AEROFLEX

Transponder/DME Test Set

ATC-1400A-2

Maintenance Manual

Issue-2

EXPORT CONTROL WARNING: This document contains controlled technology or technical data under the jurisdiction of the Export Administration Regulations (EAR), 15 CFR 730-774. It cannot be transferred to any foreign third party without the specific prior approval of the U.S. Department of Commerce Bureau of Industry and Security (BIS). Violations of these regulations are punishable by fine, imprisonment, or both.

MAINTENANCE MANUAL

TRANSPONDER/DME TEST SET

ATC-1400A-2

PUBLISHED BY
Aeroflex

Reissued Jan 1/10

Issue-2 Mar 1/11

10200 West York / Wichita, Kansas 67215 U.S.A. / (316) 522-4981 / FAX 524-2623

FOR QUALIFIED SERVICE PERSONNEL ONLY

THIS PAGE INTENTIONALLY LEFT BLANK.

Electromagnetic Compatibility:

For continued EMC compliance, double shielded and properly terminated external interface cables must be used with this equipment when interfacing with the GPIB, INTERROGATOR, INDICATOR, IFR BUS and/or AUXILIARY Connectors.

For continued EMC compliance, all external cables must be shielded and 3 meters or less in length.

During the occurrence of a voltage dip, interruption or surge on the power line, the display readouts may momentarily dim and Transmitter Power may momentarily display an erroneous reading.

Nomenclature Statement:

The ATC-1400A-2 Transponder/DME Test Set is the official nomenclature for the EMC and Safety compliant ATC-1400A Transponder/DME Test Set. In this manual ATC-1400A, ATC-1400A Transponder/DME Test Set or ATC-1400A Test Set refers to the ATC-1400A-2 Transponder/DME Test Set. In this manual the generic terms unit and Test Set also refer to the ATC-1400A-2 Transponder/DME Test Set.

THIS PAGE INTENTIONALLY LEFT BLANK.

WARNING:

HIGH VOLTAGE EQUIPMENT

THIS EQUIPMENT CONTAINS CERTAIN CIRCUITS AND/OR COMPONENTS OF EXTREMELY HIGH VOLTAGE POTENTIALS, CAPABLE OF CAUSING SERIOUS BODILY INJURY OR DEATH. WHEN PERFORMING ANY OF THE PROCEDURES CONTAINED IN THIS MANUAL, HEED ALL APPLICABLE SAFETY PRECAUTIONS.

SAFETY FIRST: TO ALL OPERATIONS AND SERVICE PERSONNEL

REFER ALL SERVICING OF UNIT TO QUALIFIED TECHNICAL PERSONNEL.

WARNING: USING THIS EQUIPMENT IN A MANNER NOT SPECIFIED BY THE ACCOMPANYING DOCUMENTATION MAY IMPAIR THE SAFETY PROTECTION PROVIDED BY THE EQUIPMENT.

CASE, COVER OR PANEL REMOVAL

Removing protective covers, casings or panels from this Test Set exposes the technician to electrical hazards that can result in electrical shock or equipment damage.

SAFETY IDENTIFICATION IN TECHNICAL MANUAL

This manual uses the following terms to draw attention to possible safety hazards, that may exist when operating or servicing this equipment.

CAUTION: THIS TERM IDENTIFIES CONDITIONS OR ACTIVITIES THAT, IF IGNORED, CAN RESULT IN EQUIPMENT OR PROPERTY DAMAGE (E.G., FIRE).

WARNING: THIS TERM IDENTIFIES CONDITIONS OR ACTIVITIES THAT, IF IGNORED, CAN RESULT IN PERSONAL INJURY OR DEATH.

SAFETY SYMBOLS IN MANUALS AND ON UNITS

CAUTION: REFER TO ACCOMPANYING DOCUMENTS. (THIS SYMBOL REFERS TO SPECIFIC CAUTIONS REPRESENTED ON THE UNIT AND CLARIFIED IN THE TEXT.)

AC OR DC TERMINAL: TERMINAL THAT MAY SUPPLY OR BE SUPPLIED WITH AC OR DC VOLTAGE.

DC TERMINAL: TERMINAL THAT MAY SUPPLY OR BE SUPPLIED WITH DC VOLTAGE.

AC TERMINAL: TERMINAL THAT MAY SUPPLY OR BE SUPPLIED WITH AC OR ALTERNATING VOLTAGE.

SWITCH OFF: AC LINE POWER TO THE DEVICE IS OFF.

SWITCH ON: AC LINE POWER TO THE DEVICE IS ON.

EQUIPMENT GROUNDING PRECAUTION

Improper grounding of equipment can result in electrical shock.

USE OF PROBES

Check specifications for the maximum voltage, current and power ratings of any connector on the Test Set before connecting it with a probe from a terminal device. Be sure the terminal device performs within these specifications before using it for measurement, to prevent electrical shock or damage to the equipment.

POWER CORDS

Power cords must not be frayed, broken nor expose bare wiring when operating this equipment.

USE RECOMMENDED FUSES ONLY

Use only fuses specifically recommended for the equipment at the specified current and voltage ratings.

WARNING: THE PROCESSOR PC BOARD ASSEMBLY USES A LITHIUM BATTERY. LITHIUM IS A TOXIC SUBSTANCE AND THE FOLLOWING WARNINGS CONCERNING LITHIUM BATTERIES MUST BE HEEDED:

- DO NOT CRUSH, INCINERATE OR DISPOSE OF IN NORMAL WASTE.
- DO NOT ATTEMPT TO RECHARGE.
- DO NOT SHORT CIRCUIT OR FORCE DISCHARGE AS THIS MIGHT CAUSE THE BATTERY TO VENT, OVERHEAT OR EXPLODE.

CAUTION: INTEGRATED CIRCUITS AND SOLID STATE DEVICES SUCH AS MOS FETS, ESPECIALLY CMOS TYPES, ARE SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGES RECEIVED FROM IMPROPER HANDLING, THE USE OF UNGROUNDED TOOLS AND IMPROPER STORAGE AND PACKAGING. ANY MAINTENANCE TO THIS UNIT MUST BE PERFORMED WITH THE FOLLOWING PRECAUTIONS:

- BEFORE USE IN A CIRCUIT, KEEP ALL LEADS SHORTED TOGETHER EITHER BY THE USE OF VENDOR-SUPPLIED SHORTING SPRINGS OR BY INSERTING LEADS INTO A CONDUCTIVE MATERIAL.
- WHEN REMOVING DEVICES FROM THEIR CONTAINERS, GROUND THE HAND BEING USED WITH A CONDUCTIVE WRISTBAND.
- TIPS OF SOLDERING IRONS AND/OR ANY TOOLS USED MUST BE GROUNDED.
- DEVICES MUST NEVER BE INSERTED INTO NOR REMOVED FROM CIRCUITS WITH POWER ON.
- PC BOARDS, WHEN TAKEN OUT OF THE SET, MUST BE LAID ON A GROUNDED CONDUCTIVE MAT OR STORED IN A CONDUCTIVE STORAGE BAG. REMOVE ANY BUILT-IN POWER SOURCE, SUCH AS A BATTERY, BEFORE LAYING PC BOARDS ON A CONDUCTIVE MAT OR STORING IN A CONDUCTIVE BAG.
- PC BOARDS, IF BEING SHIPPED TO THE FACTORY FOR REPAIR, MUST BE PACKAGED IN A CONDUCTIVE BAG AND PLACED IN A WELL-CUSHIONED SHIPPING CONTAINER.

CAUTION

THIS EQUIPMENT CONTAINS PARTS
SENSITIVE TO DAMAGE
BY ELECTROSTATIC DISCHARGE (ESD)

CAUTION: SIGNAL GENERATORS CAN BE A SOURCE OF ELECTROMAGNETIC INTERFERENCE (EMI) TO COMMUNICATION RECEIVERS. SOME TRANSMITTED SIGNALS CAN CAUSE DISRUPTION AND INTERFERENCE TO COMMUNICATION SERVICES OUT TO A DISTANCE OF SEVERAL MILES. USERS OF THIS EQUIPMENT SHOULD SCRUTINIZE ANY OPERATION THAT RESULTS IN RADIATION OF A SIGNAL (DIRECTLY OR INDIRECTLY) AND ENSURE COMPLIANCE WITH INSTRUCTIONS IN FAA CIRCULAR AC 170-6C, DATED FEBRUARY 19, 1981.

CAUTION: KEEP ALL VENT OPENINGS CLEAR AND UNOBSTRUCTED FOR PROPER EQUIPMENT COOLING AND CONTINUED RELIABILITY. WHEN OPERATING THE EQUIPMENT IN THE NORMAL HORIZONTAL POSITION, MAINTAIN AT LEAST TWO INCHES (≈FIVE CENTIMETERS) OF CLEARANCE BETWEEN THE REAR PANEL AND OBJECTS OR WALLS. IF OPERATING IN A RACK, MAXIMUM AMBIENT TEMPERATURE MUST BE AT OR BELOW 40° C.

TABLE OF CONTENTS

THIS PAGE INTENTIONALLY LEFT BLANK.

INTRODUCTION - ATC-1400A-2 TRANSPONDER/DME TEST SET

This manual contains the information necessary to test and repair the ATC-1400A-2 Transponder/DME Test Set. Instructions enable the technician to:

- Service, troubleshoot and repair major assemblies to component level within the test set.
- Maintain the operating condition of the test set to required performance standards.
- Understand theory of operation as it relates to overall operation of the test set as well as individual assemblies and circuits.

It is strongly recommended that personnel be thoroughly familiar with the ATC-1400A-2 and the contents of this manual before attempting to service this equipment.

Only qualified personnel should perform maintenance on this equipment.

ORGANIZATION

This manual is divided into the following sections:

THIS PAGE INTENTIONALLY LEFT BLANK.

CHAPTER TWO

ATC-1400A-2 TRANSPONDER/DME TEST SET

MAINTENANCE MANUAL

TABLE OF CONTENTS

THIS PAGE INTENTIONALLY LEFT BLANK.

LIST OF ILLUSTRATIONS

THIS PAGE INTENTIONALLY LEFT BLANK.

LIST OF TABLES

SECTION 1 - SERVICING

1. Preventive Maintenance Procedures

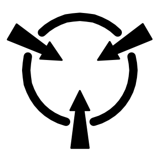
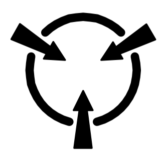
Contains routine maintenance instructions for cleaning and inspecting the Test Set.

CAUTION: DISCONNECT POWER FROM TEST SET TO AVOID POSSIBLE DAMAGE TO ELECTRONIC CIRCUITS.

A. External Cleaning

STEP	PROCEDURE
1.	Clean front panel, switches and display face with soft lint-free cloth. If dirt is difficult to remove, dampen cloth with water and mild liquid detergent.
2.	Remove fan filter from rear panel and remove dust with dry air jet. (If dirt is difficult to remove, wash filter in warm soapy water and dry with dry air jet.)
3.	Remove grease, fungus and ground-in dirt from surfaces with soft lint-free cloth dampened (not wet) with isopropyl alcohol.
4.	Remove dust and dirt from connectors with soft-bristled brush.
5.	Cover connectors, not in use, with suitable dust cover to prevent tarnishing of connector contacts.
6.	Clean cables with soft lint-free cloth.
7.	Paint exposed metal surface to avoid corrosion.

B. Internal Cleaning


CAUTION


THIS EQUIPMENT CONTAINS PARTS
SENSITIVE TO DAMAGE
BY ELECTROSTATIC DISCHARGE (ESD)

CAUTION: AVOID MOVING COMPONENTS ON CIRCUIT BOARDS OR DISASSEMBLING CONNECTORS NEEDLESSLY TO PREVENT POSSIBLE DAMAGE.

CAUTION: AVOID OPENING COMPLEX INTERNAL MODULES FOR SOLE PURPOSE OF CLEANING AND INSPECTION.

STEP	PROCEDURE
1.	Remove dust with hand-controlled dry air jet of 15 psi (1.054 kg/cm^2) and wipe internal chassis parts and frame with soft lint-free cloth moistened with isopropyl alcohol.
2.	Clean switches and controls with contact cleaner.

C. Visual Inspection

STEP	PROCEDURE

1. Inspect Chassis for:
   - Tightness of sub-assemblies and chassis mounted connectors.
   - Corrosion or damage to metal surfaces.
2. Inspect Capacitors for:
   - Loose mounting, deformities or obvious physical damage.
   - Leakage or corrosion around leads.
3. Inspect Connectors for loose or broken parts, cracked insulation and bad contacts.
4. Inspect Thumbwheel Switches for selectability.
5. Inspect Rotary Control Switches for ability to freely rotate.
6. Inspect Circuit Boards for:
   - Corrosion or damage to connectors.
   - Damage to mounted components including crystals and ICs.
   - Freedom from foreign material.
7. Inspect Resistors for:
   - Cracked, broken, charred or blistered bodies.
   - Loose or corroded soldering connections.
8. Inspect Semiconductors for:
   - Cracked, broken, charred or discolored bodies.
   - Seals around leads being in place and in good condition.
9. Inspect Switches for:
   - Loose levers, terminals and switch body contact to frame.
   - Bent or loose line switch contacts.
10. Inspect Wiring for:
    - Broken or loose ends and connections.
    - Proper dress relative to other chassis parts.

    NOTE: Verify laced wiring is tight with ends securely tied.

SECTION 2 - TROUBLESHOOTING

1. Theory of Operation

A. General

Theory of Operation is divided into three levels:

- System Theory of Operation

  Contains simplified description of signal flow through ATC-1400A-2 with accompanying block diagrams.

- Functional Theory of Operation

  Contains simplified description of functional groupings within ATC-1400A-2 with accompanying block diagrams.

- Assembly Theory of Operation

  Contains detailed description of each Assembly in ATC-1400A-2 with accompanying block diagrams.

B. System Theory of Operation (2-2-1, Figure 1)

The ATC-1400A-2 contains seventeen Assemblies and seven card cage PC Boards. All front panel displays and controls are interfaced with a data bus. Data is multiplexed on data bus and routed to/from the Microprocessor PC Board. The Microprocessor manipulates and transfers all data within the ATC-1400A-2.

Six card cage PC Boards and the Microprocessor PC Board are housed in a Card Cage Assembly. All PC Boards, with the exception of the Microprocessor PC Board, are interchangeable and can be placed in the top slot for easy access during troubleshooting.

(1) RF Assemblies

- 200 MHz Generator Assembly

  Generates all generator pulses at a fixed 200 MHz IF.

- 200 MHz SLS Source (only with SLS Modification)

  Generates a separate 200 MHz IF for SLS operation.

- ALC/Mixer Assembly

  Mixes synthesized local oscillator frequency with 200 MHz IF signal to produce generator RF pulses. Controls level of generated RF pulses based on feedback received from RF Bulkhead Assembly.

- RF Synthesizer Assembly

  Generates local oscillator frequency to ALC/Mixer Assembly.

- Discriminator Assembly

  Locks on to frequency of UUT pulses and provides a CW reference to Counter Assembly.

- Counter Assembly

  Counts generator frequency and frequency received from UUT.

- Video Assembly

  Detects UUT pulses and measures UUT power.

- RF Bulkhead Assembly

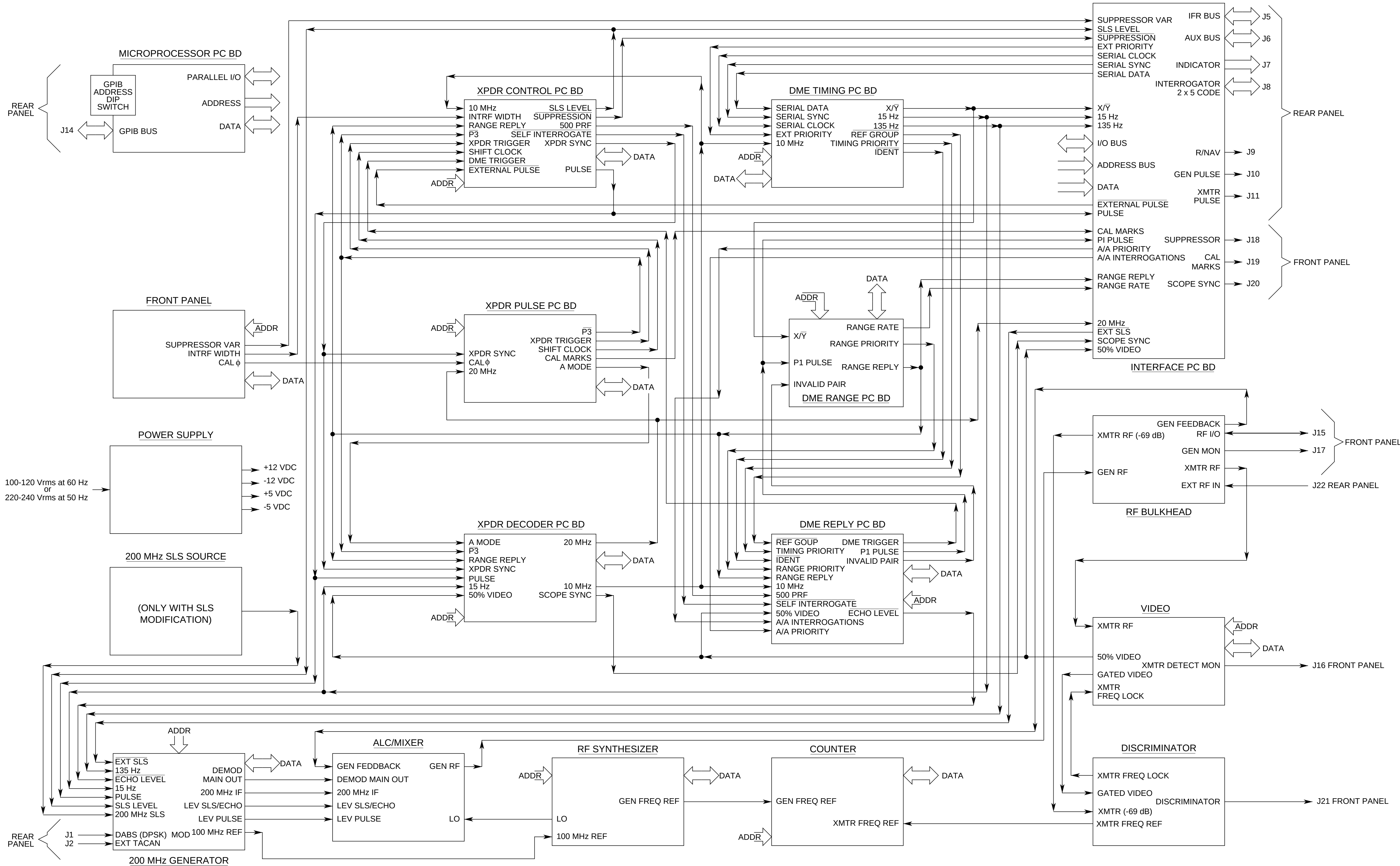
  Houses Power Amp, Bandpass Filters, Switch Attenuator, Circulator, Coupler and Fixed Attenuators.

(2) Interface Assembly

Buffers all user inputs and outputs to ATC-1400A-2 front and rear panels. All signals to Interface PC Board are measured at one of two connectors without removing Interface Assembly.

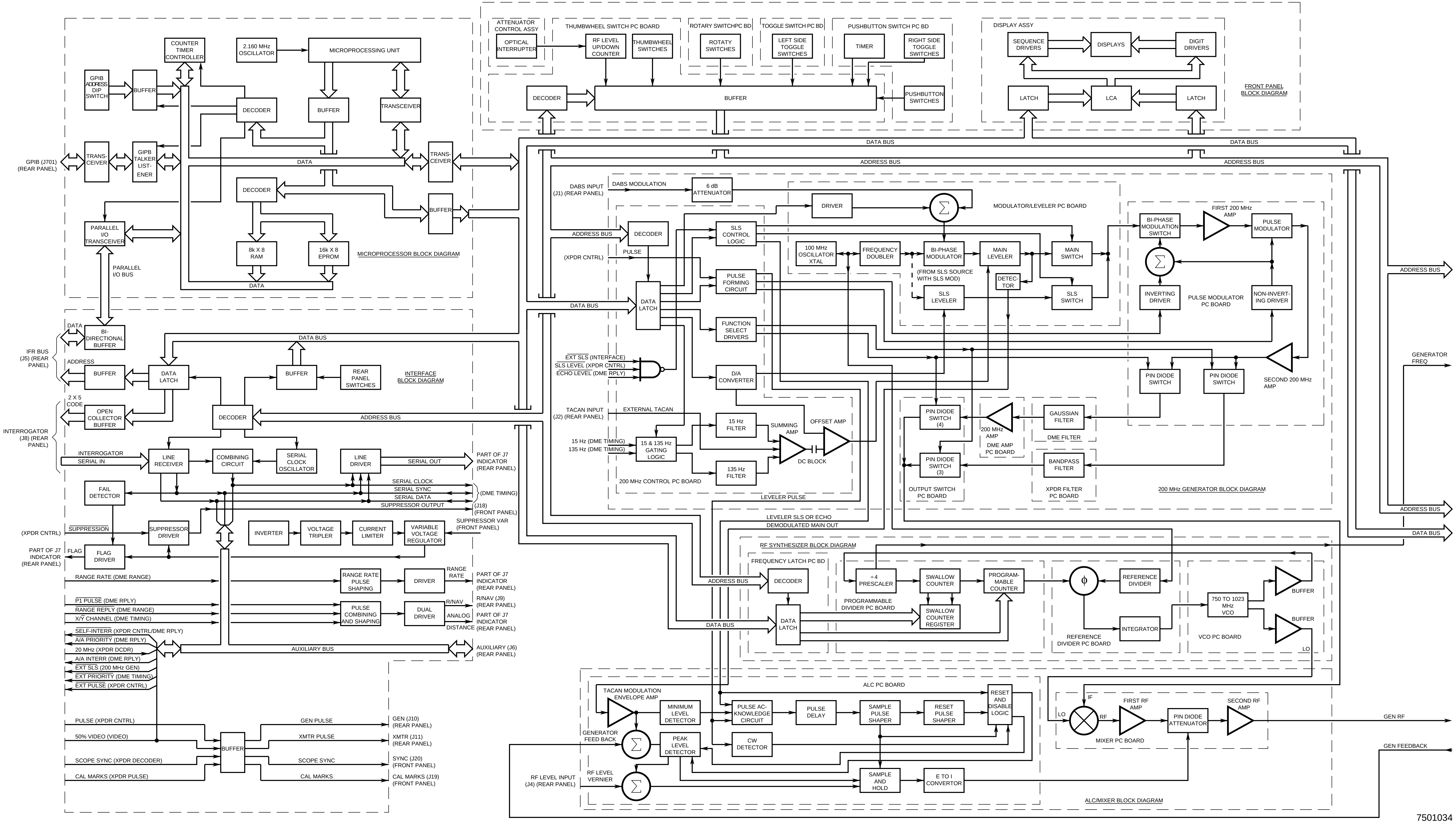
(3) Power Supply Assembly

Converts ac input voltage to four dc voltages (+5, -5, +12 and -12 Vdc) for distribution throughout ATC-1400A-2.

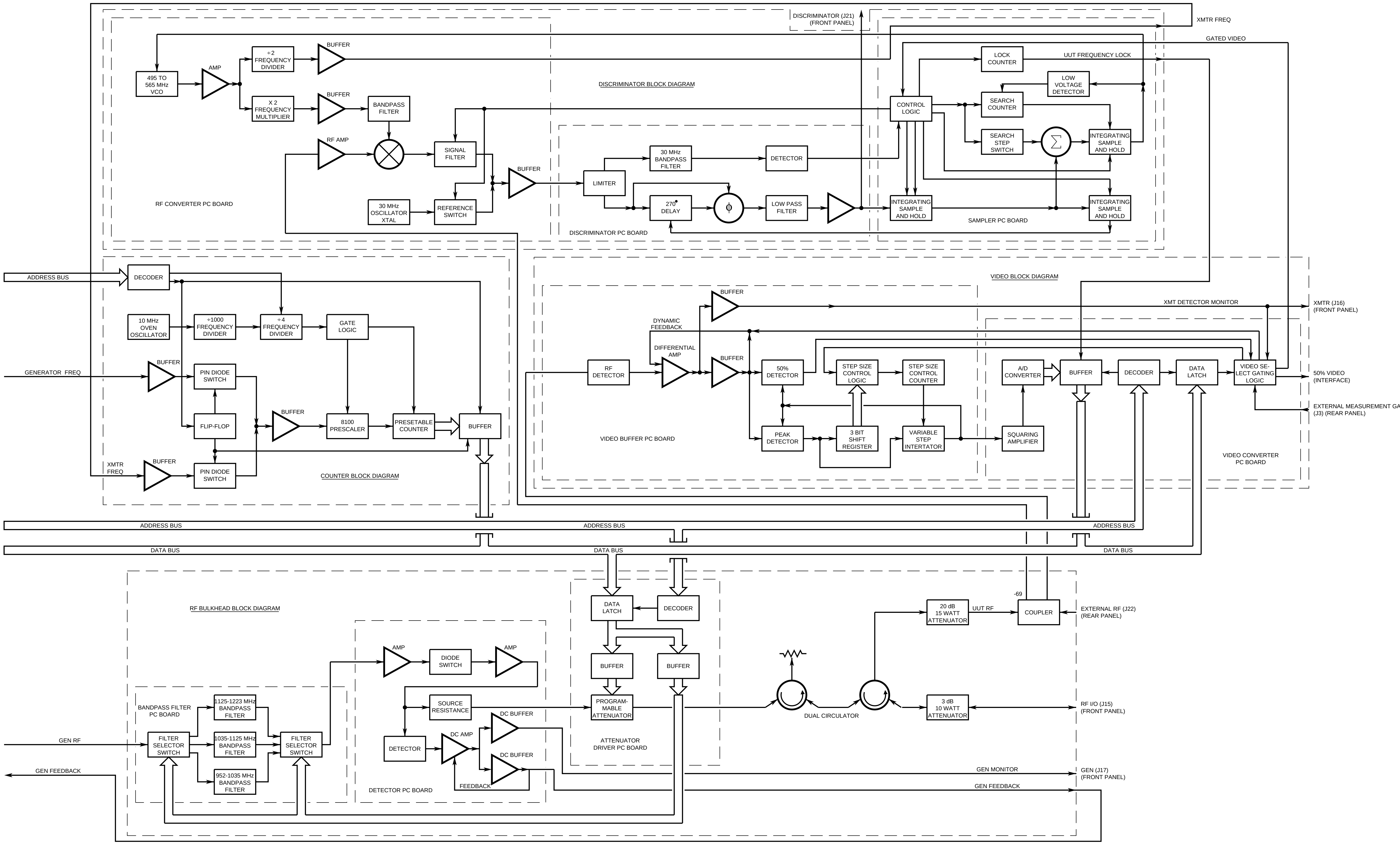


7501033

System Block Diagram
Figure 1

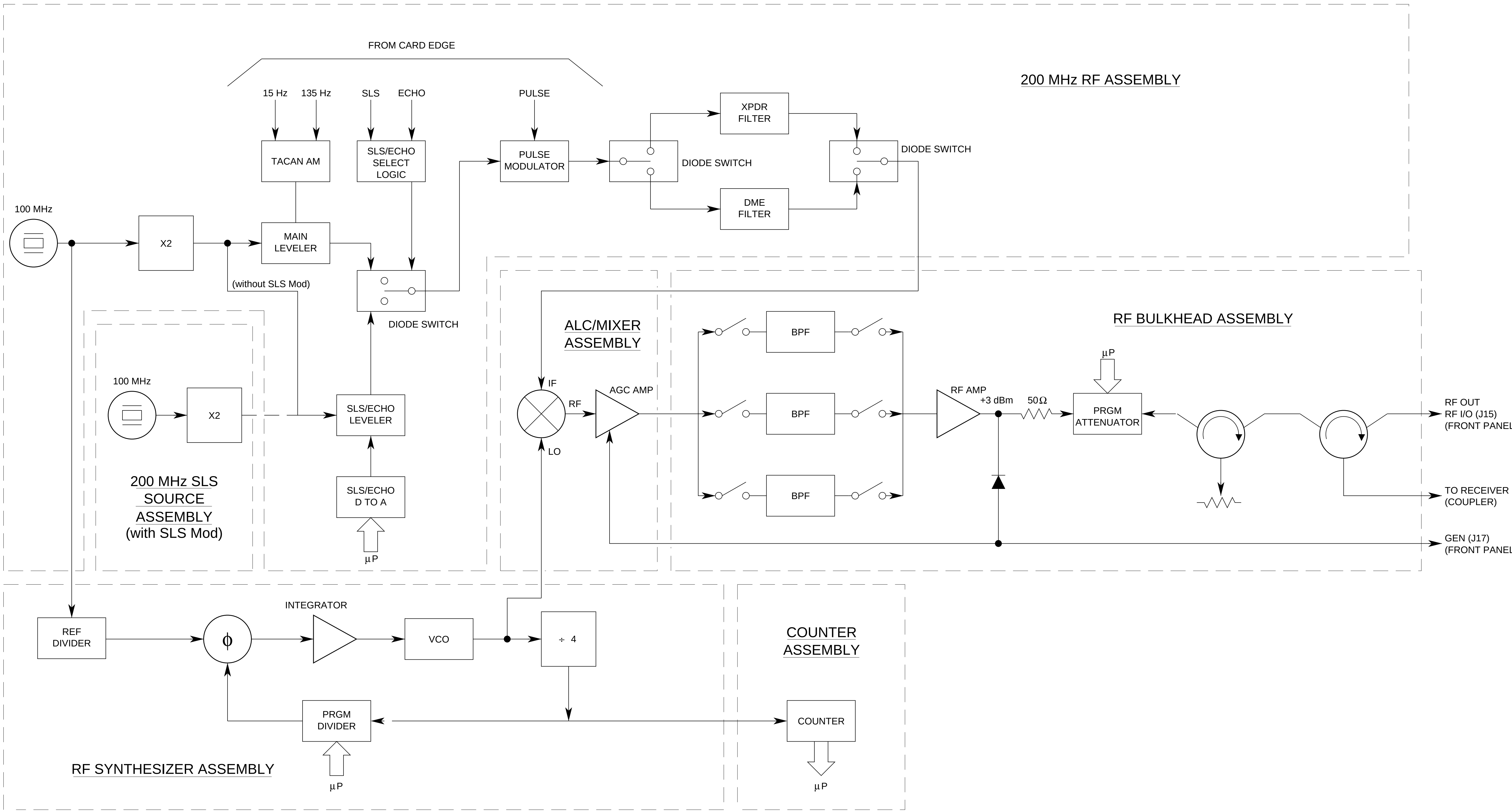


Functional Block Diagram (1 of 2)
Figure 2



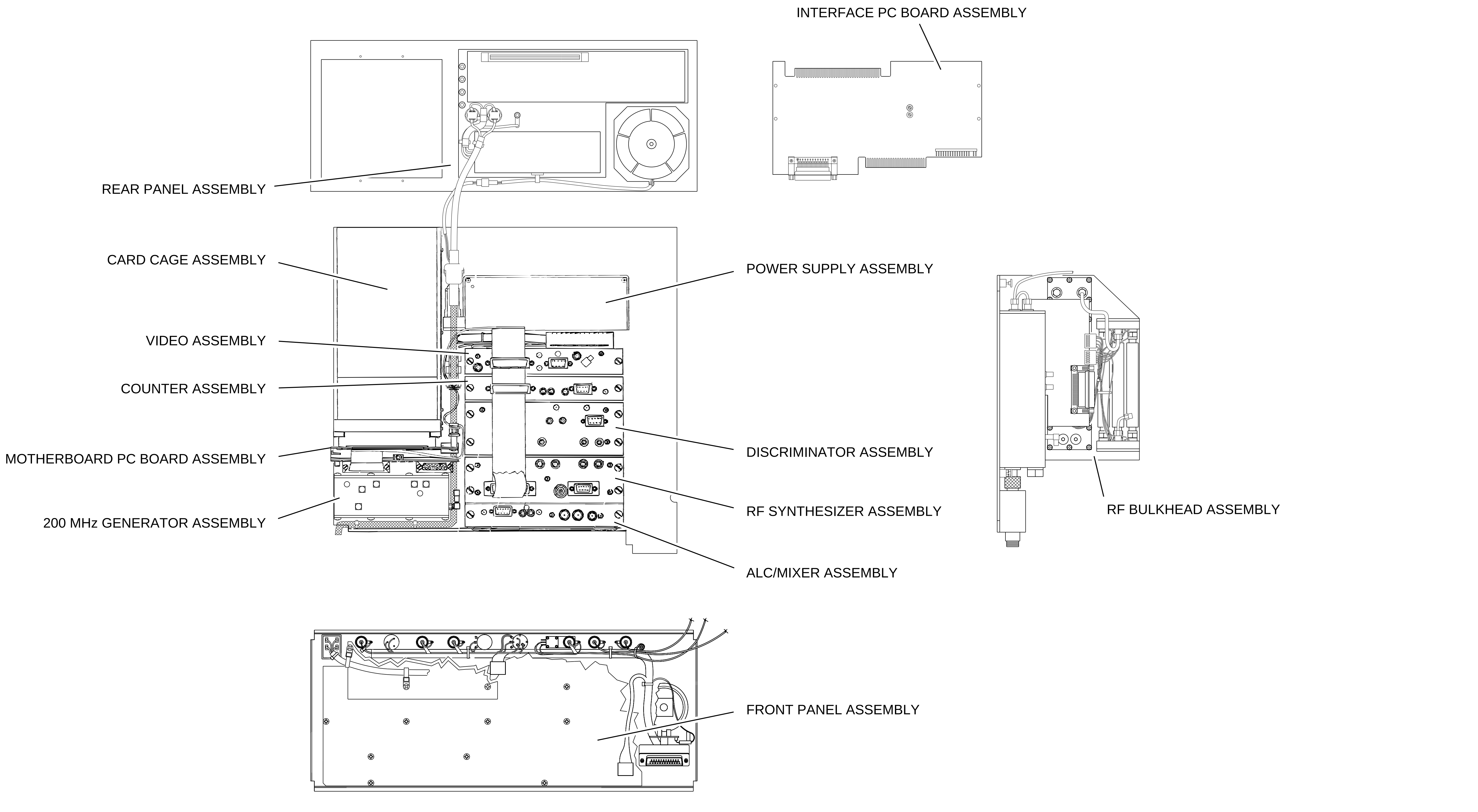
7501035

Functional Block Diagram (2 of 2)
Figure 2



7501036

Generator Section Simplified Block Diagram
Figure 3



ATC-1400A-2 Assembly Identification
Figure 4

THIS PAGE INTENTIONALLY LEFT BLANK.

C. Functional Theory of Operation (2-2-1, Figure 2)

(1) Microprocessor Operation

The Microprocessor transfers all data within ATC-1400A-2 over an internal data bus, manipulates data to allow the ATC-1400A-2 to operate and communicates with the rest of the ATC-1400A-2 through a data bus containing eight address lines, eight data lines and one write strobe. Read strobe and a bus request line is accessible at top of Motherboard PC Board for test purposes. The Microprocessor contains two routines:

- Front Panel Routine

  Front panel routine receives, from front panel, all data from control settings, processes and outputs data to hardware latches on other Assemblies. Data is read from buffers in the assemblies, processed, and then fed to front panel displays.

- GPIB Routine

  Data flow is similar to front panel routine except all control inputs come through the GPIB Connector (J14). Upon power-up, the Microprocessor reads the GPIB address switch on the ATC-1400A-2 rear panel and identifies itself as that selected address.

(2) Card Cage Operation

The Card cage contains three XPDR PC Boards and three DME PC Boards. XPDR PC Boards are not exclusively XPDR functions. XPDR PC Boards are digital boards (mostly TTL Logic) that perform all timing and decoding functions. 50% video from Video Assembly represents RF pulse sliced at 50% point. Video is applied to card cage and fed to Decoder PC Board and DME Reply PC Board. Analog inputs to card cage include CAL Phase and Interference pulse width, that is varied by a front panel control. A generated pulse is fed to the 200 MHz Generator Assembly from the XPDR Control PC Board, that modulates on a RF signal sent to the UUT. 15 Hz and 135 Hz square waves are fed to the 200 MHz Generator Assembly from the card cage to produce TACAN AM modulation.

(3) Interface PC Board

The Interface PC Board accepts numerous signals from the card cage and performs three major functions within the ATC-1400A-2:

- Buffers the signals received from the card cage and transfers the signals to user I/O connectors on the ATC-1400A-2 front and rear panels.
- Feeds some card cage signals to the AUXILIARY Connector (J6) for auxiliary equipment use.
- Links the parallel I/O Bus to the IFR BUS Connector (J5). The Parallel I/O Bus is separate from the internal data bus. The Parallel I/O Bus comes from the Microprocessor and is buffered on the Interface PC Board to create an IFR Bus Connector (J5), for auxiliary equipment use.

(4) Generator Section Operation (2-2-1, Figure 3)

(a) General

The frequency reference for the generator comes from a 100 MHz crystal on the 200 MHz Generator Assembly. The frequency reference is doubled and applied to the main leveler and the SLS/ECHO leveler (without the SLS Modification). The main leveler modulates the main signal with TACAN AM 15 Hz and 135 Hz sine waves. With the SLS Modification, the 200 MHz SLS Source Assembly uses the same type oscillator and doubling process to provide a non-coherent 200 MHz IF input to the SLS/ECHO leveler. The SLS/ECHO leveler varies the SLS signal by a dc voltage from the digital to analog converter and a signal from the microprocessor. Either the main leveler or SLS/ECHO leveler is selected at all times. The output is applied to a pulse modulator, that has an 80 dB ON/OFF ratio. The rise and fall time of the pulse output from the pulse modulator is determined by either the XPDR or DME filter. In XPDR function, a wide bandpass is used, creating a 70 ns rise and fall time. In DME function, a tri-pole helical resonator is used to highly filter the square pulse applied from the pulse modulator and create a Gaussian-shaped pulse. After selection of XPDR or DME filter, the 200 MHz IF signal is fed to the ALC/Mixer Assembly, where it is up-converted with the local oscillator frequency of the RF Synthesizer Assembly. The local oscillator frequency is 200 MHz below the selected frequency of the ATC-1400A-2.

The RF Synthesizer Assembly operates on the same 100 MHz reference as the 200 MHz Generator Assembly. The 100 MHz signal, in addition to being fed to the main and SLS/ECHO levelers, is fed in turn, to the doubler, integrator, VCO, ÷4 prescaler and programmable divider, that selects the frequency of the ATC-1400A-2 at the request of the microprocessor. The output of the ÷4 prescaler is also fed to the Counter Assembly. The Counter counts the ÷4 VCO frequency and sends the information to the microprocessor. In addition to being fed to the ÷4 prescaler, the VCO output is fed into a mixer, where it is mixed with the 200 MHz IF frequency. The mixer output is fed to an AGC amplifier that levels the RF pulses and applies the signal to one of three bandpass filters, to reject all undesired mixer products.

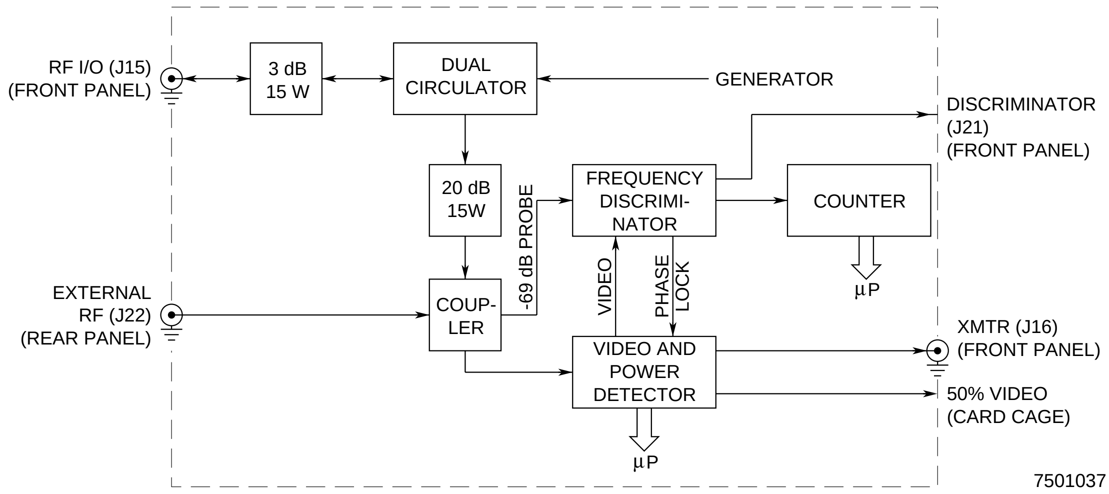
The proper bandpass filter is selected by the microprocessor according to the frequency selected on the ATC-1400A-2. The output of the bandpass filter is fed to an RF amplifier, where the level of the RF pulse is determined, and fed back to the AGC amplifier. The output of the RF amplifier is also fed to a 50 Ω resistor, fixing the source impedance of the leveling circuit to 50 Ω, so the programmable attenuator operates according to specifications. The microprocessor adjusts the programmable attenuator in 1 dB steps, determining the RF output level at the RF I/O Connector (J15). The detected output of the RF amplifier is fed to the GEN Connector (J17).

(b) 200 MHz Generator (2-2-1, Figure 3)

In addition to the five signals previously discussed that are fed to the 200 MHz Generator Assembly, there are two signals received from the ATC-1400A-2 rear panel. The first is DABS, that is a biphased modulator. The second is an external TACAN signal that AM modulates the main leveler. The output of the 200 MHz Generator Assembly consists of a 100 MHz reference frequency fed to the RF Synthesizer Assembly, an amplitude demodulated main level signal (Detector output) fed to the ALC/Mixer Assembly, a 200 MHz IF pulse fed to the ALC/Mixer Assembly, a leveler SLS or echo (Digital TTL) signal fed to the ALC/Mixer Assembly and a TTL signal that is a leveler pulse occurring along with the IF pulses. Additional signal inputs to the ALC/Mixer Assembly includes a local oscillator signal from the RF Synthesizer Assembly and the detected generator pulses received from the RF Bulkhead, that is the signal the ATC-1400A-2 levels on. The ALC detects the peaks of this signal and servos the amplifier gain to keep the detected peaks at a constant level. The generator RF Pulses from the ALC/Mixer Assembly are amplified in the RF Bulkhead Assembly and fed to the RF I/O Connector (J15), that also receives signals from the UUT in the receive mode of operation. A detected generator signal from the RF Bulkhead Assembly is fed to the GEN Connector (J17).

The RF Synthesizer Assembly receives the 100 MHz reference signal from the 200 MHz Generator Assembly and synthesizes the local oscillator frequency to the ALC/Mixer Assembly from the frequency setting received from the internal data bus. The RF Synthesizer Assembly divides the local oscillator frequency by four and sends it to the Counter Assembly. The Counter Assembly is used in both the generator and receiver section to count the generator local oscillator frequency and a reference from the Discriminator Assembly for the UUT frequency. Both signals are transmitted to the microprocessor on the internal data bus.

(5) Receiver Section Operation (2-2-1, Figure 5)

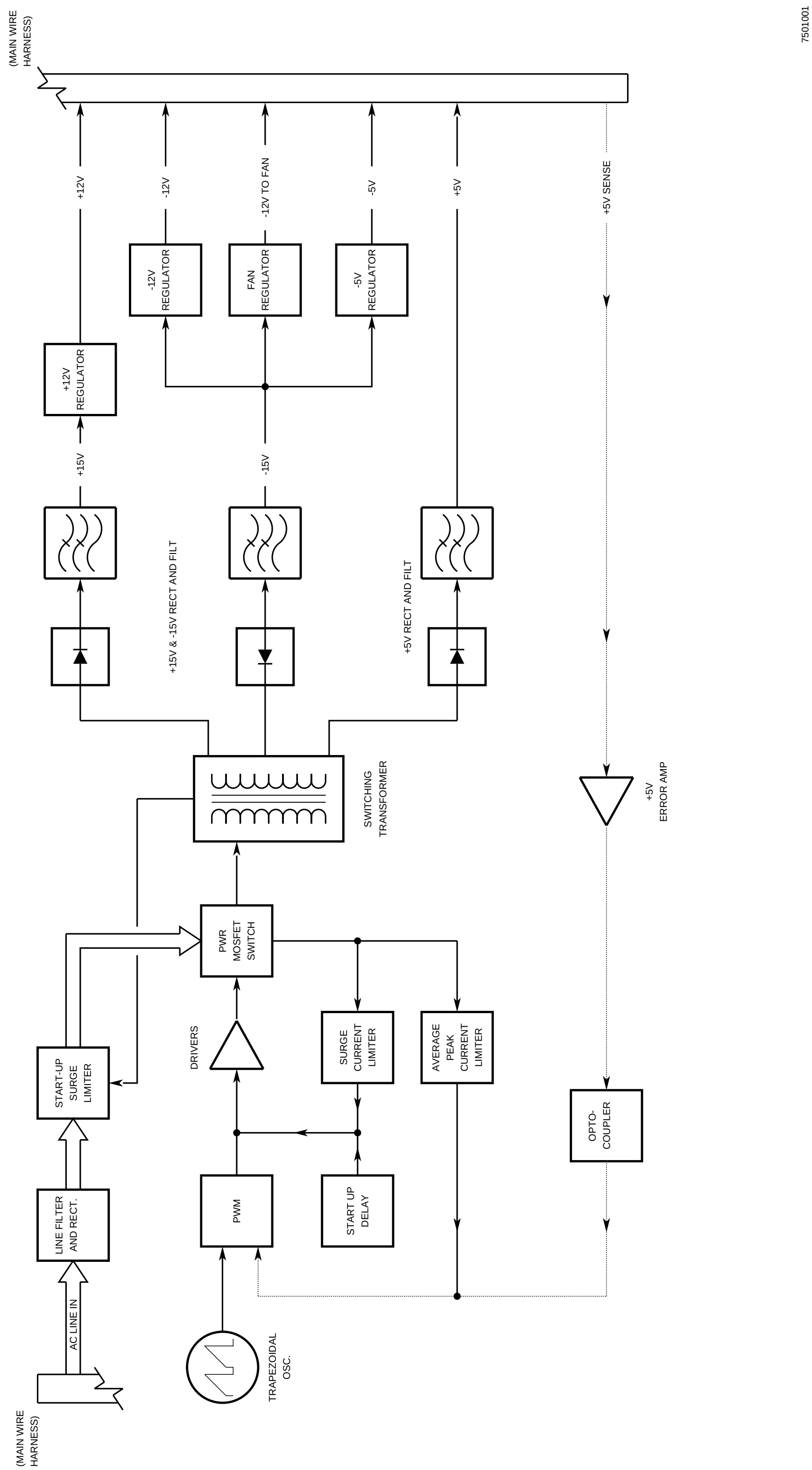


Receiver Section Functional Block Diagram
Figure 5

UUT Signals are received and fed through a 3 dB pad, on the RF Bulkhead Assembly, that can dissipate 15 watts and that fixes the ATC-1400A-2 input impedance near 50 Ω. The signal is then fed into a dual circulator that multiplexes the generator and receive signals to separate ports. The dual circulator also provides isolation from high power signals received by the ATC-1400A-2 to the generator section. The main UUT signal is fed through a high power 20 dB attenuator.

The UUT signal is then fed through a Bandpass Filter to the Power Detector Assembly and a portion of the signal is stripped off for the Discriminator Assembly. The Video and Power Detector Assembly detects the peak power of the received signal and passes this information to the Microprocessor Assembly. It also detects the UUT signal, buffers the signal and passes the waveform to the XMTR Connector (J16). The Video and Power Detector Assembly slices the detected waveform at the 50% point and feeds this digital pulse to the Card Cage Assembly and XMTR Connector (J11).

The gated video pulse fed to the Discriminator Assembly is gated for P_1 and P_2. If P_2 is selected by the front panel switch, only the P_2 pulse goes to the Frequency Discriminator. This pulse activates the discriminator that sweeps the DME band frequencies and locks to the average frequency of the received pulses. After finding and locking onto the signal, the discriminator differentiates the frequencies within the pulse, then buffers and feeds the signal to the DISCRIMINATOR Connector (J21). The discriminator also subtracts the 30 MHz IF signal from the UUT RF signal. The discriminator divides the signal by four for the Counter Assembly, that counts the UUT frequency and sends the resulting data to the microprocessor via the internal data bus.



Power Supply Block Diagram
Figure 6

D. Module Theory of Operation

(1) Power Supply (2-2-1, Figure 6)

Line Voltage (100 to 120 VAC at 60 Hz or 220 to 240 VAC at 50 Hz) is applied to the ATC-1400A-2 through the rear panel AC INPUT Connector (J9512, pins L and N). Fuses F9501 and F9502 protect against high voltage or current on the line and neutral sides respectively. The Rear Panel Assembly applies the incoming ac voltage through P/J9502 and P/J9902 to the POWER Switch on the Front Panel Assembly. The POWER Switch controls both the line and neutral sides of the circuit. With the POWER Switch ON, the Front Panel Assembly applies the ac voltage to the Power Supply through P/J9902.

The Power Supply converts the supplied ac voltage to four dc voltages (+5, -5, +12 and -12 Vdc) that are distributed throughout the ATC-1400A-2. The power supply also supplies the -12 Vdc for the cooling fan.

The external ac power (line ac voltage) is rectified and filtered by the Line Rectifier (BR10001, C10001, C10002, C10003, C10004, C10005, C10006, R10001 and R10002). The resultant high dc potential (150 to 370 Vdc) is routed to the Sub Regulator (Q10001, CR10010, Q10006 and associated components) and to the primary windings of the Output Transformer (T10002).

RT10001 and Q10007 make up the start-up Surge Limiter. C10003, C10004 and C10006 are charged through RT10001 during the start-up delay (approximately 200 ms) to allow a maximum instantaneous current of 5 A on power up. Once the start-up delay is over, the flyback from the switching transformer triggers Q10007 to allow normal operation.

The Sub-Regulator consists of a Current Limiter (Q10001, Q10006 and associated components) and a Shunt Regulator (Zener Diode, CR10010). The Current Limiter maintains a safe operating level for the Zener Diode (CR10010). The Sub-Regulator provides a source of power for the operation of a Trapezoid Oscillator (U10005, CR10011 and associated components), Comparator (U10006, Q10002 and Q10003), PWR Mosfet Switch (Q10004), part of the Optical Feedback Circuit and the start-up delay circuit (C10029, CR10021, R10041 and Q10008).

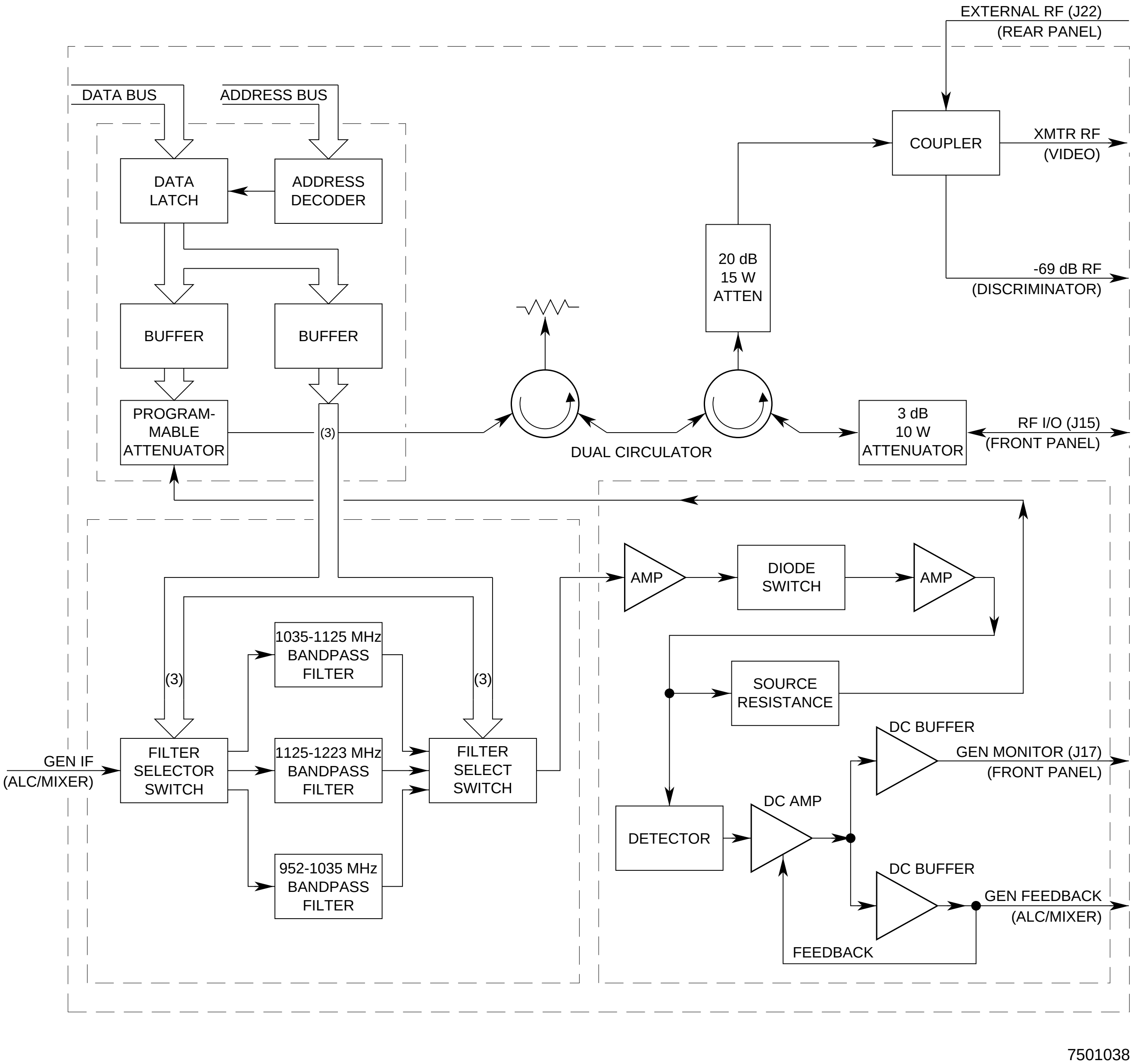
The Trapezoid Oscillator signal is sent directly to the Comparator, that produces the variable duty cycle rectangular wave required to drive the PWR Mosfet Switch. The PWR Mosfet Switch controls current flow through the primary windings of the Output Transformer (T10002) by comparing the Trapezoid Wave with the dc feedback from the Optical Feedback Circuit. When the Trapezoid Waveform rises higher than the dc feedback, the output of the Comparator goes "high" and conversely, when the instantaneous voltage on the Trapezoid Wave falls below the dc feedback, the output of the Comparator goes "low." The Comparator produces a rectangular waveform of that its duty cycle is inversely proportional to its dc input.

In addition to its primary windings, the Output Transformer has three secondary windings corresponding to the +12, -12 and +5 V outputs of the Power Supply. The secondary winding output voltages are proportional to the duty cycle at that the primary windings are switched. These transformer secondary winding output voltages are rectified (CR10001, CR10002, CR10003, CR10004, CR10006 and CR10007), producing a dc voltage with a large amount of ripple. This ripple is filtered (C10009, C10012, C10018, C10019 and L10001 through L10004) before being sent to the Voltage Regulators (U10001, U10002, U10003 and U10009).

Voltage Regulator U10001 regulates the -12 V supply, U10009 regulates the -12 V supply for the fan, U10002 regulates the -5V supply and U10003 regulates the separate +12 V source. The +5 V output is regulated by the DC Optical Feedback Circuit that also performs as the duty cycle regulator for the primary windings of the Output Transformer. This is accomplished by using an Operational Amplifier (U10008) to compare a sample of the +5 V, from the output, with a reference voltage derived from Zener Diodes (CR10014 and CR10015). The Operational Amplifier drives an Optical Coupler (U10001) to the extent necessary to make the amplifier's input voltages equal (+5 V from filter output equal to +5 V reference voltage). The optical isolation is necessary to isolate the input circuits from the output circuits.

The Current Limiter serves a dual purpose: Average Current Limiter (CR10012, U10007 and associated components) and Peak Current Limiter (Q10005). The Average Current Limiter (U10007) compares the peak voltage from Current Sense Resistors (R10023 through R10025) with a preset voltage value determined by R10014 and R10021. When a large current drain is detected, the output signal of U10007 causes comparator U10006 to stop operating, discontinuing the operation of the PWR Mosfet Switch. The Peak Current Limiter operates faster than the Average Current Limiter so Q10005 is activated when the peak current exceeds a predetermined level. This action turns Q10002 "off" and Q10003 "on" to remove the drive voltage from the PWR Mosfet Switch.

The start-up delay circuit (C10029, CR10021, R10041 and Q10008) clamps the output of the pulse width modulator to allow C10004 and C10006 to become nearly fully charged before energizing the switching transformer.



RF Bulkhead Block Diagram
Figure 7

(2) RF Bulkhead (2-2-1, Figure 7)

The RF Bulkhead Assembly processes the generated RF, provides for RF I/O duplexing and consists of the following components:

Bandpass Filter Assembly
Detector Amp Assembly/Diode Switch
Attenuator Driver PC Board/Programmable Attenuator Assembly
Dual Circulator
3 dB, 15 W Attenuator
20 dB, 15 W Attenuator
Coupler Assembly

Generated RF pulses from the ALC/Mixer Assembly are fed to the Bandpass Filter Assembly. The Bandpass Filter Assembly switches one of three bandpass filters in line with the generated RF pulse selecting the filter corresponding with the generated frequency. The frequency range for the three bandpass filters is 952 to 1035 MHz, 1035 to 1125 MHz and 1125 to 1223 MHz. The Bandpass Filter Assembly removes unwanted frequencies produced in the ALC/Mixer Assembly.

The filtered RF pulse is applied to the Detector PC Board where it is amplified, goes through a Diode Switch controlled by the Attenuator Driver PC Board and is fed to the Programmable Attenuator. The Detector PC Board also contains a detector that produces a dc voltage proportional in amplitude to the amplified RF pulses, and two buffers that feed the GEN Connector (J17) and ALC/Mixer Assembly for level control.

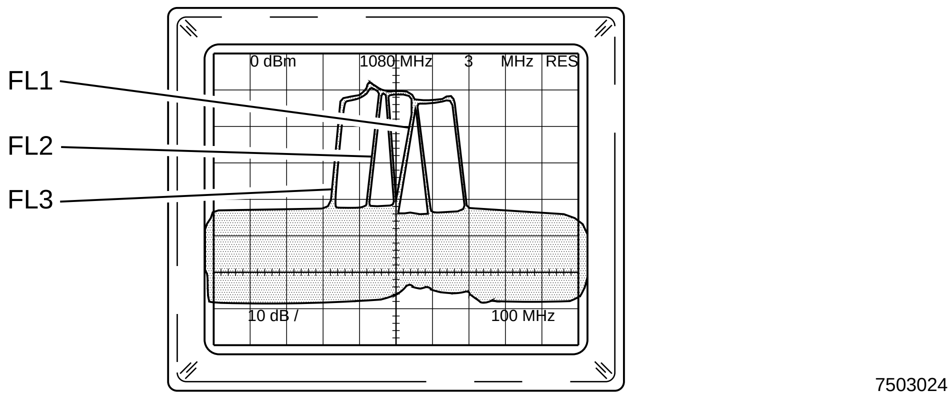
The RF pulse fed to the Programmable Attenuator is maintained at a constant level. The amount of attenuation selected by the Programmable Attenuator directly determines the RF level output at the RF I/O Connector (J15). When the address decoder decodes the attenuator driver address, data latches to and through the data latch to a buffer. Buffers send data to control the Programmable Attenuator and the filter select switch on the Bandpass Filter Assembly.

The circulator duplexes the generated and received RF signals. The generated RF pulses from the programmable attenuator pass through the circulator to the 3 dB attenuator and RF I/O Connector (J15). The RF pulses received from the UUT pass through the circulator to the 20 dB attenuator and then through the Coupler Assembly, where it is attenuated 16 dB. A portion of the signal is coupled to the Discriminator, and the main signal goes to a Bandpass Filter and on to the Video Assembly for processing.

(a) Bandpass Filter

The RF Bulkhead Assembly is comprised of three Tubular Bandpass filters and two Filter Selector Switch Assemblies. The Tubular Bandpass Filters are non-repairable items. The physical and electrical characteristics of the Filter Selector Switch Assemblies are identical. Only one switch assembly is addressed.

The Filter Selector Switch Assembly is comprised of three SPST Pin Diode Switches, that contain three diodes each. The three SPST switches are connected to form a single SPST RF Switch. When one of the diode switches in the Filter Selector Switch Assembly is turned "ON," the two series diodes start conducting and the shunt diode becomes reverse biased. When the diode switch is turned "OFF," the two series diodes are reverse biased and the shunt diode starts conducting. The typical voltage level on bandpass filters (FL8101 to FL8103) is 9.5 V for the switch that is turned "ON" and -750 mV for the two switches turned "OFF." The relative position and bandwidth of the frequency response curve for each bandpass filter is illustrated in 2-2-1, Figure 8 for reference purposes.



FL1	952.01 to 1034 MHz
FL2	1035 to 1124 MHz
FL3	1125 to 1223 MHz

Typical RF Bulkhead Bandpass Filter Frequency Response Curve
Figure 8

(b) Detector Amplifier

The Detector Amplifier contains a three stage RF amplifier, detector circuit, three dc amplifiers and a Diode Switch to provide greater on/off ratio. The three stage RF amplifier consists of one common emitter self-biased amplifier, followed by one common emitter constant current bias amplifier, a Diode Switch and another common emitter constant bias amplifier.

The detector circuit is formed by CR8504, C8505 and L8501. The detected level is fed through a summing and bias network (R8503, R8504, R8517 and R8518) to a differential amplifier consisting of Q8501, Q8504, Q8505 and Q8506. The differential amplifier output is fed to two source followers (Q8509 and Q8510). A sample of the output of Q8510 is fed back to the summing network as a negative feedback signal, that insures the DC level fed back to the ALC/Mixer Assembly is at the same level as the detector output.

(c) Attenuator Driver

The Attenuator Driver captures data from the data bus and uses this information to select the RF attenuator setting and one of three filters on the Bandpass Filter PC Board. The address decoder (X8601B, X8601C, X8602A, X8602B, X8602C and X8603) for the RF Bulkhead Assembly decodes the locations of hexadecimal address "FC" and "FD." (Refer to 2-2-1, Table 1 for address notation and data format.) The Attenuator Driver also provides the drive for the Diode Switch.

ADDRESS (HEX)	MODE	DATA (HEX)	FUNCTION
FC	WRITE	Equivalent to RF LEVEL -dBm Display value.	Programmable Attenuator (AT8601) Level Setting
FD	WRITE	∅1	952-1035 MHz BP Filter Selected
		∅2	1035-1125 MHz BP Filter Selected
		∅4	1125-1223 MHz BP Filter Selected
		∅∅	RA OFF (Not normally used, causes no damage)

Attenuator Driver Hexadecimal Address and Data Locations
Table 1

NOTE: All other combinations of data, except as listed in 2-2-1, Table 1, are illegal for address "FD."

X8604 captures the RF Attenuator setting from the data bus (bits D0 through D6 only are used). Each bit captured is buffered by a NORgate (open collector output) and a driving transistor.

The driving transistors are Q8601 through Q8607 and the inverters are comprised of X8601A and all six gates of X8605. Since the control inputs to the Programmable Attenuator are inductive (relay coils), crystal rectifiers CR8601 through CR8607 are provided to shunt the negative voltage spikes associated with turning off current to an inductor. If during troubleshooting, a driver transistor (Q8601 through Q8607) fails, check the associated protection diodes (CR8601 through CR8607) before replacing transistors.

X8606 is a four bit latch that holds the bandpass filter select information on bits D0 through D2. The three bits (DØ through D2) are buffered by a NORgate with open collector outputs, whose output is used to switch a dual constant current driver. Q8609, Q8611 and Q8613 are the sink or negative current regulators and Q8608, Q8610 and Q8612 are the positive current regulators. All three negative regulators (Q8609, Q8611 and Q8613) are conducting constantly, while only one of the positive drivers (Q8608, Q8610 or Q8612) is conducting at any one time. The active positive current pulls its output high while the output of the inactive positive drivers is under the influence of the negative current regulators. The positive current regulator output, that is applied to the Filter Select Switch, is 9.5 V for an "ON" condition and -750 mV for an "OFF" condition, so no more than one bandpass filter is selected at any one time. X8607 takes the pulse signal from the Card Cage and increases it to approximately 10 μs to frame the DME and XPDR pulses. Q8614 and Q8615 convert the signal level from TTL to 12 V logic levels, and also provides the current to drive the Diode Switch. In CW Mode, the TTL High from the Card Cage overrides X8607 through R8635 to turn on the Diode Switch.

(d) Coupler Assembly

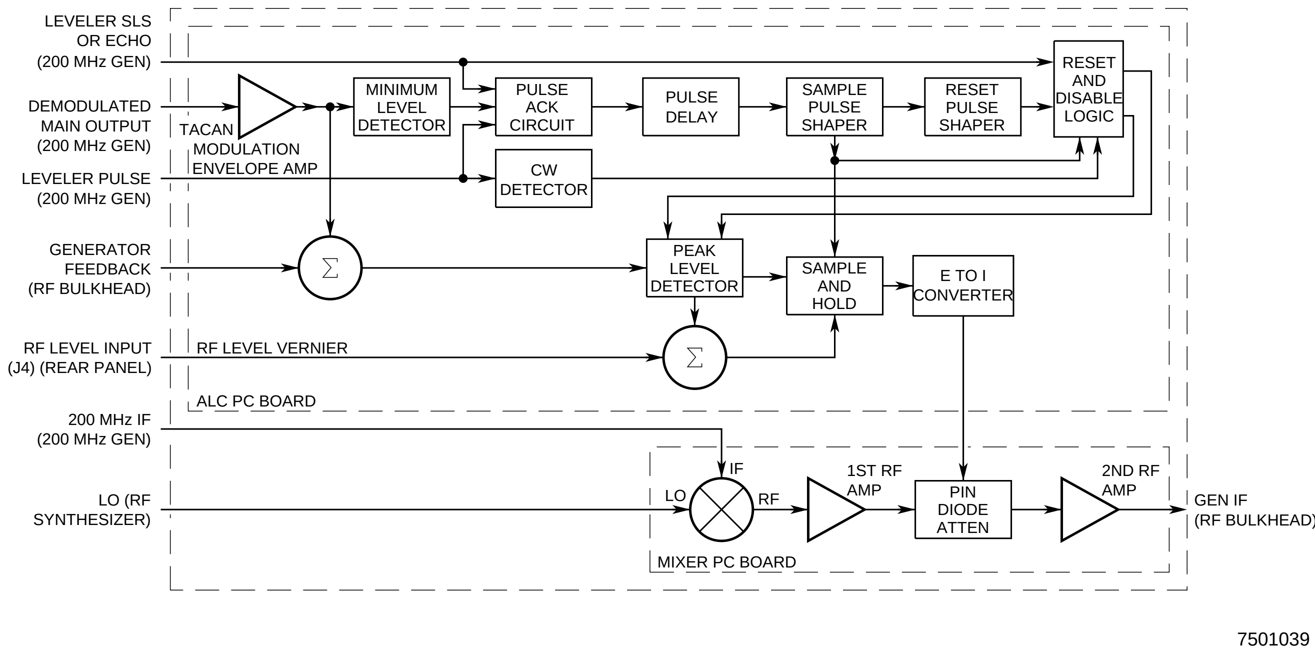
The Coupler Assembly couples the XMTR RF signal with any external RF applied to the EXTERNAL RF Connector (J22) on the rear panel. The Coupler attenuates the signal to provide a coupled output to the Discriminator Assembly (-69 dB) and after a bandpass filter, a signal for the Video Assembly.

The XMTR RF signal is attenuated by R3601, R3602 and R3603 and Bandpass Filtered by Z3602, Z3603, C3605, C3606, C3604, Z3604, Z3605, Z3606, C3602, C3603, C3601, Z3607 and Z3608. The Bandpass Filter attenuates the second harmonic of the XMTR RF signal for more accurate power measurement. The directional coupler #2 (DC3602) feeds the Discriminator Assembly when the ATC-1400A-2 is connected to the UUT XMTR. AT9103 on the rear panel terminates DC3602 for correct operation. DC3601 provides an external input to both the Video Assembly and the Discriminator Assembly. R3704 terminates DC3601 for correct operation.

(e) Non-Repairable Items

The Dual Circulator, Frequency Probe, 3 dB Attenuator and 20 dB Attenuator are non-repairable items.

The Detector Amplifier and Coupler Assembly are not field repairable.



ALC/Mixer Assembly Block Diagram
Figure 9

(3) ALC/Mixer (2-2-1, Figure 9)

The ALC/Mixer Assembly produces the generated RF pulses by mixing the local oscillator frequency with the 200 MHz IF pulses and maintains the proper output level of the produced pulses. The ALC/Mixer Assembly consists of the ALC PC Board and Mixer PC Board.

The 200 MHz IF and local oscillator are heterodyned by the mixer circuit located on the Mixer PC Board. The RF output of the mixer, in turn, is fed to the 1st RF amplifier circuit where the signal is amplified. The signal is then fed to the pin diode attenuator that is controlled by a voltage-to-current converter on the ALC PC Board. The voltage-to-current converter adjusts the current of the pin diode attenuator to produce the proper RF output level. As the control current to the pin diode attenuator varies, the attenuation changes accordingly. The RF output of the pin diode attenuator is amplified by the 2nd RF amplifier and fed to the RF Bulkhead Assembly.

The generated feedback pulse is a detected sample of the generated RF fed back to the ALC PC Board from the RF Bulkhead Assembly and applied to one side of the summing amplifier. The other input to the summing amplifier is the output from the TACAN modulation envelope amplifier, that supplies the summing amplifier with a sample of the TACAN modulation envelope 180° out of phase with the TACAN signal present on the generator feedback pulse. This TACAN signal cancels out the TACAN AM present on the generator feedback pulse in the summing network. The summing network output is then fed to a peak level detector.

The peak level detector maintains the peak level of the generator feedback pulse until the peak detector output is sampled by the sample and hold circuit and reset to zero. The output of the sample and hold circuit is fed to the voltage-to-current converter that controls the attenuation of the pin diode attenuator on the Mixer PC Board. The peak level detector has two inputs (reset line and disable line) in addition to the signal received from the summing amplifier. The detached peak level signal is then either sampled constantly for CW or sampled 8 µs after the first pulse in NORM Mode. The appropriate signal is combined with the RF output level adjust to provide correction voltage. The pulse acknowledge circuit only recognizes an SLS pulse or any other pulses farther than 80 µs from a pre-acknowledged pulse. Low level pulses, due to excessive TACAN AM modulation, are detected by the minimum level detector and fed to the pulse acknowledge circuit. An SLS pulse has an accompanying signal on the SLS or echo line that disables the pulse acknowledge circuit and instructs the reset and disable logic circuit to disable the peak level detector. The leveler pulse input to the pulse acknowledge circuit is coincident with the pulse modulated 200 MHz IF. A valid pulse from the pulse acknowledge circuit is delayed by 8 µs for the 200 MHz IF pulse to reach the summing network and peak detector on the ALC PC Board and the detector circuit on the RF Bulkhead Assembly. After the 8 µs delay, the sample pulse shaper produces a sample pulse that sets the sample and hold amplifier to "sample" mode of operation for 8 µs. At this time, the pulse shaper produces a 20 µs reset pulse instructing the reset and disable logic circuit to reset the peak level detector. The peak level detector is ready to accept the next pulse. When a CW signal is received, the output from the CW detector forces the reset and disable logic circuit to continuously reset the peak level detector.

The mixer combines the 200 MHz IF from the 200 MHz Generator Assembly and the local oscillator signal from the RF Synthesizer Assembly. The mixer, in addition to frequency mixing, contains the variable voltage pin diode attenuator that is controlled by the ALC section.

The sum frequency (200 MHz IF and local oscillator signal) is amplified and buffered by the first RF amplifier and fed to the pin diode attenuator. The pin diode attenuator, in turn, adjusts the RF level (controlled by the ALC section) applied to the second RF amplifier, that amplifies the generate signal fed to the RF Bulkhead Assembly.

(a) ALC Section

The TACAN modulation envelope amplifier consists of X3206B and associated components. Q3203 and associated components from the minimum level detector, that is 180° out of phase with X3206B, so when the detector level output at J3203 is at a minimum due to excessive TACAN modulation, the output of X3206B is maximum. When the output of X3206B reaches a level predetermined by R3225 and R3226, Q2203 turns-on and disables the pulse acknowledge circuit.

The pulse acknowledge circuit consists of X3201A, X3201B, X3203A, X3202A and Q3212. X3202A prevents any pulse from being acknowledged for 80 µs following the acknowledgment of a valid pulse. X3205A and X3201C form the CW detector circuit, and X3202B forms the 8 µs pulse delay circuit. X3204A and Q3202 form the sample pulse shaper circuit that generates the 8 µs sample pulse. The reset and disable logic circuit consists of X3203B, X3203C and Q3201.

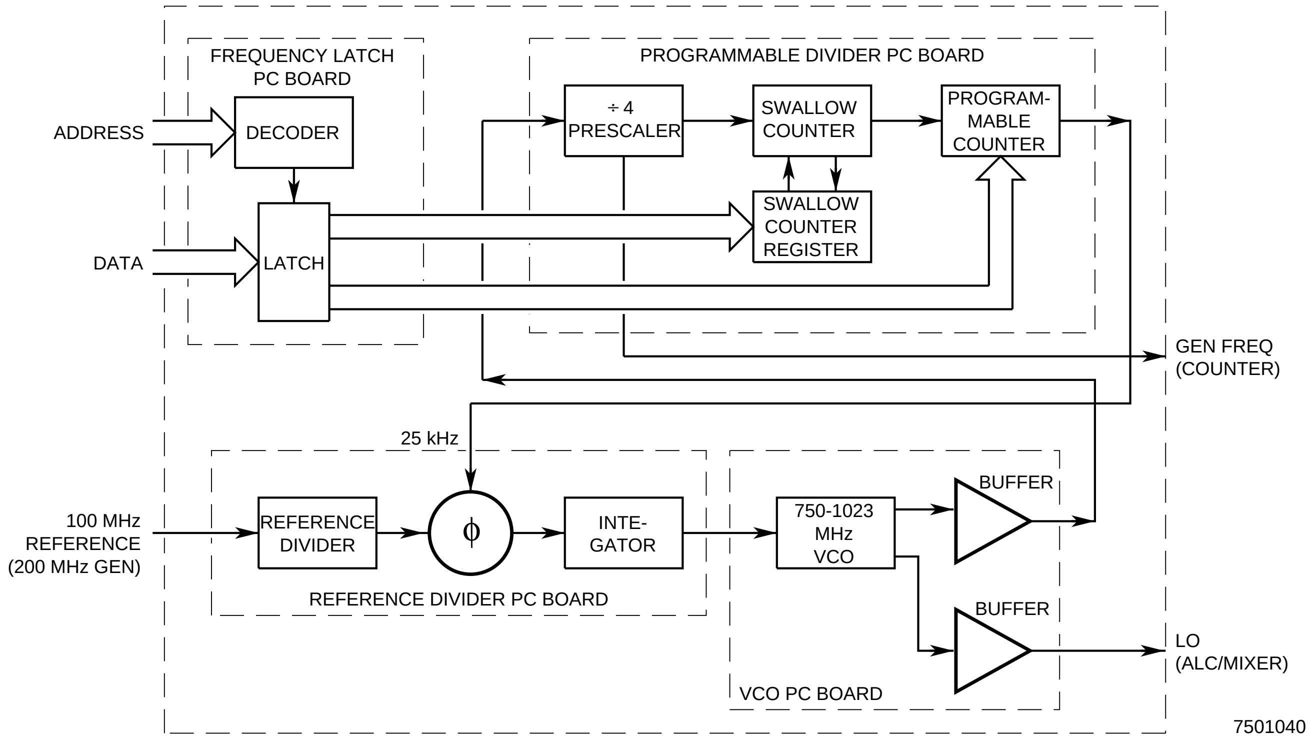
The summing network (R3231 and R3232) on the ALC/Mixer Assembly removes all TACAN AM modulation from the detected level. The differential amplifier (Q3204A, Q3204B, Q3205 and Q3206) compares the peak level detector (Q3204A, Q3204B, Q3205, Q3206, Q3207, Q3208 and Q3209) output, that is the voltage charge on C3213, to the output of the summing network at Q3204A, pin 3. The output of the differential amplifier (collector of Q3205) drives a power FET (Q3207). When the level at Q3204A, pin 3 exceeds the charge of C3213, the gate of Q3207 is driven positive, and C3213 is charged by CR3205.

The voltage on C3213 rises sharply as it is charged, and when the charge is equal to or exceeds the level at pin 3 of Q3204, Q3207 turns off. After the detected pulse passes and the level of Q3204, pin 3 returns to zero, C3213 still contains the peak level detector information. Q3209 resets the peak level detector and C3213 is discharged by Q3209 and R3240. Q3208 disables the peak level detector by shunting the driver voltage on the gate of Q3207 to ground when it is conducting.

The sample and hold amplifier consists of an integrating amplifier (X3505B) and sample and hold switches (X3207A and X3207B). X3207A is gated during the 8 µs sample pulse whereas X3207B is continuously gated during CW operation. X3207B produces a longer integrating time constant than X3207A. X3206A and associated components provide an adjustable reference voltage to the Sample and Hold circuit for calibration of the RF output level. J3204 provides an external vernier input to allow the RF output level to be adjusted in small increments. Q3210 and associated components form the voltage to current (E to I) converter.

(b) Mixer Section

The mixer (MX3101) is a hybrid integrated circuit. The first RF amplifier (Q3101 and Q3102) is a two stage, self-biased common emitter amplifier. CR3101 comprises the pin diode attenuator. The second RF amplifier (Q3104 and Q3106) is a two stage constant current biased common emitter amplifier. Q3103 and Q3105 are the constant current regulators for Q3104 and Q3106.



RF Synthesizer Block Diagram
Figure 10

(4) RF Synthesizer (2-2-1, Figure 10)

The RF Synthesizer Assembly provides the local oscillator frequency for the ATC-1400A-2 and consists of the following components:

Frequency Latch PC Board
Programmable Divider PC Board
Reference Divider PC Board
VCO PC Board

The 750 to 1023 MHz VCO produces the local oscillator frequency that is controlled by the synthesizer circuitry.

A sample of the VCO output is buffered and fed back to a ÷4 prescaler circuit on the Programmable Divider PC Board. This PC Board divides the VCO output frequency and feeds it to a swallow counter (÷100/÷101 prescaler) and the Counter Assembly. The swallow counter has a division factor of 100 or 101 and is controlled by the swallow counter register. The least significant frequency-select digits are presented to the swallow counter register by the Frequency Latch PC Board. Every time the swallow counter divides the ÷4 prescaler output by 101, the swallow counter register decrements by one. Upon reaching zero, the swallow counter divides the output frequency by 100. The swallow counter may modify the length of the overall count cycle by adding up to 99 cycles (from the ÷4 prescaler) to the overall count length. This allows for a higher frequency resolution than would be possible with a programmable divider, at the frequencies the emitter-coupled logic prescaler is designed to operate. The output from the swallow counter is fed to a programmable counter that is loaded with the most significant frequency select digits. The programmable counter is decremented for each pulse received. When the count equals zero, the swallow counter register and programmable divider are reloaded with the frequency select digits from the frequency latch. A single pulse is also fed back to the phase comparator on the Reference Divider PC Board.

A 100 MHz reference frequency is applied to the reference divider where it is divided by a fixed division factor and fed to the phase comparator. The phase comparator feeds an error voltage to the integrator that, in turn, steers the VCO to achieve phase lock to the reference pulses. The integrator circuit also provides the necessary gain and lead compensation for stable operation of the phase-locked loop. The VCO output frequency is determined by the total division factor of the Programmable Divider PC Board. With a low division factor, the VCO output frequency is low. With a high division factor, the VCO output frequency is high. The integrator circuit on the Reference Divider PC Board filters out the ac components and provides the tuning voltage input to the VCO.

The Frequency Latch PC Board receives the frequency select data from the data bus supplied by the microprocessor. The decoder enables the data latch when the frequency latch address is received on the address bus. When the data latch is enabled, data is captured and held by the data latch and presented to the programmable divider.

(a) Frequency Latch

The frequency latches (X4103, X4104 and X4105) capture the synthesizer frequency data from the internal data bus when selected by the address decoder circuit (X4104A and X4102). The address decoder circuit decodes one of three addresses: $DD_{(16)}$, $DE_{(16)}$ or $DF_{(16)}$.

Refer to 2-2-1, Table 2 for RF Synthesizer Assembly address location and frequency settings.

SYNTHESIZER ADDRESS (HEX)	DATA BUS MODE	SYNTHESIZER DATA
DD	WRITE	ef f = 10 kHz digit (BCD,, integer between ∅ and 9 inclusive) e = 100 kHz digit (BCD,, integer between ∅ and 9 inclusive)
DE	WRITE	cd c = 1 MHz digit (BCD,, integer between ∅ and 9 inclusive) d = 10 MHz digit (BCD,, integer between ∅ and 9 inclusive)
DF	WRITE	ab a = 100 MHz digit (BCD,, integer between ∅ and 9 inclusive) b = 1 GHz digit (∅ or 1 only)
NOTE: Frequency output of RF Synthesizer Assembly in Hertz= ax10 +bx10 +cx10 +dx10 +ex10 +fx10. Frequency output of ATC-1400A-2 in Hertz= ax10 +bx10 +cx10 +dx10 +ex10 +fx10 +2x10.		
The difference in frequency output of the RF Synthesizer Assembly and ATC-1400A-2 for the above equation is the 200 MHz IF that is added to the RF Synthesizer Assembly output frequency at the ALC/Mixer Assembly. The ATC-1400A-2 output frequency is always 200 MHz above the RF Synthesizer Assembly.		

RF Synthesizer Assembly Frequency Settings and Address Location
Table 2

(b) Programmable Divider

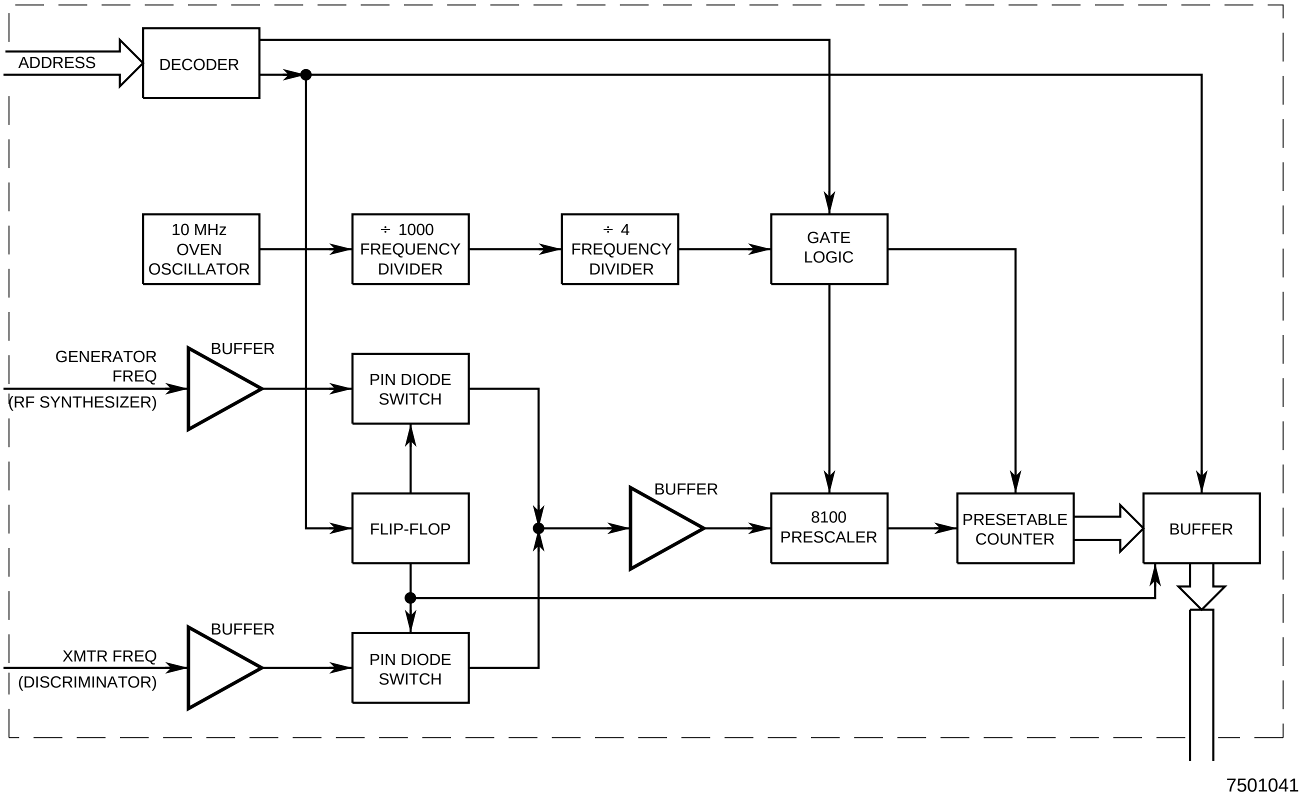
U4302 and associated components form the ÷4 prescaler that feeds a swallow counter. The swallow counter (÷100/÷101 prescaler) is comprised of U4306 (÷10/÷11 prescaler) and U4309 (BCD up/down counter) configured as a ÷10 stage. The swallow counter register consists of U4301, U4303, U4307A and U4307B. U4307A and U4307B prevent the swallow counter register from decrementing from 00 to 99. U4304, U4308, U4310, U4311, U4312, U4305A and U4305B form a programmable (down) counter. When U4305A, U4305B and U4312 detect a count of two in the programmable counter (that is 2 counts prior to the counter reaching zero) pin 4 of U4305B goes high placing an active high at the "J" input of U4313B. At one count prior to the programmable divider reaching zero, the J-K flip-flop (U4313B) is set, and remains set for one count. During the flip-flop set time, the swallow counter register and programmable counter are loaded with the data presented by the frequency latch.

(c) Reference Divider

Q4401 (common emitter self-biased amplifier) amplifies the 100 MHz reference signal received from the 200 MHz Generator Assembly to drive X4403. X4403, X4404, X4405, X4406, X4407A and X4407B form a ÷40,000 fixed divider to reduce the 100 MHz reference signal down to 2.5 kHz and feed it to a phase comparator (X4401A, X4401B, X4402, X4402, CR4404, CR4405, R4407, R4408 and C4406). Pulses from the programmable divider, with a PRF of 2.5 kHz when phase locked, are applied to X4401B. Q4403A, Q4403B, Q4404, Q4405 and associated components form the integrator circuit. The integrator circuit output is the VCO tune voltage that is fed to the 750 to 1023 MHz VCO.

(d) VCO

Q4201 and associated components form an active filter to provide a smooth supply voltage for the oscillator (Q4202 and CR4202). The oscillator frequency is controlled by CR4202. The more CR4202 is reverse-biased, the frequency increases. The output of the VCO is applied to two buffers (common emitter, self-biased amplifiers). One amplifier is a feedback buffer (Q4203 and Q4205) that provides a feedback signal to the ÷4 prescaler circuit on the Programmable Divider PC Board. The 2nd amplifier is the LO buffer (Q4204 and Q4206) that feeds the LO signal to the ALC/Mixer Assembly.



Counter Block Diagram
Figure 11

(5) Counter (2-2-1, Figure 11)

The Counter Assembly converts the ATC-1400A-2 generator and UUT transmitter frequency to a digital format, enabling the microprocessor to monitor both the generator and UUT transmitter frequencies.

A sample of the generator and UUT transmitter frequency is buffered and applied to pin diode switches. The pin diode switches select either the generator or UUT transmitter frequency for testing. The pin diode switches are controlled by a flip-flop, toggled each time address BB is selected and decoded by the address decoder. The sampled frequency from the pin diode switches is buffered and fed to a ÷100 prescaler that is gated by the gate logic circuit for a fixed period. The number of pulses counted during this period is directly proportional to the actual frequency. The time base for the gate logic circuit is the 2.5 kHz pulse derived from the output of the 10 MHz oscillator, ÷1000 frequency divider and ÷4 frequency divider respectively.

The gated pulses are counted by the presettable counter that feeds the total count to the data bus through a buffer. The state of the flip-flop is also fed to the data bus through a buffer, advising the microprocessor whether the pulse count into the ÷100 prescaler applies to the ATC-1400A-2 generator or UUT transmit frequency.

(a) 10 MHz Oscillator

The 10 MHz oscillator consists of Q6103, Q6104, Q6105 and HR6101. HR6101 is an 80° C crystal oven. C6105 adjusts the oscillator frequency during calibration. Q6103 is the oscillator transistor, Q6104 is an emitter follower buffer and Q6105 is used to convert the buffer output to TTL levels.

(b) ÷1000 Frequency Divider

The ÷1000 frequency divider consists of three ÷10 stages (X6107A, X6107B and X6111B). A 5 MHz sample signal is tapped off the ÷2 terminal of X6107 and fed to TP6101 on the top of the Counter Assembly for calibration purposes.

(c) ÷4 Frequency Divider

The ÷4 frequency counter (X6111A) is a BCD counter reset every fourth count to produce a net division factor of four. The 2.5 kHz TTL clock signal is monitored at TP6102.

(d) Gate Logic

The gate logic circuit produces a 0.04 second gate (viewed at TP6103) when instructed by the microprocessor. When a write operation to location $BB_{(16)}$ occurs, X6116A is set and enables X6116B. On the next falling edge of the 2.5 kHz clock, the Q output of X6116B goes true and the 12 bit counter (X6118) is allowed to count. When the count in X6118 reaches 100, pin 6 goes low and resets both the gate flip-flop (X6116B) and counter (X6118). The gate logic remains inactive until it is activated by the microprocessor.

(e) Buffer Circuits

The three buffer circuits within the Counter Assembly are the generator buffer (Q6101), transmitter buffer (Q6102) and diode switch buffer (Q6106). All three buffers are identical in operation as they are single stage common emitter self biased amplifiers.

(f) Pin Diode Switches

The two pin diode switches in the Counter Assembly are identical in operation. When CR6101 and CR6103 are forward biased, CR6102 and CR6104 are reverse biased allowing the ATC-1400A-2 generator sample to be passed to the diode switch buffer (Q6106). When CR6101 and CR6103 are reverse biased, CR6102 and CR6104 are forward biased allowing the UUT transmitter sample to be passed to the diode switch buffer (Q6106).

(g) Select Flip-Flop

The select flip-flop (X6102A) is toggled each time a start command is issued by the microprocessor to location $BB_{(16)}$. For each request written to location $BB_{(16)}$ by the microprocessor, the source frequency (generator or transmitter) is changed and a flag from the select flip-flop is fed to the buffer to inform the microprocessor that data has been acquired. The select flip-flop also feeds the pin diode switches and supplies preset data to the presettable counter.

(h) ÷100 Prescaler

The ÷100 prescaler consists of integrated circuits X6108 and X6112. X6108 is a ÷10 prescaler with an ECL to TTL converter, and X6112 is a ÷10 prescaler that is enabled by the 0.04 second gate. The output of the ÷100 prescaler is only enabled for 0.04 seconds following a microprocessor start command. The ÷100 prescaler also divides the incoming signal to a frequency low enough for the TTL presettable counter. The ÷100 prescaler output is presented at TP6104.

(i) Presettable Counter

The presettable counter consists of Integrated circuits X6104, X6106, X6109, X6113, X6114 and X6102B that are presettable BCD up-counters with the exception of X6102B. X6102B is a J-K flip-flop that functions as a one bit (one GHz digit) counter. The presettable counter is preset during the time a start command is written to location $BB_{(16)}$ by the microprocessor.

When the generator frequency is to be counted, the presettable counter is present with 199.99 MHz, that compensates for the 200 MHz IF added to the synthesizer output in the ALC/Mixer Assembly. The 200 MHz IF is not reflected in the frequency sample sent to the counter. If the frequency to be counted is the transmitter frequency, the presettable counter is preset to 29.99 MHz to compensate for the 30 MHz IF in the Discriminator Assembly. The presettable counter output is fed to the data bus buffers (X6105, X6110 and X6115).

(j) Address Decoder

The address decoder (X6101A, X6101B, X6101C and X6103) decodes the counter addresses: $BB_{(16)}$, $BA_{(16)}$, $B9_{(16)}$ and $B8_{(16)}$.

(k) Data Bus Buffers

The data bus buffers (X6105, X6110 and X6115) gate the counter contents onto the data bus whenever address $B6_{(16)}$, $B9_{(16)}$ or $BA_{(16)}$ is selected. The REEN line is not used by the counter and the data bus buffers are enabled whenever selected, regardless if the bus is in a read or write mode.

NOTE: Never drive the data lines (DØ to D7) when the address lines (A0 to A7) contain $BA_{(16)}$, $B9_{(16)}$ or $B8_{(16)}$.

Refer to 2-2-1, Table 3 for data status and address information of the Counter Assembly.

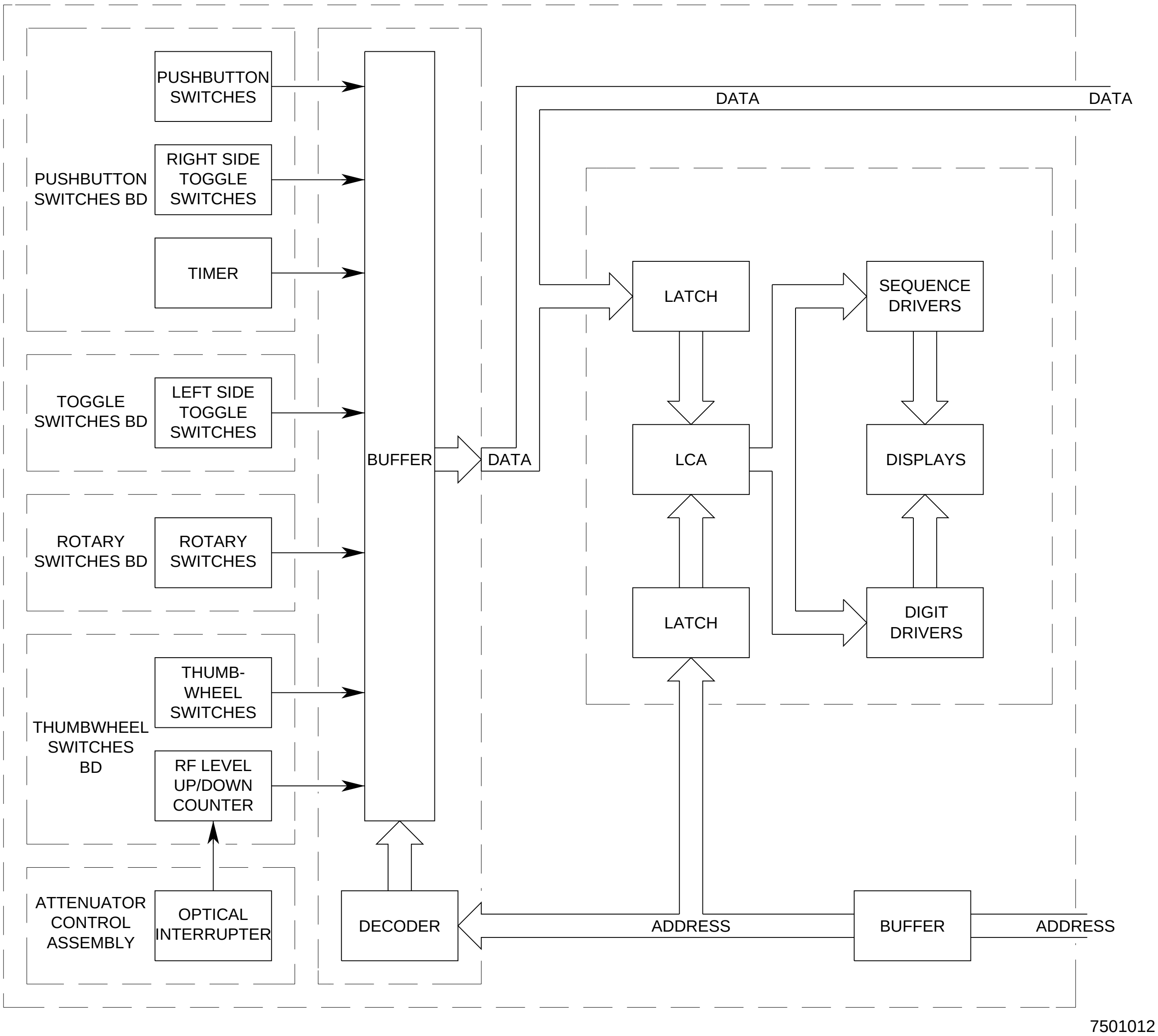
COUNTER ADDRESS (HEX)	DATA BUS MODE	COUNTER DATA
BB	WRITE	Irrelevant (all data written to address BB starts conversion cycle)
B8	READ	de d = 100 kHz digit (BCD, integer between ∅ and 9 inclusive) e = 10 kHz digit (BCD, integer between ∅ and 9 inclusive)
B9	READ	bc b = 10 MHz digit (BCD, integer between ∅ and 9 inclusive) c = 1 MHz digit (BCD, integer between ∅ and 9 inclusive)
BA	READ	na n = Status Flag nibble (2-2-1, Table 4) b = 100 MHz digit (BCD, integer between ∅ and 9 inclusive)

Counter Assembly Data Status and Address Information
Table 3

STATUS FLAG	HEXADECIMAL CODE							
	Ø	**1**	**2**	**3**	**8**	**9**	**A**	**B**
D4, 1 if ≥1 GHz, Ø if <1 GHz	Ø	Ø	Ø	Ø	1	1	1	1
D5 always Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø
D6, 1 = data not valid, Ø = data valid	Ø	Ø	1	1	Ø	Ø	1	1
D7, 1 = XMTR selected, Ø = GEN selected	Ø	1	Ø	1	Ø	1	Ø	1
NOTE: Hex Codes 4, 5, 6, 7, C, D, E or F are not returned since D5 is always zero (0).								

Description of Flag Nibble
Table 4

The Counter Assembly returns all digital frequency data, representative of the frequency at the ATC-1400A-2 RF I/O Connector (J15) for either the ATC-1400A-2 generator or UUT transmitter, to the microprocessor. This eliminates the need for further frequency calculations as all frequency calculation is accomplished in the Counter Assembly. The Counter Assembly compensates for the IF offsets and the division factor (÷4) applied to the frequency sample obtained from the RF Synthesizer and Discriminator Assemblies.



Front Panel Block Diagram
Figure 12

(6) Front Panel (2-2-1, Figure 12)

(a) Display PC Board

The Display PC Board contains only the 7-segment displays, the +5 V connector from the Power Supply Assembly and the connectors to the Display Logic PC Board.

(b) Display Logic PC Board

The Display Logic PC Board contains the interface to the CPU and driver logic for the displays located on the Display PC Board.

CPU INTERFACE

The Address lines are buffered on the Display Logic PC Board and then routed to the Thumbwheel Switch PC Board and to the LCA (U11). The Display Logic PC Board presents one load to the address bus from the CPU.

The Data lines are buffered on the Display Logic PC Board. The unbuffered signals are routed to the Thumbwheel Switch PC Board and the buffered signals are routed to the LCA (U11). There are five connections on the LCA for each data line to facilitate internal routing of the device. The Display Logic PC Board presents one load to the data bus from the CPU.

CLOCK GENERATION

There is a timer located on the Display Logic PC Board for the LED scan clock. The timer is set up to oscillate at approximately 3.75 kHz. This signal can be monitored at TP4.

DISPLAY DRIVER LOGIC

The LCA (U11) provides all of the data latch, decode and scan logic for driving the 23 7-segment displays on the Display PC Board.

The LCA contains a 4-bit latch for each display and 2 latches (one 8-bit, one 4-bit) for blanking and decimal point control. The 23 displays are split into 3 banks of 8 each. Each bank contains the data latches for the respective displays, an 8-1 MUX, BCD to 7-segment decode logic and a segment output latch. There is a digit output select latch that is common to all three banks. Refer to 2-2-1, Table 5 for the data status and address information.

DATA DEFINITION	ADDRESS (HEX)	BIT	FUNCTION
Upper Blanking/ Decimal Point Nibble	D8	D7	1 = Shows decimal point between Digits 3 and 4 of XMTR PWR WATTS Display. Ø = Omits decimal point between Digits 3 and 4 of XMTR PWR WATTS Display.
		D6	1 = Blanks Digit #1 on XMTR PWR WATTS Display. Ø = Shows Digit #1 on XMTR PWR WATTS Display.
		D5	1 = Blanks Digit #1 on DME-PRF Hz/XPDR-%REPLY Display. Ø = Shows Digit #1 on DME-PRF Hz/XPDR-%REPLY Display.
		D4	1 = Blanks Digit #2 on DME-PRF Hz/XPDR-%REPLY Display. Ø = Shows Digit #2 on DME-PRF Hz/XPDR-%REPLY Display.
Lower Blanking Nibble	D8	D3	1 = Blanks Digit #1 on XMTR FREQ MHz Display. Ø = Shows Digit #1 on XMTR FREQ MHz Display.
		D2	1 = Blanks Digit #1 on DISPLAY SELECT Readout. Ø = Shows Digit #1 on DISPLAY SELECT Readout.
		D1	1 = Blanks Digit #2 on DISPLAY SELECT Readout. Ø = Shows Digit #2 on DISPLAY SELECT Readout.
		D0	1 = Blanks Digit #3 on DISPLAY SELECT Readout. Ø = Shows Digit #3 on DISPLAY SELECT Readout.
DISPLAY SELECT Readout Nibbles	D9	D4-D7	DISPLAY SELECT Readout Digit #1 (Leftmost Digit, MSD)
		D0-D3	DISPLAY SELECT Readout Digit #2
	DA	D4-D7	DISPLAY SELECT Readout Digit #3
		D0-D3	DISPLAY SELECT Readout Digit #4
	DB	D4-D7	DISPLAY SELECT Readout Digit #5
		D0-D3	DISPLAY SELECT Readout Digit #6 (Rightmost Digit, LSD)
XMTR FREQ MHz Display Nibbles	E9	D4-D7	XMTR FREQ MHz Display Digit #1 (Leftmost Digit, MSD)
		D0-D3	XMTR FREQ MHz Display Digit #2
	EA	D4-D7	XMTR FREQ MHz Display Digit #3
		D0-D3	XMTR FREQ MHz Display Digit #4
	EB	D4-D7	XMTR FREQ MHz Display Digit #5
		D0-D3	XMTR FREQ MHz Display Digit #6 (Rightmost Digit, LSD)
DME-PRF Hz/XPDR- %REPLY Display Nibbles	DC	D4-D7	DME-PRF Hz/XPDR-%REPLY Display Digit #1 (Leftmost Digit, MSD).
		D0-D3	DME-PRF Hz/XPDR-%REPLY Display Digit #2
	E8	D4-D7	DME-PRF Hz/XPDR-%REPLY Display Digit #3
		D0-D3	DME-PRF Hz/XPDR-%REPLY Display Digit #4 (Rightmost Digit, LSD)

Display Write Data Status and Address Information
Table 5

XMTR PWR WATTS Display Nibbles	EC	D4-D7	XMTR PWR WATTS Display Digit #1 (Leftmost Digit, MSD)
		D0-D3	XMTR PWR WATTS Display Digit #2
	ED	D4-D7	XMTR PWR WATTS Display Digit #3
		D0-D3	XMTR PWR WATTS Display Digit #4 (Rightmost Digit, LSD)
RF Level -dBm Display Nibbles	EF	D4-D7	RF LEVEL -dBm Display Digit #1 (Leftmost Digit, MSD)
	EE	D4-D7	RF LEVEL -dBm Display Digit #2
		D0-D3	RF LEVEL -dBm Display Digit #3 (Rightmost Digit, LSD)
Blanking/ Decimal Point Nibble	EF	D3	1 = Shows decimal point between Digits 4 and 5 of DISPLAY SELECT Readout. Ø = Omits decimal point between Digits 4 and 5 of DISPLAY SELECT Readout.
		D2	1 = Blanks Digit #1 on RF LEVEL -dBm Display. Ø = Shows Digit #1 on RF LEVEL -dBm Display.
		D1	1 = Shows decimal point between Digits 5 and 6 of DISPLAY SELECT Readout. Ø = Omits decimal point between Digits 5 and 6 of DISPLAY SELECT Readout.
		D0	1 = Blanks Digit #2 on XMTR PWR WATTS Display. Ø = Shows Digit #2 on XMTR PWR WATTS Display.

Display Write Data Status and Address Information
Table 5 (cont)

(c) Rotary Switch PC Board

The Rotary Switch PC Board contains the encoding logic for the DISPLAY SELECT Control, XPDR MODE Control and DME REPLY EFFICIENCY Control. Refer to 2-2-1, Tables 6 through 8 for the switch position versus data encoding information of the individual controls.

ADDRESS	DISPLAY SELECT CONTROL		DATA			
(HEX)	POSITION	FUNCTION	D7	D6	D5	D4
D6	1	FREQ MHz	1	1	1	Ø
	2	RANGE NMi	1	1	Ø	1
	3	VEL KTS	1	1	Ø	Ø
	4	PRF SQTR Hz	1	Ø	1	1
	5	DME DIST NMi	1	Ø	1	Ø
	6	XPDR Code	1	Ø	Ø	1

DISPLAY SELECT Control Coding
Table 6

ADDRESS	XPDR MODE CONTROL		DATA			
(HEX)	POSITION	FUNCTION	D7	D6	D5	D4
CØ	1	1	1	1	1	Ø
	2	2	1	1	Ø	1
	3	T	1	1	Ø	Ø
	4	A	1	Ø	1	1
	5	B	1	Ø	1	Ø
	6	C	1	Ø	Ø	1
	7	D	1	Ø	Ø	Ø
	8	AC_1 CODE	Ø	1	1	1
	9	AC_2 CODE	Ø	1	1	Ø

XPDR MODE Control Coding
Table 7

ADDRESS	DME REPLY EFFICIENCY CONTROL		DATA				
(HEX)	POSITION	FUNCTION	D3	D7	D6	D5	D4
D3	1	0%	1	1	1	1	1
	2	10%	1	1	1	1	Ø
	3	20%	1	1	1	Ø	1
	4	30%	1	1	1	Ø	Ø
	5	40%	1	1	Ø	1	1
	6	50%	1	1	Ø	1	Ø
	7	60%	1	1	Ø	Ø	1
	8	70%	1	1	Ø	Ø	Ø
	9	80%	1	Ø	1	1	1
	10	90%	1	Ø	1	1	Ø
	11	100%	Ø	1	1	1	1

DME REPLY EFFICIENCY Control Coding
Table 8

(d) Toggle Switch PC Board

The Toggle Switch PC Board contains the TACAN ON/OFF Switch, IDENT TONE/OFF/CODE Switch, PRF/SQTR ON/OFF Switch, XPDR DEV P_2/CAL Switch, XPDR DEV P_3/CAL Switch, DME DEV P_2/CAL Switch, F_2/P_2 F_1/P_1 Switch, TO/TAC/TD Switch and 1.0 µS/1.45 µS Switch along with the associated wiring. Refer to 2-2-1, Tables 9 through 17 for the switch position versus data encoding information of the individual toggle switches.

ADDRESS (HEX)	DME DEV P_2/CAL SWITCH (SW1706)		DATA	
	POSITION	FUNCTION	D1	DØ
D3	A	-Δ	Ø	1
	B	CAL	Ø	Ø
	C	+Δ	1	1

DME DEV P_2/CAL Switch Coding
Table 9

ADDRESS (HEX)	XPDR DEV P_3/CAL SWITCH (SW1705)		DATA	
	POSITION	FUNCTION	D3	D2
D6	A	-Δ	Ø	1
	B	CAL	Ø	Ø
	C	+Δ	1	1

XPDR DEV P_3/CAL Switch Coding
Table 10

ADDRESS (HEX)	1.0 µS/1.45 µS SWITCH (SW1709)		DATA
	POSITION	FUNCTION	DØ
D7	A	1.0 µs	Ø
	B	1.45 µs	1

1.0 µS/1.45 µS Switch Coding
Table 11

ADDRESS (HEX)	XPDR DEV P_2/CAL SWITCH (SW1704)		DATA	
	POSITION	FUNCTION	D1	DØ
D6	A	-Δ	1	Ø
	B	CAL	Ø	Ø
	C	+Δ	1	1

XPDR DEV P_2/CAL Switch Coding
Table 12

ADDRESS	T_O/TAC/T_D SWITCH (SW1708)		DATA	
(HEX)	POSITION	FUNCTION	D3	D2
CØ	A	T_O	1	Ø
	B	TAC	1	1
	C	T_D	Ø	1

T_O/TAC/T_D Switch Coding
Table 13

ADDRESS	PRF/SQTR ON/OFF SWITCH (SW1703)		DATA
(HEX)	POSITION	FUNCTION	D7
D1	A	ON	1
	B	OFF	Ø

PRF/SQTR ON/OFF Switch Coding
Table 14

ADDRESS	F_2/P_2 F_1/P_1 SWITCH (SW1707)		DATA
(HEX)	POSITION	FUNCTION	D2
D3	A	F_2/P_2	1
	B	F_1/P_1	Ø

F_2/P_2 F_1/P_1 Switch Coding
Table 15

ADDRESS	IDENT TONE/OFF/CODE SWITCH (SW1702)		DATA	
(HEX)	POSITION	FUNCTION	D5	D4
D7	A	TONE	1	1
	B	OFF	Ø	Ø
	C	CODE	Ø	1

IDENT TONE/OFF/CODE Switch Coding
Table 16

ADDRESS	TACAN ON/OFF SWITCH (SW1701)		DATA
(HEX)	POSITION	FUNCTION	D2
D7	A	ON	Ø
	B	OFF	1

TACAN ON/OFF Switch Coding
Table 17

(e) Pushbutton Switch PC Board

The Pushbutton Switch PC Board consists of six pushbutton switches, seven toggle switches and one astable multivibrator. The six pushbutton switches (Load Range, Load Velocity, Load Acceleration, Clear Range, Clear Velocity and Clear Acceleration) are debounced by C1803 through C1808 and R1805 through R1810. The output of the switches is inverted by X1801A through X1801F. When one of the pushbutton switches is pressed, the inverter on the switch output goes high. Refer to 2-2-1, Table 18 for data and address location of the six pushbutton switches.

ADDRESS (HEX)	**PUSHBUTTON NUMBER**	**SWITCH NAME**	**DATA BIT**
C2	SW1805	Load Range	D2
	SW1806	Load Velocity	D3
	SW1807	Load Acceleration	D4
	SW1808	Clear Range	D5
	SW1809	Clear Velocity	D6
	SW1810	Clear Acceleration	D7

Pushbutton Switch Data and Address Locations
Table 18

The seven toggle switches are the CW/NORM/OFF Switch, -1 NMi NORM Switch, IN/OUT Switch, SUPPRESSION ON/OFF Switch, SLS/ECHO ON/OFF Switch, XPDR PULSE WIDTH VAR/CAL Switch and MAN/AUTO/MAN STEP Switch. Refer to 2-2-1, Tables 19 through 25 for the switch position versus data encoding information of the individual toggle switches.

ADDRESS	**CW/NORM/OFF SWITCH (SW1813)**		**DATA**	
(HEX)	**POSITION**	**FUNCTION**	**D7**	**D6**
D7	A B C	OFF NORM CW	1 Ø Ø	1 Ø 1

CW/NORM/OFF Switch Coding
Table 19

ADDRESS	**-1 NMi NORM SWITCH (SW1812)**		**DATA**
(HEX)	**POSITION**	**FUNCTION**	**D1**
C3	A B	NORM -1 NMi	1 Ø

-1 NMi/NORM Switch Coding
Table 20

ADDRESS (HEX)	**IN/OUT SWITCH (SW1811)**		**DATA**
	POSITION	**FUNCTION**	**DØ**
C3	A B	OUT IN	1 Ø

IN/OUT Switch Coding
Table 21

ADDRESS (HEX)	**SUPPRESSOR ON/OFF SWITCH (SW1804)**		**DATA**
	POSITION	**FUNCTION**	**D1**
D7	A B	ON OFF	1 Ø

SUPPRESSOR ON/OFF Switch Coding
Table 22

ADDRESS (HEX)	**SLS/ECHO ON/OFF SWITCH (SW1802)**		**DATA**
	POSITION	**FUNCTION**	**D7**
D4	A B	ON OFF	1 Ø

SLS/ECHO ON/OFF Switch Coding
Table 23

ADDRESS (HEX)	**XPDR PULSE WIDTH SWITCH (SW1801)**		**DATA**
	POSITION	**FUNCTION**	**D1**
CØ	A B	VAR CAL	1 Ø

XPDR PULSE WIDTH VAR/CAL Switch Coding
Table 24

ADDRESS (HEX)	**MAN/AUTO/MAN STEP SWITCH (SW1803)**		**DATA**
	POSITION	**FUNCTION**	**D4**
C3	A CENTER B	MAN AUTO MAN STEP	Ø 1 1

MAN/AUTO/MAN STEP Switch Coding
Table 25

X1802 is an astable multivibrator that clocks the automatic frequency stepping. When SW1001 (FREQ STEP RATE Control), that is ganged with R1001 is open, X1802 is held in the reset condition, and when SW1001 is closed, X1802 produces pulses at a rate determined by R1001. Position B (MAN STEP Function) of SW1001 is tied to the collector of Q1801 (inverting driver) for manual stepping of the channel frequency.

(f) Attenuator Control Assembly

The Attenuator Control Assembly produces two square waves when the RF LEVEL Control is rotated. OS-1 (Optical Switch) leads OS-2 by 90° when the RF LEVEL Control is rotated cw and lags 0S-2 by 90° when the RF LEVEL Control is rotated ccw.

(g) Thumbwheel Switch PC Board

X1531A and X1531B are triggered on the rising edge of OS-1. The output of X1531A is used to clock the direction of flip-flop X1528B and the output of X1531B is used to clock the 8 bit up/down counter (X1532 and X1533). X1527, X1572B, X1527C, X1528B, X1530A and X1530D disable the up/down counter when a stop is reached. The down counter stops at $00_{(16)}$ when down counting and at $80_{(16)}$ (or $120_{(16)}$) when up-counting. During power-up, R1506 and C1517 set the up/down counter to $48_{(16)}$. The binary output of the up/down counter is fed to buffer X1526. The address decoder for the Thumbwheel Switch PC Board consists of X1509A, X1509C, X1509D, X1509E, X1510, X1511, X1512A, X1512C and X1513. Refer to 2-2-1,Table 36 for definition of thumbwheel switch address and associated data.

The Thumbwheel Switch PC Board has twenty-one data buffers that gate data from their associated switches to the data bus when their address is selected. All thumbwheel switches employ BCD coding. Refer to 2-2-1, Tables 26 through 35 for switch position versus data encoding information of the individual thumbwheel switches.

ADDRESS	**ΔF THUMBWHEELS**		**DATA**	
(HEX)	**POSITION**	**FUNCTION**	**D5**	**D4**
E3	A B C	OFF +Δ -Δ	Ø Ø 1	Ø 1 Ø

ΔF Thumbwheels Coding
Table 26

ADDRESS	**FREQ/FUNCTION SELECT THUMBWHEELS**		**DATA**		
(HEX)	**POSITION**	**FUNCTION**	**D7**	**D6**	**D5**
E5	A B C D E F G	MHz X MHz Y VOR.00 VOR.05 TAC X TAC Y XPDR	Ø Ø Ø Ø 1 1 1	Ø Ø 1 1 Ø Ø 1	Ø 1 Ø 1 Ø 1 Ø

FREQ/FUNCTION SELECT Thumbwheels Coding
Table 27

ADDRESS (HEX)	DOUBLE INTERR/INTRF PULSE THUMBWHEELS		DATA	
	POSITION	FUNCTION	D7	D6
E7	A	OFF	Ø	Ø
	B	INTERF-	Ø	1
	C	INTERF+	1	Ø
	D	DOUBLE	1	1

DBL INTERR/INTRF PULSE Thumbwheels Coding
Table 28

ADDRESS (HEX)	SLS/ECHO THUMBWHEELS		DATA	
	POSITION	FUNCTION	D5	D4
D4	A	+	Ø	Ø
	B	-	Ø	1
	C	-1	1	Ø

SLS/ECHO Thumbwheels MSD Coding
Table 29

ADDRESS (HEX)	XPDR PULSE WIDTH THUMBWHEELS 1 µS DIGIT		DATA
	POSITION	FUNCTION	DØ
CØ	A	Ø	Ø
	B	1	1

XPDR PULSE WIDTH Thumbwheels 1 µs Digit Coding
Table 30

ADDRESS (HEX)	XPDR PULSE WIDTH THUMBWHEELS .01 µS DIGIT		DATA			
	POSITION	FUNCTION	D3	D2	D1	DØ
C1	A	Ø	Ø	Ø	Ø	Ø
	B	5	Ø	1	Ø	1

XPDR PULSE WIDTH Thumbwheels .01 µs Digit Coding
Table 31

ADDRESS (HEX)	RANGE/VEL/ACCEL THUMBWHEELS LEFTMOST DIGIT		DATA			
			(D5)		(C2)	
	POSITION	FUNCTION	D7	D6	D1	DØ
D5, C2	A	Ø	Ø	Ø	Ø	Ø
	B	1	Ø	Ø	Ø	1
	C	2	Ø	Ø	1	Ø
	D	3	Ø	Ø	1	1
	E	4	Ø	1	Ø	Ø
	F	5	Ø	1	Ø	1
	G	6	Ø	1	1	Ø
	H	7	Ø	1	1	1
	I	8	1	Ø	Ø	Ø
	J	9	1	Ø	Ø	1

RANGE/VEL/ACCEL Thumbwheels Leftmost Digit Coding
Table 32

ADDRESS (HEX)	XPDR P_2/P_3 DEV THUMBWHEELS 1 µS AND .01 µS DIGITS		DATA	
	POSITION	FUNCTION	D5	D4
D5	A	Ø. X Ø	Ø	Ø
	B	Ø. X 5	1	Ø
	C	1. X Ø	Ø	1
	D	1. X 5	1	1

XPDR P_2/P_3 DEV Thumbwheels 1 µs and .01 µs Digit Coding
Table 33

ADDRESS (HEX)	FREQ/FUNCTION SELECT THUMBWHEELS 1000 MHz DIGIT		DATA
	POSITION	FUNCTION	D4
E5	A	Ø	Ø
	B	1	1

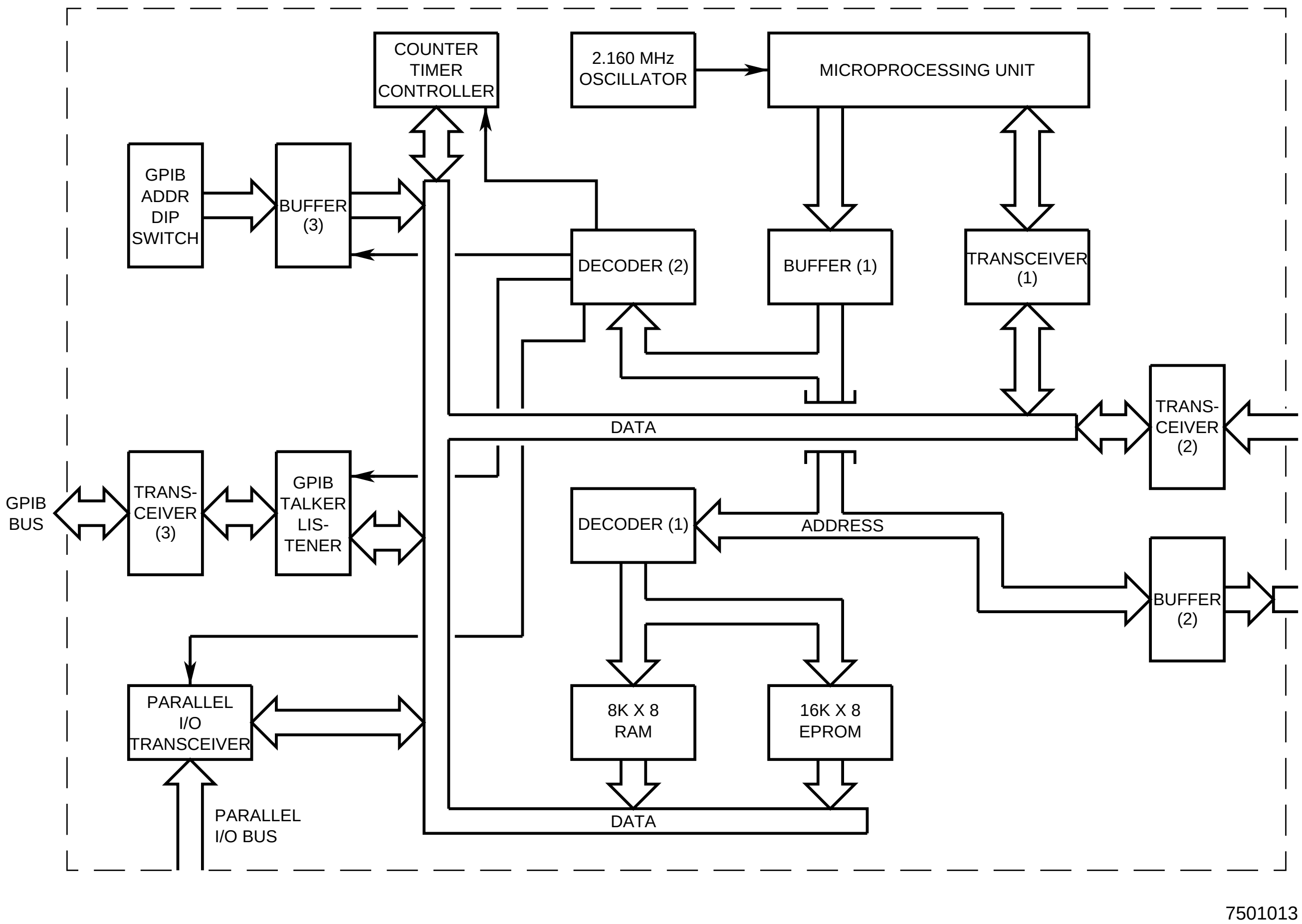
FREQ/FUNCTION SELECT Thumbwheels 1000 MHz Digit Coding
Table 34

ADDRESS (HEX)	DBL INTERR/INTRF PULSE THUMBWHEELS 100 µS DIGIT		DATA	
	POSITION	FUNCTION	D5	D4
E7	A	Ø	Ø	Ø
	B	1	Ø	1
	C	2	1	Ø
	D	3	1	1

DBL INTERR/INTRF PULSE Thumbwheels 100 µs Digit Coding
Table 35

THUMBWHEEL SWITCH ADDRESS (HEX)	THUMBWHEEL SWITCH DATA
CØ	Refer to 2-2-1, Tables 6, 13, 24 and 30 for bits DØ through D7 coding.
C1	Bits D1 and D3 are always Ø. XPDR PULSE WIDTH: .01 µS Digit (2-2-1, Table 31) (DØ, D2) and 0.1 µS Digit, BCD (D4 through-D7)
C2	Refer to 2-2-1, Tables 18 and 32 for coding of bits DØ through D7.
C3	Bits D2, D3, D6 and D7 are always Ø. (Refer to 2-2-1, Tables 20, 21 and 25 for bits DØ, D1 and D4 coding.) (D5 is auto step pulse.)
C4	Bit D7 is always Ø. RF LEVEL -dBm value, BCD (DØ through D6)
DØ	PRF/SQTR, 10 Hz Digit, BCD (D4 through D7) and PRF/SQTR, 1 Hz Digit, BCD (DØ through D3)
D1	PRF/SQTR, 1000 Hz Digit, BCD (D4 through D7) and PRF/SQTR, 100 Hz Digit, BCD (DØ through D3)
D2	DME P_2 DEV, 1 µS Digit, BCD (D4 through D7) and DME P_2 DEV, 0.1 µS Digit, BCD (DØ through D3)
D3	Refer to 2-2-1, Tables 8, 9 and 15 for bits DØ through D7 coding.
D4	Bit D7 is always Ø. SLS/ECHO, 1 dB Digit, BCD (DØ through D3), (Refer to 2-2-1, Tables 23 and 29 for bits D4, D5 and D6 MSD coding.)
D5	XPDR P_2/P_3 DEV, 0.1 µS Digit, BCD (DØ through D3), (Refer to 2-2-1, Tables 32 and 33 for bits D4, D5, D6 and D7 coding.)
D6	Refer to 2-2-1, Tables 6, 10 and 12 for coding of bits DØ through D7.
D7	Bit D3 is always Ø. Refer to 2-2-1, Tables 11, 16, 17, 19 and 22 for bits DØ, D1, D2, D4, D5, D6 and D7 coding.
EØ	RANGE/VEL/ACCEL, 0.1 µS Digit, BCD (D4 through D7) and RANGE/VEL/ACCEL, .01 µS Digit Rightmost Digit (DØ through D3)
E1	RANGE/VEL/ACCEL, 10 µS Digit (2), BCD (D4 through D7) and RANGE/VEL/ACCEL, 1 µS Digit (3), BCD (DØ through D3)
E2	ΔF, 100 kHz Digit, BCD (D4 through D7) and ΔF, 10 kHz Digit, BCD (DØ through D3)
E3	Bits D6 and D7 are always Ø. ΔF Window (2-2-1, Table 26) (D4, D5) and ΔF, 1 MHz Digit, BCD (DØ through D3)
E4	FREQ SELECT, 10 MHz Digit, BCD (D4 through D7) FREQ SELECT, 1 MHz Digit, BCD (DØ through D3)
E5	FREQ SELECT, 100 MHz Digit, BCD (DØ through D3), (Refer to 2-2-1, Tables 27 and 34 for bits D4 through D7 coding.)
E6	DBL INTERR/INTRF PULSE, 1 µS Digit, BCD (D4 through D7) and DBL INTERR/INTRF PULSE, 0.1 µS Digit, BCD (DØ through D3)
E7	DBL INTERR/INTRF PULSE, 10 µS Digit, BCD (DØ through D3), (Refer to 2-2-1, Tables 28 and 35 for bits D4 through D7 coding.)

Thumbwheel Switch Read Address Location and Data Definition
Table 36



Microprocessor Block Diagram
Figure 13

(7) Microprocessor (2-2-1, Figure 13)

The microprocessor manipulates all data within the ATC-1400A-2 when in local (front panel) mode or remote control (GPIB) mode of operation. All data (i.e., front panel switch settings, GPIB commands or UUT input data) is processed by the microprocessor for controlling the LED displays, making pulse parameter and RF settings and communicating with a UUT in DME function of operation. The 8 MHz oscillator is divided by X712 to 2 MHz, the time base for the Microprocessing Unit. The Microprocessing Unit controls the peripheral circuits based on instructions stored in ROM. 8 bits (1 byte) of data is transferred to and from the transceiver (1) circuit, that transmits and receives data to the counter/timer controller circuit, 8 K x 8 RAM, GPIB talker/listener circuit, parallel I/O transceiver circuit and transceiver (2) circuit. The microprocessor receives data from the 16 K x 8 EPROM and buffer (3) circuit. The microprocessor transmits a 16 bit address to the buffer (1) circuit, that in turn delivers the address to the buffer (2), decoder (1) and decoder (2) circuits.

The decoder (1) circuit decodes the EPROM and RAM address used to select memory. Decoder (2) circuit selects any of the following circuits:

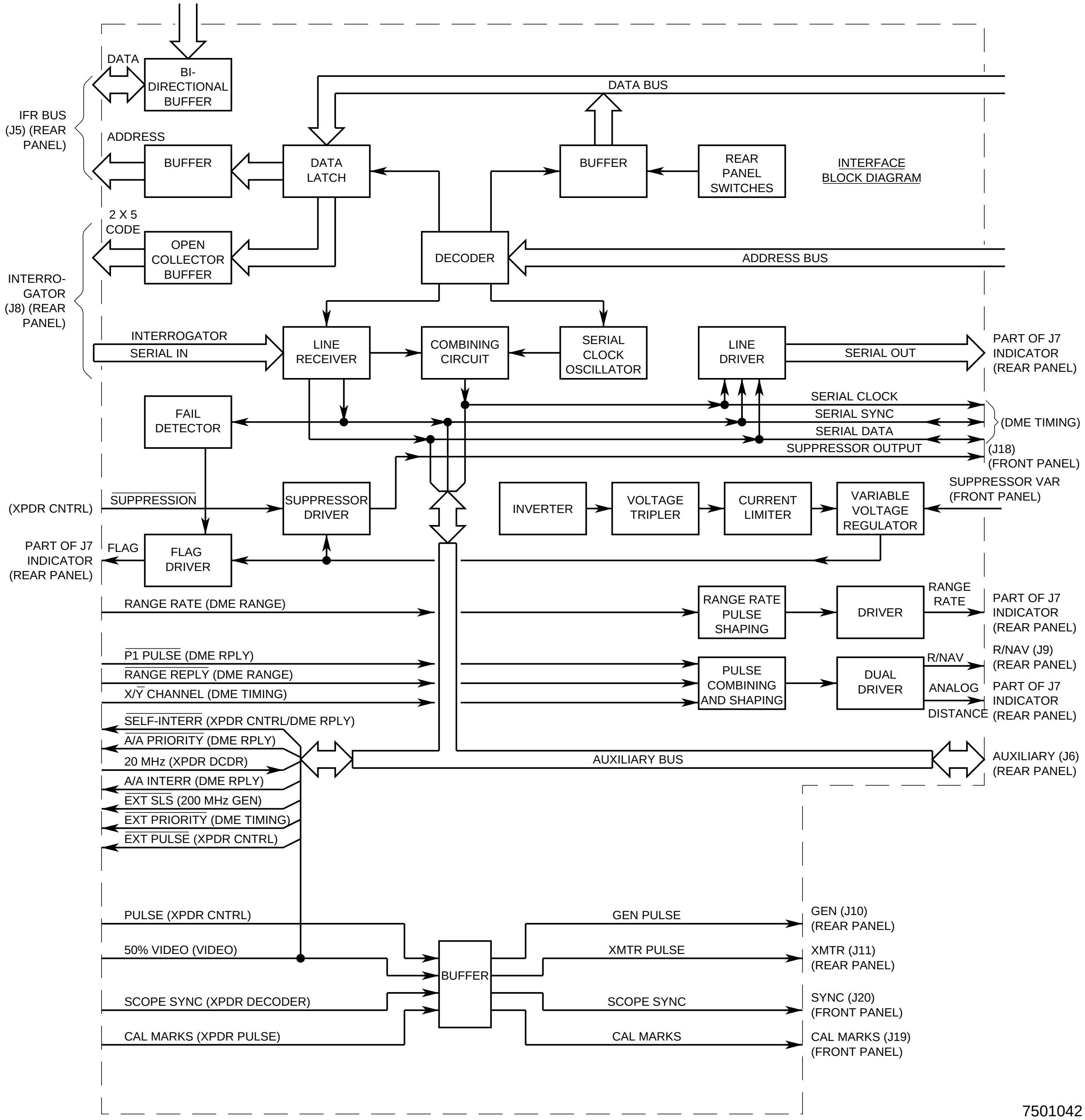
Counter/Timer Control
Buffer (3)
GPIB Talker/Listener
Parallel I/O Transceiver

The 16 K x 8 EPROM circuit contains microprocessor instructions and fixed data used by the Microprocessing Unit and the 8 K x 8 RAM contains temporary or variable information.

The buffer (2) circuit drives the address bus that services the different Assemblies within the ATC-1400A-2 and the transceiver (2) circuit transmits and receives data to and from other Assemblies within the ATC-1400A-2 over the internal data bus. The counter/timer controller circuit is a general purpose timing chip used in the ATC-1400A-2 to generate Morse code timing to the microprocessor. The buffer (3) circuit feeds the GPIB address from the GPIB address dip switches to the data bus, when selected during initialization of the ATC-1400A-2. The GPIB listener/talker is an LSI circuit that manages the GPIB bus transaction after ATC-1400A-2 initialization.

The transceiver (3) circuit is used to perform line driving and line receiving functions for the GPIB bus. The parallel I/O transceiver is used to transmit and receive data to and from the Interface Assembly via the parallel I/O data bus.

The ATC-1400A-2 microprocessor (X720) uses a memory mapped I/O scheme with the exception of the GPIB talker/listener (X729), parallel I/O (X727), counter timer controller (X728) and the GPIB address dip switch buffer (X730) that are only accessed by an I/O command. The random access memory (RAM) consists of X703. X702 is the electrically programmable read only memory (EPROM) where the firmware is stored. The two address decoders consist of X711 and X726. X711 is the EPROM and RAM decoder and X726 is the I/O decoder. The microprocessor clock consists of Y701, X709 and X712.



Interface Assembly Block Diagram
Figure 14

(8) Interface (2-2-1, Figure 14)

The Interface Assembly is used to interface the rear panel switches to the data bus and to buffer all user I/O signals to and from the Card Cage Assembly.

The rear panel switch position information is fed directly to buffer (1) that gates the data onto the data bus when instructed by the address decoder. The bi-directional buffer transmits and receives data from the IFR BUS Connector (J5). The data latch circuit captures a 6 bit address (for the IFR Bus) and a 13 bit 2 x 5 code (for the UUT channel selection) when the data latch is selected by the address decoder. The IFR bus address is buffered by buffer (2) and fed to the IFR BUS Connector (J5) and the 2 x 5 code is driven by the open collector buffer and presented at the INTERROGATOR Connector (J8).

The 28 V power supply on the Interface PC Board consists of an inverter, voltage tripler, current limiter and variable voltage regulator. The inverter converts the dc input to an ac output. The ac output of the inverter is tripled and rectified by the voltage tripler and fed to the current limiter. The current limiter protects the 28 V power supply from overloading. The variable voltage regulator output supplies power to the suppressor driver and flag driver circuits and is regulated by the SUPPRESSOR VAR Adjustment.

The pulse combining and shaping circuit produces two pulses that are applied to a dual driver that amplifies the pulses and feeds them to the INDICATOR Connector (J7) and R/NAV Connector (J9). The time lapse between the pulses is directly proportional to the distance the ATC-1400A-2 is simulating. The range rate pulse shaping circuit sets the range rate pulse width of the incoming range rate pulses, feeds them to a driver that amplifies the pulses and feeds them to the INDICATOR Connector (J7).

The serial clock pulses are monitored by the fail detector that sends a signal to the flag driver circuit if the clock pulses are missing. The flag driver displays the UUT's warning flag or pulls the warning flag out of view depending on the state of the signal received from the fail detector circuit. The line driver circuit transmits serial data to the UUT indicator via the INDICATOR Connector (J7).

The serial bus is driven by the ATC-1400A-2 or UUT indicator. Serial clock, serial sync and serial data is gated to the serial bus from the UUT Indicator whenever the line receiver circuit is enabled. With the line receiver circuit disabled, a serial clock pulse is produced by the serial clock oscillator and serial data flow is from the ATC-1400A-2 to UUT indicator only. Serial data is also made available to the AUXILIARY Connector (J6).

The pulse, 50% video, scope sync and CAL marks signals are fed to buffer (3) where the signals are buffered and fed to the appropriate rear panel connectors.

The inverter circuit consists of X9211A, X9211B, X9211D, X9211E, X9212A, X9212B, Q9201, Q9202, Q9203 and Q9204. The delay portion of the inverter (X9211D, X9211E, X9212A and X9212B) provides a non-overlapping two phase clock that drives the inverter transistors (Q9201, Q9202, Q9203 and Q9204). Q9205 and Q9206 form the current limiter circuit that limits the Interface PC Board power supply current to 65 mA. R9213 is the sense resistor for the current limiter circuit. R9217, R9216 and R1004 (SUPPRESSOR VAR Adjustment) control the voltage output of the voltage regulator (X9213). The suppressor driver (X9206B, Q9207 and Q9208) forms the Suppressor pulse presented at the SUPPRESSOR OUTPUT Connector (J18), whose amplitude is controlled by the voltage regulator output (+Vs). The line receivers consisting of X9214, X9216, X9217 and X9218 contain hysteresis with switching points at approximately 3 and 10 Vdc. This wide hysteresis of the line receivers insures the swing of the serial bus signals are at least between the minimum voltage allowable for a logic "1" and the maximum voltage allowable for a logic "Ø" before reception of the serial data is acknowledged. X9218 performs the enabling and disabling functions of the line receivers. The line driver's (X9219, X9220A, X9220B, X9220C, X9221A, X9221B and X9221C) output voltage, that swings between 3 and 7.75 Vdc, transmits serial data, serial sync and serial clock to the UUT indicator. The serial clock oscillator is comprised of X9215D, X9212C and X9212D, and is enabled when a logic "1" is applied to the input of X9215D from the data latches.

The fail detector circuit (X9226A) is a re-triggerable astable multivibrator with a greater pulse width duration than the pulse recurrence time of the serial clock pulses. When the serial clock pulses stop, the astable multivibrator times out, and the $\overline{Q}$ output of X9226A goes high. The output voltage of the flag driver circuit (Q9209 and Q9210) is controlled by the voltage regulator output (+Vs).

The range rate pulse shaping circuit consists of X9221E and X9226B. X9226B determines the width of the range rate pulses and X9221E and associated components determine the amplitude of the range rate pulses. The pulse combining and shaping circuit consists of X9220D, X9220E, X9221D, X9221E, X9222A, X9223A, X9223B, X9224A, X9224B, X9225A and X9225B. X9223A determines the width of the first pulse and X9223B determines the width of the second pulse. X9224A allows adjustment to the pulse spacing when a "Y" channel is selected and X9224B allows adjustment to the pulse spacing when an "X" channel is selected. X9218B buffers the CAL marks, scope sync pulse and video lines.

The address decoder consists of X9201A, X9201B, X9201C and X9202. 2-2-1, Table 37 lists the description of the four addresses associated with the Interface Assembly. X9204 and X9205 latches the 2 x 5 code for UUT channel selection and X9208 is used to latch the address for the IFR Bus, while X9209 buffers the address, performs line driving functions and buffers the read and write lines for the IFR Bus. X9210 is the Bi-directional transceiver for the IFR Bus.

INTERFACE ADDRESS (HEX)	DATA BUS MODE	INTERFACE ASSEMBLY DATA
CF	WRITE	ØØ to 3F IFR Bus Address
CE	WRITE	DØ, Tenths E (2 x 5 Code) D1, Tenths D (2 x 5 Code) D2, Tenths C (2 x 5 Code) D3, Tenths B (2 x 5 Code) D4, Tenths A (2 x 5 Code) D5, Not Used D6, Interrogator Enable D7, Serial Clock Enable
CD	WRITE	DØ, Units E (2 x 5 Code) D1, Units D (2 x 5 Code) D2, Units C (2 x 5 Code) D3, Units B (2 x 5 Code) D4, Units A (2 x 5 Code) D5, Hundreds (2 x 5 Code) D6, Tenths E (2 x 5 Code) D7, Tenths A (2 x 5 Code)
CC	READ	Refer to 2-2-1, Tables 38, 39 and 40 for bits DØ, D1 and D2 coding. Bits D3 through D7 are not used.

Interface PC Board Assembly 2 x 5 Code and Address Locations
Table 37

ADDRESS	DECODER WIDE/NARROW SWITCH		DATA
(HEX)	POSITION	FUNCTION	DØ
CC	1 2	WIDE NARROW	1 Ø

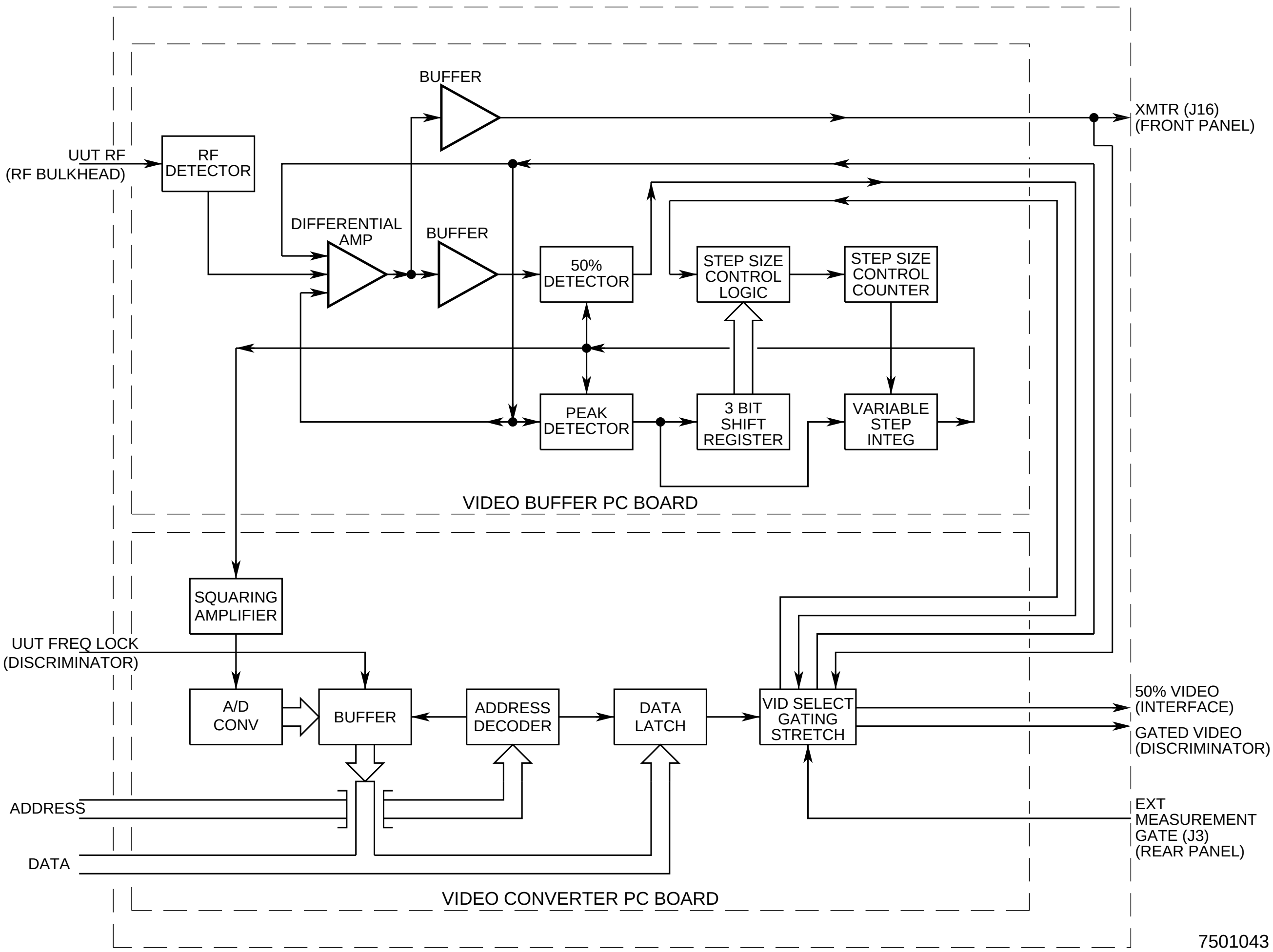
DECODER WIDE/NARROW Switch Coding
Table 38

ADDRESS	EQUALIZER/OFF SWITCH		DATA
(HEX)	POSITION	FUNCTION	D1
CC	1 2	ON OFF	1 Ø

EQUALIZER/OFF Switch Coding
Table 39

ADDRESS	SELF-INTERR/OFF SWITCH		DATA
(HEX)	POSITION	FUNCTION	D2
CC	1 2	ON OFF	1 Ø

SELF-INTERR/OFF Switch Coding
Table 40



Video Assembly Block Diagram
Figure 15

(9) Video (2-2-1, Figure 15)

The Video Assembly detects and measures the amplitude of the input video pulses and consists of a Video Buffer PC Board and Video Converter PC Board.

The UUT RF pulses are fed to an RF detector on the Video Buffer PC Board. With the RF detector output applied to one side and a static feedback signal from the offset adjust applied to the other side, a differential dc amplifier stabilizes the gain. A sample of the amplifier output signal is buffered and fed to a transmitter detector monitor and another sample of the output signal is buffered and fed to a peak detector and 50% video detector. The 50% video detector produces pulses the width of the video pulse at the 50% point, and feeds this pulse to the video select gating logic circuit. The peak detector output is fed to a three bit shift register and variable step integrator. The input to the variable step integrator is either High or Low depending on the video amplitude versus the reference voltage input to the peak detector. This combination slews the reference voltage in the appropriate direction. The three bit shift register informs the step size control logic circuit on the status of the peak level detector for the last three bits. If all three bits are the same (i.e., low for three consecutive pulses or high for three consecutive pulses), the step size control logic circuit changes the variable step integrator time constant to allow faster slewing of the reference voltage. The gated video feedback pulse to the step size control logic circuit determines that pulse of the UUT RF pulse pair affects the reference voltage and three bit shift register. The step size control counter generates the data used by the variable step integrator to select one of the eight time constants or "step sizes."

The reference voltage is maintained at the peak level of the video pulses and fed to a squaring amplifier on the Video Converter PC Board, to convert voltage to power. An analog to digital converter changes the squaring amplifier output power level to a digital format compatible to the microprocessor and feeds this data to a buffer that gates the data onto the data bus when selected by the address decoder. The data latch stores four bits of data received from the data bus that selects the gated video pulse (fed to the Card Cage Assembly) and gated video feedback pulse (that is fed back to the step size control logic circuit from the video select gating logic circuit). The latch is used for select external gating (measuring pulses other than first or second pulse). The latch also has the ability to change the feedback gain in the buffer for x10 and x1 operation.

The differential amplifier (Q7201, Q7202, Q7203 and Q7204) feeds two buffers Q7205 and Q7206. X7202 comprises the 50% video detector. The peak detector consists of X7203 and Q7208. The three bit shift register is formed by X7204A, X7204B, X7205A and X7205B. The step size control logic circuit consists of X7206A, X7206B, X7206C, X7207A, X7207B, X7207C, X7207D, X7207F, X7208, X7209, X7210A, X7210B, X7210C, X7211A, X7211E and X7211F. X7212 comprises the step size counter. The variable step attenuator consists of X7213 and X7201.

The squaring amplifier (X7103) feeds the analog to digital (A/D) converter (X7105). The buffer and data latch consists of X7108 and X7107 respectively. X7101, X7102 and X7104 (10 gates) form the decoding logic, and the gating logic is formed by X7109A, X7109B, X7110, X7111, X7106A, X7106B and X7106C.

Refer to 2-2-1, Tables 41 through 43 for address and data information associated with the address decoder circuit, buffer circuit and data latch circuits.

DATA DEFINITION	ADDRESS (HEX)	BIT	FUNCTION
BCD Digit as selected by Control Nibble	6C (Read)	DØ	2^0 = (BCD LSD)
		D1	2^1
		D2	2^2
		D3	2^3 = (BCD MSD)
Status Nibble	6C (Read)	D4	1 = Data acquired is not valid (accessed an overflow or out-of-range value). Ø = Data acquired is valid.
		D5	1 = Conversion is completed. (Data is valid and may be read.) Ø = Conversion is in progress.
		D6	1 = 4 kW Range Ø = 2 kW Range
		D7	1 = Frequency is phase locked. Ø = Frequency is not phase locked. (information is from the Discriminator Assembly and not related to Video Assembly operation.)
Control Nibble	6D (Write)	DØ	Digit select LSD (Refer to 2-2-1, Table 42.)
		D1	Digit select MSD (Refer to 2-2-1, Table 42.)
		D2	1 = Start Conversion (Conversion completed bit [D5 at 6C]).
		D3	Not used
Video Gating and x10/x1 Selection Nibble	6D (Write)	D4	1 = x10 Ø = x1
		D5	Gating select MSD (Refer to 2-2-1, Table 43.)
		D6	Gating select LSD (Refer to 2-2-1, Table 43.)
		D7	Gating select (Refer to 2-2-1, Table 43.)

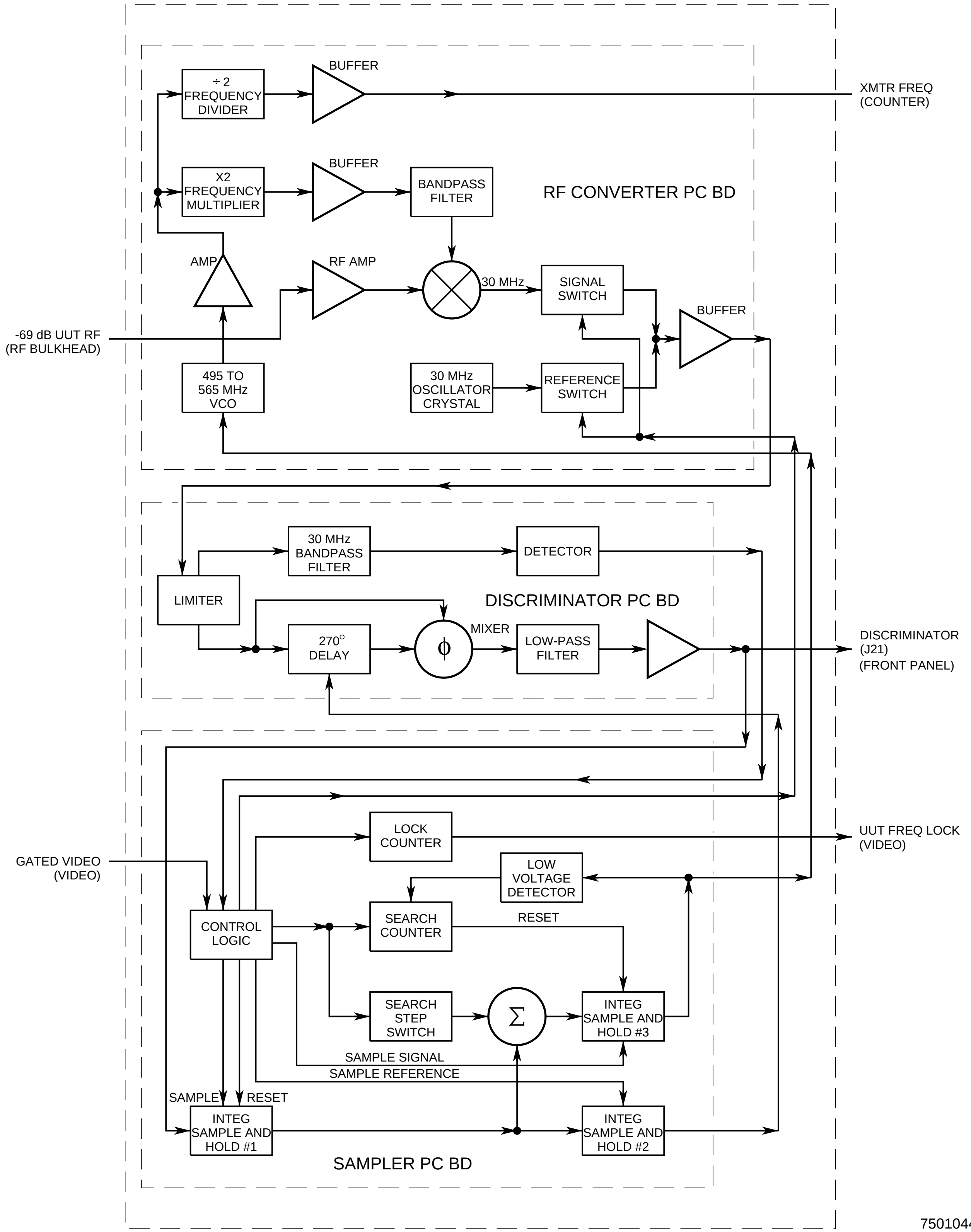
Video Assembly Address and Data Information
Table 41

SELECTED BCD DIGIT	D1	DØ
Ø (LSD)	Ø	Ø
1	Ø	1
2	1	Ø
3 (MSD)	1	1

Definition of Digit Select Bits
Table 42

SELECTED GATING	D5	D6	D7
P2	Ø	Ø	Ø
P1	Ø	Ø	1
F2	Ø	1	Ø
F1	Ø	1	1
EXT GATE	1	Ø	Ø
P1	1	Ø	1
EXT GATE	1	1	Ø
F1	1	1	1

Gating Select Bit Definition
Table 43



Discriminator Block Diagram
Figure 16

(10) Discriminator (2-2-1, Figure 16)

The purpose of the Discriminator Assembly is to determine the frequency within an RF pulse sample of the UUT RF transmitter. This is accomplished by extracting a 30 MHz IF signal from an incoming pulse modulated wave by changing frequency phase variations into dc amplitude variations. These dc variations are used to phase-lock a VCO. The CW frequency of the VCO is pre-scaled and then sent to the RF Frequency Counter. This Assembly consists of the following components:

RF Converter PC Board
Discriminator PC Board
Sampler PC Board

The 495 to 565 MHz VCO circuit output is buffered by an amplifier and fed to a x2 frequency multiplier and a ÷2 frequency divider. The output of the ÷2 frequency divider is fed through a buffer to the Counter Assembly, while the x2 frequency multiplier output is fed through a buffer to the bandpass filter circuit. The buffer and bandpass filter provide a local oscillator frequency between 990 and 1130 MHz that is fed to the mixer circuit. A sample of the UUT RF is fed to the RF amplifier, where it is buffered and fed to the other side of the mixer circuit. The mixer circuit heterodynes the UUT RF with the frequency from the bandpass filter and feeds the 30 MHz IF to a signal switch, providing the VCO is locked on frequency.

NOTE: The 30 MHz oscillator produces a 30 MHz reference signal to zero the Discriminator Assembly and eliminates all offsets within the Assembly. The 30 MHz reference output from the oscillator is fed to the reference switch.

The signal switch and reference switch determines whether the 30 MHz IF or 30 MHz reference signal is fed to the limiter circuit on the Discriminator PC Board, through the buffer circuit. The reference switch conducts during the discriminator zero time and the signal switch conducts at all other times.

The limiter circuit removes any amplitude modulation on the 30 MHz RF pulse and feeds this signal to a frequency discriminator and a 30 MHz bandpass filter. The 30 MHz bandpass filter rejects out-of-bound IFs and feeds this signal to the detector circuit that detects IF PULSES that fall within the bandpass of the 30 MHz bandpass filter. The output of the detector is a digital signal fed to the control logic circuit on the Sampler PC Board, that informs the sampler that a signal is detected within the acquisition band of the discriminator. The 270° delay circuit shifts the phase of the 30 MHz signal 270°. If the signal frequency varies, the phase shift changes accordingly, and this change is detected by the phase comparator. The 270° delay is electrically adjustable to remove any frequency offset. The 270° delay circuit output, along with the undelayed 30 MHz signal from the limiter circuit is fed to a phase comparator that produces a dc level directly proportional to the phase difference between the input signals.

The output of the phase comparator is filtered by a low-pass filter, amplified by the dc amplifier and fed to an integrating sample and hold circuit on the Sampler PC Board and DISCRIMINATOR Connector (J21).

The control logic circuit on the Sampler PC Board determines whether the Discriminator Assembly is in the search or lock mode of operation, and produces the sample pulse, transfer pulse and zero pulse used in the Assembly. The control logic circuit becomes active upon receiving a gated video pulse from the Video Assembly. The control logic circuit sequentially produces the sample pulse, delay pulse, transfer pulse and zero pulse. When the zero pulse is active, the reference switch is closed and the dc amplifier is fed through the integrating sample and hold #1 circuit and integrating sample and hold #2 circuit. The output of integrating sample and hold #2 circuit is the control voltage that is fed back to the 270° delay circuit on the Discriminator PC Board. This feedback loop electrically adjusts the 270° delay circuit to zero out any frequency offset in the Discriminator Assembly.

In lock mode, the control logic circuit outputs a sample pulse when a gated video pulse is received from the Video Assembly. The sample pulse enables integrating sample and hold #1 circuit and places integrating sample and hold #2 circuit on hold. After a delay time for settling, the integrating sample and hold #1 circuit output is fed, in turn, to a summing network and integrating sample and hold #3 circuit during the transfer pulse. The output of sample and hold #3 circuit is used to tune the VCO.

In search mode, the control logic circuit enables the search step switch when the gated video line is active, causing the integrating sample and hold #3 circuit to increment its output at the same time the search counter is incremented. The integrating sample and hold #3 circuit output steps the VCO frequency upward until the signal acquired line is active or the search counter has received 32 counts. When the search counter reaches the 32nd count, the integrating sample and hold #3 circuit is reset. The low voltage detector circuit detects when the integrating sample and hold #3 circuit resets the search counter and re-enables the sample and hold #2 circuit. This cycle is repeated until the Discriminator Assembly obtains lock mode.

During search mode, if the signal acquired line becomes active, the control logic circuit places the Discriminator Assembly in lock mode. At this time, the output of integrating sample and hold #1 circuit supplies integrating sample and hold #3 circuit with discriminator data and the search step switch and search counter circuit is inactive. When lock mode is achieved, the lock counter is incremented each time the gated video line is active. After 16 valid lock cycles, the lock counter output goes high, indicating the Discriminator Assembly is in lock mode. If the signal acquired line is inactive after the gated video line is received, the control logic circuit output places the Discriminator Assembly in the search mode.

(a) RF Converter PC Board

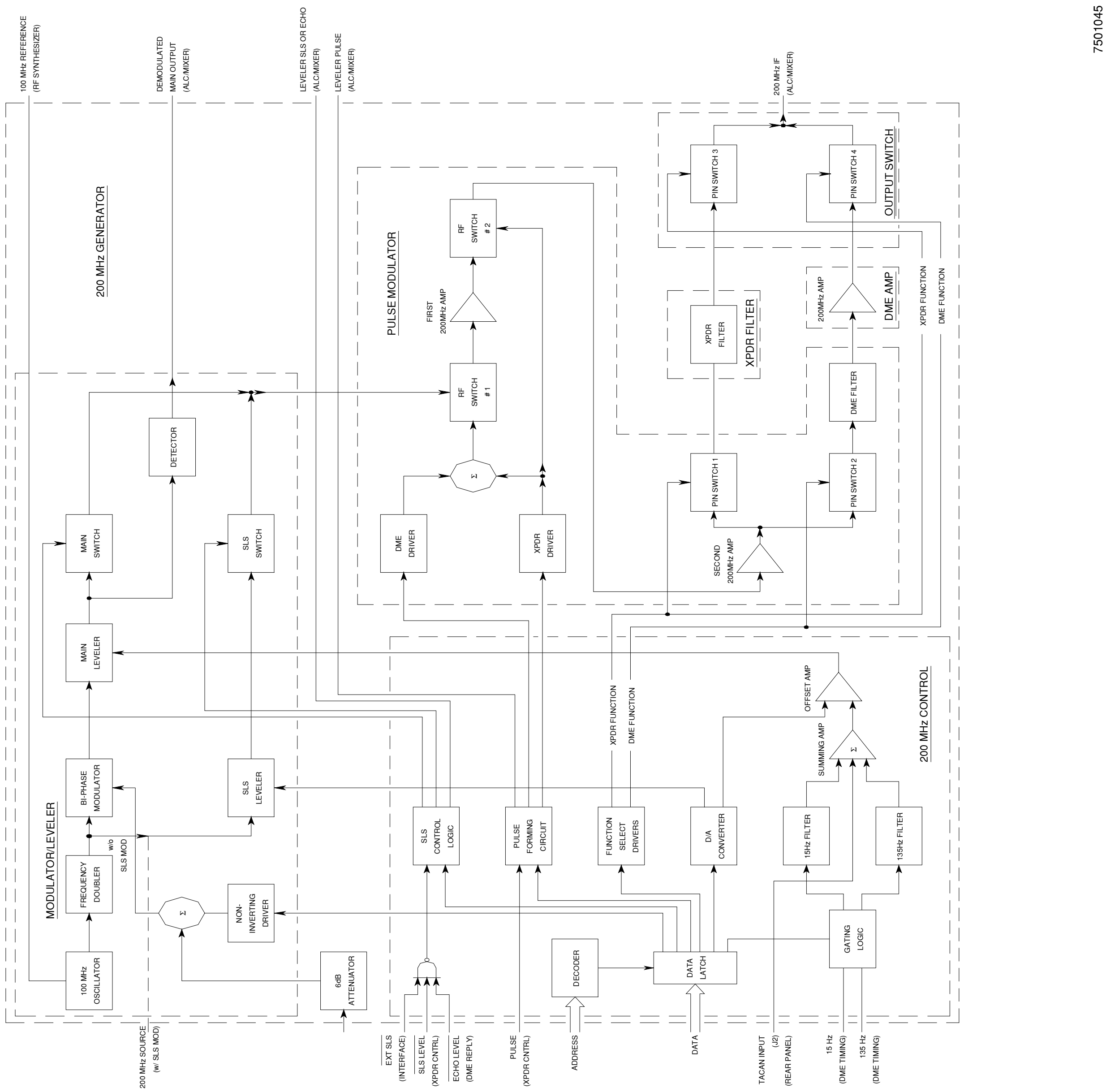
The 510 to 578 MHz VCO consists of Q5102, Q5103 and CR5104. Q5104 and Q5105 form the amplifier that drives the ÷2 frequency divider (X5101) and the x2 frequency multiplier (C5124 and L5110) that is tuned to the second harmonic of the VCO frequency. Q5107 is a buffer that drives the Strip Bandpass Filter PC Board. MX5101 comprises the mixer circuit. The signal switch is a pin diode switch formed by CR5105, CR5106 and CR5107. The reference switch is formed by CR5111, CR5112 and CR5113. Q5109, together with Y5101, comprise the 3 MHz oscillator. Q5106 is a buffer. Output from Q5106 is fed to the Discriminator PC Board.

(b) Discriminator PC Board

X5201, X5203 and associated components form the limiter circuit. The 30 MHz bandpass filter consists of C5203, C5206, C5209, C5213, L5202 and L5203. CR5201, X5202 and associated components form the detector that feeds the control logic circuit on the Sampler PC Board. CR5202, CR5204 and associated components form the 270° delay line and the phase comparator consists of MX5201. C5232, C5233, C5234, C5238, C5239, C5240, L5210, X5212 and L5213 comprise the low-pass filter. Q5201 through Q5209 is the dc amplifier circuit on the Discriminator PC Board that feeds the integrating sample and hold #1 circuit (X5301A, X5301B, X5301C and X5305) on the Sampler PC Board.

(c) Sampler PC Board

The Integrating sample and hold #2 circuit consists of X5301D, X5310A, X5310B, X5310C, X5309, X5315 and associated components. The sample and hold #3 circuit consists of Q5303, X5310B, X5314 and associated components. X5316 comprises the low voltage detector. The search counter consists of X5311. The lock counter consists of X5313, X5307B and Q5304. X5310D is the search step switch. The summing network consists of CR5306, CR5307 and associated components. All remaining 5300 series components comprise the control logic circuit.



200 MHz Generator Block Diagram
Figure 17

(11) 200 MHz Generator (2-2-1, Figure 17)

The 200 MHz Generator Assembly generates and modulates the 200 MHz IF with amplitude, phase and pulse modulation. The 200 MHz Generator Assembly consists of:

200 MHz Control PC Board
Modulator/Leveler PC Board
Pulse Modulator PC Board
XPDR Filter PC Board
DME Amplifier PC Board
Output Switch PC Board
DME Filter Cavity

The data latched from the data bus (when instructed by the address decoder) is used to enable or disable the pulse modes and select functions of the 200 MHz Generator Assembly. The data from the data bus is used to enable or disable the various modulation methods and supply the control and driver circuits and digital to analog converter with data. The 100 MHz oscillator output is fed to the frequency double circuit on the Modulator/Leveler PC Board and RF Synthesizer Assembly. The frequency doubler output (200 MHz) is fed to the bi-phase modulator (TACAN) and SLS Leveler (without SLS modification). The DABS phase modulation is accomplished in the bi-phase modulator.

The bi-phase modulator output is fed to the main leveler where an amplitude modulated 15 Hz and/or 135 Hz signal is applied to the 200 MHz IF when selected. An external TACAN signal can be used in place of 15 or 135 Hz signals. A dc block removes any dc offset present and the offset amplifier places a bias (or dc level) on the sine waves that become reference input for % of modulation. The detector circuit on the Modulator/Leveler PC Board demodulates a sample of the TACAN modulation and feeds this signal (demodulated main output) to the ALC/Mixer Assembly.

Without the SLS modification, the 200 MHz IF frequency doubler output also feeds the SLS leveler. With the SLS modification, another 200 MHz signal, from the 200 MHz SLS Source Assembly (also containing a 100 MHz oscillator and frequency doubler), feeds the SLS leveler. The output level of the SLS leveler, in turn, is controlled by the D/A converter. The main switch and SLS switches select the main leveler output, or SLS leveler output or both, depending on instructions received from the SLS control logic circuit and switch drivers. The SLS control logic circuit also provides a leveler SLS or echo timing pulse to the ALC/Mixer Assembly.

The pulse forming circuitry on the 200 MHz Control PC Board sets the pulse width as well as a fine tune on X and Y channel range delays for DME mode and provides a fine tune for the pulse width in XPDR mode. The Pulse signal is also split into DME pulses and XPDR pulses for the appropriate drivers on the Pulse Modulator PC Board.

Both the first and second pulse modulators are driven by the non-inverting driver in DME mode and the inverting driver in XPDR mode. This allows the DME pulses to be partially shaped prior to filtering to improve the pulsed spectrum. Two pulse modulators accomplish 80 dB ON/OFF ratio in both modes.

The Gaussian and Bandpass Filters output the correct pulse shape. The pulse forming circuit also provides a leveler pulse to the ALC/Mixer Assembly. The 200 MHz RF pulses from the pulse modulator are amplified by the 2nd 200 MHz amplifier and fed to pin diode switches 1 and 2. Pin diode switches 1, 2, 3 and 4 (that are controlled by the function select drivers on the 200 MHz Control PC Board) place either the XPDR Filter PC Board or DME Filter Cavity and DME Amplifier PC Board in line with the 200 MHz Generator Assembly output.

(a) 200 MHz Control PC Board

The decoder consists of all four gates of X2601 and X2602 that drive the data latches (X2604, X2617 and X2616) (2-2-1, Table 44). X2612A and X2612B form the 15 and 135 Hz gating logic circuit. The 15 Hz filter consists of X2613B and the 135 Hz filter consists of X2613A. The 15 and 135 Hz filter output feeds, in turn, a summing amplifier (X2614A) and offset amplifier (X2614B). The SLS digital to analog (D/A) converter consists of X2618 and X2615A. X2608B, X2603D, X2606C, X2606D, X2610B, X2610C, Q2605, Q2606, Q2607 and Q2608 form the SLS control logic circuit. The pulse forming circuit consists of X2607, X2605B, X2608A and X2606C. X2603D and Q2601 through Q2604 form the function select drivers.

ADDRESS LOCATION (HEX)	MODE	DATA DEFINITION
C8	WRITE	SLS Level (Hi Byte) (2-2-1, Table 46)
C9	WRITE	SLS Level (Lo Byte) (2-2-1, Table 46)
CA	WRITE	Control Byte (2-2-1, Table 45)

200 MHz Control Address Location and Data Definition
Table 44

SELECTED MODE	DATA (HEX)
XPDR	Ø3
XPDR with TACAN	43
DME-X with TACAN	73
DME-Y with TACAN	53
DME-X without TACAN	33
DME-Y without TACAN	13

Control Data Definition
Table 45

SLS/ECHO LEVEL (dB)	HI BYTE (C9) (HEX)	LO BYTE (C8) (HEX)
+9	FE	CØ
+8	DF	CØ
+7	C6	CØ
+6	AF	CØ
+5	9B	8Ø
+4	8A	4Ø
+3	7A	CØ
+2	6C	8Ø
+1	6Ø	4Ø
+Ø	54	8Ø
-Ø	54	8Ø
-1	4A	CØ
-2	41	8Ø
-3	39	8Ø
-4	32	CØ
-5	2C	4Ø
-6	26	CØ
-7	21	CØ
-8	1D	4Ø
-9	19	4Ø
-10	16	ØØ
-11	13	ØØ
-12	1Ø	ØØ
-13	ØD	8Ø
-14	ØB	8Ø
-15	Ø9	8Ø
-16	Ø8	8Ø
-17	Ø6	CØ
-18	Ø5	8Ø
-19	Ø4	8Ø

SLS/ECHO Levels
Table 46

(b) Modulator/Leveler PC Board

The non-inverting driver (Q2506) and associated summing network is formed by R2545, R2551, R2552 and R2553. The 100 MHz reference oscillator consists of Q2501, Y2501, the frequency doubler (Q2504 and Q2505) and the bi-phase modulator (MX2501). The SLS leveler is formed by CR2502, CR2504, CR2506, Q2503 and X2502, while the main leveler, that has similar arrangement, consists of CR2501, CR2503, CR2505, Q2502 and X2501. The detector for the main leveler is formed by X2501 and CR2507. The main switch is a pin diode switch consisting of CR2509, CR2511, CR2513, CR2516, CR2517, CR2518 and CR2519. The SLS switch is a pin diode switch consisting of CR2510, CR2512, CR2514, CR2520, CR2521, CR2522 and CR2523.

(c) Pulse Modulator PC Board

The DME pulse shaper is made up of Q2108, Q2109, CR2107, CR2108 and associated components. This signal drives Q2102 and Q2105, that make up the non-inverting driver. Q2101 and Q2104 are the inverting drivers used only for XPDR mode. MXR2101 and MXR2102 form the pulse modulator switches. Q2103 and Q2106 form the 1st and 2nd amplifiers. CR2101, CR2103 and CR2105 form the DME switch. CR2102, CR2104 and CR2106 form the XPDR switch.

(d) XPDR Filter PC Board

The Bandpass filter on the XPDR Filter PC Board is a passive linear phase filter consisting of C2201 through C2205 and L2201 through L2206.

(e) Gaussian Filter

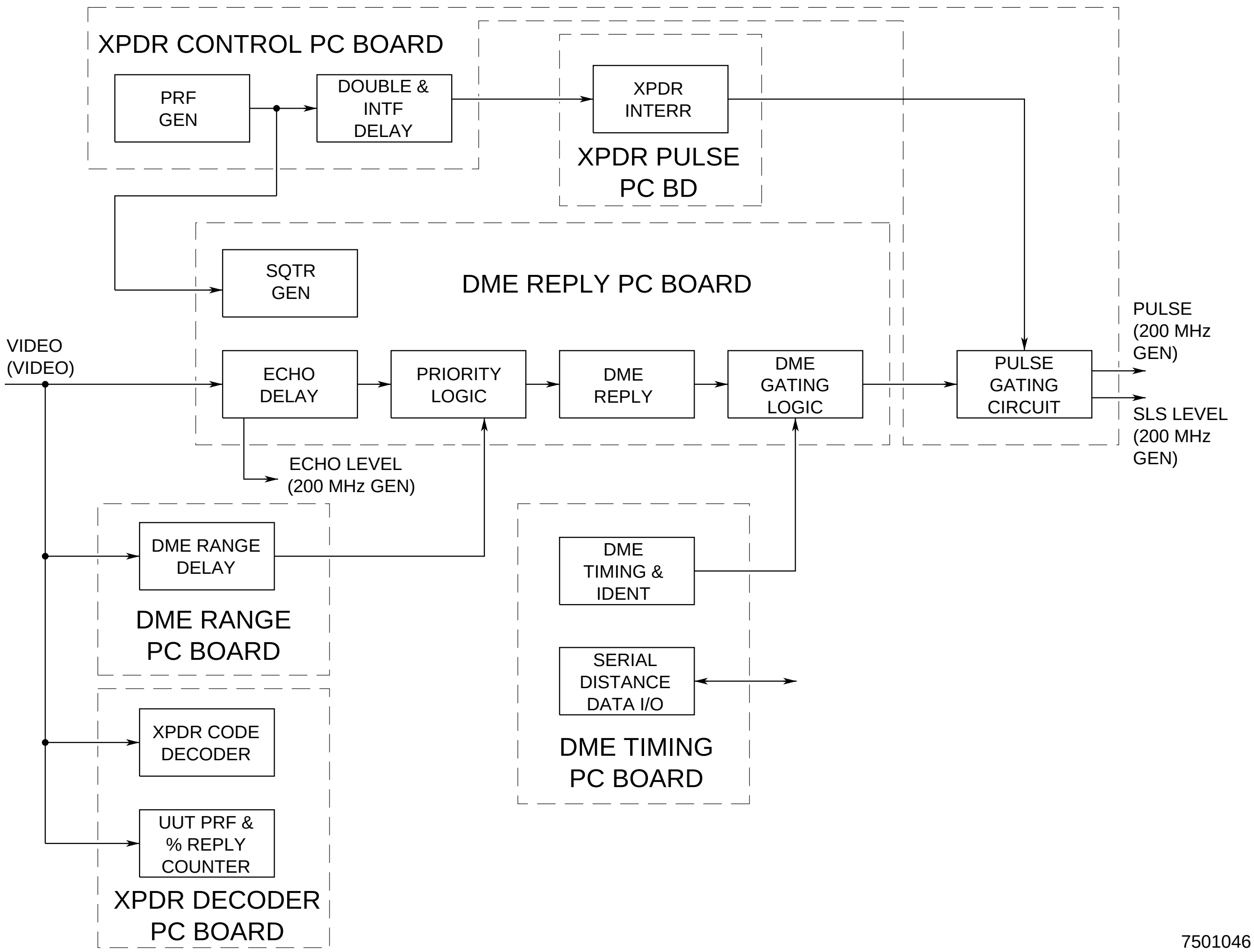
The Gaussian Filter is a tri-pole helical resonator built into the 200 MHz Generator Assembly enclosure.

(f) DME Amplifier PC Board

The 200 MHz amplifier consists of two modulation amplifiers (X2301 and X2302) and an adjustable resistive attenuator.

(g) Output Switch PC Board

Pin diode switch 3 consists of CR2401, CR2403 and CR2406 and pin diode switch 4 consists of CR2402, CR2404 and CR2405.



Card Cage Block Diagram
Figure 18

12) Card Cage (2-2-1, Figure 18)

The Card Cage Assembly performs the encoding and timing of the generated pulses to the 200 MHz Generator Assembly as well as decoding and measuring the video pulse from the Video Assembly. The Card Cage Assembly consists of:

XPDR Control PC Board
XPDR Pulse PC Board
XPDR Decoder PC Board
DME Reply PC Board
DME Range PC Board
DME Timing PC Board

The PRF generator on the XPDR Control PC Board produces pulses for the DBL INTERR and INTRF delay circuit. The delay circuit triggers an interference or a second interrogation positioned from the P_1 pulse of the first interrogation as determined by the microprocessor.

The delay circuit feeds the XPDR interrogation circuit on the XPDR Pulse PC Board to produce the P_1, P_2, P_3 and P_4 pulses with position and width selected by the microprocessor. The XPDR interrogation circuit feeds the pulse gating circuit on the XPDR Control PC Board, that gates the various digital pulses to the 200 MHz Generator Assembly according to the mode selected. The pulse gating circuit also produces the SLS pulse for the 200 MHz Generator Assembly.

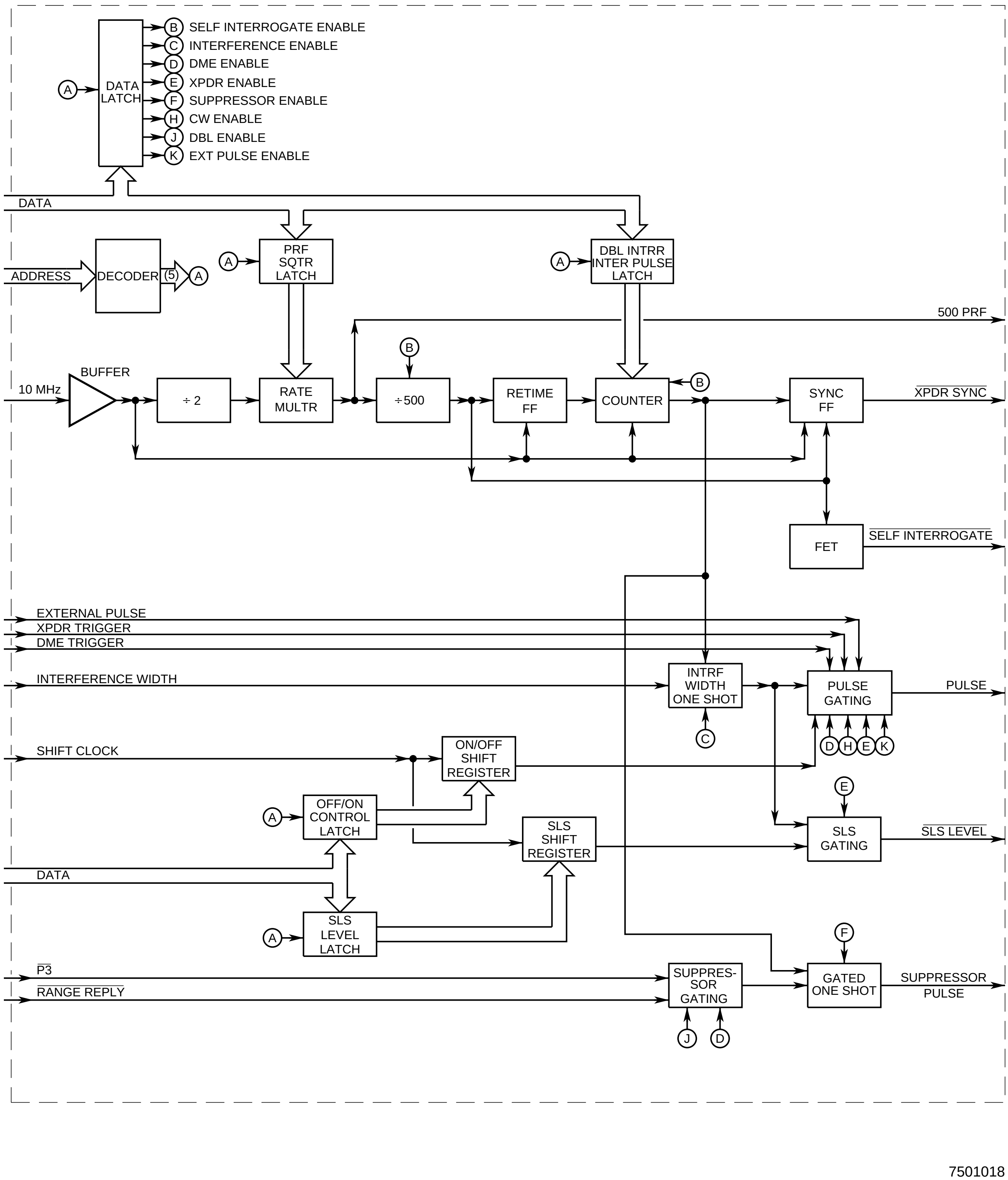
The video input to the Card Cage Assembly feeds the echo delay circuit on the DME Reply PC Board; XPDR code decoder circuit, UUT PRF counter and % reply counter on the XPDR Decoder PC Board and DME range delay circuit on the DME Range PC Board. The UUT PRF and % reply counters measure the UUT PRF during DME operation or % Reply during XPDR operation, and feed this information to the microprocessor. The XPDR code decoder circuit decodes the XPDR reply code and feeds the information to the microprocessor.

The DME range delay circuit on the DME Range PC Board produces the proper delay of the DME reply relative to the DME interrogation. The range delay is continually updated with the acceleration and velocity information as selected by the microprocessor. Similarly, the velocity is continually updated by the acceleration information. The DME range delay circuit can provide reply pulses at a different delay each time a reply is made, simulating an aircraft in flight.

The DME range delay circuit output is fed to one input of the priority logic circuit on the DME Reply PC Board. The echo delay circuit produces an echo reply input (if selected by the microprocessor) that is fed to the priority logic circuit. The third input to the priority logic circuit is random squitter pulses fed from the squitter generator circuit. The priority logic circuit combines the three input signals and feeds the signal with the highest priority to the DME reply circuit, that produces the P_1 and P_2 pulses. The position of the P_1 pulse in relation to the P_2 pulse is selectable by the microprocessor. The DME reply circuit output is fed to the DME gating logic circuit along with the TACAN reference burst and identification pulses from the DME timing and identification circuit. The DME timing and identification circuit also produces the 15 and 135 Hz for TACAN modulation, that is fed to the DME gating logic circuit.

The DME gating logic circuit combines the output from the DME reply circuit and DME timing circuit, then feeds this signal to the pulse gating circuit on the XPDR Control PC Board where the pulses are gated and fed to the 200 MHz Generator Assembly. The serial distance data I/O circuit on the DME Timing PC Board interfaces the microprocessor to the serial data bus.

Refer to the System Block Diagram (2-2-1, Figure 1) for off board signal routing.



XPDR Control PC Board Block Diagram
Figure 19

(a) XPDR Control PC Board (2-2-1, Figure 19)

The XPDR Control PC Board generates the 500 PRF $\overline{\text{XPDR sync}}$, self interrogate signal, pulse, SLS level and $\overline{\text{suppressor pulse}}$ signal from information supplied by the Motherboard.

The 10 MHz reference from the Motherboard is buffered by the 10 MHz buffer and applied to the ÷2 frequency divider, retime flip-flop, counter circuit and sync flip-flop. The ÷2 frequency divider reduces the 10 MHz reference to 5 MHz and feeds it to the rate multiplier. The rate multiplier output frequency is determined by the PRF squitter latch and is equal to 500 times the PRF frequency. The 500 PRF, divided by the ÷500 frequency divider, is the pulse repetition frequency applied to the retime flip-flop, XPDR sync flip-flop and self interrogate circuit.

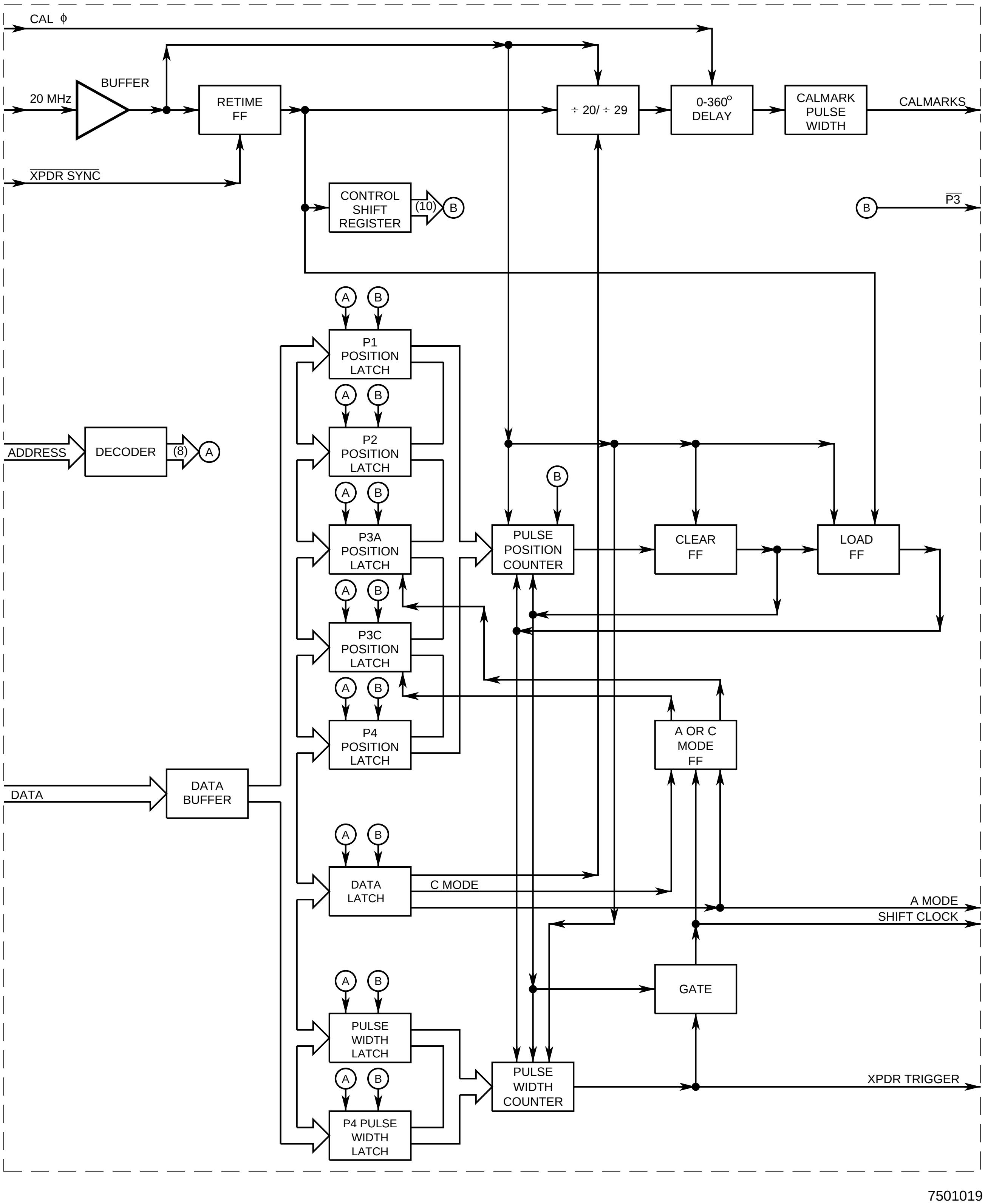
The retime flip-flop adjusts the phase of the PRF to synchronize with the reference clock. The PRF is applied to the counter circuit, that compensates for any phase shift/delay encountered in the counter. The counter produces the double interrogation/interference pulse delay when enabled by the microprocessor. The pulse delay is determined by the double interrogation/interference pulse latch. The counter output is also applied to the XPDR sync flip-flop that produces the XPDR sync pulse coincident with the 10 MHz clock. The self interrogate, when enabled by the microprocessor, gates the PRF onto the self interrogate line applied to the DME Reply PC Board.

The pulse gating circuit selects that pulse is gated to the 200 MHz Generator Assembly on the pulse line. The pulse gating circuit is controlled by the microprocessor and the on/off shift register. The microprocessor selects between the XPDR or DME operation and the on/off shift register enables/disables the P_1, P_2, P_3 and P_4 pulses. The SLS gating circuit controls the SLS level signal (used by the 200 MHz Generator Assembly to select an SLS level) based on information received from the SLS shift register. The on/off shift register and SLS shift register is loaded with data from the on/off control latch and SLS level latch respectively.

The on/off shift register and SLS shift register are clocked each time a pulse (i.e., P_1, P_2, P_3 and P_4) is to be produced. Each bit loaded into the shift register corresponds to a pulse position, and the state of the bit determines whether the shift register outputs the pulse as a main level or SLS level pulse.

The interference pulse width one shot produces an interference pulse when the counter circuit reaches terminal count. The width of the interference pulse is controlled by the INTRF PULSE WIDTH Control and is enabled/disabled by the microprocessor. The suppressor gating circuit selects the P_3 pulse, range reply or interference pulse signals to trigger the gated one shot that produces the suppressor pulse that is fed to the Interface Assembly. One of six latches are selected by the data latch circuit, on the XPDR Control PC Board, by capturing the control bits from the data bus when instructed by the address decoder.

Refer to the System Block Diagram (2-2-1, Figure 1) for off board signal routing.



XPDR Pulse PC Board Block Diagram
Figure 20

(b) XPDR Pulse PC Board (2-2-1, Figure 20)

The XPDR Pulse PC Board produces CAL Marks and XPDR interrogations. The CAL Marks are produced when the 20 MHz signal received from the Motherboard, is buffered by the 20 MHz buffer and applied to the ÷20/÷29 frequency divider. (The division factor of the ÷20/÷29 frequency divider is controlled by the microprocessor.) The ÷20 division factor is selected for 1.0 µS CAL Marks and ÷29 division factor is selected for 1.45 µS CAL Marks. The 1 MHz or 689.655 kHz (depending on the division factor) output of the ÷20/÷29 frequency divider is applied to the CAL Marks pulse width circuit through the 0° to 360° delay circuit.

The 0° to 360° delay circuit shifts the phase of the CAL Marks depending on the setting of the front panel CAL Ø Control. The CAL Marks pulse width circuits set the pulse wide to approximately 0.45 µs that is fed to the Interface PC Board Assembly.

The XPDR interrogations are produced by five pulse position latches (P_1, P_2, P_3A, P_3C and P_4), that contains the pulse position latch for each pulse listed. In addition to the pulse position latches, there are two pulse width latches (Pulse Width Latch and P_4 Pulse Width Latch).

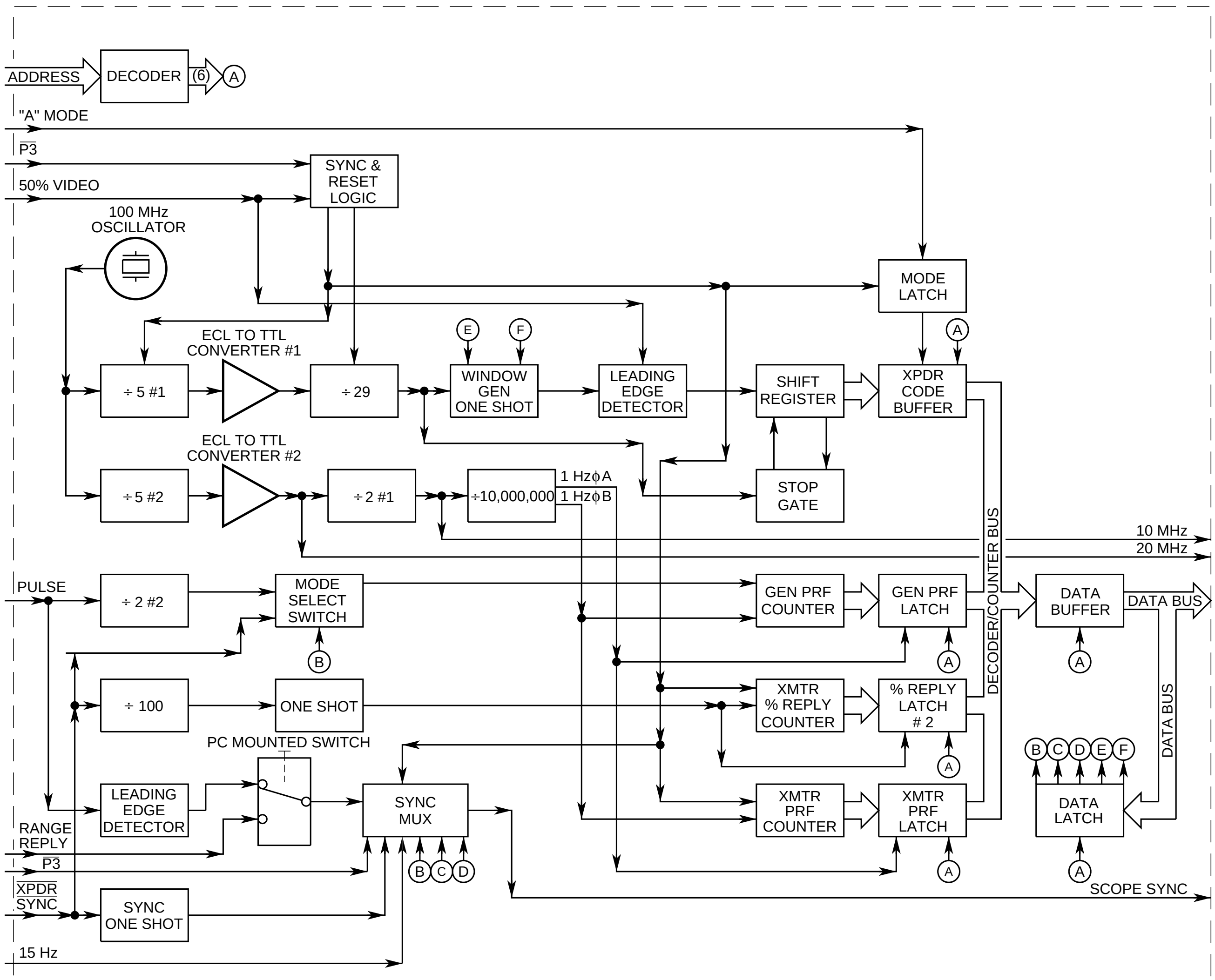
The pulse width latch determines the width of the P_1, P_2, P_3A and P_3C pulses and the P_4 pulse width latch determines the width of the P_4 pulse.

The $\overline{\text{XPDR sync}}$ line becomes active when a XPDR interrogation is produced. The $\overline{\text{XPDR sync}}$ pulse is synchronized to the 20 MHz clock by the retime flip-flop and fed to the control shift register and load flip-flop. The load flip-flop loads the pulse position counter with data from the pulse position latch selected by the control shift register. The control shift register sequentially enables the pulse position latches. When the $\overline{\text{XPDR sync}}$ line becomes active, the control shift register enables the P_1 latch producing a P_1 pulse. After the P_1 pulse is produced, the control shift register is clocked and the P_2 position latch is enabled. After the P_2 pulse is produced, either the P_3A or P_3C position latch is enabled. The A or C mode flip-flop determines whether the P_3A Position Latch or P_3C Position Latch is enabled. The data latch determines the state of the A or C flip-flop.

When the pulse position counter is loaded, it is decremented by the buffered 20 MHz clock until it reaches two counts prior to its terminal count. At this time, the clear flip-flop is triggered and the pulse position counter and pulse width counter are cleared. One clock cycle later, the load flip-flop is triggered and the pulse position counter and pulse width counter are loaded. The pulse width counter is active until it is decreases to zero. The shift clock gate produces the shift clock pulse on the trailing edge of the XPDR trigger.

The address decoder enables the latches on the XPDR Pulse PC Board when the address for a specific latch is presented at the latch input. A data buffer is provided to reduce the number of TTL loads seen by the internal data bus.

Refer to the System Block Diagram (2-2-1, Figure 1) for off board signal routing.



XPDR Decoder PC Board Block Diagram
Figure 21

(c) XPDR Decoder PC Board (2-2-1, Figure 21)

The XPDR Decoder PC Board decodes the XPDR Reply, counts PRF and % Reply, as well as producing the scope sync signal. The 50% video received from the Video Assembly is applied to the sync and reset logic circuit that detects the first framing pulse. When the first framing pulse is detected, the shift register is cleared, the mode latch is strobed and a XPDR reply sync pulse is produced. This pulse is fed to the ÷5 #1 frequency divider, mode latch, SYNC multiplexer, XMTR % reply counter and XMTR PRF counter.

The 100 MHz oscillator is the time base for the XPDR Decoder PC Board. The oscillator output is applied to the ÷5 #1 and ÷5 #2 frequency dividers. The ÷5 #1 frequency divider is reset by the sync and reset logic circuit when an F_1 pulse is detected. The 20 MHz output of the ÷5 #1 circuit passes through the ECL to TTL #1 converter and is applied to a ÷29 frequency divider. The ÷29 frequency divider is the 689.655 kHz decoder clock applied to the window generator, one shot and stop gate. The window generator one shot produces a window to coincide with the rising edge of the 50% video. The window width is selected by the microprocessor. The window generator one shot enables the leading edge detector that produces a true output when the leading edge occurs during a window. The leading edge detector output is applied to a shift register (serial in/parallel out) clocked by the decoder clock via the stop gate. When the F_1 pulse is shifted to the last position in the shift register, the stop line to the stop gate circuit becomes active and the shift register stops. At this time, the received video, from the Video Assembly, is presented to the XPDR code buffer in a parallel format, along with the output of the mode latch, that stores the status of the "A" mode line. The XPDR code buffer gates the data present on its input onto the decoder/counter bus when selected by the microprocessor.

The time base for the counters consists of the 100 MHz oscillator, ÷5 #2 frequency divider, ECL to TTL #2 converter, ÷2 #1 frequency divider and $\div 10^7$ #1 frequency divider. The 100 MHz from the oscillator is applied to the ÷5 #2 frequency divider, reduced to 20 MHz, and fed to the ECL to TTL converter. The ECL to TTL #2 converter output is fed to the ÷2 #1 frequency divider and Motherboard Assembly. The 10 MHz output from the ÷2 #2 frequency divider is fed to the $\div 10^7$ frequency divider and Motherboard Assembly. The $\div 10^7$ frequency divider produces two 1 Hz outputs (1 Hz φA and 1 Hz φB). The 1 Hz φA output is used to gate the GEN PRF counter and XMTR PRF counter. The 1 Hz φB output is used to latch the GEN PRF latch and XMTR PRF latch after the 1 Hz φB output becomes inactive. The 20 MHz output of the ECL to TTL Converter #2 is fed through the Motherboard PC Board to the Interface PC Board, and the 10 MHz output from the ÷2 #1 circuit is fed to the XPDR CONTROL PC Board.

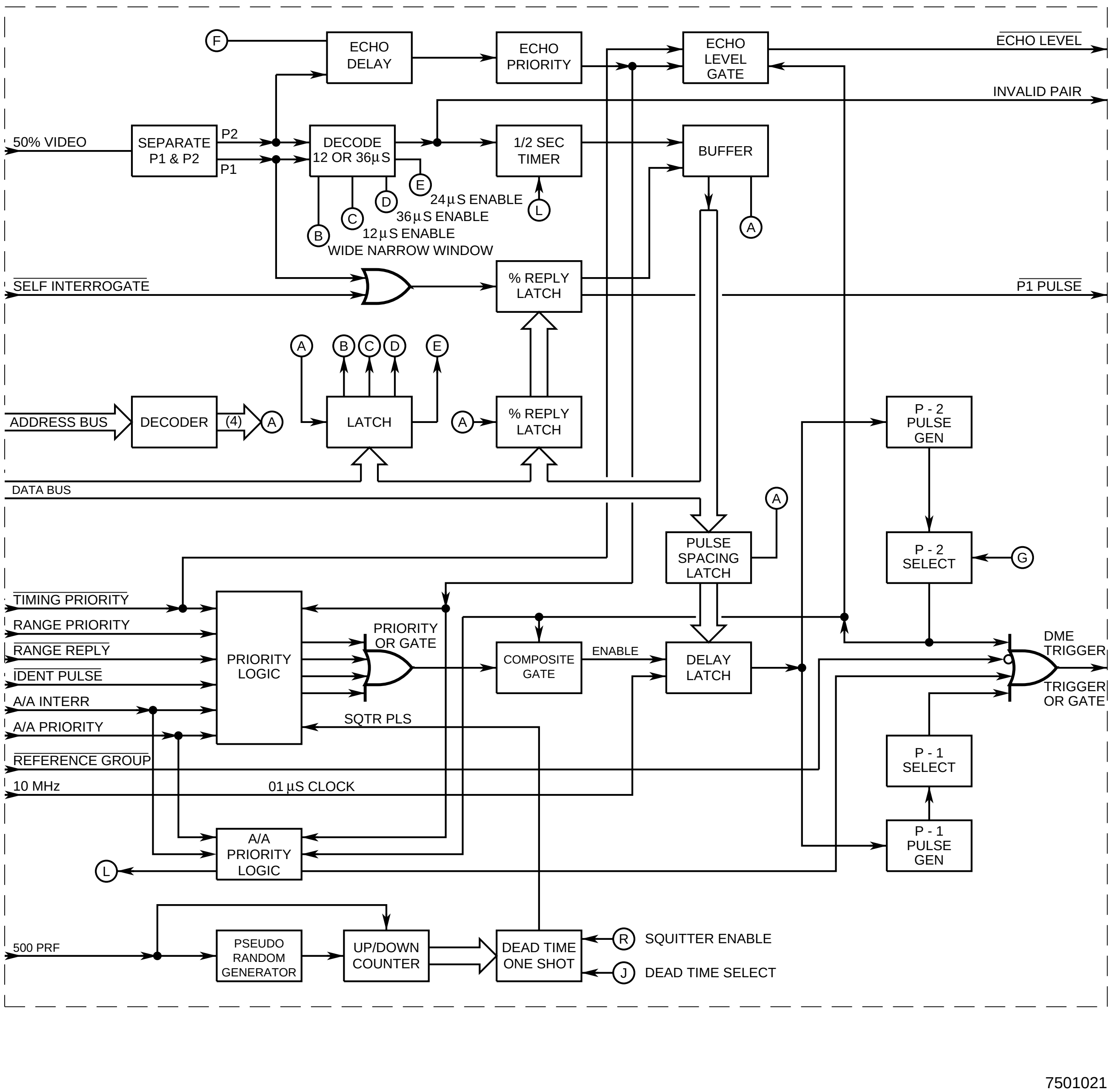
In DME function of operation, the generator PRF counting function is performed when the mode select switch circuit selects the output of the ÷2 #2 frequency divider applied to the GEN PRF counter. The ÷2 #2 frequency divider reduces the number of DME pulses present on the pulse line, that causes the GEN PRF counter to count pulse pairs rather than individual pulses.

In XPDR function of operation, the generator PRF counting function is performed when the mode select switch circuit applies the $\overline{\text{XPDR sync}}$ pulses to the GEN PRF counter that counts XPDR interrogations per second. The XMTR PRF counter counts the number of transmitter replies per second received from the sync and reset logic circuit and feeds this information to the XMTR PRF latch. In addition to storing the XMTR PRF information, the XMTR PRF latch gates this information onto the decoder/ counter bus.

The $\overline{\text{XPDR sync}}$ pulse is also applied to a ÷100 frequency divider that produces a gate 100 interrogations long. The ÷100 frequency divider output is fed to a one shot that stretches the gate in order to count the reply to the 100th interrogation. The one shot output gates the XMTR % reply counter and % reply latch. The % reply latch is strobed by the falling edge of the gate, and gates the stored data onto the decoder/ counter bus when instructed by the microprocessor. The data buffer in turn, gates the data from the decoder/counter bus onto the internal data bus when instructed by the microprocessor.

The sync multiplexer and PC mounted switch selects the source of the scope sync signal. The leading edge detector and sync one shot perform wave shaping functions. The data latch captures control bits from the data bus when selected by the address decoder. The address decoder selects a latch or buffer on the XPDR Decoder PC Board depending on the address present on the address bus.

Refer to the System Block Diagram (2-2-1, Figure 1) for off board signal routing.



DME REPLY PC Board Block Diagram
Figure 22

(d) DME REPLY PC Board (2-2-1, Figure 22)

The DME Reply PC Board produces the squitter pulses, decodes the DME interrogation, produces echo pulses, and sorts the DME, TACAN and A/A priorities.

The 50% video from the Video Assembly is applied to the separate P_1 and P_2 circuit that places the P_1 and P_2 pulses on separate lines. The P_2 pulse is applied to the echo delay circuit. The P_1 pulse is fed to the 12, 24 or 36 μs decoder and to an ORgate that may apply either the P_2 pulse or $\overline{\text{self interrogate}}$ pulse to the % reply gate. The % reply gate is gated by the microprocessor. The % reply rate multiplier output has a duty cycle from 0% to 100% in 10% increments in local mode and 1% increments in GPIB Mode as selected by the microprocessor. The gated P_1 pulse is also fed to the Motherboard Assembly.

The echo delay circuit produces a fixed delay when echo is enabled. The trigger produced by the echo delay circuit is fed to the echo priority circuit. The echo priority circuit produces the echo priority flag that is fed, in turn, to the echo level gate and the priority circuits. The echo level gate only allows an echo level to be produced when the timing priority signals are inactive or outside an active P_2 pulse (timing has priority over echo). An output from the echo priority is applied to the echo gate. This allows the echo pulse to be fed to the priority ORgate circuit except when the timing priority is active. The range reply signal is fed, in turn, to the 1st range reply gate, 2nd range reply gate and priority ORgate circuit. The 1st range reply gate inhibits a range reply if the timing priority pulse is active. The 2nd range reply gate inhibits range replies if an echo pulse is present (both timing and echo pulses have priority over range replies).

Squitter pulses, produced by the TTL clock, with a frequency 500 times the selected PRF, (500 PRF line) enter the DME Reply PC Board and are applied to the pseudo random generator. The pseudo random generator has a serial bit output port connected to the up/down counter input. As the up/down counter is clocked by the 500 PRF line, the serial data from the pseudo random generator causes the up/down counter to slew randomly up or down. The output of the up/down counter is applied to the dead time one shot. When the output of the up/down counter goes low, the dead time one shot forces a low on the squitter line. The dead time one shot ignores any further triggers until it terminates, that is selected to be either 60 or 74 μs by the microprocessor.

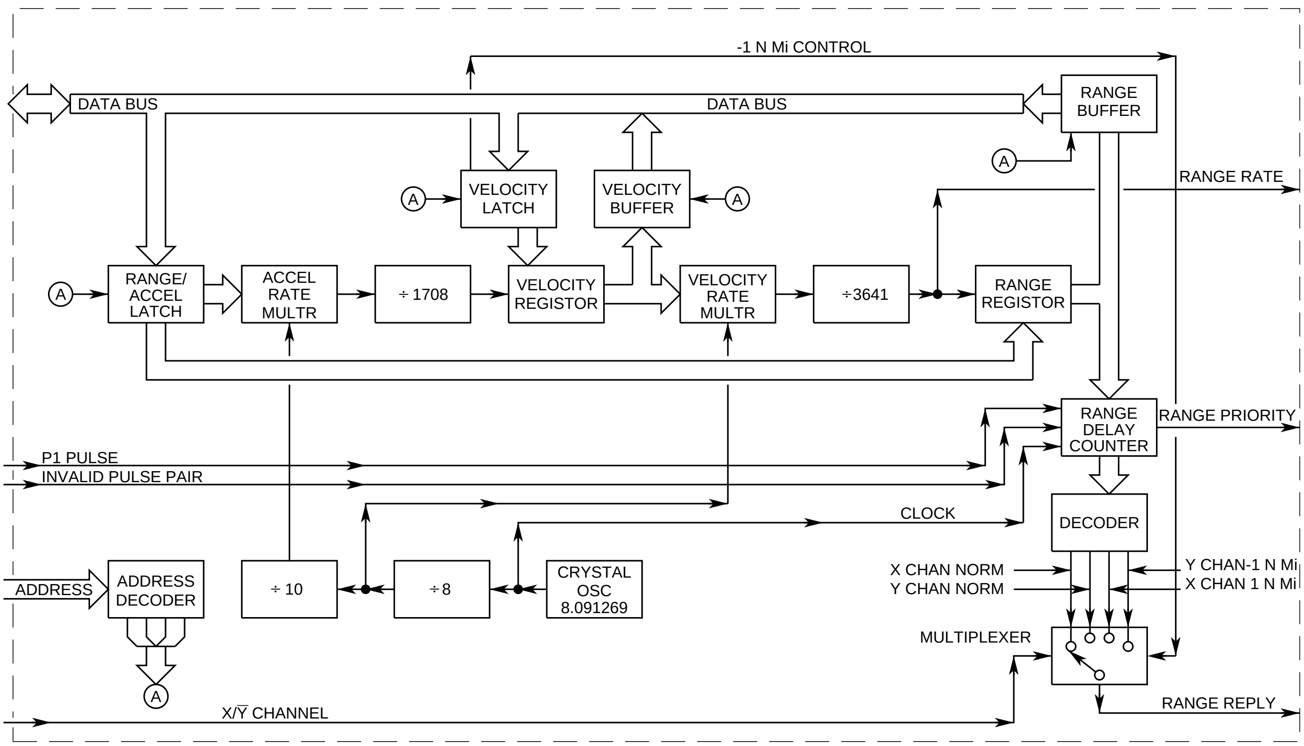
The squitter pulses are fed to the priority logic. The priority logic establishes priorities for pulses under the following convention: Reference (group), Echo, Range, A/A and Squitter. Ident pulses, in addition to the three squitter gate inputs, are applied directly to the priority ORgate without passing through other gates. Ident has priority over all other pulses except the reference groups. (The priority between the ident pulse and reference groups is established on the DME Timing PC Board.) The $\overline{\text{timing priority}}$ line is active when ident pulses are received. Echo, DME reply, A/A and squitter pulses are inhibited.

The output of the priority ORgate is fed through the composite gate to the delay latch. When the delay latch is clocked by the 0.1 μs clock, it produces a pulse with a width determined by the microprocessor. The output of the delay counter is applied to the P_1 and P_2 pulse generator. The P_1 pulse generator produces a 0.1 μs pulse on the rising edge of the delay counter output pulse. When the delay counter goes low, the P_2 pulse generator produces a 10 μs P_2 pulse. The P_1 and P_2 pulse generator outputs are individually gated for single or double pulse operation, and then ORgated with REF group and A/A INTERR to produce the DME Trigger.

A/A Interrogations bypass the internal pulse generator and feed the trigger ORgate directly as they have priority, and the internal pulse generator is not active. The invalid pair detector is ORgated off for approximately 100 μs to keep single pulse replies from producing an invalid pair response.

The data latch captures the control information from the internal data bus, while the address decoder selects the data latch, % reply latch, pulse spacing latch and invalid pair flag. The 12, 24 or 36 μs decoders produce an invalid pair flag if the spacing between the P_1 and P_2 pulse is incorrect. The 0.5 second timer holds the invalid pair flag for 0.5 seconds, so it can be read by the microprocessor through the buffer.

Refer to the System Block Diagram (2-2-1, Figure 1) for off board signal routing.



DME Range PC Board Block Diagram
Figure 23

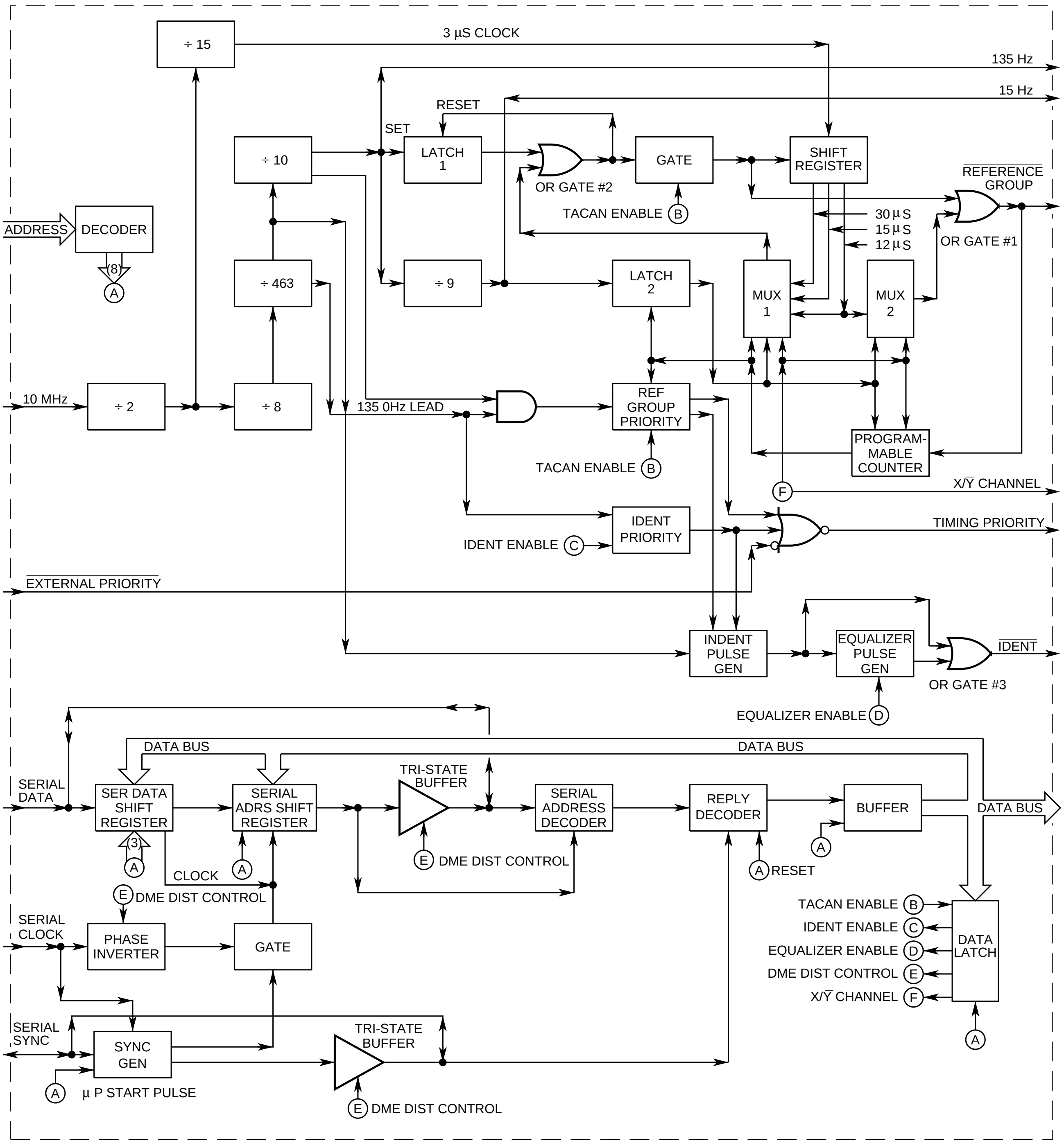
(e) DME Range PC Board (2-2-1, Figure 23)

The 8.091269 MHz crystal oscillator output, that is the timebase for all distance simulating, is fed to the range delay counter and ÷8 frequency driver. The ÷8 frequency divider is applied to the ÷10 frequency divider and velocity rate multiplier. The ÷10 frequency divider output is fed to the acceleration rate multiplier (bit rate multiplier) programmed by the range/accel latch. The output of the acceleration rate multiplier is applied through the ÷1708 frequency divider to the velocity register (programmable up/down counter). The velocity register is preset by the velocity latch and is increased or decreased by the acceleration rate multiplier. The velocity register output is fed to a velocity rate multiplier and velocity buffer that allows the microprocessor to read the current velocity rate.

The velocity rate multiplier output is fed through a ÷3641 frequency divider to the range register. The ÷3641 frequency divider output also produces the range rate pulses fed to the Interface Assembly. The range register (programmable up/down counter) is preset by the range/accel latch and increased or decreased by the velocity rate multiplier. The range register output is fed to a range delay counter and range buffer that allows the microprocessor to read the current range delay.

The range delay counter starts counting when a valid P_1 pulse is received and is reset when an invalid pulse pair is detected. Once triggered, the range delay counter output is fed to a decoder that decodes the range delay counter output (BCD value) and produces the proper delay time for the X and Y NORM and -1 NMi channels. One of the four decoder output channels (range reply) is selected by the multiplexer and fed to the DME Reply PC Board. The address decoder selects and/or enables the range/accel latch, velocity latch, velocity buffer and range buffer.

Refer to the System Block Diagram (2-2-1, Figure 1) for off board signal routing.



DME Timing PC Board Block Diagram
Figure 24

(f) DME Timing PC Board (2-2-1, Figure 24)

The 10 MHz signal fed to the DME Timing PC Board is applied to a ÷2 frequency divider. The 5 MHz output of the ÷2 frequency divider is fed to a ÷15 frequency divider and ÷8 frequency divider. The ÷15 frequency divider produces a pulse every 3 µs (3 µs clock) at 333.333 kHz. The output of the ÷8 frequency divider is applied to the ÷463 frequency divider that produces a two phase output (1350 Hz lead and 1350 Hz lag) signal. The 1350 kHz lead signal (occurring prior to the 1350 kHz lag) is fed to the priority logic and ident priority circuits.

The 1350 Hz lag signal is applied to the ÷10 frequency divider that produces a two phase output (135 Hz lead and 135 Hz lag) signal. The 135 Hz lead signal is fed to the priority logic circuit and the 135 Hz lag signal is fed to a ÷9 frequency divider, latch #1 circuit and 200 MHz Generator Assembly. The ÷9 frequency divider output is the 15 Hz signal applied to the latch #2 circuit and the 200 MHz Generator Assembly.

The two latch circuits (latch #1 and latch #2), shift register, multiplexer #1, multiplexer #2, programmable counter and associated gates formulate the reference group counter that produces the MRB (main reference burst) and ARB (auxiliary reference burst). The IDENT pulse generator and equalizer pulse generator form the IDENT circuit. The reference group priority circuit and IDENT priority circuit produces the priority circuit flag used by the DME Reply PC Board. The timing priority flag indicates reference group pulses or IDENT pulses are being produced, that has the highest priority on the DME Reply PC Board.

The reference priority circuit starts a priority flag when the 1350 Hz lead, 135 Hz lead and TACAN enable signals are all set (high). Shortly after the priority flag is set, latch #1 is set. The priority flag is terminated by the programmable counter. When TACAN is enabled, the pulse (high) from latch #1 is applied to a shift register and ORgate-1 through ORgate-2 and gate circuits. The output from ORgate-2, after the propagation delay, resets the latch #1 circuit producing the first pulse to the shift register and ORgate-1. ORgate-1 produces the $\overline{\text{reference group}}$ pulses fed to the DME Reply PC Board.

The first pulse produced by ORgate-1 is stepped through the shift register one stage for each 3 µs clock. The shift register fourth stage output (occurring 12 µs after the first pulse is presented at the shift register input) is applied to both multiplexer #1 and multiplexer #2, while the shift register fifth and tenth stage output (15 and 30 µs clock respectively) is applied to multiplexer #1. Multiplexer #2 is used only for gating when an "X" channel is selected and the current reference group is an MRB. The first pulse (delayed by 12 µs) is applied to ORgate-1 producing the second pulse.

When an "X" channel is selected and the current reference group is an MRB, multiplexer #1 selects either the 12, 15 or 30 s output from the shift register and feed it back to the shift register input. This sequence produces a third pulse (first pulse of the second pulse pair) from ORgate-1. When the selected channel is a "Y" channel or the current reference group is an ARB, the pulse described is only the second pulse produced by ORgate-1, as multiplexer #1 does not gate the 12 μs pulse to ORgate-1. Multiplexer #1 determines whether pulse pairs or a train of equally spaced pulses are produced, whereas multiplexer #2 determines the spacing of the produced pulses pairs or equally spaced pulses.

Latch #2 is set to the leading edge of the 15 Hz signal from the ÷9 frequency divider. When latch #2 is not set, the current reference group is an ARB. A reference group is produced each time the 135 Hz lag goes high. Every ninth reference group is an MRB, with eight ARB reference groups between each MRB. The latch #2 output is fed to multiplexer #1, multiplexer #2 and a programmable counter. The programmable counter is preset (at a level determined by the state of the X/$\overline{\text{Y}}$ line and whether the reference group is an MRB or ARB) and incremented each time a pulse is produced by ORgate-1. After a pre-determined number of individual pulses are produced by ORgate-1, the programmable divider overflows and resets the reference group priority and latch #2 circuits.

When IDENT is enabled, the IDENT priority logic produces a priority flag when the 1350 Hz lead phase goes high. The 1350 Hz lag phase to the IDENT pulse generator is enabled when the IDENT priority circuit output is true (high) and the reference group priority output is false (low). No IDENT pulses are produced when the reference group priority circuit output is true (high), as the reference groups have priority over ident pulses. The IDENT pulse generator circuit output is fed to ORgate-3 and equalizer pulse generator. If equalizer is enabled, the equalizer pulse generator produces a second pulse approximately 100 μs after the IDENT pulse. The output of ORgate-3 is the $\overline{\text{IDENT}}$ information fed to the DME Reply PC Board.

2. Calibration/Verification

A. General

(1) Calibration/Verification Schedule

The Calibration/Verification Procedures should be performed as a result of one or more of the following conditions:

- Failure to Meet Specifications

  If, during the course of normal operation, the ATC-1400A-2 or any major function thereof fails to meet the performance specifications according to Appendix I, Calibration/Verification Procedures should be performed.

- Assembly Replacement

  If one or more ATC-1400A-2 assemblies are replaced, Calibration/Verification Procedures should be performed according to 2-2-2, Table 47.

- Annual Calibration/Verification

  IFR recommends an annual Calibration/Verification on the ATC-1400A-2 to maintain proper testing standards.

(2) Controls, Connectors and Indicators

Refer to Appendix J, Figure 1 to locate controls, connectors and indicators on the ATC-1400A-2 Front Panel. Refer to Appendix J, Figure 2 to locate controls, connectors and indicators on the ATC-1400A-2 Rear Panel.

(3) Test Record

A Calibration/Verification Data Sheet is provided for recording results obtained while performing the Calibration/Verification Procedures.

NOTE: It is recommended the technician reproduce copies of the Calibration/Verification Data Sheet rather than use the copy in this manual.

B. Precautions

(1) Safety

WARNING: **REMOVE ALL JEWELRY OR OTHER COSMETIC APPAREL BEFORE PERFORMING ANY CALIBRATION/VERIFICATION PROCEDURE INVOLVING LIVE CIRCUITS.**

WARNING: **WHEN WORKING WITH LIVE CIRCUITS OF HIGH POTENTIAL, KEEP ONE HAND IN POCKET OR BEHIND BACK TO AVOID SERIOUS SHOCK HAZARD.**

WARNING: **USE ONLY INSULATED TROUBLESHOOTING TOOLS WHEN WORKING WITH LIVE CIRCUITS.**

WARNING: **FOR ADDED INSULATION, PLACE RUBBER BENCH MAT UNDERNEATH ALL POWERED BENCH EQUIPMENT, AS WELL AS RUBBER MAT UNDERNEATH TECHNICIAN'S CHAIR.**

WARNING: **HEED ALL WARNINGS AND CAUTIONS CONCERNING MAXIMUM VOLTAGES AND POWER INPUTS.**

(2) ESD

CAUTION: THE POWER SUPPLY ASSY, DIGITAL IF PCB ASSY, FRONT PANEL PULSE PCB ASSY, RF ASSY AND FRONT PANEL ASSY CONTAIN PARTS SENSITIVE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD). ALL PERSONNEL PERFORMING CALIBRATION PROCEDURES SHOULD HAVE KNOWLEDGE OF ACCEPTED ESD PRACTICES AND/OR BE ESD CERTIFIED.

CAUTION

THIS EQUIPMENT CONTAINS PARTS
SENSITIVE TO DAMAGE
BY ELECTROSTATIC DISCHARGE (ESD)

(3) EMC and Safety Compliance

All assemblies, cables, connectors, plastic fasteners, gaskets, fingerstock and miscellaneous hardware within the Test Set are configured to satisfy the safety and EMC compliance standards.

CAUTION: UPON COMPLETION OF ANY MAINTENANCE ACTION; ALL ASSEMBLIES, CABLES, CONNECTORS, PLASTIC FASTENERS, GASKETS, FINGERSTOCK AND MISCELLANEOUS HARDWARE MUST BE CONFIGURED AS INSTALLED AT THE FACTORY.

C. Requirements

(1) Test Equipment

Appendix G contains a list of test equipment suitable for performing any procedure in this manual. Any other equipment meeting the specifications of equipment listed in Appendix G may be substituted in place of the recommended models.

NOTE: For certain procedures, equipment listed in Appendix G may exceed the minimum required specifications.

(2) Disassembly

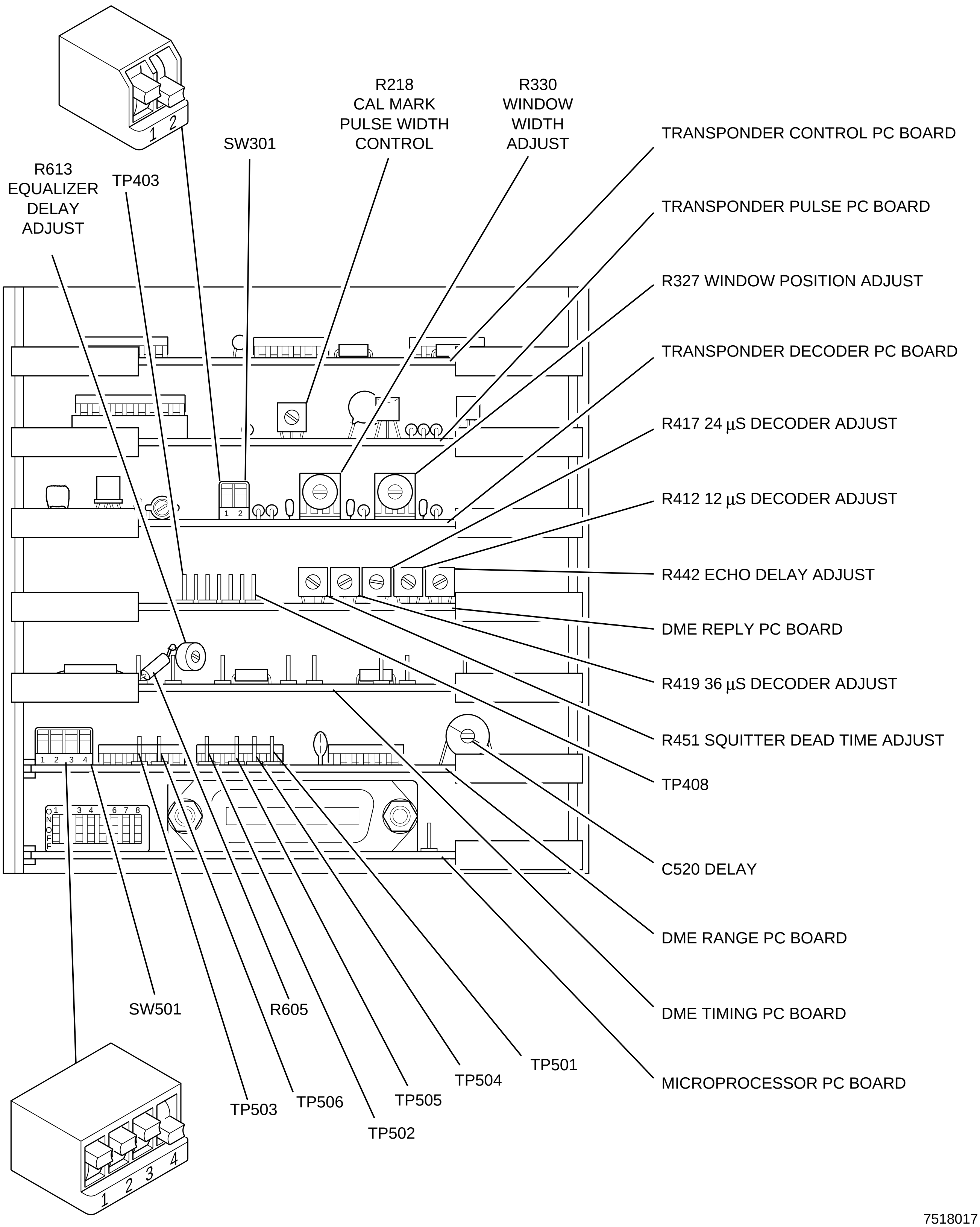
Remove the top cover from the ATC-1400A-2 according to the disassembly procedure in 2-3-1D(1)(a). Remove the Card Cage Assembly cover according to the disassembly procedure in 2-3-1D(14)(a).

(3) Environment

For best results, the calibration/verification environmental conditions should be identical to the environmental conditions at the normal operating location.

(4) Tools

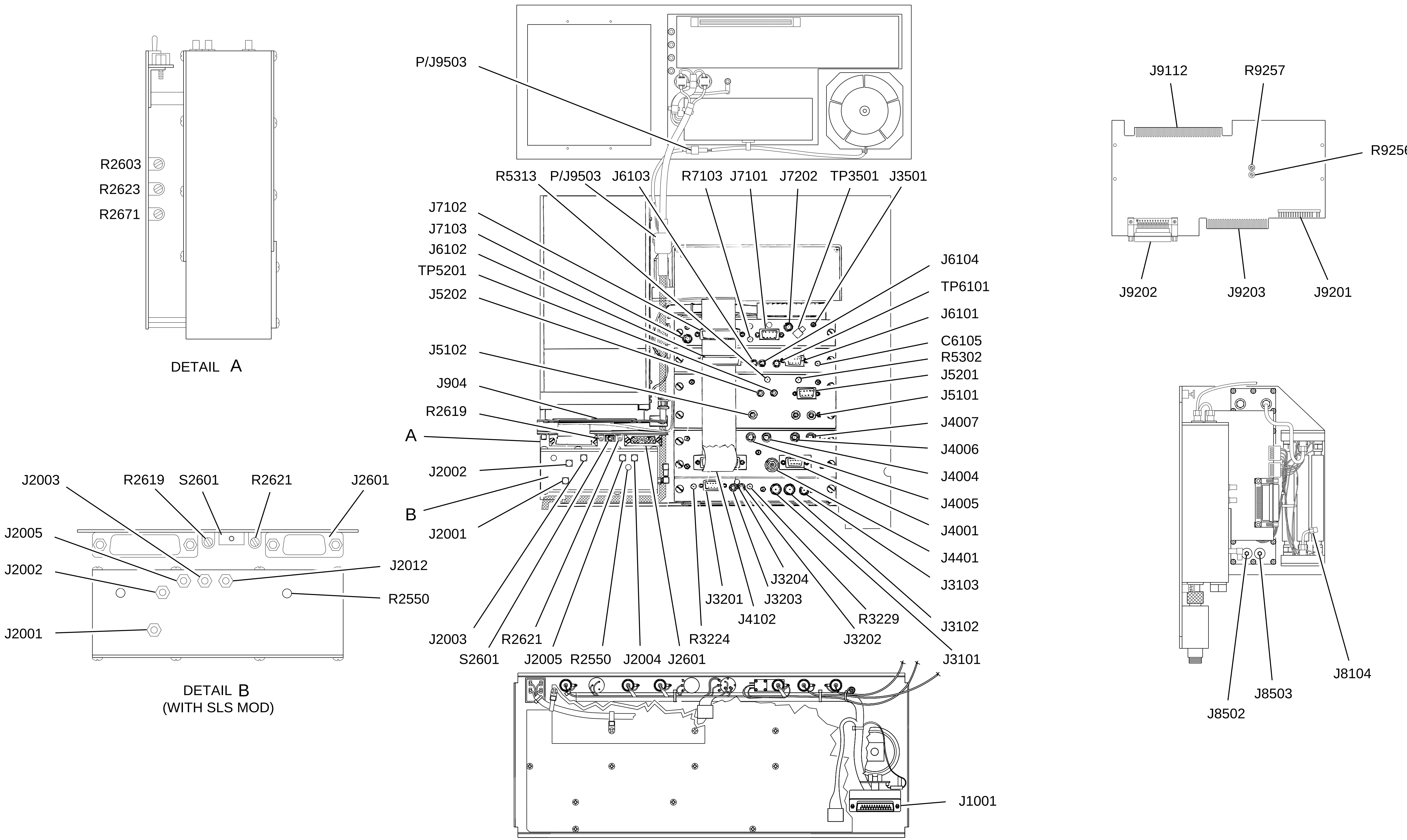
Adjustments require a non-conductive adjustment tool up to four inches (≈ten centimeters) in length.



Rear Panel Card Cage Assembly View
Figure 25

If this assembly is repaired or replaced, the following Calibration Procedures must be performed.	Power Supply	Counter Time Base	Cal Marks	RF Frequency Check and Level	TACAN AM	SLS Level	XPDR/DME Pulse Spacing and Shaping	XPDR/DME Window Width and Positioning	X and Y Channel Range and R-NAV Delay	50% Video Slicer and Transmitter Power	Discriminator Frequency	Parameter Verifications
Front Panel Assembly												
Microprocessor PC Board Assembly												
DME Range PC Board Assembly									●			
DME Reply PC Board Assembly								●	●			
DME Timing PC Board Assembly									●			
XPDR Control PC Board Assembly												
XPDR Decoder PC Board Assembly			●					●	●			
XPDR Pulse PC Board Assembly			●									
Motherboard PC Board Assembly				●	●							
200 MHz Generator Assembly				●	●	●	●		●			
ALC/Mixer Assembly				●	●	●						
RF Synthesizer Assembly				●								
Discriminator Assembly										●	●	
Counter Assembly		●										
Video Assembly										●	●	
RF Bulkhead Assembly				●	●	●				●	●	
Power Supply Assembly	●	●	●	●	●	●	●	●	●	●	●	●
Interface PC Board Assembly									●			
Rear Panel Assembly												

Assembly Replacement Requirements
Table 47



Location of Calibration Adjustments and Test Points
Figure 26

D. Calibration/Verification Procedures

(1) Power Supply

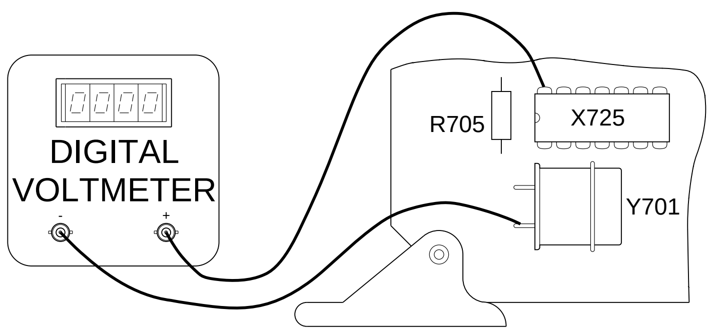
PREREQUISITES: None

TEST EQUIPMENT: 1 Digital Multimeter

SET-UP DIAGRAM: None

NOTE: During performance of this procedure, if a certain condition or specification cannot be verified, refer to appropriate assembly test procedure in 2-2-4 for testing and repair of faulty assembly.

STEP	PROCEDURE
1.	Verify on SW301 (XPDR Decoder PC Board Assembly), dip switch #1 is set to ***UP*** and dip switch #2 is set to ***DOWN*** (2-2-2, Figure 25).
2.	Verify on SW501 (DME Range PC Board Assembly), dip switch #1, #2 and #3 are set to ***UP*** and dip switch #4 is set to ***DOWN*** (2-2-2, Figure 25).
3.	Remove Microprocessor PC Board Assembly (2-2-2, Figure 25) part way out from Card Cage Assembly and connect Digital Multimeter positive lead to X725, pin 14 and negative lead to ground (2-2-2, Figure 27).



Microprocessor PC Board Assembly Detail
Figure 27

STEP	PROCEDURE
4.	Reinstall Microprocessor PC Board Assembly in Card Cage Assembly.
5.	Set ATC-1400A-2 POWER Switch to ***ON***. Verify ATC-1400A-2 front panel displays are in accordance with power-up self test in 2-2-4, Table 55.
6.	Allow a 10 minute warm-up period before proceeding.

STEP PROCEDURE

7. Verify voltage displayed on Digital Multimeter is 4.9 Vdc (±0.05 V). If not, adjust R9932 as follows:

   WARNING: THE FRONT AND REAR PANEL ASSEMBLIES CARRY 120 OR 240 VAC POTENTIAL WHEN THE POWER CORD IS CONNECTED TO THE ATC-1400A-2 AND EXTERNAL AC POWER SOURCE. DO NOT CONTACT THESE OR ANY ASSOCIATED COMPONENTS DURING CALIBRATION.

   - Set ATC-1400A-2 POWER Switch to ***OFF***.
   - Disconnect ac power cord from AC INPUT Connector.
   - Remove the bottom cover from the ATC-1400A-2 according to the disassembly procedure in 2-3-1D(1)(a).
   - Reconnect ac power cord to AC INPUT Connector.
   - Set ATC-1400-2A POWER Switch to ***ON***.
   - Adjust R9932 (+5 V Adjustment) through the small adjustment hole on the underside of the ATC-1400A-2 (directly underneath the Power Supply Assembly), as needed for 4.9 Vdc (±0.05 V).

8. Set ATC-1400A-2 POWER Switch to ***OFF***.

9 Remove Microprocessor PC Board Assembly (2-2-2, Figure 25) part way out of Card Cage Assembly. Disconnect Digital Multimeter leads.

10. Reinstall Microprocessor PC Board Assembly in Card Cage Assembly.

11. Set POWER Switch to ***ON***. Verify ATC-1400A-2 front panel displays are in accordance with power-up self test in 2-2-4, Table 55.

12. Connect Digital Multimeter positive lead to P/J7101, pin 1 and negative lead to P/J7101, pin 2. Refer to J7101 (2-2-2, Figure 26) on Video Assembly.

STEP	PROCEDURE

13. Verify voltage displayed on Digital Multimeter is 5 Vdc (±0.25 Vdc). If voltage exceeds 5.25 V, adjust R9932 as follows:

    WARNING: THE FRONT AND REAR PANEL ASSEMBLIES CARRY 120 OR 240 VAC POTENTIAL WHEN THE POWER CORD IS CONNECTED TO THE ATC-1400A-2 AND EXTERNAL AC POWER SOURCE. DO NOT CONTACT THESE OR ANY ASSOCIATED COMPONENTS DURING CALIBRATION.

    - Set ATC-1400A-2 POWER Switch to ***OFF***.
    - Disconnect ac power cord from AC INPUT Connector.
    - Remove the bottom cover from the ATC-1400A-2 according to the disassembly procedure in 2-3-1D(1)(a).
    - Reconnect ac power cord to AC INPUT Connector.
    - Set ATC-1400A-2 POWER Switch to ***ON***.
    - Adjust R9932 (+5 V Adjustment) through the small adjustment hole on the underside of the ATC-1400A-2 (directly underneath the Power Supply Assembly), as needed to set voltage ≤±5.25 Vdc.
    - Set ATC-1400A-2 POWER Switch to ***OFF***.
    - Repeat Steps 3 through 13 until Microprocessor PC Board Assembly voltage is 4.9 Vdc (±0.05 V) and Video Assembly voltage is ≤5.25 Vdc.

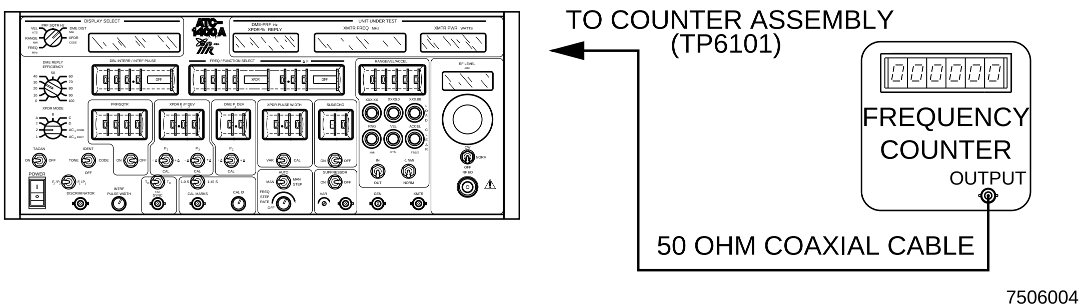
14. Disconnect Digital Multimeter positive lead from P/J7101, pin 1. Connect Digital Multimeter positive lead to P/J7101, pin 3. Refer to J7101 (2-2-2, Figure 26) on Video Assembly. Verify +12 Vdc (±0.2 V) is displayed on Digital Multimeter.
15. Disconnect Digital Multimeter positive lead from P/J7101, pin 3. Connect Digital Multimeter positive lead to P/J7101, pin 5. Refer to J7101 (2-2-2, Figure 26) on Video Assembly. Verify -12 Vdc (±0.5 V) is displayed on Digital Multimeter.
16. Disconnect Digital Multimeter positive lead from P/J7101, pin 5. Connect Digital Multimeter positive lead to P/J7101, pin 6. Refer to J7101 (2-2-2, Figure 26) on Video Assembly. Verify -5 Vdc (±0.2 V) is displayed on Digital Multimeter.
17. Set POWER Switch to ***OFF***.
18. Disconnect test equipment.
19. Reinstall all assemblies.

(2) Counter Time Base

PREREQUISITES: 2-2-2D(1) Power Supply

TEST EQUIPMENT: 1 Frequency Counter
1 50 Ω Coaxial Cable (BNC to SMB)

SET-UP DIAGRAM:



Counter Time Base Calibration Test Setup Diagram
Figure 28

NOTE: During performance of this procedure, if a certain condition or specification cannot be verified, refer to appropriate assembly test procedure in 2-2-4 for testing and repair of faulty assembly.

STEP	PROCEDURE
1.	Connect test equipment to ATC-1400A-2 as shown in 2-2-2, Figure 28.
2.	Set ATC-1400A-2 POWER Switch to ***ON***. Verify ATC-1400A-2 front panel displays are in accordance with power-up self test in 2-2-4, Table 55.
3.	Allow a 10 minute warm-up period.
4.	Verify frequency displayed on Frequency Counter is 5 MHz (±3 Hz). Adjust C6105 (Counter Assembly) (2-2-2, Figure 26) as needed for proper frequency.
5.	Set POWER Switch to ***OFF***.
6.	Disconnect test equipment.

(3) CAL MARKS

PREREQUISITES: 2-2-2D(1) Power Supply

TEST EQUIPMENT: 1 Frequency Counter
2 50 Ω Coaxial Cables (BNC to BNC)

SET-UP DIAGRAM: None

NOTE: During performance of this procedure, if a certain condition or specification cannot be verified, refer to appropriate assembly test procedure in 2-2-4 for testing and repair of faulty assembly.

STEP	PROCEDURE

1. Set ATC-1400A-2 controls as follows:

CONTROL	SETTING
CAL Ø Control	***CCW***
1.0 µs/1.45 µs Switch	***1.45 µs***
PRF/SQTR ON/OFF Switch	***OFF***
PRF/SQTR Thumbwheels	***0000***
FREQ/FUNCTION SELECT Thumbwheels	***1000 XPDR***

2. Connect Frequency Counter to CAL MARKS Connector (J19).
3. Set POWER Switch to ***ON***. Allow a 10 minute warm-up period.
4. Verify frequency displayed on Frequency Counter is 689655 Hz (±34 Hz).
5. Set CAL MARKS Switch to ***1.0 µs***.
6. Verify frequency displayed on Frequency Counter is 1 MHz (±50 Hz).
7. Remove Frequency Counter from CAL MARKS Connector (J19). Connect Oscilloscope to CAL MARKS Connector (J19). Set 1.0 µs/1.45 µs Switch to ***1.45 µs***.
8. Verify pulse width displayed on Oscilloscope is 0.45 µs at 50% point. Adjust R218 (XPDR Pulse PC Board Assembly) (CAL MARK Pulse Width Control) (2-2-2, Figure 25) as needed for proper pulse width.
9. Connect Oscilloscope External Trigger to SYNC Connector.
10. Set PRF/SQTR Thumbwheels to ***2000***, PRF/SQTR ON/OFF Switch to ***ON*** and TO/TAC/TD Switch to ***TO***.
11. Align leading edge of first pulse on left-most vertical graticule. Vary CAL Ø Control and verify pulses move a minimum of 360°.
12. Set POWER Switch to ***OFF***.
13. Disconnect test equipment.

(4) RF Check and Level

PREREQUISITES: 2-2-2D(1) Power Supply
2-2-2D(7) XPDR/DME Pulse Shaping

TEST EQUIPMENT:
1 Frequency Counter
1 Power Meter with 51075 Sensor
1 Spectrum Analyzer
1 Power Supply
1 50 Ω Coaxial Cable (BNC to Type N)
1 VSWR Bridge

SET-UP DIAGRAM: None

NOTE: During performance of this procedure, if a certain condition or specification cannot be verified, refer to appropriate assembly test procedure in 2-2-4 for testing and repair of faulty assembly.

STEP	PROCEDURE

1. Set ATC-1400A-2 controls as follows:

CONTROL	SETTING
CW/NORM/OFF Switch	***CW***
TACAN ON/OFF Switch	***OFF***
XPDR MODE Control	***A***
FREQ/FUNCTION/SELECT Thumbwheels	***1000 XPDR***
ΔF Thumbwheels	***000 OFF***

2. Connect Frequency Counter to RF I/O Connector (J15).
3. Set POWER Switch to ***ON***. Allow a 10 minute warm-up period.
4. Adjust RF LEVEL Control for 0 dBm as displayed on RF LEVEL -dBm Display.
5. Verify frequency displayed on Frequency Counter is 1000 MHz (±10 kHz).
6. Set FREQ/FUNCTION SELECT Thumbwheels to ***1090 XPDR***.
7. Remove Frequency Counter from RF I/O Connector (J15). Connect Power Meter to RF I/O Connector (J15).
8. Verify power level displayed on Power Meter is 0 dBm. Adjust R3229 (ALC/Mixer Assembly) (2-2-2, Figure 26) as needed for proper RF power level.
9. Remove SMB coaxial connector from J3202 (ALC/Mixer Assembly) (2-2-2, Figure 26). Verify RF power level (ALC headroom) increases minimum of 4 dB from level in Step 8.
10. Using external Power Supply, apply 5 Vdc to center conductor of J3202 (ALC/Mixer Assembly) (2-2-2, Figure 26). Verify RF output level decreases minimum of 4 dB from level in Step 8.
11. Remove external Power Supply from J3202. Reconnect coaxial cable to J3202.
12. Set FREQ/FUNCTION SELECT Thumbwheels to ***962 MHz***. Verify RF power level is 0 dB (±0.6 dB).
13. Disconnect coaxial cable from J3202. Verify RF power level (ALC headroom) increases minimum of 4 dBm from level in Step 12.
14. Using external Power Supply, apply 5 Vdc to center conductor of J3202 (ALC/Mixer Assembly) (2-2-2, Figure 26). Verify RF output level decreases minimum of 4 dB from level in Step 12.

STEP PROCEDURE

15. Remove external Power Supply from J3202. Reconnect coaxial cable to J3202.

16. Set FREQ/FUNCTION SELECT Thumbwheels to ***1213 MHz***. Verify RF power level is 0 dB (±0.6 dB).

17. Disconnect coaxial cable from J3202. Verify RF power level (ALC headroom) increases minimum of 4 dBm from level in Step 16.

18. Using external Power Supply, apply 5 Vdc to center conductor of J3202. Verify RF output level decreases a minimum of 4 dB from level in Step 16.

19. Remove external Power Supply from J3202.

20. Reconnect SMB coaxial connector to J3202.

21. Set FREQ/FUNCTION SELECT Thumbwheels to ***1090 XPDR***.

22. Verify RF power level displayed on Power Meter is 0 dBm. Adjust R3229 (ALC/Mixer Assembly) (2-2-2, Figure 26) as needed for proper RF power level.

23. Using Power Meter, verify RF power level as shown in 2-2-2, Table 48 for frequencies selected on FREQ/FUNCTION SELECT Thumbwheels.

FREQ/FUNCTION SELECT THUMBWHEELS SETTING	RF POWER OUTPUT
962 MHz	0 dBm (±0.6 dB)
1000 MHz	0 dBm (±0.6 dB)
1050 MHz	0 dBm (±0.6 dB)
1100 MHz	0 dBm (±0.6 dB)
1150 MHz	0 dBm (±0.6 dB)
1213 MHz	0 dBm (±0.6 dB)

RF Power Level versus Frequency
Table 48

24. Set FREQ/FUNCTION SELECT Thumbwheels to ***1090 MHz***.

25. Decrease RF LEVEL Control in 1 dB increments from ***0*** to ***-30 dBm***. Verify RF LEVEL -dBm display and Power Meter reflect same RF level (±0.3 dB).

26. Disconnect Power Meter from RF I/O Connector. Connect VSWR Bridge with Spectrum Analyzer to RF I/O Connector. Verify VSWR, on Spectrum Analyzer, is 1.2:1 from 1020 to 1155 MHz.

27. Disconnect VSWR Bridge from RF I/O Connector. Connect Spectrum Analyzer to RF I/O Connector. Set Spectrum Analyzer controls as follows:

CONTROL	SETTING
Center Frequency Control	1090 MHz
Sensitivity Control	2 dB/Div
Video Filter Control	300 Hz
Dispersion Control	50 kHz/Div
Bandwidth Control	30 kHz
Reference Level	-30 dBm
Sweep Control	20 ms/Div

STEP PROCEDURE

28. Decrease RF LEVEL Control in 1 dB increments from ***-30*** to ***-110 dBm***. Verify RF LEVEL -dBm Display and Spectrum Analyzer reflect same RF LEVEL (±0.5 dB from -30 to -90 dBm and ±2.5 dB from -90 to -110 dBm).

NOTE: Depending on Spectrum Analyzer used, a 30 dB Amplifier may be necessary on RF I/O Connector to display levels below -100 dBm.

29. Set ATC-1400A-2 controls as follows:

CONTROL	SETTING
RF LEVEL Control	***0 dBm***
CW/NORM/OFF Switch	***CW***
PRF/SQTR Thumbwheels	***0000***
FREQ/FUNCTION SELECT Thumbwheels	***1090 XPDR***

30. Set Spectrum Analyzer reference level to 0 dBm.

31. Adjust Spectrum Analyzer Center Frequency to position peak amplitude of CW signal at center of display.

32. Set CW/NORM/OFF Switch to ***OFF*** and Spectrum Analyzer Reference Level for -70 dB. Verify signal displayed on Spectrum Analyzer is ≥80 dBc.

33. Set CW/NORM/OFF switch to CW.

34. Set Spectrum Analyzer resolution to 50 kHz. Verify phase noise is 55 dBc at 150 kHz from center frequency.

35. Set FREQ/FUNCTION SELECT Thumbwheels to ***962 MHz X***. Set Spectrum Analyzer Center Frequency to 962 MHz. Verify phase noise is 55 dBc at 150 kHz from center frequency.

36. Set Spectrum Analyzer controls as follows:

CONTROL	SETTING
Sensitivity Control	***10 dB/Div***
Dispersion Control	***1 MHz/Div***
Sweep Control	***50 ms/Div***
Reference Level	***0 dBm***

NOTE: Do not overdrive Spectrum Analyzer vertical amplifier, as this gives a false indication of spurs on ATC-1400A-2 RF level output.

37. After verification of signal from ATC-1400A-2 is referenced at 0 dB, set Spectrum Analyzer reference level to -20 dB.

38. While tuning Spectrum Analyzer center frequency from 350 to 1800 MHz, verify any or all spurs appearing on display are 60 dBc.

39. Set FREQ/FUNCTION SELECT Thumbwheels to ***1100 MHz***.

40. While tuning Spectrum Analyzer center frequency from 350 to 1800 MHz, verify any or all spurs appearing on display are 60 dBc.

STEP	PROCEDURE
41.	Set FREQ/FUNCTION SELECT Thumbwheels to ***1200 MHz***.
42.	While tuning Spectrum Analyzer center frequency from 350 to 1800 MHz, verify any or all spurs appearing on display are 60 dBc.
43.	Set FREQ/FUNCTION SELECT Thumbwheels to ***1034 MHz***.
44.	Set Spectrum Analyzer center frequency to 834 MHz and verify all spurs appearing on display are 60 dBc.
45.	Set FREQ/FUNCTION SELECT Thumbwheels to ***1124 MHz***.
46.	Set Spectrum Analyzer center frequency to 924 MHz and verify all spurs appearing on display are 60 dBc.
47.	Set FREQ/FUNCTION SELECT Thumbwheels to ***1213 MHz***.
48.	Set Spectrum Analyzer center frequency to 1013 MHz and verify all spurs appearing on display are 60 dBc.
49.	Set ATC-1400A-2 controls as follows:

CONTROL	SETTING
RF LEVEL Control	***0 dBm***
PRF/SQTR Thumbwheels	***2700***
PRF/SQTR ON/OFF Switch	***ON***
FREQ/FUNCTION SELECT Thumbwheels	***1090 MHz X***

50. Set Spectrum Analyzer controls as follows:

CONTROL	SETTING
RF Input Level	-20 dBm
Frequency Tuning	1090 MHz
Freq Span/Div	200 kHz
Resolution Control	100 kHz
dB/Div	10 dB
Time/Div	As required

51. Connect Spectrum Analyzer to RF I/O Connector.
52. Adjust frequency tuning on Spectrum Analyzer so center of displayed signal is centered on display.
53. Set CW/NORM/OFF Switch to ***NORM***. Vary Spectrum Analyzer RF Input Level so display signal is at top graticule. Record amplitude of displayed signal.
54. Record amplitude of displayed signal at ±800 kHz from center frequency.
55. Subtract amplitude of signal noted in Step 54 from amplitude recorded in Step 53. Verify level difference is >60 dBc.
56. Set POWER Switch to ***OFF***.
57. Disconnect test equipment.

(5) TACAN AM

PREREQUISITES: 2-2-2D(1) Power Supply

TEST EQUIPMENT:
1 Oscilloscope
1 Modulation Meter
1 50 Ω Coaxial Cable (BNC to Type N)
1 50 Ω Coaxial Cable (BNC to BNC)

SET-UP DIAGRAM: None

NOTE: During performance of this procedure, if a certain condition or specification cannot be verified, refer to appropriate assembly test procedure in 2-2-4 for testing and repair of faulty assembly.

STEP	PROCEDURE

1. Set ATC-1400A-2 controls as follows:

CONTROL	SETTING
CW/NORM/OFF Switch	***CW***
DME DEV P_2/CAL Switch	***CAL***
T_O/TAC/T_D Switch	***TAC***
PRF/SQTR ON/OFF Switch	***ON***
IDENT TONE/OFF/CODE Switch	***OFF***
TACAN ON/OFF Switch	***OFF***
DME REPLY EFFICIENCY Control	***100%***
PRF/SQTR Thumbwheels	***2000***
FREQ/FUNCTION SELECT Thumbwheels	***1090 MHz Y***
ΔF Thumbwheels	***000 OFF***

2. Adjust RF LEVEL Control from -50 dBm to 3 dB past Lock-On, on Modulation Meter, approximately -25 dBm, as displayed on RF LEVEL -dBm Display.

   CAUTION: DO NOT OVERDRIVE INPUT TO MODULATION METER, AS THIS CAUSES ERRONEOUS % MODULATION READINGS ON THE MODULATION METER DISPLAY.

3. Connect Modulation Meter to RF I/O Connector.

4. Set Modulation Meter controls as follows:

CONTROL	SETTING
Tuning (Auto/Ext)	Auto
High Pass Filter (Hz)	300
Low Pass Filter (kHz)	3
Peak	Pk-Pk/2
Range	10
Function	kHz Deviation

5. Set POWER Switch to ***ON*** and allow 10 minute warm-up period.

6. Verify peak to peak FM is <5 kHz at 1090 MHz.

7. Set FREQ/FUNCTION SELECT Thumbwheels to ***962 MHz***. Verify peak to peak FM is ≤5 kHz.

8. Set FREQ/FUNCTION SELECT Thumbwheels to ***1213 MHz***. Verify peak to peak FM is ≤5 kHz.

9. Set TACAN ON/OFF Switch to ***ON***. Connect Oscilloscope external trigger to SYNC Connector (J20) and Oscilloscope Channel A, using X10 probe, to P3201, Pin 7 (ALC/Mixer Assembly) (2-2-2, Figure 26).

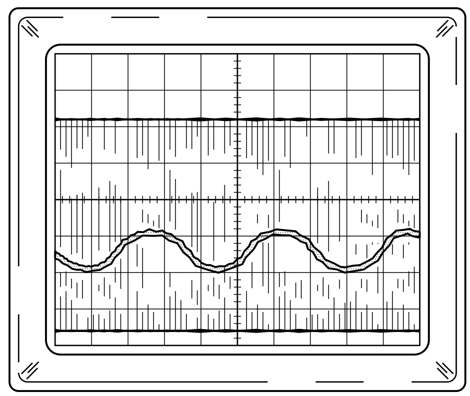
STEP PROCEDURE

10. Set Oscilloscope controls as follows:

CONTROL	SETTING
Vertical Sensitivity	0.05 V/Div
Coupling Switch	DC
Trigger Source Control	EXT SYNC
Sweep	2 ms/Div

11. Set CW/NORM/OFF Switch to ***NORM***.

12. Adjust R3224 (TACAN AM NULL Control) (ALC/Mixer Assembly) (2-2-2, Figure 26) for minimum ripple of waveform (top pulses) displayed on Oscilloscope (2-2-2, Figure 29).



7503001

Displayed Waveform with Minimum Ripple
Figure 29

13. Set CW/NORM/OFF Switch to ***CW***.

14. Set Modulation Meter Controls as follows:

CONTROL	SETTING
Tuning	Auto
High Pass Filter (Hz)	10
Low Pass Filter (kHz)	3
Peak	Pk-Pk/2
Range	100
Function	% AM

15. Press spring loaded S2601 (TACAN Test Switch) (200 MHz Generator Assembly) (2-2-2, Figure 26) to left-most position (***15 Hz***). Verify Modulation Meter displays 21% (±1%).

16. Press spring loaded S2601 (TACAN Test Switch) (200 MHz Generator Assembly) (2-2-2, Figure 26) to right-most position (***135 Hz***). Verify Modulation Meter displays 21% (±1%).

17. With SW2601 in center position (***both 15 and 135 Hz***), verify Modulation Meter displays 42% (±2%).

NOTE: Composite modulation may cause erroneous readings due to phase-lock circuitry in modulation meter.

18. Set POWER Switch to ***OFF***.

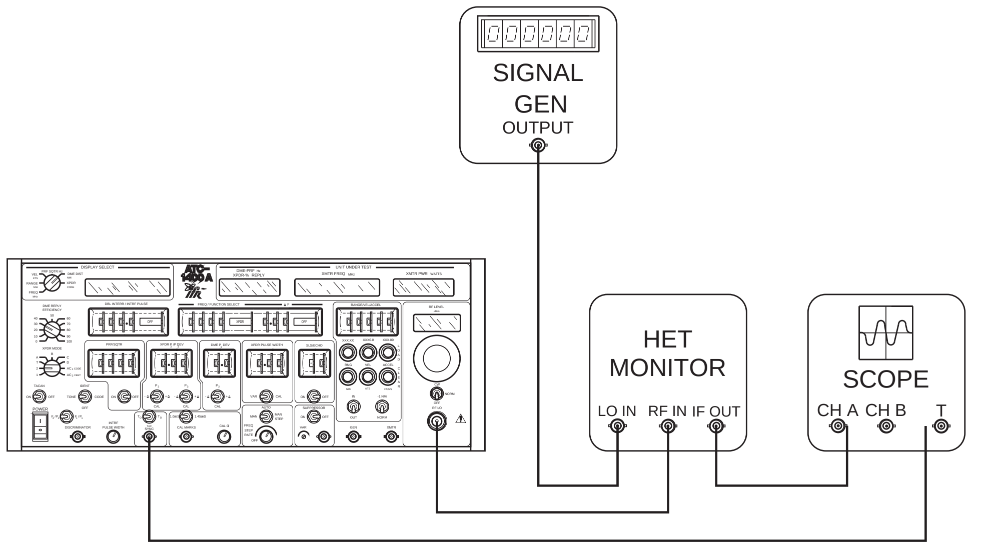
19. Disconnect test equipment.

(6) SLS Level

PREREQUISITES: 2-2-2D(1) Power Supply
2-2-2D(4) RF Check and Level

TEST EQUIPMENT:
1 Oscilloscope
1 Signal Generator
1 Heterodyne Monitor
3 50 Ω Coaxial Cables (BNC to BNC)
1 Power Meter with 57318 sensor

SET-UP DIAGRAM:



XPDR/DME Pulse Spacing and Shaping
Figure 30

NOTE: During performance of this procedure, if a certain condition or specification cannot be verified, refer to appropriate assembly test procedure in 2-2-4 for testing and repair of faulty assembly.

STEP PROCEDURE

1. Set ATC-1400A-2 controls as follows:

CONTROL	SETTING
CW/NORM/OFF Switch	***NORMAL***
SLS/ECHO ON/OFF Switch	***OFF***
XPDR PULSE WIDTH VAR/CAL Switch	***CAL***
FREQ STEP RATE Control	***OFF***
MAN/AUTO/MAN STEP Switch	***MAN***
XPDR DEV P_3/CAL Switch	***CAL***
XPDR DEV P_2/CAL Switch	***CAL***
TO/TAC/TD Switch	***TO***
PRF/SQTR ON/OFF Switch	***ON***
POWER Switch	***ON***
TACAN ON/OFF Switch	***OFF***
XPDR MODE Control	***A***
PRF/SQTR Thumbwheels	***1000***
FREQ/FUNCTION SELECT Thumbwheels	***1090 XPDR***
SLS/ECHO Thumbwheels	***-0***
RF LEVEL Control	***-10***

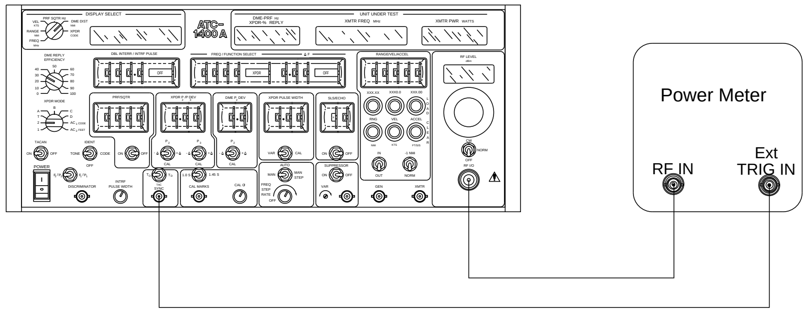
STEP PROCEDURE

2. Connect test equipment to ATC-1400A-2 as shown in 2-2-2, Figure 30.
3. Set Signal Generator for 1090 MHz at +5 dBm.
4. Set Oscilloscope controls as follows:

CONTROL	SETTING
Vertical Sensitivity Control	0.01 V/Div
Trigger Source Control	EXT SYNC Trigger

5. Using Vernier Control, position peak of positive going P_1 pulse on third horizontal axis (one graticule division above major horizontal axis). Adjust vertical vernier so P_1 pulse amplitude is five graticule divisions on Oscilloscope display.
6. Set Oscilloscope Vertical Sensitivity Control to **0.005 V/Div**.
7. Using positioning control, position peak of P_1 pulse on horizontal axis one graticule position from top of CRT display.
8. Set CW/NORM/OFF Switch to ***CW***. Verify difference between transponder pulse level and CW is ≤2%.
9. Set CW/NORM/OFF Switch to ***NORM***, FREQ/FUNCTION SELECT Thumbwheels to ***MHz X*** and TO/TAC/TD Switch to ***TD***.
10. Verify difference between DME pulse level and CW is ≤2%.
11. Set PRF/SQTR Thumbwheels to ***1010***. Record reference level. Set PRF/SQTR Thumbwheels to ***10*** and verify % change is ***<1%***.
12. Set TO/TAC/TD Switch to ***TO***, PRF/SQTR Thumbwheels to ***1010*** and FREQ/FUNCTION SELECT Thumbwheels to ***1090 XPDR***.
13. Record reference level. Set PRF/SQTR Thumbwheels to ***10*** and verify % change is <1%.
14. Using positioning control, position peak of P_1 pulse on horizontal axis one graticule from top of CRT display.
15. Set XPDR PULSE WIDTH VAR/CAL Switch to ***VAR*** and XPDR PULSE WIDTH Thumbwheels to ***0.20 μs***. Verify change in amplitude is <3%.
16. Set XPDR PULSE WIDTH Thumbwheels to ***0.45 μs***. Verify change in amplitude is <2%.
17. Disconnect test equipment and connect power meter sensor to ATC-1400A-2 RF I/O as shown in Figure 31.

STEP PROCEDURE



7506008

SLS Level Calibration Test Setup Diagram
Figure 31

18. Set ATC-1400A-2 controls as follows:

CONTROL	SETTING
SLS/ECHO ON/OFF Switch	***ON***
XPDR PULSE WIDTH VAR/CAL Switch	***CAL***
FREQ STEP RATE Control	***OFF***
MAN/AUTO/MAN STEP Switch	***MAN***
XPDR DEV P_3/CAL Switch	***CAL***
XPDR DEV P_2/CAL Switch	***CAL***
TO/TAC/TD Switch	***TO***
PRF/SQTR ON/OFF Switch	***ON***
XPDR MODE Control	***A***
PRF/SQTR Thumbwheels	***1000***
SLS/ECHO Thumbwheels	***-0***
RF LEVEL Control	***-10***

STEP PROCEDURE

19. Set Power Meter as follows:

CONTROL	SETTING
Measure	**Pulse Mode**
Offset	**0**
Frequency	**1090 MHz**
Averaging	**64**
Cal factor	**0.0**
Video Bandwidth	**High**
Vertical Span	**20 dB**
Vertical Center	**-10 dBm**
Unit Log	**dBm**
Resolution	**X.XXX**
Marker Mode	**Vertical**
Time Span	**5.0 uS**
Time Position	**Middle**
Time Delay	**2.0 uS**
Trig Level	**-10 dBm**
Trig Slope	**Positive**
Hold off	**0.00**
Trig Source	**Sensor 1**
Trig Mode	**Auto**

20. Push the “GRAPH’ button twice to get menu settings at top of screen.

STEP PROCEDURE

21. Push the left or right arrow key until ‘Marker 1” selection appears.

22. Push the up or down arrow key to center Marker 1 in the middle of the first pulse.

23. Push the left or right arrow key until ‘Marker 2” selection appears.

24. Push the up or down arrow key to center Marker 2 in the middle of the second pulse.

25. Push the “GRAPH’ button once to get marker readings at top of screen.

26. Subtract the Marker 2 reading from the Marker 1 reading to determine the level difference between P_1 and P_2. Verify level of P_2 (SLS Pulse) is equal to P_1 pulse. Adjust R2671 (SLS Calibration Adjust) (200 MHz Control PC Board Assembly, 2-2-2 Figure 26) as needed for proper results.

27. Set SLS Thumbwheel switches to -19 dB.

28. Verify level of P2 Pulse is 19 dB (± 0.5 dB) below P1 level. Adjust R2550 (-19 dB) on the Modulation/Leveler Assembly in the 200 MHz Control PC Board Assembly (2-2-2 Figure 26) as needed for proper results.

NOTE: It may be necessary to alternately repeat Steps 26 and 28, as the adjustments are interactive and adjusting one SLS level may affect the other SLS level.

29. Set SLS/ECHO Thumbwheels to levels shown in 2-2-2, Table 49 and verify SLS pulse levels in 2-2-2, Table 49.

SLS/ECHO THUMBWHEELS SETTING	ACCEPTABLE SLS PULSE LEVEL (NONCOHERENT SLS)	ACCEPTABLE SLS PULSE LEVEL (SLS)
0 dB	reference with P_1 (±0.5 dB)	reference with P_1 (±0.2 dB)
-5 dB	-5 dB (±0.5 dB)	-5 dBm (±0.2 dB)
-10 dB	-10 dB (±0.5 dB)	-10 dBm (±0.2 dB)
3 dB	+3 dB (±0.5 dB)	+3 dBm (±0.2 dB)
6 dB	+6 dB (±0.5 dB)	+6 dBm (±0.5 dB)

SLS Pulse Level Chart
Table 49

30. Set SLS/ECHO ON/OFF Switch to ***OFF*** and RF LEVEL Control to ***-10 dB***.

31. Disconnect Power Meter Sensor from ATC-1400A-2 RF I/O.

32. Set POWER Switch to ***OFF***.

33. Disconnect test equipment.

(7) XPDR/DME Pulse Spacing and Shaping

PREREQUISITES: 2-2-2D(1) Power Supply

TEST EQUIPMENT:
1 Oscilloscope
1 Signal Generator
1 Heterodyne Monitor
3 50 Ω Coaxial Cables (BNC to BNC)

SET-UP DIAGRAM: 2-2-2, Figure 30

NOTE: During performance of this procedure, if a certain condition or specification cannot be verified, refer to appropriate assembly test procedure in 2-2-4 for testing and repair of faulty assembly.

STEP PROCEDURE

1. Set ATC-1400A-2 controls as follows:

CONTROL	SETTING
CW/NORM/OFF Switch	***NORM***
SLS/ECHO ON/OFF Switch	***OFF***
XPDR PULSE WIDTH VAR/CAL Switch	***CAL***
FREQ STEP RATE Control	***OFF***
MAN/AUTO/MAN STEP Switch	***MAN***
XPDR DEV P_3/CAL Switch	***CAL***
XPDR DEV P_2/CAL Switch	***CAL***
T_O/TAC/T_D Switch	***T_O***
PRF/SQTR ON/OFF Switch	***ON***
XPDR MODE Control	***A***
PRF/SQTR Thumbwheels	***2000***
FREQ/FUNCTION SELECT Thumbwheels	***1090 XPDR***
SLS/ECHO Thumbwheels	***-0***

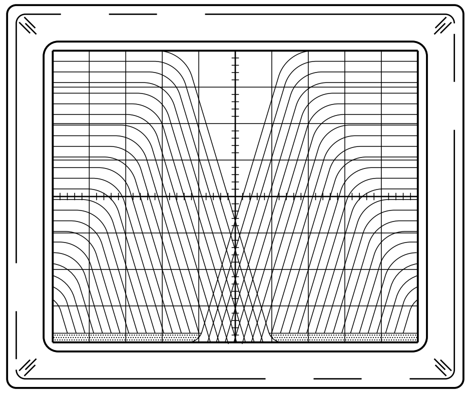
2. Connect test equipment to ATC-1400A-2 as shown in 2-2-2, Figure 30.
3. Set POWER Switch to ***ON*** and allow 10 minute warm-up period.
4. Adjust RF LEVEL Control for ***-12 dBm*** as displayed on RF LEVEL -dBm Display.
5. Set Oscilloscope controls as follows:

CONTROL	SETTING
Vertical Sensitivity Control	0.005 V/Div
Trigger Source Control	EXT SYNC Trigger
Main Sweep	5 µs/Div

6. Adjust vertical Vernier Control for a 0 to 100% full display of P_1 pulse on Oscilloscope.
7. Set Oscilloscope Time Switch to ON and Sweep Delay Control to 0.05 µs/Div.
8. Verify P_1 pulse rise and fall time, from 10% to 90% point, is 70 ns (+10 ns, -20 ns).

STEP	PROCEDURE

9. Using Oscilloscope start and stop controls, cross leading and trailing edge of P_1 pulse at 50% point (2-2-2, Figure 32). Verify pulse width is 0.8 µs (±5 ns). Adjust R2603 (XPDR Pulse Width Adjust) (200 MHz Control PC Board Assembly) (2-2-2, Figure 26) as needed for proper results.



7503002

XPDR P_1 Pulse with Leading and Trailing Edges Crossed at 50% Points
Figure 32

10. Set XPDR PULSE WIDTH VAR/CAL Switch to ***VAR*** and XPDR PULSE WIDTH Thumbwheels to ***0.20 µs***. Verify pulse width is 0.2 µs (±5 ns).

11. Set XPDR PULSE WIDTH Thumbwheels to ***1.85 µs***. Verify pulse width is 1.85 µs (±5 ns).

12. Set XPDR PULSE WIDTH VAR/CAL Switch to ***CAL***. Verify XPDR pulse spacing displayed on Oscilloscope for XPDR MODE Control is within tolerance as follows:

SETTING	PULSE SPACING
Mode 1	3.0 µs (±5 ns)
Mode 2	5.0 µs (±5 ns)
Mode T	6.5 µs (±5 ns)
Mode A/Mode 3	8.0 µs (±5 ns)
Mode B	17.0 µs (±5 ns)
Mode C	21.0 µs (±5 ns)
Mode D	25.0 µs (±5 ns)

13. Set SLS/ECHO ON/OFF Switch to ***ON***. Verify P_1 to P_2 pulse spacing is 2 µs (±5 ns).

14. Set XPDR P_2/P_3 DEV Thumbwheels to ***1.85*** and XPDR DEV P_2/CAL Switch to ***+Δ***. Verify P_1 to P_2 pulse spacing is 3.85 µs (±5 ns).

15. Set XPDR P_2/P_3 DEV Thumbwheels to ***0.90*** and XPDR DEV P_2/CAL Switch to ***-Δ***. Verify P_1 to P_2 pulse spacing is 1.10 µs (±5 ns).

16. Step XPDR P_2/P_3 DEV Thumbwheels from ***0.90*** to ***0.00 µs*** and verify P_1 to P_2 pulse spacing steps from 1.10 to 2.00 µs in 0.05 µs steps.

17. Set XPDR DEV P_2/CAL Switch to ***+Δ*** and step XPDR P_2/P_3 DEV Thumbwheels from ***0.00*** to ***1.85 µs***. Verify P_1 to P_2 pulse spacing steps from 2.00 to 3.85 µs in 0.05 µs steps.

STEP PROCEDURE

18. Set ATC-1400A-2 controls as follows:

CONTROL	SETTING
SLS/ECHO ON/OFF Switch	***OFF***
XPDR DEV P_3/CAL Switch	***+Δ***
XPDR DEV P_2/CAL Switch	***CAL***
XPDR MODE Control	***A***

19. Verify P_1 to P_3 pulse spacing is 9.85 µs (±5 ns).

20. Set XPDR DEV P_3/CAL Switch to ***-Δ***. Verify P_1 to P_3 pulse spacing is 6.15 µs (±5 ns).

21. Step XPDR P_2/P_3 DEV Thumbwheels from ***1.85*** to ***0.00 µs*** and verify P_1 to P_3 pulse spacing steps from 6.15 to 8.00 µs in 0.05 µs steps.

22. Set XPDR DEV P_3/CAL Switch to ***+Δ*** and step XPDR P_2/P_3 DEV Thumbwheels from ***0.00*** to ***1.85 µs***. Verify P_1 to P_3 pulse spacing steps from 8.00 to 9.85 µs in 0.05 µs steps.

23 Set XPDR DEV P_3/CAL Switch to ***CAL***.

24. Set DBL INTERR/INTRF PULSE Thumbwheels to ***17.5 INTERF-***. Verify on Oscilloscope a pulse is positioned 17.5 µs (±0.05 µs) before leading edge of P_1.

25. Set DBL INTERR/INTRF PULSE Thumbwheels to ***100.0 INTERF+***. Verify on Oscilloscope a pulse is positioned 100 µs (±0.05 µs) after leading edge of P_1.

26. Set DBL INTERR/INTRF PULSE Thumbwheels to ***399.0 INTERF+***. Verify on Oscilloscope a pulse is positioned 399 µs (±0.05 µs) after leading edge of P_1.

27. While stepping SLS/ECHO Thumbwheels from ***0*** to ***9*** and from ***-0*** to ***-9***, verify on Oscilloscope interference pulse follows in amplitude.

28. Set INTRF PULSE WIDTH Control ***fully ccw*** and DBL INTERR/INTRF PULSE Thumbwheels to ***50.0***. Verify on Oscilloscope interference pulse is <0.2 µs wide.

29. Set INTRF PULSE WIDTH Control ***fully cw***. Verify on Oscilloscope interference pulse is >5 µs.

30. Set DBL INTERR/INTRF PULSE Thumbwheels to ***035.0 DOUBLE***. Verify on Oscilloscope P_1 of second interrogation pulse occurs 35.0 µs (±1.05 µs) after leading edge of P_1 of first interrogation.

31. Set DBL INTERR/INTRF PULSE Thumbwheels to ***100.0 DOUBLE***. Verify on Oscilloscope P_1 of second interrogation pulse occurs 100 µs (±3 µs) after leading edge of P_1 of first interrogation.

32. Set SUPPRESSOR ON/OFF Switch to ***ON***. Verify first interrogation disappears, suppressor pulse occurs at previous position of P_3 and second interrogation moves so DBL INTERR/INTRF PULSE Thumbwheels reflect spacing between suppressor and P_1 of second interrogation.

33 Set SUPPRESSOR ON/OFF Switch to ***OFF***.

34. Set DBL INTERR/INTRF PULSE Thumbwheels to ***399.9 DOUBLE*** and PRF/SQTR Thumbwheels to ***1000***. Verify P_1 of second interrogation occurs 399.9 µs (±12 µs) after leading edge of P_1 of first interrogation.

STEP PROCEDURE

35. Set ATC-1400A-2 controls as follows:

CONTROL	SETTING
DME DEV P_2/CAL Switch	***CAL***
T_O/TAC/T_D Switch	***T_D***
PRF SQTR ON/OFF Switch	***OFF***
IDENT TONE/OFF/CODE Switch	***OFF***
TACAN ON/OFF Switch	***OFF***
DBL INTERR/INTRF Pulse Thumbwheels	***000.0 OFF***
FREQ/FUNCTION SELECT Thumbwheels	***1090 MHz Y***
SELF-INTERR/OFF Switch	***ON***

36. Set Oscilloscope Sweep delay counter to 0.5 µs/Div and Main Sweep to 10 µs.

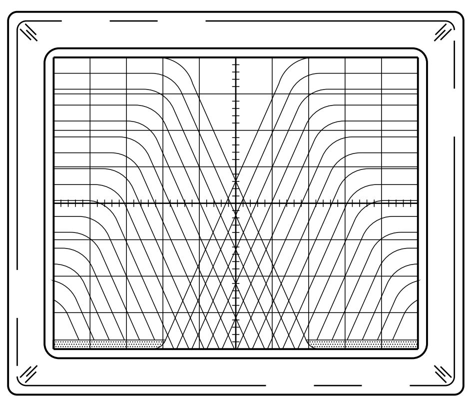
37. Adjust Vertical Vernier Control to position peak of P_1 pulse for 0 to 100% on Oscilloscope display.

38. Verify P_1 pulse rise time, from 10% to 90% point, is 2.0 µs (±0.25 µs).

39. Verify P_1 pulse fall time, from 10% to 90% point, is 2.5 µs (±0.25 µs).

40. Using Oscilloscope start and stop controls, cross leading and trailing edges of P_1 pulse at 50% point (2-2-2, Figure 33). Verify pulse width at 50% point is 3.5 µs (±0.5 µs). Adjust R2623 (Pulse Width Adjust) on 200 MHz Control PC Board Assembly (2-2-2, Figure 26) as needed for proper results of Steps 38, 39 and 40.

NOTE: If R2623 is adjusted, repeat Steps 35 through 37. If Steps 38, 39, and 40 cannot all be satisfied, refer to assembly testing.



7503003

DME P_1 Pulse with Leading and Trailing Edges Crossed at 50% Points
Figure 33

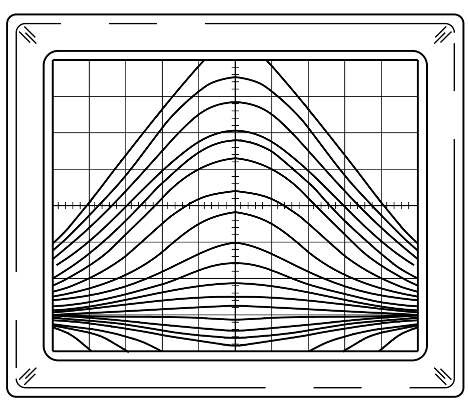
41. Set FREQ/FUNCTION SELECT Thumbwheels to ***1090 MHz X***. Verify on Oscilloscope P_1 to P_2 pulse spacing is 12 µs (±0.1 µs).

42. Set FREQ/FUNCTION SELECT Thumbwheels to ***1090 MHz Y***. Verify on Oscilloscope P_1 to P_2 pulse spacing is 30 µs (±0.1 µs).

43. Set DME DEV P_2/CAL Switch to ***+Δ***. While incrementing DME P_2 DEV Thumbwheels from ***0*** to ***7.9 µs***, verify P_2 pulse tracks in 0.1 µs steps.

44. Set DME DEV P_2/CAL Switch to ***-Δ***. While decrementing DME P_2 DEV Thumbwheels from ***7.9*** to ***0 µs***, verify P_2 pulse tracks in 0.1 µs steps.

STEP	PROCEDURE
45.	Set DME DEV P_2/CAL Switch to ***+Δ*** and DME P_2 DEV Thumbwheels to ***1.0***.
46.	Verify P_1 to P_2 pulse spacing is 31.0 µs (±0.1 µs).
47.	Set DME DEV P_2/CAL Switch to ***-Δ***. Verify P_1 to P_2 pulse spacing is 29 µs (±0.1 µs).
48.	Set DME P_2 DEV Thumbwheels to ***7.9 µs***. Verify P_1 to P_2 pulse spacing is 22.1 µs (±0.1 µs).
49.	Set DME DEV P_2/CAL Switch to ***+Δ***. Verify P_1 to P_2 pulse spacing is 37.9 µs (±0.1 µs).
50.	Set FREQ/FUNCTION SELECT Thumbwheels to ***1090 MHz X*** and DME P_2 DEV Thumbwheels to ***1.0 µs***. Verify P_1 to P_2 pulse spacing is 13 µs (±0.1 µs).
51.	Set DME DEV P_2/CAL Switch to ***-Δ***. Verify P_1 to P_2 pulse spacing is 11 µs (±0.1 µs).
52.	Set DME P_2 DEV Thumbwheels to ***5.0 µs***. Verify P_1 to P_2 pulse spacing is 7.0 µs (±0.1 µs)).
53.	Set DME DEV P_2/CAL Switch to ***+Δ*** and DME P_2 DEV Thumbwheels to ***7.9 µs***. Verify P_1 to P_2 pulse spacing is 19.9 µs (±0.1 µs).
54.	Set CW/NORM/OFF Switch to ***CW*** and RF LEVEL Control to ***0 dBm***.
55.	Connect Frequency Counter to RF I/O Connector. Record CW frequency output.
56.	Disconnect Frequency Counter from RF I/O Connector.
57.	Set CW/NORM/OFF Switch to ***NORM*** and RF LEVEL Control to ***-12 dBm***.
58.	Connect Heterodyne Monitor to RF I/O Connector.
59.	Connect Variable Frequency Generator to Heterodyne Monitor LO Connector. Adjust Variable Frequency Generator for a zero beat of DME pulse as seen on Oscilloscope. (Refer to 2-2-2, Figure 34 for typical display of frequency zero beat waveform.)



7503004

DME Pulse Zero Beat Waveform
Figure 34

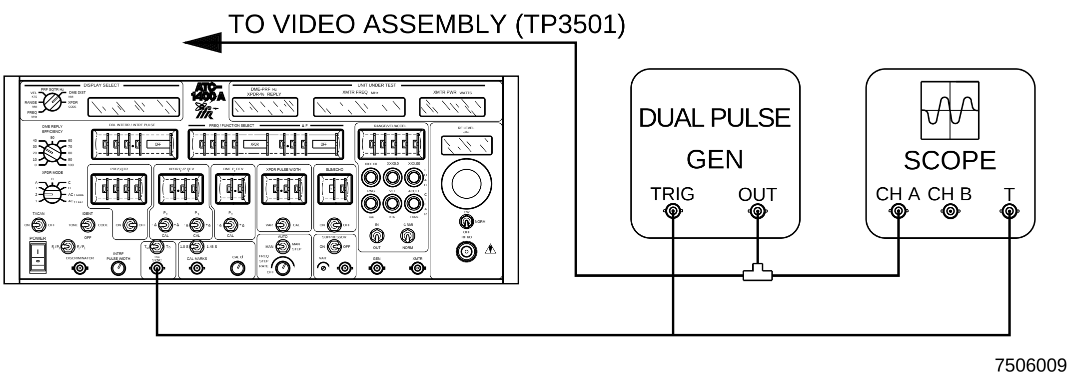
STEP	PROCEDURE
60.	Record DME Pulse Frequency of Variable Pulse Generator.
61.	Subtract DME Pulse Frequency recorded in Step 60 from CW frequency recorded in Step 55. Verify difference is <10 kHz.
62.	Set POWER Switch to ***OFF***.
63.	Disconnect test equipment.

(8) XPDR/DME Window Width and Positioning

PREREQUISITES: 2-2-2D(1) Power Supply

TEST EQUIPMENT:
1 Dual Pulse Generator
1 GPIB Controller
1 Oscilloscope
1 50 Ω Coaxial Cable (BNC to BNC)
1 50 Ω Coaxial Cable (BNC to SMA)
1 50 Ω BNC Tee Connector
1 Computer/Controller (GPIB Mode)

SET-UP DIAGRAM:



XPDR Window Width and Positioning Calibration Test Setup Diagram
Figure 35

NOTE: During performance of this procedure, if a certain condition or specification cannot be verified, refer to appropriate assembly test procedure in 2-2-4 for testing and repair of faulty assembly.

STEP PROCEDURE

1. Set ATC-1400A-2 controls as follows:

CONTROL	SETTING
MAN/AUTO/MAN STEP Switch	***MAN***
DISPLAY SELECT Control	***XPDR CODE***
FREQ/FUNCTION SELECT Thumbwheels	***1090 MHz-X***
DECODER WIDE/NARROW Switch	***NARROW***
SELF-INTERR/OFF Switch	***OFF***

2. Connect test equipment to ATC-1400A-2 as shown in 2-2-2, Figure 35.

3. Set POWER Switch to ***ON*** and allow 10 minute warm-up period.

4. Set Dual Pulse Generator controls as follows:

CONTROL	SETTING
PRF Control	150 Hz
Amplitude Control	-1.2 V Peak
Pulse Width Control	0.8 µs
Spacing Control	12.00 µs

5. Verify "F" is not displayed in left-most digit of DME-PRF Hz/XPDR-%REPLY Display.

STEP PROCEDURE

6. Set Dual Pulse Generator CAL/Vernier Switch to Vernier and output pulse spacing to 11.30 µs. Decrease or increase output pulse spacing until a flashing "F" is displayed on DME-PRF Hz/XPDR-%REPLY Display.

7. Verify spacing between two pulses is 11.25 µs (±0.1 µs).

8. Set Dual Pulse Generator CAL/Vernier Switch to CAL and output pulse spacing for 12.7 µs.

9. Set Dual Pulse Generator CAL/Vernier Switch to Vernie***r***. Increase or decrease output pulse spacing until a flashing "F" is displayed on DME-PRF Hz XPDR - % REPLY Display.

10. Verify spacing between two pulses is 12.75 µs (±0.1 µs).

11. If proper results cannot be obtained in Steps 5 through 10, perform Steps 12 through 14. When results are obtained go to Step 15.

12. Adjust Dual Pulse Generator output pulse spacing for 11.25 µs.

13. Adjust R412 (12 µs Decoder Adjust) (2-2-2, Figure 25) to threshold where "F" just disappears in left-most digit of DME-PRF Hz/XPDR-%REPLY Display.

14. Repeat procedures in Steps 5 through 10.

15. Set FREQ/FUNCTION SELECT Thumbwheels to ***1090 MHz Y***.

16. Set Dual Pulse Generator CAL/Vernier Switch to CAL and output pulse spacing for 36.0 µs.

17. Verify a "F" is not displayed in DME-PRF Hz/XPDR-%REPLY Display.

18. Set Dual Pulse Generator CAL/Vernier Switch to Vernier and output pulse spacing to 35.3 µs. Decrease or increase output pulse spacing until a flashing "F" is displayed on DME-PRF Hz/XPDR-%REPLY Display.

19. Verify spacing between two pulses is 35.25 µs (±0.1 µs).

20. Set Dual Pulse Generator CAL/Vernier Switch to CAL and output pulse spacing for 36.7 µs.

21. Set Dual Pulse Generator CAL/Vernier Switch to Vernier. Increase or decrease output pulse spacing until a flashing "F" is displayed on DME PRF Hz/XPDR-%REPLY Display.

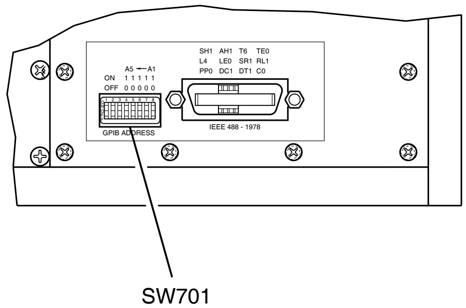
22. Verify spacing between two pulses is 36.75 µs (±0.1 µs).

23. If proper results cannot be obtained in Steps 16 through 22, perform Steps 24 through 26, otherwise go to Step 27.

24. Set Dual Pulse Generator output pulse spacing for 35.25 µs.

25. Set R419 (36 µs Decoder Adjust) (2-2-2, Figure 25) to threshold where "F" just disappears in left-most digit of DME-PRF Hz/XPDR-%REPLY Display.

26. Repeat procedures in Steps 16 through 22.



0103

STEP	PROCEDURE

27. Ensure Switch 3 of SW701 (Rear Panel) is set to ON.

NOTE: If Switch 3 is not set to ON, switch ATC-1400A OFF, then ON to obtain proper operation.

28. Using external controller in GPIB mode, go to monitor mode by keying letter 0 and WDCF940 for narrow window. Verify TP403 (2-2-2, Figure 25) is high (invalid pair detection).

29. Set Dual Pulse Generator CAL/Vernier Switch to CAL and output pulse spacing for 24.0 µs.

30. Verify TP403 is low.

31. Set Dual Pulse Generator CAL/Vernier Switch to Vernier and output pulse spacing to 23.3 µs. Decrease or increase output pulse spacing until TP403 goes high.

32. Verify spacing between two pulses is 23.25 µs (±0.1 µs).

33. Set Dual Pulse Generator CAL/Vernier Switch to CAL and output pulse spacing for 24.7 µs.

34. Set Dual Pulse Generator CAL/Vernier Switch to Vernier. Increase or decrease output pulse spacing until TP403 goes high.

35. Verify spacing between two pulses is 24.75 µs (±0.1 µs).

36. If proper results cannot be obtained in Steps 27 through 35, perform Steps 37 through 39. When results are obtained go to Step 40.

37. Set Dual Pulse Generator output pulse spacing for 23.25 µs.

38. Set R417 (24 µs Decoder Adjust) (2-2-2, Figure 25) to threshold where TP403 goes high.

39. Repeat procedures in Steps 29 through 35.

40. Type "Q" and "!" to return to local mode.

41. Set DECODER WIDE/NARROW Switch to ***WIDE***.

42. Set Dual Pulse Generator CAL/Vernier Control Switch to CAL and output pulse spacing for 33.5 µs.

43. Set Dual Pulse Generator CAL/Vernier Switch to Vernier. Decrease or increase output pulse spacing until a flashing "F" is displayed on DME-PRF Hz/ XPDR % - REPLY Display.

44. Verify spacing between two pulses is 33.5 μs (±0.4 μs).

45. Set Dual Pulse Generator CAL/Vernier to CAL and output pulse spacing for 38.5 μs.

46. Set Dual Pulse Generator CAL/Vernier Switch to Vernier. Increase or decrease output pulse spacing until a flashing "F" is displayed on DME-PRF Hz/ XPDR - % REPLY Display.

47. Verify spacing between two pulses is 38.5 μs (±0.4 μs).

48. Using external controller in GPIB Mode, go to monitor mode by keying letter 0 and WDCF950 for wide window. Verify TP403 is high (invalid pair detection).

49. Set Dual Pulse Generator CAL/Vernier Control Switch to CAL position and output pulse spacing for 21.5 μs.

50. Set Dual Pulse Generator CAL/Vernier Switch to Vernier. Decrease or increase output pulse spacing until TP403 goes high.

51. Verify spacing between two pulses is 21.5 μs (±0.4 μs).

52. Set Dual Pulse Generator CAL/Vernier to CAL and output pulse spacing for 26.5 μs.

53. Set Dual Pulse Generator CAL/Vernier Switch to Vernier. Increase or decrease output pulse spacing until TP403 goes high.

54. Verify spacing between two pulses is 26.5 μs (±0.4 μs).

55. Type "Q" and "!" to return to local mode.

56. Set FREQ/FUNCTION SELECT Thumbwheels to ***1090 MHz X***.

57. Set Dual Pulse Generator CAL/Vernier Switch to CAL and output pulse spacing to 9.5 μs.

58. Set Dual Pulse Generator CAL/Vernier Switch to Vernier. Decrease or increase output pulse spacing until a flashing "F" is displayed on DME-PRF Hz/XPDR-%REPLY Display.

59. Verify spacing between two pulses is 9.5 μs (±0.4 μs).

60. Set Dual Pulse Generator output pulse spacing to 14.5 μs**.**

61. Increase or decrease output pulse spacing until a flashing "F" is displayed on DME-PRF Hz/XPDR-%REPLY Display.

62. Verify spacing between two pulses is 14.5 μs (±0.4 μs).

63. Set FREQ/FUNCTION SELECT Thumbwheels to ***1090 XPDR*** and PRF/SQTR Thumbwheels to ***1000***, PRF/SQTR ON/OFF Switch to ON.

64. Trigger dual pulse generator on falling edge of TO Sync.

65. Verify ***100*** is displayed on DME-PRF Hz/XPDR-%REPLY Display.

66. Set Dual Pulse Generator output pulse spacing for 20.3 μs. Verify "F" is not displayed in leftmost digit of DISPLAY SELECT Readout.

67. Slowly decrease Dual Pulse Generator output pulse spacing to threshold where "F" just appears on DISPLAY SELECT Readout.

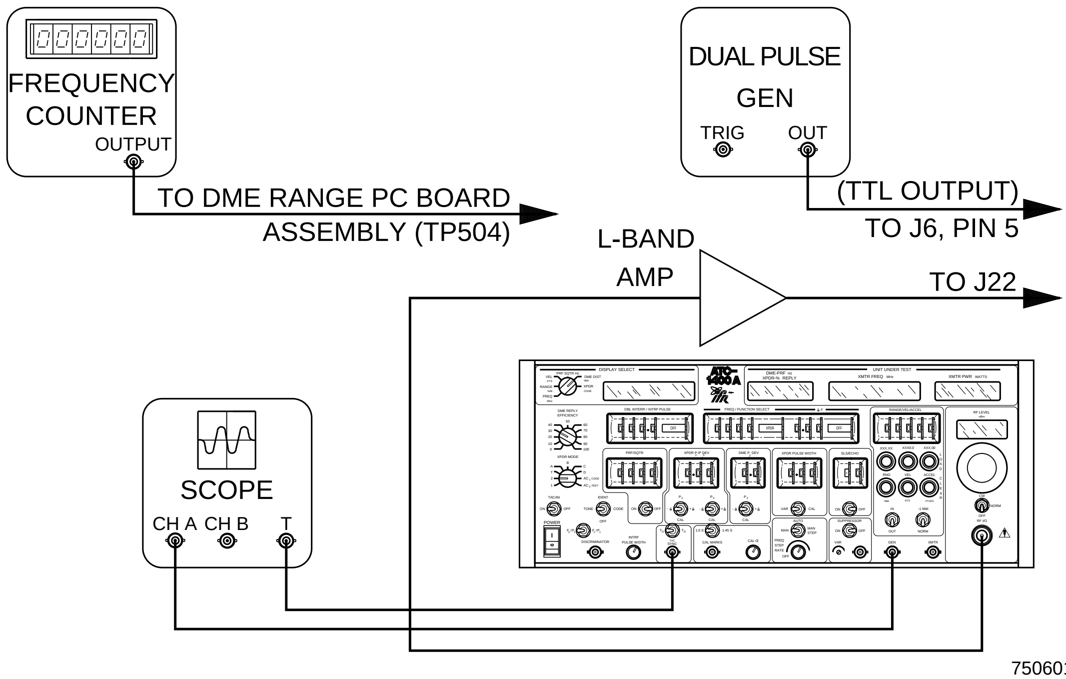
STEP	PROCEDURE
68.	Using Oscilloscope, verify pulse spacing is 19.9 µs (±0.15 µs).
69.	Slowly increase Dual Pulse Generator output pulse spacing to threshold where "F" disappears, then just reappears on DISPLAY SELECT Readout.
70.	Using Oscilloscope, verify pulse spacing is 20.8 µs (±0.15 µs).
71.	Set DECODER WIDE/NARROW Switch to ***NARROW***.
72.	Set Dual Pulse Generator output pulse spacing for 20.19 µs (±10 ns).
73.	Adjust R327 (Window Position Adjust) (2-2-2, Figure 25) as needed until "F" appears at one half brightness (flickering) on DISPLAY SELECT Readout.
74.	Set Dual Pulse Generator output pulse spacing for 20.410 µs (±10 ns).
75.	Adjust R330 (Window Width Adjust) (2-2-2, Figure 25) as needed until "F" appears at one half brightness (flickering) on DISPLAY SELECT Readout.
76.	Set POWER Switch to ***OFF***.
77.	Disconnect test equipment.

(9) X and Y Channel Range and R-NAV Delay

PREREQUISITES: 2-2-2D(1) Power Supply

TEST EQUIPMENT:
1 Frequency Counter
1 Dual Pulse Generator
1 Oscilloscope
3 50 Ω Coaxial Cables (BNC to BNC)
1 50 Ω Coaxial Cable (BNC to Type N)
1 50 Ω Coaxial Cable (BNC to E-Z Hook)
1 L-Band Amplifier

SET-UP DIAGRAM:



X and Y Channel Range and R-NAV Delay Calibration Test Setup Diagram
Figure 36

NOTE: During performance of this procedure, if a certain condition or specification cannot be verified, refer to appropriate assembly test procedure in 2-2-4 for testing and repair of faulty assembly.

STEP PROCEDURE

1. Set ATC-1400A-2 controls as follows:

CONTROL	SETTING
SLS/ECHO ON/OFF Switch	***OFF***
DME DEV P_2/CAL Switch	***-Δ***
T_O/TAC/T_D Switch	***T_D***
PRF/SQTR ON/OFF Switch	***OFF***
IDENT TONE/OFF/CODE Switch	***OFF***
TACAN ON/OFF Switch	***OFF***
DME REPLY EFFICIENCY Control	***100%***
FREQ/FUNCTION SELECT Thumbwheels	***1090 MHz Y***
DME P_2 DEV Thumbwheels	***5.0***
SLS/ECHO Thumbwheels	***0 dB***
SELF-INTERR/OFF Switch	***OFF***

STEP PROCEDURE

2. Connect test equipment to ATC-1400A-2 as shown in 2-2-2, Figure 36.

3. Set POWER Switch to ***ON*** and allow 10 minute warm-up period.

4. Press CLEAR RNG Pushbutton Switch.

5. Verify 8.091269 MHz (±400 Hz) is displayed on Frequency Counter. Adjust C520 (Delay Osc Adjust) (2-2-2, Figure 25) as needed for proper reading.

6. Using Dual Pulse Generator, inject two negative going TTL pulses, spaced 36 µs apart, into pin 5 of AUXILIARY Connector (J6).

7. Adjust RF LEVEL Control for approximately 1 W input at EXTERNAL RF Connector (J22) or approximately ***100 W*** displayed.

8. Using Oscilloscope, verify a pulse pair corresponding to signal from dual pulse generator is displayed on Front Panel GEN Connector. Verify corresponding range reply. Verify spacing from P_1 of interrogation to P_1 of Range Reply is 56 µs (±247 ns). Adjust R2621 (Y Channel Delay Adjust) (2-2-2, Figure 26) as needed for proper spacing.

9. Set FREQ/FUNCTION SELECT Thumbwheels to ***1090 MHz X***, DME DEV P_2/CAL Switch to ***+Δ*** and DME P_2 DEV Thumbwheels to ***5.0***.

10. Using Dual Pulse Generator, inject two negative going TTL pulses, spaced 12 µs apart, into pin 5 of AUXILIARY Connector (J6).

11. Using Oscilloscope, verify pulse pair corresponding to signal from dual pulse generator is displayed on GEN Connector. Verify corresponding range reply. Verify spacing from P_1 of interrogation to P_1 of Range Reply is 50 µs (±247 ns). Adjust R2619 (X Channel Delay Adjust) (2-2-2, Figure 26) as needed for proper spacing.

12. Set RANGE/VEL ACCEL Thumbwheels to ***00100*** and press LOAD RNG Pushbutton Switch. Set -1 NMi/NORM Switch to ***-1***. Verify spacing between P_1 of interrogation pulse to P_1 of reply pulse is 50 µs (±247 ns).

13. Set FREQ/FUNCTION SELECT Thumbwheels to ***1090 MHz Y*** and DME DEV P_2/CAL Switch to ***CAL***.

14. Set Dual Pulse Generator output pulse spacing for 36.0 µs. Verify spacing between interrogation pulse P_1 to reply pulse P_2 is 56 µs (±247 ns).

15. Set RANGE/VEL/ACCEL Thumbwheels to ***39900*** and -1 NMi/NORM Switch to ***NORM***.

16. Verify spacing between interrogation pulse P_1 to reply pulse P_1 is 4987.2 µs (±0.49 µs).

17. Set FREQ/FUNCTION SELECT Thumbwheels to ***1090 MHz X***.

18. Set Dual Pulse Generator output pulse spacing for 12.0 µs. Verify spacing between interrogation pulse P_1 to reply pulse P_1 is 4981.2 µs (±0.49 µs).

19. Remove TTL Output of Dual Pulse Generator from rear panel and connect 50 Ω output to TP3501 (2-2-2, Figure 26) with negative going video pulses.

20. Set SLS/ECHO ON/OFF Switch to ***ON***. Clear Range.

STEP PROCEDURE

21. Verify delay time of 420.8 µs (12 µs) between P_1 of Dual Pulse Generator and P_1 of echo reply, on Oscilloscope. Adjust R442 (Echo Delay Adjust) (2-2-2, Figure 25) as needed for proper delay time.

22. Set TO/TAC/TD Switch to ***TO***. Connect Oscilloscope Channel B to R-NAV Connector (J9).

23. Verify a pulse spacing of 50.0 µs (±0.25 µs) on Oscilloscope. Adjust R9257 (X Channel R NAV Adjust) (2-2-2, Figure 26) as needed for proper pulse spacing.

24. Using Oscilloscope, verify P_1 and P_2 pulse widths are 7 µs (±1.0 µs).

25. Set FREQ/FUNCTION SELECT Thumbwheels to ***1090 MHz Y*** and Dual Pulse Generator output for 36 µs spacing.

26. Verify a pulse spacing of 56.0 µs (±0.25 µs) on Oscilloscope. Adjust R9256 Y Channel R NAV Adjust) (2-2-2, Figure 26) as needed for proper pulse spacing.

27. Using Oscilloscope, verify P_1 and P_2 pulse widths are 7 µs (±1.0 µs).

28. Disconnect Dual Pulse Generator from ATC-1400A-2. Connect Frequency Counter to GEN Connector.

29. Set IDENT TONE/OFF/CODE Switch to ***TONE***. Verify frequency displayed is 2700 Hz (±0.54 Hz).

    NOTE: Frequency Counter readout is double IDENT pulse rate, so it is necessary to divide by 2 to verify accuracy.

30. Disconnect Frequency Counter and connect Oscilloscope to GEN Connector.

31. Set EQUALIZER/OFF Switch to ***EQUALIZER***.

32. Verify equalizer pulse spacing between interrogation pulse P_1 and reply pulse P_1 is 100 µs (±10 µs).

33. Set PRF/SQTR ON/OFF Switch to ***ON***, IDENT TONE/OFF/CODE Switch to ***OFF***, PRF/SQTR Thumbwheels to ***2700*** and EQUALIZER/OFF Switch to ***OFF***.

34. Disconnect Oscilloscope from GEN Connector. Connect Frequency Counter to GEN Connector.

35. With Oscilloscope Probe, monitor TP408 and adjust R451 (2-2-2, Figure 25) as needed for 60 µs (±10 µs) low time.

36. Observe Frequency Counter and take average of random squitter frequency. Divide by 2, and verify squitter frequency is 2700 Hz (±54 Hz).

37. Set PRF/SQTR ON/OFF Switch to ***OFF***, PRF/SQTR Thumbwheels to ***0010*** and SELF-INTERR/OFF Switch to ***SELF-INTERR***.

38. Step PRF/SQTR Thumbwheels from ***10*** to ***5999 Hz***. Verify PRF/SQTR Thumbwheels track with display on frequency counter.

    NOTE: Frequency Counter readout is double PRF/SQTR Thumbwheel setting, so it is necessary to divide by 2 to verify accuracy.

39. Reconnect 50 Ω Termination to EXTERNAL RF Connector (J22).

40. Set POWER Switch to ***OFF***.

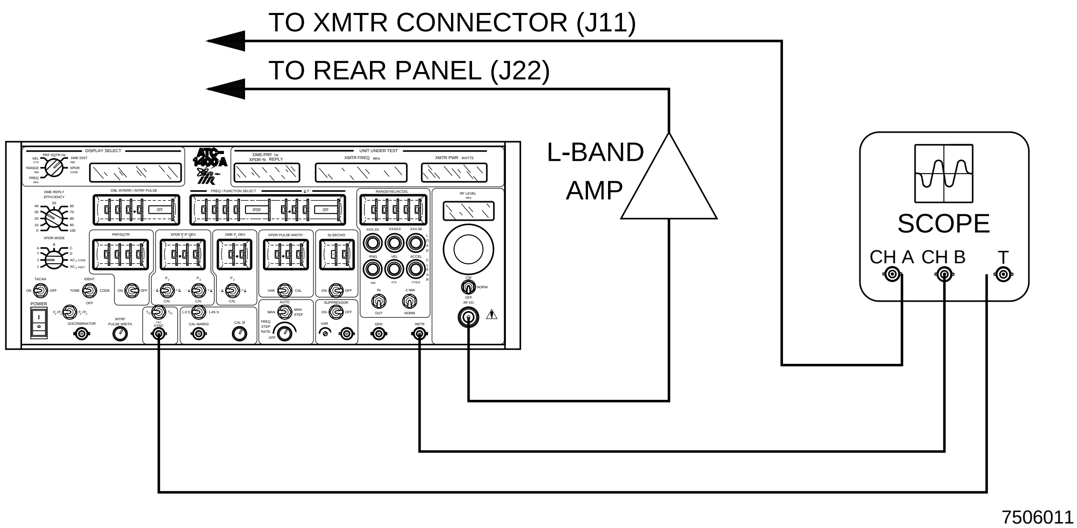
41. Disconnect test equipment.

(10) 50% Video Slicer and Transmitter Power

PREREQUISITES: 2-2-2D(1) Power Supply

TEST EQUIPMENT:
1 Peak Power Meter
1 Pulsed RF Power Source
1 Directional Coupler
1 Oscilloscope
1 L Band Amplifier
1 50 Ω Coaxial Cable (BNC to Type N)
4 50 Ω Coaxial Cables (BNC to BNC)

SET-UP DIAGRAM:



50% Video Slicer Calibration Test Setup Diagram
Figure 37

NOTE: During performance of this procedure, if a certain condition or specification cannot be verified, refer to appropriate assembly test procedure in 2-2-4 for testing and repair of faulty assembly.

STEP PROCEDURE

1. Connect test equipment to ATC-1400A-2 as shown in 2-2-2, Figure 37.
2. Set POWER Switch to ***ON*** and allow 10 minute warm-up period.
3. Set ATC-1400A-2 controls as follows:

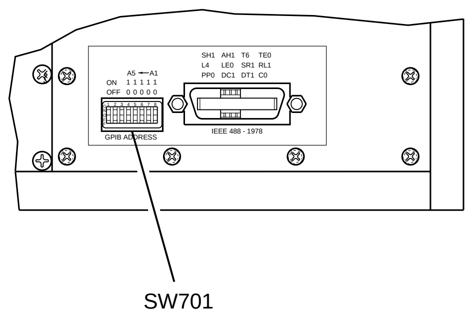
CONTROL	SETTING
DME DEV P_2/CAL Switch	***CAL***
T_O/TAC/T_D Switch	***T_D***
PRF/SQTR ON/OFF Switch	***OFF***
PRF/SQTR Thumbwheels	***150***
FREQ/FUNCTION SELECT Thumbwheels	***1090 MHz Y***
SELF-INTERR/OFF Switch	***ON***

4. Rotate RF LEVEL Control until ***500 W*** is displayed on XMTR PWR Watts Display.
5. Using Oscilloscope, verify 50% video pulse aligns with Gaussian shaped pulse at 50% point.

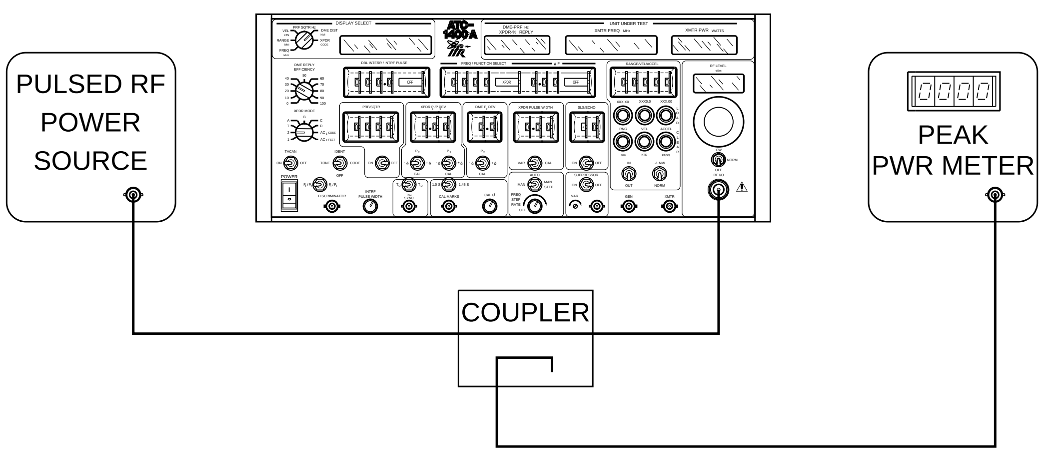
STEP PROCEDURE

6. Using Oscilloscope, verify 0.6 Vp-p (typical) at 500 W.F
7. Adjust Oscilloscope sweep and positioning controls until displayed 50% video pulse is 10 graticules long.
8. Rotate RF LEVEL Control until ***50 W*** is displayed on XMTR PWR WATTS Display.
9. Using Oscilloscope, verify 50% video pulse is minimum 9.5 graticules long.

   NOTE: If amplifier is compressing, test is inaccurate. Amplifier must be linear.



10. Ensure Switches 1 and 2 of SW701 (Rear Panel) are set to ON.
11. Rotate RF LEVEL Control ccw until XMTR PWR WATTS Display indicates ***2 W***.
12. Verify 50% video pulse displayed on Oscilloscope does not oscillate or disappear. Decrease level and verify slicer quits between 1 and 2 W reading.
13. Reconnect 50 Ω Termination to EXTERNAL RF Connector (J22).
14. Connect test equipment to ATC-1400A-2 as shown in 2-2-2, Figure 38.



Transmitter Power Calibration Test Setup Diagram
Figure 38

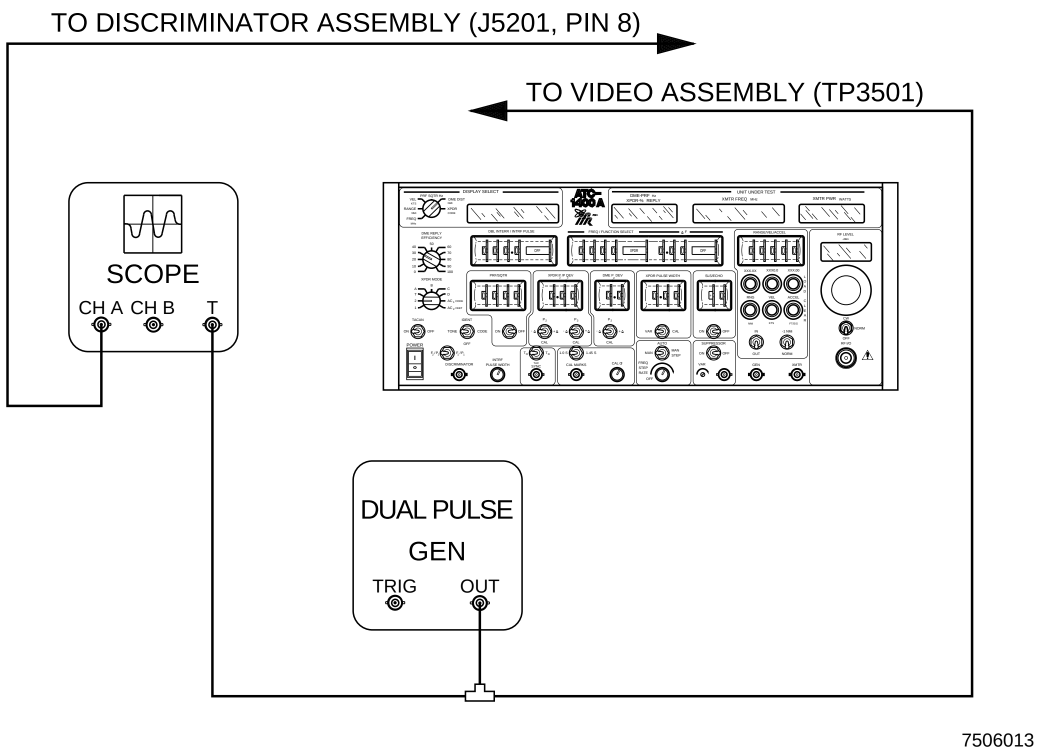
STEP	PROCEDURE
15.	Set CW/NORM/OFF Switch to ***OFF***.
16.	Apply ac power to Pulsed RF Power source. Record power level on Peak Power Meter for later reference.
17.	Adjust R7103 (Power Adjust) (2-2-2, Figure 26) as needed for reading on XMTR POWER WATTS Display ten times value indicated on Peak Power Meter. (Power readout is ±0.5 dB of applied power.)
18.	Decrease power level 10 dB. Verify reading is 10X less than reading in Step 16. Adjust R7103 as needed for proper reading. Increase power level 10 dB and verify reading is 10X more than previous reading. Repeat as needed for proper results.
19	Set POWER Switch to ***OFF***. Disconnect test equipment.

(11) Discriminator Frequency

PREREQUISITES: 2-2-2D(1) Power Supply
2-2-2D(4) RF Check and Level

TEST EQUIPMENT:
1 Oscilloscope
1 Dual Pulse Generator
1 L Band Amplifier
1 50 Ω BNC Tee Connector
1 50 Ω Load
4 50 Ω Coaxial Cables (BNC to BNC)
1 50 Ω Coaxial Cable (SMB to BNC)

SET-UP DIAGRAM:



P_1/P_2 Positioning Calibration Test Setup Diagram
Figure 39

NOTE: If during performance of this procedure, a certain condition or specification cannot be verified, refer to appropriate assembly test procedure in 2-2-4 for testing and repair of faulty assembly.

STEP PROCEDURE

1. Set ATC-1400A-2 controls as follows:

CONTROL	SETTING
CW/NORM/OFF Switch	***NORM***
SLS/ECHO ON/OFF Switch	***OFF***
XPDR PULSE WIDTH VAR/CAL Switch	***VAR***
DME DEV P_2/CAL Switch	***CAL***
XPDR DEV P_3/CAL Switch	***-.65***
T_O/TAC/T_D Switch	***T_O***
PRF/SQTR ON/OFF Switch	***OFF***
F_2/P_2 F_1/P_1 Switch	***F_1/P_1***
IDENT TONE/OFF/CODE Switch	***OFF***
TACAN ON/OFF Switch	***OFF***
XPDR MODE Control	***C***
DISPLAY SELECT Control	***FREQ MHz***
PRF/SQTR Thumbwheels	***102***
DBL INTERR/INTRF PULSE Thumbwheels	***OFF***
FREQ/FUNCTION SELECT Thumbwheels	***1090 MHz Y***
ΔF Thumbwheels	***1.00 OFF***
XPDR PULSE WIDTH Thumbwheels	***0.45***
DECODER WIDE/NARROW Switch	***WIDE***
SELF-INTERR/OFF Switch	***ON***

2. Connect test equipment to ATC-1400A-2 as shown in 2-2-2, Figure 39.

3. Set POWER Switch to ***ON*** and allow 10 minute warm-up period.

4. Set Dual Pulse Generator controls as follows:

CONTROL	SETTING
PRF Control	102 Hz
Amplitude Control	-1.2 V Peak
Pulse Width Control	0.8 µs
Spacing Control	36 µs

5. Verify P_1 pulse is displayed on Oscilloscope.

6. Set F_2/P_2 F_1/P_1 Switch to ***F_2/P_2***.

7. Verify P_2 pulse is displayed on Oscilloscope.

   NOTE: P_2 pulse is positioned 36 µs after P_1 pulse noted in Step 5.

8. Set FREQ/FUNCTION SELECT Thumbwheels to ***1090 XPDR***.

9. Set Dual Pulse Generator output pulse spacing to 21 µs.

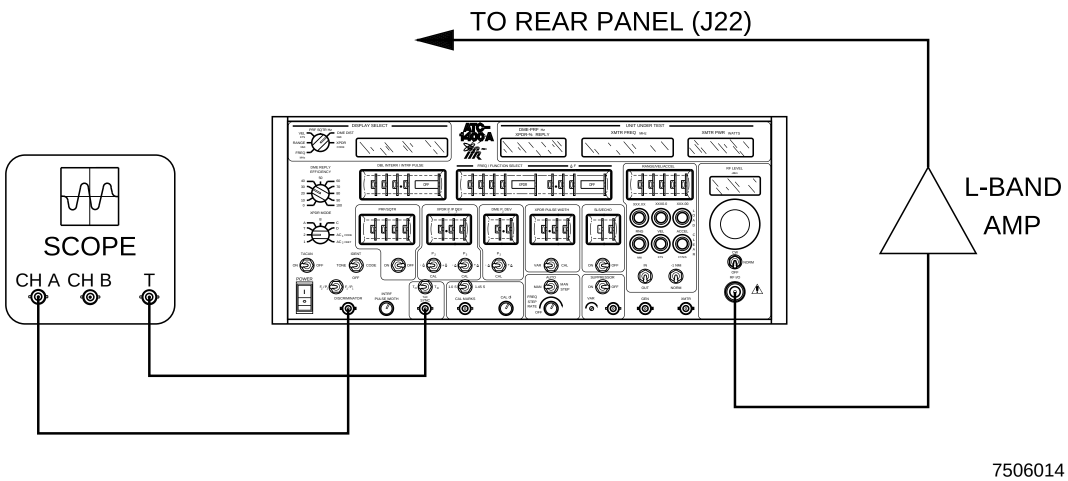
10. Verify F_2 pulse is displayed on Oscilloscope.

11. Set Dual Pulse Generator output pulse spacing to 19 µs. Increment pulse spacing thumbwheels to 22.4 µs. Verify F_2 pulse is displayed on Oscilloscope between 19.8 µs (±0.2 µs) and 22 µs (±0.4 µs).

12. Set F_2/P_2 F_1/P_1 Switch to ***F_1/P_1***. Verify F_1 pulse is displayed on Oscilloscope.

13. Set POWER Switch to ***OFF***. Remove test equipment from ATC-1400A-2.

14. Connect test equipment to ATC-1400A-2 as shown in 2-2-2, Figure 40.



Discriminator Frequency Calibration Test Setup Diagram
Figure 40

STEP	PROCEDURE
15.	Set POWER Switch to ***ON*** and allow 10 minute warm-up period.
16.	Set FREQ/FUNCTION SELECT Thumbwheels to ***1090 MHz Y*** and adjust RF LEVEL Control until approximately ***500 W*** is on XMTR PWR WATTS Display.
17.	Adjust R5302 (Offset Adjust) (2-2-2, Figure 26) until frequency on XMTR FREQ MHz Display is equal to frequency on DISPLAY SELECT Readout.
18.	Set FREQ/FUNCTION SELECT Thumbwheels to ***1090 XPDR***, PRF/SQTR ON/OFF Switch to ***ON*** and rotate RF LEVEL Control until ***500 W*** (±50 W) is on XMTR PWR WATTS Display.
19.	Adjust R5313 (Narrow Pulse Offset Adjust) (2-2-2 Figure 26) until frequency on XMTR FREQ MHz Display is equal to frequency on DISPLAY SELECT Readout.
20.	Set FREQ/FUNCTION SELECT Thumbwheels to ***1020 MHz Y*** and PRF/SQTR ON/OFF Switch to ***OFF***. Verify frequency on XMTR FREQ MHz Display is within ±20 kHz of frequency on DISPLAY SELECT Readout.
21.	Set FREQ/FUNCTION SELECT Thumbwheels to ***1155 MHz Y***. Verify frequency on XMTR FREQ MHz Display is within ±20 kHz of frequency on DISPLAY SELECT Readout. Record frequency.
22.	Set PRF/SQTR Thumbwheels to ***2 Hz***, PRF/SQTR ON/OFF Switch to ***ON*** and SELF-INTERR/OFF Switch to ***OFF***. Verify XMTR FREQ MHz Display is within ±20 kHz of frequency on DISPLAY SELECT Readout.
23.	Set FREQ/FUNCTION SELECT Thumbwheels to ***1020 MHz Y***. Verify XMTR FREQ MHz Display is within ±20 kHz of frequency on DISPLAY SELECT Readout.
24.	Set PRF/SQTR Thumbwheels to ***102***.
25.	Rotate RF LEVEL Control until ***40 W*** (±5 W) is on XMTR PWR WATTS Display. Verify XMTR FREQ MHz Display is within ±20 kHz of frequency in Step 20.

STEP PROCEDURE

26. Set FREQ/FUNCTION SELECT Thumbwheels to ***1155 MHz Y***. Verify frequency on XMTR FREQ MHz Display is within ±20 kHz of frequency in Step 21.

27. Set F_2/P_2 F_1/P_1 Switch to ***F_2/P_2***. Verify frequency displayed on XMTR FREQ MHz Display is same as recorded in Step 26.

28. Set FREQ/FUNCTION SELECT Thumbwheels to ***1090 XPDR***, F_2/P_2 F_1/P_1 Switch to ***F_1/P_1*** and PRF/SQTR ON/OFF Switch to ***ON***. Verify frequency on XMTR FREQ Hz Display is within ±50 kHz of frequency in Step 19.

29. Rotate RF LEVEL Control until ***1000 W*** (±100 W) is displayed on XMTR PWR WATTS Display. Verify frequency on XMTR FREQ MHz Display is within ±50 kHz of frequency in Step 19.

30. Rotate RF LEVEL Control until ***500 W*** (±50 W) is displayed on XMTR PWR WATTS Display.

31. Set XPDR PULSE WIDTH Thumbwheels to ***0.55***. Verify frequency on XMTR FREQ MHz Display is within ±50 kHz of frequency in Step 19.

32. Set XPDR PULSE WIDTH Thumbwheels to ***0.35***. Verify frequency on XMTR FREQ MHz Display is within ±50 kHz of frequency in Step 19.

33. Set XPDR PULSE WIDTH Thumbwheels to ***0.30***. Verify frequency on XMTR FREQ MHz Display is within ±50 kHz of frequency in Step 19.

34. Set XPDR PULSE WIDTH Thumbwheels to ***0.45***.

35. Set XPDR Mode Control to ***Mode A***. After Discriminator locks on, set F_2/P_2 F_1/P_1 Switch to ***F_2/P_2***. Record dc level displayed on Oscilloscope for later reference.

36. While monitoring Oscilloscope display, set ΔF Thumbwheels to ***1.00 +Δ*** and verify dc level shifts approximately 1 V from level recorded in Step 35.

37. While monitoring Oscilloscope display, set ΔF Thumbwheels to ***1.00 -Δ*** and verify dc level shifts approximately -1 V from level recorded in Step 35.

38. Using BNC Tee Connector, connect 50 Ω Load parallel with Oscilloscope.

39. Set ΔF Thumbwheels to ***OFF***. Record dc level displayed on Oscilloscope for later reference.

40. While monitoring Oscilloscope, set ΔF Thumbwheels to +Δ and verify dc level shifts approximately +0.5 V from level recorded in Step 39.

41. While monitoring Oscilloscope, set ΔF Thumbwheels to -Δ and verify dc level shifts approximately -0.5 V from level recorded in Step 39.

42. Replace 50 Ω Terminations on TP3501 and J22.

43. Set POWER Switch to ***OFF***.

44. Disconnect test equipment.

(12) Parameter Verifications

The following procedure is strictly a verification of parameters for:

Reply Efficiency (DME Mode)
T_O, T_D, TAC Sync
Percent Reply (XPDR Mode)
Velocity at 1000 Knots
Generator Output Voltage
Mutual Suppression Pulse
Acceleration
PRF at 1000 Hz
Auto/Freq Step Rate
Coupler Loss

PREREQUISITES: None

TEST EQUIPMENT:
1 Oscilloscope
1 Dual Pulse Generator
1 Frequency Counter
1 Signal Generator
1 Totalizing Counter
1 2.0 kΩ Resistor
1 50 Ω Load
1 Stopwatch

SET-UP DIAGRAM: None

NOTE: During performance of this procedure, if a certain condition or specification cannot be verified, refer to appropriate assembly test procedure in 2-2-4 for testing and repair of faulty assembly.

STEP PROCEDURE

1. Set ATC-1400A-2 controls as follows:

CONTROL	SETTING
CW/NORM/OFF Switch	***NORM***
SUPPRESSOR ON/OFF Switch	***ON***
SLS/ECHO ON/OFF Switch	***OFF***
XPDR PULSE WIDTH VAR/CAL Switch	***CAL***
DME DEV P_2/CAL Switch	***CAL***
XPDR DEV P_3/CAL Switch	***CAL***
XPDR DEV P_2/CAL Switch	***CAL***
T_O/TAC/T_D Switch	***T_O***
PRF/SQTR ON/OFF Switch	***ON***
POWER Switch	***ON***
PRF/SQTR Thumbwheels	***1000***
DBL INTERR/INTERF PULSE Thumbwheels	***0000 OFF***
FREQ/FUNCTION SELECT Thumbwheels	***1090 XPDR***

2. Connect Oscilloscope External Trigger to SYNC Connector, Oscilloscope Channel A (loaded with 2.0 kΩ resistor to ground) to SUPPRESSOR OUTPUT Connector and Oscilloscope Channel B to GEN Connector.

3. Verify on Oscilloscope Channel A, displayed pulse width is 33 μs (±3 μs).

4. Set SUPPRESSOR VAR Adjustment ***fully ccw***. Verify pulse amplitude is <3 V.

5. Set SUPPRESSOR VAR Adjustment ***fully cw***. Verify pulse amplitude is >27 V.

6. Adjust SUPPRESSOR VAR Adjustment for ***18.5 V***, as displayed on Oscilloscope.

STEP PROCEDURE

7. Set Oscilloscope to Alternate. Verify leading edge of suppressor pulse is approximately .8 μs with leading edge of XPDR P_3 pulse.

8. Set PRF/SQTR ON/OFF Switch to ***OFF***, TO/TAC/TD Switch to ***TD***, FREQ/FUNCTION SELECT Thumbwheels to ***1090 MHz Y*** and SELF-INTERR/OFF Switch to ***SELF-INTERR***.

9. Verify leading edge of suppressor pulse occurs approximately 3.5 μs before P_1 of range reply pulse.

10. Verify amplitude of generator pulses are approximately 0.5 V_{P-P} into 50 Ω Load.

11. Set TO/TAC/TD Switch to ***TO***, PRF/SQTR ON/OFF Switch to ***ON*** and FREQ/FUNCTION SELECT Thumbwheels to ***1090 XPDR***.

12. Verify leading edge of P_1 occurs approximately 20 μs after beginning of Oscilloscope trace.

13. Set TO/TAC/TD Switch to ***TD*** and verify leading edge of P_3 occurs at beginning of Oscilloscope trace.

14. Set PRF/SQTR ON/OFF Switch to ***OFF*** and FREQ/FUNCTION SELECT Thumbwheels to ***1090 MHz X***.

15. Verify P_1 of range reply occurs approximately 3.5 μs after beginning of Oscilloscope trace.

16. Set TO/TAC/TD Switch to ***TAC***, TACAN ON/OFF Switch to ***ON*** and SELF-INTERR/OFF Switch to ***OFF***.

    NOTE: Oscilloscope syncs on main burst.

17. Verify pulse spacing between leading edge of first pulse to leading edge of second pulse is 12 μs and spacing between leading edge of second pulse to leading edge of third pulse is 18 μs.

18. Connect Frequency Counter to TP506 (DME Range PC Board Assembly, Rear Panel Card Cage Assembly View) (2-2-2, Figure 4). For extra clarity, refer to DME Range PC Board Assembly, (2-2-5, Figure 78).

19. Set FREQ/FUNCTION SELECT Thumbwheels to ***MHz Y***, IN/OUT Switch to ***OUT***, RANGE/VEL/ACCEL Thumbwheels to ***1000 KTS*** and DISPLAY SELECT Control to ***RANGE***.

20. Press LOAD VEL Pushbutton Switch. Verify ***27.777 Hz*** (±0.014 Hz) is displayed on Frequency Counter.

21. Remove Frequency Counter from TP506, and connect to TP505,(DME Range PC Board Assembly, Rear Panel Card Cage Assembly View) (2-2-2, Figure 4).

22. Press CLEAR RNG Pushbutton Switch to clear all previous entered range, velocity and acceleration data.

STEP PROCEDURE

23. Set RANGE/VEL/ACCEL Thumbwheels to ***399***.

24. Depress LOAD ACCEL Pushbutton Switch and verify 23.644 Hz (±0.03 Hz) is displayed on Frequency Counter.

25. Remove Frequency Counter and replace ATC-1400A-2 Card Cage Assembly cover.

26. Set SLS/ECHO ON/OFF Switch to ***OFF***, PRF/SQTR Thumbwheels to ***1000*** and FREQ/FUNCTION SELECT Thumbwheels to ***1090 XPDR***.

27. Connect Frequency Counter to GEN Connector.

28. Verify output on Frequency Counter at GEN Connector, divided by 2, is 999.95 to 1000.05 Hz (±0.005%).

29. Connect Dual Pulse Generator to TP3501 (Video Assembly) (2-2-2, Figure 26).

30. Set Dual Pulse Generator output pulse spacing for 12 μs, pulse width for 3 μs and PRF for 150 Hz.

31. Connect Totalizing Counter Channel A to GEN Connector (J10) and Totalizing Counter Channel B to SYNC Connector.

32. Set Totalizing Counter Function Control to A/B and Range Control to 10^2.

NOTE: A/B selection on Totalizing Counter provides ratio of frequency of Channel A divided by frequency of Channel B.

33. Set ATC-1400A-2 controls as follows:

CONTROL	SETTING
SLS/ECHO ON/OFF Switch	***OFF***
TO/TAC/TD Switch	***TO***
PRF/SQTR ON/OFF Switch	***OFF***
DME REPLY EFFICIENCY Control	***100***
FREQ/FUNCTION SELECT Thumbwheels	***1090 MHz X***

34. Verify Totalizing Counter displays a frequency ratio of 2.0.

35. Set DME REPLY EFFICIENCY Control to ***0%*** reply rate. Verify Totalizing Counter displays a frequency ratio of 0.0.

36. Set Totalizing Counter range control to 105.

37. Set DME REPLY EFFICIENCY Control to ***50%*** reply rate. Verify Totalizing Counter displays a frequency ratio of 0.9 to 1.1.

38. Set DME REPLY EFFICIENCY Control to ***70%*** reply rate. Verify Totalizing Counter displays a frequency ratio of 1.3 to 1.5.

39. Set Display Select Control to PRF/SQTR***.***

40. Set PRF/SQTR ON/OFF Switch to ***ON***, PRF/SQTR Thumbwheels to ***500*** and FREQ/FUNCTION SELECT Thumbwheels to ***1090 XPDR***.

41. Connect Totalizing Counter Channel A to XMTR Connector.

42. Verify Totalizing Counter readout is 2X reading displayed on Display Select.

STEP | PROCEDURE

43. Set FREQ STEP RATE Control fully ccw (short of detent).

44. Simultaneously start Stopwatch and set MAN/AUTO/MAN STEP Switch to ***AUTO***. Verify minimum step rate is >10 seconds per channel.

NOTE: Channel change is observed on DISPLAY SELECT Readout.

45. Set FREQ STEP RATE Control ***fully cw***.

46. Simultaneously start Stopwatch and set MAN/AUTO/MAN STEP Switch to ***AUTO***. Verify maximum step rate is <2 seconds per channel.

NOTE: To obtain an accurate reading for above step rate, it is necessary to take an average of 10 steps (channels) as displayed on DISPLAY SELECT Readout.

47. Set POWER Switch to ***OFF***.

48. Disconnect test equipment.

E. Calibration/Verification Test Data Sheet

TECHNICIAN: ________________________________ DATE: ____________________________

ATC-1400A-2 S/N: __________________

STEP	DATA	RESULT
(1) Power Supply		
1.	Dip Switch #1 (SW301) set to ***UP***	________ (√)
	Dip Switch #2 (SW301) set to ***DOWN***	________ (√)
2.	Dip Switch #1, #2 and #3 (SW501) set to ***UP***	________ (√)
	Dip Switch #4 (SW501) set to ***DOWN***	________ (√)
5.	ATC-1400A-2 front panel displays are in accordance with power-up self test.	________ (√)
7.	+5 V Microprocessor PC Board Assembly voltage 4.9 Vdc (±0.05 V)	________
11.	ATC-1400A-2 front panel displays are in accordance with power-up self test.	________ (√)
13.	+5 V Video Assembly voltage ≤5.25 Vdc	________
	+5 V Microprocessor PC Board Assembly voltage readjust 4.9 Vdc (±0.05 V)	________
14.	+12 V Video Assembly voltage +12 Vdc (±0.2 V)	________
15.	-12 V Video Assembly voltage -12 Vdc (±0.5 V)	________
16.	-5 V Video Assembly voltage -5 Vdc (±0.2 V)	________
(2) Counter Time Base		
2.	ATC-1400A-2 front panel displays are in accordance with power-up self test.	________ (√)
4.	5 MHz (±3 Hz)	________
(3) CAL MARKS		
4.	689655 Hz (±34 Hz)	________
6.	1 MHz (±50 Hz)	________
8.	0.45 µs at 50% point	________ (√)
11.	Pulses move a minimum of 360°	________ (√)

STEP	DATA	RESULT
(4) RF Check and Level		
5.	1000 MHz (±10 kHz)	________
8.	0 dBm	________
9.	RF power level (ALC headroom) increases ≥4 dB from Step 8 level.	________
10.	RF output level decreases ≥4 dB from Step 8 level.	________
12.	0 dB (±0.6 dB)	________
13.	RF power level (ALC headroom) increases ≥4 dB from Step 12 level.	________
14.	RF output level decreases ≥4 dB from Step 12 level.	________
16.	0 dB (±0.6 dB)	________
17.	RF power level (ALC headroom) increases ≥4 dB from Step 16 level.	________
18.	RF output level decreases ≥4 dB from Step 16 level.	________
22.	0 dBm	________
23.	962 MHz 0 dBm (±0.6 dB)	________
	1000 MHz 0 dBm (±0.6 dB)	________
	1050 MHz 0 dBm (±0.6 dB)	________
	1100 MHz 0 dBm (±0.6 dB)	________
	1150 MHz 0 dBm (±0.6 dB)	________
	1213 MHz 0 dBm (±0.6 dB)	________
25.	RF LEVEL -dBm display and Power Meter reflect same RF level (±0.3 dB) from 0 to -30 dBm.	________
26.	VSWR is 1.2:1 from 1020 to 1155 MHz.	________ (√)
28.	RF LEVEL -dBm Display and Spectrum Analyzer reflect same RF LEVEL (±0.5 dB from -30 to -90 dBm and ±2.5 dB from -90 to -110 dBm).	________ (√)
32.	≥80 dB	________
34.	≥55 dB	________
35.	≥55 dBc	________
38.	Spurs appearing on display are ≥-60 dBc.	________
40.	Spurs appearing on display are ≥-60 dBc.	________

STEP	DATA	RESULT
42.	Spurs appearing on display are $\geq$60 dBc.	________
44.	Spurs appearing on display are $\geq$60 dBc.	________
46.	Spurs appearing on display are $\geq$60 dBc.	________
48.	Spurs appearing on display are $\geq$60 dBc.	________
53.	Amplitude of displayed signal	________
54.	Amplitude of displayed signal at ±800 kHz from center frequency	________
55.	Amplitude difference of center frequency from signal noted in Step 54 is >-60 dBc.	________
(5) TACAN AM		
6.	<5 kHz at 1090 MHz	________
7.	962 MHz <5 kHz	________
8.	1213 MHz <5 kHz	________
12.	TACAN AM Null	________ (√)
15.	21% (±1%)	________
16.	21% (±1%)	________
17.	42% (±2%)	________
(6) SLS Level		
5.	P_1 pulse amplitude is five graticule divisions.	________ (√)
8.	≤2%	________
10.	≤2%	________
11.	Reference level	________ (√)
	% change is <1%	________
13.	Reference level	________ (√)
	% change is <1%	________
15.	Change in amplitude is <3%.	________
16.	Change in amplitude is <2%.	________

STEP	DATA	RESULT
26.	P2 Level = P1 Level	________ (√)
29.	(Noncoherent SLS)	
	0 dB (±0.5 dB)	________
	-5 dB (±0.5 dB)	________
	-10 dB (±0.5 dB)	________
	3 dB (±0.5 dB)	________
	6 dB (±0.5 dB)	________
	(SLS)	
	0 dB (±0.2 dB)	________
	-5 dB (±0.2 dB)	________
	-10 dB (±0.2 dB)	________
	3 dB (±0.2 dB)	________
	6 dB (±0.5 dB)	________
(7)	XPDR/DME Pulse Spacing and Shaping	
8.	Rise and Fall time 70 ns (+10 ns, -20 μs)	________
9.	Pulse width 0.8 μs (±5 ns)	________
10.	Pulse width narrow 0.2 μs (±5 ns)	________
11.	Pulse width wide 1.85 μs (±5 ns)	________
12.	Mode 1 pulse spacing 3.0 μs (±5 ns)	________
	Mode 2 pulse spacing 5.0 μs (±5 ns)	________
	Mode T pulse spacing 6.5 μs (±5 ns)	________
	Mode A/Mode 3 pulse spacing 8.0 μs (±5 ns)	________
	Mode B pulse spacing 17.0 μs (±5 ns)	________
	Mode C pulse spacing 21.0 μs (±5 ns)	________
	Mode D pulse spacing 25.0 μs (±5 ns)	________
13.	P_1 to P_2 (SLS) pulse spacing 2 μs (±5 ns)	________
14.	P_1 to P_2 (SLS) pulse spacing wide 3.85 μs (±5 ns)	________
15.	P_1 to P_2 (SLS) pulse spacing narrow 1.10 μs (±5 ns)	________
16.	P_1 to P_2 pulse spacing 1.10 to 2.00 μs in 0.05 μs steps	________ (√)
17.	P_1 to P_2 pulse spacing 2.00 to 3.85 μs in 0.05 μs steps	________ (√)

STEP	DATA	RESULT
19.	P_1 to P_3 pulse spacing wide 9.85 µs (±5 ns)	________
20.	P_1 to P_3 pulse spacing narrow 6.15 µs (±5 ns)	________
21.	P_1 to P_3 pulse spacing 6.15 to 8.00 µs in 0.05 µs steps	________
22.	P_1 to P_3 pulse spacing 8.00 to 9.85 µs in 0.05 µs steps	________
24.	Interference pulse occurs 17.5 µs (±0.05 µs) before leading edge of P_1.	________
25.	Interference pulse occurs 100 µs (±0.05 µs) after leading edge of P_1.	________
26.	Interference pulse occurs 399 µs (±0.05 µs) after leading edge of P_1.	________
27.	Interference pulse amplitude varies from -9 to +9 dB P_1.	________ (√)
28.	Interference pulse width narrow is <0.2 µs.	________
29.	Interference pulse width wide is >5 µs	________
30.	P_1 of first interrogation to P_1 of second interrogation 35.0 µs 33.95 to 36.05 µs	________
31.	P_1 of first interrogation to P_1 of second interrogation 100 µs 97 to 103 µs	________
32.	First interrogation disappears.	________ (√)
	Suppressor pulse is coincident with previous P_3 position.	________ (√)
	Second interrogation changes position.	________ (√)
34.	P_1 of first interrogation to P_1 of second interrogation 399.9 µs 387.9 to 411.9 µs	________
38.	P_1 pulse rise time 2.0 µs (±0.25 µs)	________
39.	P_1 pulse fall time 2.5 µs (±0.25 µs)	________
40.	P_1 pulse width 3.5 µs (±0.5 µs)	________
41.	1090 MHz X P_1 to P_2 pulse spacing 12 µs (±0.1 µs)	________
42.	1090 MHz Y P_1 to P_2 pulse spacing 30 µs (±0.1 µs)	________
43.	1090 MHz Y P_1 to P_2 pulse spacing 30 to 37.9 µs in 0.1 µs steps	________ (√)
44.	1090 MHz Y P_1 to P_2 pulse spacing 22.1 to 30 µs in 0.1 µs steps	________ (√)
46.	1090 MHz Y P_1 to P_2 pulse spacing 31 µs (±0.1 µs)	________
47.	1090 MHz Y P_1 to P_2 pulse spacing 29 µs (±0.1 µs)	________
48.	1090 MHz Y P_1 to P_2 pulse spacing 22.1 µs (±0.1 µs)	________
49.	1090 MHz Y P_1 to P_2 pulse spacing 37.9 µs (±0.1 µs)	________

STEP	DATA	RESULT
50.	1090 MHz X P_1 to P_2 pulse spacing 13 µs (±0.1 µs)	________
51.	1090 MHz X P_1 to P_2 pulse spacing 11 µs (±0.1 µs)	________
52.	1090 MHz X P_1 to P_2 pulse spacing 7.0 µs (±0.1 µs)	________
53.	1090 MHz X P_1 to P_2 pulse spacing 19.9 µs (±0.1 µs)	________
55.	CW frequency output reference	________ (√)
60.	DME Pulse Frequency	________ (√)
61.	Difference between CW and DME Pulse frequencies is <10 kHz	________
(8)	XPDR/DME Window Width and Positioning	
5.	"F" does not appear on DME-PRF Hz/XPDR-%REPLY Display for accepted 1090 MHz X pulse spacing.	________ (√)
7.	1090 MHz X DME-PRF Hz/XPDR-%REPLY Display indicates pulse spacing below accepted minimum 11.25 µs (±0.1 µs)	________
10.	1090 MHz X DME-PRF Hz/XPDR-%REPLY Display indicates pulse spacing above accepted maximum 12.75 µs (±0.1 µs)	________
17.	"F" does not appear on DME-PRF Hz/XPDR-%REPLY Display for accepted 1090 MHz Y pulse spacing.	________ (√)
19.	1090 MHz Y DME-PRF Hz/XPDR-%REPLY Display indicates pulse spacing below accepted minimum 35.25 µs (±0.1 µs)	________
22.	1090 MHz Y DME-PRF Hz/XPDR-%REPLY Display indicates pulse spacing above accepted maximum 36.75 µs (±0.1 µs)	________
28.	TP403 is high for invalid pulse spacing.	________ (√)
30.	TP403 is low for accepted 24 µs pulse spacing.	________ (√)
32.	Pulse spacing below accepted minimum 23.25 µs (±0.1 µs)	________
35.	Pulse spacing above accepted maximum 24.75 µs (±0.1 µs)	________
44.	Wide 1090 MHz Y pulse spacing below accepted minimum 33.5 µs (±0.4 µs)	________
47.	Wide 1090 MHz Y pulse spacing above accepted maximum 38.5 µs (±0.4 µs)	________
48.	TP403 is high for invalid pulse spacing.	________ (√)
51.	Wide pulse spacing below accepted minimum 21.5 µs (±0.4 µs)	________
54.	Wide pulse spacing above accepted maximum 26.5 µs (±0.4 µs)	________

STEP	DATA	RESULT
59.	Wide 1090 MHz X pulse spacing below accepted minimum 9.5 µs (±0.4 µs)	________
62.	Wide 1090 MHz X pulse spacing above accepted maximum 14.5 µs (±0.4 µs)	________
65.	1090 XPDR DME-PRF Hz/XPDR-%REPLY Display indicates 100% for accepted pulse spacing in reply.	________ (√)
66.	'F' does not appear in XPDR Code display for accepted 1090 XPDR Spacing	________ (√)
68.	1090 XPDR Code Display indicates pulse spacing below accepted minimum 19.9 µs (±0.15 µs)	________
70.	1090 XPDR Code Display indicates pulse spacing above accepted maximum 20.8 µs (±0.15 µs)	________
73.	1090 XPDR Narrow Window adjusted to 20.19 uS ±10ns	________
75.	1090 XPDR Narrow Window adjusted to 40.41 uS ±10ns	________
(9)	X and Y Channel Range and R-NAV Delay	
5.	8.091269 MHz (±400 Hz)	________
8.	Oscilloscope displays 36 µs interrogation pulse pair.	________ (√)
	Oscilloscope displays 1090 MHz Y range reply.	________ (√)
	Range reply delay is 56 µs (±247 ns).	________
11.	Oscilloscope displays 12 µs interrogation pulse pair.	________ (√)
	Oscilloscope displays 1090 MHz X range reply.	________ (√)
	Range reply delay is 50 µs (±247 ns).	________
12.	1090 MHz X range reply delay (loaded range canceled out by -1 NMi/NORM Switch) is 50 µs (±247 ns).	________
14.	1090 MHz Y range reply delay (loaded range canceled out by -1 NMi/NORM Switch) is 56 µs (±247 ns).	________
16.	1090 MHz Y range reply delay with 399 nmi range 4987.2 µs (±0.49 µs)	________
18.	1090 MHz X range reply delay with 399 nmi range 4981.2 µs (±0.49 µs)	________
21.	Echo reply delay is 420.8 µs (±12 µs)	________
23.	1090 MHz X R NAV pulse spacing 50.0 µs (±0.25 µs)	________
24.	1090 MHz X R NAV pulse widths 7 µs (±1.0 µs)	________
26.	1090 MHz Y R NAV pulse spacing 56.0 µs (±0.25 µs)	________
27.	1090 MHz Y R NAV pulse widths 7 µs (±1.0 µs)	________

STEP	DATA	RESULT
29.	IDENT Tone is 2700 Hz (±0.54 Hz).	________
32.	Equalizer pulse spacing is 100 µs (±10 µs)	________
36.	Squitter frequency 2700 Hz (±29 Hz)	________
38.	PRF/SQTR thumbwheel settings track frequency counter display	________ (√)
(10)	50% Video Slicer and Transmitter Power	
5.	50% video pulse aligns with Gaussian shaped pulse at 50% point	________ (√)
6.	0.75 Vp-p (typical) at 1000 W	________ (√)
9.	50% video pulse is ≥9.5 graticules long	________
12.	50% video pulse does not oscillate or disappear.	________ (√)
	Slicer quits between 1 and 2 W reading	________ (√)
16.	Pulsed RF Power Source Level reference	________
18.	XMTR POWER WATTS Display indicates 10x less than Step 16 reading with input power decreased 10 dB.	________ (√)
	XMTR POWER WATTS Display indicates 10x more than Step 16 reading with input power increased 10 dB.	________ (√)
(11)	Discriminator Frequency	
5.	P_1 pulse is displayed.	________ (√)
7.	P_2 pulse is displayed.	________ (√)
10.	F_2 pulse is displayed.	________ (√)
11.	F_2 pulse is displayed between 19.8 (±0.2 µs) and 22 µs (±0.4 µs).	________ (√)
12.	F_1 pulse is displayed.	________ (√)
20.	Frequency displayed on XMTR FREQ MHz Display is within ±20 kHz of frequency on DISPLAY SELECT Readout.	________
21.	Frequency displayed on XMTR FREQ MHz Display is within ±20 kHz of frequency on DISPLAY SELECT Readout.	________
22.	XMTR FREQ MHz Display is within ±20 kHz of frequency on DISPLAY SELECT Readout.	________ (√)
23.	XMTR FREQ MHz Display is within ±20 kHz of frequency on DISPLAY SELECT Readout.	________ (√)
25.	XMTR FREQ MHz Display is within ±20 kHz of frequency in Step 21.	________ (√)

STEP	DATA	RESULT
26.	XMTR FREQ MHz Display is within ±20 kHz of frequency in Step 22.	________ (√)
27.	Frequency displayed on XMTR FREQ MHz Display is same as recorded in Step 26.	________ (√)
28.	Frequency displayed on XMTR FREQ Hz Display is within ±50 kHz of frequency displayed in Step 19.	________ (√)
29.	Frequency displayed on XMTR FREQ MHz Display is within ±50 kHz of frequency displayed in Step 19.	________
31.	Frequency displayed on XMTR FREQ MHz Display is within ±50 kHz of frequency displayed in Step 19.	________
32.	Frequency displayed on XMTR FREQ MHz Display is within ±50 kHz of frequency displayed in Step 19.	________
33.	Frequency displayed on XMTR FREQ MHz Display is within ±50 kHz of frequency displayed in Step 19.	________
35.	dc level displayed	________
36.	The dc level shifts approximately 1 V from level recorded in Step 35.	________ (√)
37.	The dc level shifts approximately -1 V from level recorded in Step 35.	________ (√)
39.	dc level displayed	________
40.	The dc level shifts approximately +0.5 V from level recorded in Step 39.	________ (√)
41.	The dc level shifts approximately -0.5 V from level recorded in Step 39.	________ (√)
(12) Parameter Verifications		
3.	Suppressor pulse width 33 μs (±3 μs)	________ (√)
4.	Suppressor minimum pulse amplitude <3 V	________ (√)
5.	Suppressor maximum pulse amplitude >27 V	________ (√)
7.	Leading edge of suppressor pulse is coincident with leading edge of XPDR P_3 pulse	________ (√)
9.	Leading edge of suppressor pulse occurs approximately 3.5 μs before P_1 of range reply pulse	________ (√)
10.	Amplitude (p-p) of generator pulses is approximately 0.5 V into a 50 Ω Load	________ (√)
12.	Verify leading edge of P_1 occurs approximately 20 μs after beginning of Oscilloscope trace.	________ (√)
13.	Leading edge of P_3 occurs at beginning of Oscilloscope trace.	________ (√)

STEP	DATA	RESULT
15.	P_1 of range reply occurs approximately 3.5 μs after beginning of Oscilloscope trace	________ (√)
17.	Pulse spacing between leading edge of first pulse to leading edge of second pulse is 12 μs.	________ (√)
	Spacing between leading edge of second pulse to leading edge of third pulse is 18 μs.	________ (√)
28.	999.95 to 1000.05 Hz (±0.005%)	________ (√)
44.	>10 seconds per channel	________ (√)
46.	<2 seconds per channel	________ (√)

3. Troubleshooting Flowcharts

The Troubleshooting Flowcharts give step-by-step procedures necessary to determine faults within the ATC-1400A-2. When following the steps in sequence, should any requirement not be met, refer to 2-2-4 for guidance in repair of the faulty Assembly.

The Troubleshooting Flowcharts do not include all possible causes of failure, but are presented as a guideline to be used in locating the appropriate area where the ATC-1400A-2 has failed.

A. How To Use Flowchart

The Troubleshooting Flowcharts isolate a malfunction to the Assembly level, with tables containing technical data to assist in localizing and correcting common problems. Once a fault has been isolated to a particular Assembly, the technician is directed to 2-2-4 for further testing of the defective Assembly.

The troubleshooting procedure used with the flowchart is based on the premise the technician is using the same front panel control settings/GPIB commands in which the malfunction occurred.

Throughout the troubleshooting flowchart, reference is made to test points for measuring power supply voltages. To locate these test points, the technician should refer to 2-2-5 for the appropriate support illustration.

B. Troubleshooting Hints

Before proceeding with extensive troubleshooting, it is advisable that the technician first make a few simple checks, which may be related to the cause of the malfunction. These checks may save the technician many hours of labor needlessly spent on extensive troubleshooting.

- Front Panel Control Settings/GPIB Commands

  Improper front panel control settings or GPIB commands to the ATC-1400A-2 or any improper control settings to any associated test equipment may produce false troubleshooting symptoms.

- Visual Inspection

  After defining the trouble symptom, visually inspect any components within the ATC-1400A-2 which may have a relationship to the malfunction. In many instances, a malfunction may be caused by broken wires, unsoldered connections, damaged PC components, bent connector pins, etc. Also look for signs of excessive heat as evidenced by burned or charred components.

- Calibration

  Make sure the ATC-1400A-2 is in proper calibration. One or more maladjusted calibration potentiometers may be the cause of the trouble symptom(s) and the apparent malfunction.

- Performance Evaluation

  Before attempting any troubleshooting, make sure all appropriate performance evaluation procedures in 1-2-3 of the ATC-1400A-2 Operation Manual have been performed. In many cases, these procedures isolate a trouble symptom to a particular assembly, making any subsequent troubleshooting easier.

C. Safety Precautions

As with any piece of electronic equipment, extreme caution should be taken when troubleshooting live circuits. Certain circuits and/or components within the ATC-1400A-2 contain extremely high voltage potentials, capable of causing serious bodily injury or death. When troubleshooting the ATC-1400A-2, be sure to observe the following precautions:

WARNING: **THE REAR PANEL AC CONNECTOR AND POWER SUPPLY ASSEMBLY CARRY 120 OR 240 VAC AS LONG AS THE POWER CORD IS CONNECTED TO THE ATC-1400A-2 AND EXTERNAL AC POWER SOURCE. DO NOT CONTACT THESE OR ANY ASSOCIATED COMPONENTS DURING TROUBLESHOOTING OR CALIBRATION.**

WARNING: **REMOVE ALL JEWELRY OR OTHER COSMETIC APPAREL BEFORE PERFORMING ANY TROUBLESHOOTING PROCEDURES INVOLVING LIVE CIRCUITS.**

WARNING: **WHEN WORKING WITH LIVE CIRCUITS OF HIGH POTENTIAL, KEEP ONE HAND IN POCKET OR BEHIND BACK, TO AVOID SERIOUS SHOCK HAZARD. USE ONLY INSULATED TROUBLESHOOTING TOOLS WHEN WORKING WITH LIVE CIRCUITS.**

WARNING: **FOR ADDED INSULATION, PLACE RUBBER BENCH MAT UNDERNEATH ALL POWERED BENCH EQUIPMENT, AS WELL AS A RUBBER MAT UNDERNEATH TECHNICIAN'S CHAIR.**

WARNING: **HEED ALL WARNINGS AND CAUTIONS CONCERNING MAXIMUM VOLTAGES AND POWER INPUTS.**

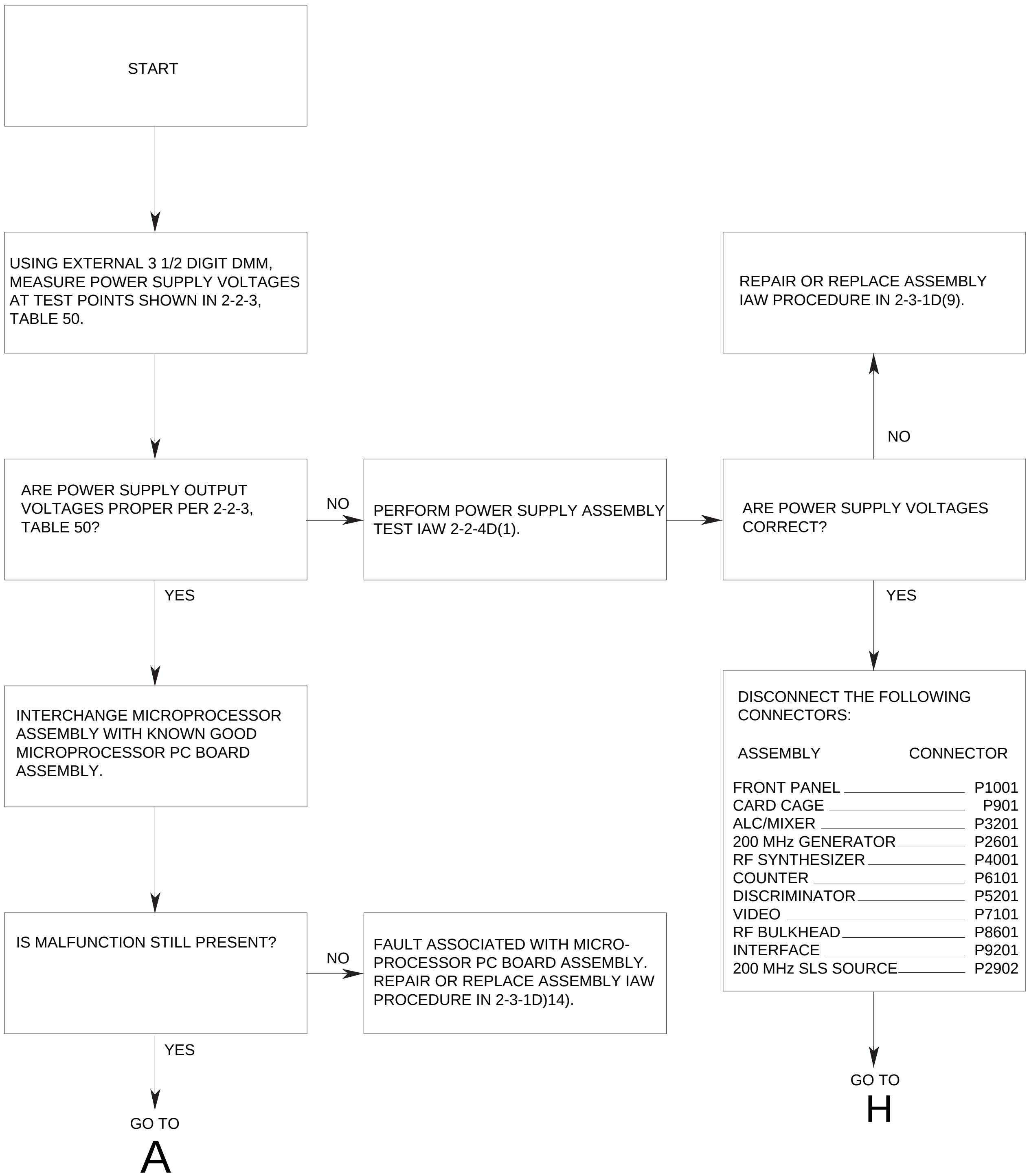
D. Test Equipment Requirements

Appendix G contains a list of test equipment suitable for performing any procedure in this manual. Any other equipment meeting the specifications listed in Appendix G, may be substituted in place of the recommended models.

NOTE: For certain procedures, equipment listed in Appendix G may exceed the minimum required specifications.

E. Disassembly Requirements

The exterior case must be removed from ATC-1400A-2 for the Troubleshooting Procedures. Refer to 2-3-1 for covers removal, assembly removal and disassembly instructions.


START
USING EXTERNAL 3 1/2 DIGIT DMM, MEASURE POWER SUPPLY VOLTAGES AT TEST POINTS SHOWN IN 2-2-3, TABLE 50.
ARE POWER SUPPLY OUTPUT VOLTAGES PROPER PER 2-2-3, TABLE 50?
NO
PERFORM POWER SUPPLY ASSEMBLY TEST IAW 2-2-4D(1).
ARE POWER SUPPLY VOLTAGES CORRECT?
NO
REPAIR OR REPLACE ASSEMBLY IAW PROCEDURE IN 2-3-1D(9).
YES
DISCONNECT THE FOLLOWING CONNECTORS:
ASSEMBLY CONNECTOR
FRONT PANEL P1001
CARD CAGE P901
ALC/MIXER P3201
200 MHz GENERATOR P2601
RF SYNTHESIZER P4001
COUNTER P6101
DISCRIMINATOR P5201
VIDEO P7101
RF BULKHEAD P8601
INTERFACE P9201
200 MHz SLS SOURCE P2902
GO TO
H
YES
INTERCHANGE MICROPROCESSOR ASSEMBLY WITH KNOWN GOOD MICROPROCESSOR PC BOARD ASSEMBLY.
IS MALFUNCTION STILL PRESENT?
NO
FAULT ASSOCIATED WITH MICRO-PROCESSOR PC BOARD ASSEMBLY. REPAIR OR REPLACE ASSEMBLY IAW PROCEDURE IN 2-3-1D)14).
YES
GO TO
A

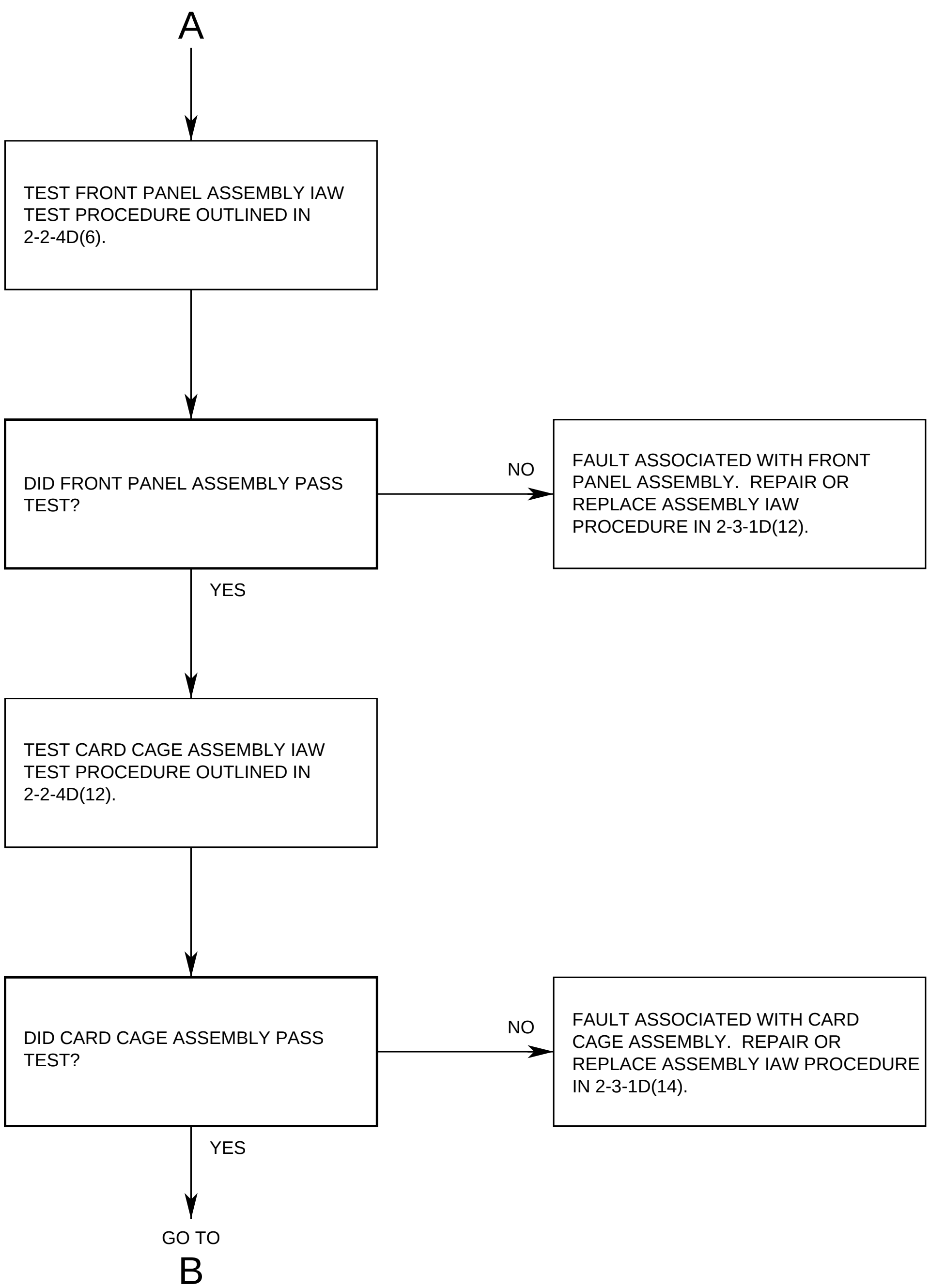
7504011

TEST POINTS	VOLTAGE READING
J9901 Pins 7 and 10	+5 V (0.2 V)
J9901 Pin 12	-5 V (0.25 V)
J9901 Pin 6	+12 V (0.25 V)
J9901 Pins 9 and 11	-12 V (0.25 V)
NOTE: All voltages are measured with respect to chassis ground. Input voltage is measured from J9902, pin 1 to J9902, pin 2 (typically 110 VAC).	

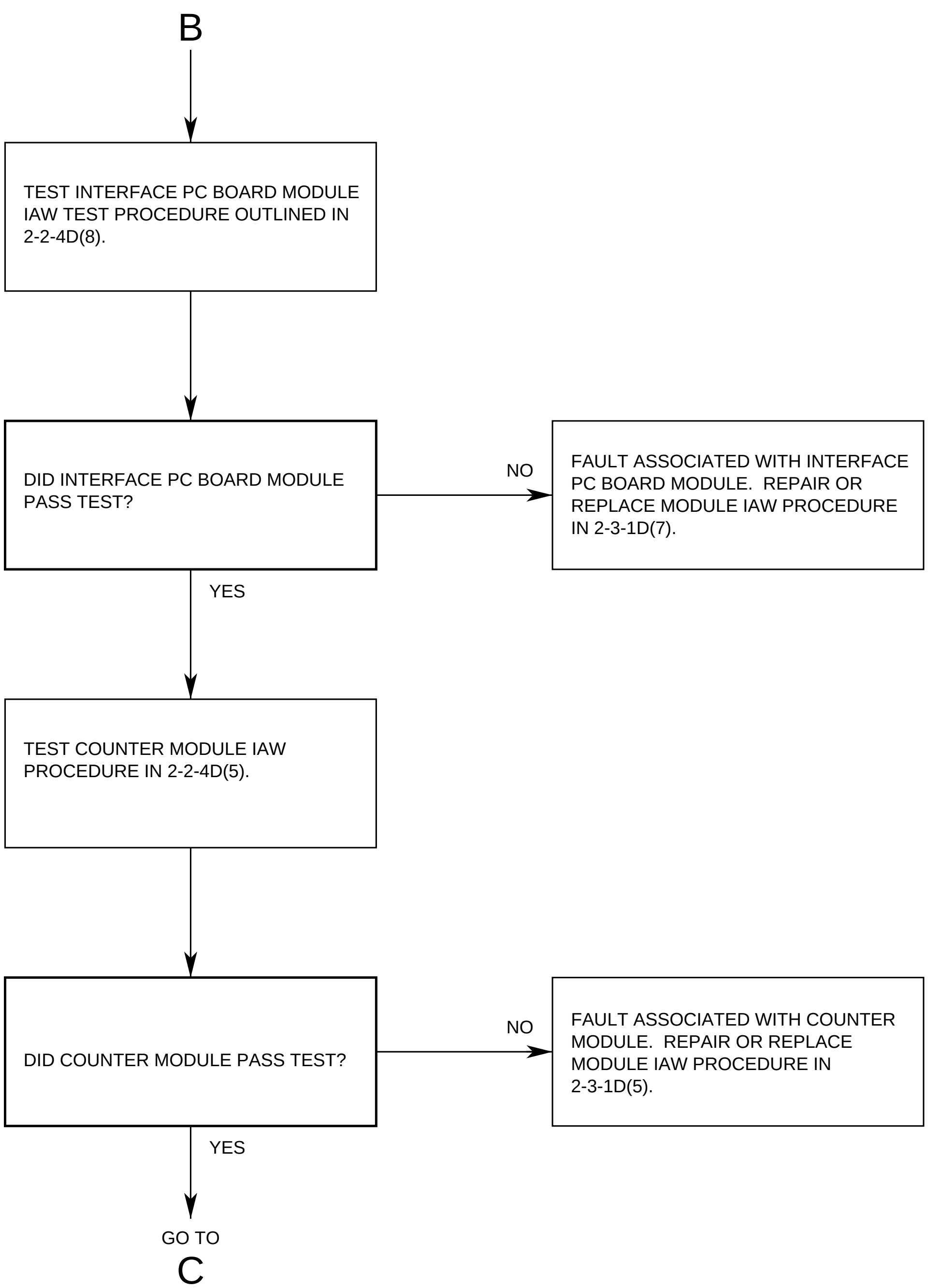
Power Supply dc Voltage Measurement Chart
Table 50

RECONNECT ORDER	ASSEMBLY	CONNECTOR
1	FRONT PANEL	P1001
2	CARD CAGE	P901
3	INTERFACE PC BOARD	P9201
4	RF BULKHEAD	P8601
5	VIDEO	P7101
6	DISCRIMINATOR	P5201
7	COUNTER	P6101
8	200 MHz GENERATOR	P2601
9	200 MHz SLS SOURCE (SLS MOD)	P2902
10	ALC/MIXER	P3201
11	RF SYNTHESIZER	P4001

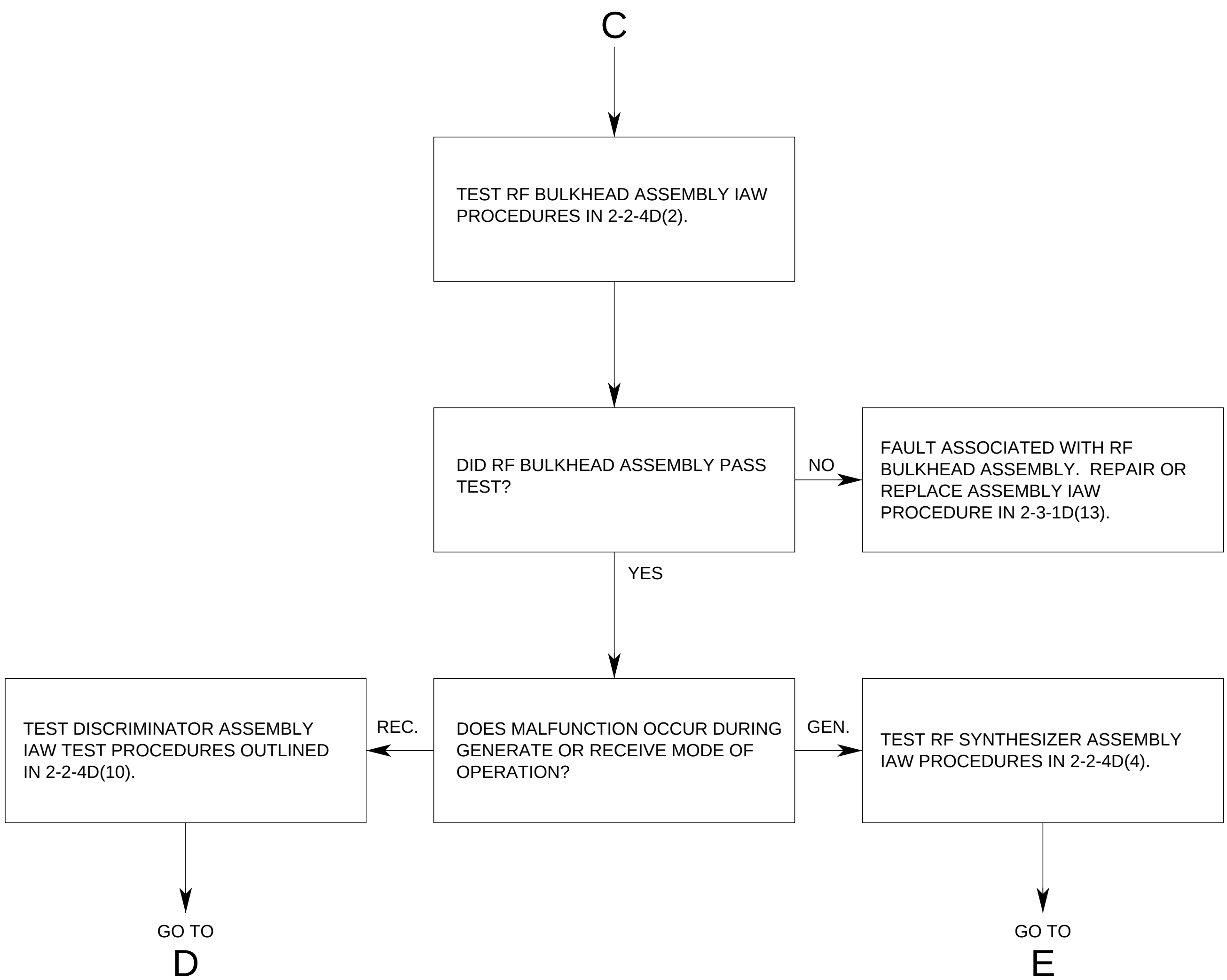
Assembly Reconnect Sequence Chart
Table 51


A
TEST FRONT PANEL ASSEMBLY IAW TEST PROCEDURE OUTLINED IN 2-2-4D(6).
DID FRONT PANEL ASSEMBLY PASS TEST?
NO
FAULT ASSOCIATED WITH FRONT PANEL ASSEMBLY. REPAIR OR REPLACE ASSEMBLY IAW PROCEDURE IN 2-3-1D(12).
YES
TEST CARD CAGE ASSEMBLY IAW TEST PROCEDURE OUTLINED IN 2-2-4D(12).
DID CARD CAGE ASSEMBLY PASS TEST?
NO
FAULT ASSOCIATED WITH CARD CAGE ASSEMBLY. REPAIR OR REPLACE ASSEMBLY IAW PROCEDURE IN 2-3-1D(14).
YES
GO TO
B

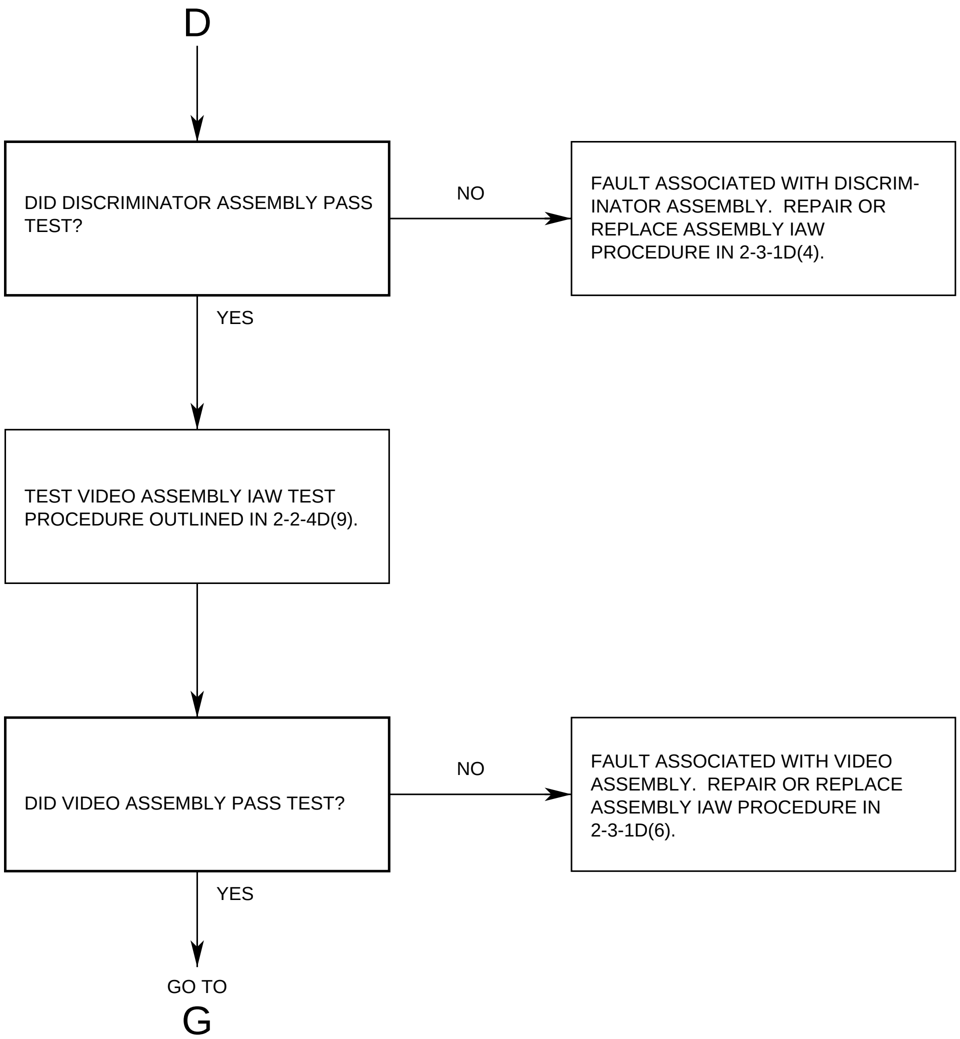
7504012


B
TEST INTERFACE PC BOARD MODULE IAW TEST PROCEDURE OUTLINED IN 2-2-4D(8).
DID INTERFACE PC BOARD MODULE PASS TEST?
NO
FAULT ASSOCIATED WITH INTERFACE PC BOARD MODULE. REPAIR OR REPLACE MODULE IAW PROCEDURE IN 2-3-1D(7).
YES
TEST COUNTER MODULE IAW PROCEDURE IN 2-2-4D(5).
DID COUNTER MODULE PASS TEST?
NO
FAULT ASSOCIATED WITH COUNTER MODULE. REPAIR OR REPLACE MODULE IAW PROCEDURE IN 2-3-1D(5).
YES
GO TO
C

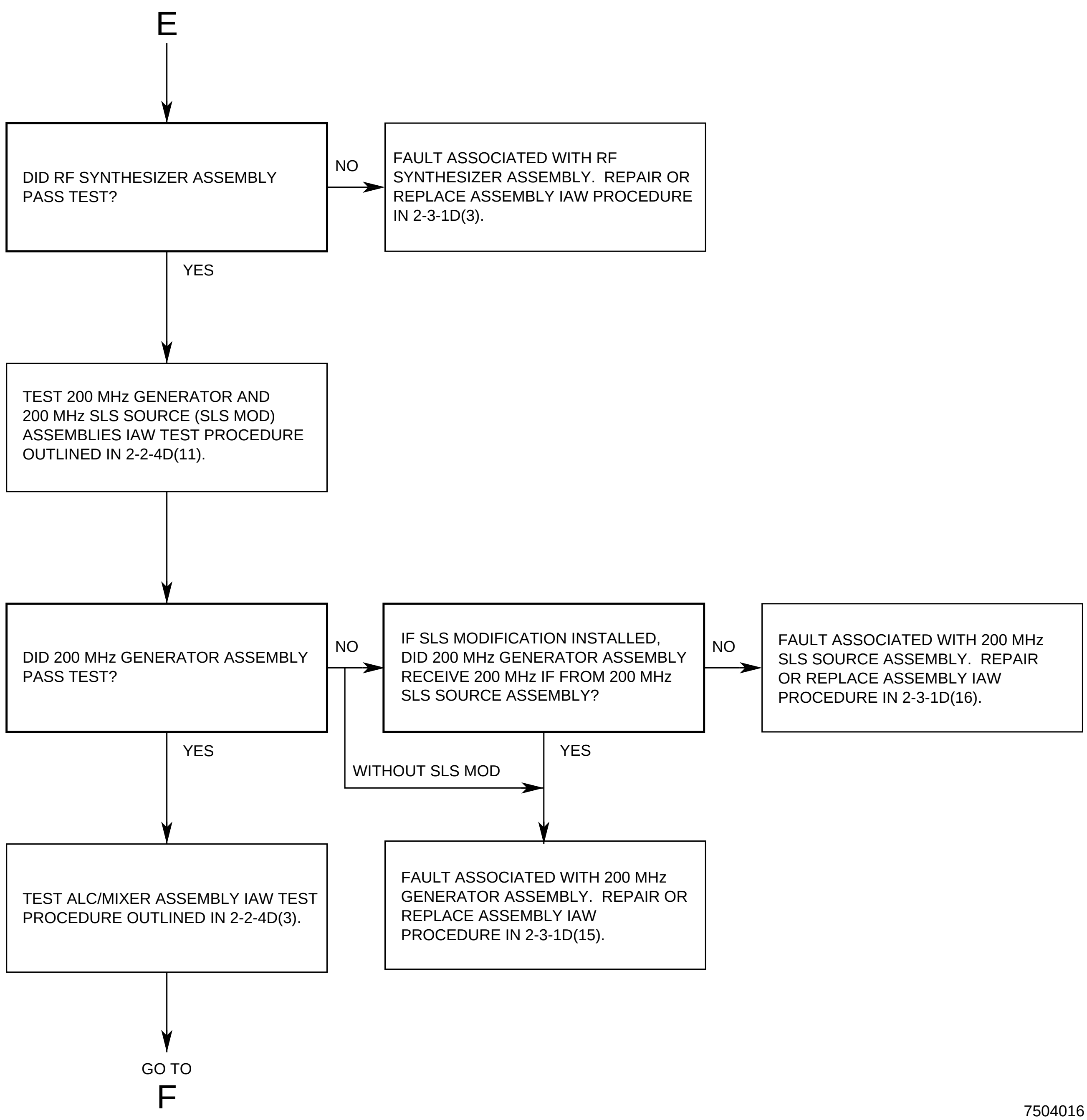
7504013


C
TEST RF BULKHEAD ASSEMBLY IAW PROCEDURES IN 2-2-4D(2).
DID RF BULKHEAD ASSEMBLY PASS TEST?
NO
FAULT ASSOCIATED WITH RF BULKHEAD ASSEMBLY. REPAIR OR REPLACE ASSEMBLY IAW PROCEDURE IN 2-3-1D(13).
YES
DOES MALFUNCTION OCCUR DURING GENERATE OR RECEIVE MODE OF OPERATION?
REC.
TEST DISCRIMINATOR ASSEMBLY IAW TEST PROCEDURES OUTLINED IN 2-2-4D(10).
GEN.
TEST RF SYNTHESIZER ASSEMBLY IAW PROCEDURES IN 2-2-4D(4).
GO TO
D
GO TO
E

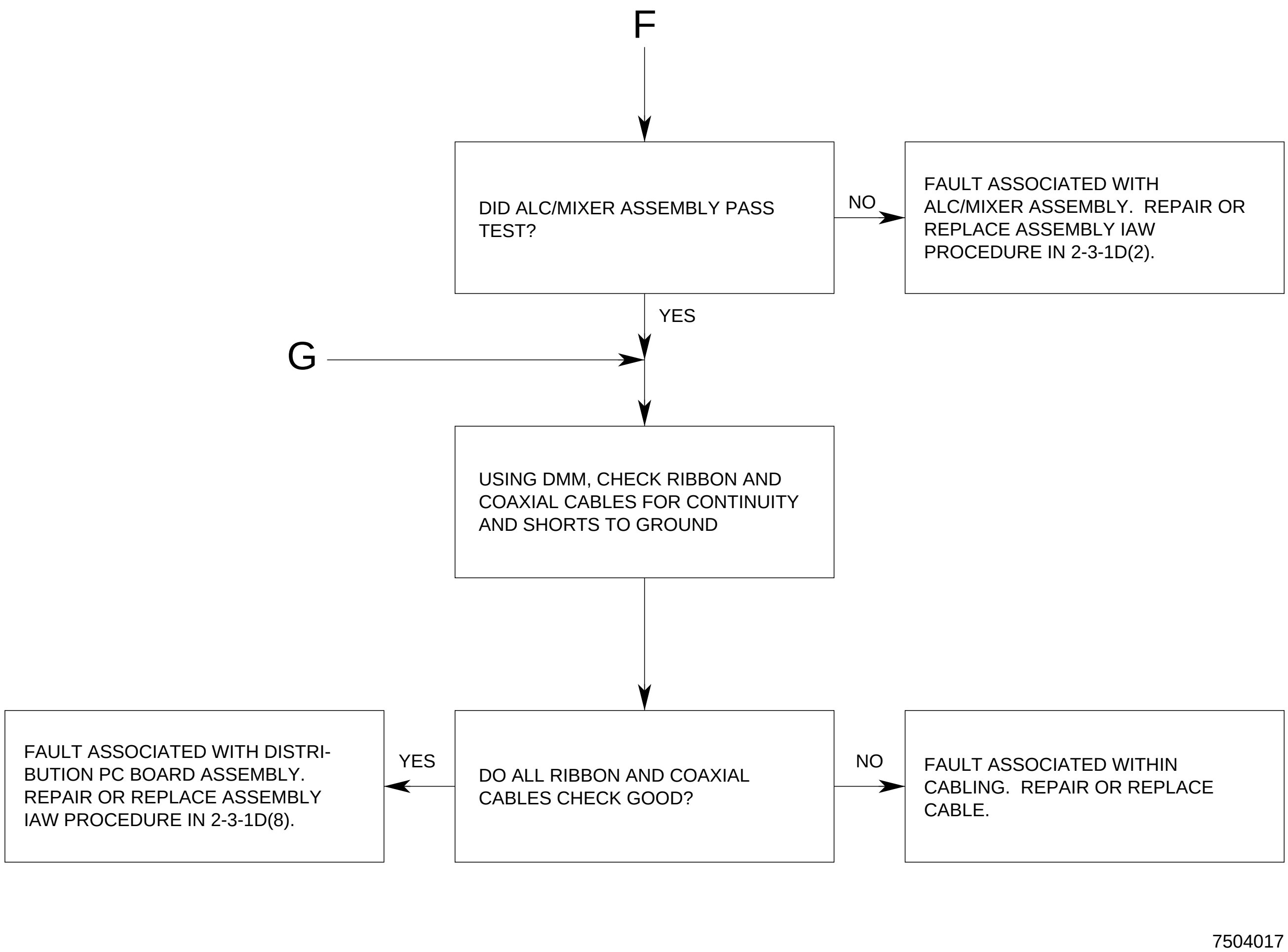
7504014

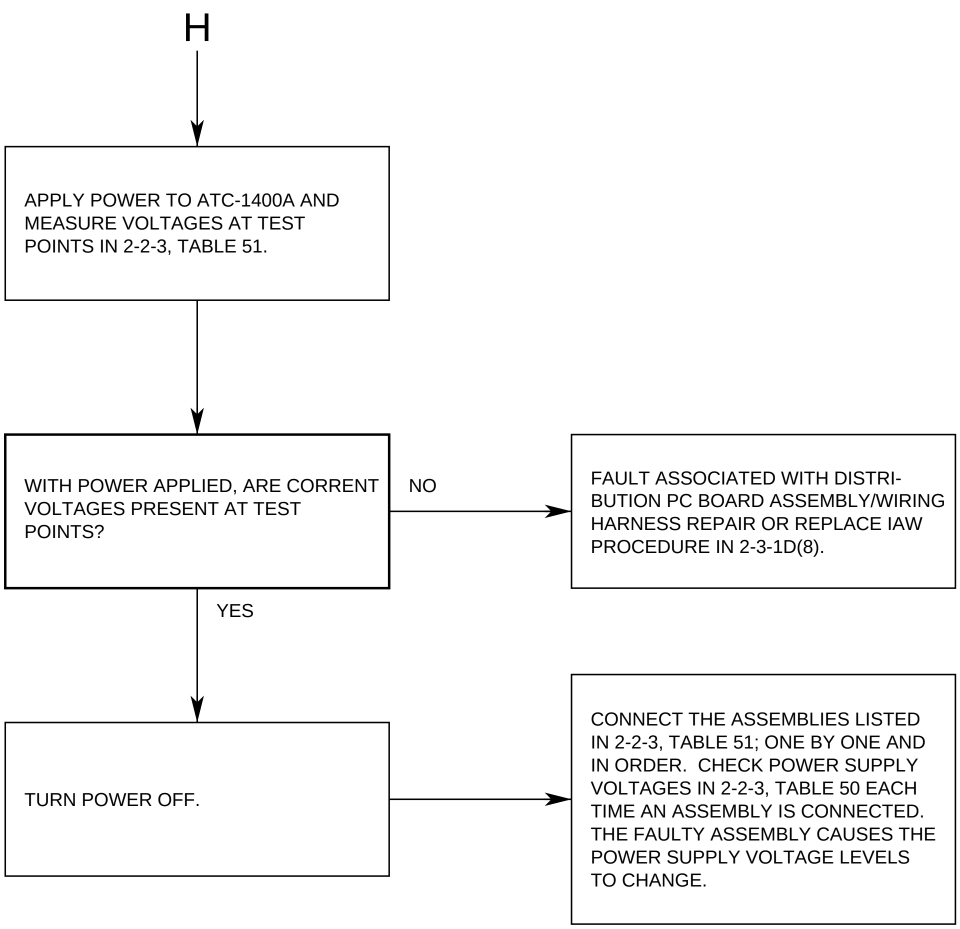

D
DID DISCRIMINATOR ASSEMBLY PASS TEST?
NO
FAULT ASSOCIATED WITH DISCRIM- INATOR ASSEMBLY. REPAIR OR REPLACE ASSEMBLY IAW PROCEDURE IN 2-3-1D(4).
YES
TEST VIDEO ASSEMBLY IAW TEST PROCEDURE OUTLINED IN 2-2-4D(9).
DID VIDEO ASSEMBLY PASS TEST?
NO
FAULT ASSOCIATED WITH VIDEO ASSEMBLY. REPAIR OR REPLACE ASSEMBLY IAW PROCEDURE IN 2-3-1D(6).
YES
GO TO
G

7504015


E
DID RF SYNTHESIZER ASSEMBLY PASS TEST?
NO
FAULT ASSOCIATED WITH RF SYNTHESIZER ASSEMBLY. REPAIR OR REPLACE ASSEMBLY IAW PROCEDURE IN 2-3-1D(3).
YES
TEST 200 MHz GENERATOR AND 200 MHz SLS SOURCE (SLS MOD) ASSEMBLIES IAW TEST PROCEDURE OUTLINED IN 2-2-4D(11).
DID 200 MHz GENERATOR ASSEMBLY PASS TEST?
NO
IF SLS MODIFICATION INSTALLED, DID 200 MHz GENERATOR ASSEMBLY RECEIVE 200 MHz IF FROM 200 MHz SLS SOURCE ASSEMBLY?
NO
FAULT ASSOCIATED WITH 200 MHz SLS SOURCE ASSEMBLY. REPAIR OR REPLACE ASSEMBLY IAW PROCEDURE IN 2-3-1D(16).
YES
WITHOUT SLS MOD
YES
TEST ALC/MIXER ASSEMBLY IAW TEST PROCEDURE OUTLINED IN 2-2-4D(3).
FAULT ASSOCIATED WITH 200 MHz GENERATOR ASSEMBLY. REPAIR OR REPLACE ASSEMBLY IAW PROCEDURE IN 2-3-1D(15).
GO TO
F

7504016


F
DID ALC/MIXER ASSEMBLY PASS TEST?
NO
FAULT ASSOCIATED WITH ALC/MIXER ASSEMBLY. REPAIR OR REPLACE ASSEMBLY IAW PROCEDURE IN 2-3-1D(2).
YES
G
USING DMM, CHECK RIBBON AND COAXIAL CABLES FOR CONTINUITY AND SHORTS TO GROUND
DO ALL RIBBON AND COAXIAL CABLES CHECK GOOD?
YES
FAULT ASSOCIATED WITH DISTRIBUTION PC BOARD ASSEMBLY. REPAIR OR REPLACE ASSEMBLY IAW PROCEDURE IN 2-3-1D(8).
NO
FAULT ASSOCIATED WITHIN CABLING. REPAIR OR REPLACE CABLE.
7504017


H
APPLY POWER TO ATC-1400A AND MEASURE VOLTAGES AT TEST POINTS IN 2-2-3, TABLE 51.
WITH POWER APPLIED, ARE CORRENT VOLTAGES PRESENT AT TEST POINTS?
NO
FAULT ASSOCIATED WITH DISTRIBUTION PC BOARD ASSEMBLY/WIRING HARNESS REPAIR OR REPLACE IAW PROCEDURE IN 2-3-1D(8).
YES
TURN POWER OFF.
CONNECT THE ASSEMBLIES LISTED IN 2-2-3, TABLE 51; ONE BY ONE AND IN ORDER. CHECK POWER SUPPLY VOLTAGES IN 2-2-3, TABLE 50 EACH TIME AN ASSEMBLY IS CONNECTED. THE FAULTY ASSEMBLY CAUSES THE POWER SUPPLY VOLTAGE LEVELS TO CHANGE.

7504018

THIS PAGE INTENTIONALLY LEFT BLANK.

4. Assembly Testing

A. General

These detailed mechanical assembly and PC board assembly procedures are intended to aid the technician in determining whether a given assembly or PC board (suspected as defective) is readily repairable or requires replacement.

Refer to 2-2-5 for mechanical assemblies, PC board assemblies, interconnect diagrams and circuit schematics.

(1) Internal Data Bus Test Considerations

The ATC-1400A-2 contains a microcomputer, ten assemblies and six card cage PC boards. Seven assemblies and all card cage PC boards are peripherals to the microprocessor. The peripheral assemblies and PC board assemblies are as follows:

Peripheral Assemblies	Peripheral PC Boards
Front Panel Assembly	XPDR Control PC Board Assembly
Interface Assembly	XPDR Pulse PC Board Assembly
200 MHz Assembly	XPDR Decoder PC Board Assembly
RF Synthesizer Assembly	DME Reply PC Board Assembly
RF Bulkhead Assembly	DME Range PC Board Assembly
Counter Assembly	DME Timing PC Board Assembly
Video Assembly	

The peripheral assemblies and PC boards communicate with the microprocessor over an internal data bus (27 pin ribbon cable). The data bus employs a memory mapped scheme for I/O devices which has eight address bits (AØ through A7) capable of selecting 1 of 256 locations.

The locations on the microprocessor's memory map are between DCØØ$_{(16)}$ and DCFF$_{(16)}$. For a more detailed description of the internal data bus, refer to 2-2-4, Table 52.

DATA BUS PIN #	DATA BUS SIGNAL NAME	DATA BUS SIGNAL FUNCTION
1	GND	Ground
2	µP CLOCK	Processor Clock - Active High. During write cycle, data is placed on DØ through D7 lines. After sufficient setup time (to allow address decoding, etc.), µP CLOCK line goes high. The low to high transition strobes data into receiving latch.
3	REEN	Read Enable - Active High. During a read cycle, selected buffer places valid data on DØ through D7 lines when REEN line is active.
4	5 V	Peripheral 5 V Supply 5.0 V (±0.25 V)
5 6 7 8 9 10	A7 A6 A5 A4 A3 A2	MSB Address Lines. Contains location 6 A6 of latch or buffer currently being 7 A5 serviced.
11 12	A1 AØ	LSB Address Lines
14	GND	Ground
15	GND	Ground
16	5 V	Peripheral 5 V Supply 5.0 V (±0.25 V)
17	GND	Ground
18 19 20 21 22 23 24	D7 D6 D5 D4 D3 D2 D1	MSB - Data Bits. Bi-directional data is transmitted over these lines during read cycle. DØ through D8 lines are tri-stated when inactive.
25	DØ	LSB Data Line

Internal Data Bus Signal to Pin Locations
Table 52

(2) Test Methods

When testing a peripheral assembly or PC board on the internal data bus, it is necessary to issue commands over the internal data bus. Assembly Testing Procedures use one of two methods of communicating with peripherals for testing the assemblies and PC boards within the ATC-1400A-2.

- Front Panel Control Test Method

  Direct control of the internal data bus through ATC-1400A-2 front panel control settings for communication with peripheral assemblies and PC boards.

- GPIB Controller Test Method

  Direct control of the internal data bus through the GPIB Control. The ATC-1400A-2 firmware contains a monitor routine to allow reading or writing to a memory location.

CAUTION: CARE IS ADVISED WHEN USING THE MONITOR ROUTINE AS IT CAN ACCESS ANY MEMORY LOCATION ACCESSIBLE BY THE MICROPROCESSOR, AND ANY COMMAND ENTERED IN ERROR BY THE GPIB CONTROLLER CAN CHANGE CRITICAL SYSTEM DATA AND CAUSE ERRORS.

The only address locations valid for the external data bus are $DCØØ_{(16)}$ through $DCFF_{(16)}$. These are the only locations to be accessed by the monitor routine. Do not access locations below $8ØØØ_{(16)}$.

Set GPIB ADDRESS DIP Switches to "111XXXXX."

To access the monitor routine, enter the following ASCII Command:

"0" (return)

After entering ASCII Command "0," the monitor routine is in control and the microprocessor only accepts the following three types of commands:

- WRITE

  Allows writing to a memory location using the following ASCII format:

  "WDCnnxx" (return)

  W - Command

  DC - High order address byte in hexadecimal (always DC[16])

  nn - Low order address byte (from $ØØ_{[16]}$ to $FF_{[16]}$) present on AØ to A7 of the internal data bus.

  xx - The data byte to be written ($ØØ_{[16]}$ to $FF_{[16]}$) appears on DØ to D7 of the internal data bus.

- READ

  Allows reading contents of a memory location using the following ASCII format:

  "RDCnn" (return) - GPIB Controller displays content of location in hexadecimal after the above address is entered.

  R - Command

  DC - High order address byte in hexadecimal (always $DC_{[16]}$)

  nn - Low order address byte (from ØØ[$_{16}$] to FF[$_{16}$]). (8 bit address appears on AØ to A7 of the internal data bus.)

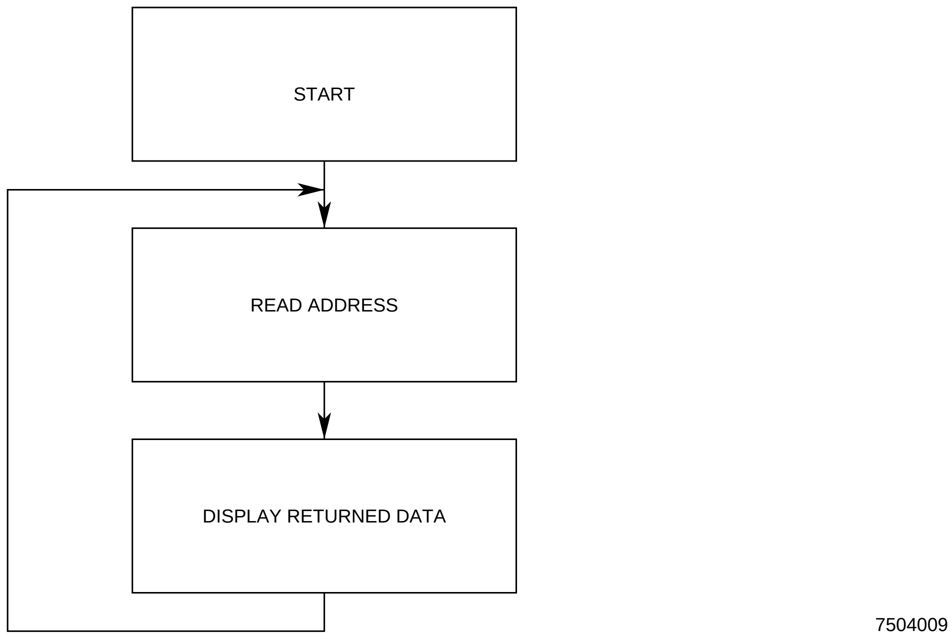
- QUIT

Allows exit from monitor routine (return to normal operation) using ASCII Command "Q" (return).

Use of the GPIB Controller requires the Microprocessor Assembly, Power Supply Assembly, Motherboard PC Board, 25 Conductor Ribbon Cable and Power Distribution Systems are working properly, as the GPIB Controller method of testing has the same limitations as the front panel control test method. Specific data and address information is provided for each test along with the required front panel control settings if applicable.

CAUTION: NEVER ACCESS ANY LOCATION BELOW $8ØØØ_{(16)}$.

To continuously read an address location, using a GPIB Controller, it is necessary to load the program shown in 2-2-4, Figure 41.



GPIB Controller Program
Figure 41

B. Precautions

(1) Safety

As with any piece of electronic equipment, extreme caution should be taken when troubleshooting or working with live circuits. Certain circuits and/or components within the ATC-1400A-2 contain extremely high voltage potentials, capable of causing serious bodily injury or death. When performing the assembly testing procedures in this section, be sure to observe the following precautions:

WARNING: THE REAR PANEL, FRONT PANEL AND POWER SUPPLY (ONLY WITH POWER SWITCH ON) ASSEMBLIES CARRY 120 OR 240 VAC AS LONG AS THE POWER CORD IS CONNECTED TO THE ATC-1400A-2 AND EXTERNAL AC POWER SOURCE. DO NOT CONTACT THESE OR ANY ASSOCIATED COMPONENTS WHILE PERFORMING THE ASSEMBLY TESTING PROCEDURES.

WARNING: REMOVE ALL JEWELRY OR OTHER COSMETIC APPAREL BEFORE PERFORMING ANY CALIBRATION/VERIFICATION PROCEDURE INVOLVING LIVE CIRCUITS.

WARNING: WHEN WORKING WITH LIVE CIRCUITS OF HIGH POTENTIAL, KEEP ONE HAND IN POCKET OR BEHIND BACK TO AVOID SERIOUS SHOCK HAZARD.

WARNING: USE ONLY INSULATED TROUBLESHOOTING TOOLS WHEN WORKING WITH LIVE CIRCUITS.

WARNING: FOR ADDED INSULATION, PLACE RUBBER BENCH MAT UNDERNEATH ALL POWERED BENCH EQUIPMENT, AS WELL AS RUBBER MAT UNDERNEATH TECHNICIAN'S CHAIR.

WARNING: HEED ALL WARNINGS AND CAUTIONS CONCERNING MAXIMUM VOLTAGES AND POWER INPUTS.

(2) ESD

CAUTION: THE POWER SUPPLY ASSY, DIGITAL IF PCB ASSY, FRONT PANEL PULSE PCB ASSY, RF ASSY AND FRONT PANEL ASSY CONTAIN PARTS SENSITIVE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD). ALL PERSONNEL PERFORMING CALIBRATION PROCEDURES SHOULD HAVE KNOWLEDGE OF ACCEPTED ESD PRACTICES AND/OR BE ESD CERTIFIED.

CAUTION

THIS EQUIPMENT CONTAINS PARTS
SENSITIVE TO DAMAGE
BY ELECTROSTATIC DISCHARGE (ESD)

(3) EMC and Safety Compliance

All assemblies, cables, connectors, tie wraps, gaskets, fingerstock and miscellaneous hardware within the Test Set are configured to satisfy the safety and EMC compliance standards.

CAUTION: UPON COMPLETION OF ANY MAINTENANCE ACTION; ALL ASSEMBLIES, CABLES, CONNECTORS, TIE WRAPS, GASKETS, FINGERSTOCK AND MISCELLANEOUS HARDWARE MUST BE CONFIGURED AS INSTALLED AT THE FACTORY.

C. Requirements

(1) Test Equipment

Appendix G contains a list of test equipment suitable for performing any procedure in this manual. Any other test equipment meeting the specifications of these models may be substituted in place of the recommended models.

NOTE: For Certain procedures, equipment listed in Appendix G may exceed the minimum required specifications.

(2) Disassembly Requirements

Remove the exterior top dust cover from the ATC-1400A-2 according to the disassembly procedure in 2-3-1D(1)(a) prior to performing the Assembly Testing Procedures. Refer to 2-3-1 for other disassembly instructions as needed.

D. Assembly Test Procedures

Refer to Appendix J, Figure 1 to locate controls, connectors and indicators on the ATC-1400A-2 Front Panel. Refer to Appendix J, Figure 2 to locate controls, connectors and indicators on the ATC-1400A-2 Rear Panel.

(1) Power Supply Assembly

TEST EQUIPMENT: 1 Digital Multimeter

SET-UP DIAGRAM: None

STEP	PROCEDURE
1.	Set POWER Switch to ***ON***.
2.	Set Digital Multimeter to indicate positive dc voltage.
3.	Connect Digital Multimeter ground lead to chassis ground.
4.	Connect Digital Multimeter positive lead to P7101, pin 1. Refer to J7101 (2-2-2, Figure 26) on Video Assembly. Verify 5 Vdc (±0.2 Vdc).
5.	Connect Digital Multimeter positive lead to P7101, pin 3. Refer to J7101 (2-2-2, Figure 26) on Video Assembly. Verify 12 Vdc (±0.4 V).
6.	Set Digital Multimeter to indicate negative dc voltage.
7.	Connect Digital Multimeter positive lead to P7101, pin 5. Refer to J7101 (2-2-2, Figure 26) on Video Assembly. Verify -12 Vdc (±0.4 V).
8.	Connect Digital Multimeter positive lead to P7101, pin 6. Refer to J7101 (2-2-2, Figure 26) on Video Assembly. Verify -5 Vdc (±0.4 V).
9.	Set POWER Switch to ***OFF***.
10.	Disconnect test equipment.

(2) RF Bulkhead Assembly

TEST EQUIPMENT:
1 50 Ω dc Block
1 50 Ω Termination
1 Coaxial Cable (50 Ω BNC to BNC)
1 Coaxial Cable (50 Ω BNC to SMA)
1 Coaxial Cable (50 Ω BNC to SMB)
1 Coaxial Cable (50 Ω BNC to Type N)
1 Digital Multimeter
1 Oscilloscope
1 Power Meter
1 Signal Generator
1 Tracking Generator

SET-UP DIAGRAM: None

WARNING: DO NOT APPLY POWER TO ATC-1400A UNTIL INSTRUCTED.

STEP PROCEDURE

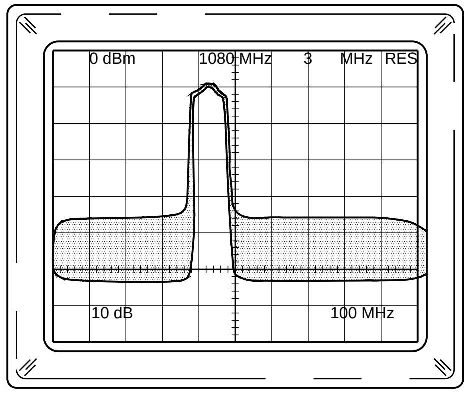
1. Refer to 2-2-5, Figure 77, Composite Assembly (3 of 4). Loosen semi-rigid coaxial cable connector P/J3103 on ALC/Mixer Assembly.
2. Refer to 2-2-5, Figure 77, Composite Assembly (3 of 4). Disconnect coaxial cable connectors as follows:
   - P/J3202 on ALC/Mixer Assembly
   - P/J3501 on Video Assembly
   - P/J5101 on Discriminator Assembly
   - P/J8104 on RF Bulkhead Assembly (Rotate cable out of the way.)
3. Using 50 Ω dc Block and coaxial cable, connect Tracking Generator output to J8104 on RF Bulkhead Assembly (2-2-5, Figure 77).
4. Use coaxial cable to connect Tracking Generator input to ATC-1400A-2 RF I/O Connector (J15).
5. Use coaxial cable to connect end of coaxial cable P3202 (2-2-5, Figure 77) to Oscilloscope 50 Ω input.
6. Apply ac power to ATC-1400A-2 and set POWER Switch to ***ON***.
7. Set ATC-1400A-2 controls as follows:

CONTROL	SETTING
RF LEVEL Control	***-10 dBm***
CW/NORM/OFF Switch	***CW***
MAN/AUTO/MAN STEP Switch	***MAN***
FREQ/FUNCTION SELECT Thumbwheels	***1030 MHz X***
ΔF Thumbwheels	***OFF***

8. Set Tracking Generator output to -10 dBm and adjust Tracking Generator to display a 952 to 1035 MHz bandpass filter frequency response.

STEP PROCEDURE

9. Verify 952 to 1035 MHz bandpass filter response curve displayed on Tracking Generator is similar to 2-2-4, Figure 42.



952 to 1035 MHz Bandpass Filter Frequency Response
Figure 42

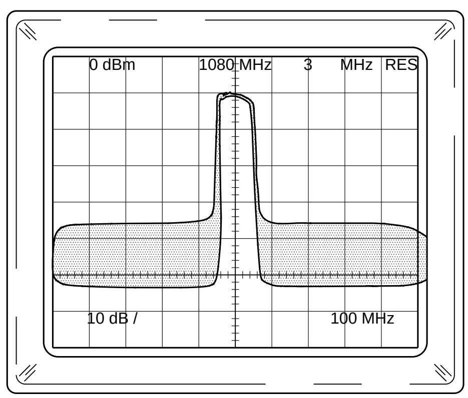
10. Refer to 2-2-5, Figure 77, Composite Assembly (3 of 4). Disconnect P/J9201 on Interface PC Board Assembly.

11. Verify 952 to 1035 MHz Bandpass Filter Frequency Response decreases >20 dB.

12. Reconnect P/J9201 on Interface PC Board Assembly (2-2-5, Figure 77).

13. Set FREQ/FUNCTION SELECT Thumbwheels to ***1040 MHz X***.

14. Verify 1035 to 1125 MHz bandpass filter frequency response on Tracking Generator is similar to 2-2-4, Figure 43.



1035 to 1125 MHz Bandpass Filter Frequency Response
Figure 43

15. Disconnect P/J9201 on Interface PC Board Assembly (2-2-5, Figure 77).

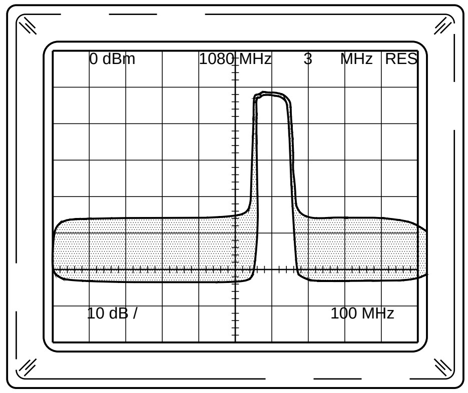
16. Verify 1035 to 1125 MHz Bandpass Filter Frequency Response decreases >20 dB.

17. Reconnect P/J9201 on Interface PC Board Assembly (2-2-5, Figure 77).

18. Set FREQ/FUNCTION SELECT Thumbwheels to ***1140 MHz X***.

STEP PROCEDURE

19. Verify 1125 to 1223 MHz bandpass filter frequency response on Tracking Generator is similar to 2-2-4, Figure 44.



7503007

1125 to 1223 MHz Bandpass Filter Frequency Response
Figure 44

20. Disconnect P/J9201 on Interface PC Board Assembly (2-2-5, Figure 77).

21. Verify 1125 to 1223 MHz Bandpass Filter Frequency Response decreases >20 dB.

22. Reconnect P/J9201 on Interface PC Board Assembly (2-2-5, Figure 77).

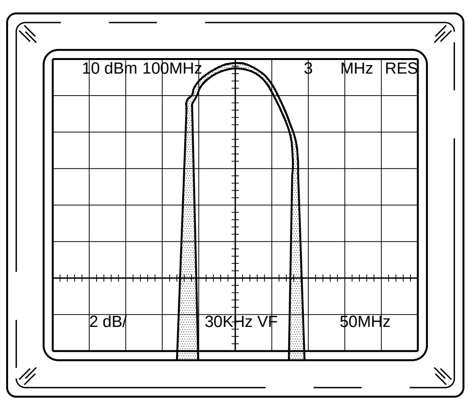
23. Verify Oscilloscope displays waveform (similar to Spectrum Analyzer display) pulse with amplitude of 0.6 to 1.5 Vdc.

24. Disconnect P3202 from Oscilloscope. Connect GEN Connector (J17) to Oscilloscope input.

25. Verify Oscilloscope displays waveform (similar to Spectrum Analyzer display) pulse with amplitude of 0.6 to 1.5 Vdc.

26. Set RF LEVEL Control for ***00 dBm*** as displayed on RF LEVEL -dBm Display.

27. Adjust Tracking Generator for a display as shown in 2-2-4, Figure 45. Adjust Tracking Generator output level for -10 dBm.



7503008

RF Level Displayed at 0 dB
Figure 45

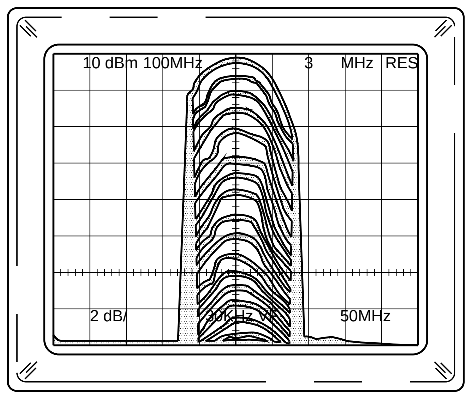
STEP PROCEDURE

28. Decrease RF LEVEL Control in 1 dB increments until RF Level of filter shape display disappears from view on Tracking Generator. Verify Tracking Generator display decreases by 1 dB as shown in 2-2-4, Figure 46.

NOTE: Most Tracking Generators cannot measure levels below -90 dBm. Therefore, incremental accuracy need only be checked to within specifications of Tracking Generator used:

RF LEVEL CONTROL SETTINGS	TOLERANCE
0 to -90 dBm -90 to -110 dBm -110 to -127 dBm	±0.5 dB ±0.7 dB ±0.9 dB

NOTE: To prevent RF level filter shape display from disappearing on Tracking Generator display when decreasing RF LEVEL Control, readjust reference level control on Tracking Generator until filter shape display is at 0 dB mark (2-2-4, Figure 45).



7503009

RF Level Displayed at Multiple Decibel Settings
Figure 46

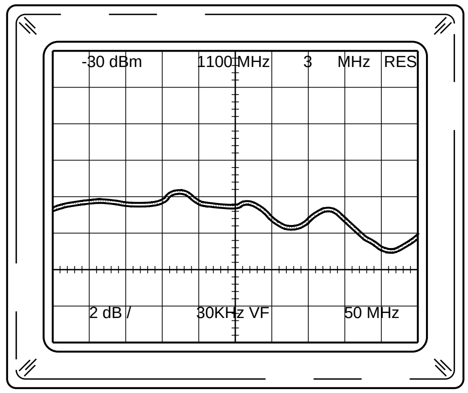
29. Set RF LEVEL Control ***ccw*** until desired level is displayed on RF LEVEL -dBm Display.

30. Disconnect Tracking Generator input from RF I/O Connector (J15). Connect Tracking Generator input to end of coaxial cable P3501 (2-2-5, Figure 77).

31. Disconnect Tracking Generator output from J8104 on RF Bulkhead Assembly. Connect Tracking Generator output to RF I/O Connector (J15).

STEP PROCEDURE

32. Set Tracking Generator to 0 dBm. Verify RF Level response curve is nominal -39 dBm with flatness ±3 dB at 900 to 1250 MHz as shown in 2-2-4, Figure 47.

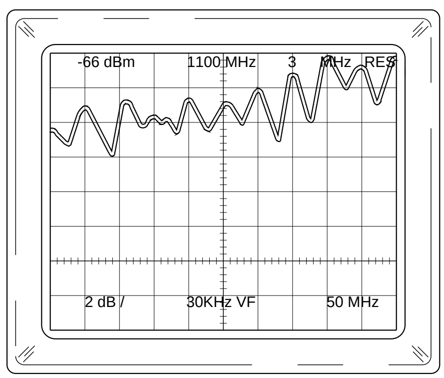


7503010

RF Level Filter Frequency Response at Nominal -39 dBm Level
Figure 47

33. Disconnect Tracking Generator input from P3501. Connect Tracking Generator input to end of coaxial cable P5101 (2-2-5, Figure 77).

34. Verify RF response level is nominal 30 dB (±4 dB) down from Step 38 with flatness ±3 dB at 900 to 1250 MHz as shown in 2-2-4, Figure 48.



7503011

RF Level Filter Frequency Response at Nominal -30 dB From -39 dBm
Figure 48

35. Disconnect Tracking Generator output from RF I/O Connector (J15).

36. Remove termination from EXTERNAL RF Connector (J22). Connect Tracking Generator output to EXTERNAL RF Connector (J22).

37. Disconnect Tracking Generator input from P5101. Connect Tracking Generator input to end of coaxial cable P3501 (2-2-5, Figure 77).

38. Set Tracking Generator output to 0 dBm. Verify RF Output Level is nominal -10 dBm with flatness ±3 dB from 1000 to 1175 MHz.

39. Disconnect Tracking Generator from P3501 and EXTERNAL RF Connector (J22).

40. Reinstall termination AT9103 to EXTERNAL RF Connector (J22).

41. Connect Digital Multimeter to end of coaxial cable P3202 (2-2-5, Figure 77).

42. Connect Signal Generator output through 50 Ω dc Block to J8104 (2-2-5, Figure 77).

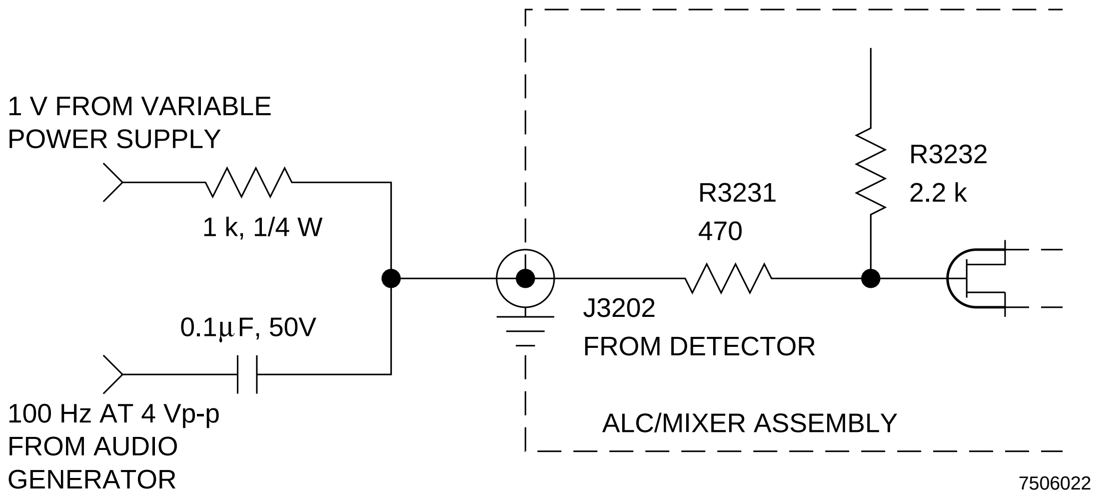
STEP	PROCEDURE

43. Connect Power Meter input to RF I/O Connector (J15).
44. Set FREQ/FUNCTION SELECT Thumbwheels to ***1000 MHz X*** to select 952 to 1305 MHz bandpass filter.
45. Set Signal Generator output frequency to 962 MHz.
46. Adjust Signal Generator output level for 0 dBm as indicated on Power Meter. Record voltage level on Digital Multimeter for reference.
47. Set Signal Generator output frequency to 1000 MHz.
48. Adjust Signal Generator output level until Digital Multimeter displays value recorded in Step 46. Verify Power Meter displays 0 dBm (±0.3 dB).
49. Set FREQ/FUNCTION SELECT Thumbwheels to ***1100 MHz X*** to select 1035 to 1125 MHz bandpass filter.
50. Set Signal Generator output frequency to 1050 MHz.
51. Adjust Signal Generator output level until Digital Multimeter displays value recorded in Step 46. Verify Power Meter displays 0 dBm (±0.3 dB).
52. Set Signal Generator output frequency to 1100 MHz.
53. Adjust Signal Generator output level until Digital Multimeter displays value recorded in Step 46. Verify Power Meter displays 0 dBm (±0.3 dB).
54. Set FREQ/FUNCTION SELECT Thumbwheels to ***1200 MHz X*** to select 1125 to 1223 MHz bandpass filter.
55. Set Signal Generator output frequency to 1100 MHz.
56. Adjust Signal Generator output level until Digital Multimeter displays value recorded in Step 46. Verify Power Meter displays 0 dBm (±0.3 dB).
57. Set Signal Generator output frequency to 1200 MHz.
58. Adjust Signal Generator output level until Digital Multimeter displays value recorded in Step 46. Verify Power Meter displays 0 dBm (±0.3 dB).
59. Set Signal Generator output frequency to 1213 MHz.
60. Adjust Signal Generator output level until Digital Multimeter displays value recorded in Step 46. Verify Power Meter displays 0 dBm (±0.3 dB).
61. Set POWER Switch to ***OFF***.
62. Disconnect test equipment.
63. Refer to 2-2-5, Figure 77, Composite Assembly (3 of 4). Reconnect coaxial cable connectors as follows:
    - P/J3202 on ALC/Mixer Assembly
    - P/J3501 on Video Assembly
    - P/J5101 on Discriminator Assembly
    - P/J8104 on RF Bulkhead Assembly
64. Refer to 2-2-5, Figure 77, Composite Assembly (3 of 4). Tighten semi-rigid coaxial cable connector P/J3103 on ALC/Mixer Assembly.

(3) ALC/Mixer Assembly

TEST EQUIPMENT:
1 Audio Generator
1 Capacitor (0.1 µF, 50 V)
1 Digital Multimeter
1 Oscilloscope
1 Resistor (1.0 kΩ, 10%, .25 W)
1 Resistor (4.7 kΩ, 10%, .25 W)
1 Tracking Generator
1 Variable Power Supply

SET-UP DIAGRAM:



ALC/Mixer Assembly Test Setup Diagram
Figure 49

WARNING: DO NOT APPLY POWER TO ATC-1400A-2 UNTIL INSTRUCTED.

STEP	PROCEDURE
1.	Remove ALC/Mixer Assembly according to 2-3-1D(2)(a) and configure with access to ALC PC Board Assembly, ability to reconnect wire cable connector and maintaining electronic integrity (no ESD or shorting components).
2.	Refer to 2-2-5, Figure 77, Composite Assembly (3 of 4). Reconnect P/J3201 on ALC/Mixer Assembly.
3.	Connect Tracking Generator output to J3102 and Tracking Generator input to J3103 (2-2-2, Figure 26).
4.	Connect 4.7 kΩ resistor between J3101 (2-2-5, Figure 26) and 12 V terminal on Variable Power Supply.
5.	Apply ac power to ATC-1400A-2.
6	Refer to 2-2-5, Figure 91, ALC/Mixer Assembly (2 of 5). Use Digital Multimeter and record dc Level on TP3203.
7.	Set R3229 (RF Output Level Adjust) (2-2-5, Figure 91) fully cw.
8.	Set CW/NORM/OFF Switch to ***CW***.
9.	Set Tracking Generator output to -10 dBm. Verify Tracking Generator displays flatness of ±3 dB between 962 and 1213 MHz. Verify J3103 output (Tracking Generator input) level is ≥-2 dBm.

STEP PROCEDURE

10. Connect Variable Power Supply 5 Vdc terminal to J3202 (2-2-2, Figure 26). Verify Tracking Generator displays flatness of ±3 dB between 962 and 1213 MHz. Verify J3103 output (Tracking Generator input) level is ≤-18 dBm.

11. Disconnect Variable Power Supply from J3202 (2-2-2, Figure 26).

12. Connect J3202 (2-2-2, Figure 26) to ground.

13. Using Audio Generator, apply 100 Hz, 1 V_{P-P} sine wave to J3203 (2-2-2, Figure 26).

14. Connect Oscilloscope to J3201, pin 7 (2-2-2, Figure 26). Verify sine wave at J3201, pin 7 is 1 V_{P-P} (±0.3 V).

15. Disconnect J3202 from ground.

16. Disconnect Audio Generator from J3203.

17. Using Audio Generator, apply 100 Hz, 4 V_{P-P} sine wave output to J3202 along with 1 Vdc bias voltage from Variable Power Supply. (Refer to 2-2-4, Figure 49 for correct hook-up.)

18. Using Oscilloscope, verify sine wave at J3201, pin 7 is 4 V_{P-P}.

19. Disconnect Audio Generator from J3202.

20. Verify Oscilloscope displays voltage level at <0.0 Vdc.

21. Set AUXILIARY Connector, pin 6 (Appendix E, Figure 2) to ground. Verify Oscilloscope displays voltage level at <0.0 Vdc.

22. Disconnect AUXILIARY Connector, pin 6 from ground.

23. Connect Oscilloscope External Trigger to SYNC Connector.

24. Set ATC-1400A-2 controls as follows:

CONTROL	SETTING
CW/NORM/OFF Switch	***NORM***
T_O/TAC/T_D Switch	***T_O***
XPDR MODE Control	***1***
FREQ/FUNCTION SELECT Thumbwheels	***1000 XPDR***

25. Refer to 2-2-5, Figure 91, ALC/Mixer Assembly (2 of 5). Connect Oscilloscope Channel A to X3202, pin 5.

26. Verify presence of 8 µs pulse with amplitude of 4.5 V (±0.5 V).

27. Refer to 2-2-5, Figure 91, ALC/Mixer Assembly (2 of 5). Connect Oscilloscope Channel A to X3204, pin 13.

28. Verify presence of 8 µs pulse with amplitude of 4.5 V (±0.5 V).

29. Refer to 2-2-5, Figure 91, ALC/Mixer Assembly (2 of 5). Connect Oscilloscope Channel A to X3204, pin 12.

30. Verify presence of negative going 20 µs pulse. Verify voltage swing on pulse is 4.5 V (±0.5 V) to 0.4 V (±0.4 V).

31. Refer to 2-2-5, Figure 91, ALC/Mixer Assembly (2 of 5). Connect Oscilloscope to base of Q3208.

STEP	PROCEDURE
32.	Verify 30 µs positive going pulse with amplitude of 0 to 0.8 V occurs 26 µs after beginning of sweep.
33.	Refer to 2-2-5, Figure 91, ALC/Mixer Assembly (2 of 5). Connect Oscilloscope to base of Q3209.
34.	Verify 20 µs positive going pulse with amplitude of -5 to -4.2 V occurs 35 µs after beginning of sweep.
35.	Use Digital Multimeter to verify TP3203 (2-2-5, Figure 91) is 2.9 V (±0.5 V).
36.	Use Variable Power Supply to apply 6 Vdc to J3204 (2-2-2, Figure 26). Verify TP3203 is 4.4 Vdc (±0.5 Vdc).
37.	Apply 0 Vdc to J3204. Verify TP3203 is 1.5 Vdc (±0.5 V).
38.	Readjust R3229 (RF Output Level Adjust) (2-2-5, Figure 91) to dc Level recorded in Step 6.
39.	Set POWER Switch to ***OFF***.
40.	Disconnect test equipment.
41.	Reassemble ALC/Mixer Assembly into ATC-1400A-2 Composite Assembly according to 2-3-2C.

(4) RF Synthesizer Assembly

TEST EQUIPMENT: 1 Spectrum Analyzer
1 Frequency Counter

SET-UP DIAGRAM: None

WARNING: DO NOT APPLY POWER TO ATC-1400A UNTIL INSTRUCTED.

STEP PROCEDURE

1. Refer to 2-2-5, Figure 77, Composite Assembly (3 of 4). Loosen semi-rigid coaxial cable connector P/J3102 on ALC/Mixer Assembly.
2. Refer to 2-2-5, Figure 77, Composite Assembly (3 of 4). Disconnect coaxial cable connectors on RF Synthesizer Assembly as follows:
   - P/J4005
   - P/J4007 (Rotate coaxial cable out of way.)
3. Connect Spectrum Analyzer input to J4007 (2-2-2, Figure 26).
4. Apply ac power to ATC-1400A-2.
5. Set ATC-1400A-2 controls as follows:

CONTROL	SETTING
MAN/AUTO/MAN STEP Switch	***MAN***
FREQ/FUNCTION SELECT Thumbwheels	***0962 MHz X***
ΔF Thumbwheels	***0.00 +Δ***

6. Verify Spectrum Analyzer displays signal of 762 MHz at approximately 6 dBm.
7. Disconnect Spectrum Analyzer from J4007. Connect Spectrum Analyzer to J4005 (2-2-2, Figure 26).
8. Verify signal displayed is 190.5 MHz at 0 dBm.
9. Refer to 2-2-2, Figure 26 and remove semi-rigid coaxial cable by disconnecting P/J4004 and P/J4006 on RF Synthesizer Assembly.
10. Disconnect Spectrum Analyzer from J4005. Connect Spectrum Analyzer to J4006 (2-2-2, Figure 26).
11. Verify signal amplitude is approximately 3 dBm at 1000 to 1050 MHz.
12. Disconnect Spectrum Analyzer from J4006.
13. Reconnect semi-rigid coaxial cable to J4004 and J4006 (2-2-2, Figure 26).
14. Connect Frequency Counter to J4005 (2-2-2, Figure 26).
15. Verify Frequency Counter displays 190.50 MHz (±0.01%).
16. Disconnect Frequency Counter from J4005. Connect Frequency Counter to J4007 (2-2-2, Figure 26).
17. Verify Frequency Counter displays 762 MHz (±0.01%).
18. Increment ΔF Thumbwheels (10 kHz digits) from 0 to 9 and verify Frequency Counter displays frequency change accordingly.

STEP PROCEDURE

19. Set ATC-1400A-2 controls as follows:

CONTROL	SETTING
FREQ/FUNCTION SELECT Thumbwheels	***1000 MHz X***
ΔF Thumbwheels	***OFF***

20. Increment ΔF Thumbwheels (100 kHz digits) from 0 to 9 and verify Frequency Counter displays frequency change accordingly.

21. Set ΔF Thumbwheels to ***OFF***. Verify frequency on Frequency Counter is 800 MHz (±0.01%).

22. Increment FREQ/FUNCTION SELECT Thumbwheels (1 MHz digits) from 0 to 9 and verify Frequency Counter displays frequency change accordingly.

23. Set FREQ/FUNCTION SELECT Thumbwheels to ***1000 MHz X***. Verify frequency on Frequency Counter is 800 MHz (±0.01%).

24. Increment FREQ/FUNCTION SELECT Thumbwheels (10 MHz digits) from 0 to 9 and verify Frequency Counter displays frequency change accordingly.

25. Set FREQ/FUNCTION SELECT Thumbwheels to ***1100 MHz X***. Verify frequency on Frequency Counter is 900.0 MHz (±0.01%).

26. Set FREQ/FUNCTION SELECT Thumbwheels to ***1200 MHz X***. Verify frequency on Frequency Counter is 1000 MHz (±0.01%).

27. Set FREQ/FUNCTION SELECT Thumbwheels to ***1213 MHz X***. Verify frequency on Frequency Counter is 1013.0 MHz (±0.01%).

28. Set POWER Switch to ***OFF***.

29. Disconnect test equipment.

30. Refer to 2-2-5, Figure 77, Composite Assembly (3 of 4). Reconnect coaxial cable connectors on RF Synthesizer Assembly as follows:

    - P/J4005
    - P/J4007

31. Refer to 2-2-5, Figure 77, Composite Assembly (3 of 4). Tighten semi-rigid coaxial cable connector P/J3102 on ALC/Mixer Assembly.

(5) Counter Assembly

TEST EQUIPMENT:
1 Coaxial Cable (50 Ω BNC to SMB)
1 Coaxial Cable (50 Ω SMB to SMB)
1 Signal Generator
1 Tee Connector (50 Ω SMB to SMB)

SET-UP DIAGRAM: None

WARNING: DO NOT APPLY POWER TO ATC-1400A UNTIL INSTRUCTED.

STEP PROCEDURE

1. Refer to 2-2-5, Figure 77, Composite Assembly (3 of 4). Disconnect coaxial cable connectors on Counter Assembly as follows:
   - P/J6103
   - P/J6104
2. Connect Tee Connector to J6104 (2-2-2, Figure 26).
3. Use coaxial cable to connect one end of Tee Connector to J6103 (2-2-2, Figure 26).
4. Use coaxial cable to connect other end of Tee Connector to Signal Generator.
5. Refer to 2-2-5, Figure 77, Composite Assembly (3 of 4). Disconnect wire cable connector P/J7101 on Video Assembly (2-2-2, Figure 26).
6. Set POWER Switch to ***ON***.
7. Set Signal Generator output to 180.00 MHz at 3 dBm.
8. Set ATC-1400A-2 controls as follows:

CONTROL	SETTING
DISPLAY SELECT Control	***FREQ MHz***
FREQ/FUNCTION SELECT Thumbwheels	***1000 MHz X***
ΔF Thumbwheels	***OFF***

9. Verify frequency is ***920.000*** on DISPLAY SELECT Readout and ***750.00*** on XMTR FREQ MHz Display.
10. Set Signal Generator output to 250.00 MHz at 3 dBm.
11. Verify frequency is ***1200.00*** on DISPLAY SELECT Readout and ***1030.00*** on XMTR FREQ MHz Display.
12. Set Signal Generator output to 300.00 MHz at 3 dBm.
13. Verify frequency is ***1400.00*** on DISPLAY SELECT Readout and ***1230.00*** on XMTR FREQ MHz Display.
14. Set POWER Switch to ***OFF***.
15. Disconnect test equipment.

(6) Front Panel Assembly

TEST EQUIPMENT: 1 GPIB Controller
1 Ohmmeter

SET-UP DIAGRAM: None

WARNING: DO NOT APPLY POWER TO ATC-1400A UNTIL INSTRUCTED.

STEP PROCEDURE

1. Connect GPIB Controller to GPIB Connector.
2. Apply ac power to ATC-1400A-2.
3. Set GPIB Controller as follows:

   Address "D8", DATA "FF", Write
   Address "EF", DATA "FF", Write

4. Verify display digits listed in 2-2-4, Table 53 are blanked (not illuminated).

ITEM	DISPLAY	ACTIVE DIGIT
1	XMTR PWR WATTS Display	Digit #1 (Leftmost Digit)
2	XMTR PWR WATTS Display	Digit #2
3	DME PRF Hz XPDR - % REPLY Display	Digit #1 (Leftmost Digit)
4	DME PRF Hz XPDR - % REPLY Display	Digit #2
5	XMTR FREQ MHz Display	Digit #1 (Leftmost Digit)
6	DISPLAY SELECT Readout	Digit #1 (Leftmost Digit)
7	DISPLAY SELECT Readout	Digit #2
8	DISPLAY SELECT Readout	Digit #3
9	RF LEVEL -dBm Display	Digit #1 (Leftmost Digit)

Displays with Active Blanking Functions
Table 53

5. Verify decimal points are displayed on DISPLAY SELECT Readout between Digits 4 & 5 and 5 & 6, and on XMTR PWR WATTS Display between digits 3 & 4.
6. Set GPIB Controller as follows:

   Address "D8", DATA "ØØ", Write
   Address "EF", DATA "ØØ", Write

7. Verify display digits listed in 2-2-4, Table 53 are illuminated.
8. Verify no decimal points are displayed on DISPLAY SELECT Readout or XMTR PWR WATTS Display.
9. Verify decimal point is displayed on XMTR FREQ MHz Display between digits 4 and 5.
10. Set GPIB Controller as follows:

    Address "EF", DATA " XØ", Write (X = Ø through F)

11. Verify Digit #1, displayed on RF LEVEL -dBm Display, is identical to digit loaded sequentially onto the data bus from Ø through F.

STEP PROCEDURE

12. Set GPIB Controller as follows:

    Address "D9", DATA "XX", Write (X = Ø through F)

13. Verify Digits 1 and 2, displayed on DISPLAY SELECT Readout, equal digits loaded onto data bus, sequentially from ØØ through FF.

14. Repeat procedure outlined in Steps 10 and 10 to verify proper operation of displays for addresses DA, DB, DC, E8, E9, EA, EB, EC, ED and EE. (Refer to 2-2-1, Table 5 for definition of digits tested using above addresses.)

15. Remove ac power from Front Panel Assembly.

16. Refer to 2-2-2, Figure 26 and disconnect wire cable connector P/J1001 on Front Panel Assembly.

17. Using Ohmmeter, verify continuity between Front Panel Assembly connectors according to 2-2-4, Table 54.

OHMMETER LEADS BETWEEN		**OHMMETER READING**
J1001, Pin 2	J18	<5
J1001, Pin 2	GND	>10 MΩ
J1001, Pin 2	J19	<5
J1001, Pin 2	GND	>10 MΩ
J1001, Pin 2	J20	<5
J1001, Pin 2	GND	>10 MΩ
P7202	J16	<5
P7202	GND	>10 MΩ
P8502	J17	<5
P8502	GND	>10 MΩ
P5202	J21	<5
P5202	GND	>10 MΩ

Front Panel Assembly Connector Resistance Measurements
Table 54

18. Reconnect wire cable connector P/J1001 on Front Panel Assembly.

STEP PROCEDURE

19. Set ATC-1400A-2 Front Panel Controls as follows:

CONTROL	SETTING
CW/NORM/OFF Switch	***CW***
-1 NMI/NORM Switch	***-1 NMI***
IN/OUT Switch	***IN***
SUPPRESSOR ON/OFF Switch	***OFF***
SLS/ECHO ON/OFF Switch	***OFF***
XPDR PULSE WIDTH VAR/CAL Switch	***CAL***
FREQ STEP RATE Control	***OFF***
MAN/AUTO/MAN STEP Switch	***MAN***
DME DEV P_2/CAL Switch	***+Δ***
XPDR DEV P_3/CAL Switch	***+Δ***
1.0 µS/1.45 µS Switch	***1.0 µS***
XPDR DEV P2/CAL Switch	***+Δ***
T_O/TAC/T_D Switch	***T_D***
PRF/SQTR ON/OFF Switch	***OFF***
F_2/P_2 F_1/P_1 Switch	***F_2/P_2***
POWER Switch	***OFF***
IDENT TONE/OFF/CODE Switch	***CODE***
TACAN ON/OFF Switch	***OFF***
XPDR MODE Control	***1***
DME REPLY EFFICIENCY Switch	***0%***
DISPLAY SELECT Control	***FREQ MHz***
PRF/SQTR Thumbwheels	***0000***
DBL INTERR/INTRF PULSE Thumbwheels	***000.0***
XPDR P_2/P_3 DEV Thumbwheels	***-0.00***
FREQ/FUNCTION SELECT Thumbwheels	***0000 MHz X***
DME P_2 DEV Thumbwheels	***0.0***
ΔF Thumbwheels	***0.00 OFF***
XPDR PULSE WIDTH Thumbwheels	***0.00***
SLS/ECHO Thumbwheels	***0***
RANGE/VEL/ACCEL Thumbwheels	***00000***

20. Apply ac power to ATC-1400A-2.

21. Read from address ***"CØ"*** and verify returned data from GPIB Controller for the XPDR MODE Control setting is displayed as listed below:

XPDR MODE CONTROL SETTING	RETURNED DATA (HEXADECIMAL)
1	E4
2	D4
T	C4
A	B4
B	A4
C	94
D	84
AC1	74
AC2	64

22. Set T_O/TAC/T_D Switch to ***TAC***.

23. Read from address ***"CØ"*** and verify returned data ***"6C"*** is displayed on GPIB Controller.

24. Set T_O/TAC/T_D Switch to ***T_O***.

STEP PROCEDURE

25. Read from address ***"CØ"*** and verify returned data ***"6B"*** is displayed on GPIB Controller.

26. Set XPDR PULSE WIDTH VAR/CAL Switch to ***VAR***.

27. Read from address ***"CØ"*** and verify returned data ***"6A"*** is displayed on GPIB Controller.

28. Set XPDR PULSE WIDTH Thumbwheels to ***1.00***.

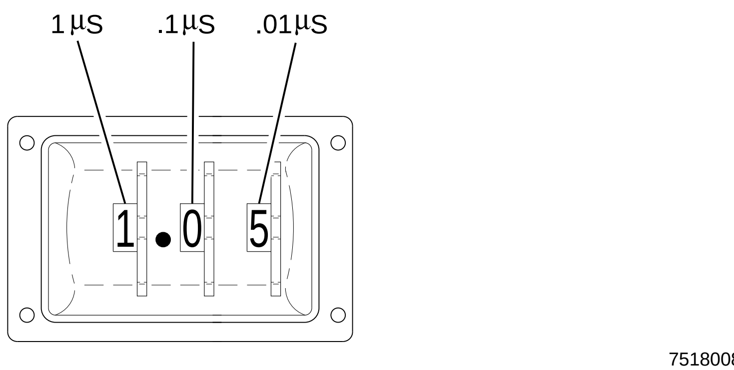
29. Read from address ***"CØ"*** and verify returned data ***"6B"*** is displayed on GPIB Controller.

30. Read from address ***"C1"*** and verify returned data ***"ØØ"*** is displayed on GPIB Controller.

31. Set XPDR PULSE WIDTH Thumbwheels to ***1.05***.

32. Read from address ***"C1"*** and verify returned data ***"Ø5"*** is displayed on GPIB Controller.

33. Increment XPDR PULSE WIDTH Thumbwheels .1 µs digits (2-2-4, Figure 50) from .0 to .9 µs while reading from address ***"C1"***. Verify returned data displayed on GPIB Controller is equal to the XPDR PULSE WIDTH Thumbwheel setting.



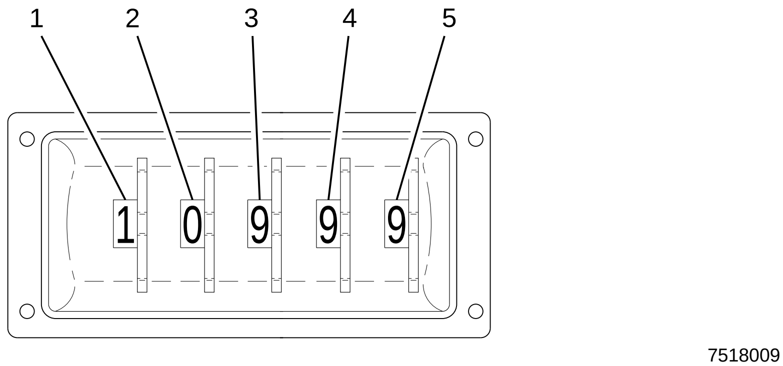
XPDR PULSE WIDTH Thumbwheels
Figure 50

34. Read from address ***"C2"*** and verify returned data ***"ØØ"*** is displayed on GPIB Controller.

STEP PROCEDURE

35. Increment digit #1 on RANGE/VEL/ACCEL Thumbwheels from 0 to 9 (2-2-4, Figure 51) while reading from address ***"C2"***. Verify returned data displayed on GPIB Controller is identical to RANGE/VEL/ACCEL Thumbwheel setting.

    NOTE: Digit #1 C & D lines are connected to address D5. Only A & B lines are connected to C2.



RANGE/VEL/ACCEL Thumbwheels
Figure 51

36. Depress LOAD RNG Pushbutton Switch. Read from address ***"C2"*** and verify returned data ***"Ø4"*** is displayed on GPIB Controller.

37. Depress LOAD VEL Pushbutton Switch. Read from address ***"C2"*** and verify returned data "***Ø8***" is displayed on GPIB Controller.

38. Depress LOAD ACCEL Pushbutton Switch. Read from address ***"C2"*** and verify returned data ***"1Ø"*** is displayed on GPIB Controller.

39. Depress CLEAR RNG Pushbutton Switch. Read from address ***"C2"*** and verify returned data ***"2Ø"*** is displayed on GPIB Controller.

40. Depress CLEAR VEL Pushbutton Switch. Read from address ***"C2"*** and verify returned data ***"4Ø"*** is displayed on GPIB Controller.

41. Depress CLEAR ACCEL Pushbutton Switch. Read from address ***"C2"*** and verify returned data ***"8Ø"*** is displayed on GPIB Controller.

42. Read from address ***"C3"*** and verify returned data ***"2Ø"*** is displayed on GPIB Controller.

43. Rotate FREQ STEP RATE Control while reading address ***"C3"***. Verify returned data displayed on GPIB Controller changes repeatedly from ***"2Ø"*** to ***"ØØ"***.

44. Set FREQ STEP RATE Control to ***OFF*** and MAN/AUTO/MAN STEP Switch to ***AUTO***.

45. Read from address ***"C3"*** and verify returned data ***"3Ø"*** is displayed on GPIB Controller.

46. While holding MAN/AUTO/MAN STEP Switch at ***MAN STEP***, read address ***"C3"***. Verify returned data ***"1Ø"*** is displayed on GPIB Controller.

47. Set IN/OUT Switch to ***OUT***.

48. Read from address ***"C3"*** and verify returned data ***"31"*** is displayed on GPIB Controller.

49. Set -1 NMi/NORM Switch to ***NORM***.

STEP PROCEDURE

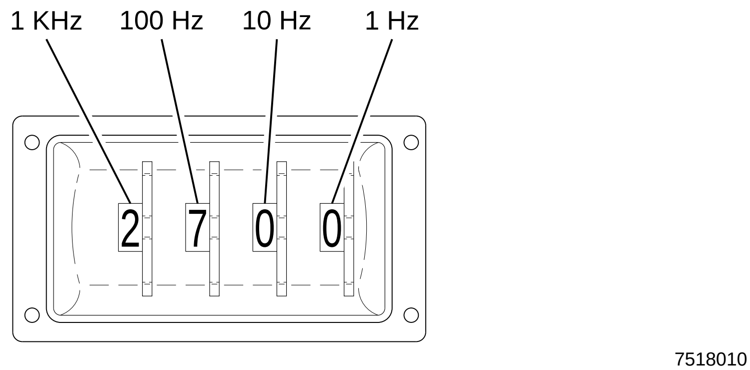
50. Read from address ***"C3"*** and verify returned data ***"33"*** is displayed on GPIB Controller.

51. Read from address ***"C4"*** and verify returned data ***"ØØ"*** is displayed on GPIB Controller.

52. Rotate RF LEVEL Control cw 3-4 full rotations while reading address ***"C4"***. Verify returned data ***"ØØ"*** is displayed on GPIB Controller.

53. Rotate RF LEVEL Control ccw 8-9 full rotations while reading address ***"C4"***. Verify returned data ***"7F"*** is displayed on GPIB Controller.

54. Increment PRF/SQTR Thumbwheel 1 and 10 Hz digits (2-2-4, Figure 52) from 0 to 9 while reading address ***"DØ"***. Verify returned data ***"XY"*** is displayed on GPIB Controller.



PRF/SQTR Thumbwheels
Figure 52

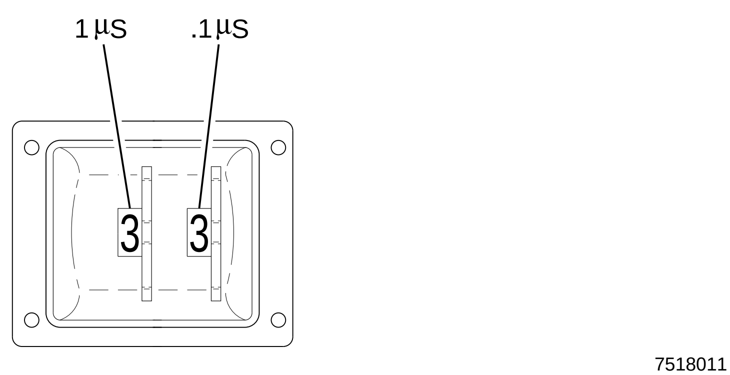
55. Set PRF/SQTR Thumbwheels to ***0000***.

56. Increment PRF/SQTR Thumbwheels 100 Hz digit from 0 to 9 and 1 kHz digit from 0 to 7 (2-2-4, Figure 53) while reading address ***"D1"***. Verify returned data ***"XY"*** is displayed on GPIB Controller.

57. Set PRF/SQTR Thumbwheels to ***0000*** and PRF/SQTR ON/OFF Switch to ***ON***.

58. Read from address ***"D1"*** and verify returned data ***"8Ø"*** is displayed on GPIB Controller.

59. Increment DME P_2 DEV Thumbwheels 1 µs digits from 0 to 7 and .1 µs digits from 0 to 9 (2-2-4, Figure 53) while reading address ***"D2"***. Verify returned data ***"XY"*** is displayed on GPIB Controller.



DME P_2 DEV Thumbwheels
Figure 53

60. Read from address ***"D3"*** and verify returned data on GPIB Controller for DME REPLY EFFICIENCY Control setting is displayed as listed below:

DME REPLY EFFICIENCY CONTROL SETTING	**RETURNED DATA (HEXADECIMAL)**
0	FF
10	EF
20	DF
30	CF
40	BF
50	AF
60	9F
70	8F
80	7F
90	6F
100	F7

61. Verify DME REPLY EFFICIENCY Control is set to 100% and F_2/P_2 F_1/P_1 Switch is set to ***F_1/P_1***.

62. Read from address ***"D3"*** and verify returned data ***"F3"*** is displayed on GPIB Controller.

63. Set DME DEV P_2/CAL Switch to ***CAL***. Read from address ***"D3"*** and verify returned data ***"FØ"*** is displayed on GPIB Controller.

64. Set DME DEV P2/Cal Switch to ***-Δ***. Read from address ***"D3"*** and verify returned data ***"F2"*** is displayed on GPIB Controller.

65. Increment the SLS/ECHO Thumbwheels from 0 to 9 dB while reading address ***"D4"***. Verify returned data displayed on GPIB Controller is identical to SLS/ECHO Thumbwheels setting.

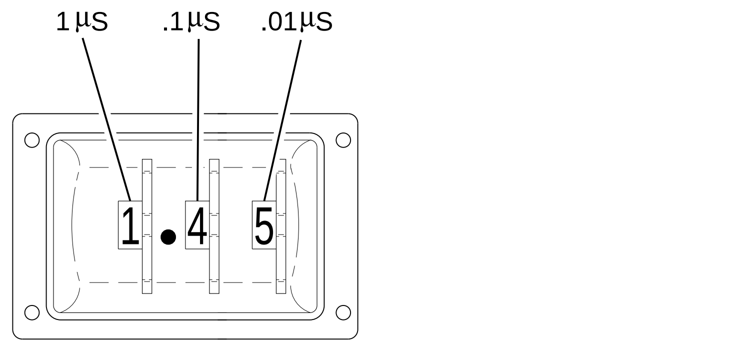
66. Set SLS/ECHO Thumbwheels to ***-0 dB***. Read from address ***"D4"*** and verify returned data ***"1Ø"*** is displayed on GPIB Controller.

67. Set SLS/ECHO Thumbwheels to ***-10 dB***. Read from address ***"D4"*** and verify returned data "2Ø" is displayed on GPIB Controller.

68. Set SLS/ECHO ON/OFF Switch to ***ON***. Read from address ***"D4"*** and verify returned data ***"6Ø"*** is displayed on GPIB Controller.

STEP PROCEDURE

69. Increment XPDR P_2/P_3 DEV Thumbwheels in .1 s digits from 0 to 9 (2-2-4, Figure 54) while reading address ***"D5"***. Verify returned data displayed on GPIB Controller is identical to XPDR P_2/P_3 DEV Thumbwheel setting.



XPDR P_2/P_3 DEV Thumbwheels
Figure 54

70. Set XPDR P_2/P_3 DEV Thumbwheels to ***1.00***. Read address ***"D5"*** and verify returned data ***"1Ø"*** is displayed on GPIB Controller.

NOTE: RANGE/VEL/ACCEL digit #1 C & D lines are connected to D6 and D7 respectively.

71. Set XPDR P_2/P_3 DEV Thumbwheels to ***1.05***. Read address ***"D5"*** and verify returned data ***"3Ø"*** is displayed on GPIB Controller.

72. Read from address ***"D6"*** and verify returned data displayed on GPIB Controller for DISPLAY SELECT Control setting is displayed as listed below:

DISPLAY SELECT CONTROL SETTING	RETURNED DATA (HEXADECIMAL)
FREQ MHz	EF
RANGE NMi	DF
VEL KTS	CF
PRF SQTR Hz	BF
DME DIST NMi	AF
XPDR CODE	9F

73. Verify DISPLAY SELECT Control is set to ***XPDR CODE*** and XPDR DEV P_2/CAL Switch is set to ***CAL***.

74. Read from address ***"D6"*** and verify returned data ***"9C"*** is displayed on GPIB Controller.

75. Set XPDR DEV P_3/CAL Switch to ***-Δ***. Read from address ***"D6"*** and verify returned data ***"9E"*** is displayed on GPIB Controller.

76. Set XPDR DEV P_3/CAL Switch to ***CAL***. Read from address ***"D6"*** and verify returned data **"92"** is displayed on GPIB Controller.

77. Set XPDR DEV P_3/CAL Switch to ***-Δ***. Read from address ***"D6"*** and verify returned data ***"9A"*** is displayed on GPIB Controller.

78. Set TACAN ON/OFF Switch to ***ON***. Read from address ***"D7"*** and verify returned data ***"D4"*** is displayed on GPIB Controller.

79. Set IDENT TONE/OFF/CODE Switch to ***OFF***. Read from address ***"D7"*** and verify returned data ***"C4"*** is displayed on GPIB Controller.

STEP PROCEDURE

80. Set IDENT TONE/OFF/CODE Switch to ***TONE***. Read from address ***"D7"*** and verify returned data ***"F4"*** is displayed on GPIB Controller.

81. Set 1.0 µS/1.45 µS Switch to 1.45 µS. Read from address ***"D7"*** and verify returned data ***"F5"*** is displayed on GPIB Controller.

82. Set SUPPRESSOR ON/OFF Switch to ***ON***. Read from address ***"D7"*** and verify returned data ***"F7"*** is displayed on GPIB Controller.

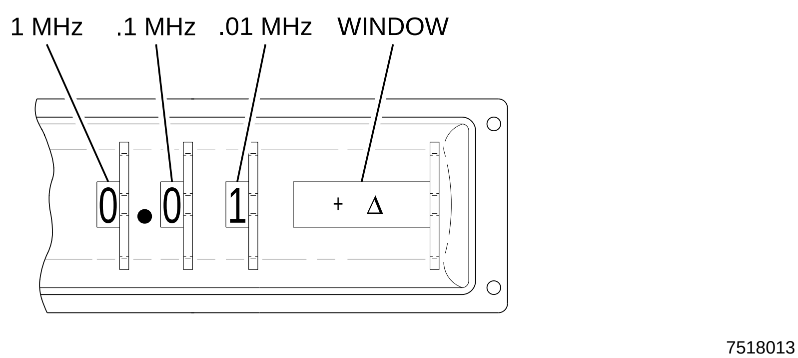
83. Set CW/NORM/OFF Switch to ***NORM***. Read from address ***"D7"*** and verify returned data ***"37"*** is displayed on GPIB Controller.

84. Set CW/NORM/OFF Switch to OFF. Read from address ***"D7"*** and verify returned data ***"77"*** is displayed on GPIB Controller.

85. Increment RANGE/VEL/ACCEL Thumbwheels digits 4 and 5 (2-2-4, Figure 51) from 0 to 9 while reading address ***"EØ"***. Verify returned data displayed on GPIB Controller is identical to RANGE/VEL/ACCEL Thumbwheels setting.

86. Increment RANGE/VEL/ACCEL Thumbwheels digits 2 and 3 (2-2-4, Figure 51) from 0 to 9 while reading address ***"E1"***. Verify the returned data displayed on GPIB Controller is identical to RANGE/VEL/ACCEL Thumbwheels setting.

87. Increment ΔF Thumbwheels .1 and 0.1 MHz digits (2-2-4, Figure 55) from 0 to 9 while reading address ***"E2"***. Verify returned data displayed on Internal Bus Simulator or GPIB Controller is identical to ΔF Thumbwheels setting.



ΔF Thumbwheels
Figure 55

88. Read address ***"E3"*** and verify returned data on GPIB Controller for ΔF Thumbwheels (2-2-4, Figure 55) is displayed as listed below:

ΔF THUMBWHEEL SETTING (WINDOW)	RETURNED DATA (HEXADECIMAL)
OFF	00
+Δ	10
−Δ	20

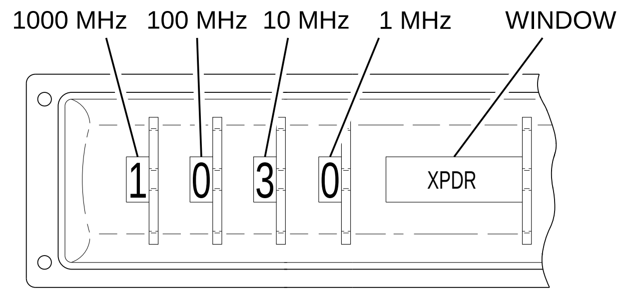
89. Verify ΔF Thumbwheel is set to ***-Δ***.

90. Increment ΔF Thumbwheel 1 MHz (2-2-4, Figure 55) from 0 to 9 while reading address ***"E3"***. Verify returned data displayed on GPIB Controller is identical to ΔF Thumbwheels setting.

91. Increment FREQ/FUNCTION SELECT Thumbwheels 1 MHz and 10 MHz digits (2-2-4, Figure 56) from 0 to 9 while reading address ***"E4"***. Verify returned data displayed on GPIB Controller is identical to FREQ/FUNCTION SELECT Thumbwheels setting.

STEP PROCEDURE

92. Increment FREQ/FUNCTION SELECT Thumbwheels 1000 MHz digit (2-2-4, Figure 56) from 0 to 9 while reading address ***"1Ø"***. Verify returned data displayed on GPIB Controller is identical to FREQ/FUNCTION SELECT Thumbwheels setting.



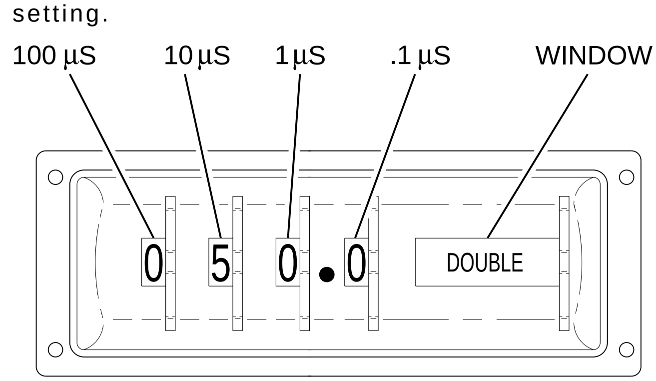
FREQ/FUNCTION SELECT Thumbwheels
Figure 56

93. Read address ***"E5"*** and verify returned data on GPIB Controller for FREQ/FUNCTION SELECT Thumbwheels (2-2-4, Figure 56) is displayed as listed below:

FREQ/FUNCTION SELECT THUMBWHEELS SETTING	**RETURNED DATA (HEXADECIMAL)**
MHz X	10
MHz Y	30
0 VOR PAIR	50
5 VOR PAIR	70
TAC X	90
TAC Y	B0
XPDR	D0

94. Set FREQ/FUNCTION SELECT Thumbwheels to ***XPDR***. Increment FREQ/FUNCTION SELECT Thumbwheels 100 MHz digit (2-2-4, Figure 57) from 0 to 9 while reading from address ***"E5"***. Verify returned data displayed on GPIB Controller is identical to FREQ/FUNCTION SELECT Thumbwheels setting.

95. Increment DBL INTERR/INTRF PULSE Thumbwheels 1 µs and .1 µs digits (2-2-4, Figure 57) from 0 to 9 while reading address ***"E6"***. Verify returned data displayed on GPIB Controller is identical to DBL INTERR/INTRF PULSE Thumbwheels setting.



DBL INTERR/INTRF PULSE Thumbwheels
Figure 57

STEP PROCEDURE

96. Read address ***"E7"*** and verify returned data on GPIB Controller for DBL INTERR/INTRF PULSE Thumbwheels (2-2-4, Figure 57) is displayed as listed below:

XPDR MODE CONTROL SETTING	RETURNED DATA (HEXADECIMAL)
OFF	00
INTERF-	40
INTERF+	80
DOUBLE	C0

97. Set DBL INTERR/INTRF PULSE Thumbwheels to ***OFF***. Increment DBL INTERR/INTRF PULSE Thumbwheels 100 μs digit from 0 to 3 and 10 μs digit from 0 to 9 (2-2-4, Figure 57) while reading from address ***"E7"***. Verify returned data displayed on GPIB Controller is identical to DBL INTERR/INTRF PULSE Thumbwheels setting.

98. Remove ac power from ATC-1400A.

99. Refer to 2-2-5, Figure 77, Composite Assembly (2 of 4). Disconnect wire cable connector P/J9902 (four conductor connector to POWER Switch).

100. Connect Ohmmeter to P9902, pins 1 and 3 and verify resistance is >10 MΩ with POWER Switch set to ***OFF*** and <5 Ω with POWER Switch set to ***ON***.

101. Connect Ohmmeter to P9902, pins 2 and 4 and verify resistance is >10 MΩ with POWER Switch set to ***OFF*** and <5 Ω with POWER Switch set to ***ON***.

102. Connect Ohmmeter to J1001, pin 16 and ground (2-2-2, Figure 26). While rotating SUPPRESSOR VAR Adjustment (R1004), verify control has uniform distribution of graduated resistance from 0 Ω to 25 kΩ.

103. Connect Ohmmeter to J1001, pins 5 and 19 (2-2-2, Figure 26). While rotating CAL PHASE Control (R1003), verify control has uniform distribution of graduated resistance from 0 Ω to 20 kΩ.

104. Connect Ohmmeter to J1001 pins 17 and 19 (2-2-2, Figure 26). While rotating INTRF PULSE WIDTH Control (R1002), verify control has uniform distribution of graduated resistance from 0 Ω to 250 kΩ.

105. Disconnect test equipment.

106. Reconnect wire cable connector P/J9902.

(7) Microprocessor PC Board Assembly

TEST EQUIPMENT: None

SET-UP DIAGRAM: None

STEP PROCEDURE

1. Set POWER Switch to ***OFF***.

2. Set POWER Switch to ***ON*** and verify following sequence is displayed on DISPLAY SELECT Readout:

FC ØØØ
FC 1ØØ
FC 11Ø
FC 111
FC 111

NOTE: If "F" appears in three rightmost digits during power-up, refer to 2-2-4, Table 56 for interpretation of failure condition test results.

TEST SEQUENCE	DISPLAY SELECT	DME-PRF Hz/XPDR-%REPLY	XMTR FREQ MHZ	XMTR PWR WATTS	RF LEVEL -dBm	ACTION
INITIAL CONDITIONS	FC 000	0000	000000	0000	000	Displays FC 000 (Fail Check) and zeros all other displays.
PASS FAIL RAM TEST	FC 100 FC F00	0000	FF47.dd XXXX.XX	0000	000	Displays final RAM address and data, if test passes, and a "1" in Display Select. Failure displays RAM locations and data that are incorrect and an "F" in Display Select.
TEST	FC X00 FC X00 FC X10 FC XFO	0000 0000 0000	FF47.dd FF47.dd FF47.dd	C1FC DA10 IEEE	001 00F 01X 0FX 1XX FXX	Tests CTC timer and interrupt line. Tests PI0. Tests GPIB device.
EPROM TEST	FC XX0 FC XXF	DDDD XXXX	FF07.dd	IEEE	XXX	Tests EPROM checksum. Displays checksum obtained, in DME-PRF Hz/XPDR-%REPLY (pair-reversed) and highest EPROM address in the 1st four digits of XMTR FREQ MHz (pair-reversed) (i.e., FF07 = 07FF).
PAUSE						Waits one second before initializing ATC-1400A.

X = Undefined state or value.

d = Data Value (varies depending upon Software Version).

ATC-1400A-2 Power-Up Self Test
Table 55

(8) Interface PC Board Assembly

TEST EQUIPMENT:
1 Digital Multimeter
1 GPIB Controller
1 Jumper Wire (22 GA)
1 Oscilloscope
1 Pull-up Resistor (4.7 kΩ/.25 W)
1 Pulse Generator

SET-UP DIAGRAM: None

WARNING: DO NOT APPLY POWER TO ATC-1400A-2 UNTIL INSTRUCTED.

STEP PROCEDURE

1. Connect GPIB Controller to GPIB Connector.

2. Set ATC-1400A-2 Controls as follows:

CONTROL	SETTING
CW/NORM/OFF Switch	***NORM***
TO/TAC/TD Switch	***TAC***
PRF/SQTR ON/OFF Switch	***ON***
TACAN ON/OFF Switch	***ON***
PRF/SQTR Thumbwheels	***1500***
FREQ/FUNCTION Select Thumbwheels	***1100 XPDR***
DECODER WIDE/NARROW Switch	***WIDE***
EQUALIZER/OFF Switch	***EQUALIZER***
SELF-INTERR/OFF Switch	***SELF-INTERR***
INST DIM HI/LOW Switch	***HI***

3. Apply ac power to ATC-1400A-2.

4. Set GPIB Controller as follows:

Address "CD", DATA "ØØ", Write
Address "CE", DATA "EØ", Write

NOTE: The above program sets all 2 x 5 code bits low, enables serial clock and disables line receivers.

5. Connect Digital Multimeter positive lead to INDICATOR Connector (J7), pin 15 (Appendix E, Figure 3) and negative lead to ground.

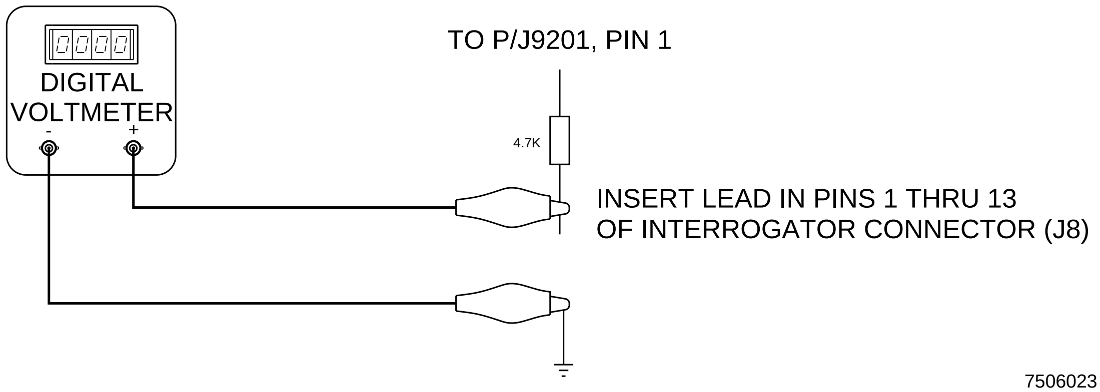
6. While monitoring Digital Multimeter, rotate SUPPRESSOR VAR Adjustment fully ccw, then fully cw. Verify Digital Multimeter display has uniform voltage distribution from 2 to 30 Vdc.

7. Set SUPPRESSOR VAR Adjustment until Digital Multimeter displays approximately 18.5 Vdc.

STEP PROCEDURE

8. Using Digital Multimeter and 4.7 kΩ pull-up resistor (2-2-4, Figure 58), verify voltage at pins 1 through 13 on INTERROGATOR Connector (J8) (Appendix E, Figure 4) is between 3.8 and 5.2 Vdc.

NOTE: The 2 x 5 code bits are inverted by open collector drivers prior to being applied to INTERROGATOR Connector (J8) (Appendix E, Figure 4).



Interface Pc Board Assembly Test Setup Diagram
Figure 58

9. Set GPIB Controller as follows:

Address "CD", DATA "FF", Write
Address "CE", DATA "FF", Write

NOTE: The above program sets all 2 x 5 code bits high, enables serial clock and disables line receivers.

10. Using Digital Multimeter and 4.7 kΩ pull-up resistor (2-2-4, Figure 58), verify voltage at pins 1 through 13 on INTERROGATOR Connector (J8) (Appendix E, Figure 4) is <0.8 Vdc.

11. Read address ***"CC"*** and verify returned data ***"FF"*** is displayed on GPIB Controller.

12. Set DECODER WIDE/NARROW Switch to NARROW, EQUALIZER/OFF Switch to ***OFF*** and SELF-INTERR/OFF Switch to ***OFF***.

13. Read address ***"CC"*** and verify returned data ***"F8"*** is displayed on GPIB Controller.

14. Using Digital Multimeter, verify voltage on pin 17 of INDICATOR Connector (J7) (Appendix E, Figure 3) is 5.2 Vdc (±0.5V).

15. Set INST-DIM HI/LOW Switch to ***LOW***.

16. Using Digital Multimeter, verify voltage on pin 17 of INDICATOR Connector (J7) (Appendix E, Figure 3) is 0 Vdc.

17. Using Oscilloscope, verify active low suppression pulse is present at J9203, pin 29 (2-2-4, Figure 59).

NOTE: If the suppression pulse is not present at J9203, pin 24, malfunction is within Card Cage Assembly. Therefore, suppression function of the Interface PC Board Assembly cannot be tested. Omit Step 18 and go to Step 19.

18. Using Oscilloscope, verify active high suppression pulse is present at J9201, pin 7 (2-2-4, Figure 59). Verify amplitude of active suppression pulse is approximately equal to amplitude of warning flag set in Step 8.

19. Set FREQ/FUNCTION SELECT Thumbwheels to ***1100 MHz X***.

20. Using Oscilloscope, verify $\overline{P_1\text{Pulse}}$ is present at J9203, pin 23.

    NOTE: If $\overline{P_1\text{Pulse}}$ is not present at J9203, pin 23, malfunction is within Card Cage Assembly. Therefore, analog distance function of the Interface PC Board Assembly cannot be tested. Omit Steps 23 through 29 and proceed directly to Step 30.

21. Using Oscilloscope, verify $\overline{\text{RANGE DELAY}}$ pulse is present at J9203, pin 34 (2-2-4, Figure 59).

    NOTE: If $\overline{\text{RANGE DELAY}}$ pulse is not present at J9203, pin 34, malfunction is within Card Cage Assembly. Therefore, analog distance function of the Interface PC Board Assembly cannot be tested. Omit Steps 23 through 29 and proceed directly to Step 30.

22. Using Digital Multimeter, verify amplitude of X/$\overline{\text{Y}}$ signal is between 3.8 and 5.2 Vdc at J9203, pin 33 (2-2-4, Figure 59).

    NOTE: If X/$\overline{\text{Y}}$ signal is not present at J9203, pin 33, malfunction is within Card Cage Assembly or ribbon cable. Therefore, analog distance function of the Interface PC Board Assembly cannot be tested. Omit Steps 23 through 29 and proceed directly to Step 30.

23. Connect Oscilloscope to R/NAV Connector (J9).

24. Press CLEAR RNG Pushbutton Switch to set ATC-1400A-2 to ***0 NMi***.

25. Adjust R9257 (2-2-4, Figure 59), as needed, to obtain 50 μs pulse spacing between leading edge of pulses displayed on Oscilloscope.

26. Set FREQ/FUNCTION SELECT Thumbwheels to ***1100 MHz Y***.

27. Using Digital Multimeter, verify amplitude of X/$\overline{\text{Y}}$ signal is <0.8 Vdc at J9203, pin 33 (2-2-4, Figure 59).

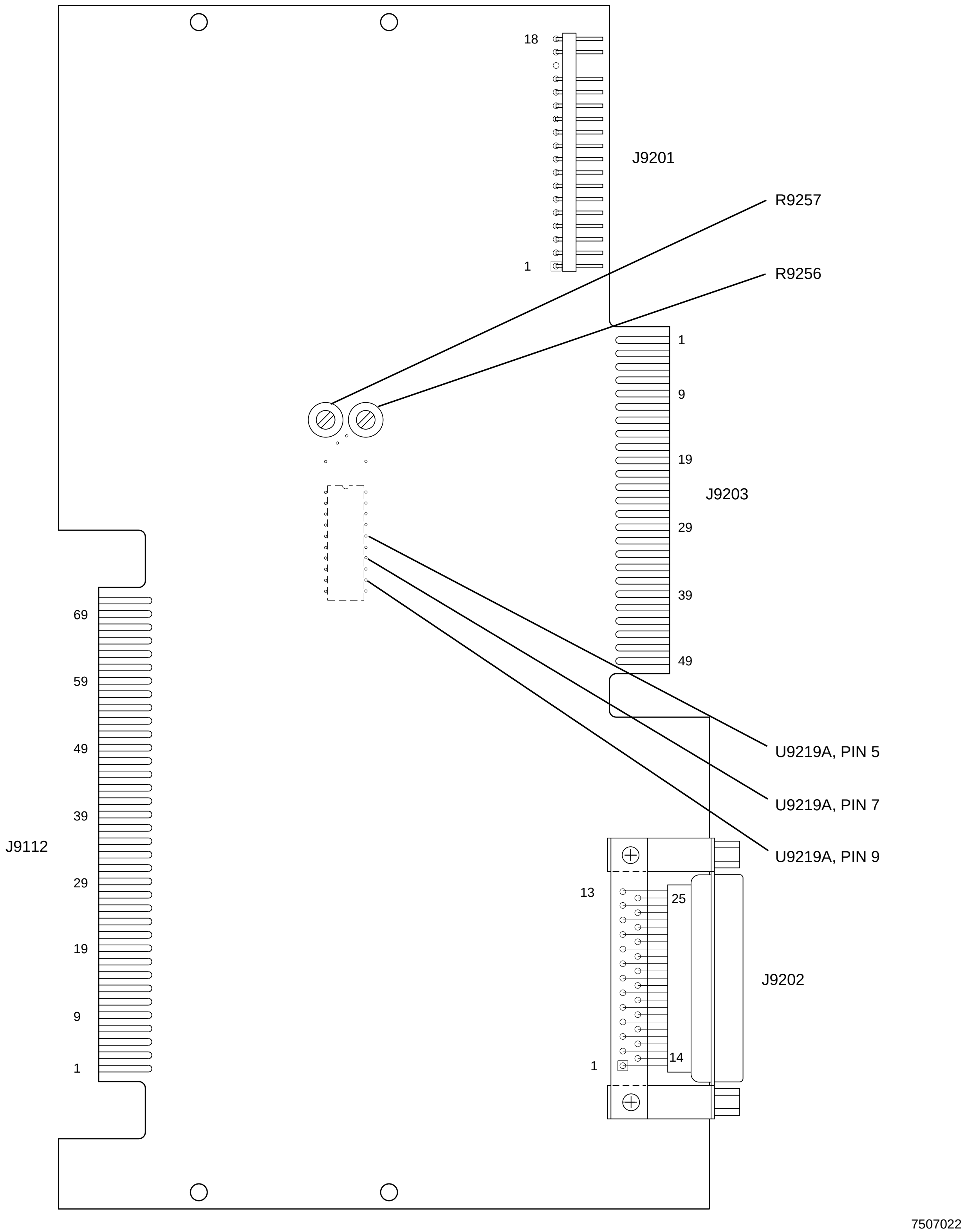
    NOTE: If X/$\overline{\text{Y}}$ signal is not present at J9203, pin 33, malfunction is within Card Cage Assembly. Therefore, analog distance function of the Interface PC Board Assembly cannot be tested. Omit Step 29 and proceed directly to Step 30.

28. Adjust R9256 (2-2-4, Figure 59) as needed to obtain 56.0 μs pulse spacing between leading edge of pulses displayed on Oscilloscope.

29. Connect Oscilloscope to INDICATOR Connector (J7), pin 8 (Appendix E, Figure 3). Verify display is similar to Step 28.

30. Connect Oscilloscope probe to ground and adjust baseline to align trace with bottom graticule using dc coupling.

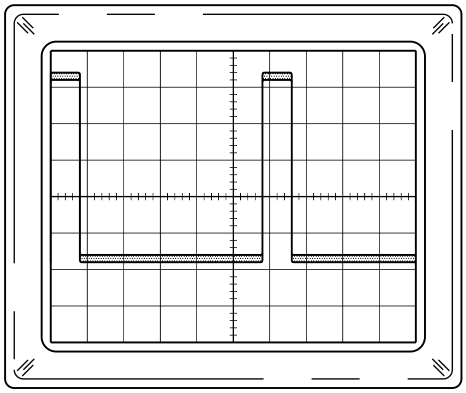
31. Connect Oscilloscope to INDICATOR Connector (J7), pin 1 (Appendix E, Figure 3). Set sweep control to 0.2 ms/Div and vertical sensitivity control to 1 V/Div.



Interface PC Board Assembly Test Points and Adjustments
Figure 59

STEP PROCEDURE

32. Verify serial data pulses displayed on Oscilloscope are similar to 2-2-4, Figure 60.



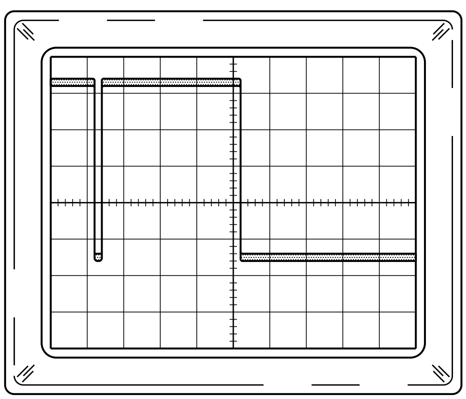
7503012

Serial Data Output Display
Figure 60

NOTE: If serial data pulses are not present, verify serial data is supplied to J9203, pin 5 (2-2-4, Figure 59) (input to Interface PC Board Assembly) from Card Cage Assembly, prior to determining the Interface PC Board Assembly is faulty. (Pulses at J9203, pin 5 are at TTL levels.)

33. Connect Oscilloscope to INDICATOR Connector (J7), pin 5 (Appendix E, Figure 3). Set Sweep Control to 1 ms/Div and Vertical Sensitivity Control to 1 V/Div.

34. Verify serial sync pulses displayed on Oscilloscope are similar to display shown in 2-2-4, Figure 64.



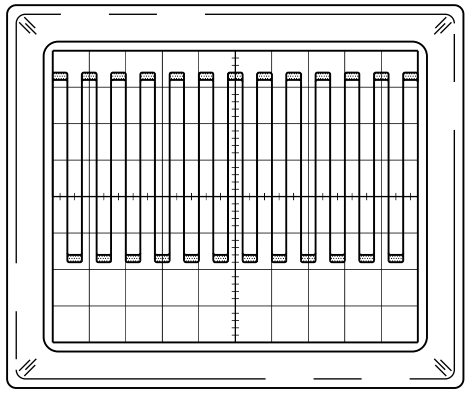
7503013

Serial Sync Output Display
Figure 61

NOTE: If serial sync pulses are not present, verify serial sync is supplied to J9203, pin 7 (2-2-4, Figure 59) (input to Interface PC Board Assembly) from Card Cage Assembly, prior to determining the Interface PC Board Assembly is faulty. (Pulses at J9203, pin 7 are at TTL levels.)

35. Connect Oscilloscope to INDICATOR Connector (J7), pin 3 (Appendix E, Figure 3). Set Sweep Control to 0.2 µs/Div and Vertical Sensitivity Control to 1 V/Div.

36. Verify Serial Clock Pulses displayed on Oscilloscope are similar to the display shown in 2-2-4, Figure 62.



7503014

Serial Clock Output Display
Figure 62

STEP	PROCEDURE

37. Using 22 GA jumper wire, connect INTERROGATOR Connector (J8), pin 24 (Appendix E, Figure 4) to ground.

38. Set GPIB Controller as follows:

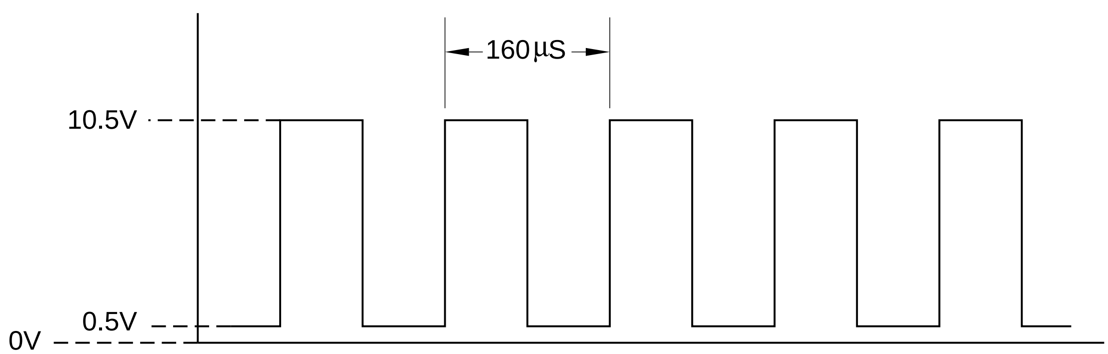
    Address "CE", DATA "ØF", Write

39. Verify serial clock pulses are no longer displayed on Oscilloscope.

40. Use Digital Multimeter to verify voltage at INDICATOR Connector (J7), pin 3 (Appendix E, Figure 3) is <0.5 Vdc.

41. Remove 22 GA jumper wire from INTERROGATOR Connector (J8), pin 24 (Appendix E, Figure 4) and ground.

42. Adjust Pulse Generator output to produce a test signal as shown in 2-2-4, Figure 63.



7518016

Pulse Generator Test Signal
Figure 63

43. Connect Pulse Generator to INTERROGATOR Connector (J8), pin 20 (Appendix E, Figure 4).

44. Using Oscilloscope, verify test signal is present at U9219A, pin 9 (2-2-4, Figure 59).

STEP PROCEDURE

45. Connect Pulse Generator to INTERROGATOR Connector (J8), pin 24 (Appendix E, Figure 4).

46. Using Oscilloscope, verify test signal is present at U9219A, pin 7 (2-2-4, Figure 59).

47. Connect Pulse Generator to INTERROGATOR Connector (J8), pin 22 (Appendix E, Figure 4).

48. Using Oscilloscope, verify test signal is present at U9219A, pin 5 (2-2-4, Figure 59).

49. Connect Oscilloscope to J9201, pin 11 (2-2-4, Figure 59). Verify CAL MARKS pulses are displayed on Oscilloscope.

NOTE: If CAL MARKS pulses are not present in Step 53. Verify CAL MARKS pulses are supplied to J9203, pin 25 (2-2-4, Figure 59) (input to Interface PC Board Assembly) from Card Cage Assembly, prior to determining Interface PC Board Assembly is faulty.

50. Connect Oscilloscope to J9201, pin 9 (2-2-4, Figure 59). Verify SYNC pulse is displayed on Oscilloscope.

NOTE: If SYNC pulse is not present, verify SYNC pulse is supplied to J9203, pin 27 (2-2-4, Figure 59) (input to Interface PC Board Assembly) from Card Cage Assembly, prior to determining Interface PC Board Assembly is faulty.

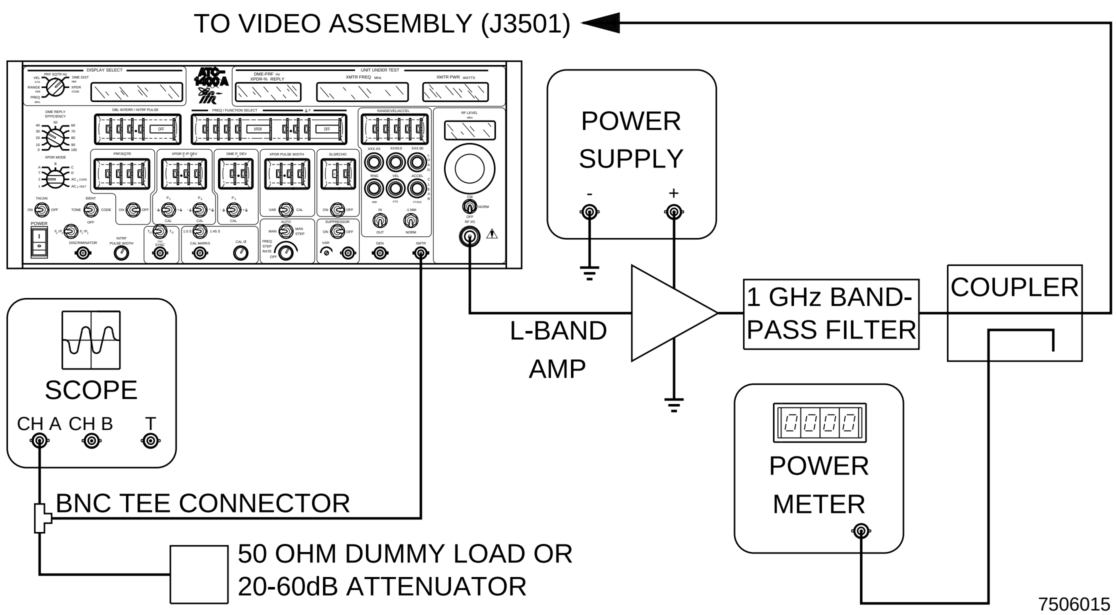
51. Set POWER Switch to ***OFF***.

52. Disconnect test equipment.

(9) Video Assembly

TEST EQUIPMENT:
1 Bandpass Filter (1 GHz, 50 Ω)
1 Coaxial Cable (50 Ω BNC to SMA)
1 Coaxial Cable (50 Ω BNC to Type N)
1 Connector (50, BNC Tee)
1 Coupler (-20 dB, 50 Ω)
1 L Band Amplifier
1 Oscilloscope
1 Power Meter
1 Power Supply
5 Coaxial Cables (50 Ω BNC to BNC)

SET-UP DIAGRAM:



Video Assembly Test Setup Diagram
Figure 64

WARNING: DO NOT APPLY POWER TO ATC-1400A-2 OR EXTERNAL POWER SUPPLY UNTIL INSTRUCTED.

STEP PROCEDURE

1. Set ATC-1400A-2 controls as follows:

CONTROL	SETTING
CW/NORM/OFF Switch	***CW***
SLS/ECHO ON/OFF Switch	***OFF***
XPDR PULSE WIDTH VAR/CAL Switch	***VAR***
MAN/AUTO/MAN STEP Switch	***MAN***
DME DEV P_2/CAL Switch	***CAL***
XPDR DEV P_3/CAL Switch	***-Δ***
T_O/TAC/T_D Switch	***T_O***
PRF/SQTR ON/OFF Switch	***ON***
F_2/P_2 F_1/P_1 Switch	***F_1/P_1***
IDENT TONE/OFF/CODE Switch	***OFF***
TACAN ON/OFF Switch	***OFF***
XPDR MODE Control	***C***
DME REPLY EFFICIENCY Switch	***100%***
PRF/SQTR Thumbwheels	***2500***
DBL INTERR/INTERF PULSE Thumbwheels	***OFF***
XPDR P_2/P_3 DEV Thumbwheels	***0.70***
FREQ/FUNCTION SELECT Thumbwheels	***1090 XPDR***
ΔF Thumbwheels	***OFF***
XPDR PULSE WIDTH Thumbwheels	***0.45***
SLS/ECHO Thumbwheels	***3***
SELF-INTERR/OFF Switch	***ON***

2. Refer to 2-2-5, Figure 77, Composite Assembly (3 of 4). Disconnect coaxial cable connector P/J3501 on Video Assembly.
3. Refer to 2-2-5, Figure 77, Composite Assembly (3 of 4). Disconnect wire cable connector P/J5201 on Discriminator Assembly.
4. Connect ATC-1400A-2 to test equipment as shown in 2-2-4, Figure 64.
5. Apply ac power to Variable Power Supply and adjust output to nominal supply of L Band Amplifier. (Refer to L Band Amplifier Manufacturer's Manual for input specifications.)
6. Set POWER Switch to ***ON*** and allow 10 minute warm-up period.
7. Adjust RF LEVEL Control for ***10.0 dBm*** (±0.5 dB) as displayed on Power Meter. Record level on RF LEVEL -dBm Display.
8. Set CW/NORM/OFF Switch to ***NORM***.
9. Adjust Variable Power Supply for XMTR PWR WATTS Display of approximately ***1000 W***.

   CAUTION: DO NOT EXCEED MANUFACTURER'S RECOMMENDED SUPPLY VOLTAGE RANGE FOR L BAND AMPLIFIER.
10. Adjust Oscilloscope Vertical Control to position trace on major horizontal axis.
11. Verify pulse amplitude is approximately 0.8 V on Oscilloscope. Expand pulse display to full screen.
12. Verify pulse rise time is approximately 70 ns (±20 ns) and pulse fall time is approximately 70 ns (±25 ns).

STEP PROCEDURE

13. Set ATC-1400A-2 controls as follows:

CONTROL	SETTING
PRF/SQTR ON/OFF Switch	***OFF***
FREQ/FUNCTION SELECT Thumbwheels	***1090 MHz Y***

14. Using Oscilloscope ground reference, locate trace on bottom horizontal axis.

15. Set TO/TAC/TD Switch to ***TD***.

16. Adjust Oscilloscope Vertical Sensitivity and Vertical Vernier Controls to position peak of DME pulse on top horizontal axis.

17. Adjust RF LEVEL Control to reduce level ***6 dB***. Verify peak of DME pulse is located on major horizontal axis (±15%).

18. Adjust RF LEVEL Control to set level to ***14 dB*** below Step 7 level. Verify DME pulse peak is 0.8 (±10%) graticule divisions from bottom horizontal axis.

19. Set RF LEVEL Control to level in Step 7.

20. Connect Oscilloscope Channel B to XMTR Connector (J11) for 50% video. Record pulse width.

21. Adjust RF LEVEL Control to reduce level ***10 dB***. Verify pulse width does not change more than 10% from value in Step 20.

22. Reduce RF level until pulse on Oscilloscope disappears. Verify XMTR PWR WATTS Display indicates ***<2.0 W***.

23. Set RF LEVEL Control to level in Step 7.

24. Refer to 2-2-5, Figure 77, Composite Assembly (3 of 4). Connect Oscilloscope Channel B probe to P/J7101, pin 9 (pin numbers indicated on P7101).

25. Verify gated video pulse is coincident with P_1 pulse.

26. Set F_2/P_2 F_1/P_1 Switch to $\boldsymbol{F_2/P_2}$ to select P_2 pulse.

27. Verify gated video pulse is coincident with P_2 pulse.

28. Set ATC-1400A-2 controls as follows:

CONTROL	SETTING
PRF/SQTR ON/OFF Switch	***ON***
FREQ/FUNCTION SELECT Thumbwheels	***1090 XPDR***

29. Verify gated video pulse is coincident with P_3 pulse.

30. Switch XPDR P_2/P_3 DEV Thumbwheels between 0.0 and 1.0 μs and verify pulse width of gated video pulse does not change.

31. Set XPDR P_2/P_3 DEV Thumbwheels to ***0.7 μs***.

32. Set F_2/P_2 F_1/P_1 Switch to $\boldsymbol{F_1/P_1}$ to select F_1 pulse.

33. Verify gated video pulse is coincident with P_1 pulse.

34. Record XMTR PWR WATTS Display reading.

35. Decrease RF LEVEL Control ***3 dB***.

STEP PROCEDURE

36. Verify XMTR PWR WATTS Display indicates approximately half the value in Step 34.

37. Set RF LEVEL Control to ***10 dB*** below level in Step 7.

38. Verify XMTR PWR WATTS Display indicates approximately one tenth the value in Step 34.

39. Set DBL INTERR/INTRF PULSE Thumbwheels to ***21.0 INTERF+***.

40. Adjust INTRF PULSE WIDTH Control for pulse width of 5.0 μs (±0.5 μs) on Oscilloscope.

41. Using DBL INTERR/INTRF PULSE Thumbwheels, position interference pulse in location occupied by F_2 pulse on Oscilloscope.

42. Set F_2/P_2 F_1/P_1 Switch to ***F_2/P_2***.

43. Verify XMTR PWR WATTS Display indicates approximately twice the value in Step 38.

44. Set POWER Switch to ***OFF***.

45. Disconnect test equipment.

46. Refer to 2-2-5, Figure 77, Composite Assembly (3 of 4). Reconnect coaxial cable connector P/J3501 on Video Assembly.

47. Refer to 2-2-5, Figure 77, Composite Assembly (3 of 4). Reconnect wire cable connector P/J5201 on Discriminator Assembly.

(10) Discriminator Assembly

TEST EQUIPMENT:
1 Digital Multimeter
1 Frequency Counter
1 Oscilloscope
1 Pulse Generator
1 Signal Generator
1 Spectrum Analyzer
1 Variable Power Supply

SET-UP DIAGRAM: None

NOTE: When testing, the Discriminator and Sampler PC Boards must remain connected by the flex strip. If testing the RF Converter PC Board is done, it must be completely separated from the other boards.

NOTE: It is highly recommended that the RF Converter PC Board be serviced by the Aeroflex Customer Service Department. Service by customer is not recommended.

WARNING: DO NOT APPLY POWER TO ATC-1400A UNTIL INSTRUCTED.

STEP	PROCEDURE
1.	Prepare Discriminator Assembly for testing as follows: ● Remove Discriminator Assembly according to 2-3-1D(4)(a). ● Provide access to Discriminator and Sampler PC Board Assemblies by performing Steps 1 through 4 of 2-3-1D(4)(b) disassembly procedure. ● Configure with access to Discriminator and Sampler PC Board Assemblies, ability to reconnect wire harness connector and maintaining electronic integrity (no ESD or shorting components). ● Refer to 2-2-5, Figure 77, Composite Assembly (3 of 4). Reconnect wire cable connector P/J5201 on Discriminator Assembly.
2.	Refer to 2-2-5, Figure 77, Composite Assembly (3 of 4). Disconnect wire cable connector P/J7101 on Video Assembly.
3.	Connect Signal Generator to J5101 (2-2-2, Figure 26). Set Signal Generator output for 1100.000 MHz at -20 dBm.
4.	Connect Pulse Generator output to wire cable connector P7101, pin 9. Set Pulse Generator output for pulse width of 3.5 µs at 1000 Hz PRF.
5.	Connect Digital Multimeter between P7101, pin 7 and ground.
6.	Connect Spectrum Analyzer input to J5102 (2-2-2, Figure 26).
7.	Set POWER Switch to ***ON***. After Microprocessor self test is complete, allow 10 minute warm-up period.
8.	Verify Digital Multimeter displays (TTL High) Frequency Lock signal.
9.	Verify Spectrum Analyzer displays signal level between -10 and 4 dBm at 267.5 MHz.
10.	Disconnect Spectrum Analyzer from J5102.
11	Connect Frequency Counter to J5102.
12.	Verify Frequency Counter displays 267.500 MHz (±5 kHz).
13.	Set Pulse Generator pulse width to 0.45 µs. Verify Frequency Counter displays 267.500 MHz (±5 kHz).

STEP PROCEDURE

14. Set Pulse Generator PRF to 10 Hz. Verify Frequency Counter displays 267.500 MHz (±5 kHz).

15. Set Signal Generator output to 1155 MHz. Verify Frequency Counter displays 281.250 MHz (±5 kHz).

16. Set Pulse Generator pulse width to 3.5 µs. Verify Frequency Counter displays 281.250 MHz (±5 kHz).

17. Set Pulse Generator PRF to 1000 Hz. Verify Frequency Counter displays 281.250 MHz (±5 kHz).

18. Disconnect Frequency Counter from J5102.

19. Connect Spectrum Analyzer to J5102. Verify signal amplitude displayed on Spectrum Analyzer is between -10 and 5 dBm.

20. Disconnect Signal Generator from J5101.

21. Refer to 2-3-1, Figure 5 and disconnect coaxial cable connector P/J5103 (18) on RF Converter PC Board Assembly.

22. Refer to 2-2-5, Figure 89, Discriminator Assembly (4 of 7). Connect Signal Generator to coaxial cable connector P5103 on Discriminator PC Board Assembly. Set for 30 MHz at -20 dBm.

23. Connect Oscilloscope to TP5201 (2-2-2, Figure 26).

24. Refer to 2-2-5, Figure 89, Discriminator Assembly (4 of 7). Disconnect R5208 from E5201-17 on Discriminator PC Board.

NOTE: Use extender cables, as needed, to maintain connections when making adjustments on the Discriminator PC Board.

25. Connect Power Supply to disconnected end of R5208 on Discriminator PC Board. Set Power Supply for <+1 Vdc.

26. Disconnect Digital Multimeter from P7101, pin 7.

27. Connect Digital Multimeter to disconnected end of R5208 on Discriminator PC Board (2-2-5, Figure 89) and ground.

28. Verify Oscilloscope displays 0.4 to 0.5 V_P sine wave at ≈333 ns/cycle (30 MHz).

29. Adjust Power Supply for 1.150 V at R5208.

30. Disconnect Digital Multimeter from R5208.

31. Connect Digital Multimeter to J5202 (2-2-2, Figure 26).

32. Refer to 2-2-5, Figure 89, Discriminator Assembly (4 of 7). Adjust C5214 on Discriminator PC Board for 0.00 V at J5202.

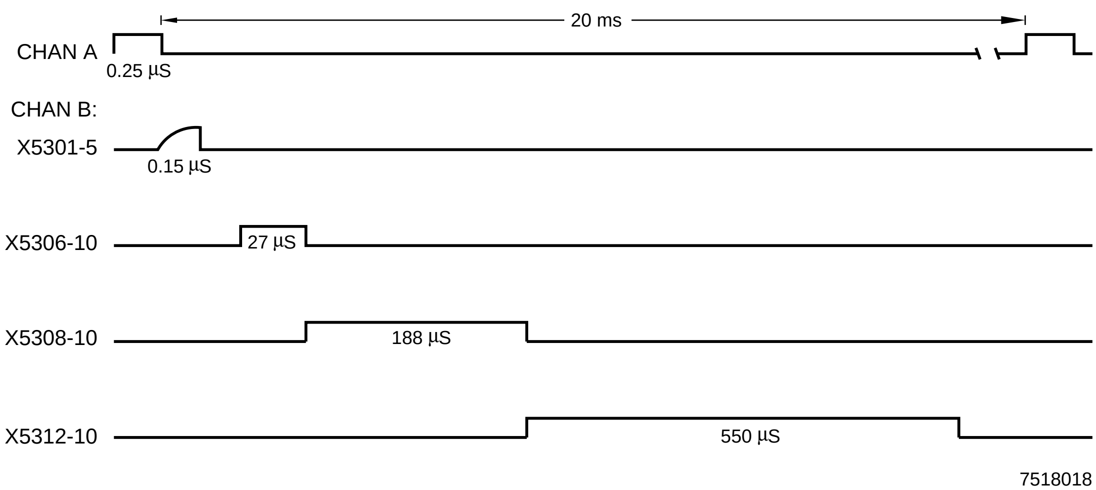
33. Set Signal Generator to 31 MHz.

34. Refer to 2-2-5, Figure 89, Discriminator Assembly (4 of 7). Adjust R5219 on Discriminator PC Board for 1 V at J5202.

35. Repeat Steps 22 and 32 through 34 until 30 MHz is 0 V and 31 MHz is 1 V. Check at 32 MHz, 29 MHz and 28 MHz for 2, -1 and -2 V; respectively.

36. Set Signal Generator to 30 MHz and decrease level. Verify 30 MHz signal on Oscilloscope starts distorting at <-50 dBm on Signal Generator.

STEP	PROCEDURE
37.	Set Signal Generator at -20 dBm.
38.	Refer to 2-2-5, Figure 89, Discriminator Assembly (4 of 7). Disconnect Power Supply from R5208 on Discriminator PC Board.
39	Refer to 2-2-5, Figure 89, Discriminator Assembly (4 of 7). Reconnect R5208 to E5201-17 on Discriminator PC Board.
40.	Connect Tee Connector at Pulse Generator output and set Pulse Generator for 0.25 µs wide pulse at 500 PRF.
41.	Disconnect Oscilloscope from TP5201 (2-2-2, Figure 26).
42.	Connect Oscilloscope Channel A to Tee Connector.
43.	Refer to 2-2-5, Figure 92, Discriminator Assembly (6 of 7). Connect Oscilloscope probe to Oscilloscope Channel B and verify signal at following points on Sampler PC Board with 2-2-4, Figure 65: X5301, Pin 5 X5306, Pin 10 X5308, Pin 10 X5312, Pin 10



Sampler PC Board Pulse Widths
Figure 65

44.	Refer to 2-2-5, Figure 89, Discriminator Assembly (6 of 7). Use Oscilloscope probe to verify 0.4 µs pulse width at X5317, pin 10 on Sampler PC Board. Adjust C5330 on Sampler PC Board, as needed.

STEP PROCEDURE

45. Connect Oscilloscope probe to wire cable connector P7101, pin 7.

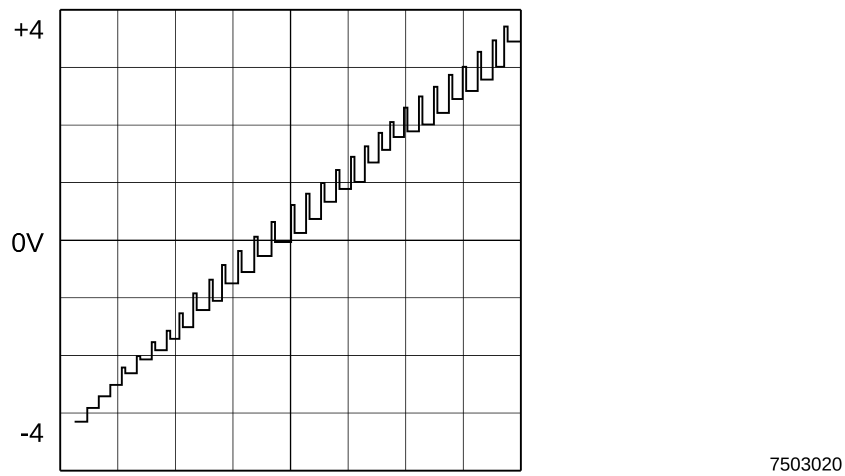
46. Set Signal Generator to 20 MHz and verify Oscilloscope signal is 0 V.

47. Increase Signal Generator frequency to >36 MHz and verify Oscilloscope signal is +5 V from 24 to 36 MHz (±1 MHz) and 0 V for all other frequencies. If not, refer to 2-2-5, Figure 89, Discriminator Assembly (4 of 7) and adjust R5218 on Discriminator PC Board.

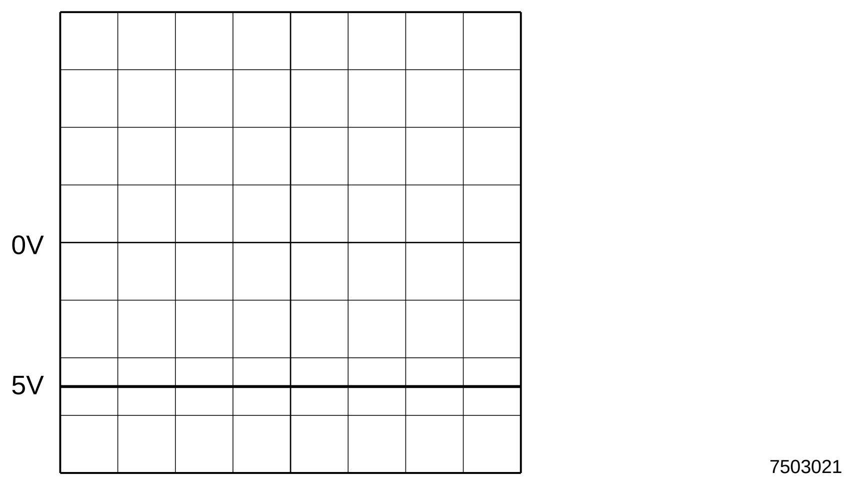
48. Refer to 2-2-5, Figure 89, Discriminator Assembly (6 of 7). Connect Oscilloscope probe to either end of CR5308 on Sampler PC Board. Set Oscilloscope for 5 ms/Div sweep time and 2V/Div amplitude scale.

49. Refer to 2-2-4, Figures 66, 67 and 68. Set Signal Generator to following frequencies and verify signal on Oscilloscope:

30 MHz - ± voltage with no stepping.
20 MHz - Stepping (32 stair steps total) from -4 to 4 V.
40 MHz - Stepping (32 stair steps total) from -4 to 4 V.

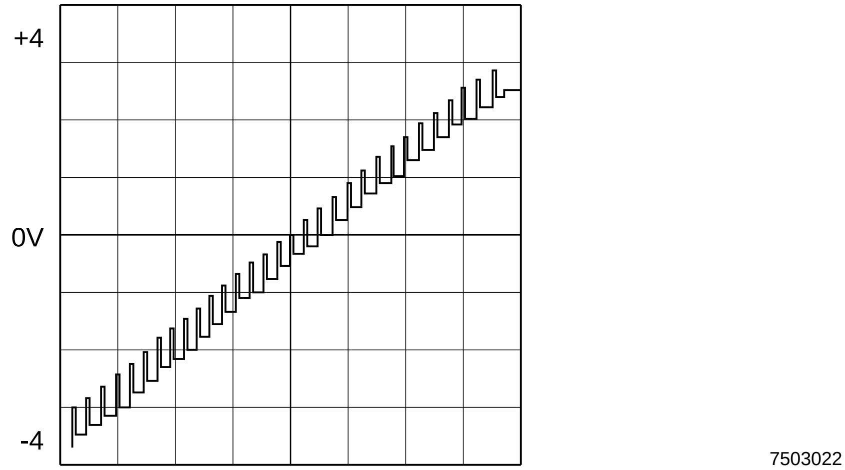


20 MHz Display
Figure 66



30 MHz Display
Figure 67

STEP PROCEDURE

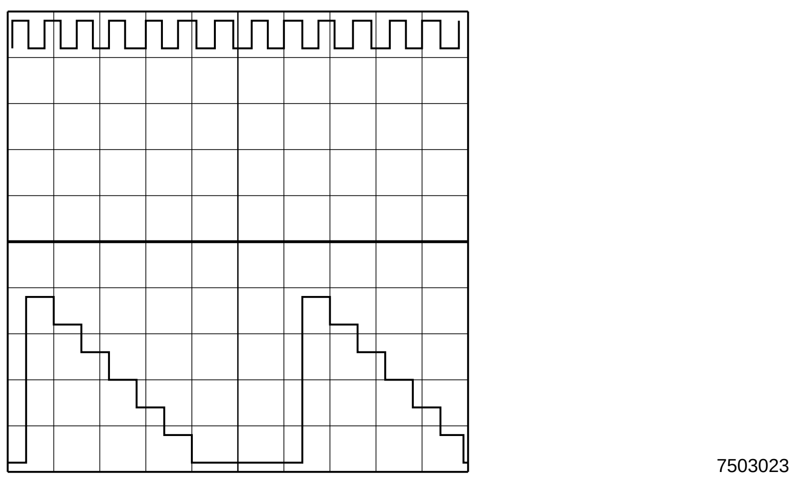


40 MHz Display
Figure 68

50. Refer to 2-2-5, Figure 89, Discriminator Assembly (4 of 7). Connect Oscilloscope probe to R5208 (side connected to E5201-17) on Discriminator PC Board.

51. Refer to 2-2-4, Figure 69. Set Signal Generator to following frequencies and verify Auto Zero signal on Oscilloscope:

    40 MHz - 5 V
    30 MHz - 0 V
    20 MHz - -5 V



Auto Zero Display
Figure 69

52. Disconnect Spectrum Analyzer, Signal Generator and Oscilloscope from test setup.

53. Refer to 2-3-1, Figure 5 and reconnect coaxial cable connector P/J5103 (18) on RF Converter PC Board Assembly.

STEP PROCEDURE

54. Refer to 2-2-5, Figure 77, Composite Assembly (3 of 4). Reconnect coaxial cable connectors on Discriminator Assembly:

- P/J5101
- P/J5102

55. Set Pulse Generator for 0.5 µs wide pulse at 500 PRF.

56. Refer to 2-2-5, Figure 89, Discriminator Assembly (2 of 7). Connect Spectrum Analyzer to TP5101 and verify frequency is sweeping from 985 to 1130 MHz. If not, adjust TUNE POSITION R5111 (Sweep Center) and TUNE GAIN R5112 (Sweep Width) on RF Converter PC Board, as needed.

57. Remove power.

58. Disconnect test equipment.

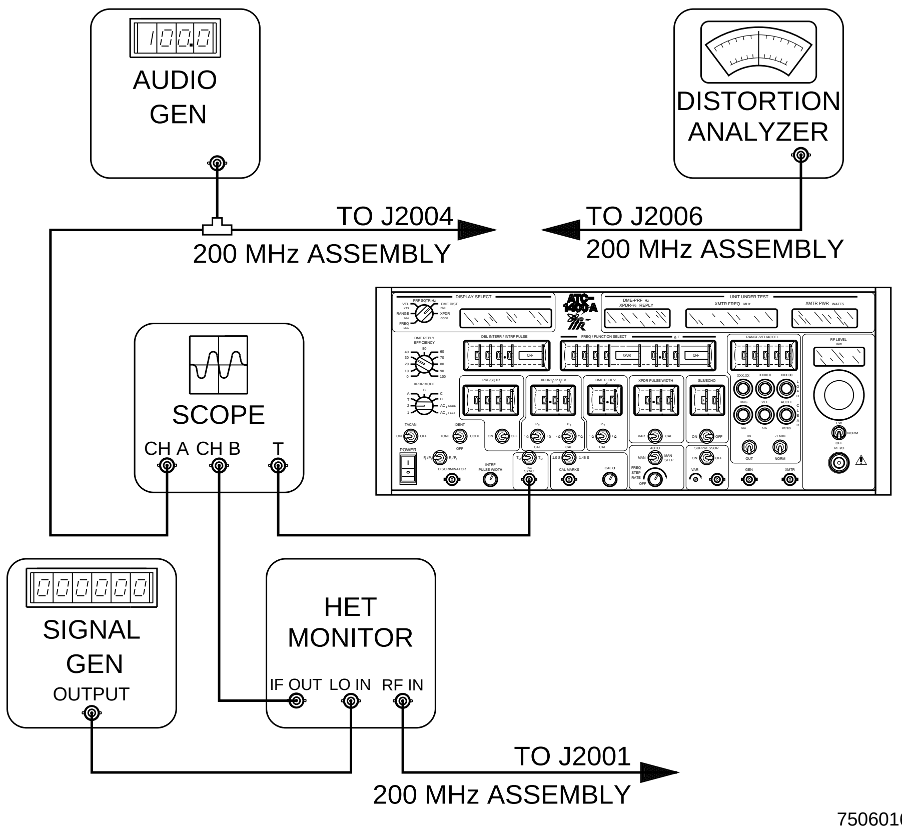
59. Reinstall Discriminator Assembly as follows:

- Perform 2-3-1D(4)(b), Steps 1 through 4 in reverse order.
- Perform 2-3-1D(4)(a) steps in reverse order disconnecting and reconnecting cables as needed.

(11) 200 MHz Generator Assembly

TEST EQUIPMENT:
1 Audio Generator
3 Coaxial Cables (50 Ω BNC to SMB)
4 Coaxial Cables (50 Ω BNC to BNC)
1 Connector (50 Ω BNC Tee)
1 Digital Multimeter
1 Distortion Analyzer
1 Frequency Counter
1 Heterodyne Monitor
1 Jumper Wire (22 GA)
1 Modulation Meter
1 Oscilloscope
1 Power Meter
1 Signal Generator
1 Spectrum Analyzer

SET-UP DIAGRAM:



200 MHz Assembly Test Setup Diagram
Figure 70

WARNING: DO NOT APPLY POWER TO ATC-1400A-2 UNTIL INSTRUCTED.

STEP PROCEDURE

1. Set ATC-1400A Controls as follows:

CONTROL	SETTING
CW/NORM/OFF Switch	***CW***
IN/OUT Switch	***IN***
SLS/ECHO ON/OFF Switch	***ON***
XPDR PULSE WIDTH VAR/CAL Switch	***CAL***
FREQ STEP RATE Control	***OFF***
MAN/AUTO/MAN STEP Switch	***MAN***
XPDR DEV P_3/CAL Switch	***CAL***
XPDR DEV P_2/CAL Switch	***CAL***
T_O/TAC/T_D Switch	***T_O***
INTERF PULSE WIDTH Control	***Midrange***
PRF/SQTR ON/OFF Switch	***ON***
IDENT TONE/OFF/CODE Switch	***OFF***
TACAN/ON/OFF Switch	***OFF***
XPDR MODE Control	***1***
DME REPLY EFFICIENCY Control	***100%***
PRF/SQTR Thumbwheels	***500***
DBL INTERR/INTERF Pulse Thumbwheels	***019.0 OFF***
FREQ/FUNCTION SELECT Thumbwheels	***1000 XPDR***
ΔF Thumbwheels	***0.00 OFF***
SLS/ECHO Thumbwheels	***0 dB***
EQUALIZER/OFF Switch	***OFF***
SELF-INTERR/OFF Switch	***SELF-INTERR***

2. Refer to 2-2-5, Figure 87, 200 MHz Generator Assembly (1 of 20) or (15 of 20) (with SLS Modification). Disconnect coaxial cable connectors on 200 MHz Generator Assembly as follows:
   - P/J2001
   - P/J2002
   - P/J2004
   - P/J2006
3. Connect Frequency Counter to J2002 (2-2-2, Figure 26).
4. Connect Spectrum Analyzer to J2001 (2-2-2, Figure 26).
5. Apply ac power to ATC-1400A-2 and allow 10 minute warm-up period.
6. Verify Frequency Counter displays 100 MHz (±0.5 kHz).
7. Verify Spectrum Analyzer displays a level of -10 dBm (±2 dB) at 200 MHz and <-60 dBc (-70 dBm typical) at 100 and 300 MHz.
8. Set CW/NORM/OFF Switch to ***OFF*** and verify Spectrum Analyzer displays <-80 dBc (-90 dBm typical) at 200 MHz.
9. Disconnect test equipment.
10. Connect a jumper wire between AUXILIARY Connector (J6), pin 6 (Appendix A, Figure 2) and ground.
11. Set CW/NORM/OFF Switch to ***CW***.

NOTE: Steps 12 through 18 only apply if the SLS Modification is installed.

STEP PROCEDURE

12. Connect Frequency Counter to J2001 (2-2-2, Figure 26).

13. Verify ***200.001 MHz*** (±200 Hz) frequency. If not, adjust L2802 on 200 MHz SLS Source PC Board Assembly as follows:

    - Remove 200 MHz SLS Source Assembly according to 2-3-1D(16)(a), Steps 1 through 3.
    - Lift 200 MHz SLS Source Assembly so that lowest access hole (L2802) on front side is accessible. Refer to 2-2-5, Figure 95, 200 MHz SLS Source Assembly (1 of 2).
    - Adjust L2802 for 200.001 MHz (±200 Hz) frequency.
    - Reinstall 200 MHz SLS Source Assembly.

14. Disconnect coaxial cable connector P/J2012 on 200 MHz Generator Assembly (2-2-7, Figure 26).

15. Connect Spectrum Analyzer to P2012.

16. Verify 200 MHz SLS Source Assembly output is -1 dBm (±1 dB).

17. Disconnect test equipment.

18. Reconnect coaxial cable connector P/J2012 on 200 MHz Generator Assembly.

19. Connect Power Meter to J2001 (2-2-2, Figure 26).

20. Set SLS/ECHO Thumbwheels to ***0 dB***. Note SLS/ECHO Level displayed on Power Meter for reference.

21. Increment SLS/ECHO Thumbwheels from ***6 dB to -19 dB***. Verify Power Meter displays selected level plus level recorded in Step 20. (Refer to 2-2-4, Table 56 for SLS/ECHO Level acceptable tolerance.)

22. Remove jumper wire between AUXILIARY Connector (J6), pin 6 (Appendix A, Figure 2) and ground.

23. Set FREQ/FUNCTION SELECT Thumbwheels to ***1000 MHz X***, TACAN ON/OFF Switch to ***ON*** and PRF/SQTR ON/OFF Switch ***OFF*** to support TACAN and CW operation.

24. Connect Modulation Meter to J2001 (2-2-2, Figure 26).

25. Hold S2601 (15 Hz/135 Hz Switch) (2-2-2, Figure 26) in leftmost (15 Hz) position and verify Modulation Meter displays 21% (±2%) modulation.

    NOTE: If failure occurs in Step 25; perform Steps 26 through 36, perform TACAN AM Calibration Procedure in 2-2-2D(5) and restart assembly testing at Step 23. Otherwise go to Step 37.

SELECTED SLS/ ECHO LEVEL	TOLERANCE	SELECTED SLS/ ECHO LEVEL	TOLERANCE
+6 dB	±0.5 dB	-7 dB	±0.2 dB
+5 dB	±0.5 dB	-8 dB	±0.2 dB
+4 dB	±0.5 dB	-9 dB	±0.2 dB
+3 dB	±0.2 dB	-10 dB	±0.2 dB
+2 dB	±0.2 dB	-11 dB	±0.5 dB
+1 dB	±0.2 dB	-12 dB	±0.5 dB
+0 dB	±0.2 dB	-13 dB	±0.5 dB
-0 dB	±0.2 dB	-14 dB	±0.5 dB
-1 dB	±0.2 dB	-15 dB	±0.5 dB
-2 dB	±0.2 dB	-16 dB	±0.5 dB
-3 dB	±0.2 dB	-17 dB	±0.5 dB
-4 dB	±0.2 dB	-18 dB	±0.5 dB
-5 dB	±0.2 dB	-19 dB	±0.5 dB
-6 dB	±0.2 dB		

SLS/ECHO Level Tolerance
Table 56

Note: For non-coherent SLS units, all tolerances are +.5 dB.

STEP PROCEDURE

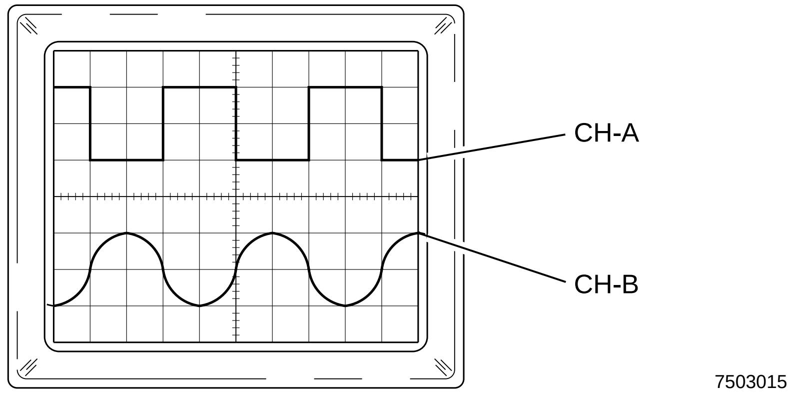
26. Prepare 200 MHz Generator Assembly as follows:

- Remove ac power from ATC-1400A-2.
- Remove 200 MHz Generator Assembly according to 2-3-1D(15)(a).
- Remove 200 MHz Control PC Board Assembly according to 2-3-1D(15)(b), Steps 1 and 2.
- Configure with access to 200 MHz Control PC Board Assembly, ability to reconnect connectors and maintaining electronic integrity (no ESD or shorting components).
- Refer to 2-2-5, Figure 77, Composite Assembly (3 of 4). Reconnect ribbon cable connector P/J2602 and wire cable connector P/J2601 on 200 MHz Generator Assembly.
- Apply ac power to ATC-1400A-2.

27. Set FREQ/FUNCTION SELECT Thumbwheels to ***1000 MHz X*** and TACAN ON/OFF Switch ***ON***.

STEP PROCEDURE

28. Refer to 2-2-5, Figure 87, 200 MHz Generator Assembly (4 of 20). Connect Oscilloscope Channel A to J2601, pin 14 and Channel B to TP2607. Verify waveforms displayed on Oscilloscope are similar to 2-2-4, Figure 71.



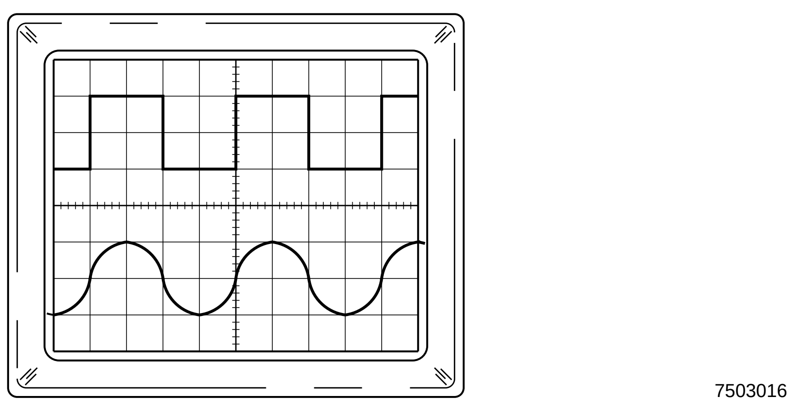
Channel A and Channel B Oscilloscope Display (Out of Phase)
Figure 71

29. Refer to 2-2-5, Figure 87, 200 MHz Generator Assembly (4 of 20). Connect jumper wire between J2603, pin 6 and J2603, pin 3 (analog ground) on 200 MHz Control PC Board.

30. Connect Digital Multimeter (set for Vrms) between J2603, pin 5 and J2603, pin 3 (2-2-5, Figure 8).

31. Refer to 2-2-5, Figure 88, 200 MHz Generator Assembly (4 of 20). Adjust R2651 (135 Hz Gain Control) and R2649 (135 Hz Phase Control) on 200 MHz Control PC Board, as needed, so both signals displayed on Oscilloscope are in phase and measure 7.5 V_{P-P} at TP2607 according to 2-2-4, Figure 72.

NOTE: The gain and phase adjustments in Step 31 are interactive, so it may be necessary to alternately adjust R2651 and R2649 to obtain the desired result.



Channel A and Channel B Oscilloscope Display (In Phase)
Figure 72

32. Hold S2601 (15 Hz/135 Hz Switch) (2-2-2, Figure 26) in rightmost (135 Hz) position and verify Digital Multimeter displays 0.150 Vrms (±0.005 V).

NOTE: If voltage displayed in Step 32 is not within tolerance, repeat alignment procedure in Step 31 until both signals displayed on Oscilloscope are in phase at 7.5 V_{P-P} and 0.150 Vrms (±0.005 V) is displayed on Digital Multimeter.

STEP PROCEDURE

33. Refer to 2-2-5, Figure 87, 200 MHz Generator Assembly (4 of 20). Connect Oscilloscope Channel A to J2601, pin 15 and Channel B to TP2609 on 200 MHz Control PC Board. Verify waveforms displayed on Oscilloscope are identical to those in 2-2-4, Figure 71.

34. Adjust R2659 (15 Hz Gain Control) and R2656 (15 Hz Phase Control) on 200 MHz Control PC Board (2-2-5, Figure 87), as needed, so both signals displayed on Oscilloscope are in phase and measure 7.5 V_{P-P} at TP2609 according to 2-2-4, Figure 72.

    NOTE: Gain and phase adjustments in Step 34 are interactive. It may be necessary to alternately adjust R2659 and R2656 to obtain the desired result.

35. Hold S2601 (15 Hz/135 Hz Switch) (2-2-2, Figure 26) in leftmost (15 Hz) position and verify 0.150 Vrms (±0.005 V) on Digital Multimeter.

    NOTE: If voltage displayed in Step 35 is not within tolerance, repeat alignment procedure in Step 34 until both signals displayed on Oscilloscope are in phase at 7.5 V_{P-P} and 0.150 Vrms (±0.005 V) is displayed on Digital Multimeter.

36. Hold S2601 (15 Hz/135 Hz Switch) (2-2-2, Figure 26) in rightmost (135 Hz) position, and verify Modulation Meter displays 21% (±2%) modulation.

    NOTE: If failure occurs in Step 36, perform TACAN AM Calibration procedure in 2-2-2D(5) and restart assembly testing at Step 26. Otherwise go to Step 37.

37. Set TACAN ON/OFF Switch ***OFF***.

38. Connect test equipment to ATC-1400A-2 as shown in 2-2-4, Figure 70.

39. Adjust Audio Generator output frequency to 135 Hz.

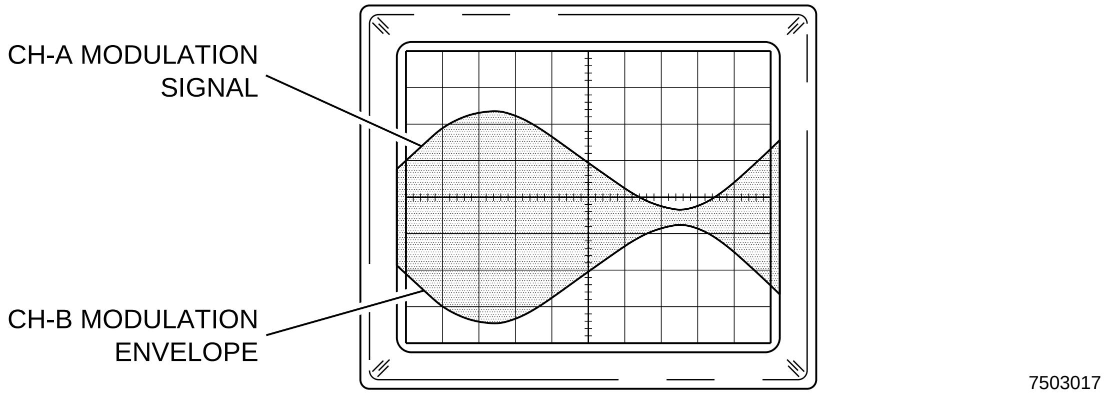
40. Set output level of Audio Generator for 90% modulation on Modulation Meter.

41. Set Signal Generator for 200 MHz (slightly offset for better resolution) at ≈+7 dBm.

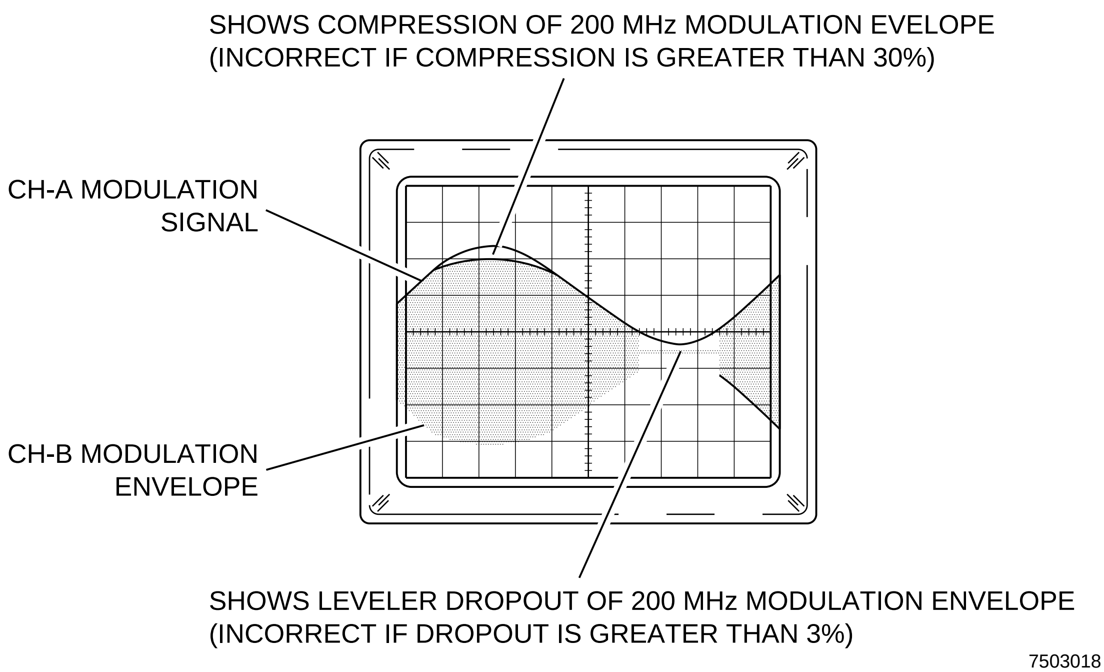
STEP PROCEDURE

42. Adjust Oscilloscope positioning and vertical sensitivity controls to set Channel A modulation signal over Channel B modulation envelope. Verify modulation error is <3%. (Refer to 2-2-4, Figures 73 and 74.)

NOTE: If failure occurs in Step 42; perform Steps 26 through 36, perform TACAN AM Calibration procedure in 2-2-2D(5) and restart assembly testing at Step 37. Otherwise go to Step 43.



Display Showing Ideal Modulation Envelope
Figure 73



Display Showing Error 3% for Compression
Figure 74

43. Verify Distortion Analyzer displays <3% distortion.

NOTE: If Step 43 is >3% distortion; perform Steps 26 through 36, perform TACAN AM Calibration procedure in 2-2-2D(5) and continue assembly testing at Step 37. Otherwise go to Step 39.

44. Set PRF/SQTR ON/OFF Switch to ***ON*** and FREQ/FUNCTION SELECT Thumbwheels to ***1000 XPDR***.

STEP PROCEDURE

45. Disconnect Audio Signal Generator.

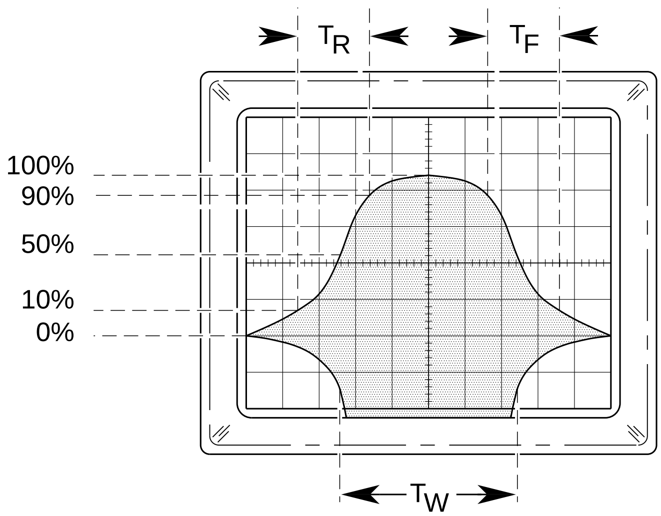
46. Adjust Oscilloscope controls for stable display on Channel B.

47. Verify transponder (XPDR) pulses have rise time of 70 ns (+10 ns, -20 ns) measured at 10% to 90% amplitude points, and fall time of 70 ns (+10 ns, -20 ns) measured at 90% to 10% amplitude points.

48. Set SLS/ECHO Thumbwheels to ***0 dB*** and verify amplitude of P_1 and P_2 pulses are within 2% of each other. Note pulse levels for reference.

49. Set PRF/SQTR ON/OFF Switch to ***OFF***, FREQ/FUNCTION SELECT Thumbwheels to ***1000 MHz X*** and TO/TAC/TD Switch to ***TD***.

50. Adjust Oscilloscope controls for stable display and verify DME pulse characteristics displayed are similar to 2-2-4, Figure 75.



T_R = PULSE RAISE TIME 2.0µS (± .25µS)
T_W = PULSE WIDTH 3.5µS (± .5µS)
T_F = PULSE FALL TIME 2.5µS (± .25µS)

7503019

DME Pulse Characteristics
Figure 75

51. Verify DME pulse amplitudes equal XPDR pulse amplitudes referenced in Step 42. If not, perform Step 26 except for removing 200 MHz Control PC Board Assembly. Refer to 2-2-5, Figure 87, 200 MHz Generator Assembly (2 of 20) or (16 of 20) (with SLS Modification). Adjust R2303 on DME Amp PC Board Assembly.

52. Remove ac power.

53. Disconnect test equipment.

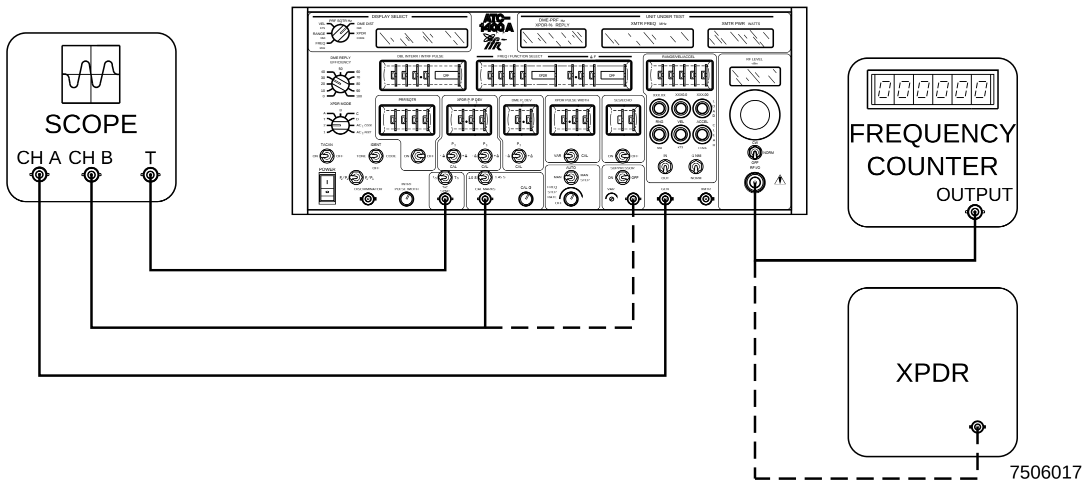
54. If needed, reinstall 200 MHz Generator Assembly as follows:

- Perform 2-3-1D(15)(b), Steps 1 through 2 in reverse order.
- Perform 2-3-1D(15)(a) steps in reverse order disconnecting and reconnecting cables as needed.

(12) Card Cage Assembly

TEST EQUIPMENT:
- 3 Coaxial Cables (50 Ω BNC to BNC)
- 1 Coaxial Cable (50 Ω BNC to Type N)
- 1 Frequency Counter
- 1 Oscilloscope
- 1 Transponder (XPDR)

SET-UP DIAGRAM:



Card Cage Assembly Test Setup Diagram
Figure 76

WARNING: DO NOT APPLY POWER TO ATC-1400A-2 UNTIL INSTRUCTED.

STEP	PROCEDURE

1. Connect ATC-1400A-2 as shown in 2-2-4, Figure 76.
2. Set ATC-1400A-2 Controls as follows:

CONTROL	SETTING
CW/NORM/OFF Switch	***NORM***
-1 NMi/NORM Switch	***NORM***
IN/OUT Switch	***IN***
SUPPRESSOR ON/OFF Switch	***ON***
SLS/ECHO ON/OFF Switch	***OFF***
XPDR PULSE WIDTH VAR/CAL Switch	***CAL***
FREQ STEP RATE Control	***OFF***
MAN/AUTO/MAN STEP Switch	***MAN***
XPDR DEV P_3/CAL Switch	***CAL***
1.0 µS/1.45 µS Switch	***1.0 µS***
XPDR DEV P_2/CAL Switch	***CAL***
T_O/TAC/T_D Switch	***T_O***
INTRF PULSE WIDTH Control	***Midrange***
PRF/SQTR ON/OFF Switch	***ON***
IDENT TONE/OFF/CODE Switch	***OFF***
TACAN ON/OFF Switch	***OFF***
XPDR MODE Control	***1***
DME REPLY EFFICIENCY Control	***100%***
DISPLAY SELECT Control	***FREQ MHz***
PRF/SQTR Thumbwheels	***2500***
DBL INTERR/INTRF Pulse Thumbwheels	***019.0 OFF***
XPDR P_2/P_3 DEV Thumbwheels	***1.00***
FREQ/FUNCTION SELECT Thumbwheels	***0962 XPDR***
DME P_2 DEV Thumbwheels	***7.0***
ΔF Thumbwheels	***0.00 OFF***
XPDR PULSE WIDTH Thumbwheels	***1.85***
SLS/ECHO Thumbwheels	***6 dB***
RANGE/VEL/ACCEL Thumbwheels	***39999***
EQUALIZER/OFF Switch	***OFF***
SELF-INTERR/OFF Switch	***SELF-INTERR***

3. Apply ac power to ATC-1400A-2 and allow 10 minute warm-up period. Verify ATC-1400A-2 power-up self test as shown in 2-2-4, Table 55.
4. Apply ac power to accessory test equipment.
5. Verify pulse spacing on Oscilloscope Channel A is 3 µs (±5 ns).
6. Set XPDR MODE Control to ***2***. Verify pulse spacing displayed on Oscilloscope Channel A is 5.0 µs (±5 ns).
7. Set XPDR MODE Control to ***T***. Verify pulse spacing displayed on Oscilloscope Channel A is 6.5 µs (±5 ns)
8. Set XPDR MODE Control to ***A***. Verify pulse spacing displayed on Oscilloscope Channel A is 8.0 µs (±5 ns).
9. Set XPDR MODE Control to ***B***. Verify pulse spacing displayed on Oscilloscope Channel A is 17 µs (±5 ns).
10. Set XPDR MODE Control to ***C***. Verify pulse spacing displayed on Oscilloscope Channel A is 21 µs (±5 ns)

STEP	PROCEDURE
11.	Set XPDR MODE Control to ***D***. Verify pulse spacing displayed on Oscilloscope Channel A is 25 µs (±5 ns)
12.	Set XPDR MODE Control to ***AC_1 CODE***. Verify pulse spacing displayed on Oscilloscope Channel A is 8.0 µs.
13.	Set XPDR MODE Control to ***AC_2 FEET***. Verify pulse spacing displayed on Oscilloscope Channel A is 21 µs.
14.	Set XPDR MODE Control to A and SLS/ECHO ON/OFF Switch to ***ON***. Verify 800 ns pulse appears 2.0 µs after the leading edge of P_1 pulse.
15.	Alternately set XPDR DEV P_2/CAL Switch between **-** and **+** while monitoring Oscilloscope. Verify P_2 pulse is positioned 1.0 µs from leading edge of P_1 with switch set to ***-Δ***, and 3.0 µs from leading edge of P_1 with switch set to ***+Δ***.
16.	Set XPDR DEV P2/CAL Switch to ***CAL***.
17.	Alternately set XPDR DEV P3/CAL Switch between **-** and **+** while monitoring Oscilloscope. Verify P_3 pulse is positioned 7.0 µs from leading edge of P_1 with switch set to ***-Δ***, and 9.0 µs from leading edge of P_1 with switch set to +Δ.
18.	Set XPDR DEV P3/CAL Switch to ***CAL***.
19.	Set XPDR PULSE WIDTH VAR/CAL Switch to ***VAR***. Verify pulse width is 1.85 µs (±5 ns).
20.	Decrement XPDR PULSE WIDTH Thumbwheels to ***0.15 µs*** and verify pulse width decreases accordingly.
21.	Set XPDR PULSE WIDTH VAR/CAL Switch to ***CAL***.
22.	Set DBL INTERR/INTRF PULSE Thumbwheels to ***017.5 INTERF-*** and Oscilloscope to INTERNAL SYNC. Verify pulse approximately twice the amplitude of P_1 pulse is positioned 17.5 µs (±50 ns)æ<0.05%) before the leading edge of P_1.
23.	Set DBL INTERR/INTRF PULSE Thumbwheels to ***019.0 INTERF+*** and Oscilloscope to EXTERNAL SYNC. Verify pulse approximately twice the amplitude of P_1 pulse is positioned 19.0 µs (±50 ns) after the leading edge of P_1.
24.	Rotate INTRF PULSE WIDTH Control ***fully cw, then fully ccw***. Verify pulse width changes a minimum of 0.4 to 5 µs.
25.	Set DBL INTERR/INTRF PULSE Thumbwheels to ***050.0 DOUBLE***. Verify a second interrogation pulse is positioned 50.0 µs (±50 ns) after leading edge of P_1.
26.	Set DBL INTERR/INTRF PULSE Thumbwheels to ***050.0 OFF***.
27.	Verify on Oscilloscope Channel B the CAL MARKS pulses are spaced 1.0 µs apart with pulse width of 0.45 µs (±40 ns).
28.	Set 1.0 µS/1.45 µs Switch to ***1.45 µs***. Verify CAL MARKS pulses are spaced 1.45 µs apart.
29.	Rotate CAL Ø Control ***fully cw, then fully ccw***. Verify CAL MARKS Phase shifts a minimum of 360°.

STEP PROCEDURE

30. Disconnect Oscilloscope Channel B from CAL MARKS Connector and connect Oscilloscope Channel B to SUPPRESSOR OUTPUT Connector. Verify rising edge of suppression pulse is coincident with rising edge of P_3 and pulse amplitude is 18.5 V.

31. Set TO/TAC/TD Switch to ***TD***, FREQ/FUNCTION SELECT Thumbwheels to ***0962 MHz X*** and PRF/SQTR Thumbwheels to ***OFF***. Verify two Gaussian shaped pulses spaced 12 µs (±0.2 µs) apart are displayed.

32. Set FREQ/FUNCTION SELECT Thumbwheels to ***0962 MHz Y***. Verify two Gaussian shaped pulses displayed are now spaced 30 µs (±0.2 µs) apart.

33. Set DME DEV P_2/CAL Switch to ***-Δ*** then ***+Δ***. Verify P_2 pulse is positioned 23 µs from leading edge of P_1 set to ***-Δ***, and 37 µs from leading edge of P_1 set to ***+Δ***.

34. Set DISPLAY SELECT Control to ***PRF SQTR Hz*** and IDENT TONE/OFF/CODE Switch to ***TONE***. Verify ***1350*** is displayed on DISPLAY SELECT Readout.

35. Set EQUALIZER/OFF Switch to ***EQUALIZER***. Verify DISPLAY SELECT Readout displays ***2700***.

36. Set IDENT TONE/OFF/CODE Switch to ***OFF***.

37. Verify frequency on DISPLAY SELECT Readout for DME REPLY EFFICIENCY Control setting is within tolerance as listed in 2-2-4, Table 57.

NOTE: All DME replies selected by DME REPLY EFFICIENCY Control have random functions except 0% and 100% which are stable.

DME REPLY EFFICIENCY CONTROL SETTING	DISPLAY SELECT READOUT
0%	0 Hz (±0 Hz)
10%	250 Hz (±125 Hz)
20%	500 Hz (±125 Hz)
30%	750 Hz (±125 Hz)
40%	1000 Hz (±125 Hz)
50%	1250 Hz (±125 Hz)
60%	1500 Hz (±125 Hz)
70%	1750 Hz (±125 Hz)
80%	2000 Hz (±125 Hz)
90%	2250 Hz (±125 Hz)
100%	2500 Hz (±25 Hz)

Display Frequency for DME Control Settings
Table 57

38. Set PRF/SQTR ON/OFF Switch to ***ON*** and SELF-INTERR/OFF Switch to ***OFF***. Verify ***2500*** (±80) is displayed on DISPLAY SELECT Readout.

NOTE: DISPLAY SELECT Readout changes continually due to random squitter pulses.

STEP PROCEDURE

39. Set TO/TAC/TD Switch to ***TAC*** and TACAN ON/OFF Switch to ***ON***.

40. Using Oscilloscope with Channel A sweep control set to 10 ms/Div, verify 15 Hz and 135 Hz TACAN AM is present on squitter pulses.

41. Set PRF/SQTR ON/OFF Switch to ***OFF***. Verify DISPLAY SELECT Readout displays ***877*** (±2).

42. Set FREQ/FUNCTION SELECT Thumbwheels to ***0962 MHz X***. Verify DISPLAY SELECT Readout displays ***900*** (±2).

43. Set DISPLAY SELECT Control to ***Range NMi***. Depress LOAD RNG Pushbutton Switch and verify DISPLAY SELECT Readout displays ***399.99***.

44. Set -1 NMi/NORM Switch to ***-1 NMi***. Verify DISPLAY SELECT Readout displays ***398.99***. Set -1 NMi/NORM Switch to ***NORM***.

45. Depress LOAD VEL Pushbutton Switch. Verify DISPLAY SELECT Readout is decrementing.

46. Set IN/OUT Switch to ***OUT***. Verify DISPLAY SELECT Readout is incrementing.

47. Set DISPLAY SELECT Control to ***VEL KTS***. Verify DISPLAY SELECT Readout displays ***3990***.

48. Depress LOAD ACCEL Pushbutton Switch. Verify DISPLAY SELECT Readout is decrementing.

    NOTE: When DISPLAY SELECT Readout digits reach 0000, the display automatically increments.

49. Depress CLEAR ACCEL Pushbutton Switch. Verify display on DISPLAY SELECT Readout remains constant.

50. Depress CLEAR VEL Pushbutton Switch. Verify DISPLAY SELECT Readout displays ***000***.

51. Set DISPLAY SELECT Control to ***RANGE NMi***. Verify DISPLAY SELECT Readout remains constant.

52. Set PRF/SQTR ON/OFF Switch to ***ON*** and PRF/SQTR Thumbwheels to ***0500***.

53. Connect XPDR to RF I/O Connector.

54. Set XPDR Power Switch to ***STAND BY*** and allow 90 second warm-up period.

55. Set XPDR Power Switch to ***ON***.

56. Adjust RF LEVEL Control to ***-60 dBm*** on RF LEVEL -dBm Display.

57. Select five different codes on XPDR at random. Verify DISPLAY SELECT Readout shows selected codes DME-PRF Hz/XPDR - % REPLY Display shows ≥***100%*** reply rate on DME.

THIS PAGE INTENTIONALLY LEFT BLANK.

5. Assemblies and Schematics

A. General

This section contains component layout drawings for the repairable mechanical assemblies, PC board assemblies, interconnect diagrams and circuit schematics within the ATC-1400A-2 with or without the SLS modification installed.

B. How To Use Schematics

To trace coaxial cable conductors from one schematic to another, follow the procedure outlined in 2-2-3B(1) To trace conductors for multiple pin connectors, follow the procedure outlined in 2-2-3B(2). Also refer to the cable tables in this section.

(1) Coaxial Cables

STEP	PROCEDURE
1.	Locate desired assembly on Interconnect Diagram.
2.	Locate desired coaxial cable on Interconnect Diagram.
	NOTE: Connectors are identified by reference designators.
3.	Follow coaxial cable on Interconnect Diagram to locate opposite end of conductor. Note coaxial cable connector reference designator and destination.
4.	Locate schematic of desired assembly in 2-2-3C.
5.	Locate reference designator of coaxial cable connector and continue tracing circuit.

(2) Multiple Pin Connectors

STEP	PROCEDURE
1.	Locate desired assembly on Interconnect Diagram.
2.	Locate desired multiple pin connector on Interconnect Diagram.
	NOTE: Connectors are identified by reference designators.
3.	Note reference designator of the mating connector. Note assembly or wire harness the connector is mounted on or grouped with.
4.	Locate schematic of desired assembly in 2-2-3C.
5.	Locate reference designator of multiple pin connector and corresponding pin number. Continue tracing circuit.

C. Alphabetical Index of Assemblies, Interconnect Diagrams and Circuit Schematics

ITEM #	FROM (CONNECTOR-ASSEMBLY)	TO (CONNECTOR-ASSEMBLY	SIGNAL	FREQUENCY	LEVEL
COMPOSITE ASSEMBLY					
21	P/J9128 (Rear Panel Assembly)	P/J7103 (Video Assembly)	Measurement Gate	Pulse	TTL
22	P/J5102 (Discriminator Assembly)	P/J6104 (Counter Assembly)	Transmitter Frequency	247.5 to 280 MHz	≈-10 dBm
24	P/J8503 (RF Bulkhead Assembly)	P/J3202 (ALC/Mixer Assembly)	Generator Feedback	dc	1.85 Vdc
25	P/J9126 (Rear Panel Assembly)	P/J2003 (200 MHz Generator Assembly)	DABS	Pulse	TTL
26	P/J3703 (RF Bulkhead Assembly)	P/J5101 (Discriminator Assembly)	-69 dB RF	1020 to 1150 MHz	-69 dB (UUT RF I/O input)
27	P/J3103 (ALC/Mixer Assembly)	P/J8104 (RF Bulkhead Assembly)	Generator RF	952 to 1223 MHz	≈-10 dBm
28	P/J4007 (RF Synthesizer Assembly)	P/J3102 (ALC/Mixer Assembly)	LO	752.99 to 1022.99 MHz	≈7 dBm
29	P/J4005 (RF Synthesizer Assembly)	P/J6103 (Counter Assembly)	Generator Frequency	188.0025 to 255.7475 MHz	≈-6 dBm
30	P/J9129 (Rear Panel Assembly)	P/J3204 (ALC/Mixer Assembly)	RF Level Vernier	dc	1.0 to 5.5 Vdc
31	P/J2005 (200 MHz Generator Assembly)	P/J3203 (ALC/Mixer Assembly)	Demodulated Output	TACAN AM	600 mV_{P-P}
32	P/J4401 (RF Synthesizer Assembly)	P/J2002 (200 MHz Generator Assembly)	100 MHz	100 MHz	≈-12 dBm
33	P/J2001 (200 MHz Generator Assembly)	P/J3101 (ALC/Mixer Assembly)	200 MHz IF	200 MHz	≈-10 dB
63	P/J9121 (Rear Panel Assembly)	P/J3702 (RF Bulkhead Assembly)	External RF	962 to 1213 MHz	External
65	P/J9127 (Rear Panel Assembly)	P/J2004 (200 MHz Generator Assembly)	TACAN	15 to 135 Hz	External
71 (SLS Mod)	P/J2901 (200 MHz SLS Source Assembly)	P/J2012 (200 MHz Generator Assembly)	200 MHz SLS	200 MHz	-1 dBm

Coaxial Cable List
Table 58

FRONT PANEL ASSEMBLY					
W1006	P/J7202 (Video Assembly)	J1016 (Front Panel Assembly)	Transmitter Detect	1020 to 1150 MHz	External
W1008	P/J8502 (RF Bulkhead Assembly)	J1017 (Front Panel Assembly)	Generator Monitor	Positive Generator Pulses	0.6 V
W1010	P/J5202 (Discriminator Assembly)	J1021 (Front Panel Assembly)	Discriminator	UUT Frequency	1 V/MHz (open), 0.5 V/MHz (50 Ω)
200 MHz GENERATOR ASSEMBLY					
6	P/J2006 (Modulator/ Leveler PC Board Assembly)	P/J2007 (Pulse Modulator PC Board Assembly)	200 MHz	200 MHz	≈-25 dBm
PULSE MODULATOR PC BOARD ASSEMBLY					
2	E2106 (Pulse Modulator PC Board Assembly)	P/J2009 (DME Filter, part of 200 MHz Generator Assembly)	DME Pulses	200 MHz	≈-12 dBm
TRANSPONDER FILTER PC BOARD ASSEMBLY					
2	P/J2101 (Pulse Modulator PC Board Assembly)	E2201 (Transponder Filter PC Board Assembly)	XPDR Pulses	200 MHz	-7 dBm
2	E2202 (Transponder Filter PC Board Assembly)	P/J2401 (Output Switch PC Board Assembly)	XPDR Pulses	200 MHz	-9 dBm
DME AMPLIFIER PC BOARD ASSEMBLY					
2	P/J2010 (DME Filter, part of 200 MHz Generator Assembly)	E2301 (DME Amplifier PC Board Assembly)	DME Pulses	200 MHz	≈-28 dBm
OUTPUT SWITCH PC BOARD ASSEMBLY					
E2404	P/J2301 (DME Amplifier PC Board Assembly)	E2404 (Output Switch PC Board Assembly)	DME Pulses	200 MHz	≈-9 dBm

Coaxial Cable List
Table 58 (cont)

RF BULKHEAD ASSEMBLY					
8	P/J8001 (20 dB Attenuator, part of RF Bulkhead Assembly)	P/J3701 (Coupler Assembly)	Transmitter RF	1020 to 1150 MHz	-23 dB (UUT RF I/O input)
18	P/J8204 (Bandpass Filter Assembly)	P/J8501 (Power Detector Assembly)	Generator RF	Three bands in MHz: 950 -1034, 1034 - 1124, 1124 - 1230	≈-16 dBm
22	P/J8504 (Power Detector Assembly)	P/J8605 (Attenuator Driver PC Board Assembly)	RF Amplifier	950 to 1230 MHz	≈7 dBm
26	P/J3704 (Coupler Assembly)	P/J3501 (Video Assembly)	Transmitter RF Out	1020 to 1150 MHz	-39 dB (UUT RF I/O input)
MIXER ASSEMBLY					
6	E3106 (C3119) (Mixer PC Board Assembly)	J3103 (Mixer Assembly)	Generator RF	962 to 1213 MHz	≈-10 dBm
DISCRIMINATOR PC BOARD ASSEMBLY					
E5203	P/J5103 (RF Converter PC Board Assembly)	E5203 (Discriminator PC Board Assembly)	30 MHz IF	30 MHz	-25 dBm
RF SYNTHESIZER ASSEMBLY					
17	P/J4006 (VCO PC Board Assembly)	P/J4004 (Programmable Divider PC Board Assembly)	LO	752 to 1022 MHz	+3 to +7 dBm

Coaxial Cable List
Table 58 (cont)

ITEM #	NAME	CONNECTIONS
COMPOSITE ASSEMBLY		
11	1400 Bus	P/J902 (Motherboard PC Board Assembly, part of Card Cage Assembly that is part of Floor Assembly) P/J1401 (Display Logic PC Board Assembly, part of Display Assembly that is part of Front Panel Assembly) P/J2602 (200 MHz Control PC Board Assembly, part of 200 MHz Generator Assembly) P/J4102 (Frequency Latch PC Board Assembly, part of Frequency Reference Assembly) P/J6102 (Counter PC Board Assembly, part of Counter Assembly) P/J7102 (Video Converter PC Board Assembly, part of Video Assembly) P/J8602 (Attenuation Driver PC Board Assembly, part of RF Bulkhead Assembly) P/J9202 (Interface PC Board Assembly)
FRONT PANEL ASSEMBLY		
W1	Front Panel Harness	P/J1001 (Front Panel Assembly connection to Main Wire Harness) J1018 (SUPPRESSOR OUTPUT Connector on Front Panel Assembly) J1019 (CAL MARKS Connector on Front Panel Assembly) J1020 (SYNC Connector on Front Panel Assembly) P/J1101 (Optical Counter PC Board Assembly, part of Attenuation Control Assembly that is part of Front Panel Assembly) P/J1201 (Display PC Board Assembly, part of Display Assembly that is part of Front Panel Assembly) P/J1505 (Thumbwheel Switch PC Board Assembly, part of Front Panel Assembly) P/J1801 (Pushbutton Switch PC Board Assembly, part of Front Panel Assembly)
W2	Power Switch	P/J9902 (Power Supply and Rear Panel Assemblies, part of Floor Assembly) SW1002 (POWER Switch on Front Panel Assembly)
ROTARY SWITCH PC BOARD ASSEMBLY		
J1601		J1601 (Rotary Switch PC Board Assembly, part of Front Panel Assembly) P/J1502 (Thumbwheel Switch PC Board Assembly, part of Front Panel Assembly)

Multi-Line Cable List
Table 59

THUMBWHEEL SWITCH PC BOARD ASSEMBLY		
J1503		J1503 (Thumbwheel Switch PC Board Assembly, part of Front Panel Assembly) P/J1701 (Toggle Switch PC Board Assembly, part of Front Panel Assembly)
J1504		J1504 (Thumbwheel Switch PC Board Assembly, part of Front Panel Assembly) P/J1802 (Pushbutton Switch PC Board Assembly, part of Front Panel Assembly)
DISPLAY LOGIC PC BOARD ASSEMBLY		
7		Hardwired to Display Logic PC Board Assembly (Front Panel Assembly) P/J1501 (Thumbwheel Switch PC Board Assembly, part of Front Panel Assembly)
FLOOR ASSEMBLY		
22	Main Wire Harness	P/J901 (Motherboard PC Board Assembly, part of Card Cage Assembly that is part of Floor Assembly) P/J1001 (Front Panel Assembly) P/J2601 (200 MHz Control PC Board Assembly, part of 200 MHz Generator Assembly) P/J2902 (SLS Source Assembly) (SLS Modification) P/J3201 (ALC PC Board Assembly, part of ALC/Mixer Assembly) P/J4001 (RF Synthesizer Assembly) P/J5201 (Discriminator PC Board Assembly, part of Discriminator Assembly) P/J6101 (Counter PC Board Assembly, part of Counter Assembly) P/J7101 (Video Converter PC Board Assembly, part of Video Assembly) P/J8601 (Attenuation Driver PC Board Assembly, part of RF Bulkhead Assembly) P/J9201 (Interface PC Board Assembly) P/J9503 (Fan Assembly, part of Floor Assembly) P/J9901 (Power Supply PC Board Assembly, part of Power Supply Assembly that is part of Floor Assembly)
MODULE RACK ASSEMBLY		
5		P/J903 (Motherboard PC Board Assembly, part of Card Cage Assembly that is part of Floor Assembly) P/J9203 (Interface PC Board Assembly)

Multi-Line Cable List
Table 59 (cont)

REAR PANEL ASSEMBLY		
W1	Rear Panel Wire Harness	F1 and F2 (Rear Panel Assembly, part of Floor Assembly) P/J9502 (Power Supply PC Board Assembly, part of Power Supply Assembly that is part of Floor Assembly)
POWER SUPPLY PC BOARD ASSEMBLY		
46	Power Supply Wire Harness	E2 and E4 (Power Supply PC Board Assembly, part of Power Supply Assembly that is part of Floor Assembly) P/J9902 (Front Panel Assembly) P/J9502 (Rear Panel Assembly, part of Floor Assembly)
POWER DETECTOR ASSEMBLY		
P8603		FL8601, FL8602, FL8603 and FL8604 (Power Detector Assembly, part of RF Bulkhead Assembly) P/J8603 (Attenuator Driver PC Board Assembly, part of RF Bulkhead Assembly)
BANDPASS FILTER ASSEMBLY		
P8604		FL8201, FL8202, FL8203 and G8201 (Diode Switch Assembly [Unit B], part of Bandpass Filter Assembly that is part of RF Bulkhead Assembly) FL8301, FL8302, FL8303, G8301 (Diode Switch Assembly [Unit A], part of Bandpass Filter Assembly that is part of RF Bulkhead Assembly) P/J8604 (Attenuator Driver PC Board Assembly, part of RF Bulkhead Assembly)

Multi-Line Cable List
Table 59 (cont)

PIN	SIGNAL
1400 Bus (25-Pin)	
1	Ground
2	µProcessor Clock
3	Read Enable
4	+5 V
5	A7
6	A6
7	A5
8	A4
9	A3
10	A2
11	A1
12	A0
13	Ground
14	Ground
15	Ground
16	+5 V
17	Ground
18	D7
19	D6
20	D5
21	D4
22	D3
23	D2
24	D1
25	D0

PIN	SIGNAL
Front Panel Wire Harness P/J1001 (25-Pin)	
1	Signal Shield
2	Suppressor
3	Scope Sync
4	+5 V
5	Cal 0
6	Ground 3
7	+5 V
8	Ground 4
9	NC
10	NC
11	NC
12	NC
13	NC
14	Ground 1
15	Cal Marks
16	Variable Control
17	Interference Pulse Width
18	Ground 5
19	+12 V
20	+5 V
21	Ground 2
22	NC
23	NC
24	NC
25	NC

PIN	SIGNAL
Front Panel Wire Harness P/J1101 (6-Pin)	
1	+12 V
2	OS1
3	Ground (1)
4	OS2
5	Pin removed for keying.
6	NC
Front Panel Wire Harness P/J1201 (6-Pin)	
1	+5 V LED
2	Ground (2)
3	+5 V Logic
4	Ground (4)
5	Pin removed for keying.
6	NC
Front Panel Wire Harness P/J1505 (6-Pin)	
1	NC
2	OS1
3	OS2
4	Pin removed for keying.
5	Ground (5)
6	+5 V
Front Panel Wire Harness P/J1801 (6-Pin)	
1	On
2	Rate A
3	Rate 9
4	Pin removed for keying.
5	+5 V
6	Ground (3)

Multi-Line Cable Signal Designations
Table 60

Power Switch (4-Pin)	
1	Switched Line
2	Switched Neutral
3	Line
4	Neutral

Rotary Switch PC Board Assembly P/J1502 (16-Pin)	
1	+5 V
2	DME Reply Eff E (D3)
3	DME Reply Eff D (D7)
4	DME Reply Eff C (D6)
5	DME Reply Eff B (D5)
6	DME Reply Eff A (D4)
7	Display Select A (D4)
8	Display Select B (D5)
9	Display Select D (D7)
10	Display Select C (D6)
11	NC
12	XPDR Mode A (D4)
13	XPDR Mode B (D5)
14	XPDR Mode C (D6)
15	XPDR Mode D (D7)
16	Ground

Thumbwheel Switch PC Board Assembly P/J1701 (16-Pin)	
1	Ident A (D4)
2	Ident B (D5)
3	Sync A (D2) (TO/TAC/TD)
4	PRF/SQTR Enable
5	$(F_2/P_2)/\overline{F1/P1}$ (D2)
6	DME P_2 B (D1)
7	DME P_2 A (D0)
8	Sync B (D3) (TO/TAC/TD)
9	Ground
10	+5 V
11	XPDR P_2 A (D0)
12	XPDR P_3 B (D3)
13	XPDR P_3 A (D2)
14	XPDR P_2 B (D1)
15	$\overline{\text{TACAN Enable}}$
16	Cal Marks (1.45µs/ $\overline{1.00\mu s}$)

Thumbwheel Switch PC Board Assembly P/J1802 (16-Pin)	
1	SLS/Echo Enable
2	Range Load
3	Velocity Load
4	Acceleration Clear
5	NC
6	VAR/ $\overline{\text{CAL}}$ (XPDR PW)
7	$\overline{\text{Suppressor Enable}}$
8	RF Out A (D6)
9	Out/ $\overline{\text{In}}$
10	Norm/ $\overline{\text{-1 NMi}}$
11	Step Rate
12	Freq Step (Auto/ $\overline{\text{Man}}$)
13	RF Out B (D7)
14	Velocity Clear
15	Acceleration Load
16	Range Clear

Multi-Line Cable Signal Designations
Table 60 (cont)

Display Logic PC Board Assembly P/J1501 (16-Pin)	
1	A7
2	A5
3	A3
4	A1
5	D7
6	D5
7	D3
8	D1
9	D0
10	D2
11	D4
12	D6
13	A0
14	A2
15	A4
16	A6

Main Wire Harness P/J1001 (16-Pin)
See Front Panel Wire Harness.

Main Wire Harness P/J3201 (9-Pin)	
1	+5 V
2	Ground
3	+12 V
4	Ground
5	-12 V
6	-5 V
7	NC
8	Leveler Pulse
9	$\overline{\text{Leveler SLS}}$

Main Wire Harness P/J901 (16-Pin)	
1	$\overline{\text{External SLS}}$
2	Pin removed for keying.
3	Ground
4	Interference Pulse Width
5	Cal 0
6	Pulse
7	50% Video
8	15 Hz
9	135 Hz
10	$\overline{\text{Echo Level}}$
11	$\overline{\text{SLS Level}}$
12	NC
13	+5 V
14	+5 V
15	Ground
16	Ground
17	NC
18	NC

Main Wire Harness P/J4001 (9-Pin)	
1	+5 V
2	Ground
3	+12 V
4	Ground
5	-12 V
6	NC
7	NC
8	NC
9	NC

Main Wire Harness P/J2601 (15-Pin)	
1	+5 V Analog
2	Ground
3	+12 V
4	Analog Ground
5	-12 V
6	NC
7	$\overline{\text{Leveler SLS}}$
8	$\overline{\text{Echo Level}}$
9	+5 V
10	$\overline{\text{SLS Level}}$
11	Pulse
12	Leveler Pulse
13	$\overline{\text{External SLS}}$
14	135 Hz
15	15 Hz

Main Wire Harness P/J2902 (5-Pin) (SLS Mod)	
1	Ground
2	+12 V
3	-12 V
4	NC
5	NC

Main Wire Harness P/J8601 (6-Pin)	
1	Ground
2	Ground
3	Pin removed for keying.
4	+12 V
5	-12 V
6	Pulse

Multi-Line Cable Signal Designations
Table 60 (cont)

Main Wire Harness P/J5201 (9-Pin)	
1	+5 V
2	Ground
3	+12 V
4	Ground
5	-12 V
6	-5 V
7	NC
8	Gated 50% Video
9	Xmtr Freq Lock

Main Wire Harness P/J6101 (9-Pin)	
1	+5 V Digital
2	Analog Ground
3	+12 V
4	Digital Ground
5	-12 V
6	NC
7	+5 V Analog
8	NC
9	NC

Main Wire Harness P/J7101 (9-Pin)	
1	+5 V
2	Ground
3	+12 V
4	Ground
5	-12 V
6	-5 V
7	Xmtr Freq Lock
8	50% Video
9	Gated 50% Video

Main Wire Harness P/J9201 (18-Pin)	
1	+5 V
2	Digital Ground
3	+12 V
4	Analog Ground
5	-12 V
6	Signal Shield Ground
7	Suppressor
8	Signal Shield Ground
9	Scope Sync
10	Signal Shield Ground
11	Cal Marks
12	Variable Control
13	NC
14	Pulse
15	NC
16	Pin removed for keying.
17	NC
18	NC

Main Wire Harness P/J9503 (5-Pin)	
1	NC
2	NC
3	NC
4	Ground
5	-12 V

Main Wire Harness P/J9901 (12-Pin)	
1	NC
2	NC
3	Ground
4	Ground
5	Ground
6	+12 V
7	+5 V
8	+5 V Sense
9	-12 V to Fan
10	+5 V
11	-12 V
12	-5 V

Rear Panel Assembly P/J9502 (2-Pin)	
1	Line
2	Neutral

Power Supply PC Board Assembly P/J9902 (4-Pin)	
1	Switched ac Line
2	Switched ac Neutral
3	Line
4	Neutral

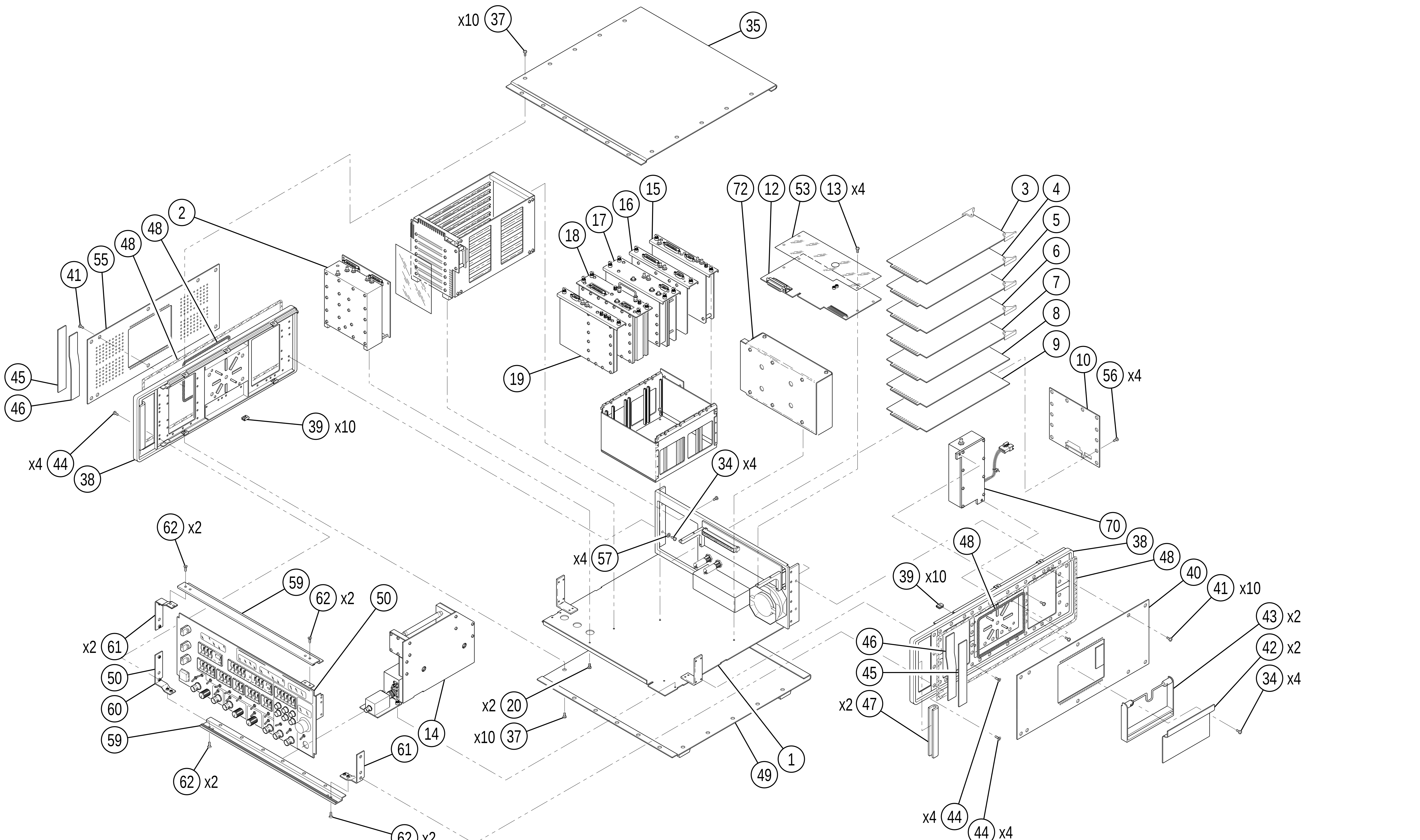
Multi-Line Cable Signal Designations
Table 60 (cont)

Module Rack Assembly P/Js 903 and 9203 (50-Pin)		**Module Rack Assembly P/Js 903 and 9203 (50-Pin) (cont)**		**Power Detector Assembly P/J8603 (6-Pin)**	
1	Ground	26	Ground	1	Ground
2	$\overline{\text{Self Interrogate}}$	27	Scope Sync	2	Ground
3	$\overline{\text{A / A Priority}}$	28	Ground	3	Pin removed for keying.
4	Ground	29	$\overline{\text{Suppression}}$	4	+12 V
5	Serial Data	30	Ground	5	-12 V
6	Serial Clock	31	Range Rate	6	Pulses + CW
7	Serial Sync	32	Ground	**Bandpass Filter Assembly P/J8604 (6-Pin)**	
8	Ground	33	X/ $\overline{\text{Y}}$ Channel		
9	$\overline{\text{External Pulse}}$	34	$\overline{\text{Range Reply}}$	1	Switch 1 Enable
10	Ground	35	NC (PB0)	2	Switch 2 Enable
11	$\overline{\text{External SLS}}$	36	PA0	3	Switch 3 Enable
12	Ground	37	NC (PB1)	4	Ground
13	$\overline{\text{External Priority}}$	38	PA1	5	Pin removed for keying.
14	Ground	39	Write (PB2)	6	Ground
15	Pulse	40	PA2		
16	Ground	41	Read (PB3)		
17	20 MHz	42	PA3		
18	Ground	43	$\overline{\text{INTR}}$ (PB4)		
19	A/A Interrogations	44	PA4		
20	Ground	45	$\overline{\text{INTA}}$ (PB5)		
21	50% Video	46	PA5		
22	Ground	47	$\overline{\text{Read Enable}}$ (PB6)		
23	$\overline{\text{P1 Pulse}}$	48	PA6		
24	Ground	49	$\overline{\text{IFR Bus Enable}}$ (PB7)		
25	Cal Marks	50	PA7		

Multi-Line Cable Signal Designations
Table 60 (cont)

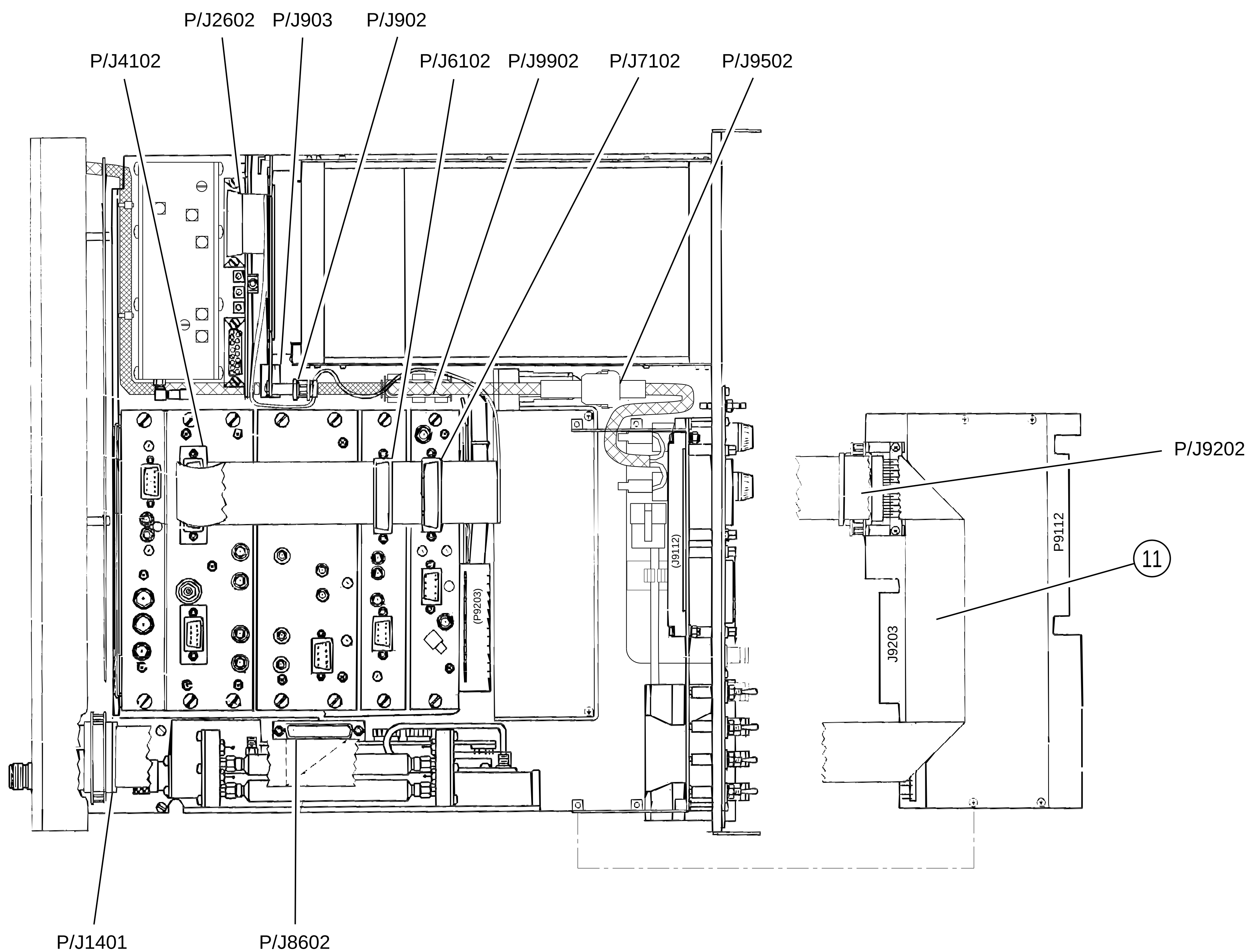
SIGNAL	INTERFACE PC BOARD ASSEMBLY P9112 PIN	CONNECTOR PC BOARD ASSEMBLY J9112 PIN	SIGNAL	INTERFACE PC BOARD ASSEMBLY P9112 PIN	CONNECTOR PC BOARD ASSEMBLY J9112 PIN
Ground	1	2	Serial Sync	37	38
D5	2	1	20 MHz	38	37
A4	3	4	Serial Clock	39	40
D6	4	3	Pulse	40	39
A2	5	6	Self Interr Control	41	42
D7	6	5	$\overline{\text{Ext Priority}}$	42	41
A0	7	8	+5 V	43	44
D4	8	7	$\overline{\text{Ext SLS}}$	44	43
A1	9	10	+5V Inst Lights Dim	45	46
D3	10	9	$\overline{\text{Ext Pulse}}$	46	45
A3	11	12	Ground	47	48
D2	12	11	$\overline{\text{A / A Priority}}$	48	47
Write	13	14	Xmtr Pulse	49	50
D1	14	13	$\overline{\text{Self Interr}}$	50	49
Read	15	16	Gen Pulse	51	52
D0	16	15	Units D	52	51
A5	17	18	Serial Signal Low	53	54
$\overline{\text{INTA}}$	18	17	Chassis Ground 2	54	53
Tenths B	19	20	Chassis Ground 1	55	56
$\overline{\text{INTR}}$	20	19	Ser Clock Out High	56	55
Hundredths C	21	22	Inst Light Return	57	58
Tens E	22	21	Ser Sync Out High	58	57
Tenths D	23	24	Freq Common	59	60
Units E	24	23	Range Rate High	60	59
Units C	25	26	Ser Signal Out Low	61	62
Tens A	26	25	Ser Data Out High	62	61
Tenths E	27	28	Serial Clock High	63	64
Tenths C	28	27	R NAV	64	63
Units B	29	30	Serial Sync High	65	66
Units A	30	29	Analog Dist High	66	65
Wide/ $\overline{\text{Narrow}}$	31	32	Serial Data High	67	68
Tenths A	32	31	Warning Flag	68	67
Equalizer Enable	33	34	NC	69	70
50% Video	34	33	Ser Clock Freq A	70	69
Serial Data	35	36	NC	71	72
A/A Interrogations	36	35	Ser Clock Freq B	72	71

P/J9112 Pin-to-Pin Correspondence
Table 61



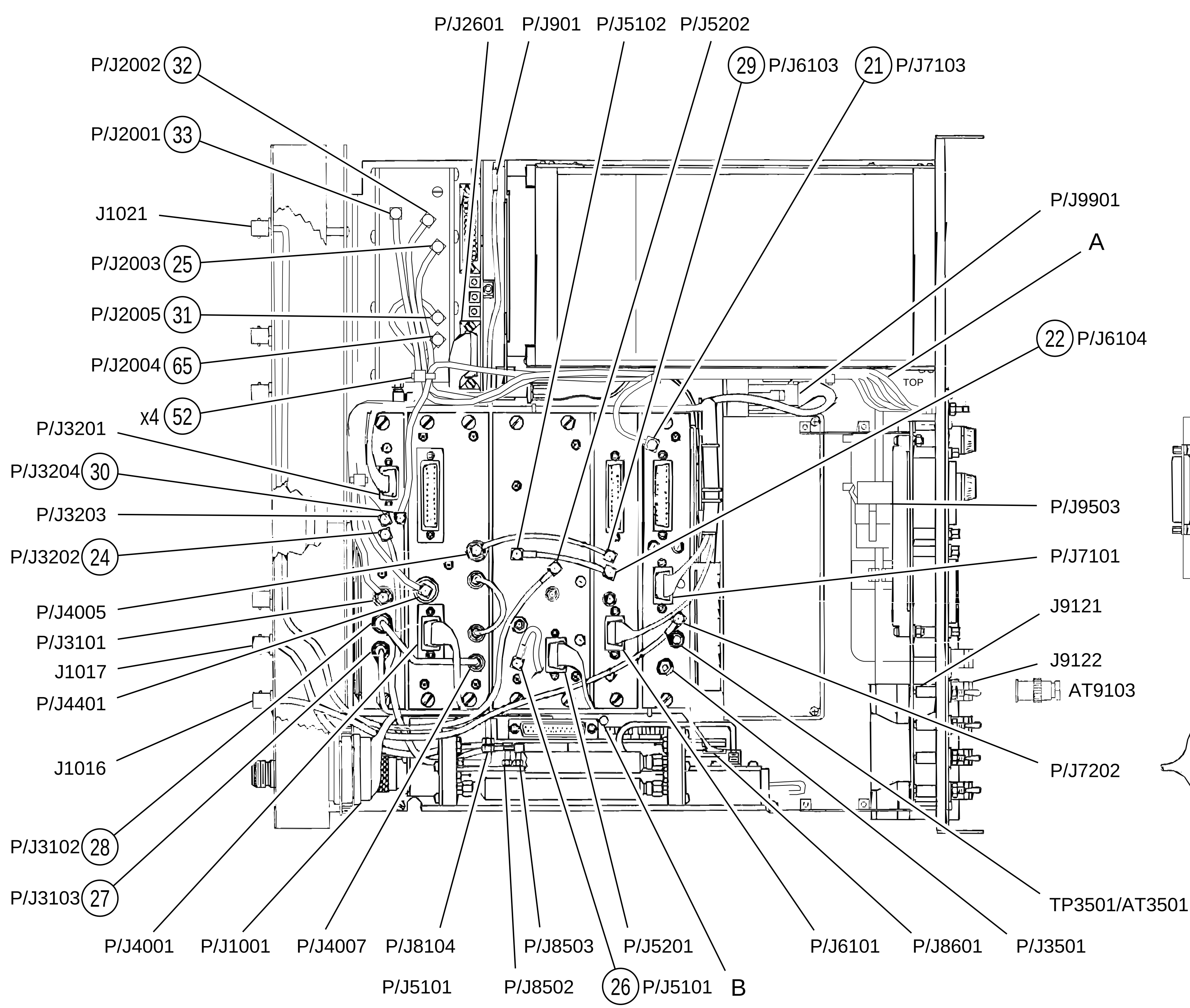
(7003-7544-200-G)

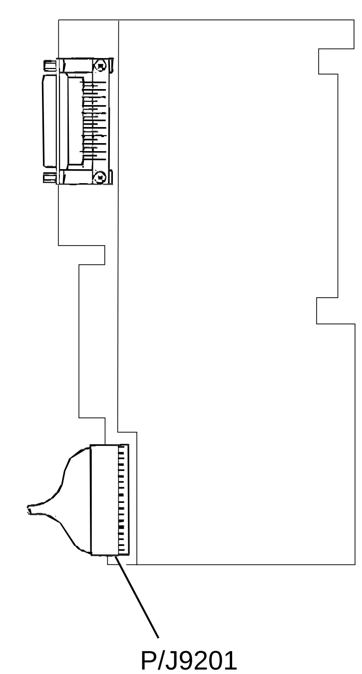
Composite Assembly (1 of 4)
Figure 77

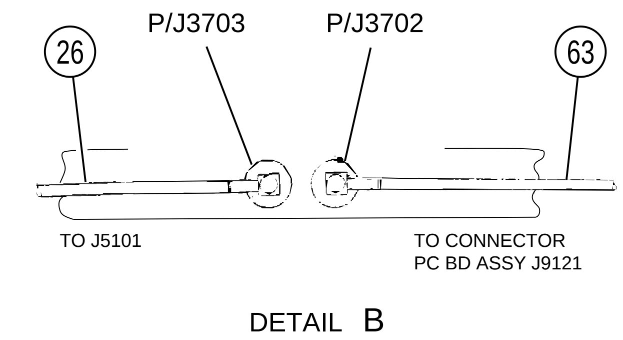


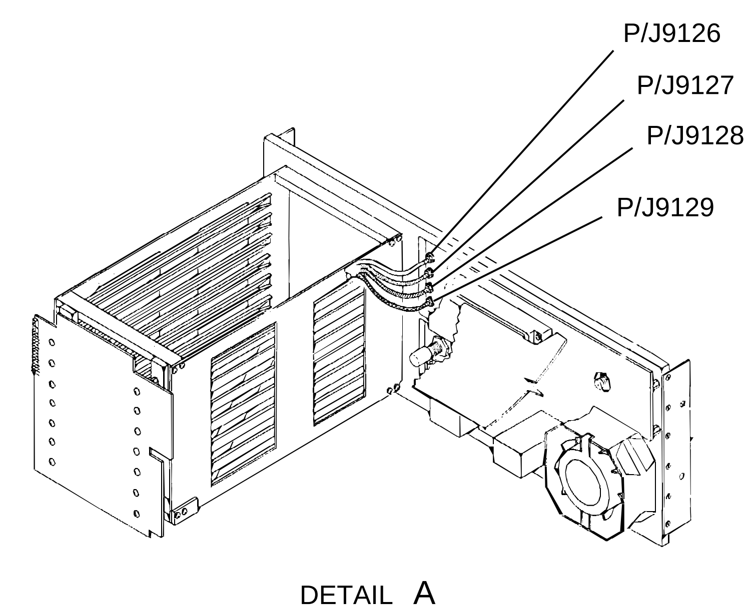
(7003-7544-200-G)

Composite Assembly (2 of 4)
Figure 77







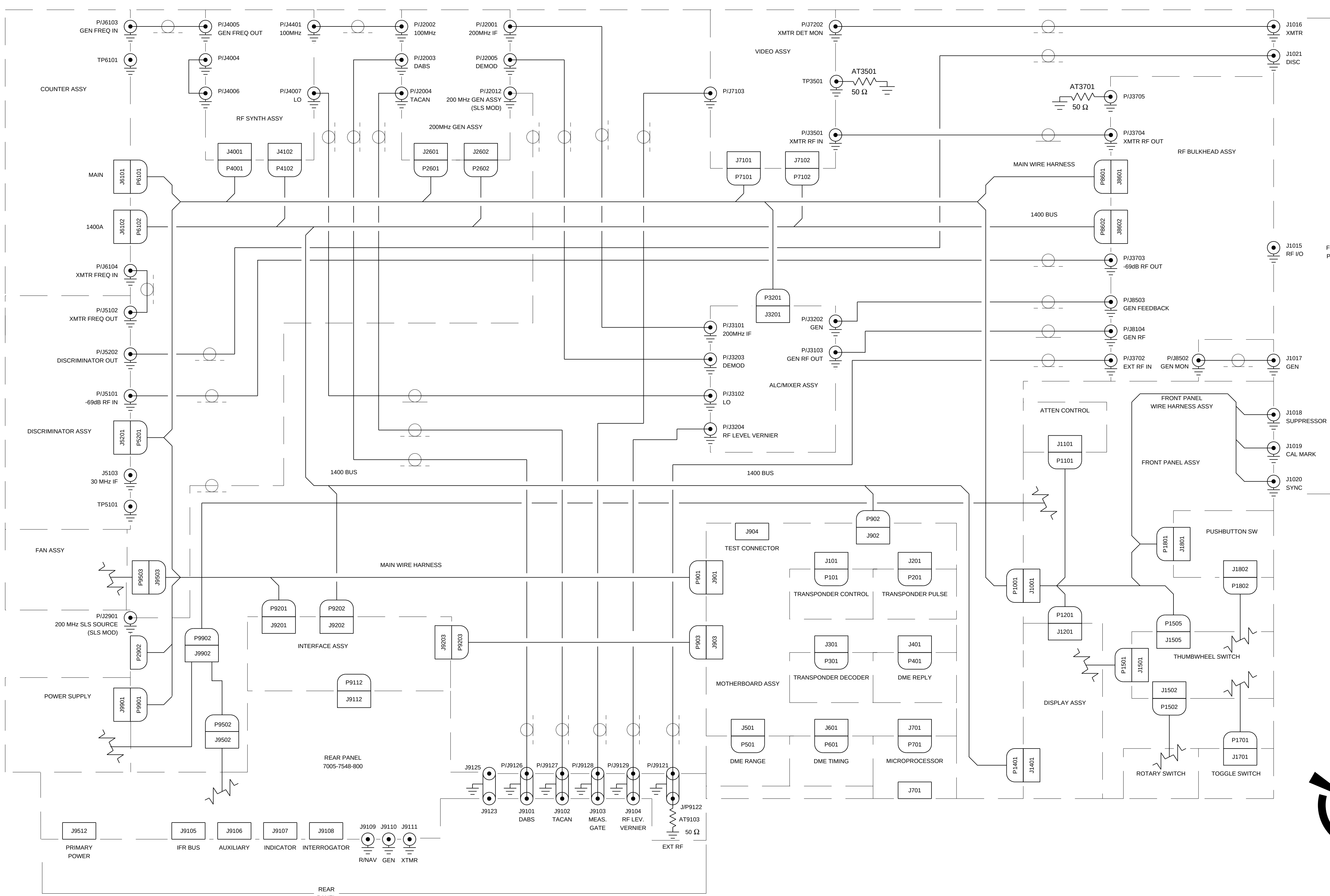


WITH THE SLS MODIFICATION, P/J2004 AND THE CABLE (ITEM 65) ON THE 200 MHz GENERATOR ASSEMBLY (ITEM 2) MOVES TO THE INWARD SIDE. THE CABLE (ITEM 71) FROM P/J2901 ON THE SLS SOURCE ASSEMBLY (ITEM 70) CONNECTS TO P/J2012 ON TOP OF THE 200 MHz GENERATOR ASSEMBLY IN THE PRESENT VICINITY OF P/J2004 AS SHOWN.

7520042

(7003-7544-200-G)

Composite Assembly (3 of 4)
Figure **77**

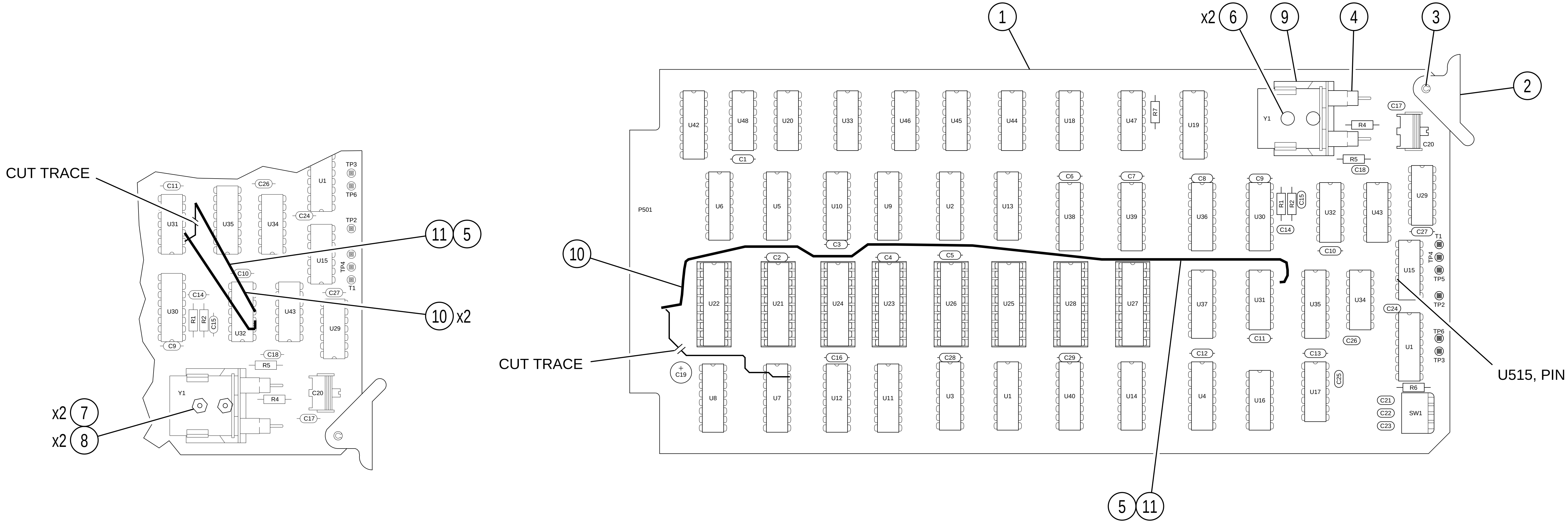


CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

0750001S

(0000-7544-200-A1)

Composite Assembly (4 of 4)
Composite Assembly Interconnect Diagram
Figure 77



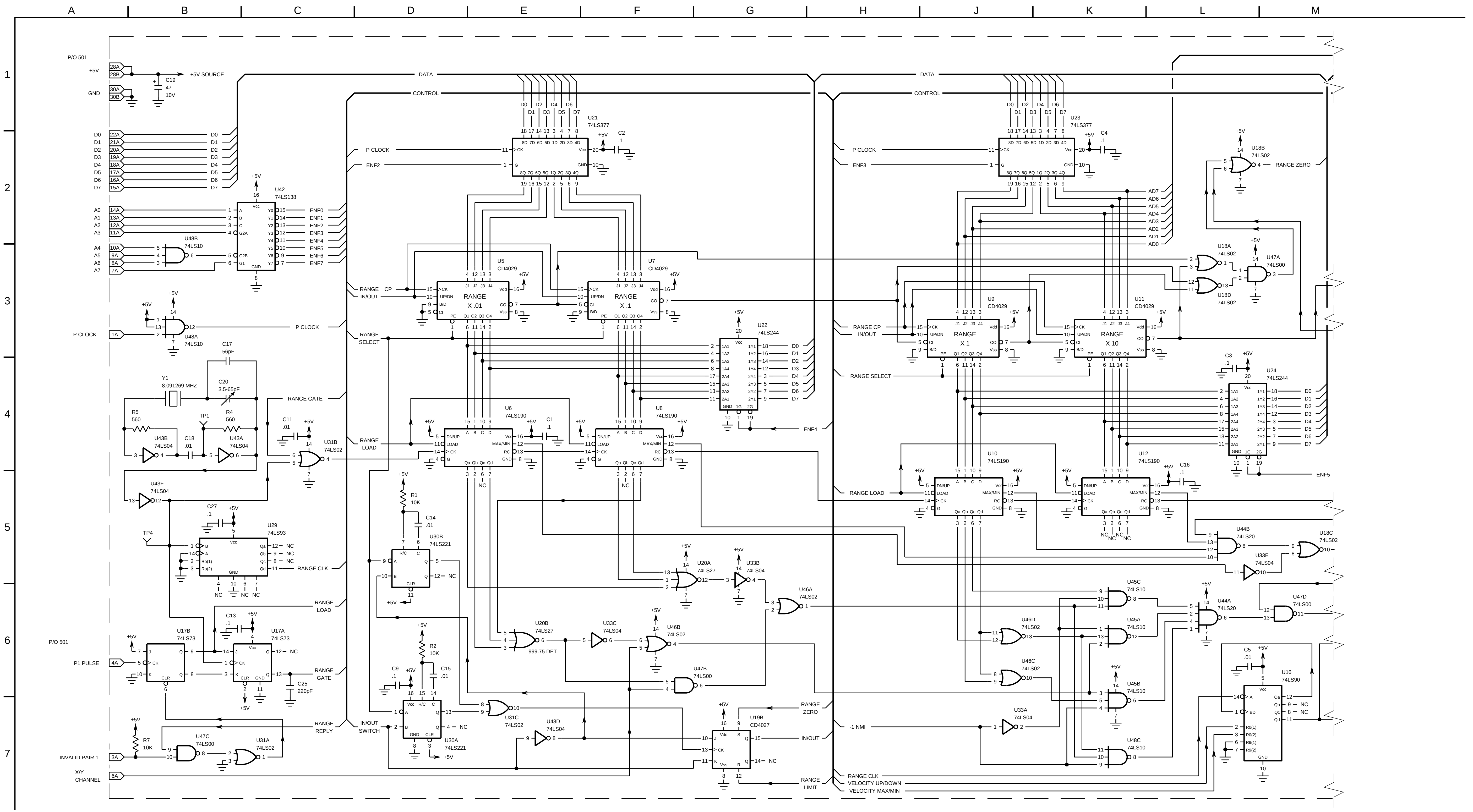
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS DRAWING CARRIES SERIES: 500 (i.e., R1 IS R501).

7532100P

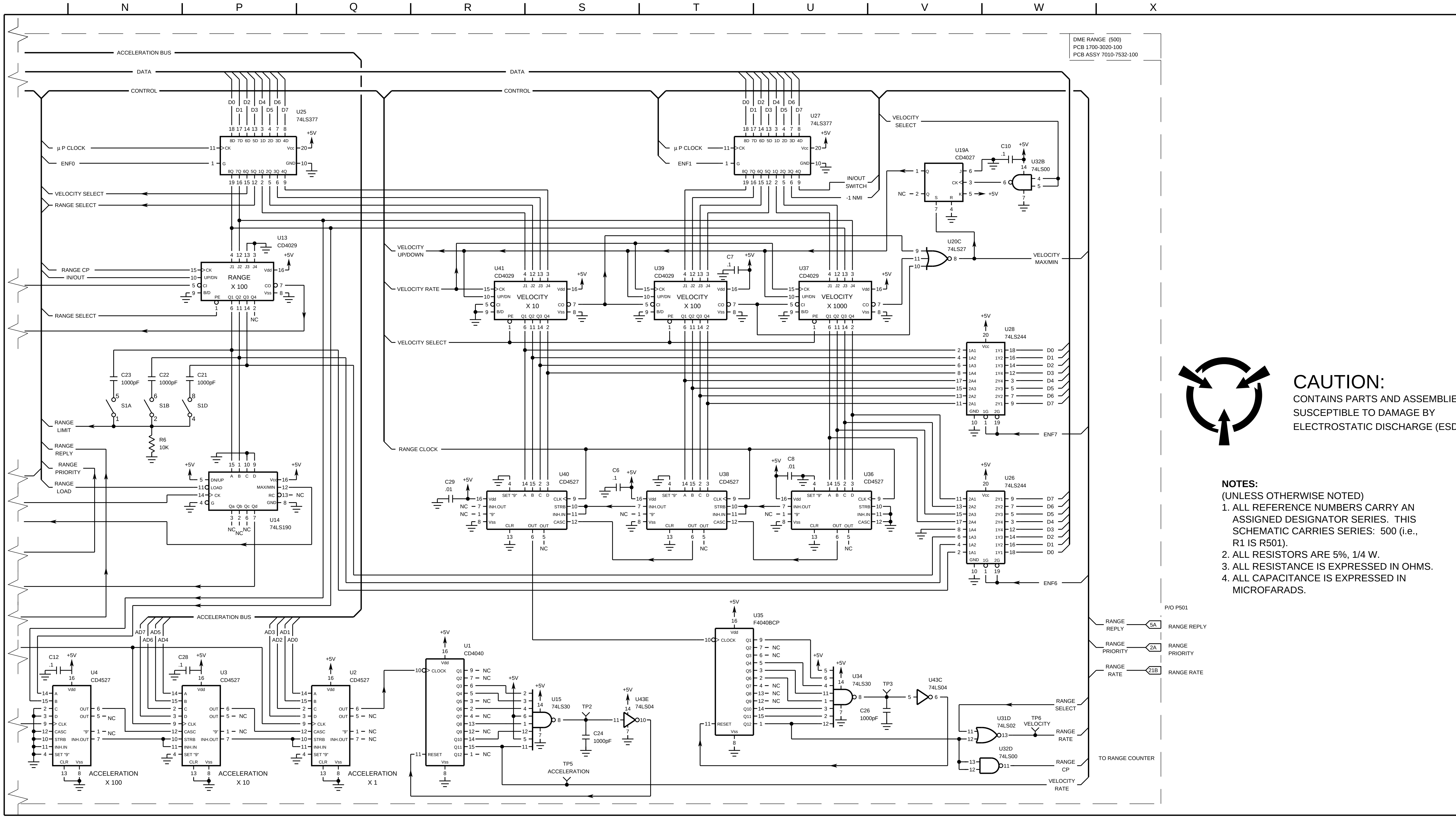
(7010-7532-100-G)

DME Range PC Board Assembly (1 of 3)
Figure 78



(0000-7512-100-E)

DME Range PC Board Assembly (2 of 3)
DME Range PC Board Assembly Circuit Schematic
Figure 78



CAUTION:

CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

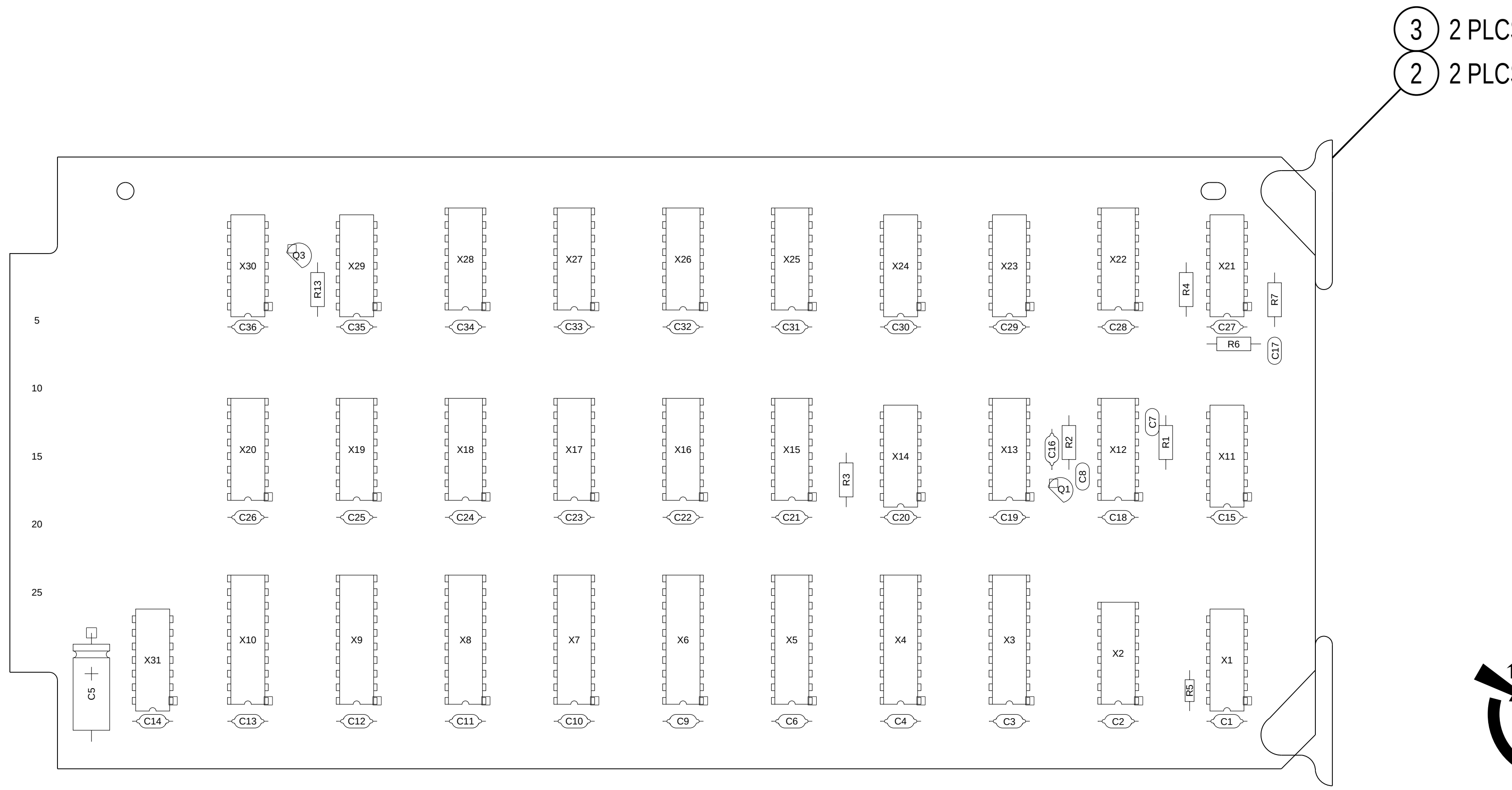
NOTES:
(UNLESS OTHERWISE NOTED)

1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS SCHEMATIC CARRIES SERIES: 500 (i.e., R1 IS R501).
2. ALL RESISTORS ARE 5%, 1/4 W.
3. ALL RESISTANCE IS EXPRESSED IN OHMS.
4. ALL CAPACITANCE IS EXPRESSED IN MICROFARADS.

0751803S

(0000-7512-100-E)

DME Range PC Board Assembly (3 of 3)
DME Range PC Board Assembly Circuit Schematic
Figure 78



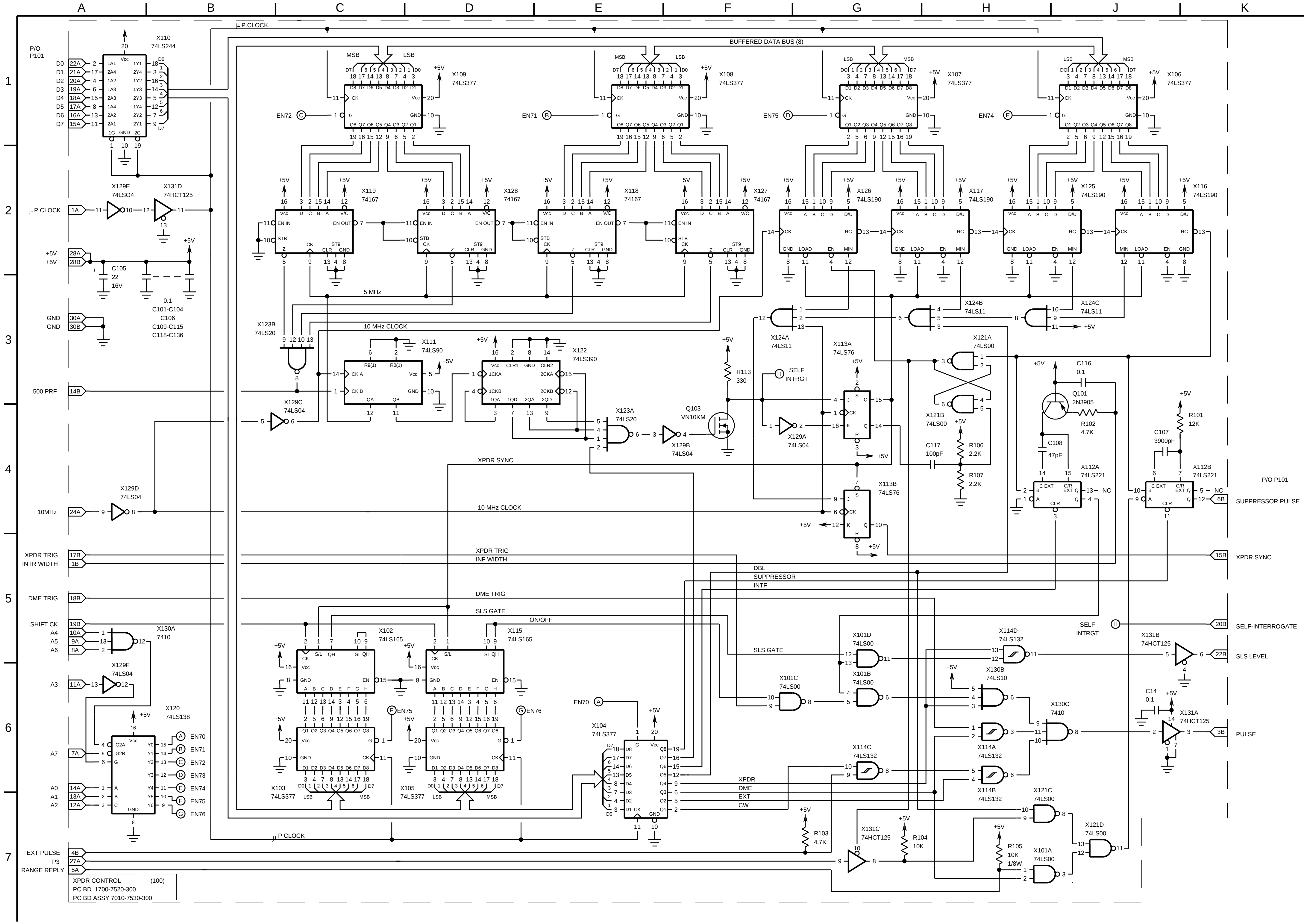
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS DRAWING CARRIES SERIES: 100 (i.e., R1 IS R101).

7530300P

(7010-7530-300-E)

Transponder Control PC Board Assembly (1 of 2)
Figure 79



CONNECTIONS NOT SHOWN

IC	+5V	GND
X101	14	7
X112	16	8
X113	5	13
X114	14	7
X121	14	7
X123	14	7
X124	14	7
X129	14	7
X130	14	7

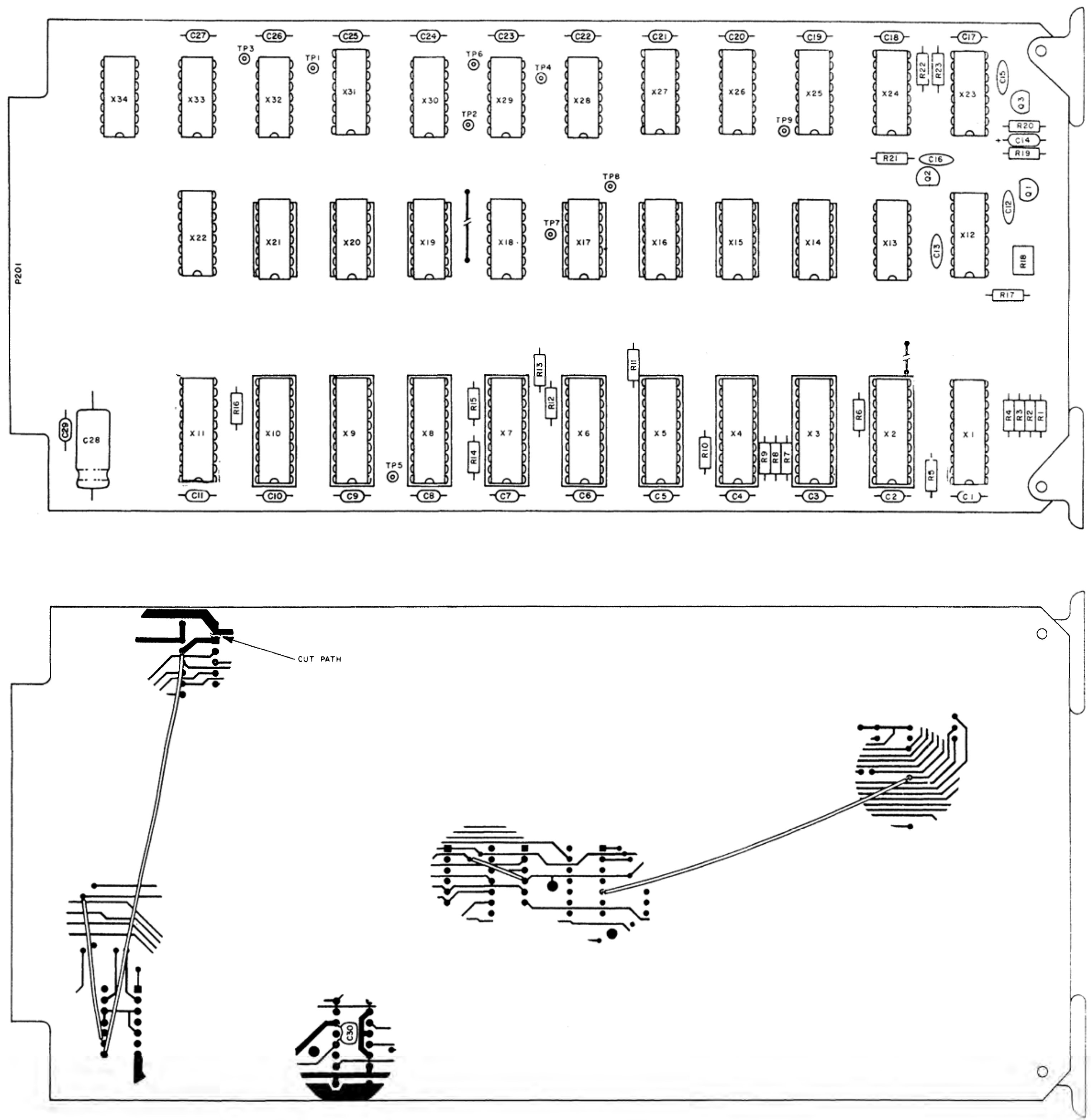
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS SCHEMATIC CARRIES SERIES: 100 (i.e., R1 IS R101).
2. ALL RESISTORS ARE 5%, 1/4 W.
3. ALL RESISTANCE IS EXPRESSED IN OHMS.
4. ALL CAPACITANCE IS EXPRESSED IN MICROFARADS.

0751804S

(0000-7510-300-D)

Transponder Control PC Board Assembly (2 of 2)
Transponder Control PC Board Assembly Circuit Schematic
Figure 79



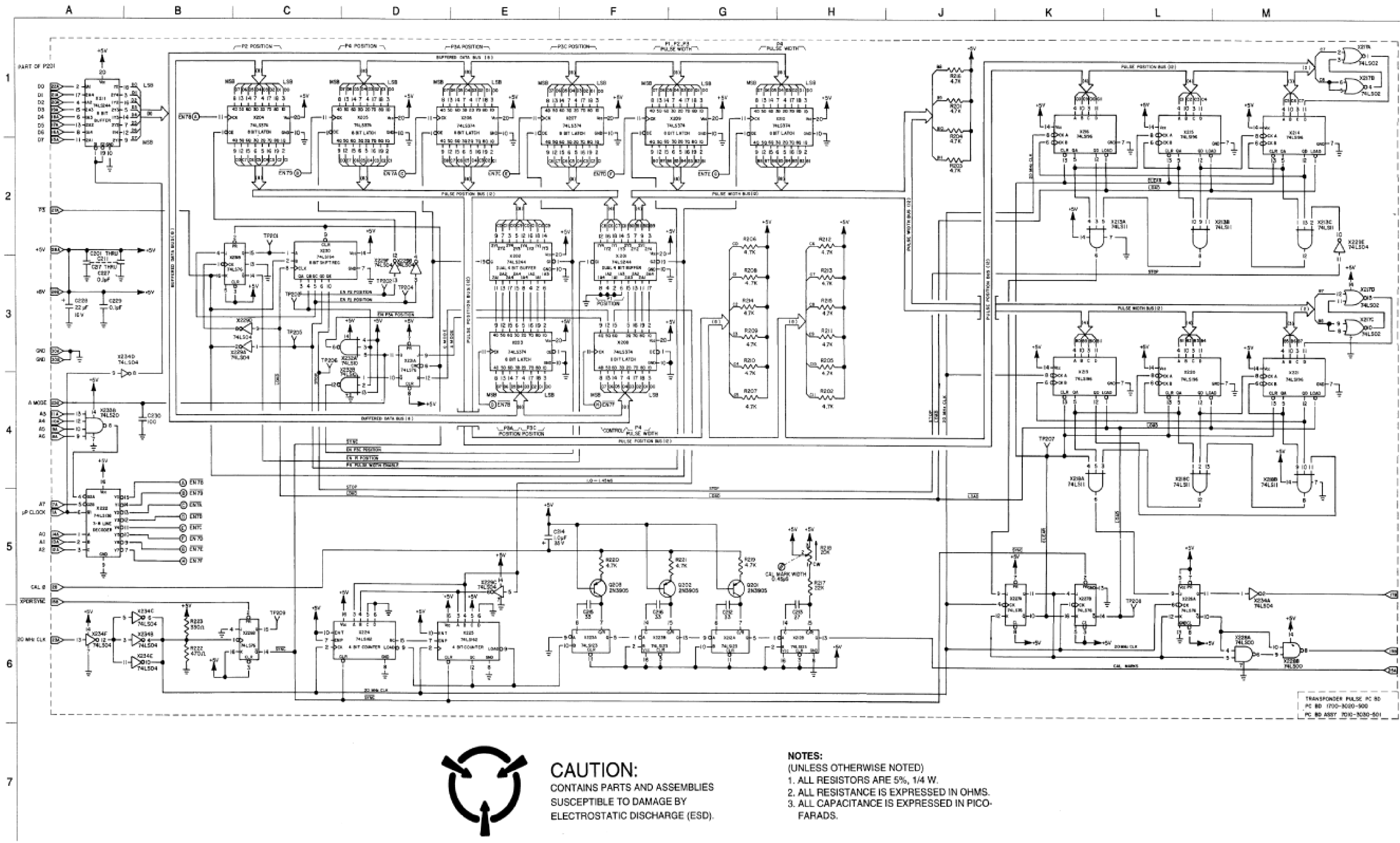
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS DRAWING CARRIES SERIES: 200 (i.e., R1 IS R201).

73030501

(7010-3030-501-D)

Transponder Pulse PC Board Assembly (1 of 2)
Figure 80

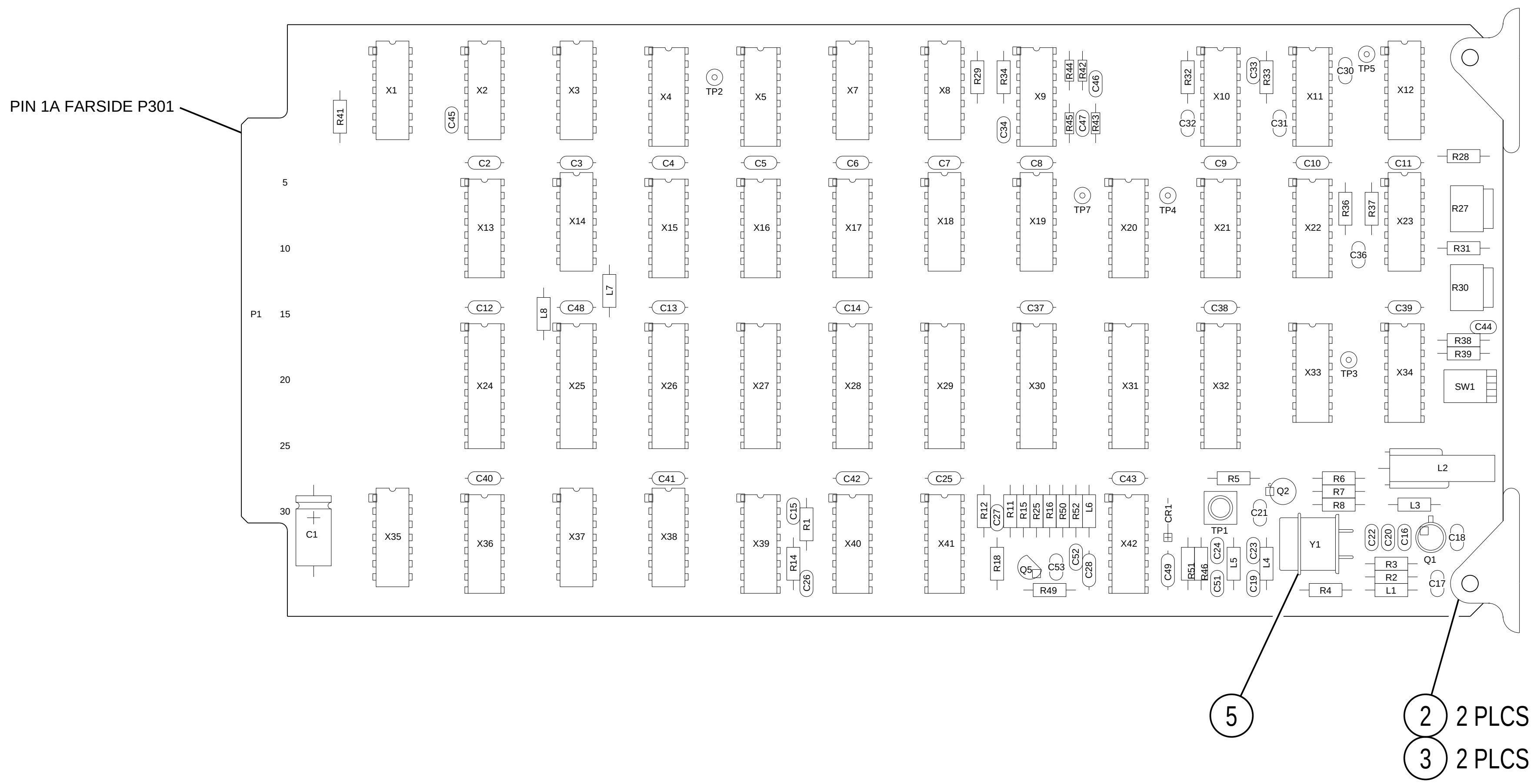


CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL RESISTORS ARE 5%, 1/4 W.
2. ALL RESISTANCE IS EXPRESSED IN OHMS.
3. ALL CAPACITANCE IS EXPRESSED IN PICO-FARADS.

(0000-3010-501-A)

Transponder Pulse PC Board Assembly (2 of 2)
Transponder Pulse PC Board Assembly Circuit Schematic
Figure 80



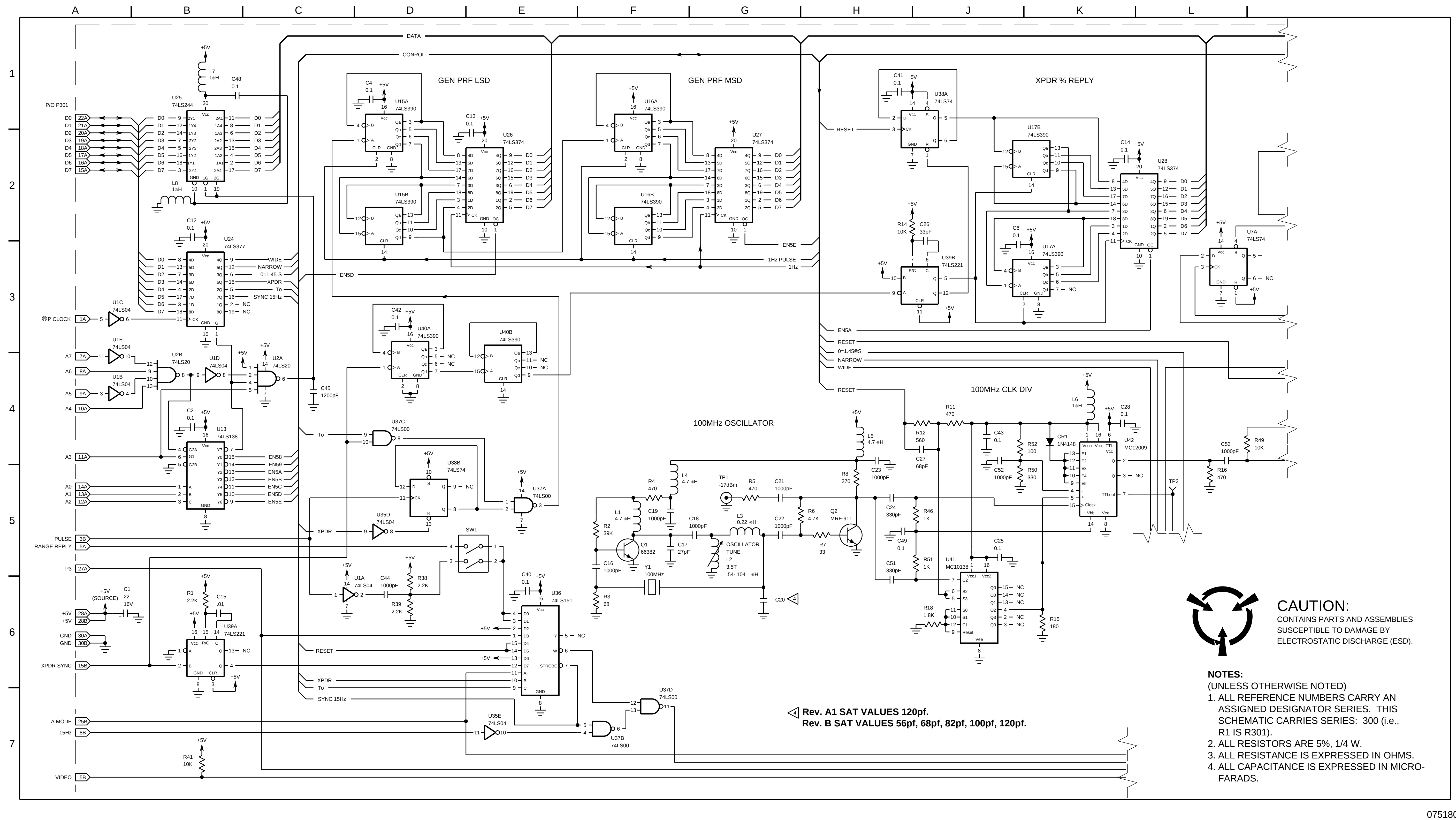
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS DRAWING CARRIES SERIES: 300 (i.e., R1 IS R301).

7532700P

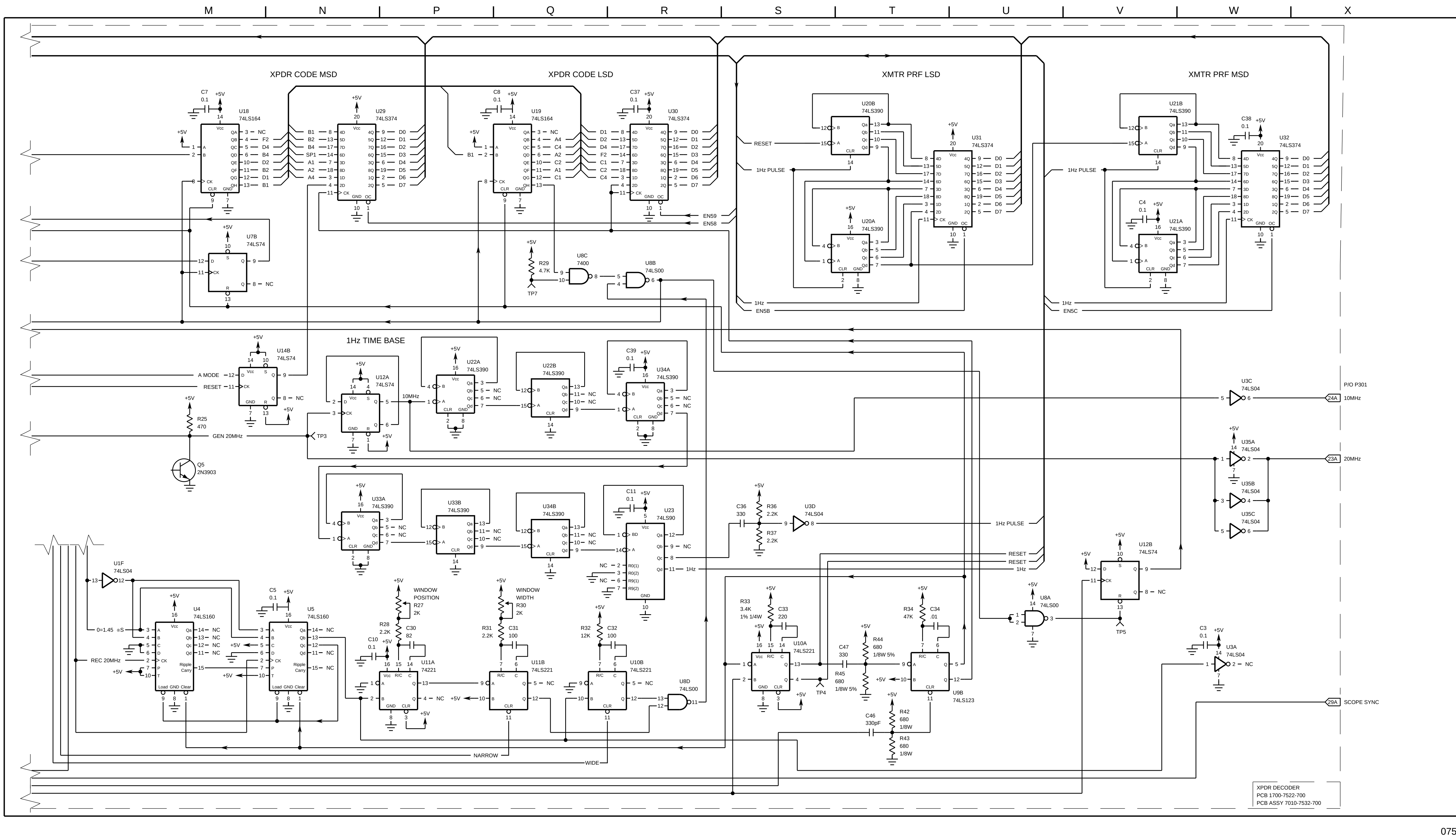
(7010-7532-700-B)

Transponder Decoder PC Board Assembly (1 of 3)
Figure 81



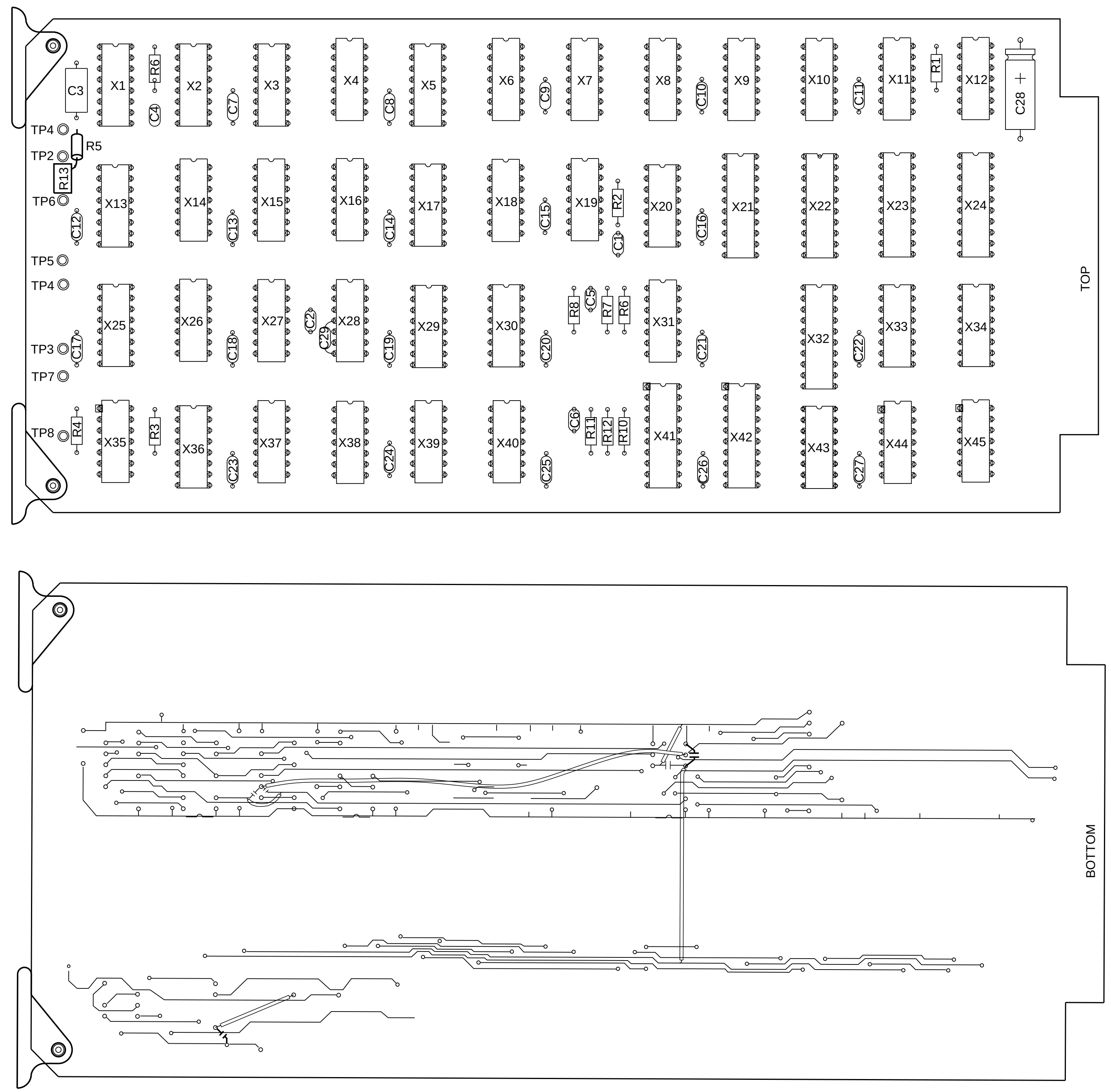
(0000-7512-700-B)

Transponder Decoder PC Board Assembly (2 of 3)
Transponder Decoder PC Board Assembly Circuit Schematic
Figure 81



(0000-7512-700-B)

Transponder Decoder PC Board Assembly (3 of 3)
Transponder Decoder PC Board Assembly Circuit Schematic
Figure 81



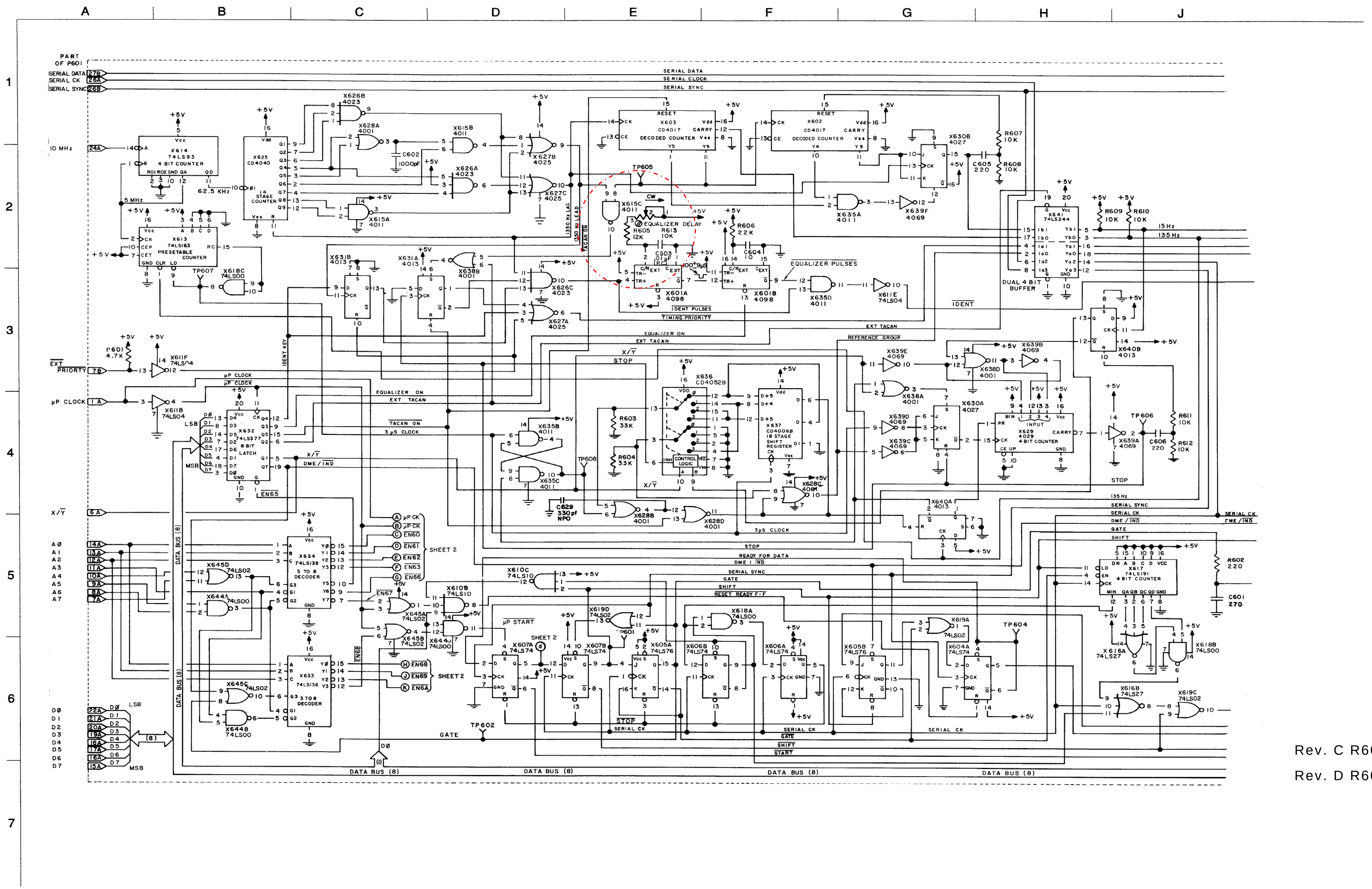
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS SCHEMATIC CARRIES SERIES: 600 (i.e., R1 IS R601).

03030600

(7010-3030-600-F)

DME Timing PC Board Assembly (1 of 3)
Figure 82

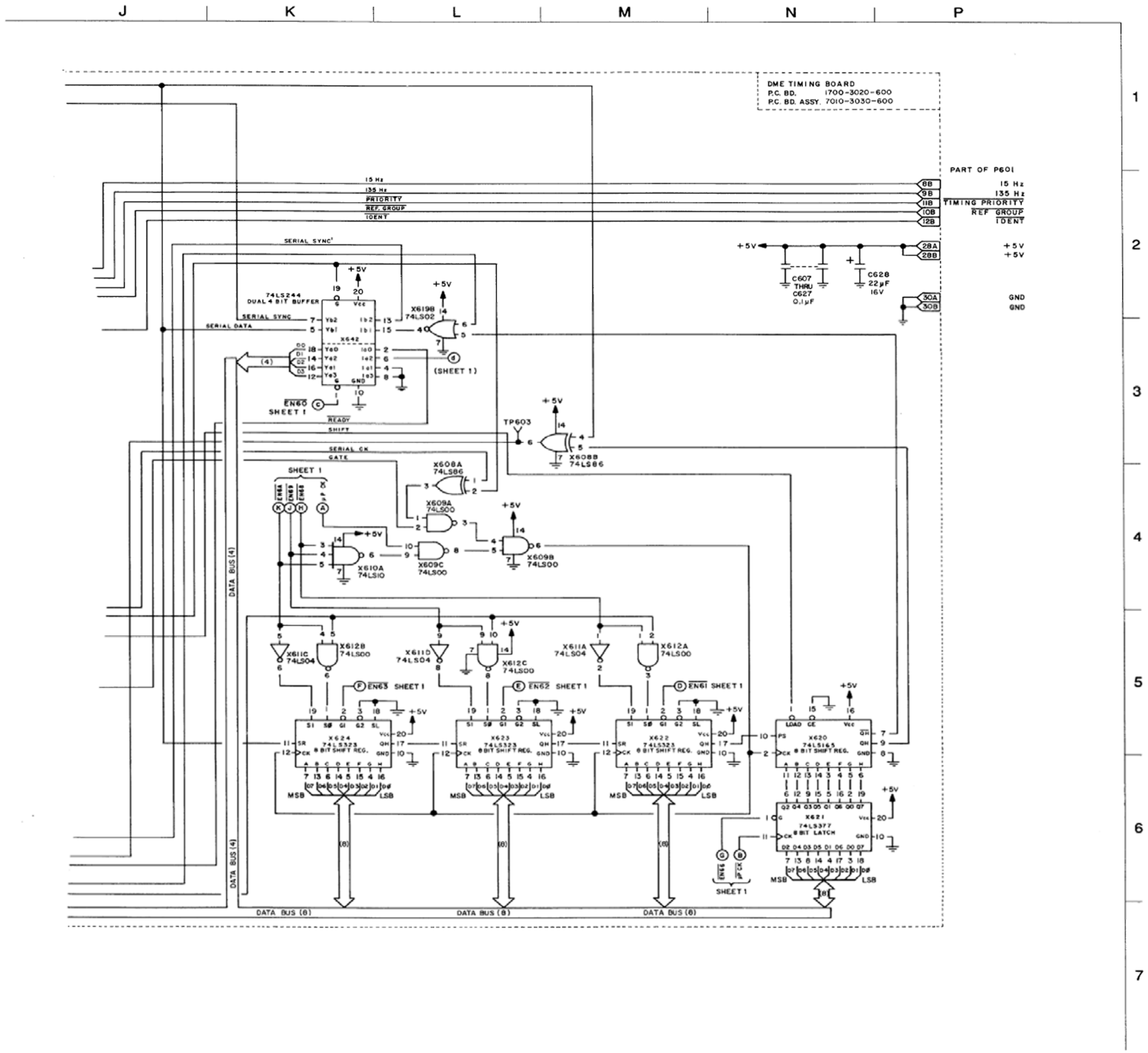


Rev. C R605 is 12K.

Rev. D R605 SAT Values are 12K, 15K 18K.

(0000-3010-600-D)

DME Timing PC Board Assembly (2 of 3)
DME Timing PC Board Assembly Circuit Schematic
Figure 82



CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

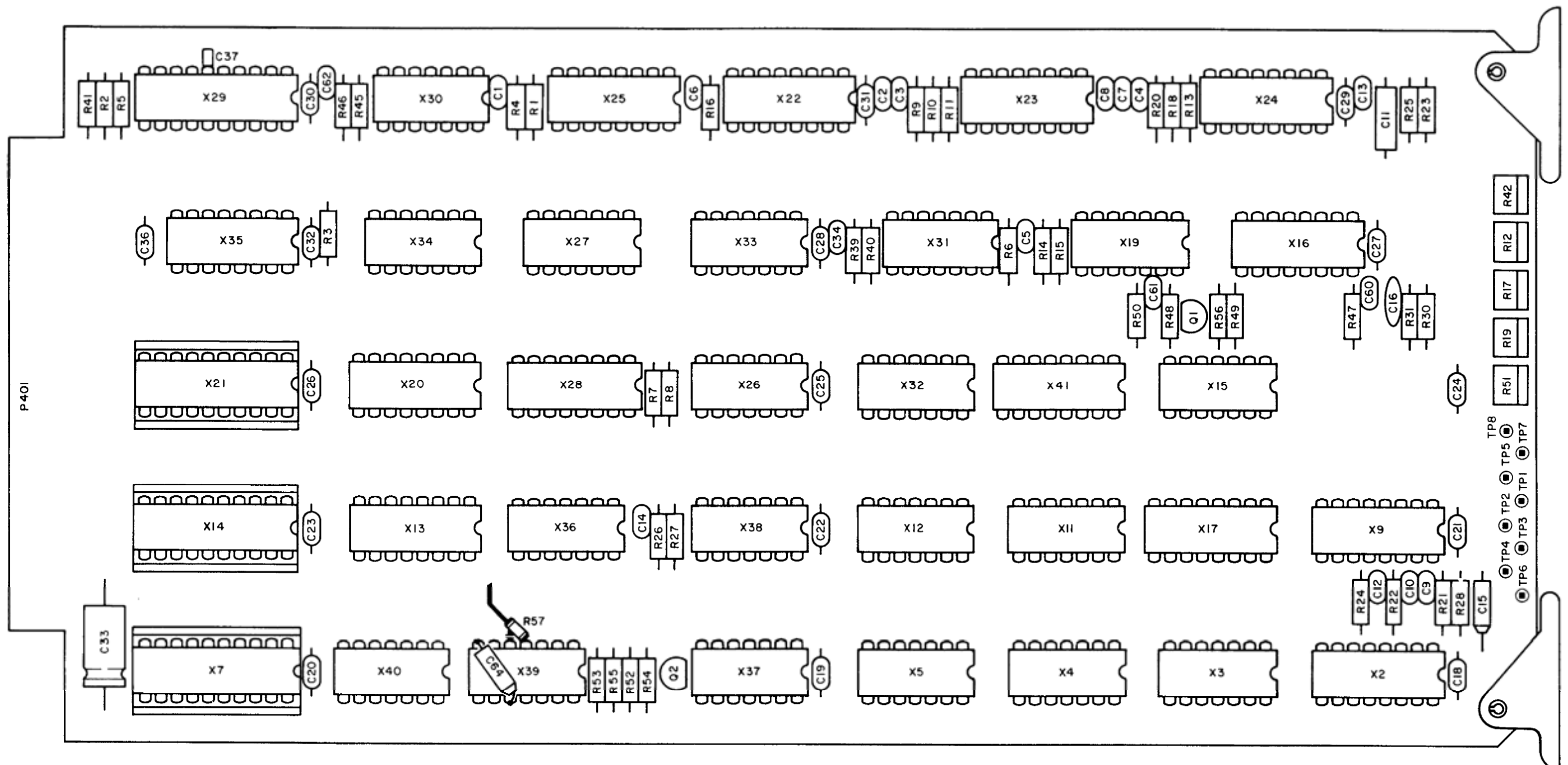
NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL RESISTORS ARE 5%, 1/4 W.
2. ALL RESISTANCE IS EXPRESSED IN OHMS.
3. ALL CAPACITANCE IS EXPRESSED IN PICO-FARADS.

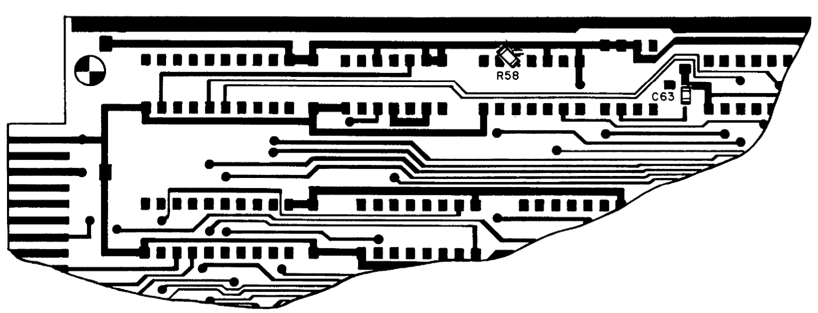
SERIAL DATA, µP INTERFACE

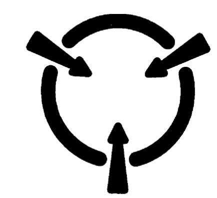
ADDRESS (HEX)	DIRECTION	DATA D7	D6	D5	D4	D3	D2	D1	DØ
66	WRITE	← LABEL →							
68	WRITE	RANGE X.01				← PAD →			
69	WRITE	RANGE X 1				RANGE X 0.1			
6A	WRITE	STATUS MATRIX		RANGE X 100		RANGE X 10			
61	READ	RANGE X.01				← PAD →			
62	READ	RANGE X 1				RANGE X 0.1			
63	READ	STATUS MATRIX		RANGE X100		RANGE X 0.1			

(0000-3010-600-D)

DME Timing PC Board Assembly (3 of 3)
DME Timing PC Board Assembly Circuit Schematic
Figure 82





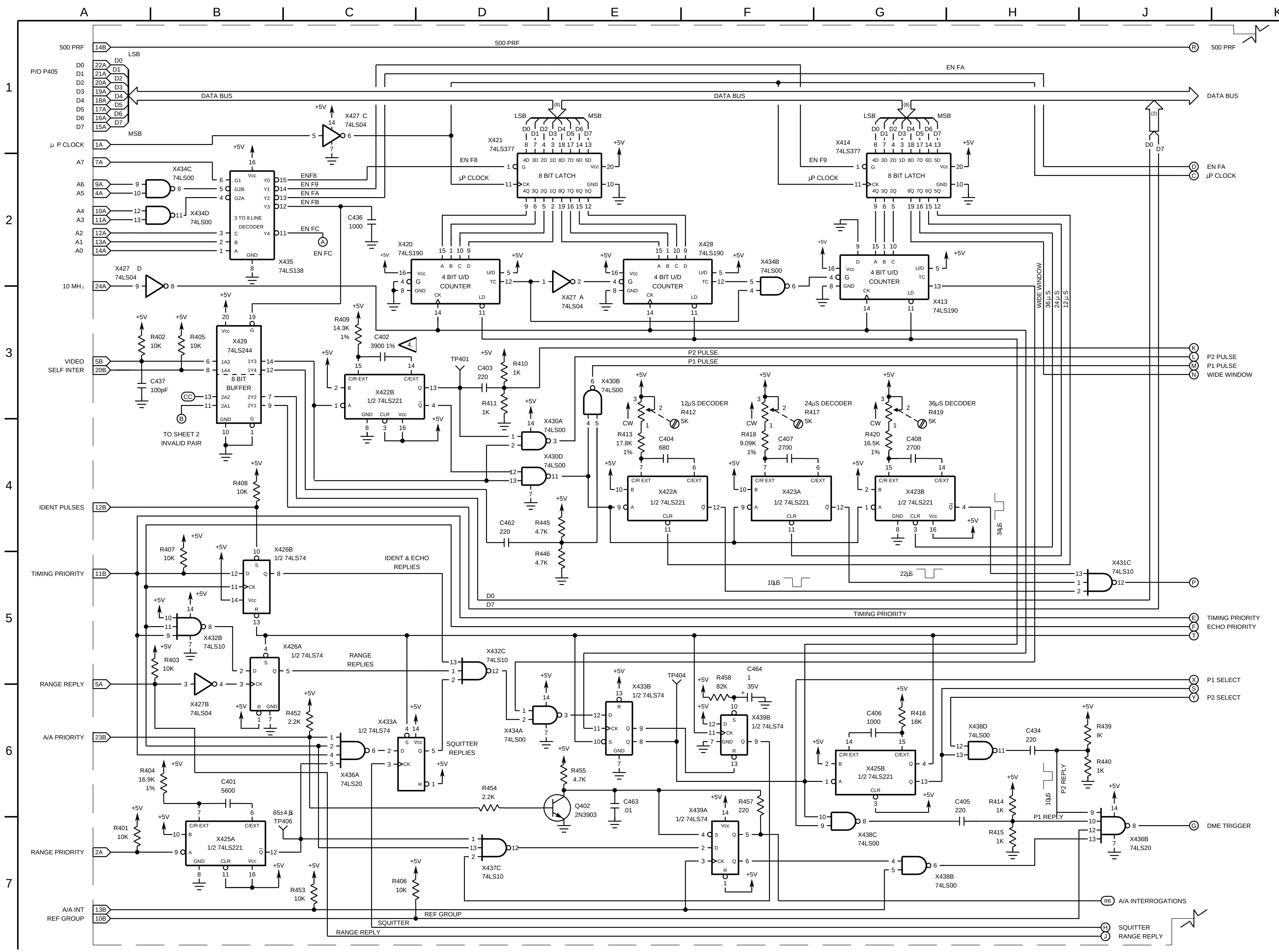


CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS DRAWING CARRIES SERIES: 400 (i.e., R1 IS R401).

7010-7530-200-C7 to E

DME Reply PC Board Assembly (1 of 3)
Figure 83



CAUTION:

CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:

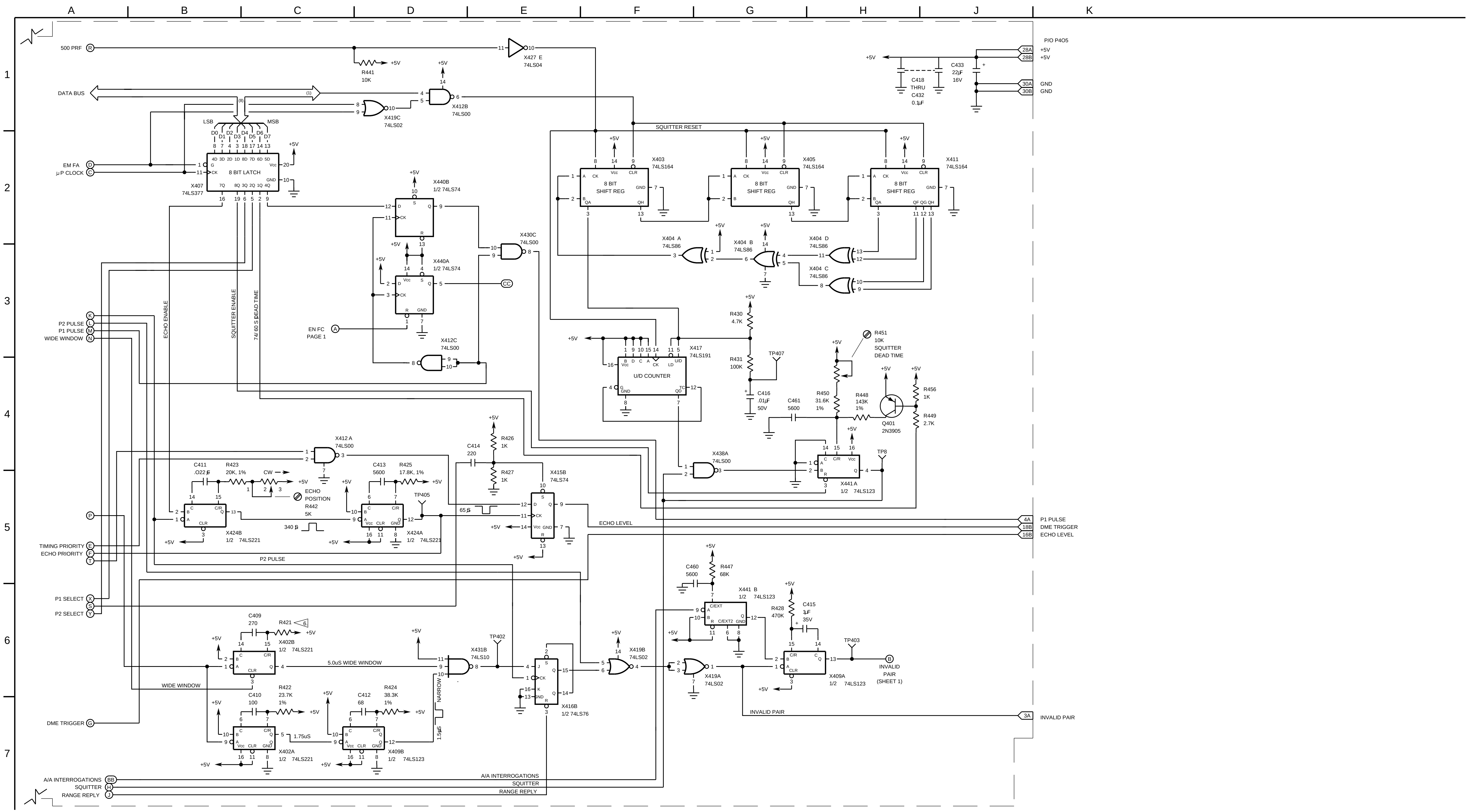
(UNLESS OTHERWISE NOTED)

1. ALL RESISTORS ARE 5%, 1/4 W.
2. ALL RESISTANCE IS EXPRESSED IN OHMS.
3. ALL CAPACITANCE IS EXPRESSED IN PICO-FARADS.
4. REV. C3 C402 3900.
   REV. D AND E C402 3900 1%.
5. REV. C3 AND D R421 24.9k 1%.
   REV. E R421 SAT VALUES: 24.9K, 25.5K, 26.7K 27.4K, 28.0K.

0751807S

(0000-7510-200-E)

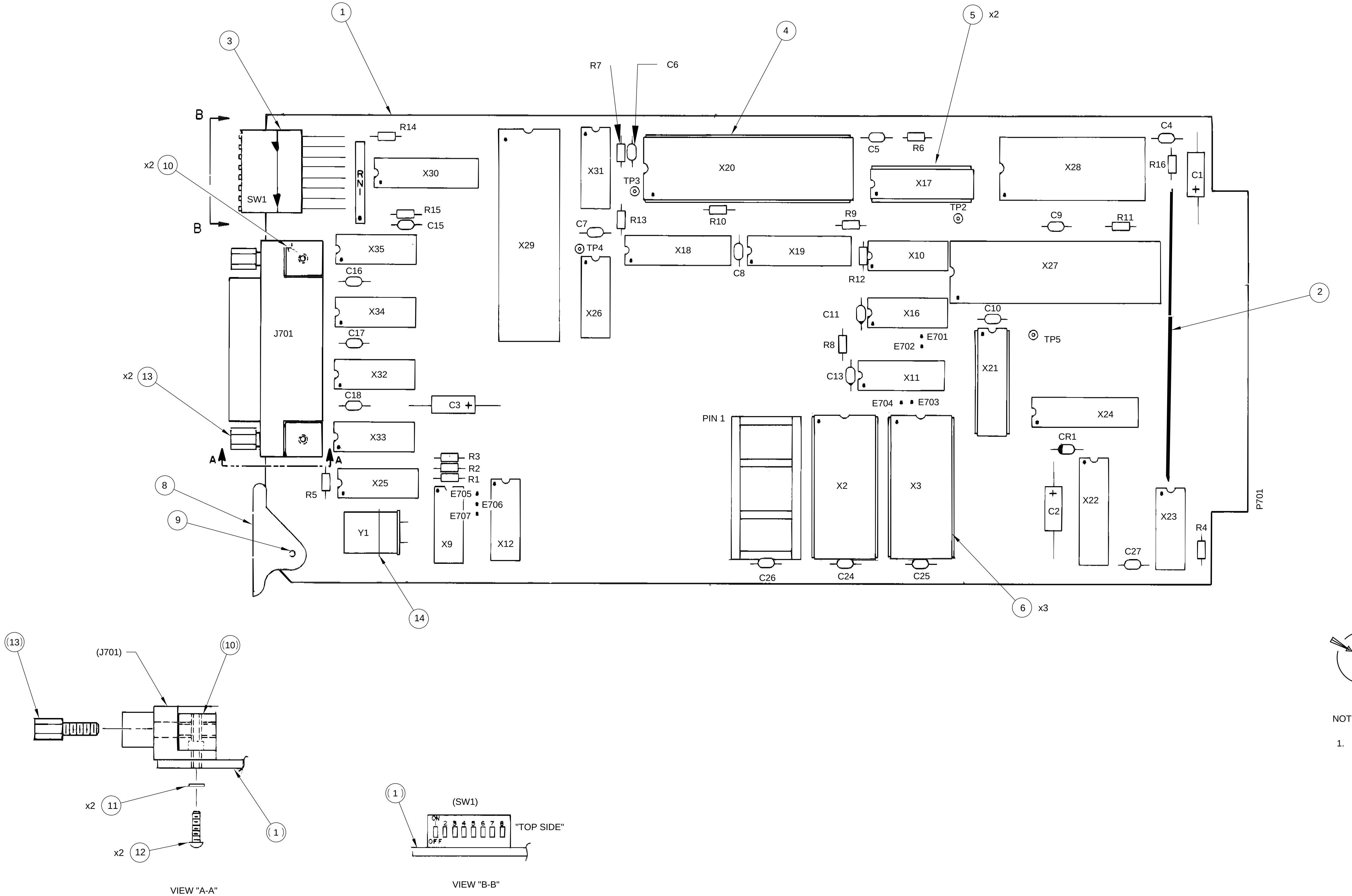
DME Reply PC Board Assembly (2 of 3)
DME Reply PC Board Assembly Circuit Schematic
Figure 83



0751808S

(0000-7510-200-E)

DME Reply PC Board Assembly (3 of 3)
DME Reply PC Board Assembly Circuit Schematic
Figure 83



CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

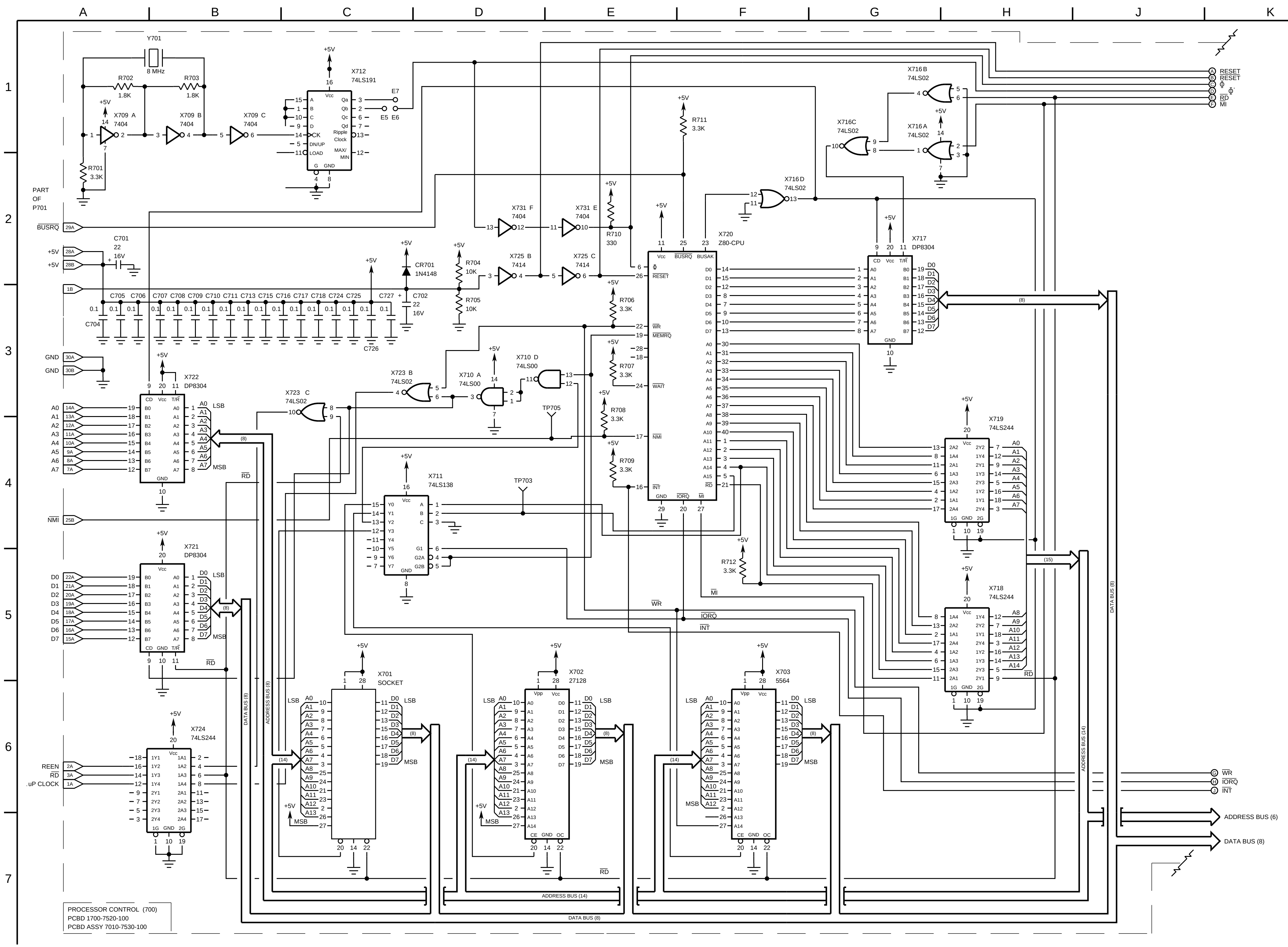
NOTES:

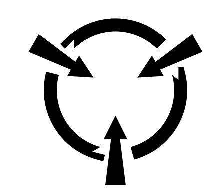
1. BASIC REFERENCE DESIGNATORS SHOWN, FOR COMPLETE DESIGNATOR PREFIXES REFER TO PRODUCT STRUCTURE, AND SYSTEM INTERCONNECT FOR APPLICATIONS WHERE USED.

7530100

(7010-7530-100-K)

Microprocessor PC Board Assembly (1 of 3)
Figure 84





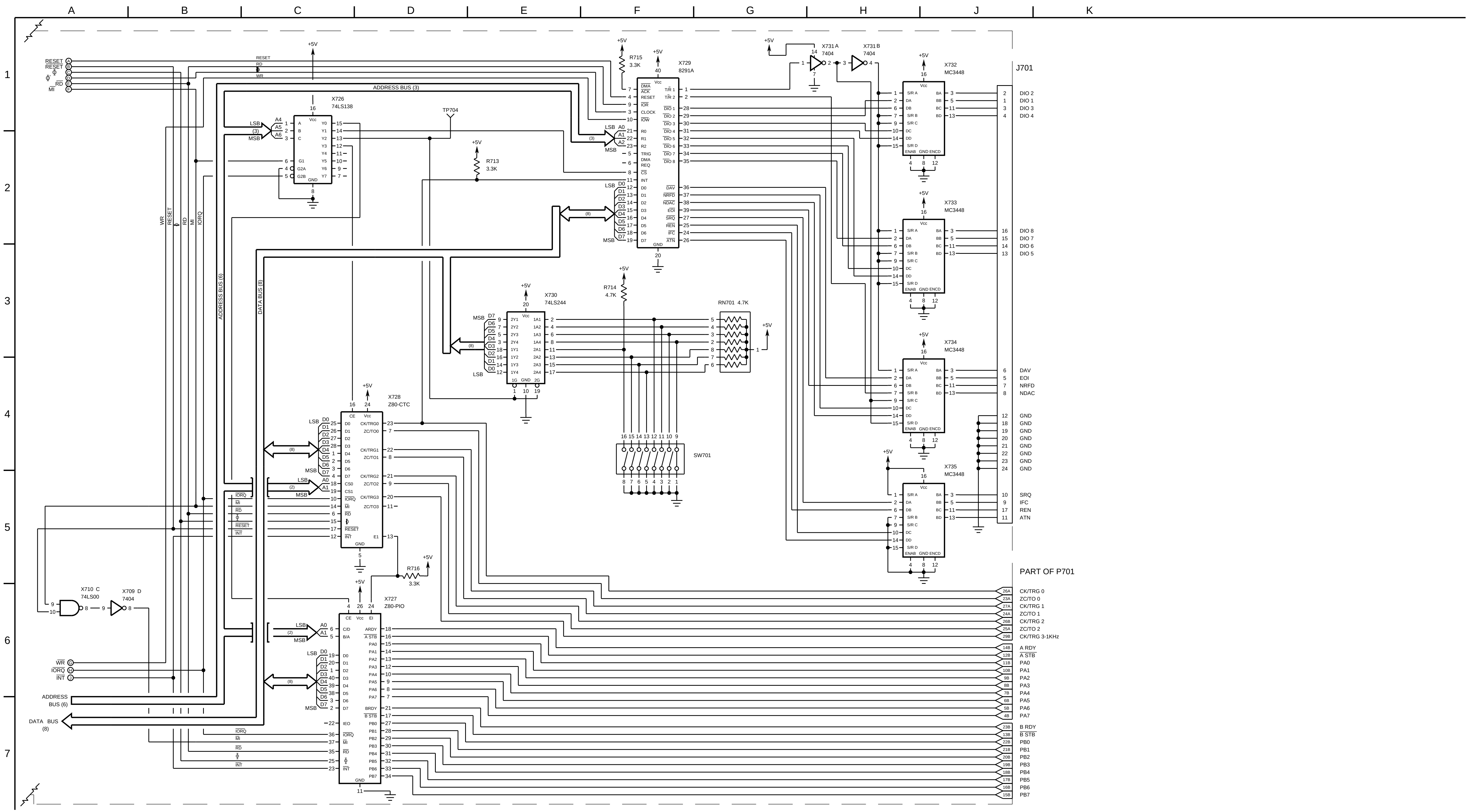
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS SCHEMATIC CARRIES SERIES: 700 (i.e., R1 IS 701).
2. ALL RESISTORS ARE 5%, 1/8 W.
3. ALL RESISTANCE IS EXPRESSED IN OHMS.
4. ALL CAPACITANCE IS EXPRESSED IN MICRO-FARADS.

0751809S

(0000-7510-100-D1)

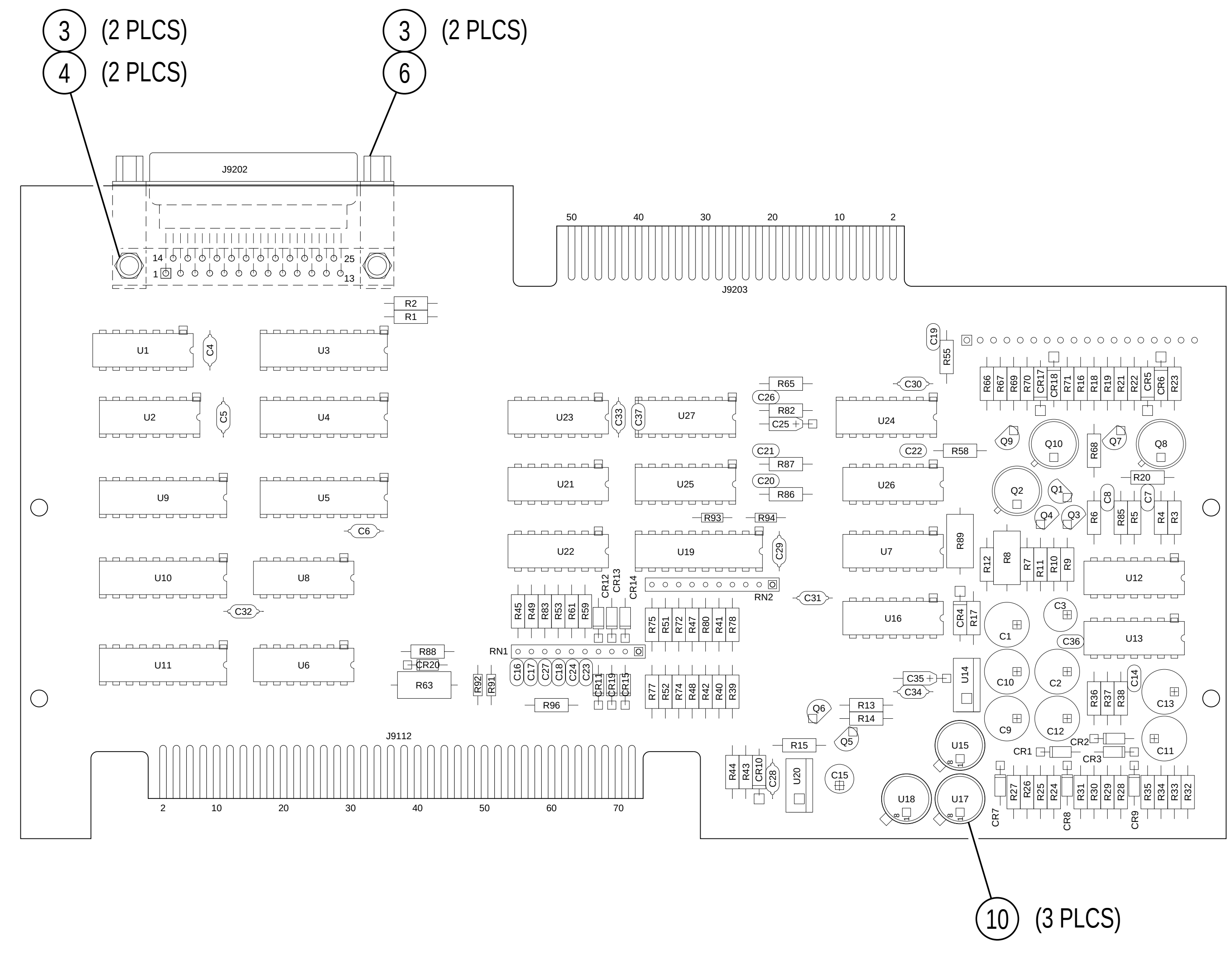
Microprocessor PC Board Assembly (2 of 3)
Microprocessor PC Board Assembly Circuit Schematic
Figure 84



0751810S

(0000-7510-100-D1)

Microprocessor PC Board Assembly (3 of 3)
Microprocessor PC Board Assembly Circuit Schematic
Figure 84



CAUTION:

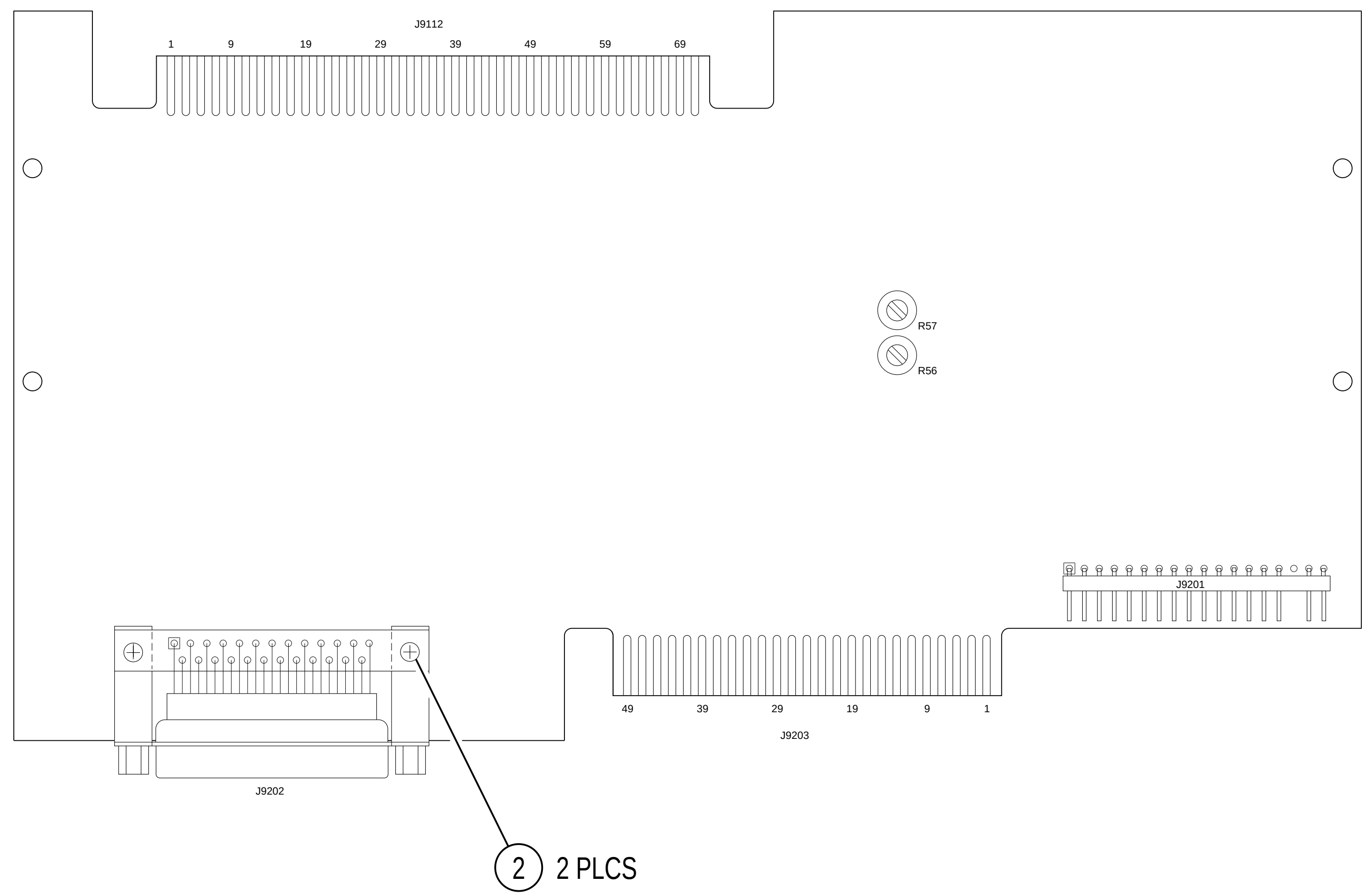
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

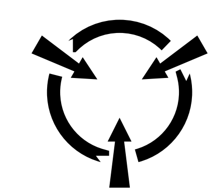
NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS DRAWING CARRIES SERIES: 9200 (i.e., R1 IS R9201).

7532300P

(7010-7532-300-C)

Interface PC Board Assembly (1 of 4)
Figure 85



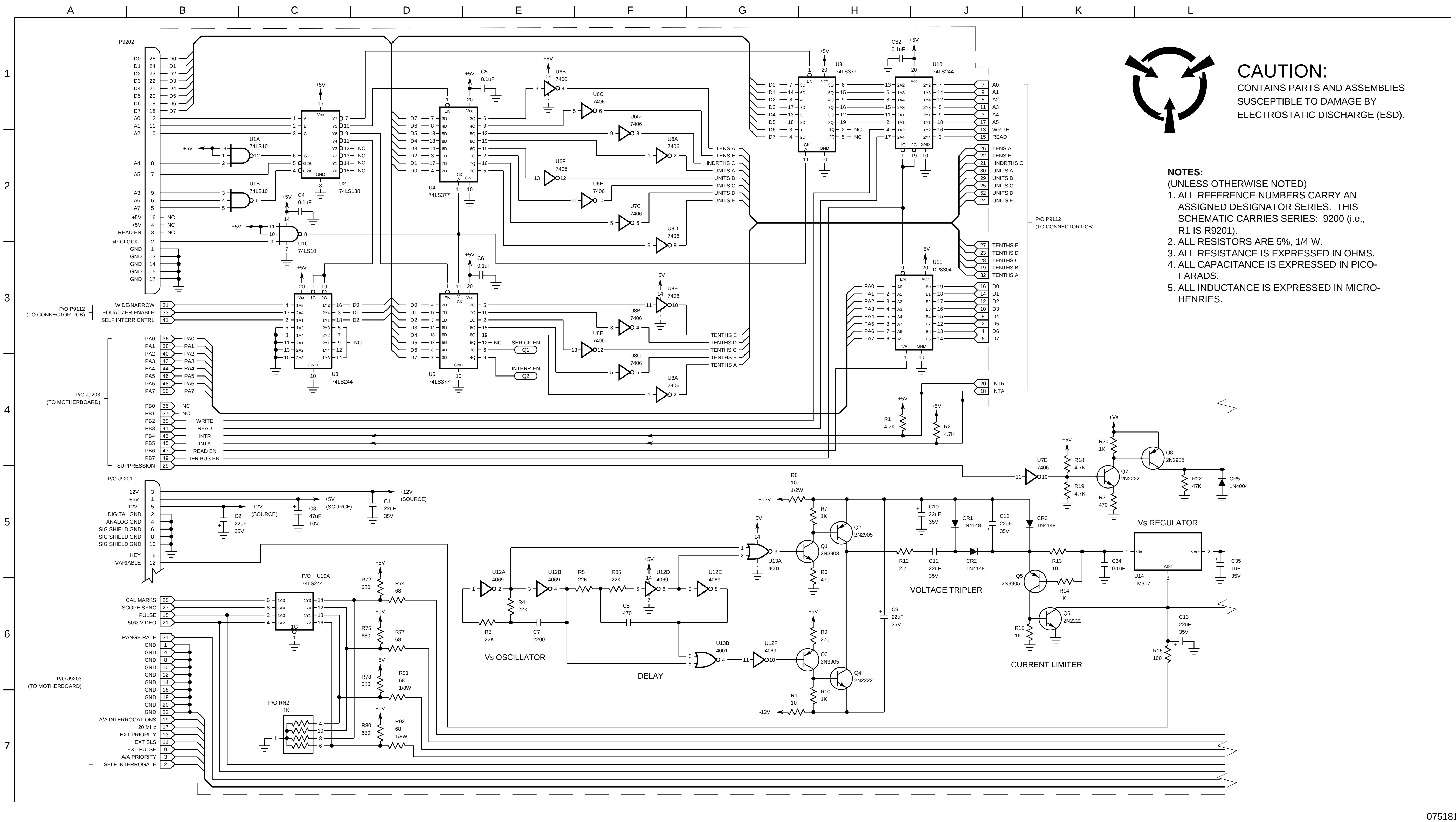


CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

7532301P

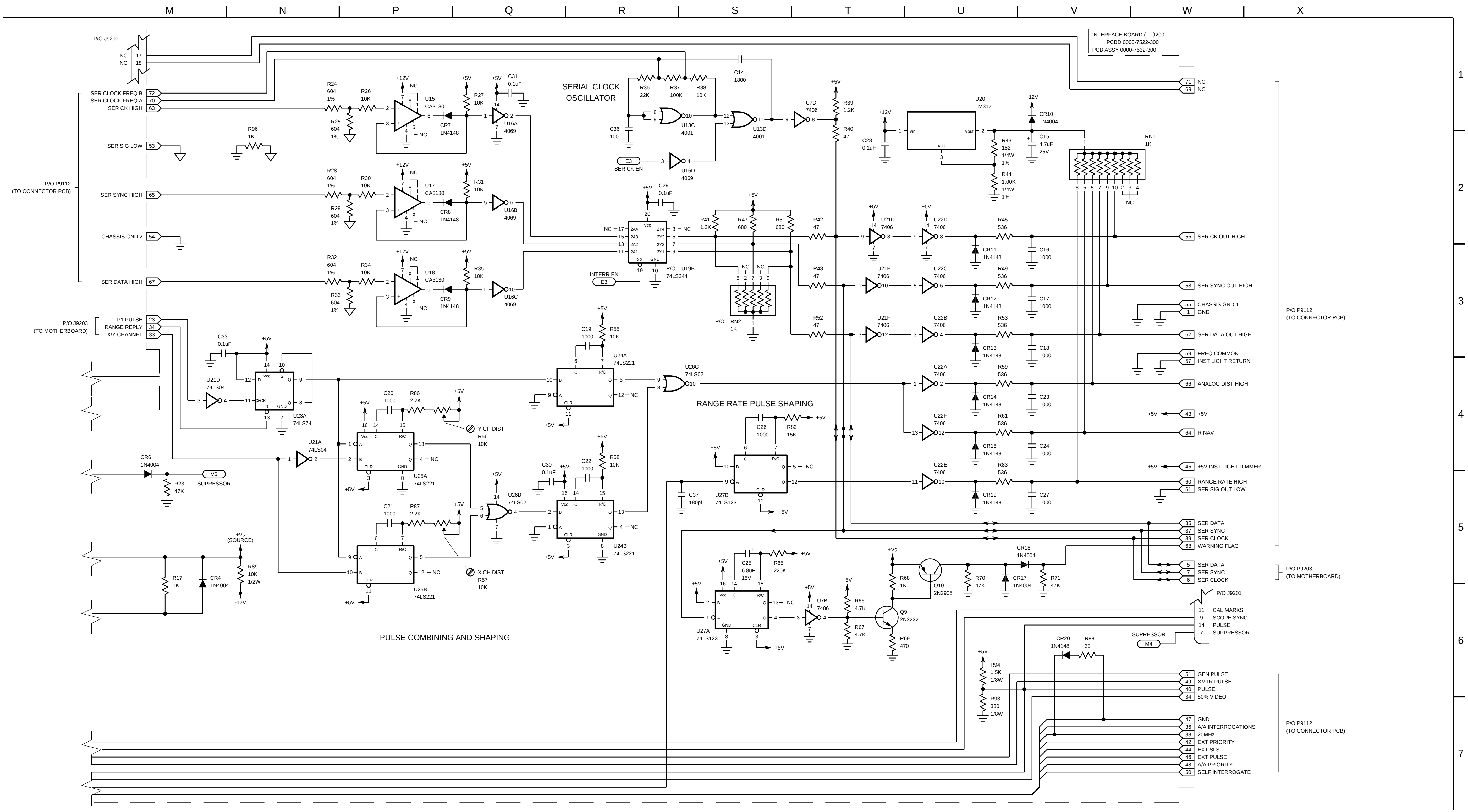
(7010-7532-300-C)

Interface PC Board Assembly (2 of 4)
Figure 85



(0000-7532-300-C1)

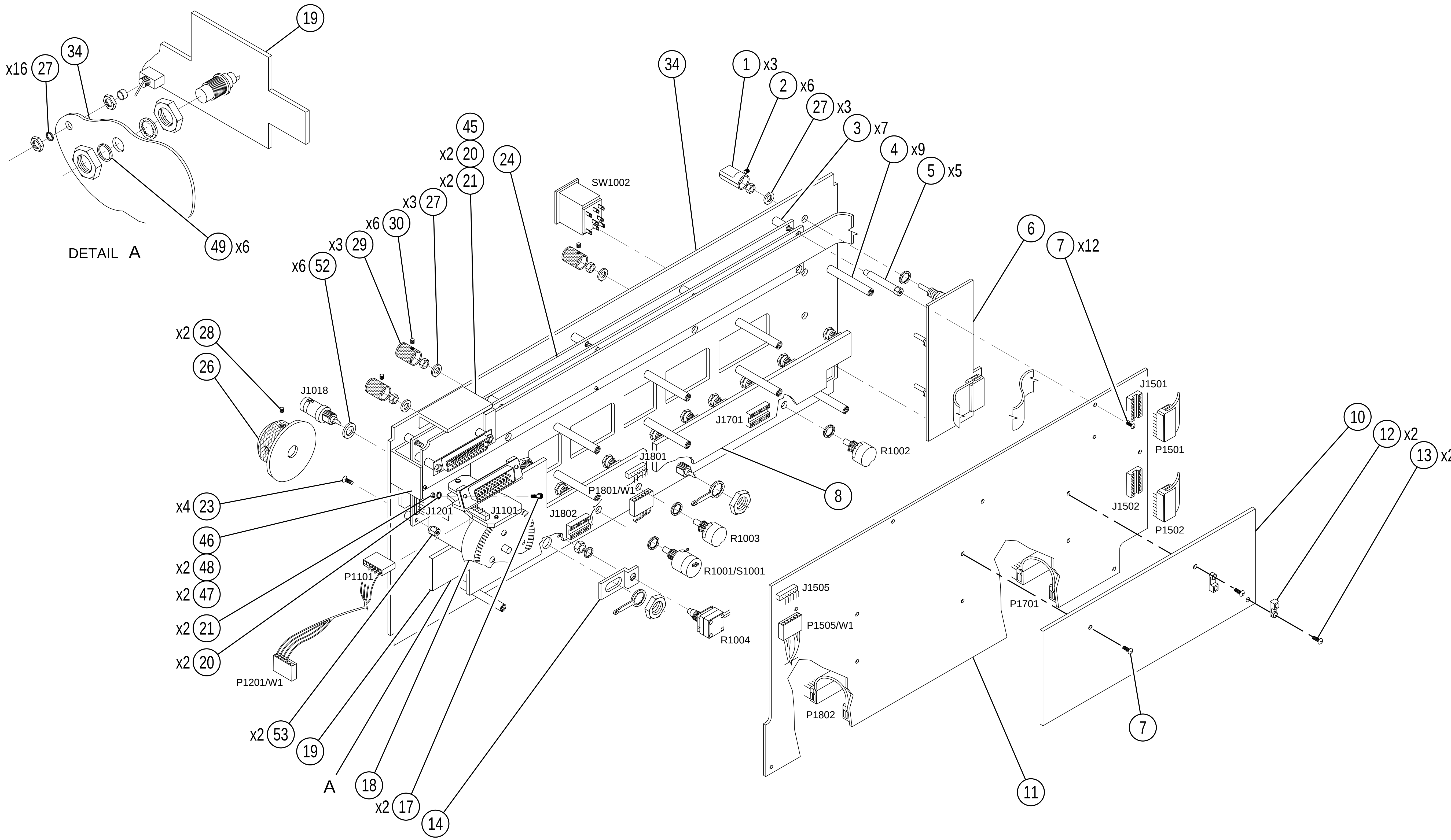
Interface PC Board Assembly (3 of 4)
Interface PC Board Assembly Circuit Schematic
Figure 85



0751812S

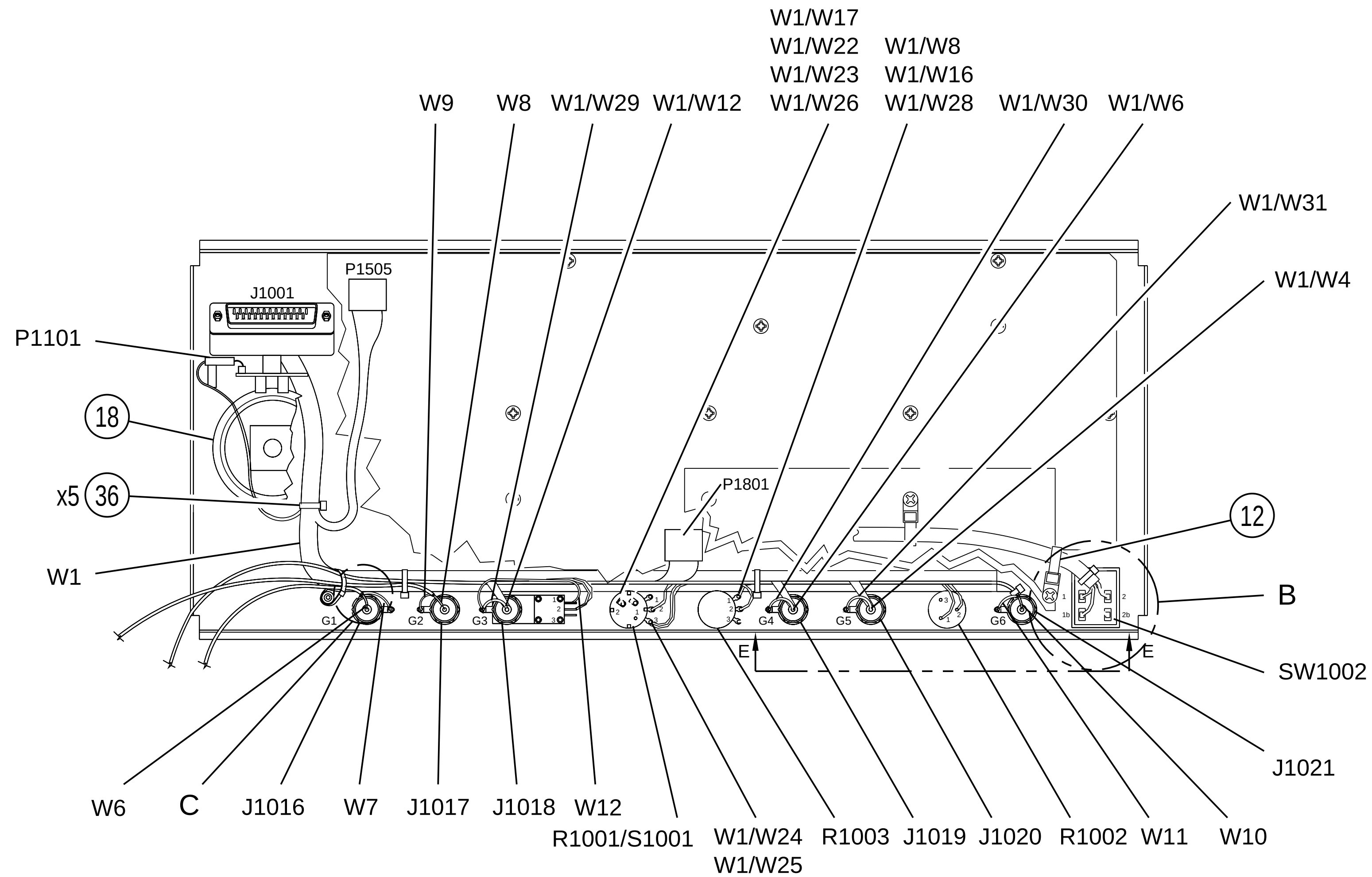
(0000-7532-300-C1)

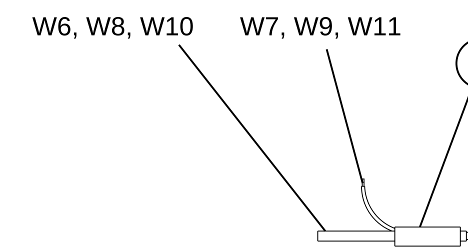
Interface PC Board Assembly (4 of 4)
Interface PC Board Assembly Circuit Schematic
Figure 85



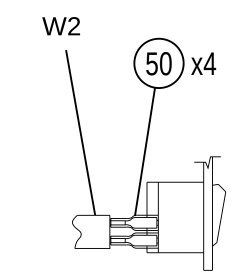
(7005-7545-200-B)

Front Panel Assembly (1 of 21)
Figure 86



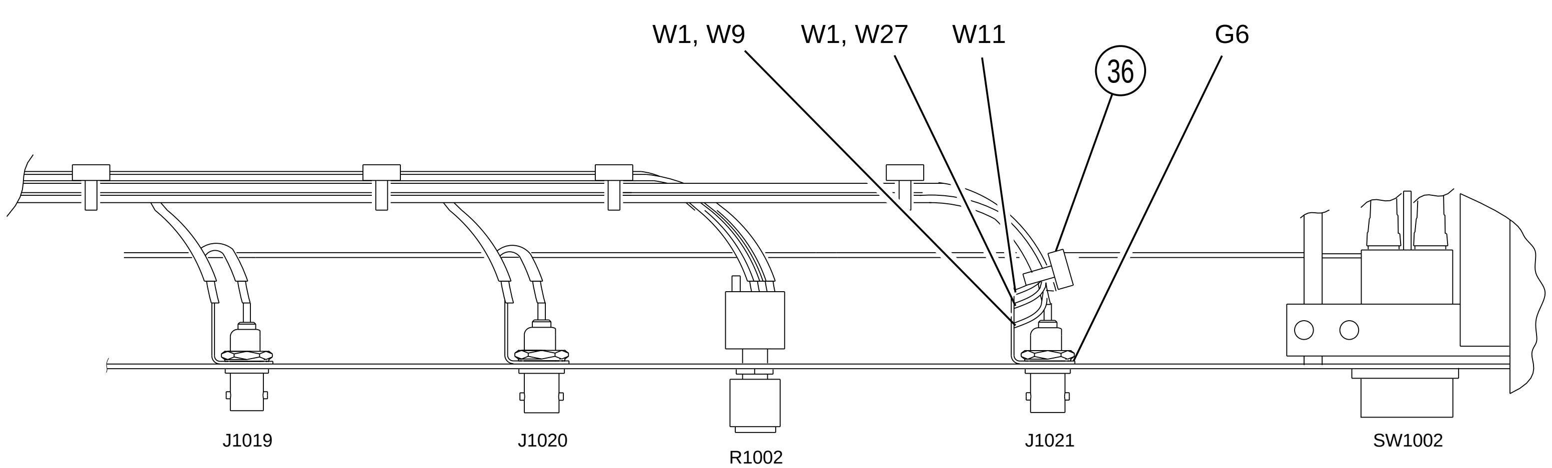


DETAIL C



DETAIL B

DESG	FROM	TO	COLOR	AWG	NOTES
W1W2		J1018	WHT CABLE		
W1W4		J1020	WHT CABLE		
W1W6		J1019	WHT CABLE		
W1W8		R1003-2	YELLOW		
W1W9		G1006	GREEN		
W1W13		R1004-2	WHT/GREEN		
W1W14		R1002-2	BROWN		
W1W16		R1003-1	RED		
W1W17		S1001-1	BLUE		
W1W19		R1002-1	RED		
W1W22		S1001-1	BLUE		
W1W23		S1001-2	VIOLET		
W1W24		R1001-2	GRAY		
W1W25		R1001-3	WHITE		
W1W26		S1001-1	BLUE		
W1W27		G1006	BLACK		
W1W28	R1002-1	R1003-1	RED		
W1W29	W1W2 SHLD	G1003	BLACK		
W1W30		G1004	BLACK		
W1W31		G1005	BLACK		
W2	SW1002-1	P9902-1	BROWN	18GA	16"
W2	SW1002-2b	P9902-4	BLUE	18GA	16"
W2	SW1002-1b	P9902-3	BROWN	18GA	16"
W2	SW1002-2	P9902-2	BLUE	18GA	16"
W6	J1016	J7202	COAX		6050-0261-600
W7	W6 SHLD	G1001	BLACK	22GA	2.5"
W8	J1017	J8502	COAX		6050-0261-100
W9	W8 SHLD	G1002	BLACK	22GA	2.5"
W10	J1021	J5202	COAX		6050-0262-500
W11	W10 SHLD	G1006	BLACK	22GA	2.5"
W12	R1004-1	G1003	BLACK	22GA	2.5"

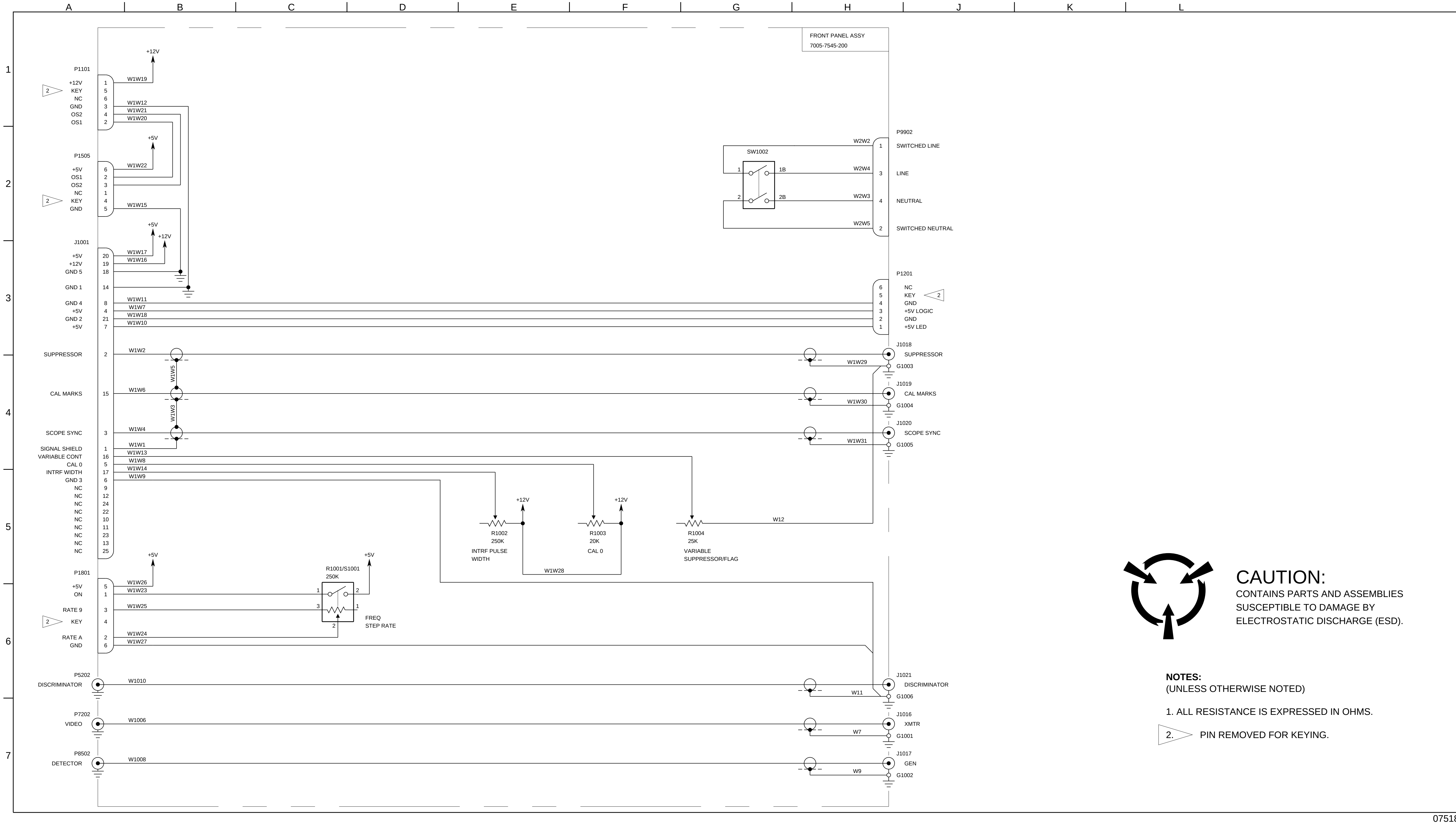


VIEW E-E

7543011M

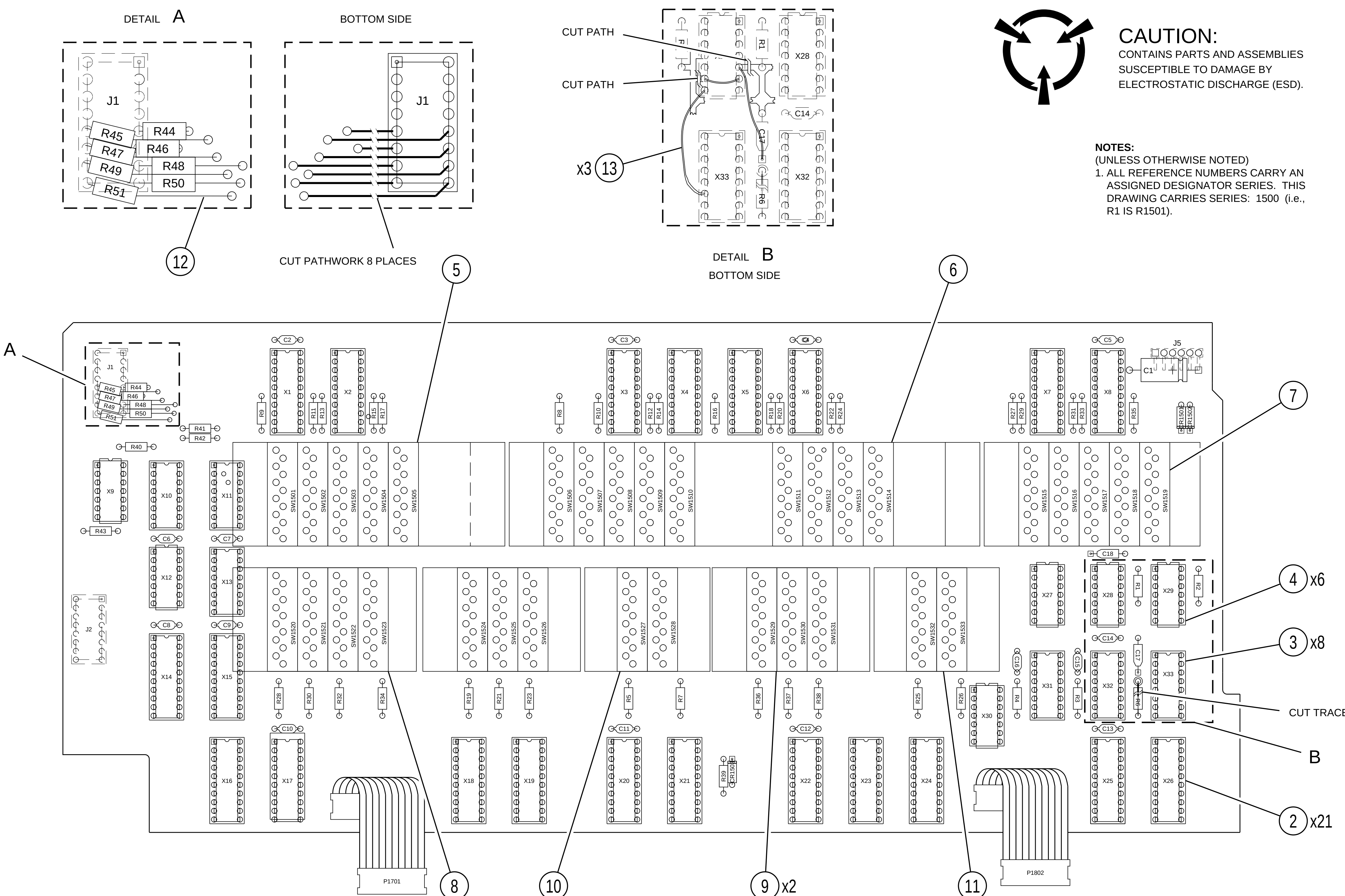
(7005-7545-200-B)

Front Panel Assembly (2 of 21)
Figure 86



(0000-7545-200-A1)

Front Panel Assembly (3 of 21)
Front Panel Assembly Circuit Schematic
Figure 86



(7010-7532-400-F1)

Front Panel Assembly (4 of 21)
Thumbwheel Switch PC Board Assembly
Figure 86

CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)

1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS SCHEMATIC CARRIES SERIES: 1500 (i.e., R1 IS R1501).
2. ALL RESISTORS ARE 5%, 1/4 W.
3. ALL RESISTANCE IS EXPRESSED IN OHMS.
4. J1505, PIN 4 REMOVED FOR KEYING.

TABLE 1

FREQ SEL	BCD CODE
MHz X	0
MHz Y	1
VOR .00	2
VOR .05	3
TAC X	4
TAC Y	5
XPDR	6

TABLE 2

DOUBLE INTRR/ INT RF PULSE	BCD CODE
OFF	0
INTRF −	1
INTRF +	2
DOUBLE	3

TABLE 3

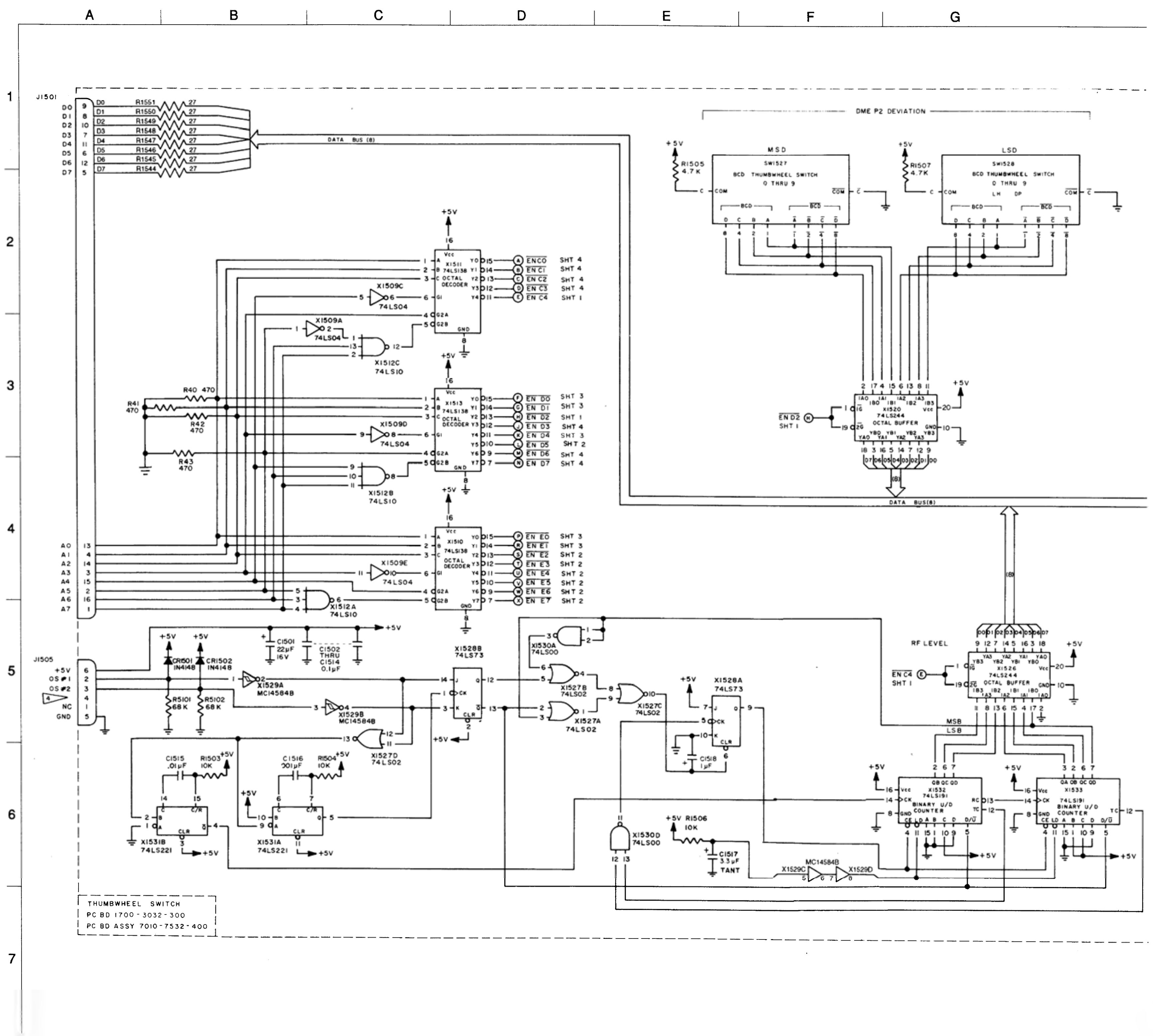
ΔF	BCD CODE
OFF	0
+Δ	1
−Δ	2

TABLE 4

SLS ECHO	BCD CODE
+	0
−	1
−1	2

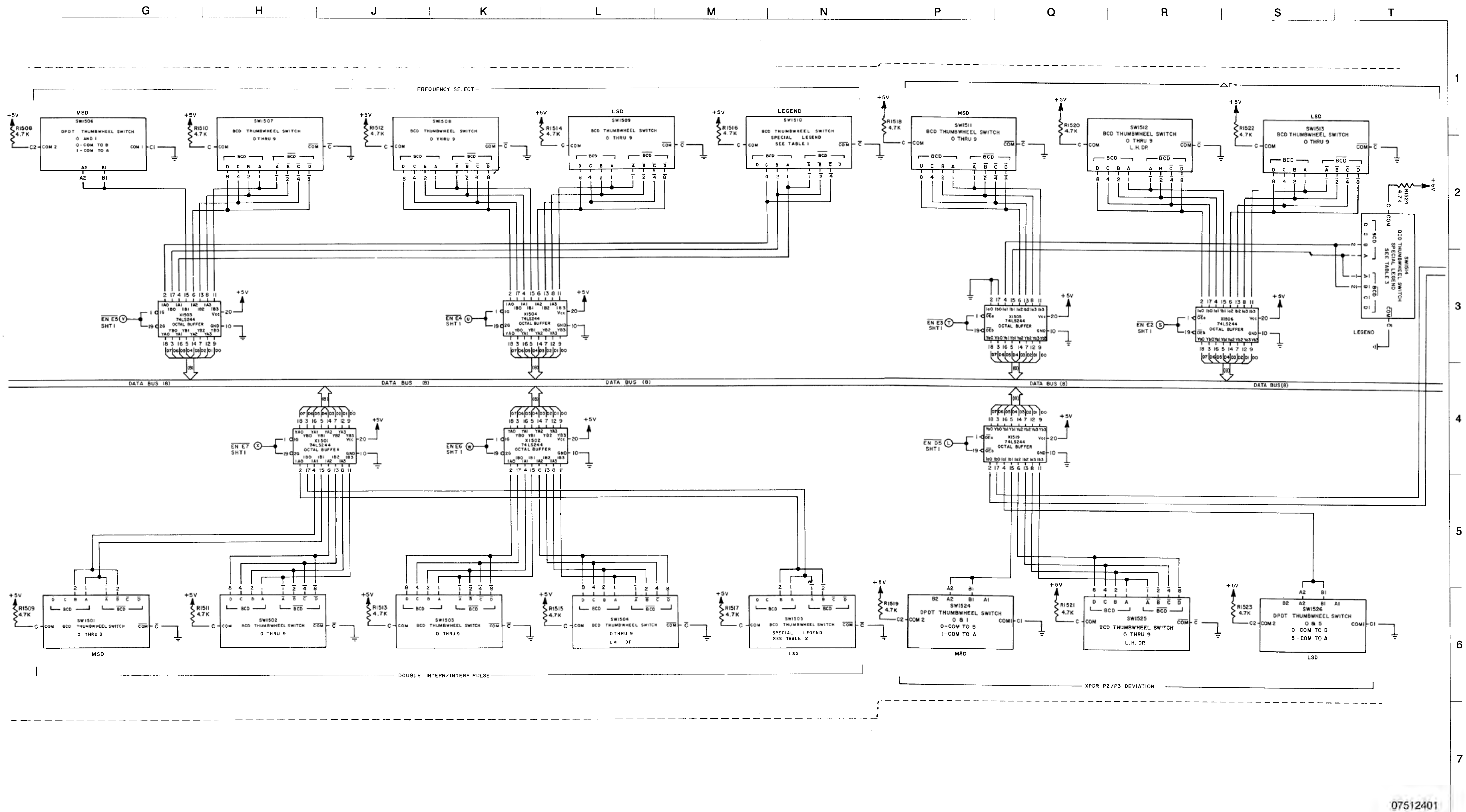
TABLE 5

IC	+5V	*GND
X1509	14	7
X1512	14	7
X1529	14	7,9,13,11,5
X1527	14	7
X1528	4	11
X1530	14	7
X1531	16	8



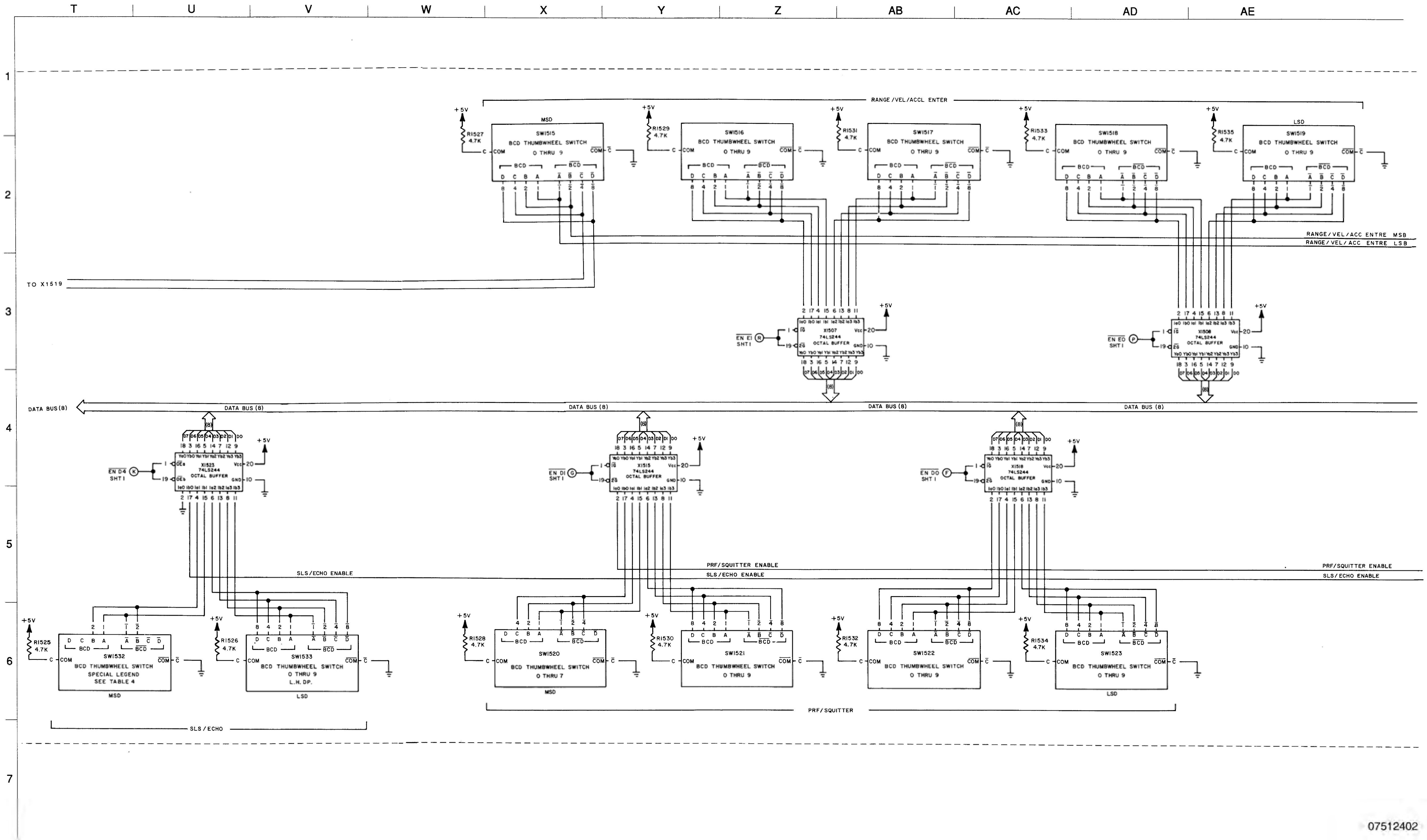
(0000-7512-400-C)

Front Panel Assembly (5 of 21)
Thumbwheel Switch PC Board Assembly Circuit Schematic
Figure 86



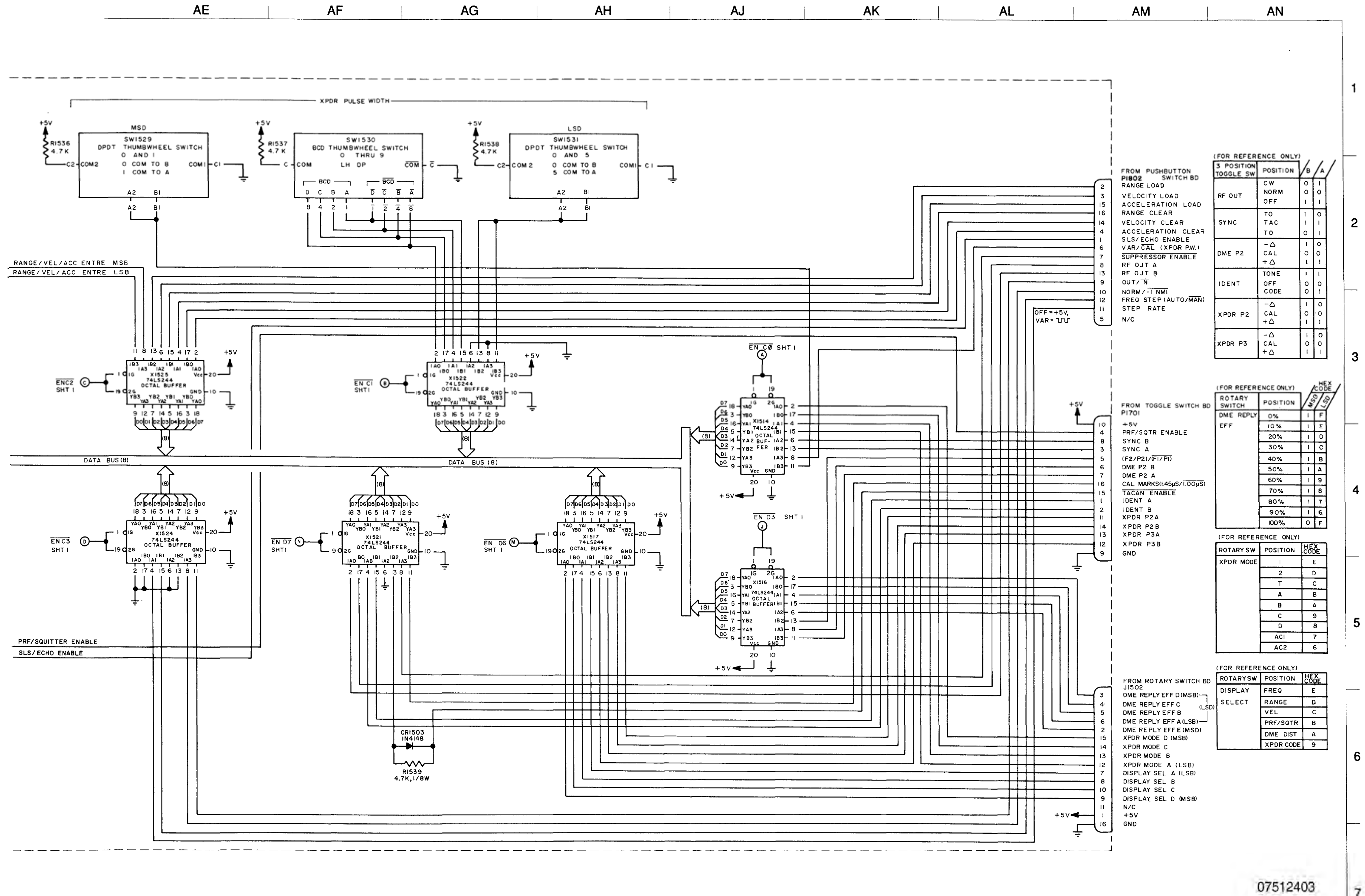
0000-7512-400-C)

Front Panel Assembly (6 of 21)
Thumbwheel Switch PC Board Assembly Circuit Schematic
Figure 86



(0000-7512-400-C)

Front Panel Assembly (7 of 21)
Thumbwheel Switch PC Board Assembly Circuit Schematic
Figure 86



(FOR REFERENCE ONLY)

3 POSITION TOGGLE SW	POSITION	B	A
RF OUT	CW	0	1
	NORM	0	0
	OFF	1	1
SYNC	TO	1	0
	TAC	1	1
	TO	0	1
DME P2	−Δ	1	0
	CAL	0	0
	+Δ	1	1
IDENT	TONE	1	1
	OFF	0	0
	CODE	0	1
XPDR P2	−Δ	1	0
	CAL	0	0
	+Δ	1	1
XPDR P3	−Δ	1	0
	CAL	0	0
	+Δ	1	1

(FOR REFERENCE ONLY)

ROTARY SWITCH	POSITION	HEX CODE MSD	HEX CODE LSD
DME REPLY EFF	0%	1	F
	10%	1	E
	20%	1	D
	30%	1	C
	40%	1	B
	50%	1	A
	60%	1	9
	70%	1	8
	80%	1	7
	90%	1	6
	100%	0	F

(FOR REFERENCE ONLY)

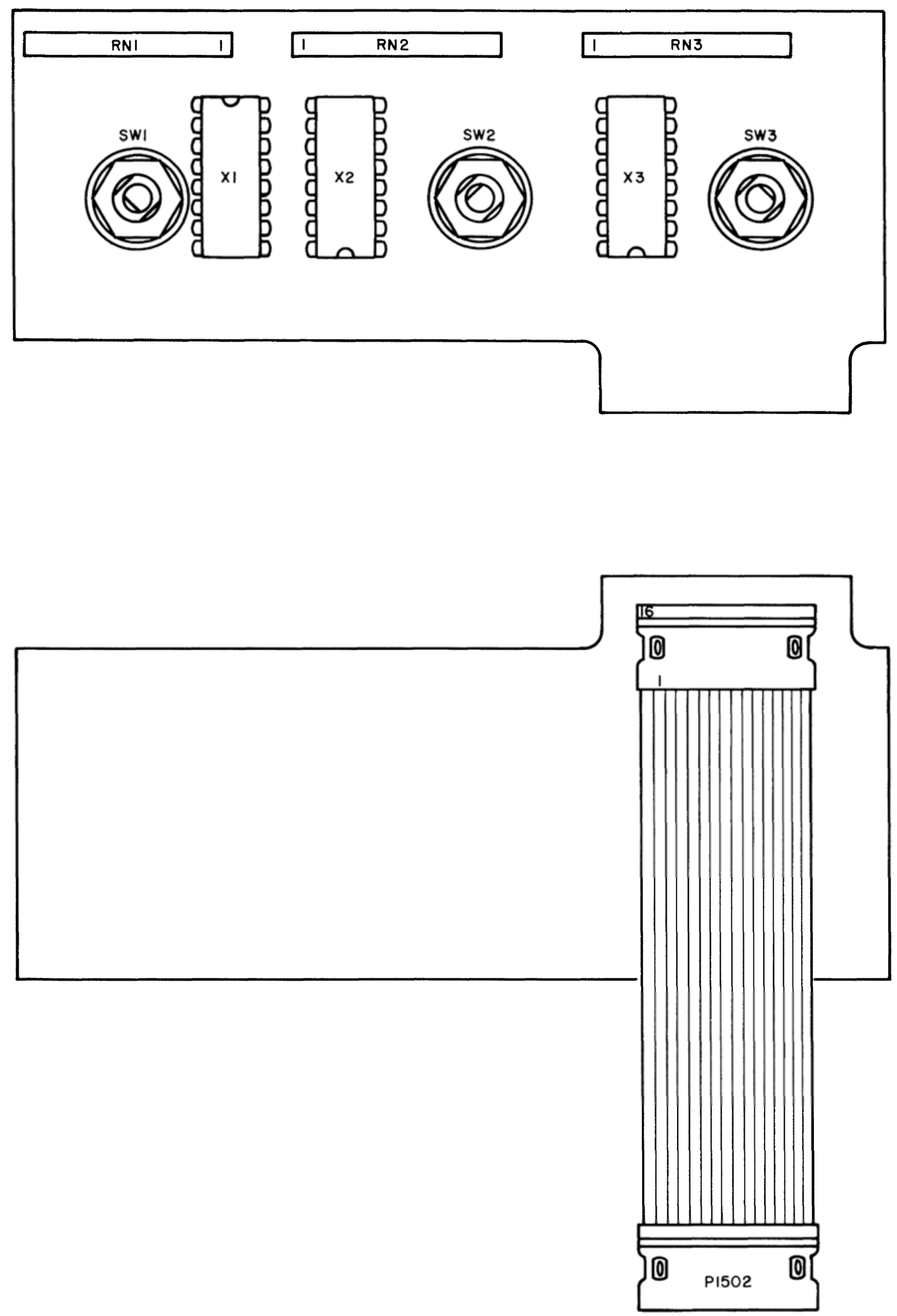
ROTARY SW	POSITION	HEX CODE
XPDR MODE	1	E
	2	D
	T	C
	A	B
	B	A
	C	9
	D	8
	AC1	7
	AC2	6

(FOR REFERENCE ONLY)

ROTARY SW	POSITION	HEX CODE
DISPLAY SELECT	FREQ	E
	RANGE	D
	VEL	C
	PRF/SQTR	B
	DME DIST	A
	XPDR CODE	9

(0000-7512-400-C)

Front Panel Assembly (8 of 21)
Thumbwheel Switch PC Board Assembly Circuit Schematic
Figure 86

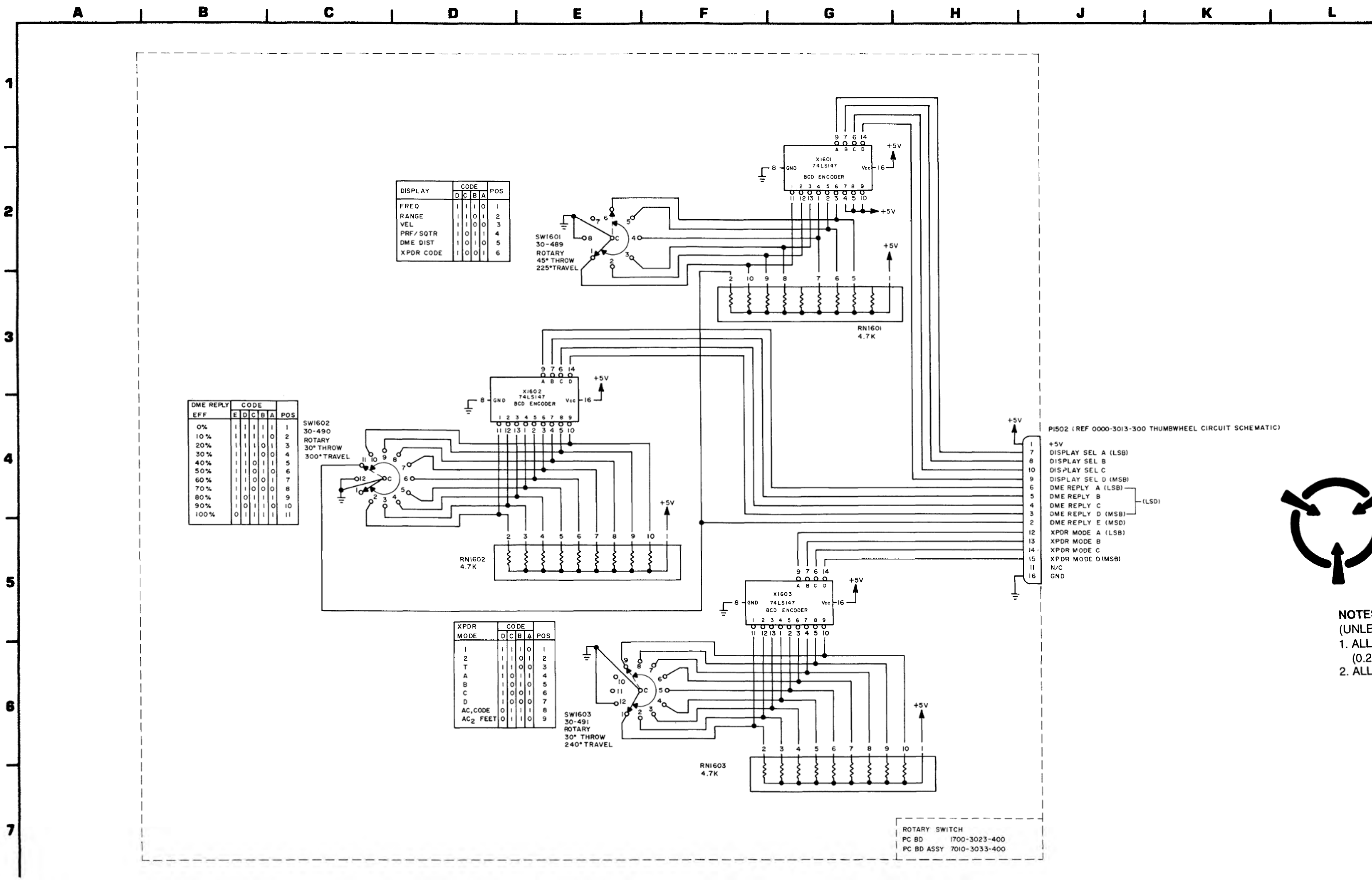


CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS DRAWING CARRIES SERIES: 1600 (i.e., X1 IS X1601).

(7010-3033-400-A1)

Front Panel Assembly (9 of 21)
Rotary Switch PC Board Assembly
Figure 86



DISPLAY	CODE D	CODE C	CODE B	CODE A	POS
FREQ	1	1	1	0	1
RANGE	1	1	0	1	2
VEL	1	1	0	0	3
PRF/SQTR	1	0	1	1	4
DME DIST	1	0	1	0	5
XPDR CODE	1	0	0	1	6

DME REPLY EFF	CODE E	CODE D	CODE C	CODE B	CODE A	POS
0%	1	1	1	1	1	1
10%	1	1	1	1	0	2
20%	1	1	1	0	1	3
30%	1	1	1	0	0	4
40%	1	1	0	1	1	5
50%	1	1	0	1	0	6
60%	1	1	0	0	1	7
70%	1	1	0	0	0	8
80%	1	0	1	1	1	9
90%	1	0	1	1	0	10
100%	0	1	1	1	1	11

XPDR MODE	CODE D	CODE C	CODE B	CODE A	POS
1	1	1	1	0	1
2	1	1	0	1	2
T	1	1	0	0	3
A	1	0	1	1	4
B	1	0	1	0	5
C	1	0	0	1	6
D	1	0	0	0	7
AC, CODE	0	1	1	1	8
AC_2 FEET	0	1	1	0	9

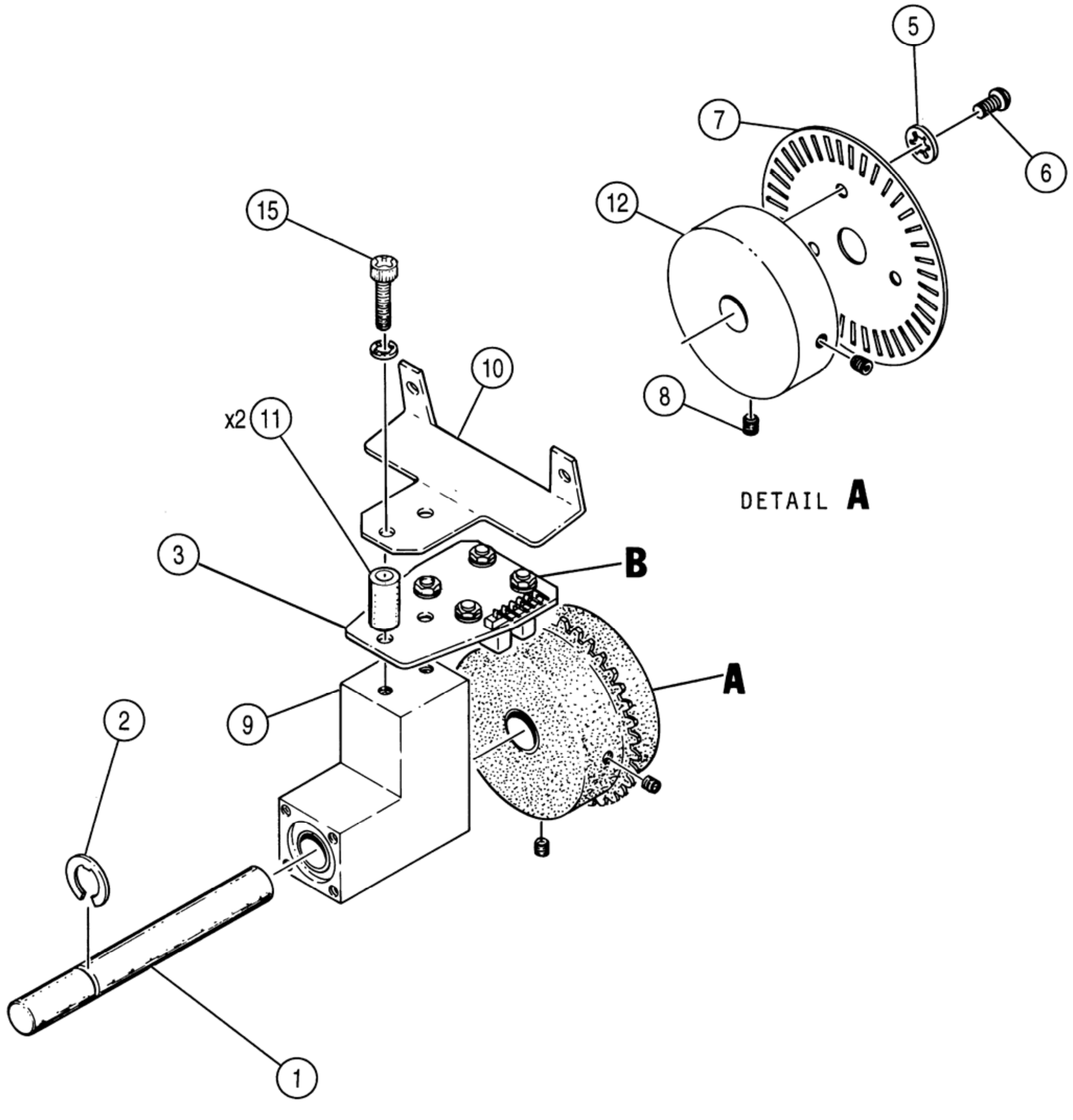
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

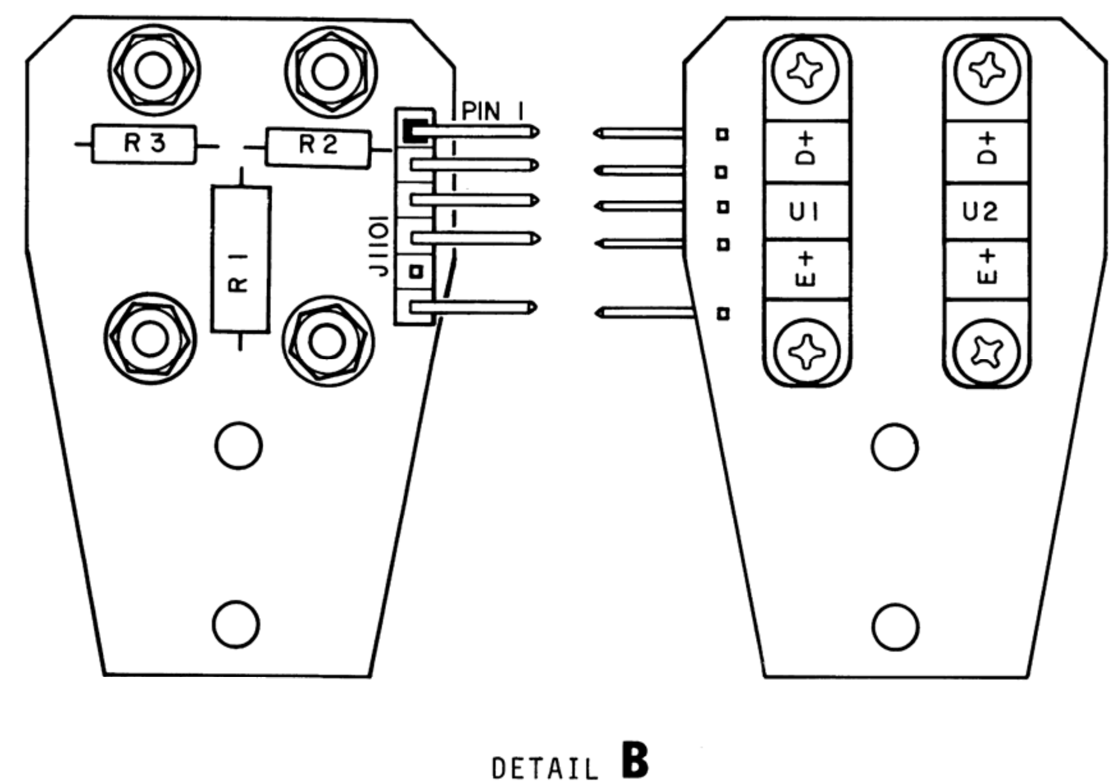
NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL RESISTOR NETWORKS ARE 2%, 1/4 W (0.2 W PER SEGMENT).
2. ALL RESISTANCE IS EXPRESSED IN OHMS.

07512405

(0000-3013-400-P1)

Front Panel Assembly (10 of 21)
Rotary Switch PC Board Assembly Circuit Schematic
Figure 86





Optical Counter PC Board Assembly (7010-3630-100-A2)

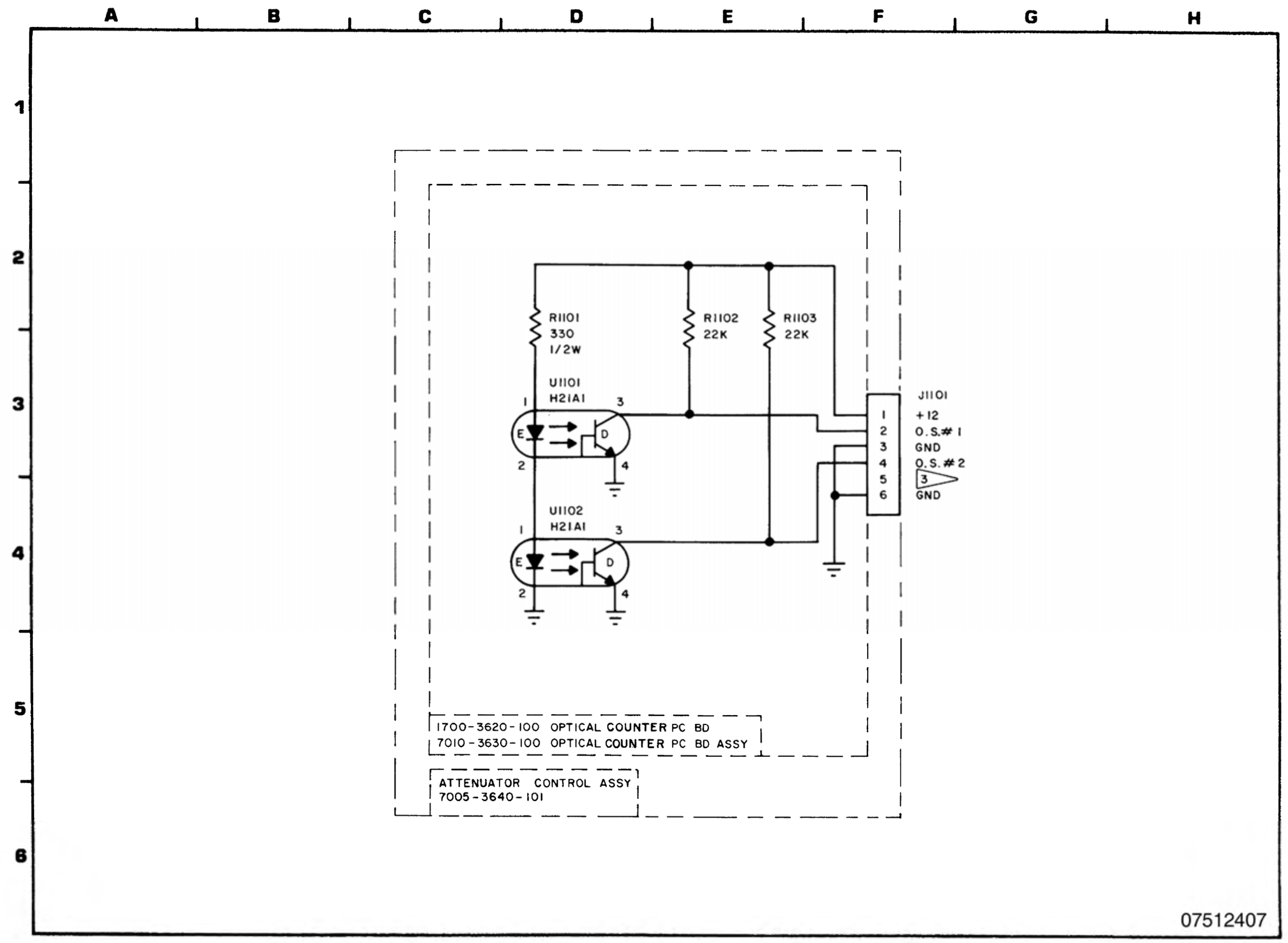
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS DRAWING CARRIES SERIES: 1100 (i.e., R1 IS R1101).

07512406

Attenuator Control Assembly
(7005-3640-101-G)

Front Panel Assembly (11 of 21)
Figure 86

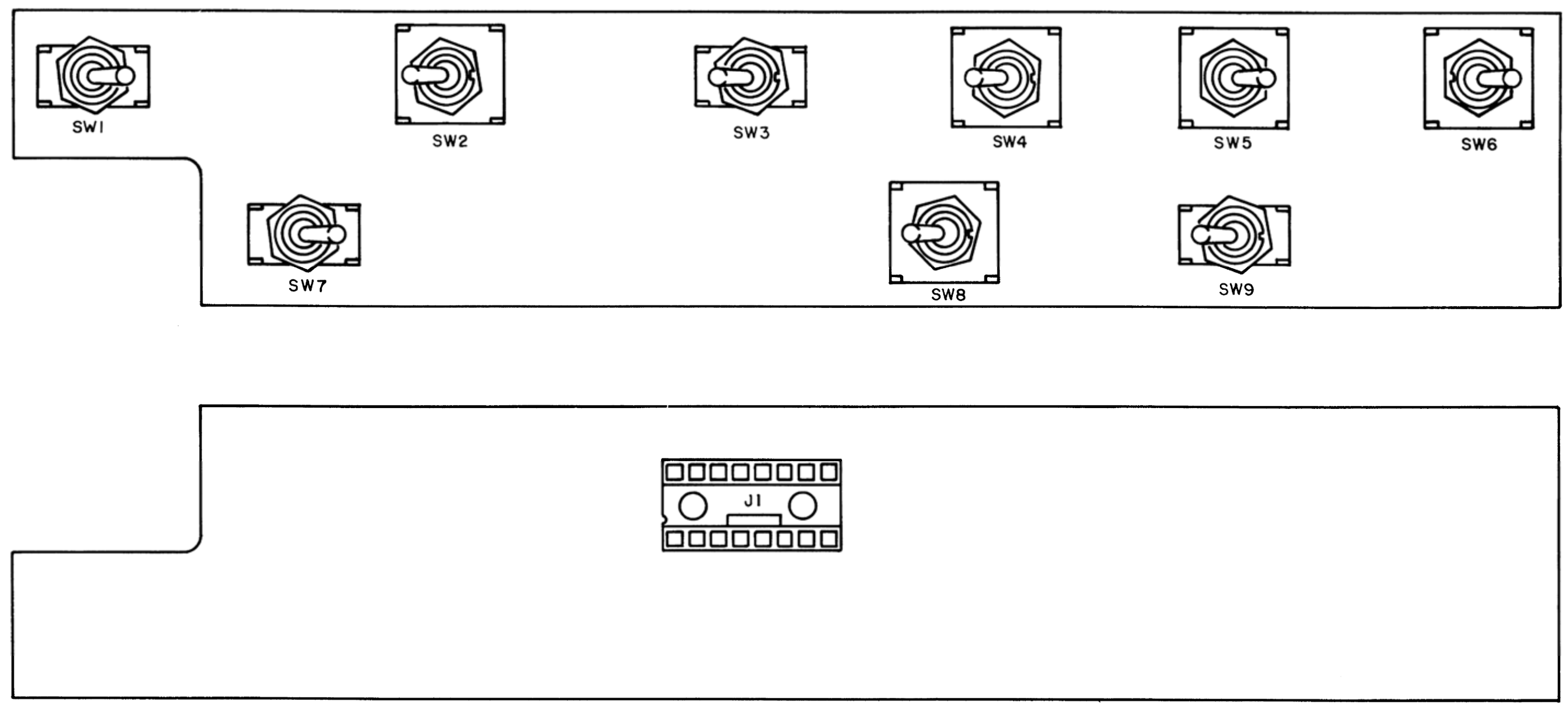


CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL RESISTORS ARE 5%, 1/4 W.
2. ALL RESISTANCE IS EXPRESSED IN OHMS.
3. J1101, PIN 5 REMOVED FOR KEYING.

(0000-3610-100-A2)

Front Panel Assembly (12 of 21)
Optical Counter PC Board Assembly Circuit Schematic
Figure 86



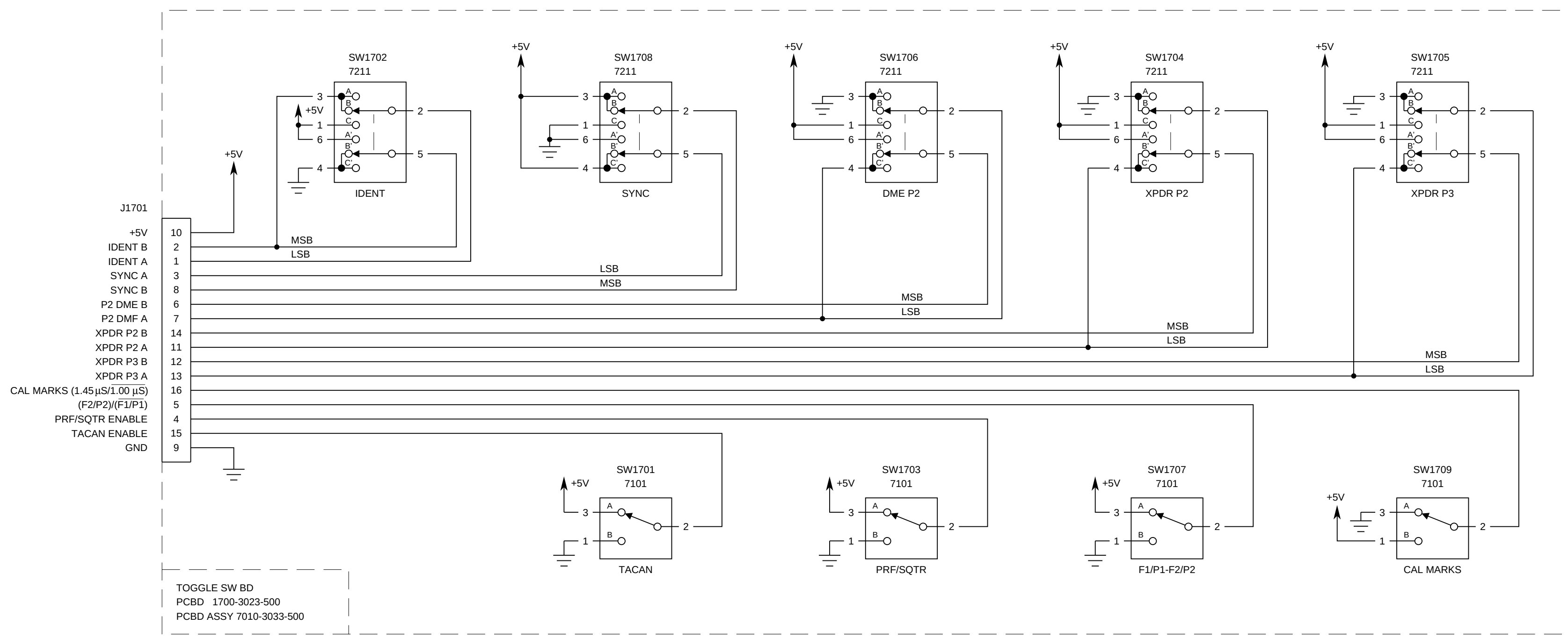
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS DRAWING CARRIES SERIES: 1700 (i.e., SW1 IS SW1701).

07512407

7010-3033-500-P1)

Front Panel Assembly (13 of 21)
Toggle Switch PC Board Assembly
Figure 86



TOGGLE SWITCH CIRCUIT SCHEMATIC (0000-3013-500-A1)

SWITCH	POSITION	FUNCTION	CODE
SW1702 IDENT	A	TONE	1 1
	B	OFF	0 0
	C	CODE	0 1
SW1708 SYNC	A	TO	1 0
	B	Tac	1 1
	C	Td	0 1
SW1701 TACAN	A	ON	1
	B	OFF	0
SW1706 DME P2	A	- Δ	1 0
	B	CAL	0 0
	C	+Δ	1 1
SW1703 PRF/SQTR	A	ON	1
	B	OFF	0
SW1704 XPDR P2	A	- Δ	1 0
	B	CAL	0 0
	C	+Δ	1 1
SW1707 F1/P1-F2/P2	A	F2/P2	1
	B	F1/P1	0
SW1705 XPDR P3	A	- Δ	1 0
	B	CAL	0 0
	C	+ Δ	1 1
SW1709 CAL MARKS	A	$1.0\mu S_1$	0
	B	$1.45\mu S_1$	1

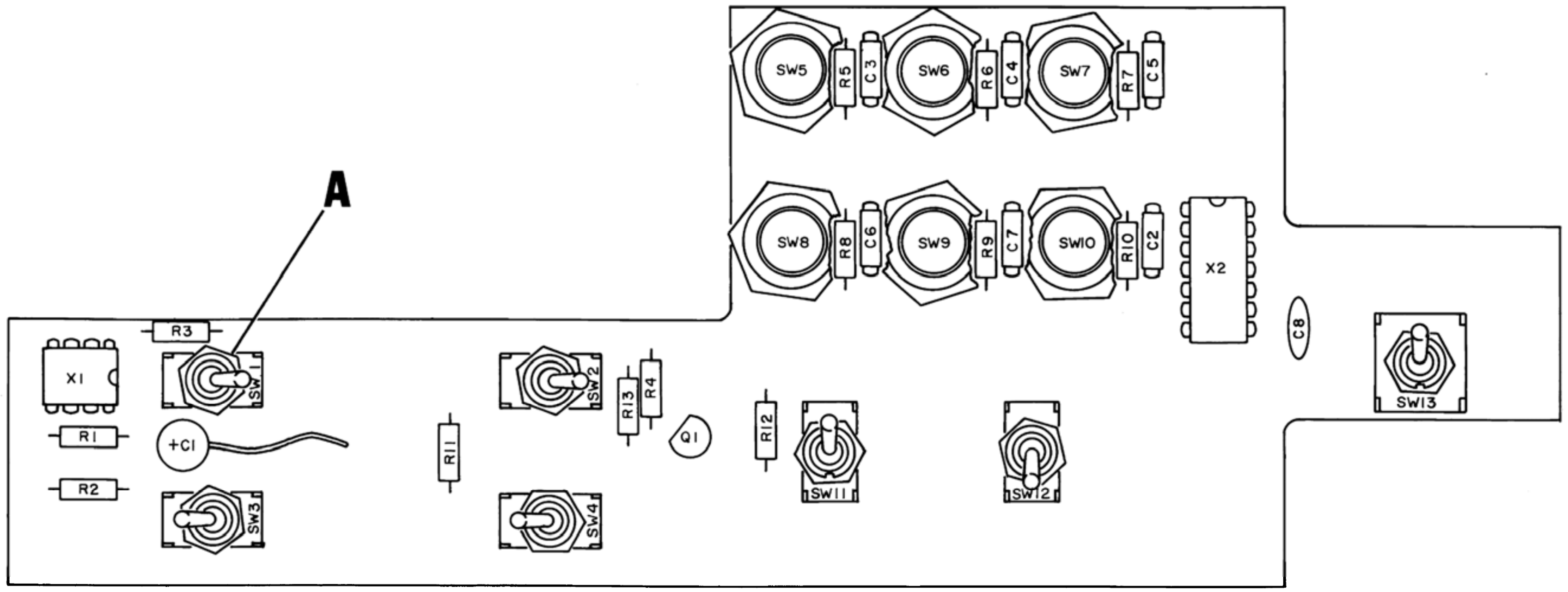
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

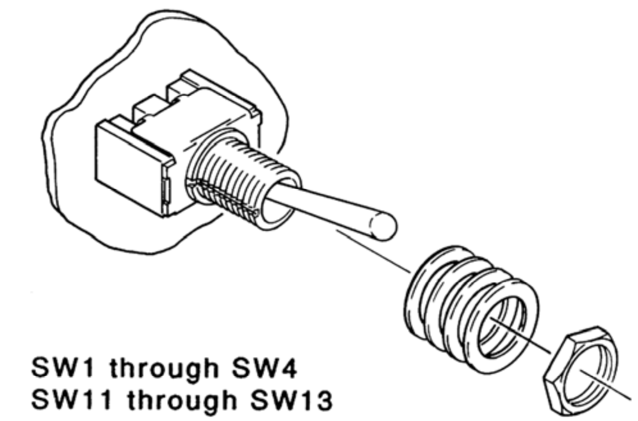
NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS SCHEMATIC CARRIES SERIES: 1700 (i.e., SW1 IS SW1701).

0751829S

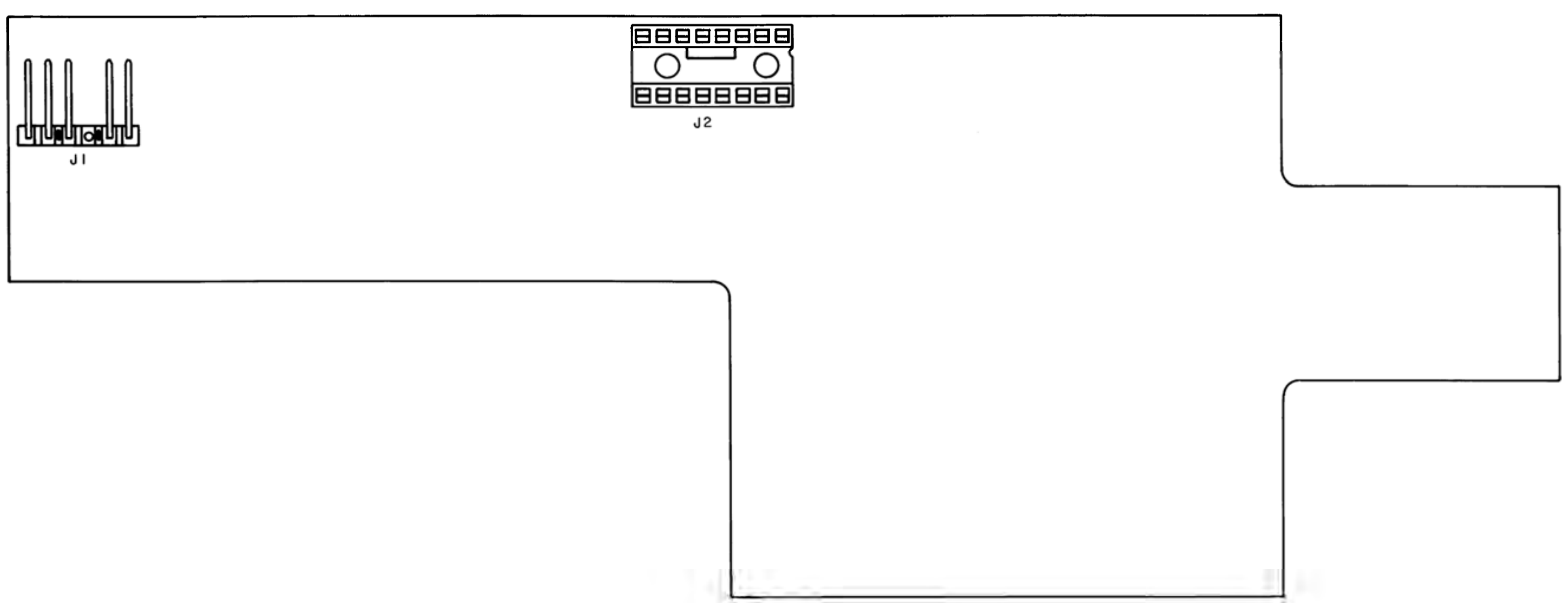
0000-3013-500-P1-1)

Front Panel Assembly (14 of 21)
Toggle Switch PC Board Assembly Circuit Schematic
Figure 86





DETAIL A



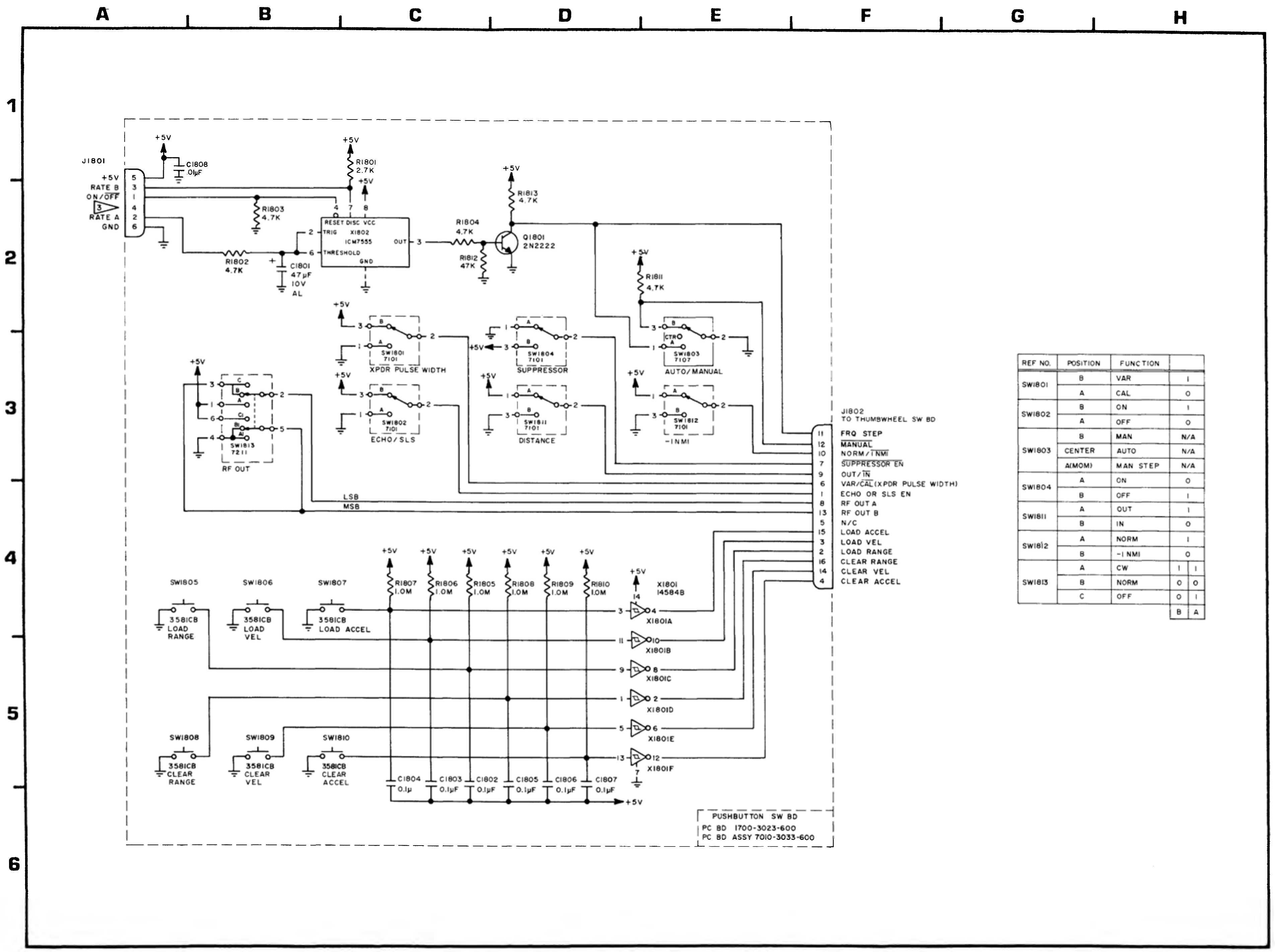
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS DRAWING CARRIES SERIES: 1800 (i.e., R1 IS R1801).

07512409

(7010-3033-600-B2)

Front Panel Assembly (15 of 21)
Pushbutton Switch PC Board Assembly
Figure 86



REF NO.	POSITION	FUNCTION		
SW1801	B	VAR	1	
	A	CAL	0	
SW1802	B	ON	1	
	A	OFF	0	
SW1803	B	MAN	N/A	
	CENTER	AUTO	N/A	
	A(MOM)	MAN STEP	N/A	
SW1804	A	ON	0	
	B	OFF	1	
SW1811	A	OUT	1	
	B	IN	0	
SW1812	A	NORM	1	
	B	-1 NMI	0	
SW1813	A	CW	1	1
	B	NORM	0	0
	C	OFF	0	1
			B	A

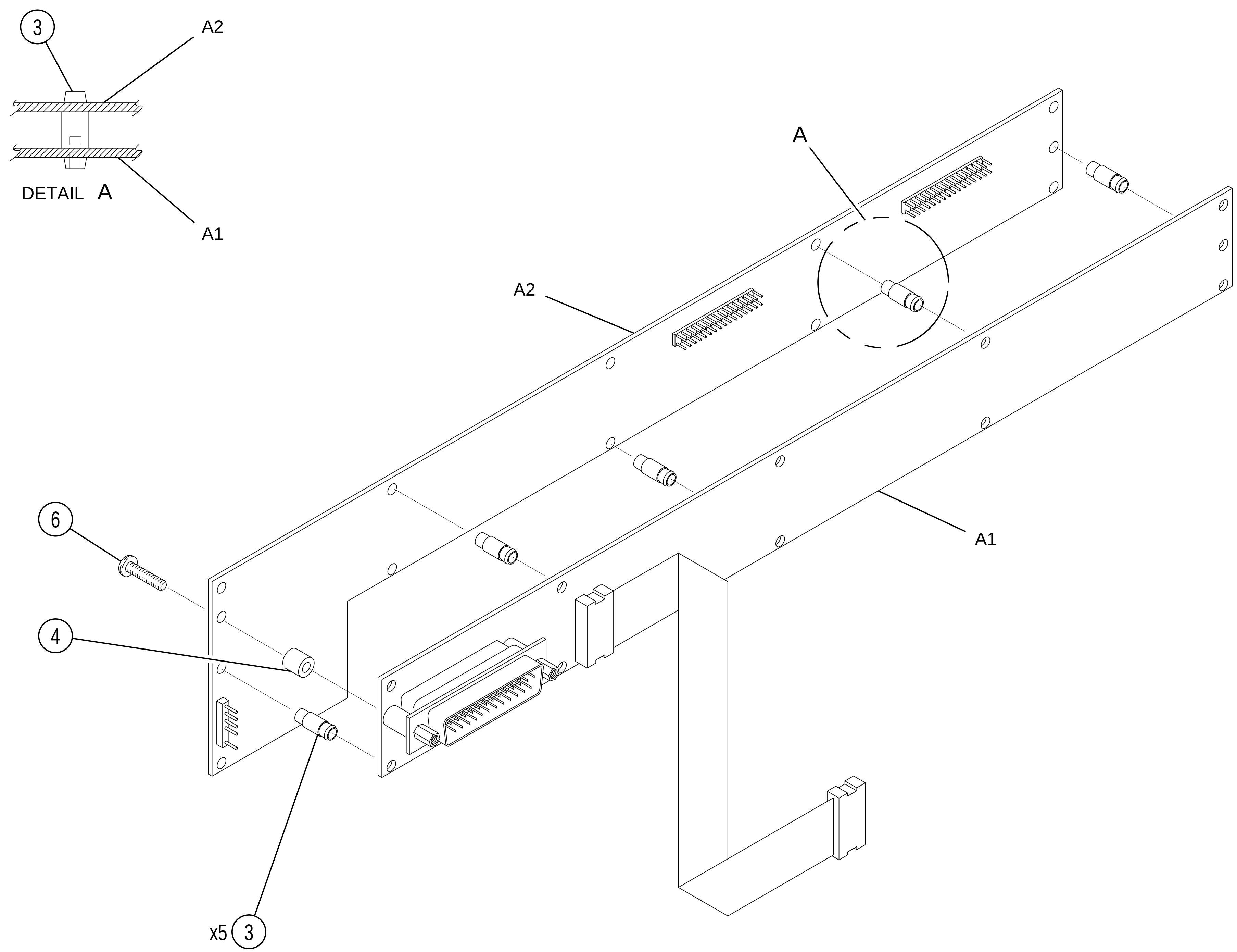
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL RESISTORS ARE 5%, 1/4 W.
2. ALL RESISTANCE IS EXPRESSED IN OHMS.
3. J1801, PIN 4 REMOVED FOR KEYING.

07512410

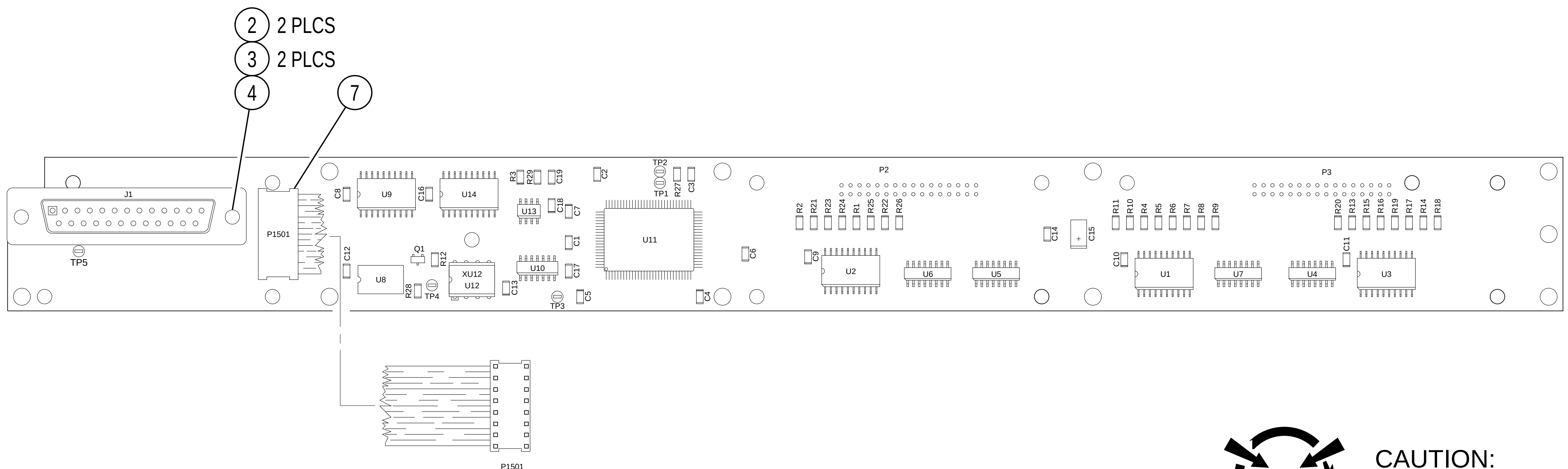
(0000-3013-600-B)

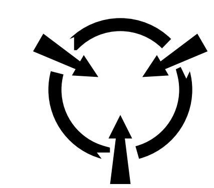
Front Panel Assembly (16 of 21)
Pushbutton Switch PC Board Assembly Circuit Schematic
Figure 86



(7005-7543-700-B)

Front Panel Assembly (17 of 21)
Display Assembly
Figure 86





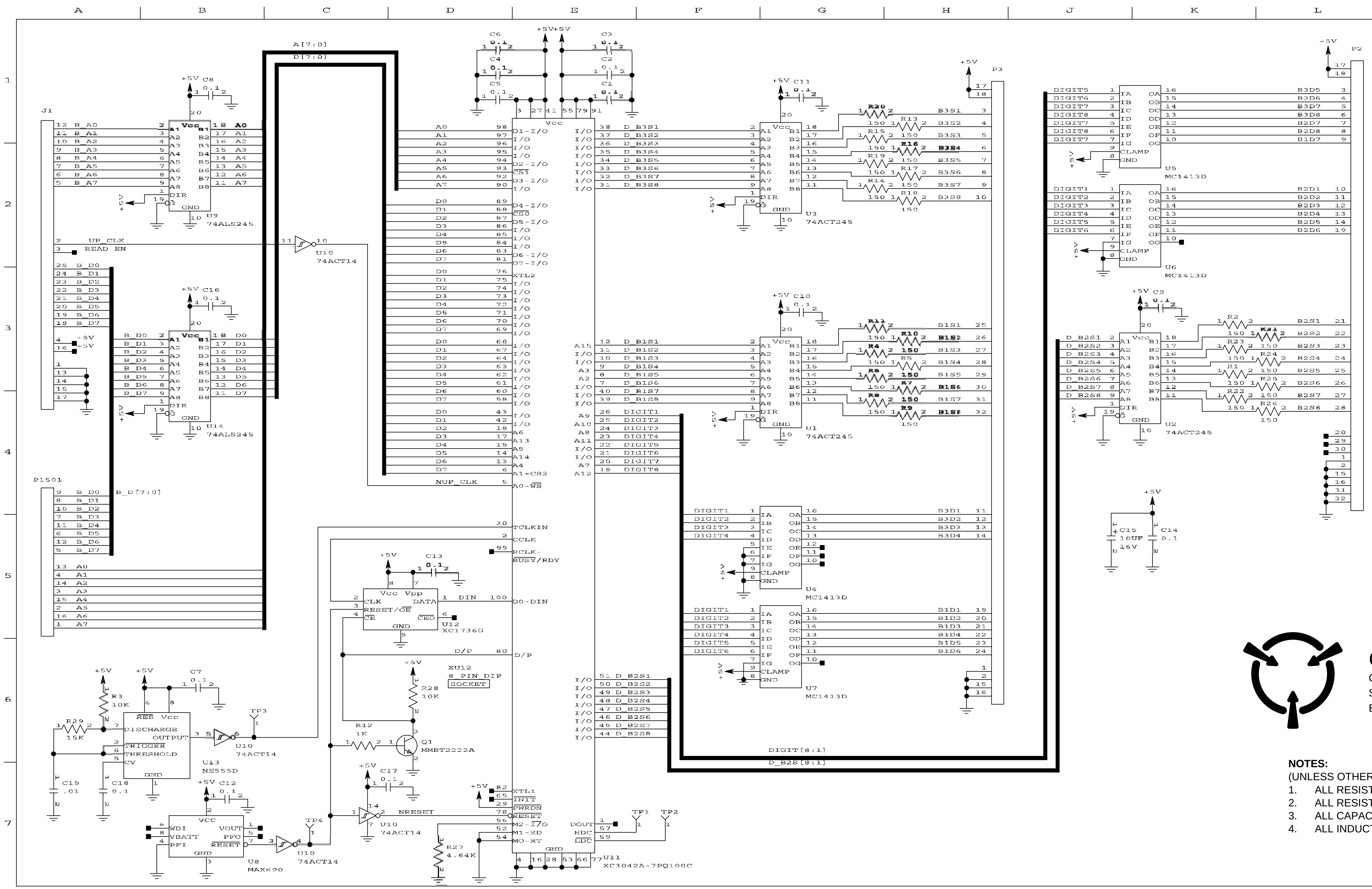
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS DRAWING CARRIES SERIES: 1400 (i.e., R1 IS R1401).

7533800

(7010-7533-800-D1)

Front Panel Assembly (18 of 21)
Display Logic PC Board Assembly
Figure 86

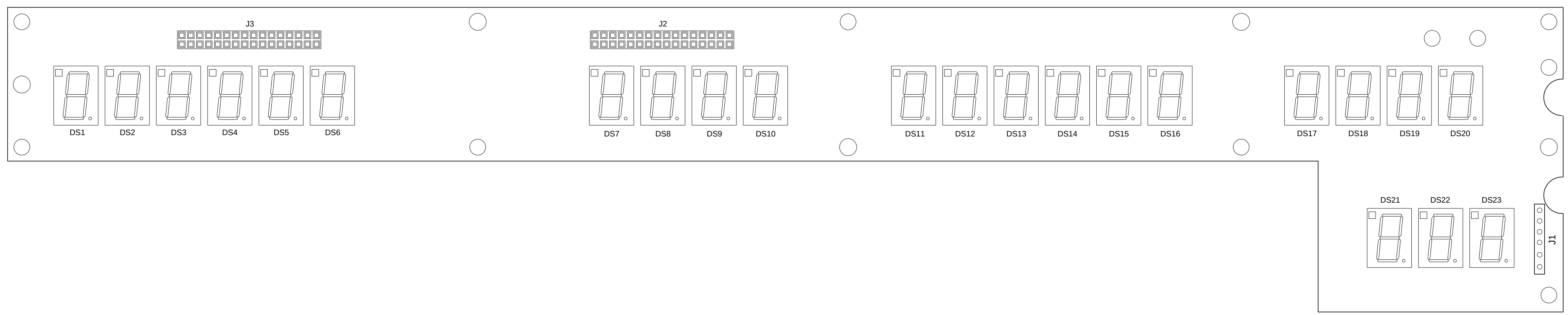


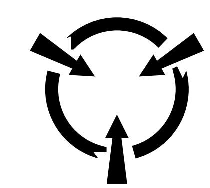
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL RESISTORS ARE 1%, 1/8 W.
2. ALL RESISTANCE IS EXPRESSED IN OHMS.
3. ALL CAPACITANCE IS EXPRESSED IN MICROFARADS.
4. ALL INDUCTANCE IS EXPRESSED IN MICROHENRIES.

(0000-7533-800-C)

Front Panel Assembly (19 of 21)
Display Logic PC Board Assembly Circuit Schematic
Figure 86





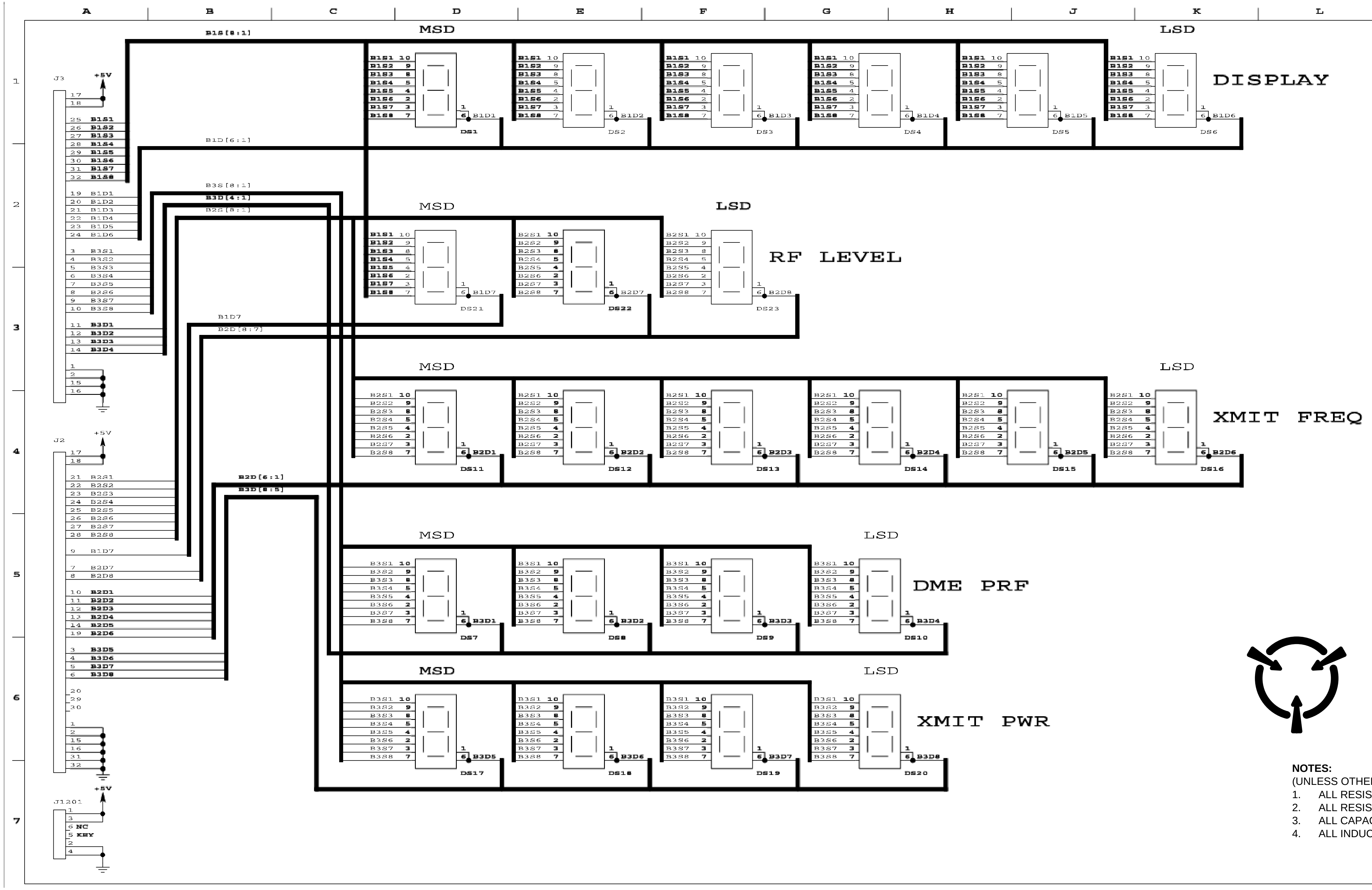
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS DRAWING CARRIES SERIES: 1300 (i.e., DS1 IS DS1301).

7533700

(7010-7533-700-B1)

Front Panel Assembly (20 of 21)
Display PC Board Assembly
Figure 86

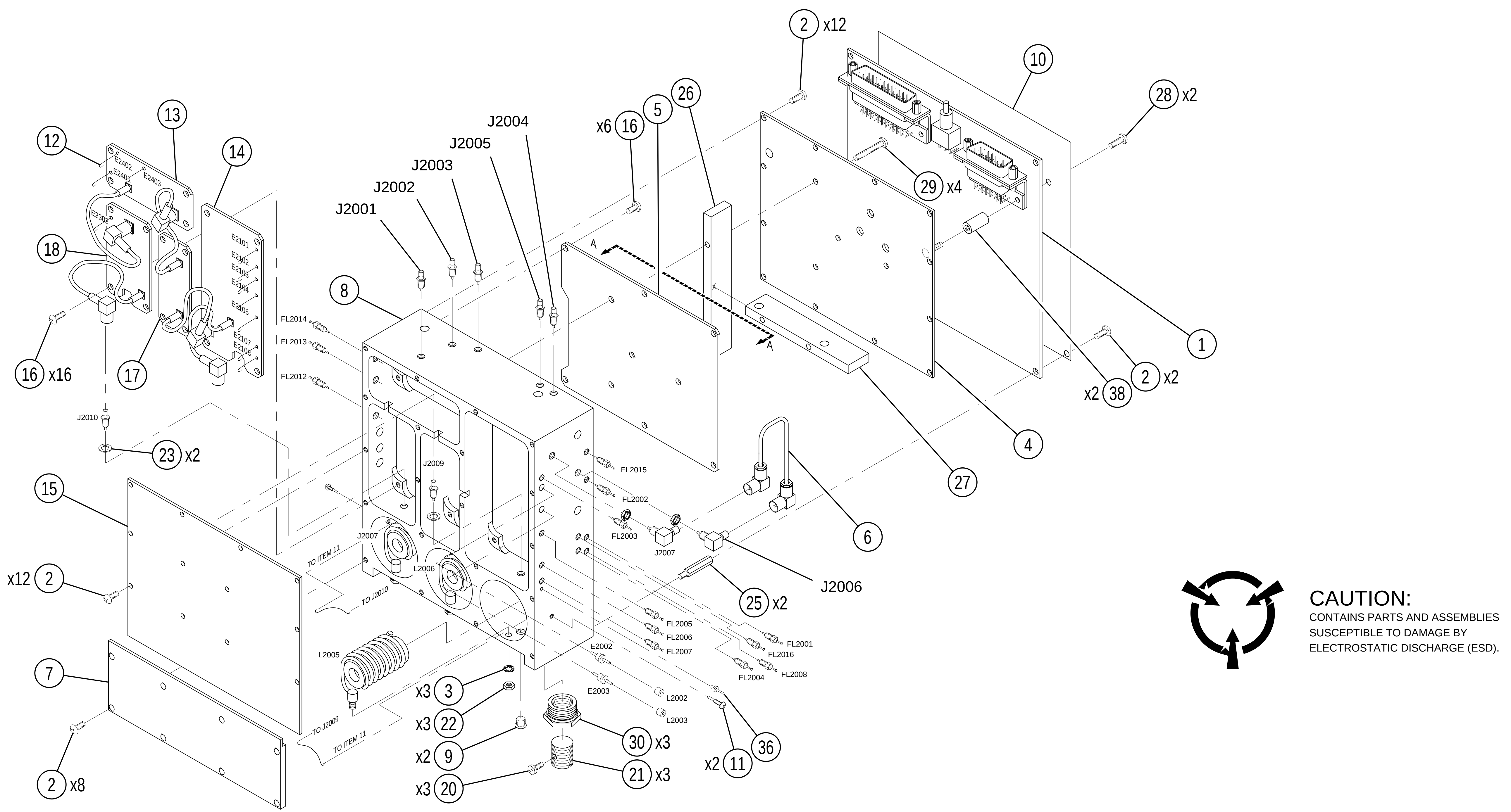


CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL RESISTORS ARE 1%, 1/8 W.
2. ALL RESISTANCE IS EXPRESSED IN OHMS.
3. ALL CAPACITANCE IS EXPRESSED IN MICROFARADS.
4. ALL INDUCTANCE IS EXPRESSED IN MICROHENRIES.

(0000-7533-700-B)

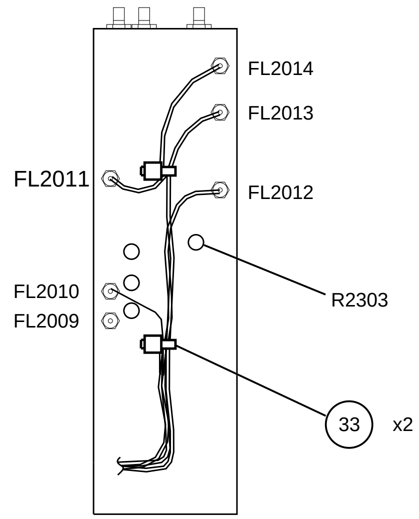
Front Panel Assembly (21 of 21)
Display PC Board Assembly Circuit Schematic
Figure 86



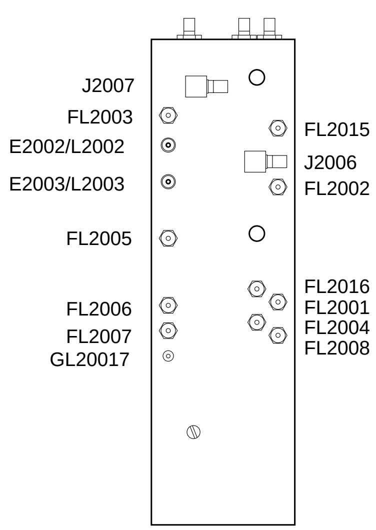
7543000M

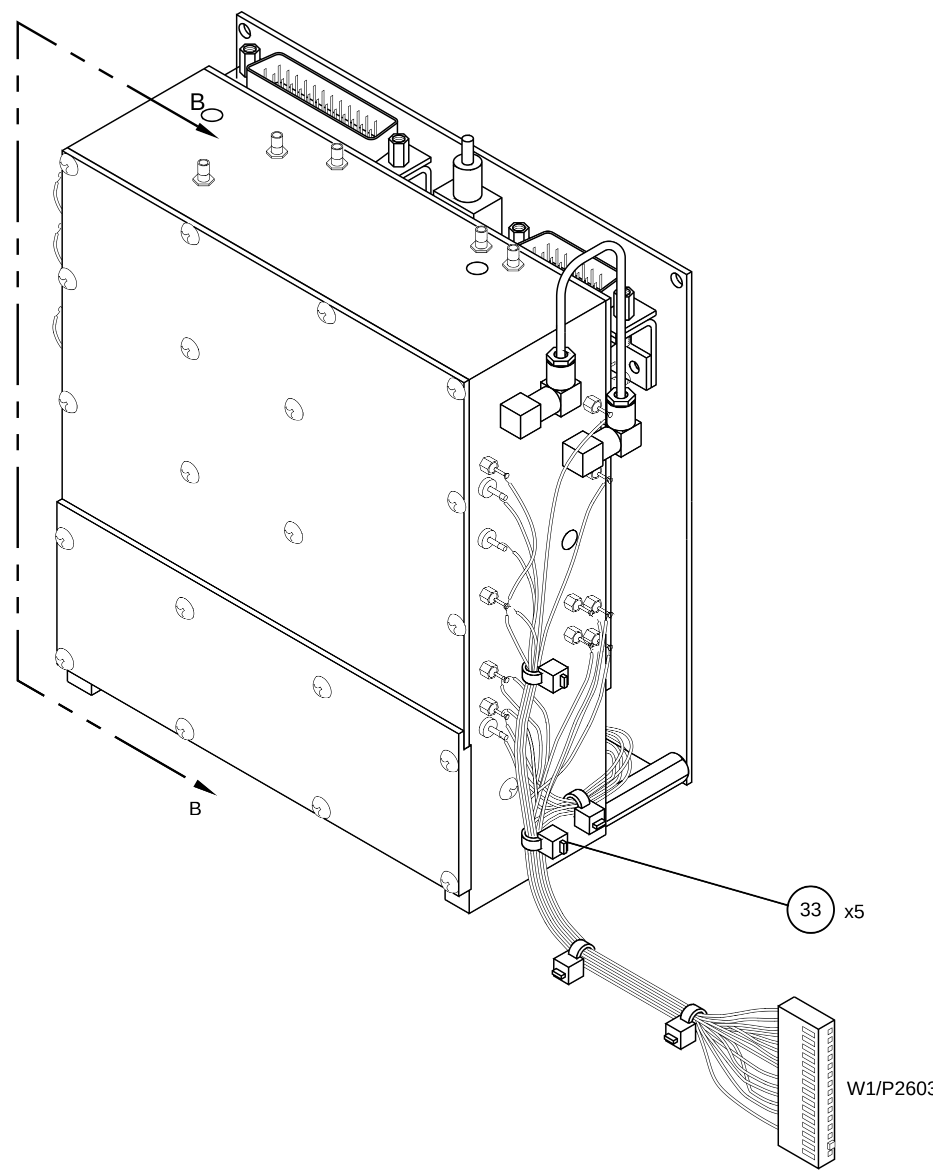
(7005-7549-000-E)

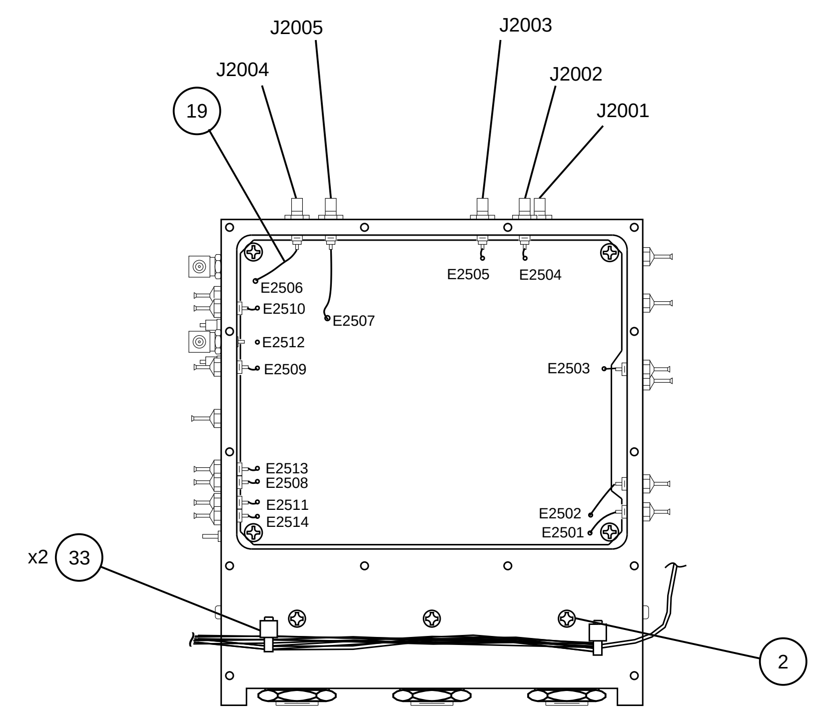
200 MHz Generator Assembly (1 of 20)
Figure 87



VIEW B-B





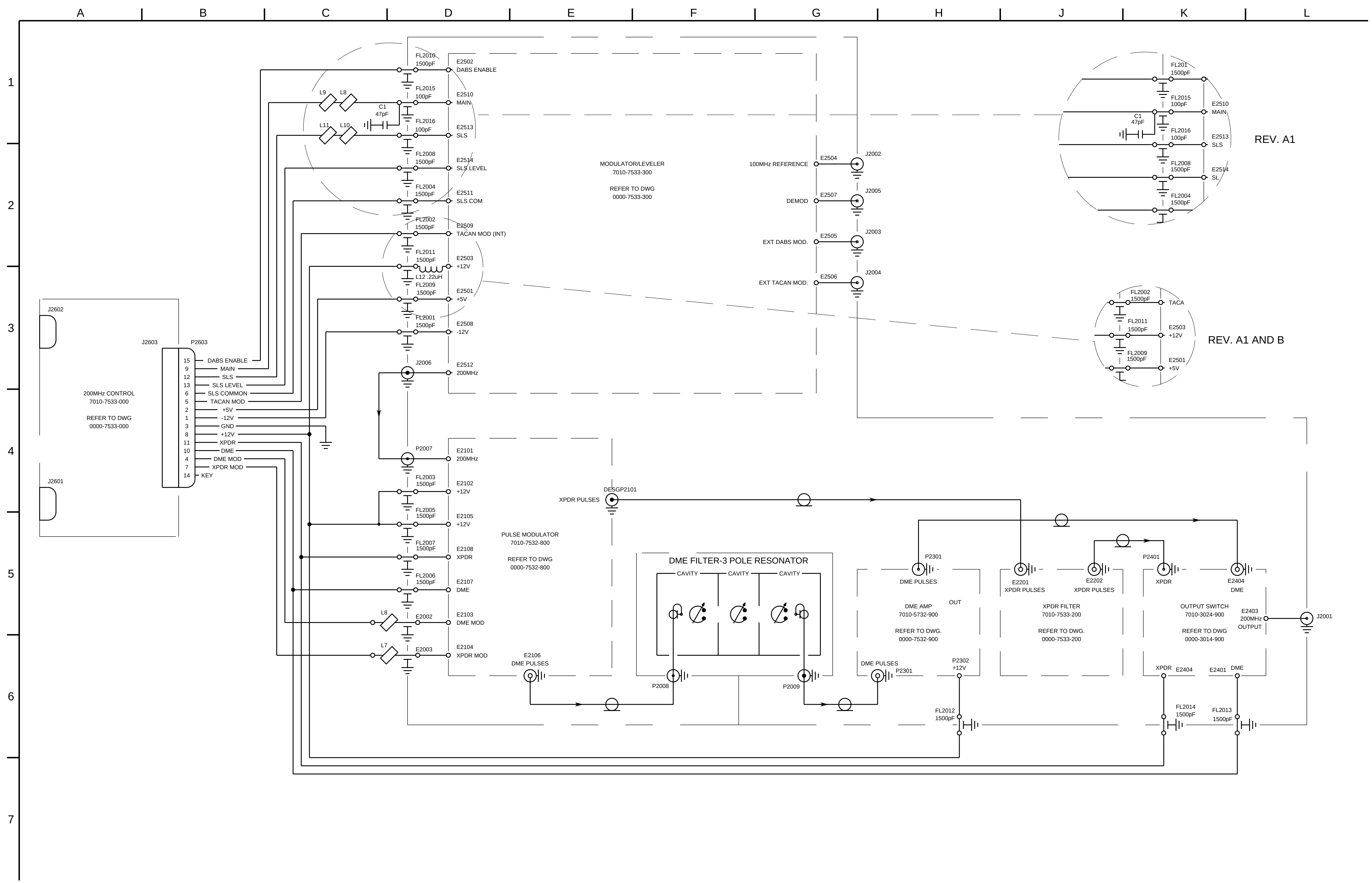


VIEW A-A

7543001M

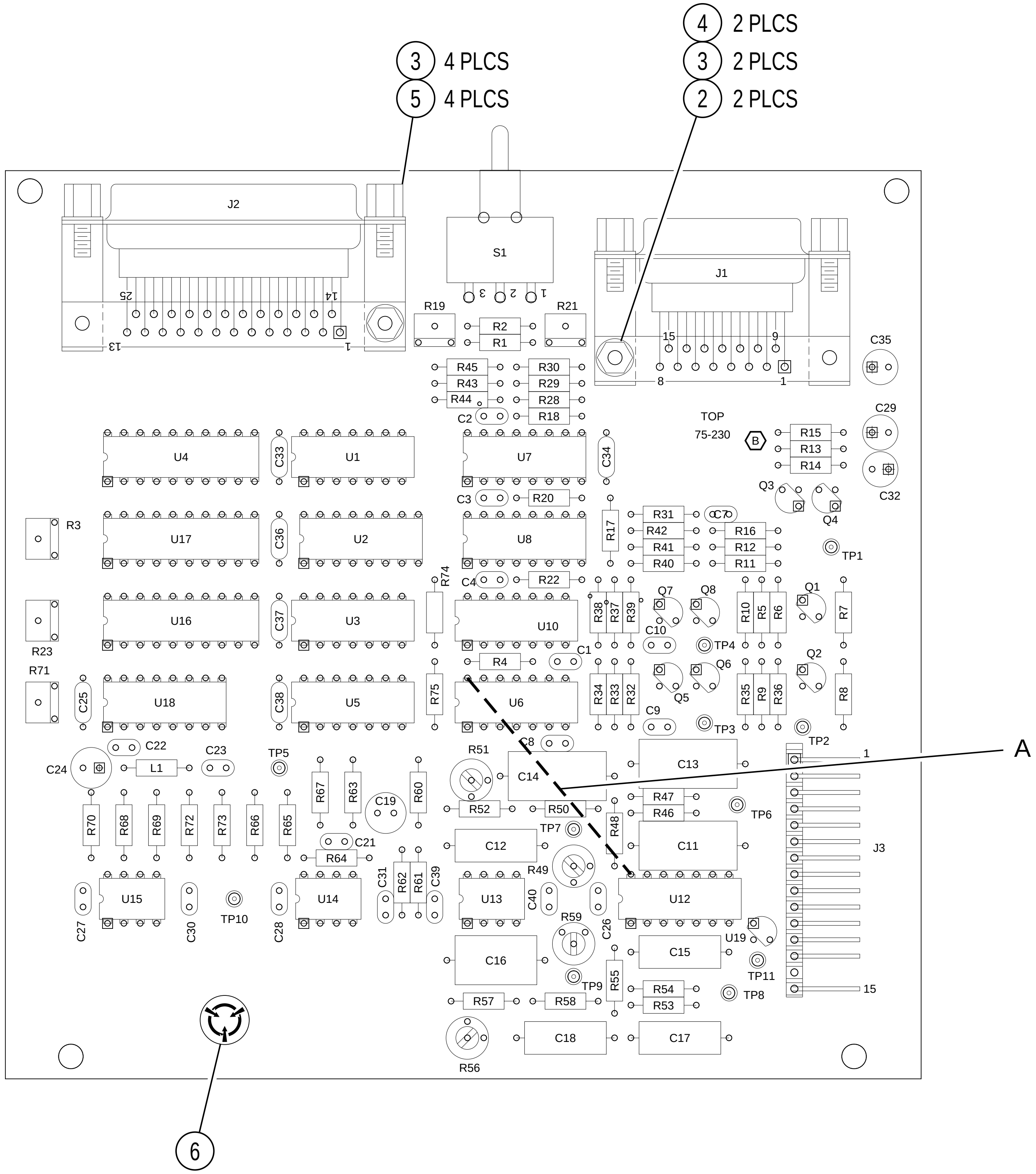
(7005-7549-000-E)

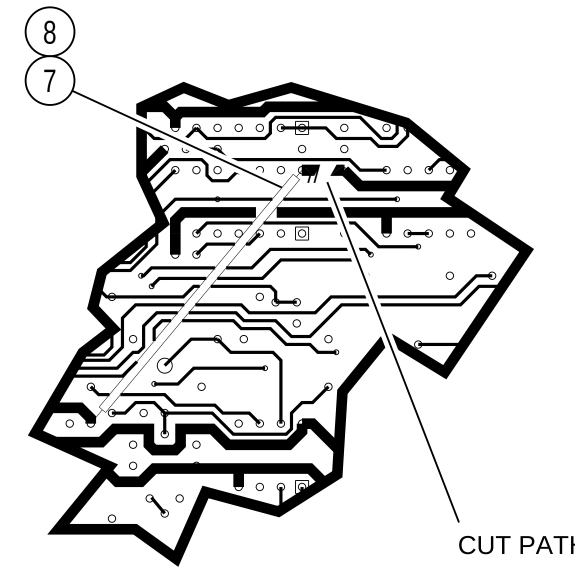
200 MHz Generator Assembly (2 of 20)
Figure 87



(0000-7543-000-C)

200 MHz Generator Assembly (3 of 20)
200 MHz Generator Assembly Interconnect Diagram
Figure 87





DETAIL A

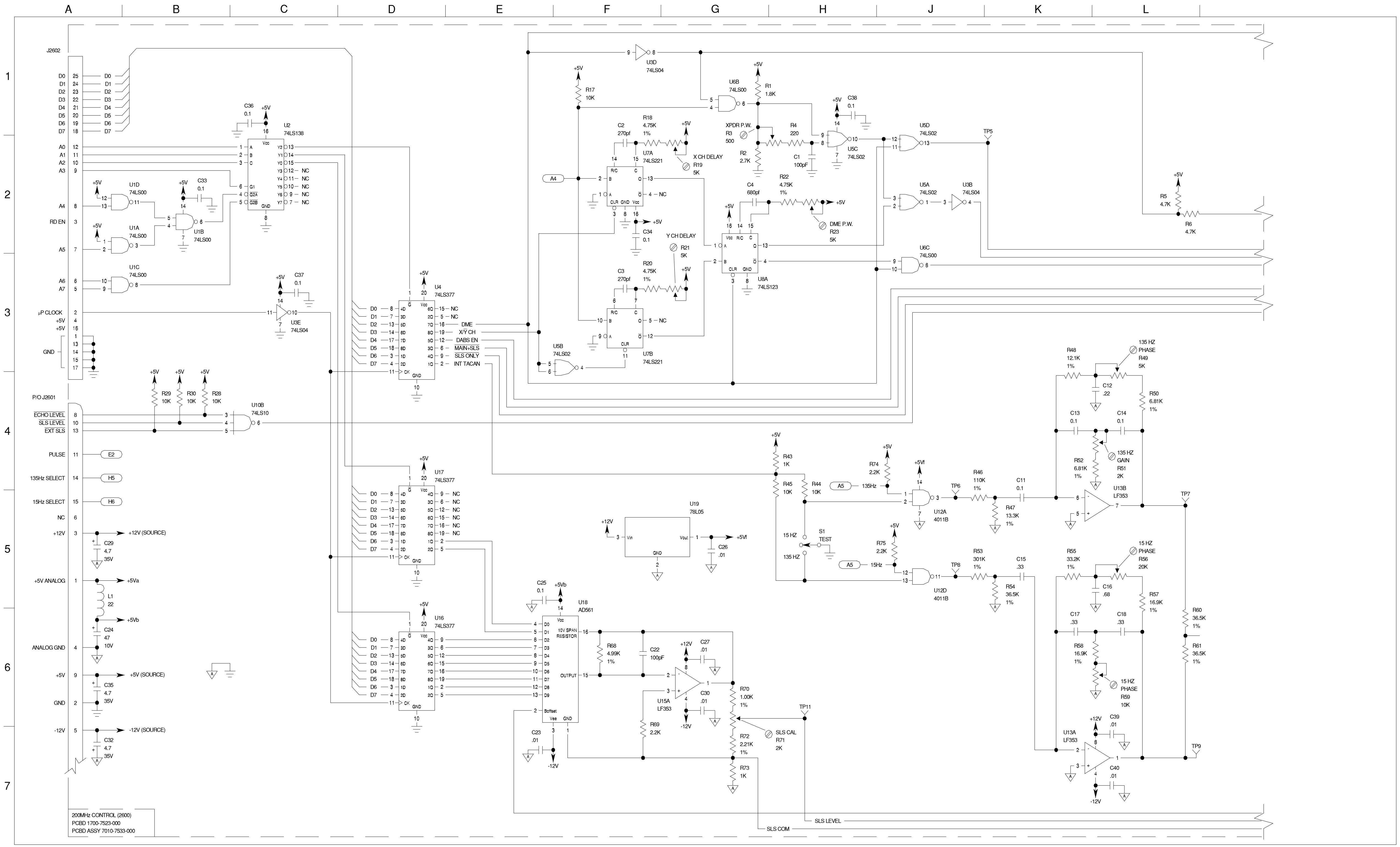
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS DRAWING CARRIES SERIES: 2600 (i.e., R1 IS R2601).

7533000P

(7010-7533-000-B3)

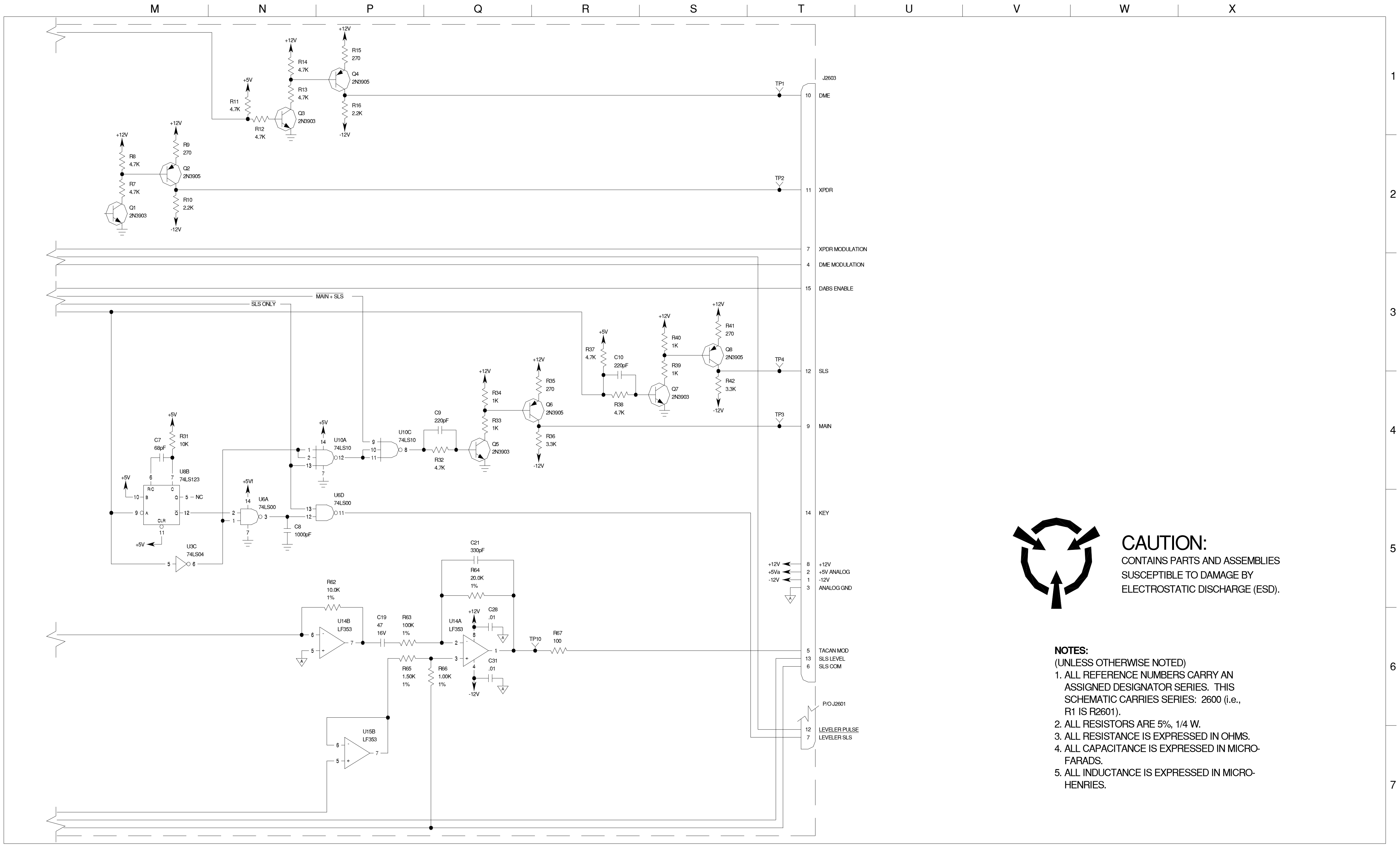
200 MHz Generator Assembly (4 of 20)
200 MHz Control PC Board Assembly
Figure 87



0751819S

(0000-7533-000-B2)

200 MHz Generator Assembly (5 of 20)
200 MHz Control PC Board Assembly Circuit Schematic
Figure 87



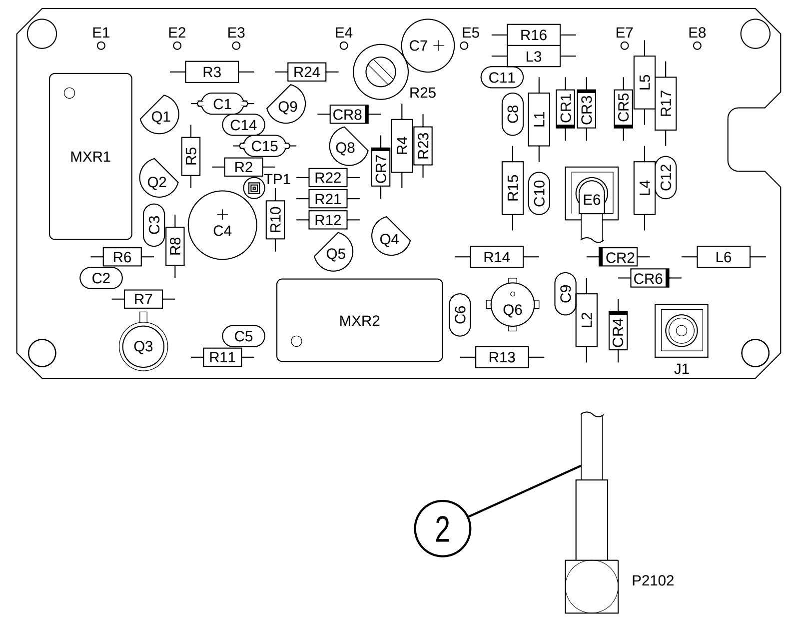
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

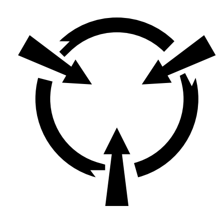
NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS SCHEMATIC CARRIES SERIES: 2600 (i.e., R1 IS R2601).
2. ALL RESISTORS ARE 5%, 1/4 W.
3. ALL RESISTANCE IS EXPRESSED IN OHMS.
4. ALL CAPACITANCE IS EXPRESSED IN MICRO-FARADS.
5. ALL INDUCTANCE IS EXPRESSED IN MICRO-HENRIES.

0751820S

(0000-7533-000-B2)

200 MHz Generator Assembly (6 of 20)
200 MHz Control PC Board Assembly Circuit Schematic
Figure 87





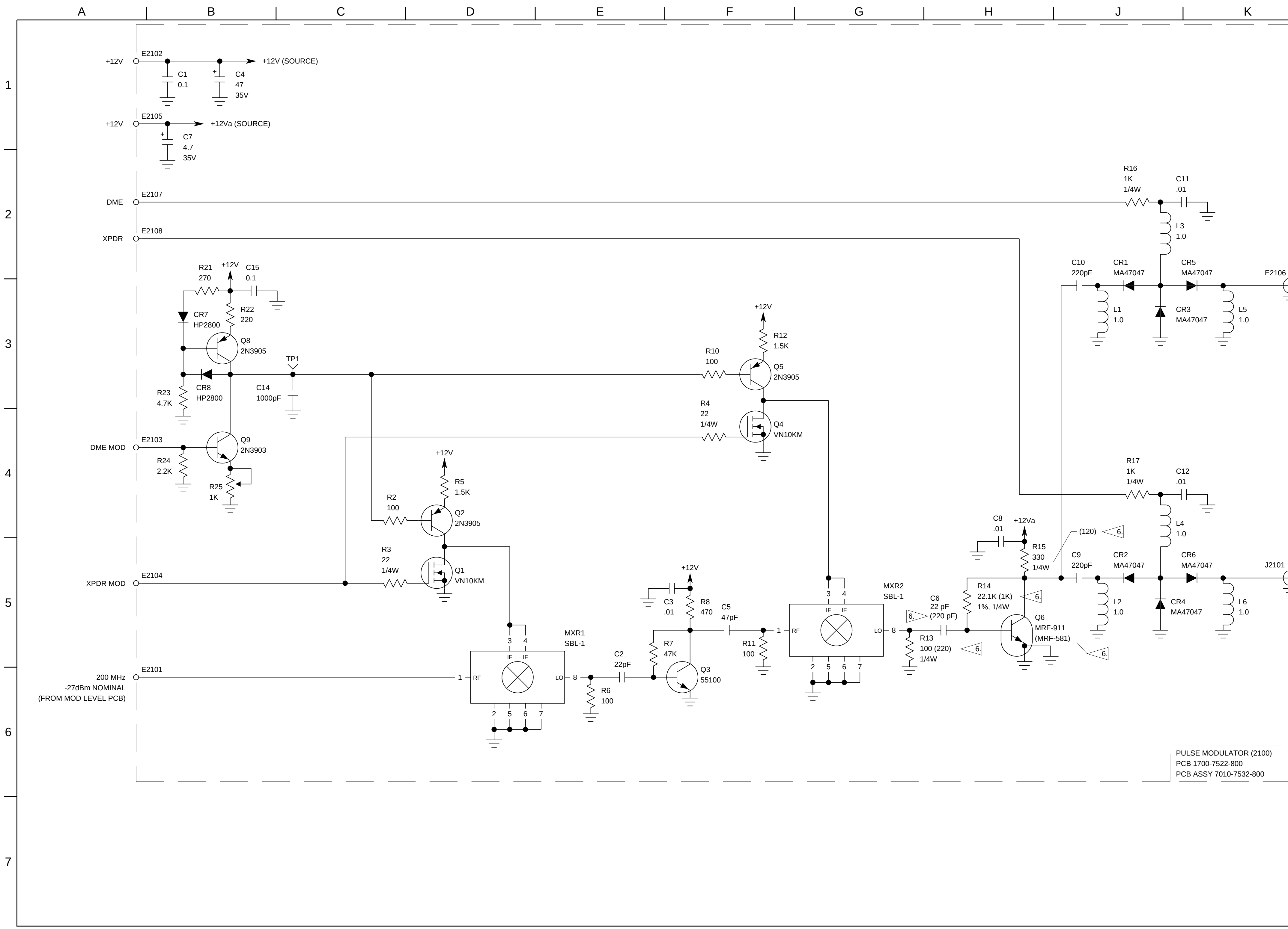
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS DRAWING CARRIES SERIES: 2100 (i.e., R1 IS R2101).

7532800P

(7010-7532-800-B)

200 MHz Generator Assembly (7 of 20)
Pulse Modulator PC Board Assembly
Figure 87



CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)

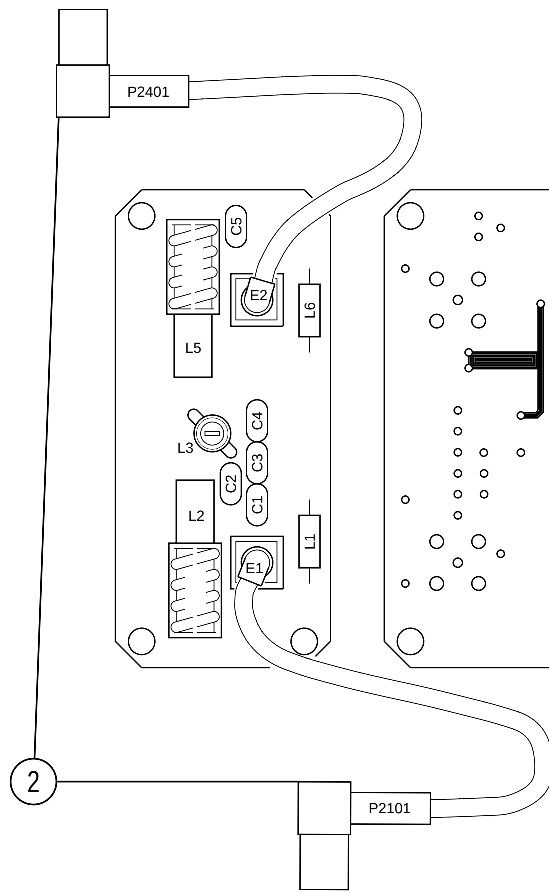
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS SCHEMATIC CARRIES SERIES: 2100 (i.e., R2 IS 2102).
2. ALL RESISTORS ARE 5%, 1/8 W.
3. ALL RESISTANCE IS EXPRESSED IN OHMS.
4. ALL CAPACITANCE IS EXPRESSED IN MICRO-FARADS.
5. ALL INDUCTANCE IS EXPRESSED IN MICRO-HENRIES.

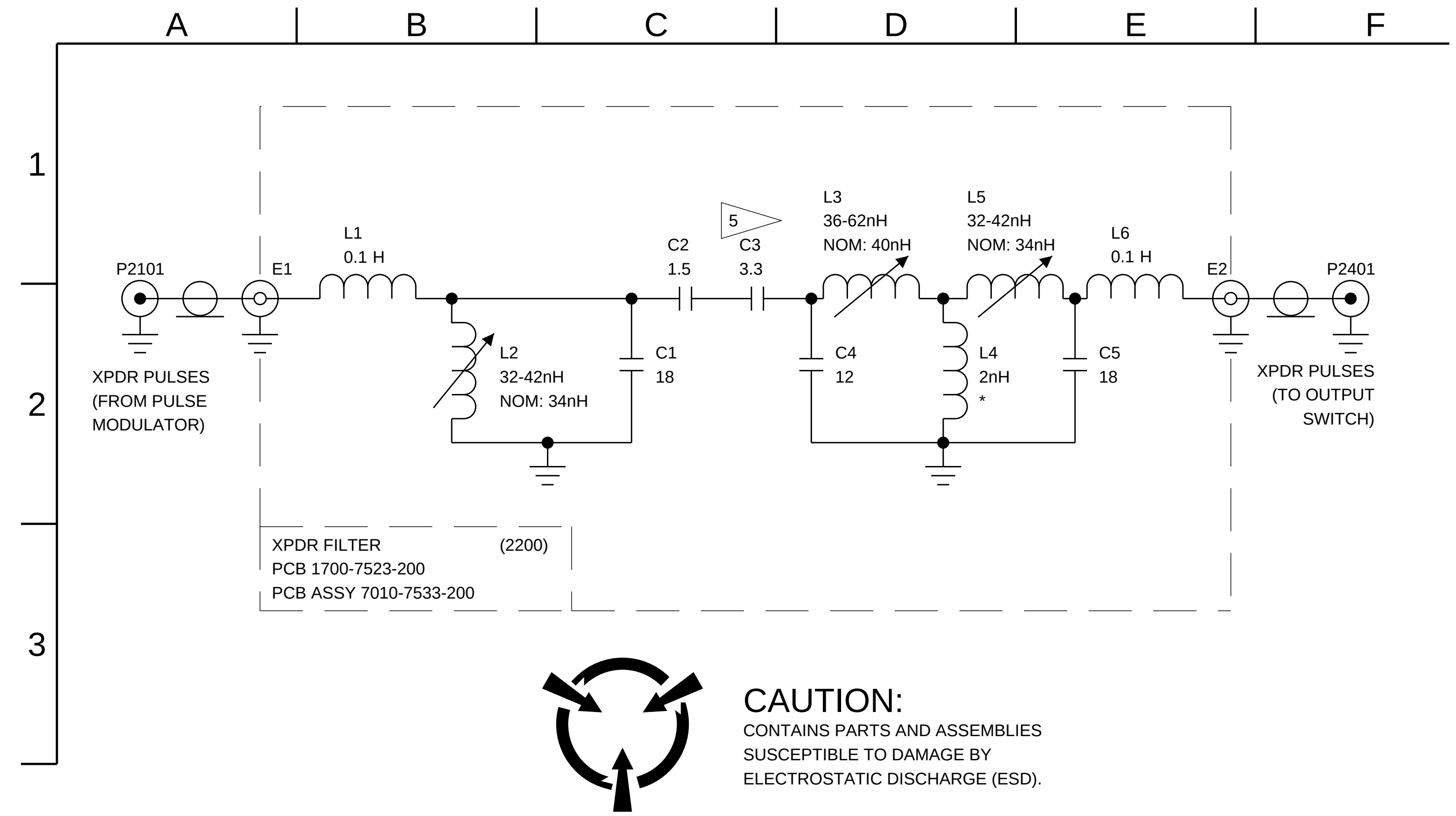
6. WITH SLS MODIFICATION.

0751814S

(0000-7532-800-B)

200 MHz Generator Assembly (8 of 20)
Pulse Modulator PC Board Assembly Circuit Schematic
Figure 87





CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THESE DRAWINGS CARRY SERIES: 2200 (i.e., C1 IS C2201).
2. ALL CAPACITANCE IS EXPRESSED IN PICO-FARADS.
3. ALL INDUCTANCE IS EXPRESSED IN NANO-HENRIES.
4. NOT USED.
5. C3 IS SELECTED AT TEST. RANGE: 1.5-5.5pF NOMINAL: 3.3pF.

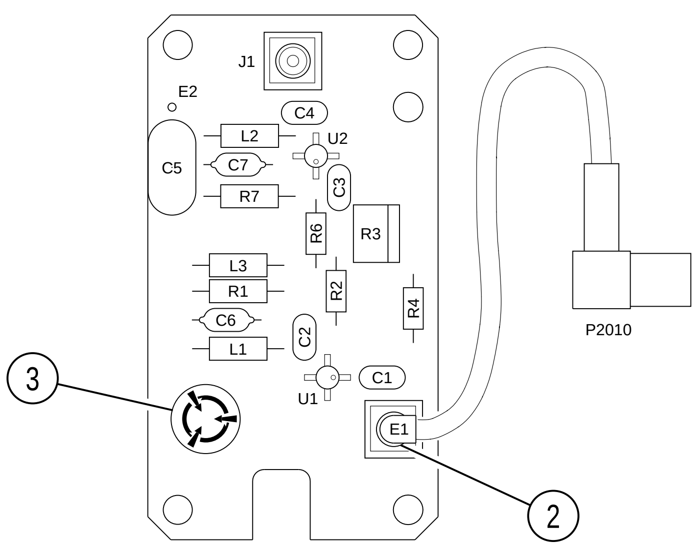
* - INDICATES PRINTED TRANSMISSION LINES OF OTHER THAN 50 OHMS IMPEDANCE WHICH CONSTITUTE CIRCUIT ELEMENTS. 50 OHM TRANSMISSION LINES ARE NOT SHOWN.

751815PS

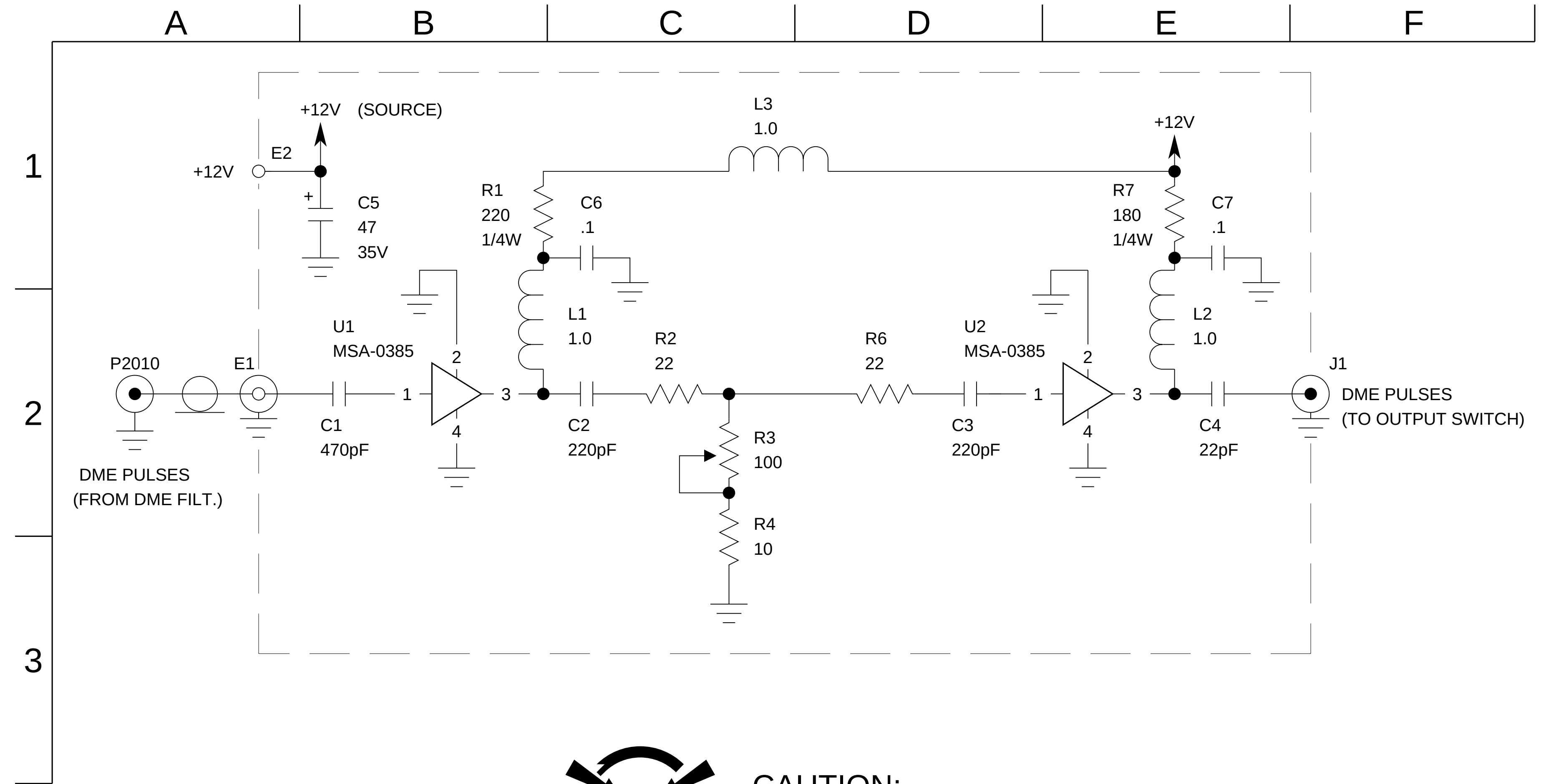
Transponder Filter PC Board Assembly (7010-7533-200-C)

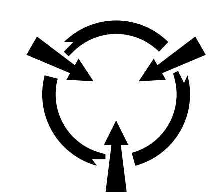
Transponder Filter PC Board Assembly Circuit Schematic (0000-7533-200-C)

200 MHz Generator Assembly (9 of 20)
Figure 87



DME Amp PC Board Assembly
(7010-7532-900-B2)





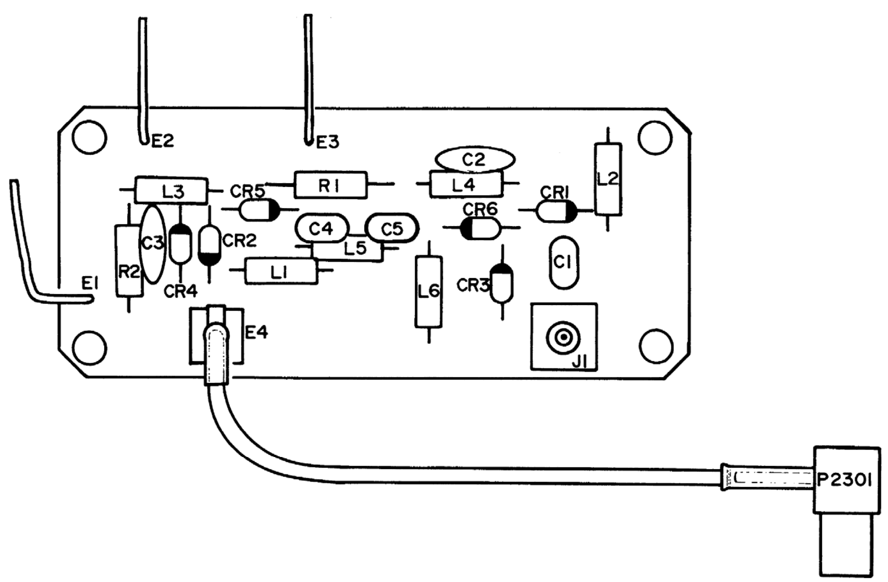
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THESE DRAWINGS CARRY SERIES: 2300 (i.e., R1 IS R2301).
2. ALL RESISTORS ARE 5%, 1/8 W.
3. ALL RESISTANCE IS EXPRESSED IN OHMS.
4. ALL CAPACITANCE IS EXPRESSED IN PICO-FARADS.
5. ALL INDUCTANCE IS EXPRESSED IN MICRO-HENRIES.

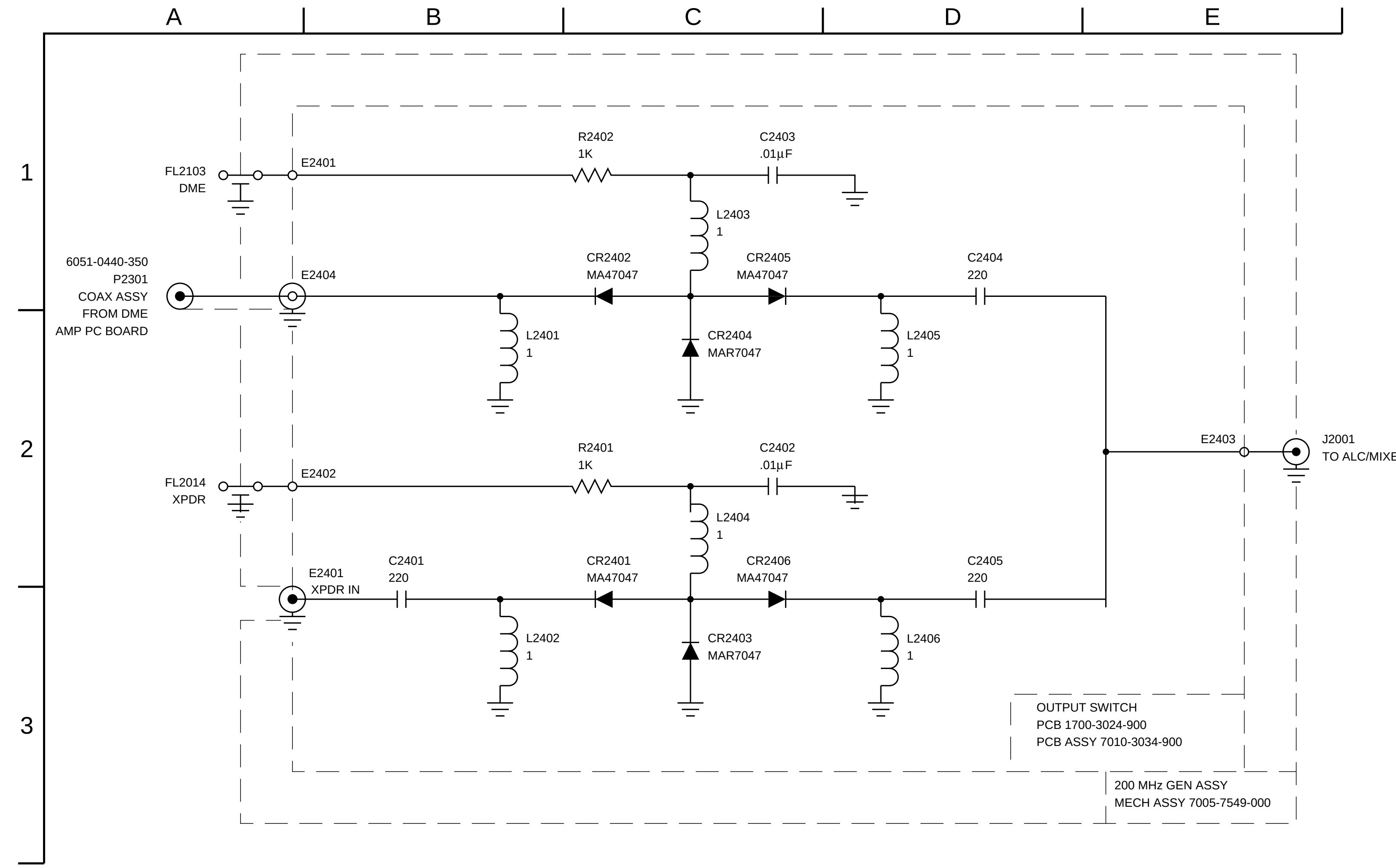
751816PS

DME Amp PC Board Assembly Circuit Schematic
(0000-7532-900-B2)

200 MHz Generator Assembly (10 of 20)
Figure 87



Output Switch PC Board Assembly
(7010-8034-900-A1)



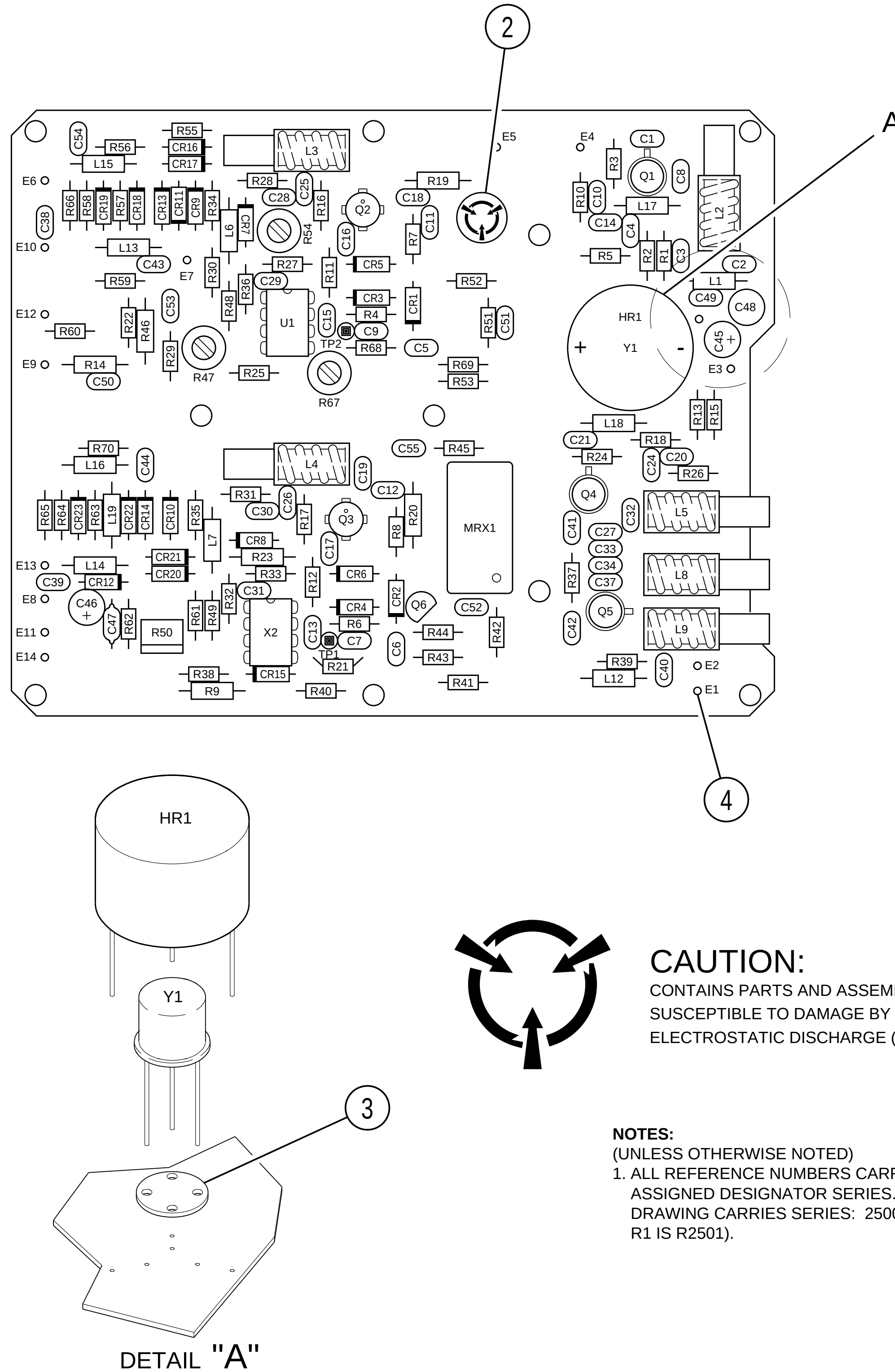
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

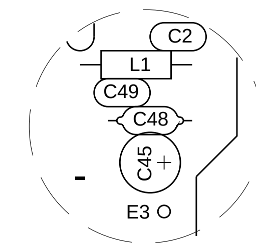
NOTES:
(UNLESS OTHERWISE SPECIFIED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THESE DRAWINGS CARRY SERIES:
   A. 2000 FOR MECH ASSY (i.e., J1 IS J2001).
   B. 2400 FOR PCB ASSY (i.e., L1 IS L2401).
2. ALL RESISTORS ARE 5%, 1/4W.
3. ALL RESISTANCE IS EXPRESSED IN OHMS.
4. ALL CAPACITANCE IS EXPRESSED IN PICO-FARADS.
5. ALL INDUCTANCE IS EXPRESSED IN MICRO-HENRYS.

0751840S

Output Switch PC Board Assembly Circuit Schematic
(0000-3014-900-A1)

200 MHz Generator Assembly (11 of 20)
Figure 87





REV. J

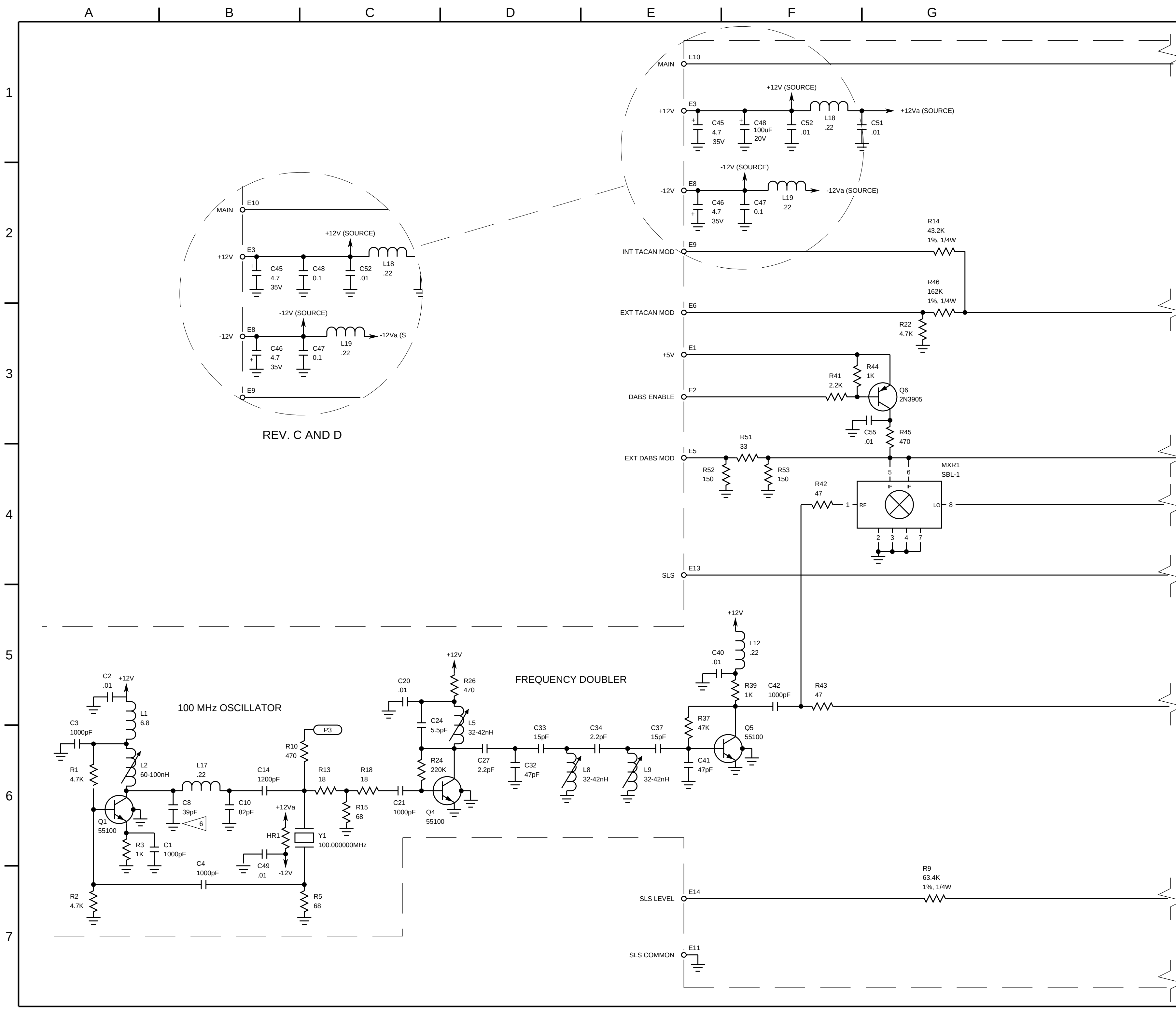
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS DRAWING CARRIES SERIES: 2500 (i.e., R1 IS R2501).

7533300P

(7010-7533-300-K)

200 MHz Generator Assembly (12 of 20)
Modulator/Leveler PC Board Assembly
Figure 87



CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)

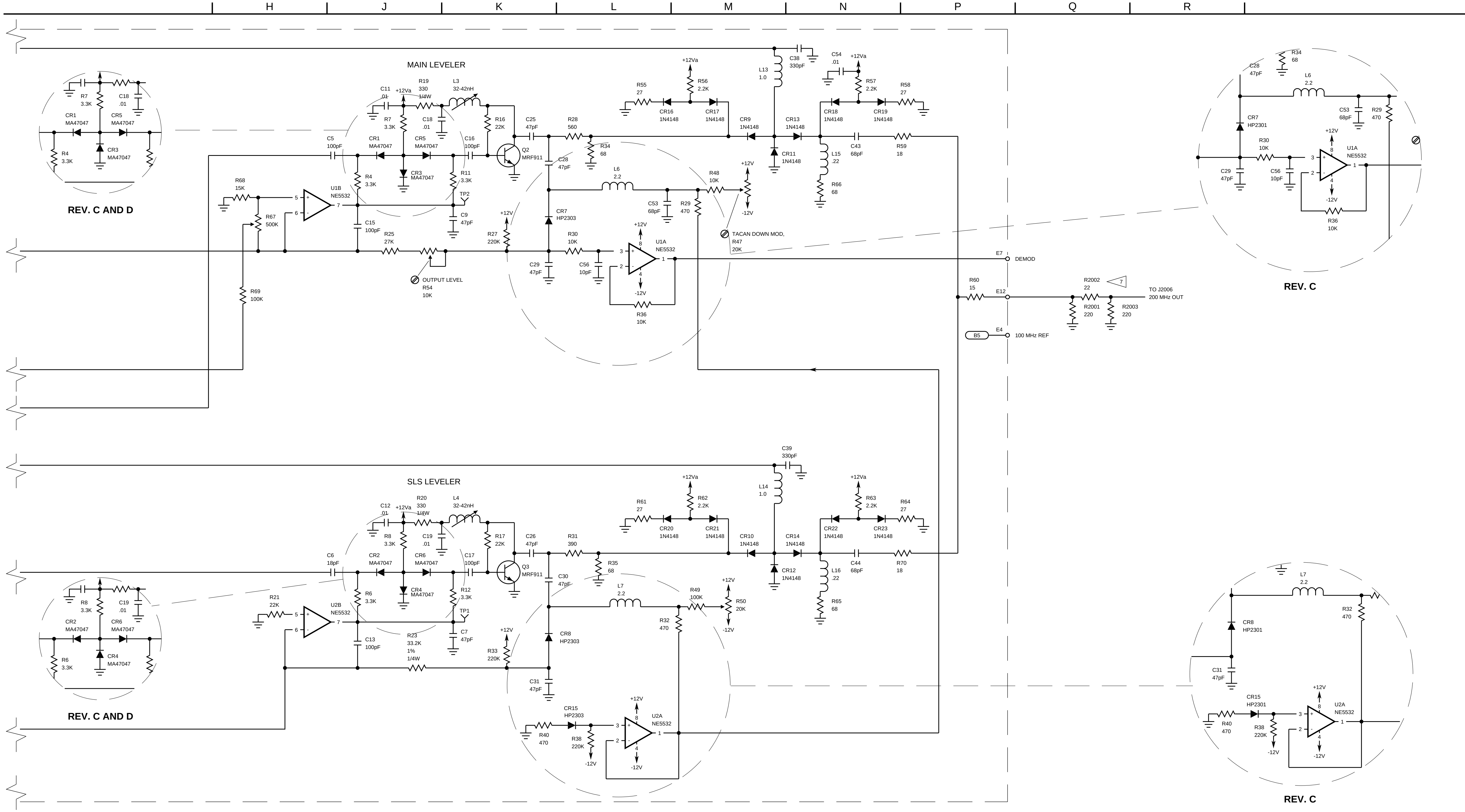
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS SCHEMATIC CARRIES SERIES: 2500 (i.e., R1 IS R2501).
2. ALL RESISTORS ARE 5%, 1/8 W.
3. ALL RESISTANCE IS EXPRESSED IN OHMS.
4. ALL CAPACITANCE IS EXPRESSED IN MICRO-FARADS.
5. ALL INDUCTANCE IS EXPRESSED IN MICRO-HENRIES.
6. C8 IS SELECTED AT TEST (SAT). NOMINAL VALUE IS 39pF. RANGE IS 27pF-56pF.
7. R2001, R2002, R2003, ARE SAT. CHANGE AS A GROUP TO FORM NEEDED ATTENUATION.

4db NOMINAL VALUES:	R2001 R2003	220 OHMS
	R2002	22 OHMS
2db SAT VALUES:	R2001 R2003	470 OHMS
	R2002	12 OHMS
3db SAT VALUES:	R2001 R2003	270 OHMS
	R2002	18 OHMS
5db SAT VALUES:	R2001 R2003	180 OHMS
	R2002	33 OHMS
6db SAT VALUES:	R2001 R2003	150 OHMS
	R2002	39 OHMS

0751817S

(0000-7533-300-F)

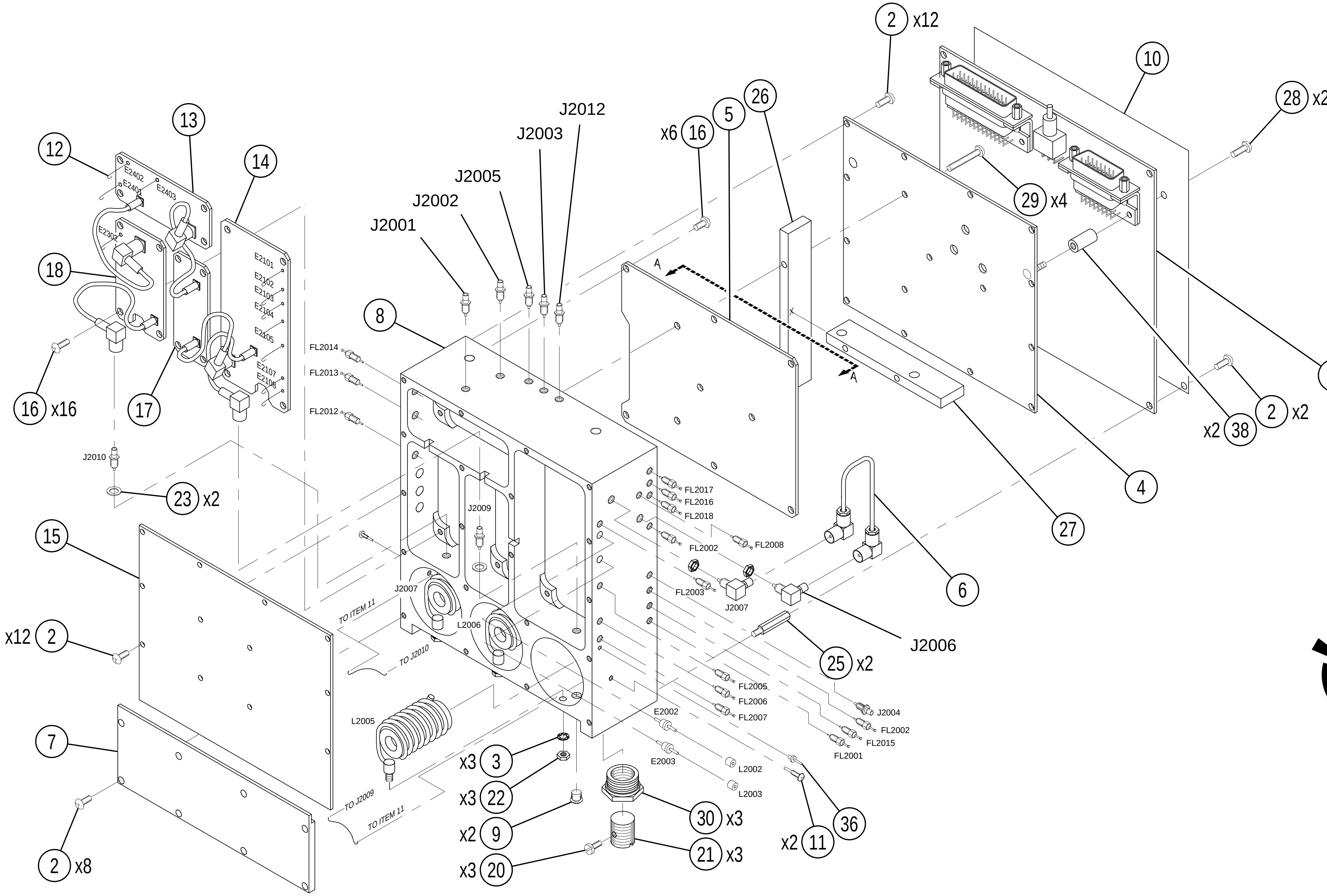
200 MHz Generator Assembly (13 of 20)
Modulator/Leveler PC Board Assembly Circuit Schematic
Figure 87

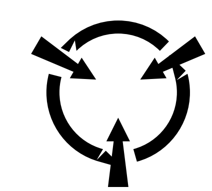


0751818S

(0000-7533-300-C)

200 MHz Generator Assembly (14 of 20)
Modulator/Leveler PC Board Assembly Circuit Schematic
Figure 87

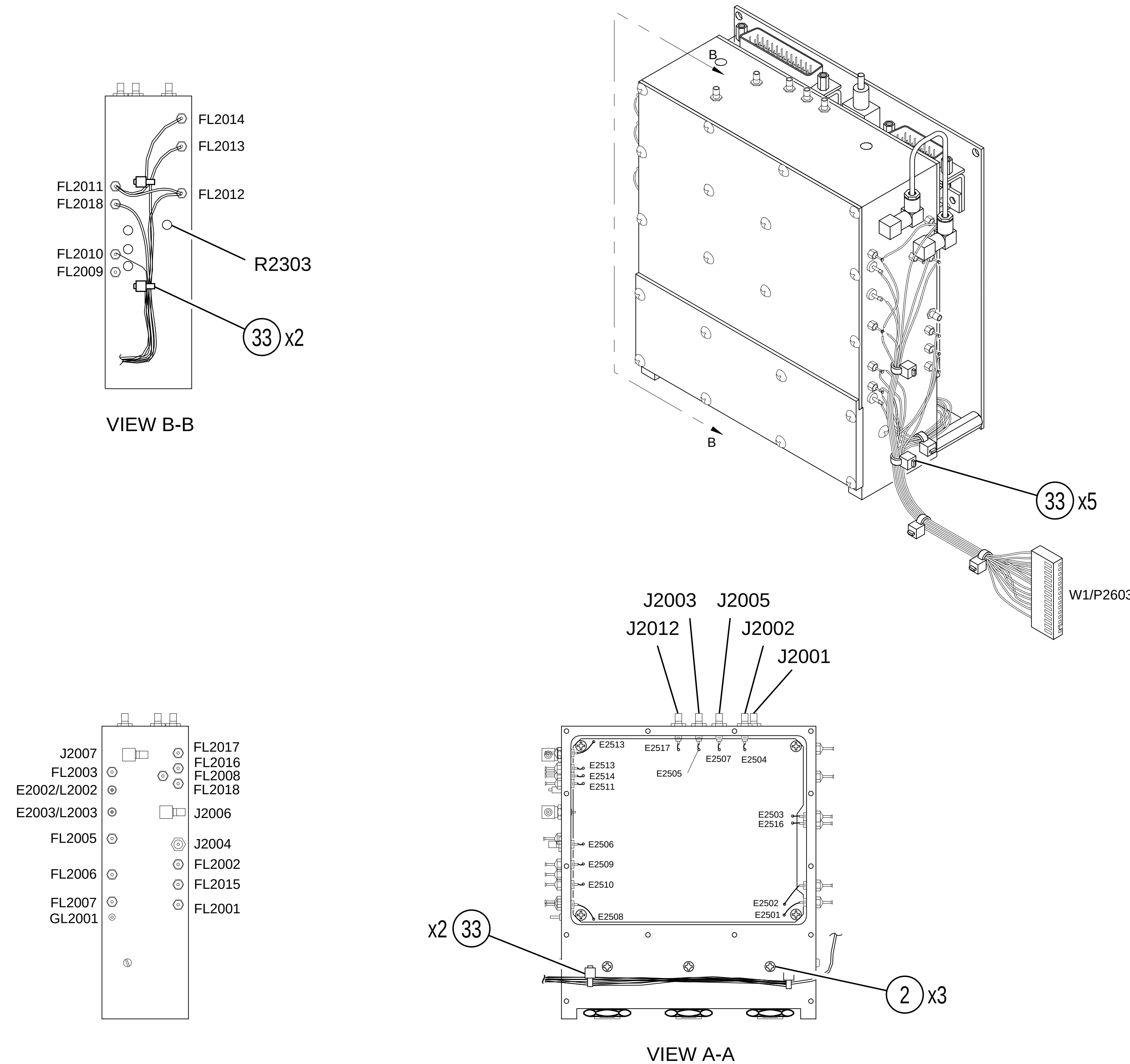




CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

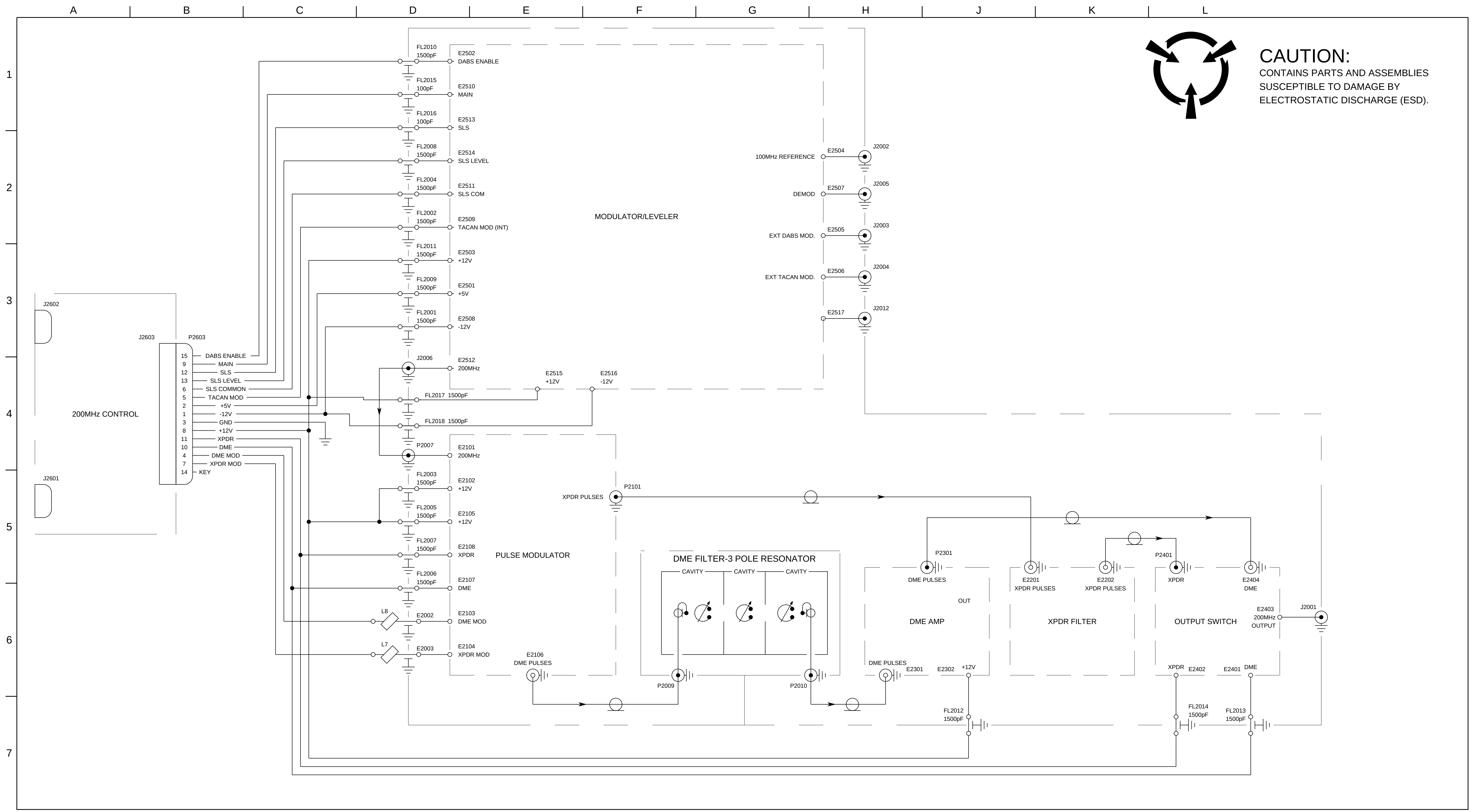
7541SLSM

200 MHz Generator Assembly (15 of 20)
(SLS Modification)
Figure 87

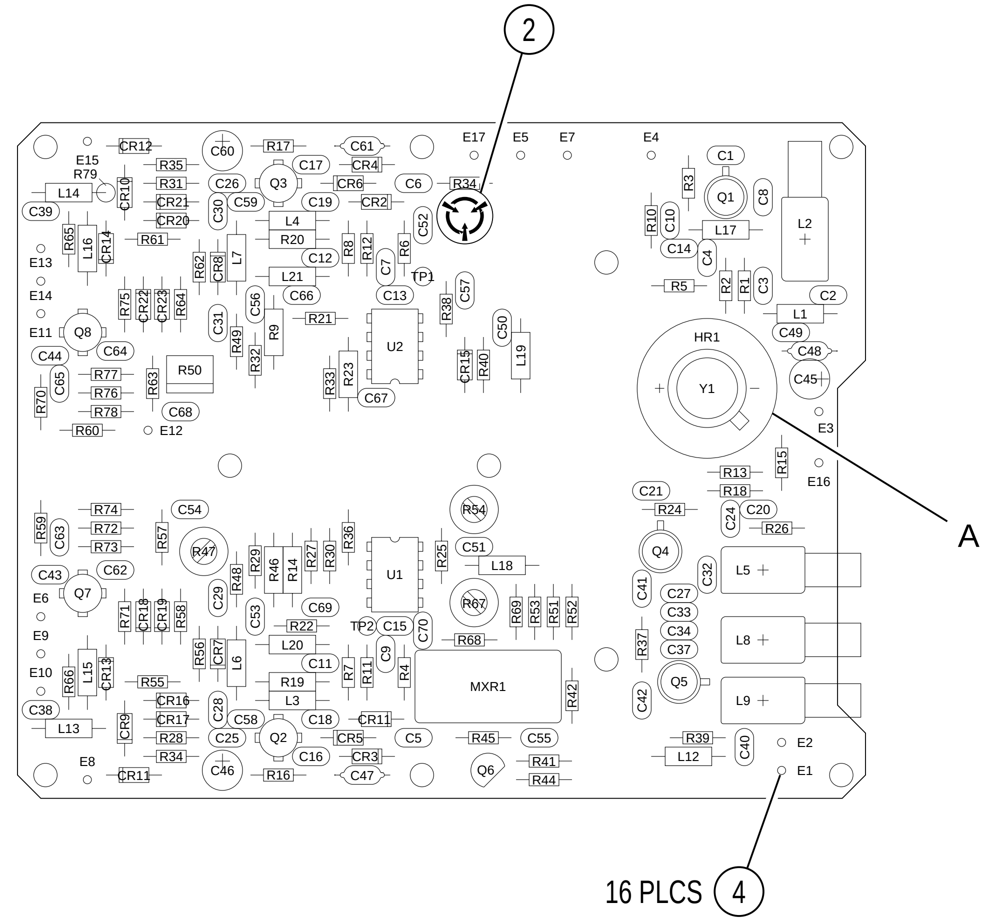


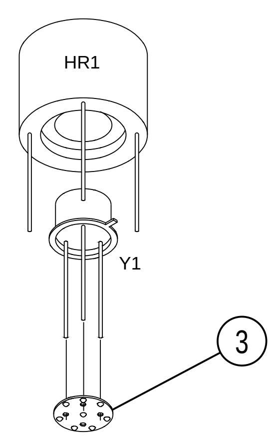
7542SLSM

200 MHz Generator Assembly (16 of 20)
(SLS Modification)
Figure 87



200 MHz Generator Assembly (17 of 20)
200 MHz Generator Assembly (SLS Modification) Interconnect Diagram
Figure 87





DETAIL A

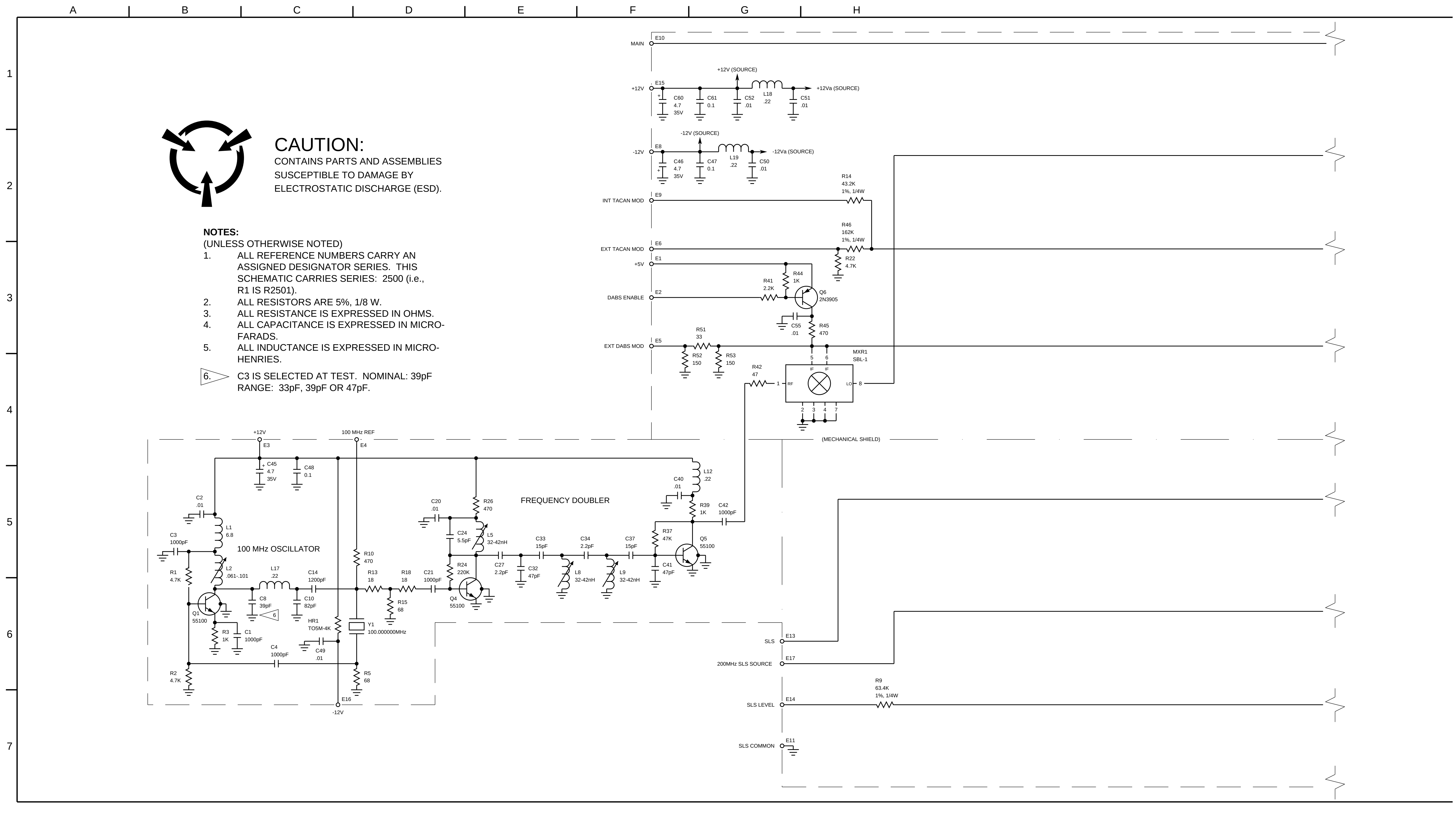
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS DRAWING CARRIES SERIES: 2500 (i.e., R1 IS R2501).

7533301P

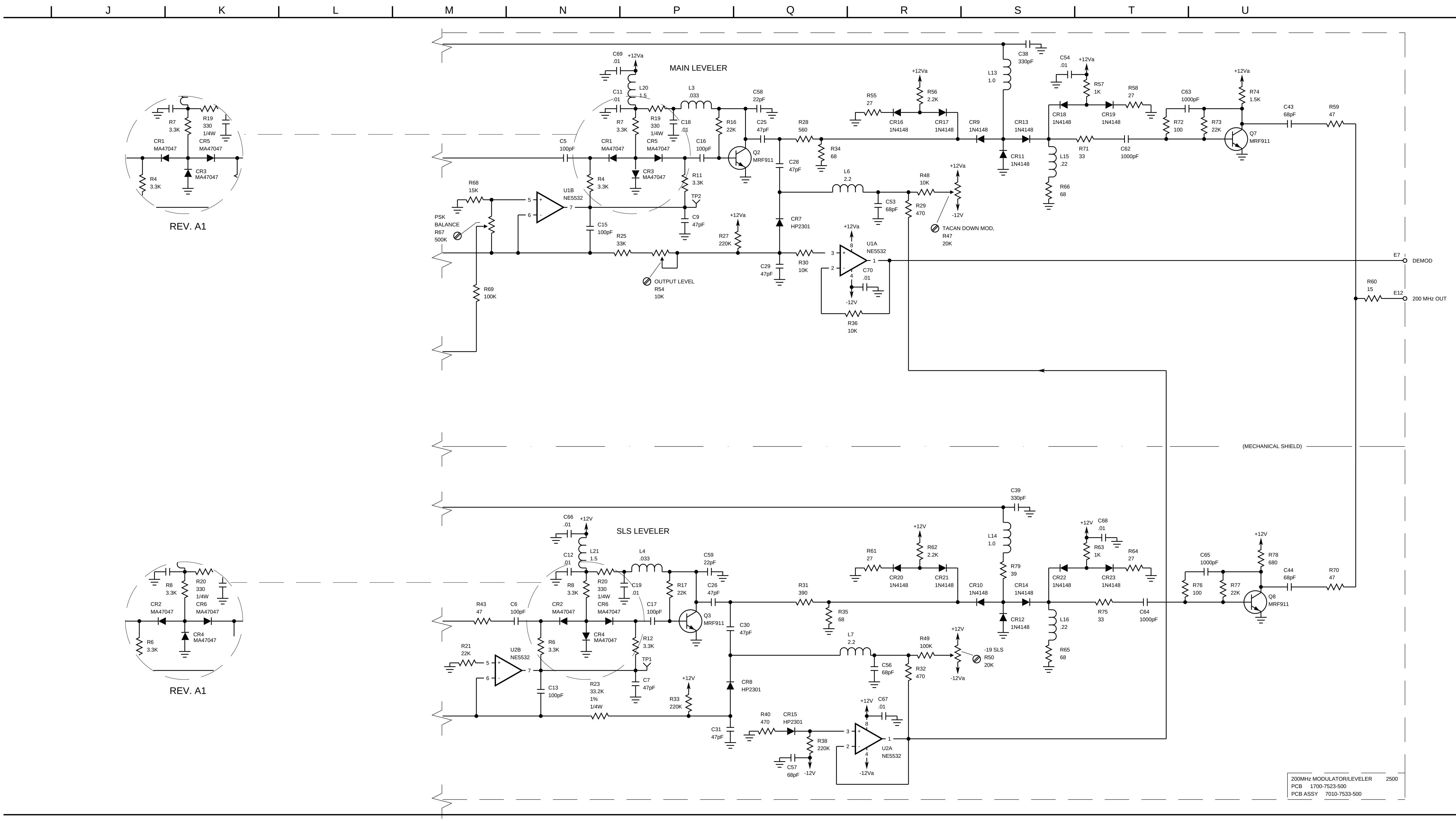
(7010-7533-500-B)

200 MHz Generator Assembly (18 of 20)
Modulator/Leveler PC Board Assembly (SLS Modification)
Figure 87



(0000-7533-500-A/A2)

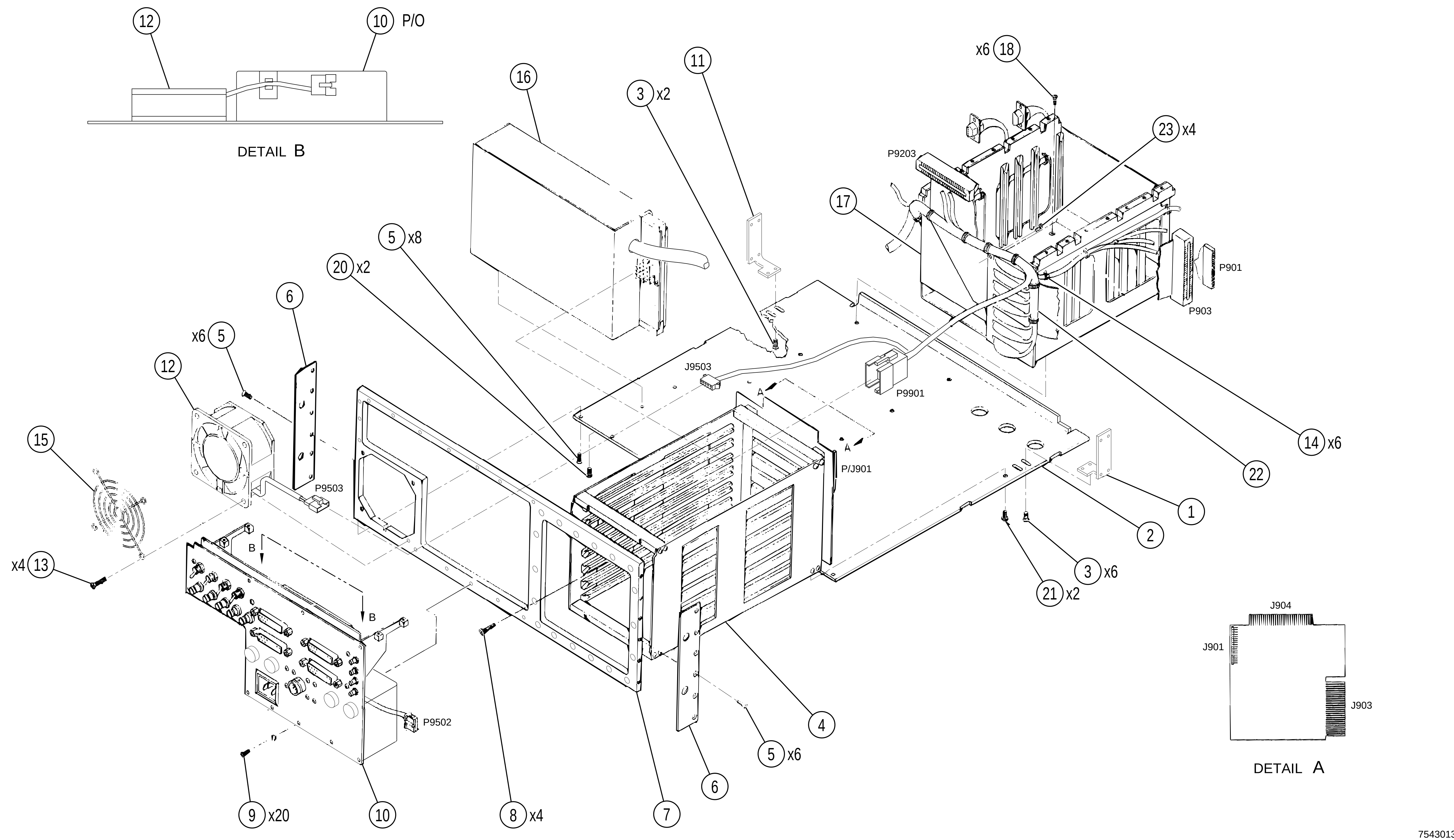
200 MHz Generator Assembly (19 of 20)
Modulator/Leveler PC Board Assembly (SLS Modification) Circuit Schematic
Figure 87



0751863S

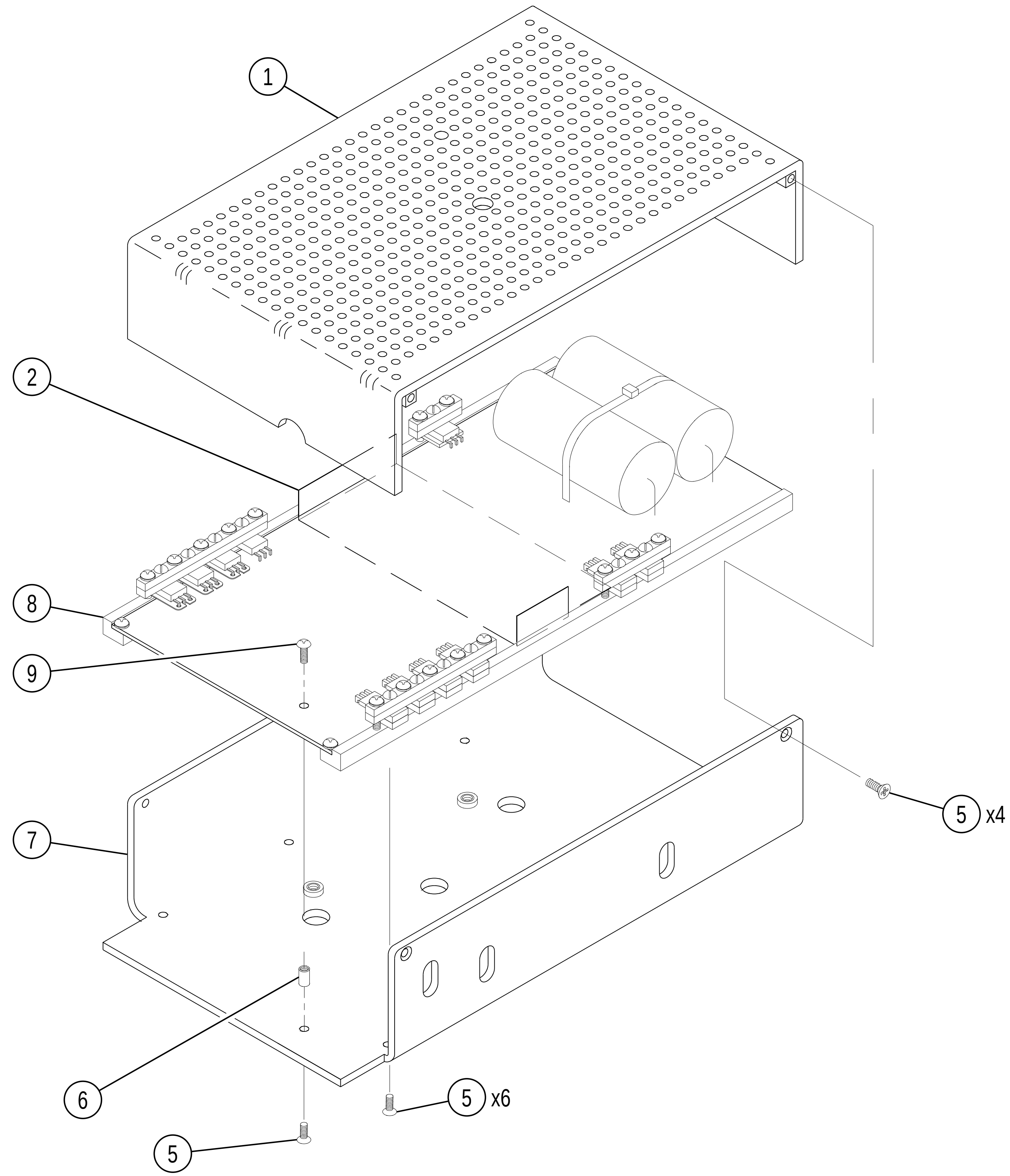
(0000-7533-500-A/A2)

200 MHz Generator Assembly (20 of 20)
Modulator/Leveler PC Board Assembly (SLS Modification) Circuit Schematic
Figure 87



(7005-7548-700-A)

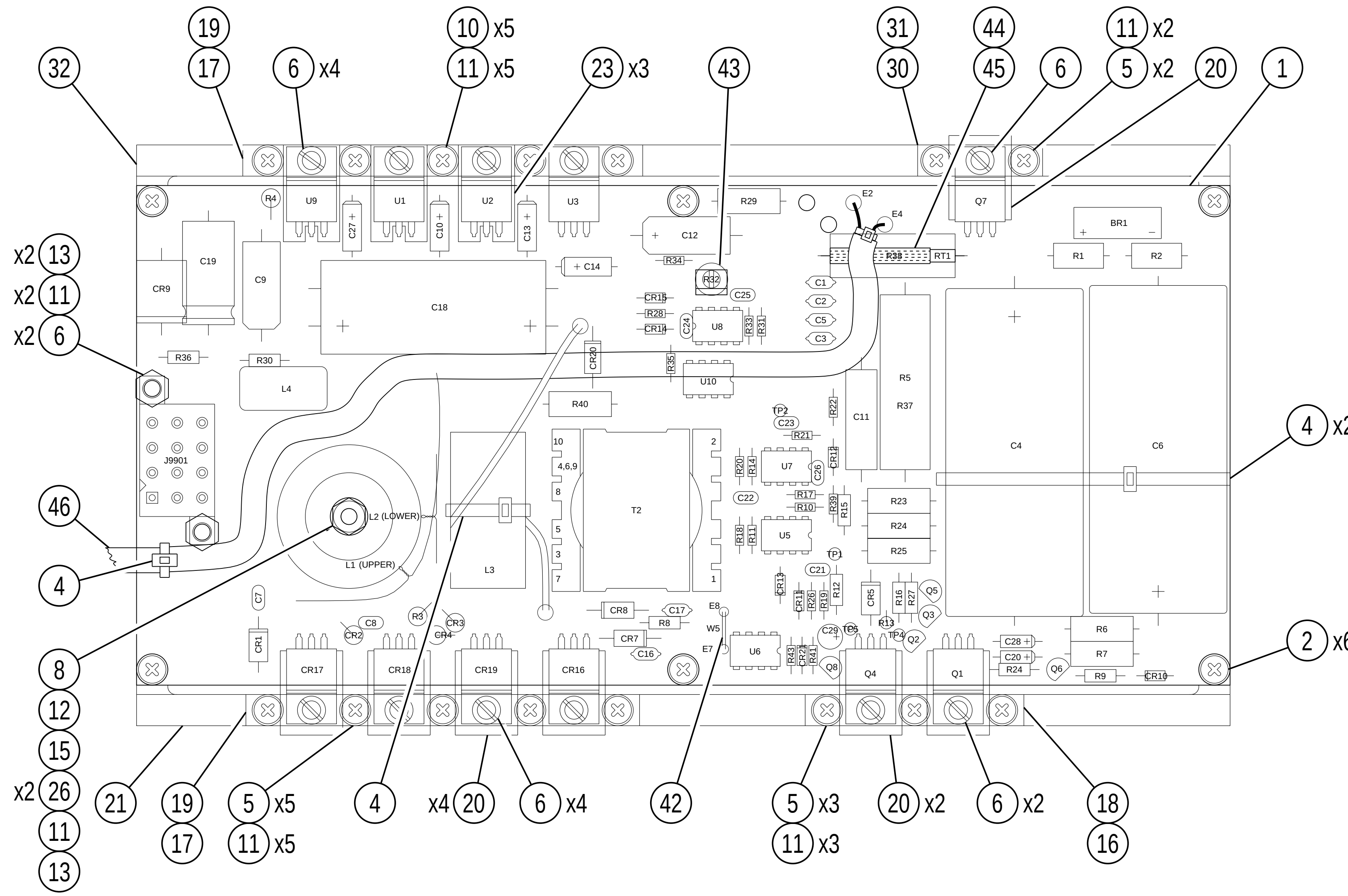
Floor Assembly (1 of 14)
Figure 88

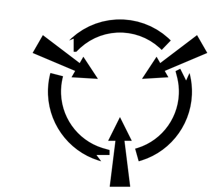


(7005-7545-100-A)

Floor Assembly (2 of 14)
Power Supply Assembly
Figure 88

WIRE RUNNING LIST				
DESG	FROM	TO	COLOR	AWG
W5	E7	E8	BUS	22





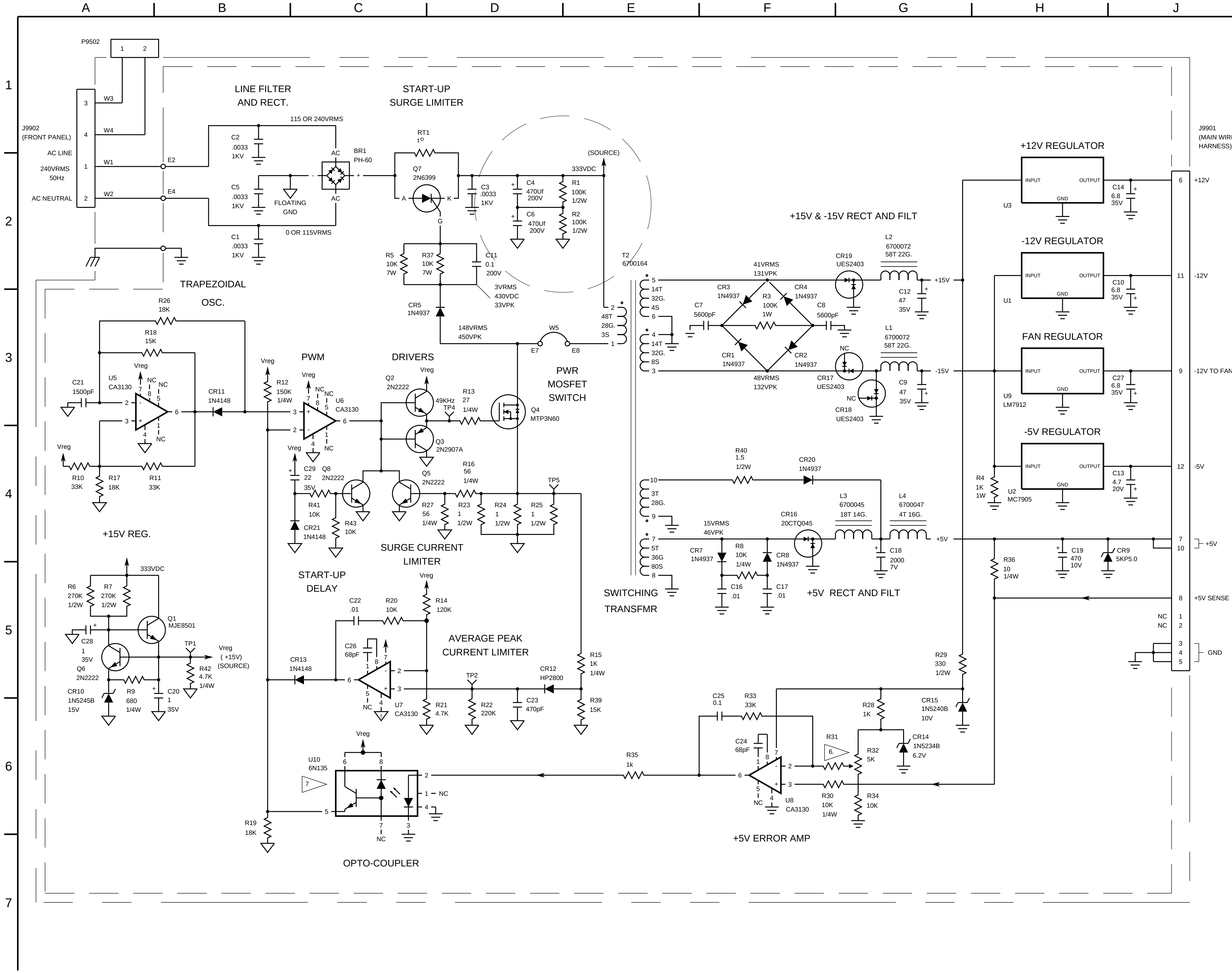
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

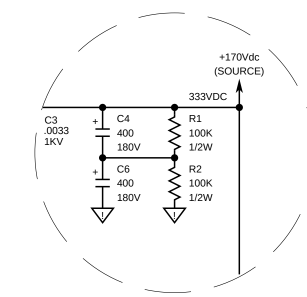
NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS DRAWING CARRIES SERIES: 10000 (i.e., R1 IS R10001).

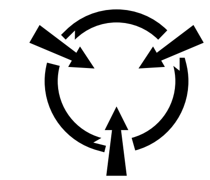
7531900P

(7010-7535-100-B)

Floor Assembly (3 of 14)
Power Supply PC Board Assembly
Figure 88




REV. A1



CAUTION:

CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

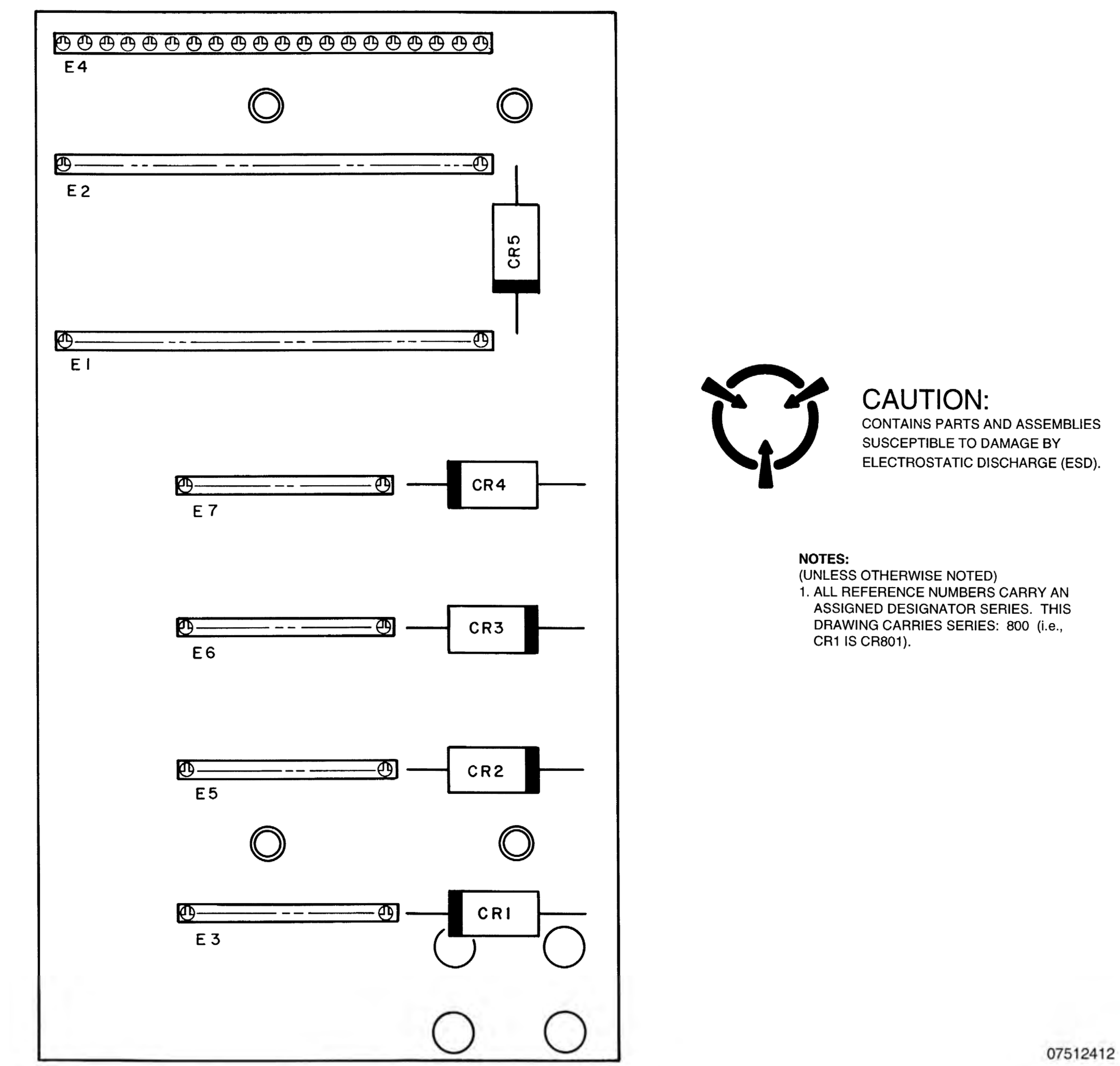
NOTES:
(UNLESS OTHERWISE NOTED)

1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS SCHEMATIC CARRIES SERIES: 10000 (i.e., R1 IS R10001).
2. ALL RESISTORS ARE 5%, 1/8 W.
3. ALL RESISTANCE IS EXPRESSED IN OHMS.
4. ALL CAPACITANCE IS EXPRESSED IN MICRO-FARADS.
5. ALL INDUCTANCE IS EXPRESSED IN MICRO-HENRIES.
6. R10031 IS SELECTED AT TEST
NOMINAL: 15k
RANGE: 12k, 15k. 18k OR 22k.
7. U10 IS S.A.T. DEVICE C.T.R. = 15-22
VCE = 2 VOLTS

0751867S

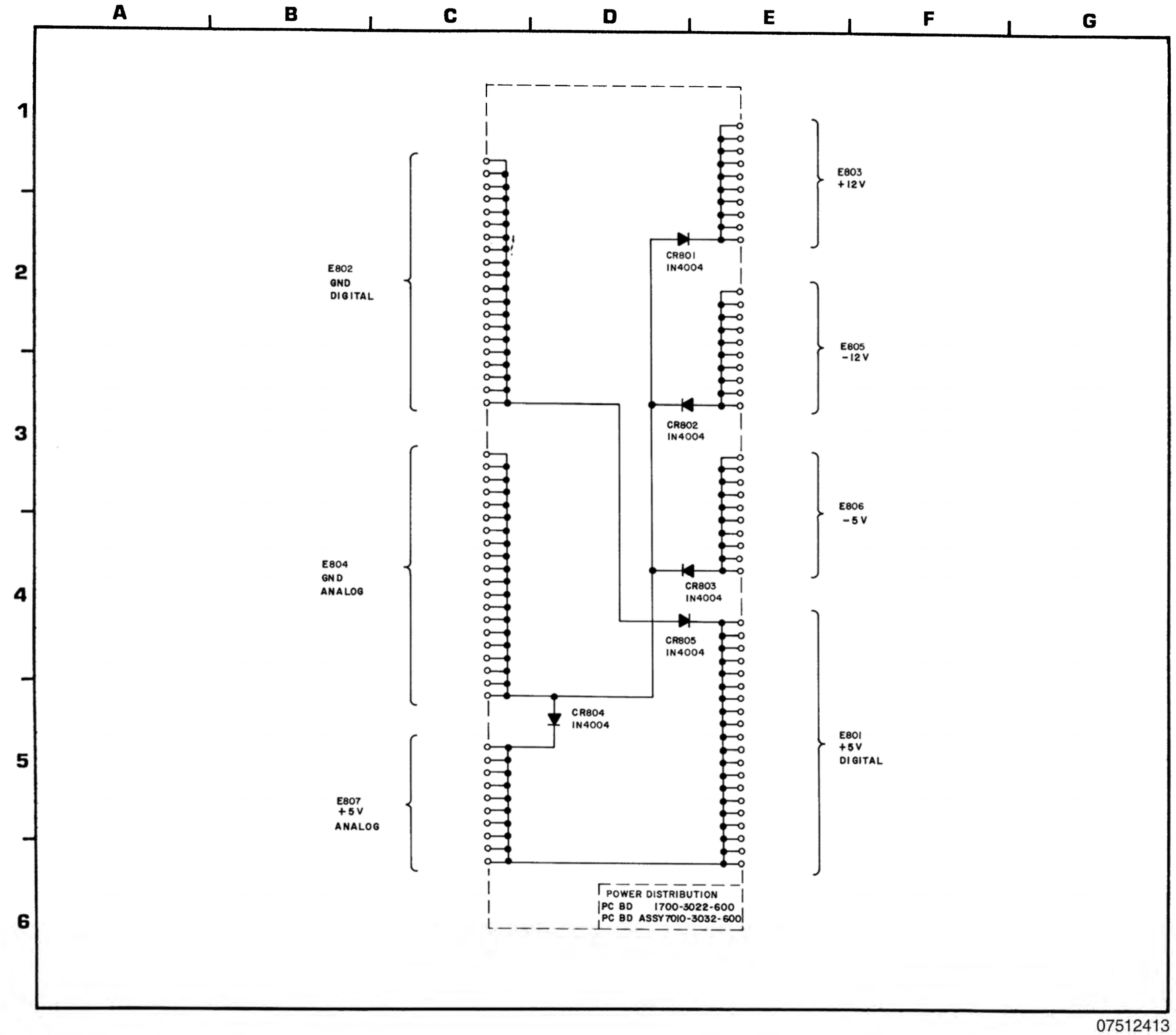
(0000-7545-100-B)

Floor Assembly (4 of 14)
Power Supply Assembly Circuit Schematic
Figure 88



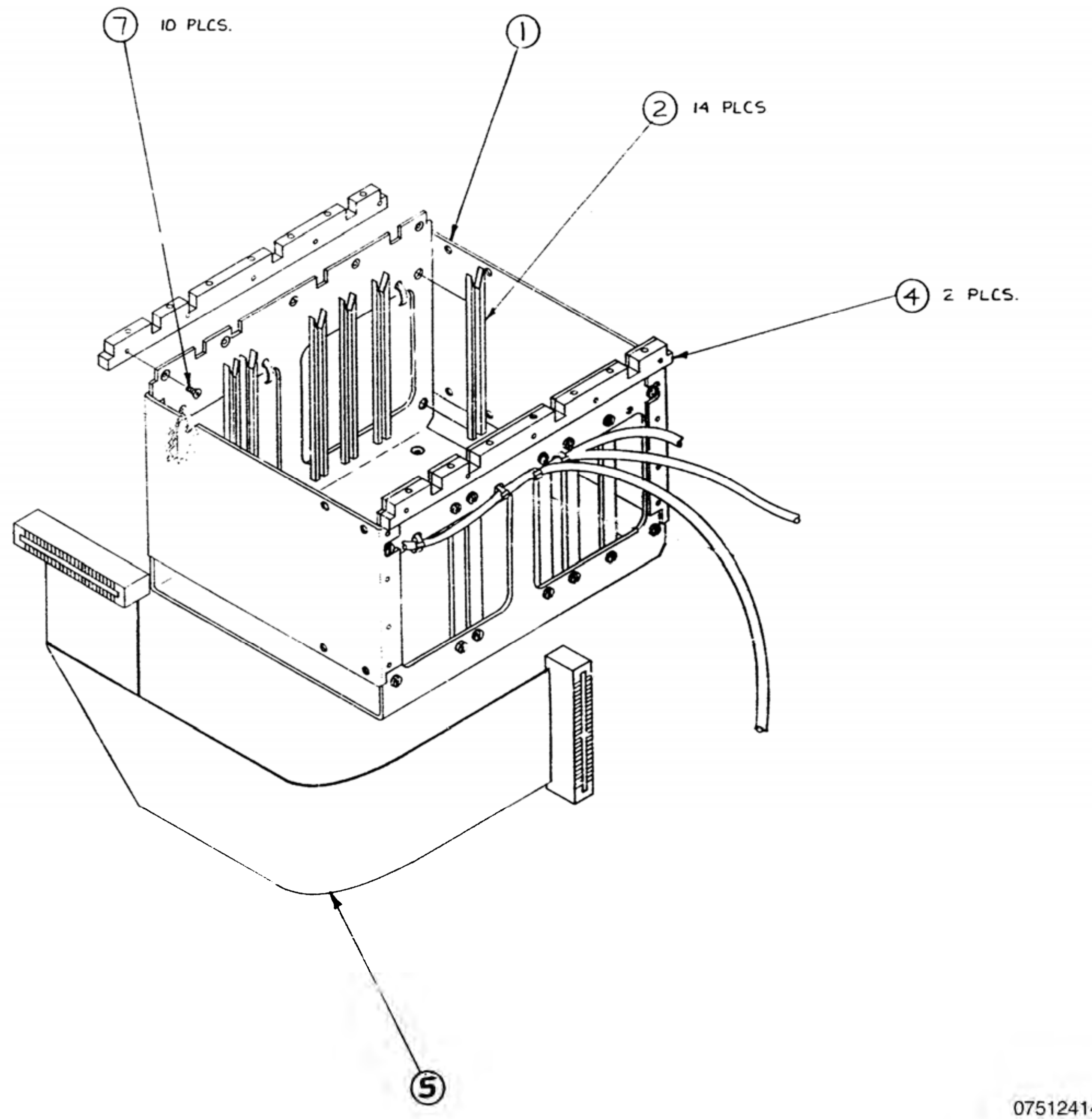
(7010-3032-600-A1)

Floor Assembly (5 of 14)
Power Distribution PC Board Assembly
Figure 88



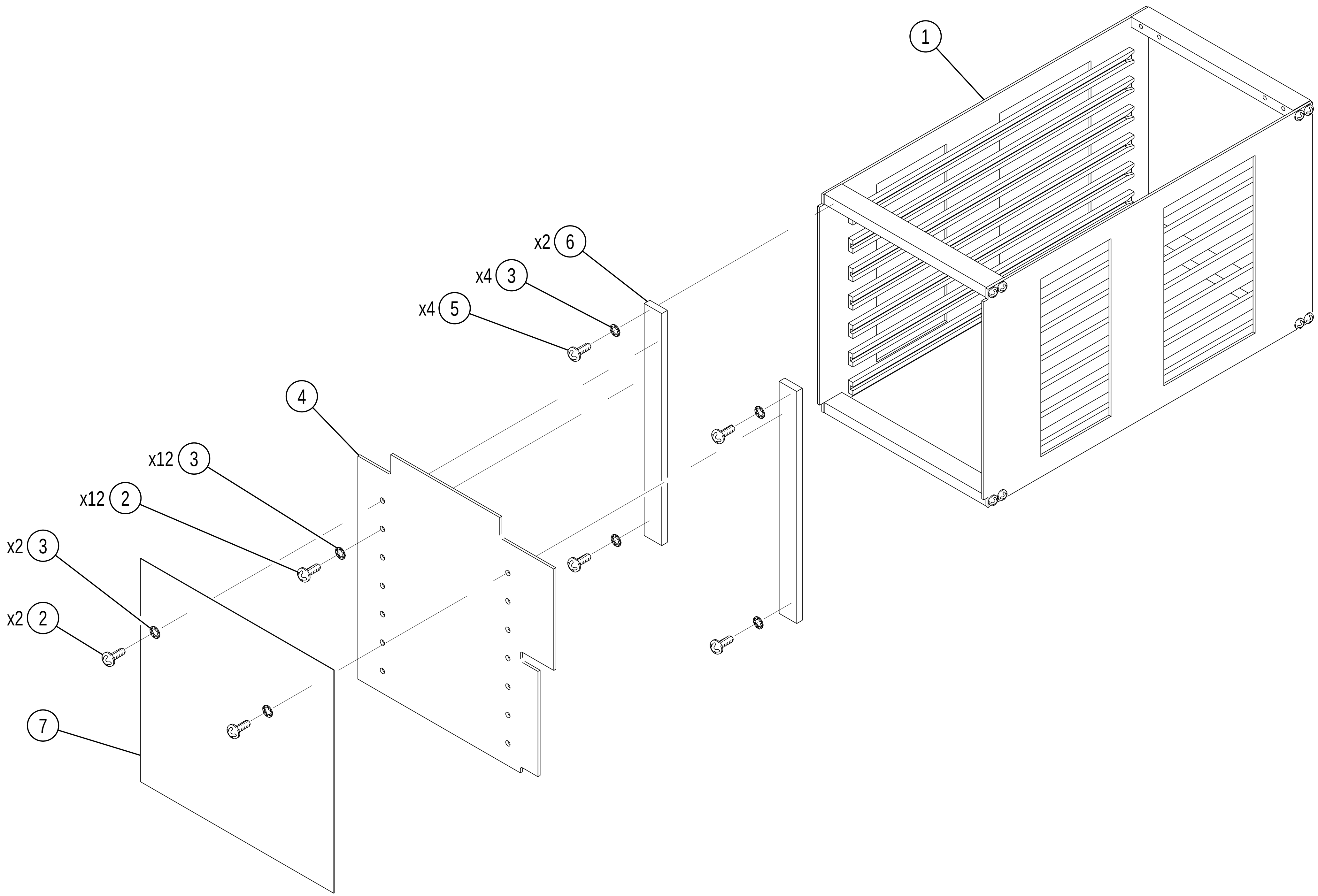
(0000-3012-600-A)

Floor Assembly (6 of 14)
Power Distribution PC Board Assembly Circuit Schematic
Figure 88



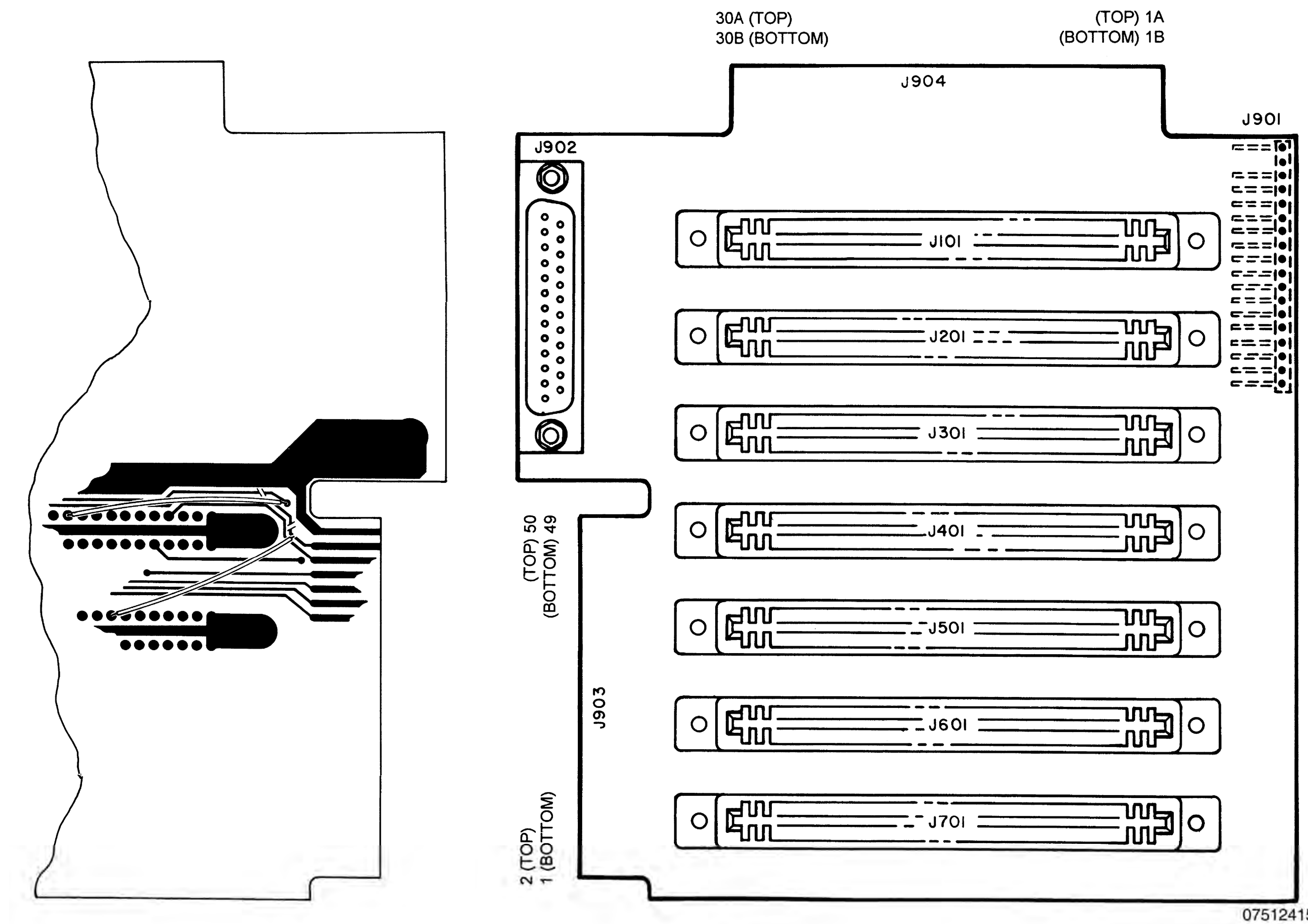
(7005-3047-701-B)

Floor Assembly (7 of 14)
Module Rack Assembly
Figure 88



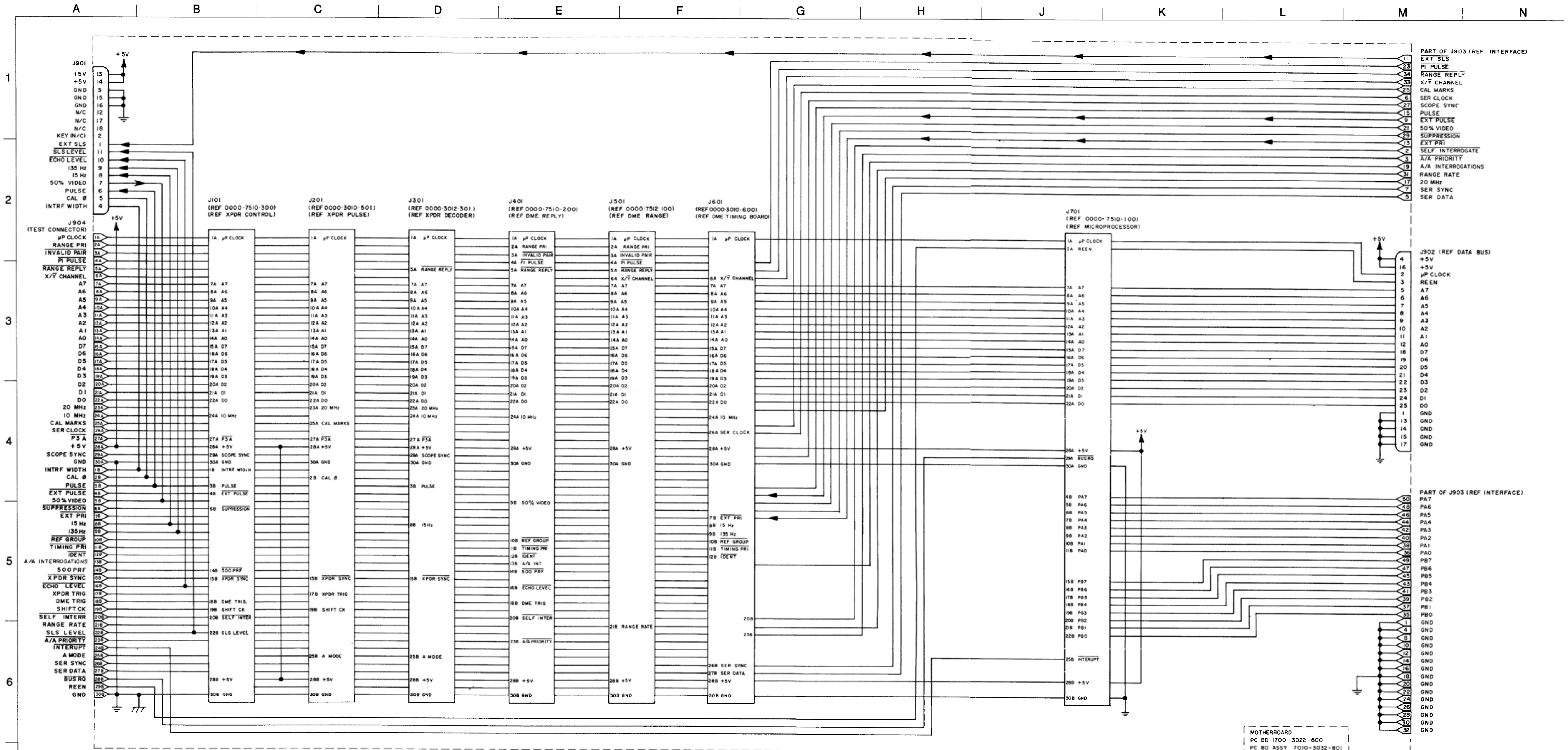
(7005-7549-100-A)

Floor Assembly (8 of 14)
Card Cage Assembly
Figure 88



(7010-3032-801-B)

Floor Assembly (9 of 14)
Motherboard PC Board Assembly
Figure 88

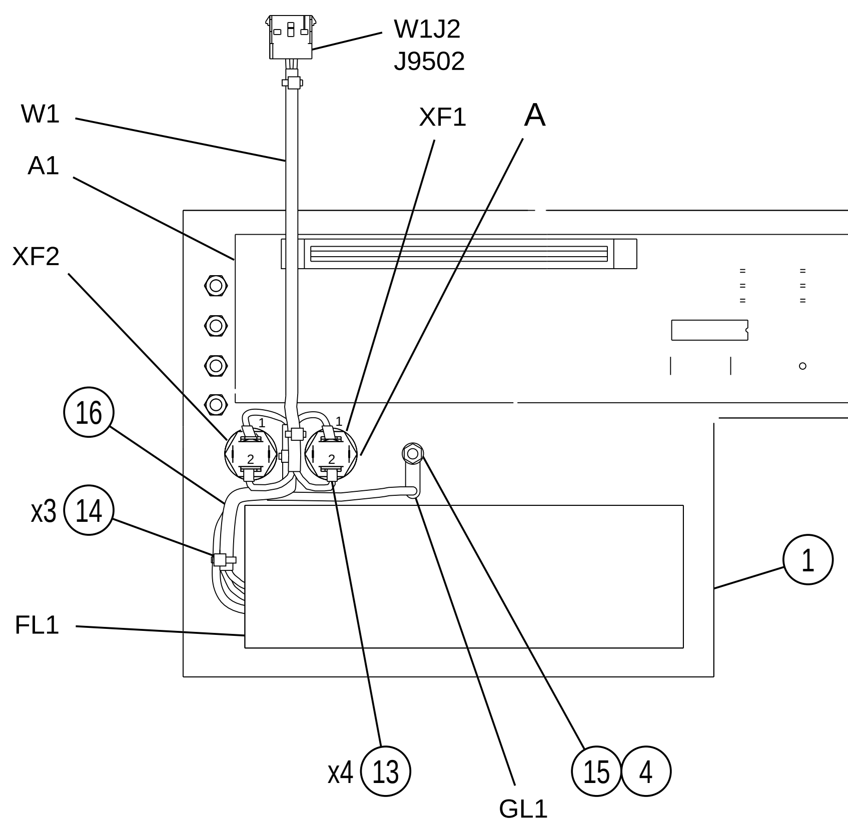


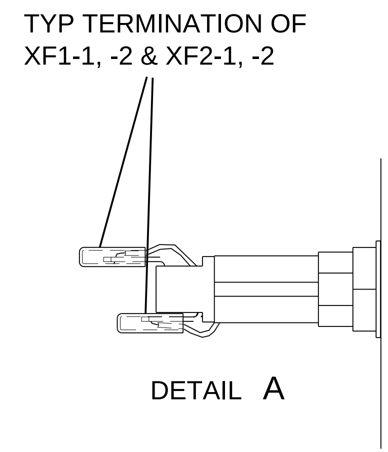
THIS SCHEMATIC ASSIGNS EACH BOARD TO A GIVEN CONNECTOR FOR ILLUSTRATION PURPOSES ONLY. J101, J201, J301, J401, J501 AND J601 ARE ELECTRICALLY IDENTICAL. THE PC BOARDS ARE INTERCHANGEABLE AMONG THESE CONNECTORS. J701 IS RESERVED FOR THE MICROPROCESSOR PC BOARD ASSEMBLY ONLY AND INCOMPATIBLE WITH THE OTHER PC BOARDS.

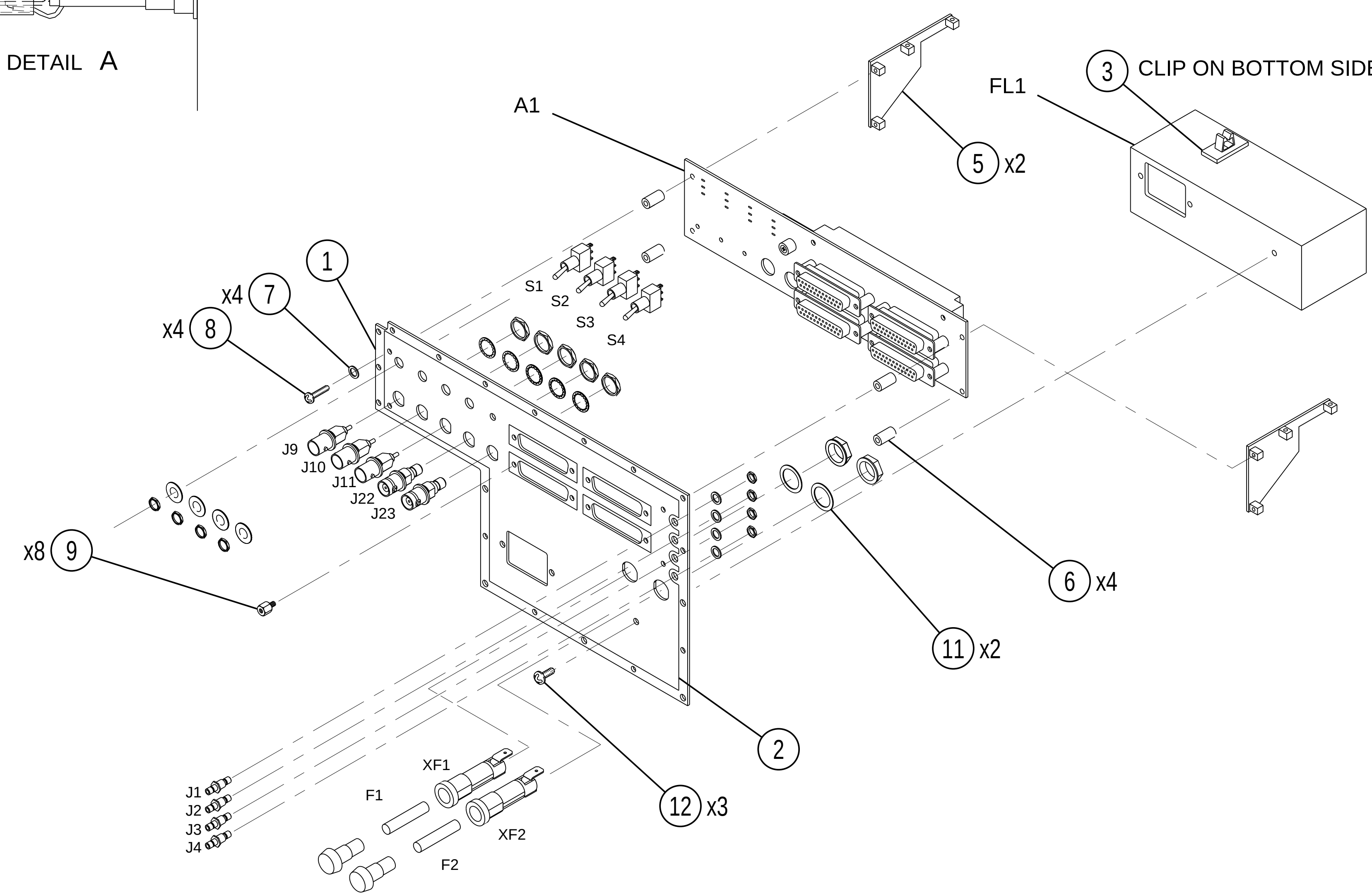
07512416

(0000-3012-801-A2)

Floor Assembly (10 of 14)
Motherboard PC Board Assembly Circuit Schematic
Figure 88





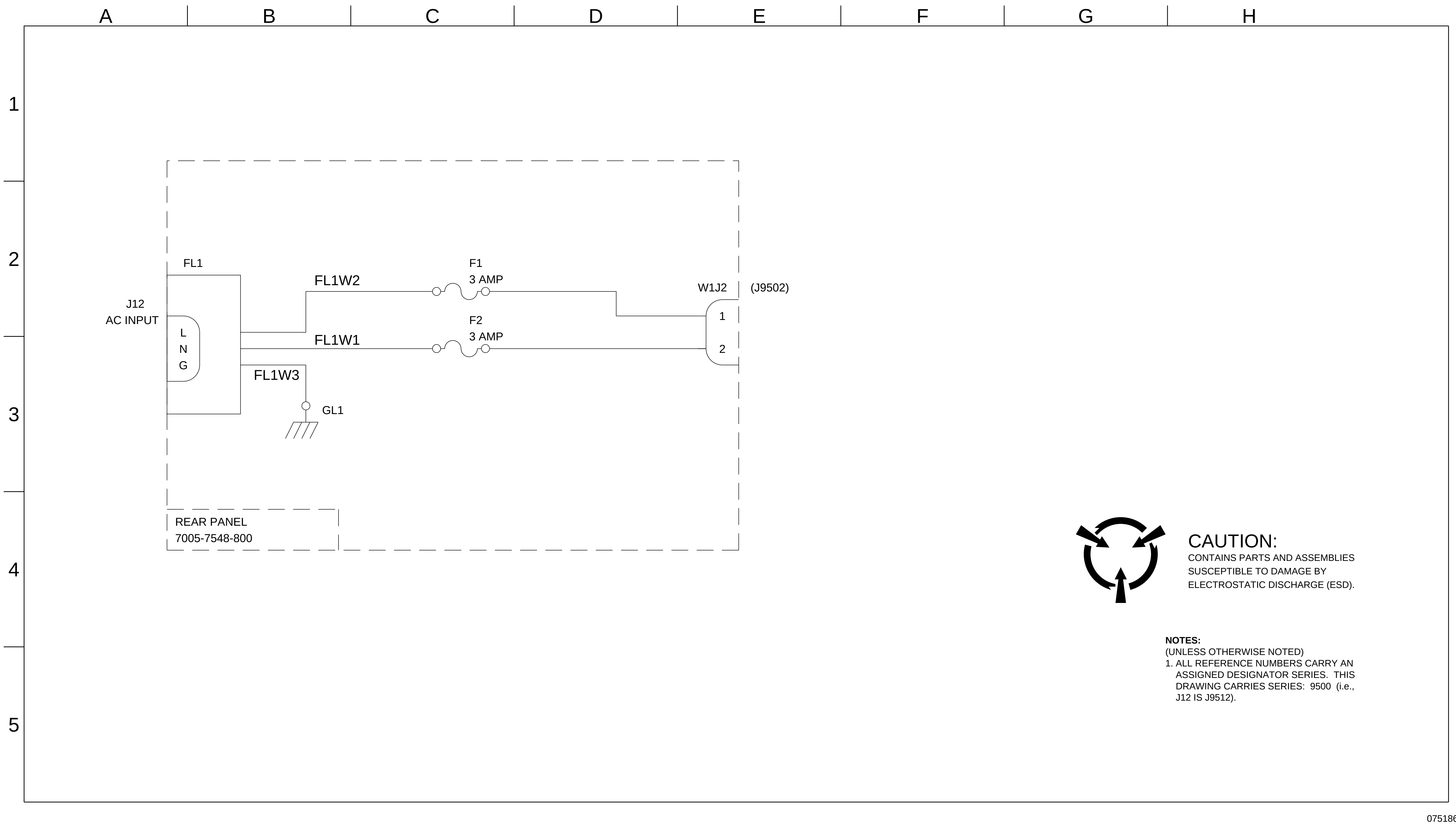


WIRE RUNNING LIST				
DESG	FROM	TO	COLOR	AWG
W1W1	W1J2-1	XF1-2	BROWN	18
W1W2	W1J2-2	XF2-2	BLUE	18
FL1W1	FL1-N	XF2-1	BLUE	16
FL1W2	FL1-L	XF1-1	BRN	16
FL1W3	FL1-E	GL1	GRN/YEL	16

7543025M

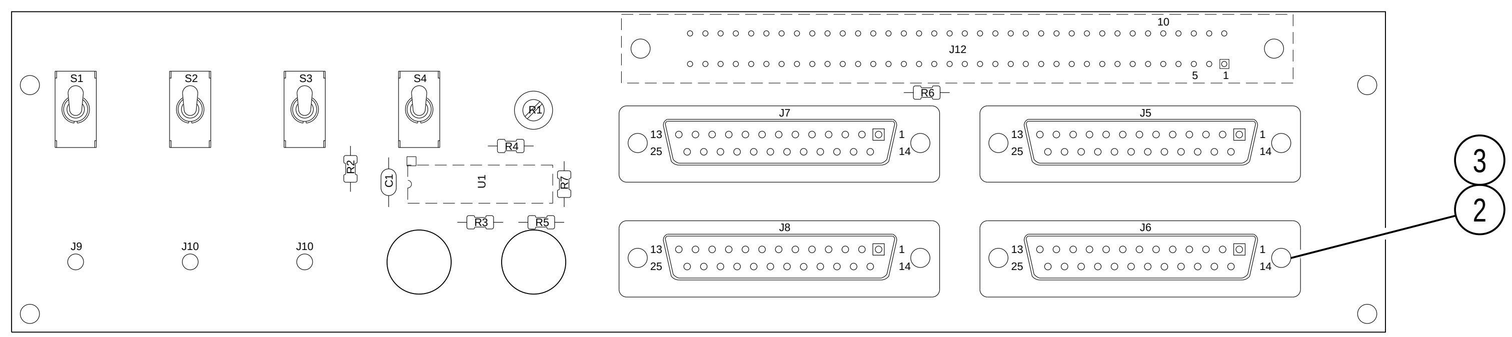
(7005-7548-800-B)

Floor Assembly (11 of 14)
Rear Panel Assembly
Figure 88



(0000-7548-800-A1)

Floor Assembly (12 of 14)
Rear Panel Assembly Circuit Schematic
Figure 88



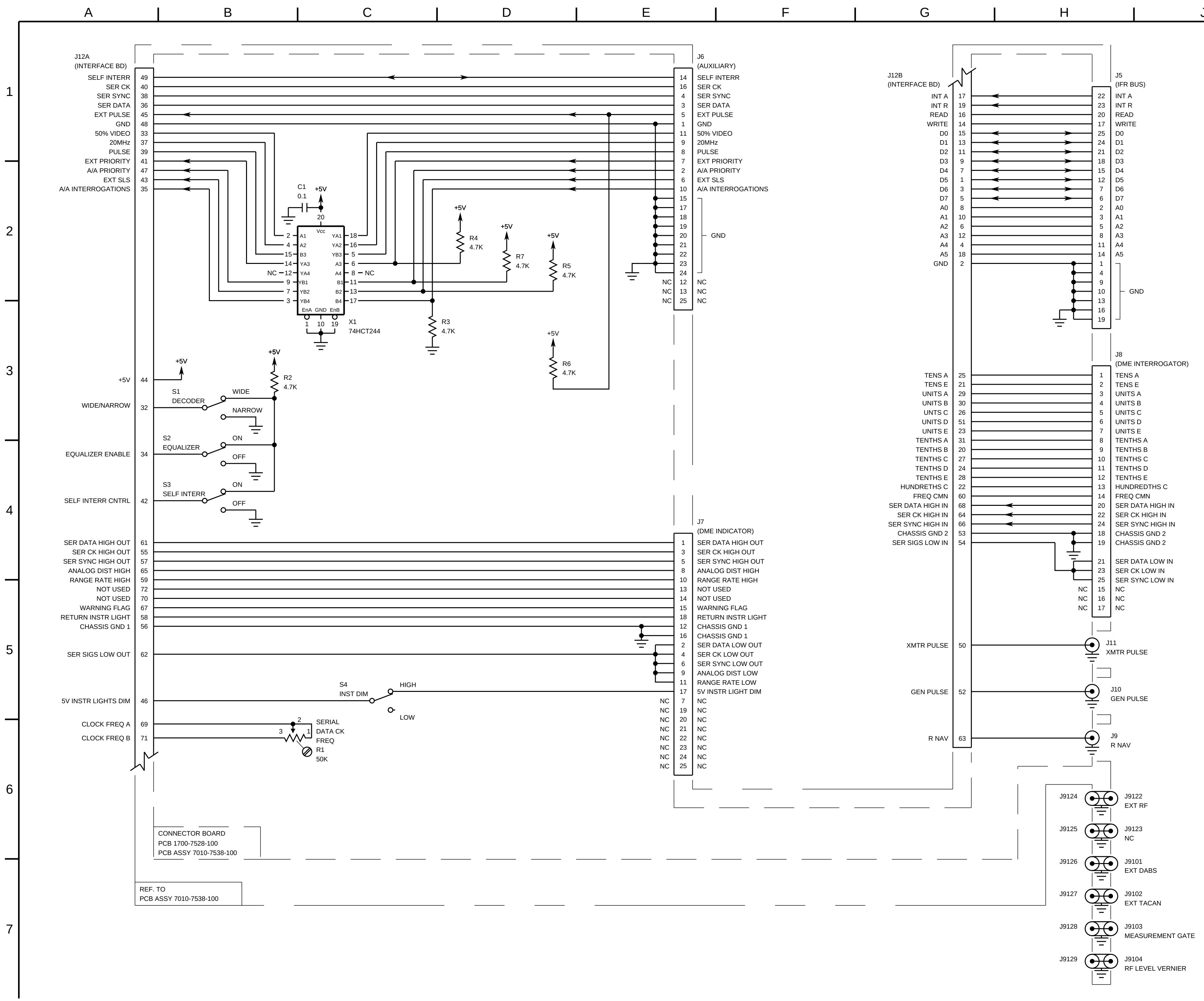
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS DRAWING CARRIES SERIES: 9100 (i.e., R1 IS R9101).

7531005P

(7010-7538-100-B)

Floor Assembly (13 of 14)
Connector PC Board Assembly
Figure 88



CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)

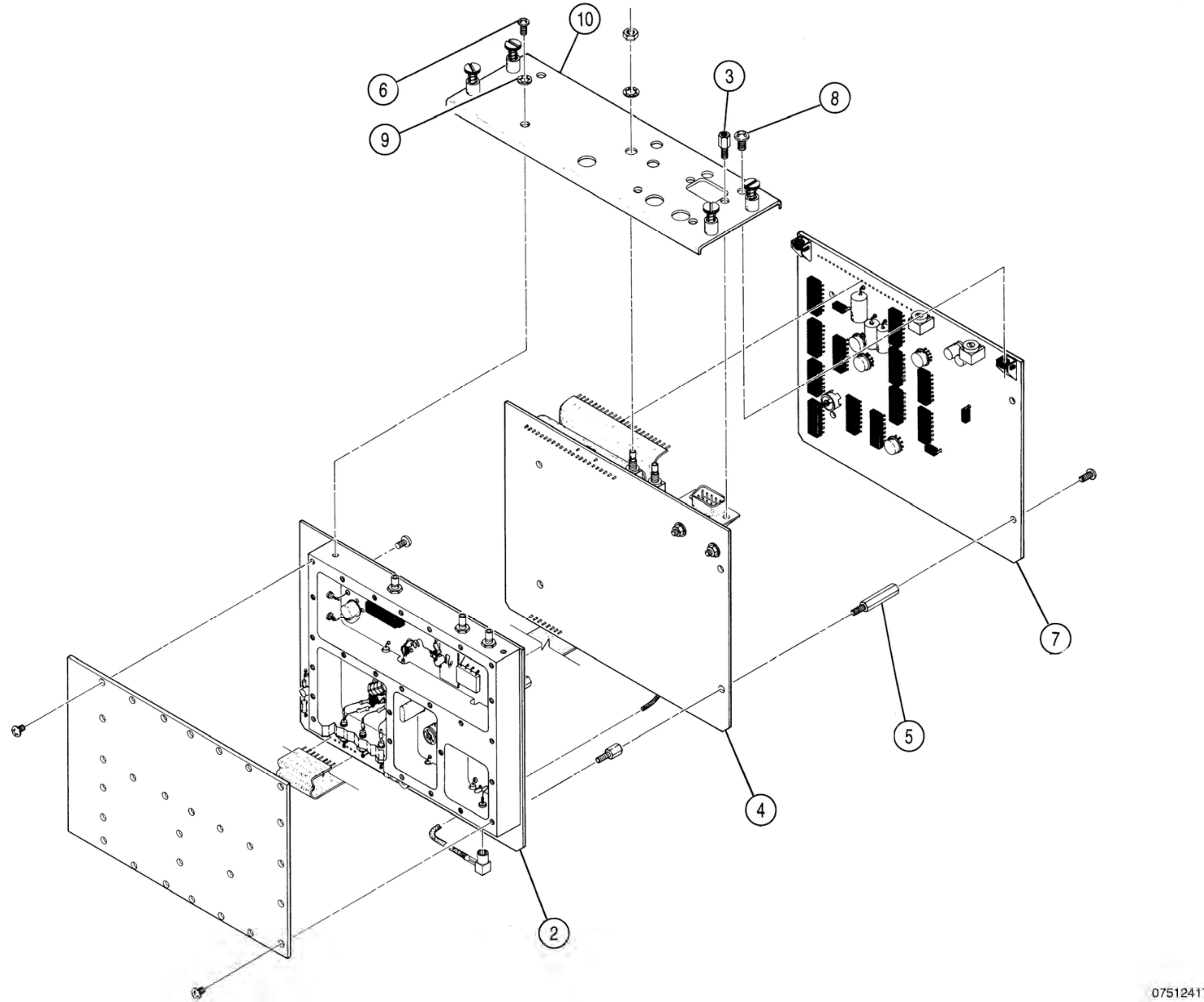
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS SCHEMATIC CARRIES SERIES: 9100 (i.e., R1 IS R9101). R1 IS R9101).
2. ALL RESISTORS ARE 5%, 1/8W.
3. ALL RESISTANCE IS EXPRESSED IN OHMS.
4. ALL CAPACITANCE IS EXPRESSED IN MICRO-FARADS.
5. ALL INDUCTANCE IS EXPRESSED IN MICRO-HENRIES.

* - INDICATES PRINTED TRANSMISSION LINES OF OTHER THAN 50 OHMS IMPEDANCE WHICH CONSTITUTE CIRCUIT ELEMENTS. 50 OHM TRANSMISSION LINES ARE NOT SHOWN.

0751821S

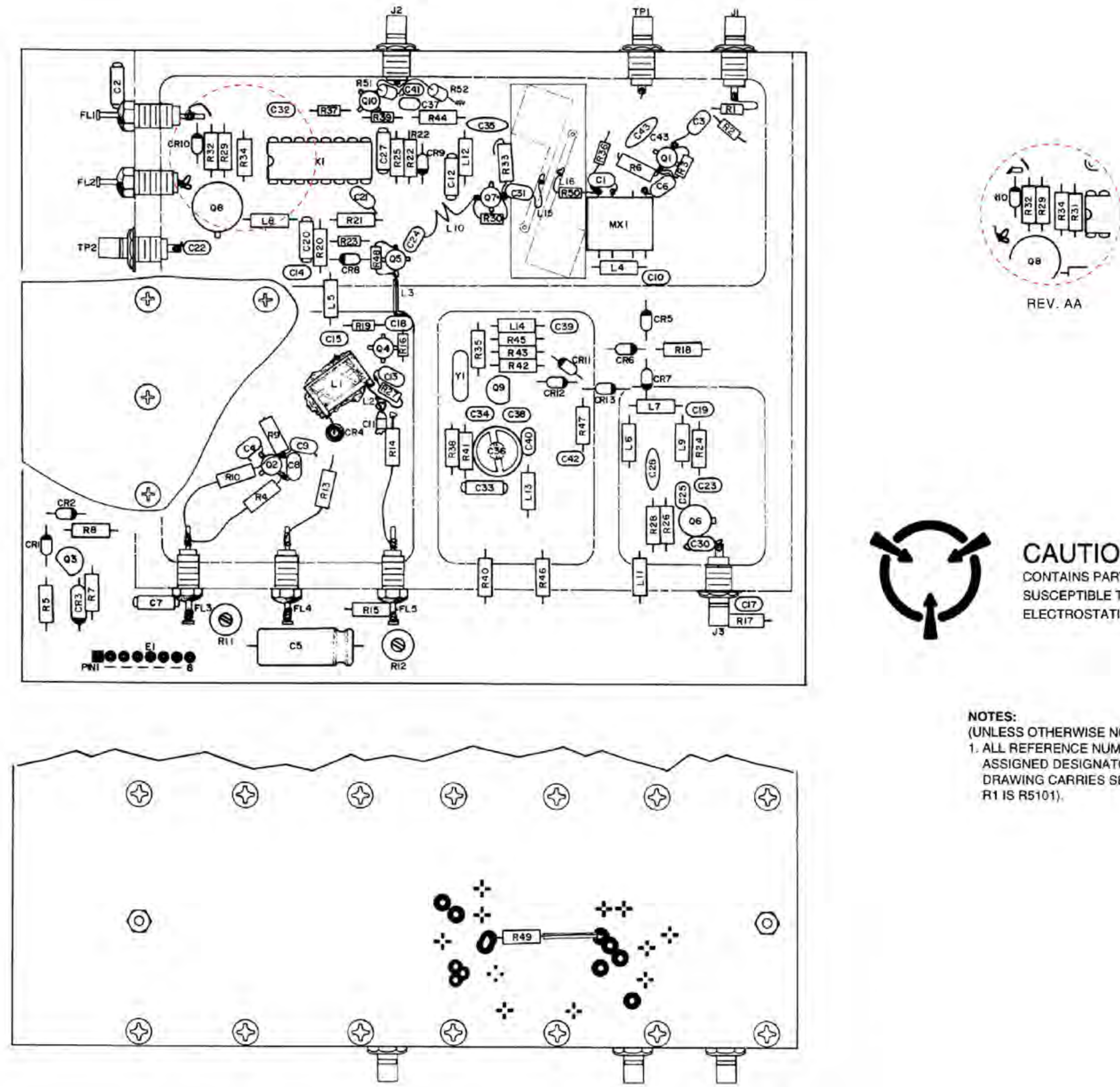
(0000-7538-100-B)

Floor Assembly (14 of 14)
Connector PC Board Assembly Circuit Schematic
Figure 88



(7005-3044-101-B2)

Discriminator Assembly (1 of 7)
Figure 89



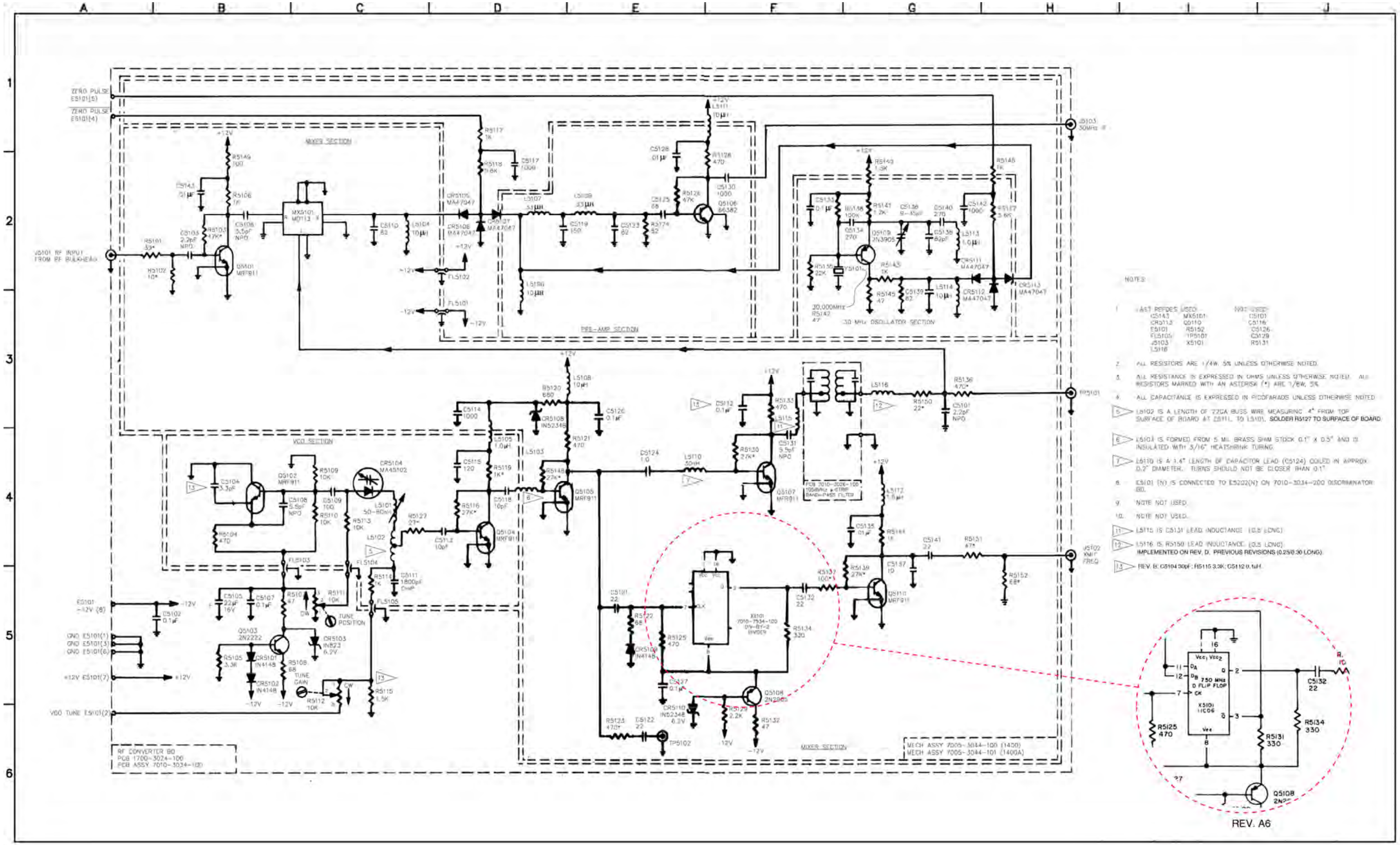
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS DRAWING CARRIES SERIES: 5100 (i.e., R1 IS R5101).

07512418

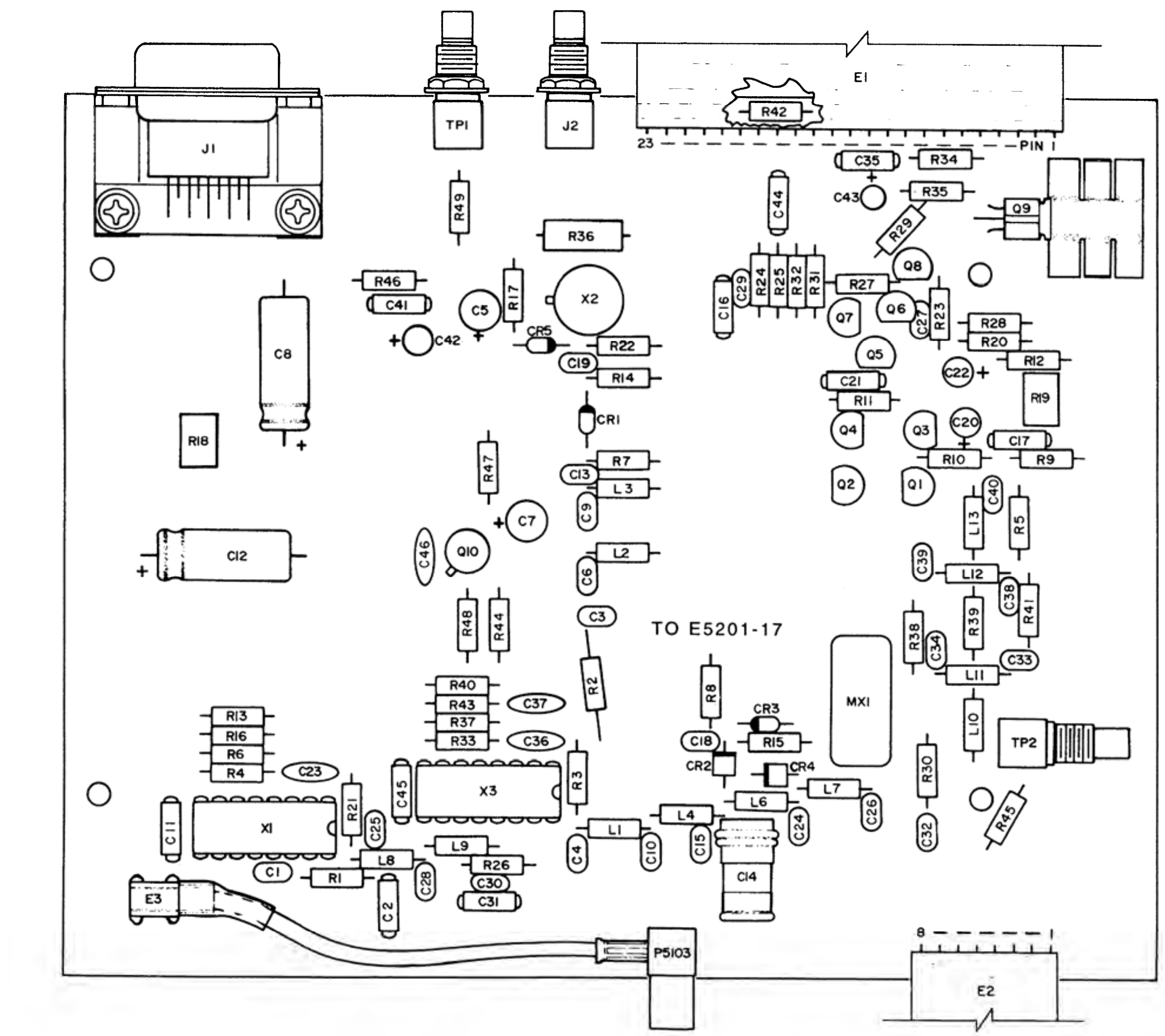
(7010-3034-100-AF)

Discriminator Assembly (2 of 7)
RF Converter PC Board Assembly
Figure 89



(0000-3014-100-E)

Discriminator Assembly (3 of 7)
RF Converter PC Board Assembly Circuit Schematic
Figure 89



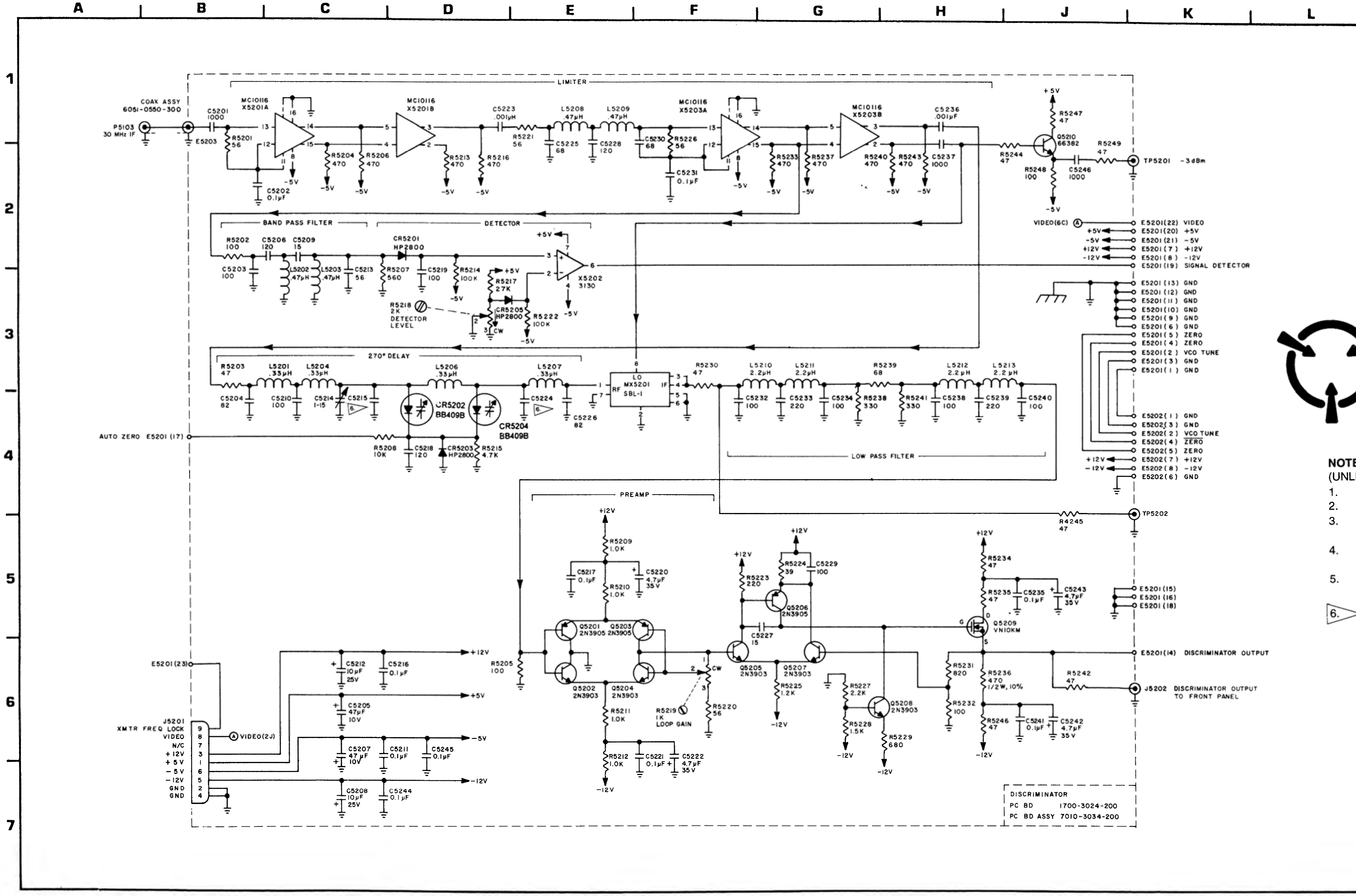
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS DRAWING CARRIES SERIES: 5200 (i.e., R1 IS R5201).

07512420

(7010-3034-100-AF)

Discriminator Assembly (4 of 7)
Discriminator PC Board Assembly
Figure 89



CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)

1. ALL RESISTORS ARE 5%, 1/4 W.
2. ALL RESISTANCE IS EXPRESSED IN OHMS.
3. ALL CAPACITANCE IS EXPRESSED IN PICO-FARADS.
4. E5201(X) CONNECTS TO E5301(X) ON THE SAMPLER PC BOARD.
5. E5202(X) CONNECTS TO E5101(X) ON THE RF CONVERTER PC BOARD.
6. C5215 AND C5224 ARE SELECTED AT TEST. NOMINAL VALUE IS 56 pF. RANGE: 47 pF, 68 pF OR 82 pF.

07512421

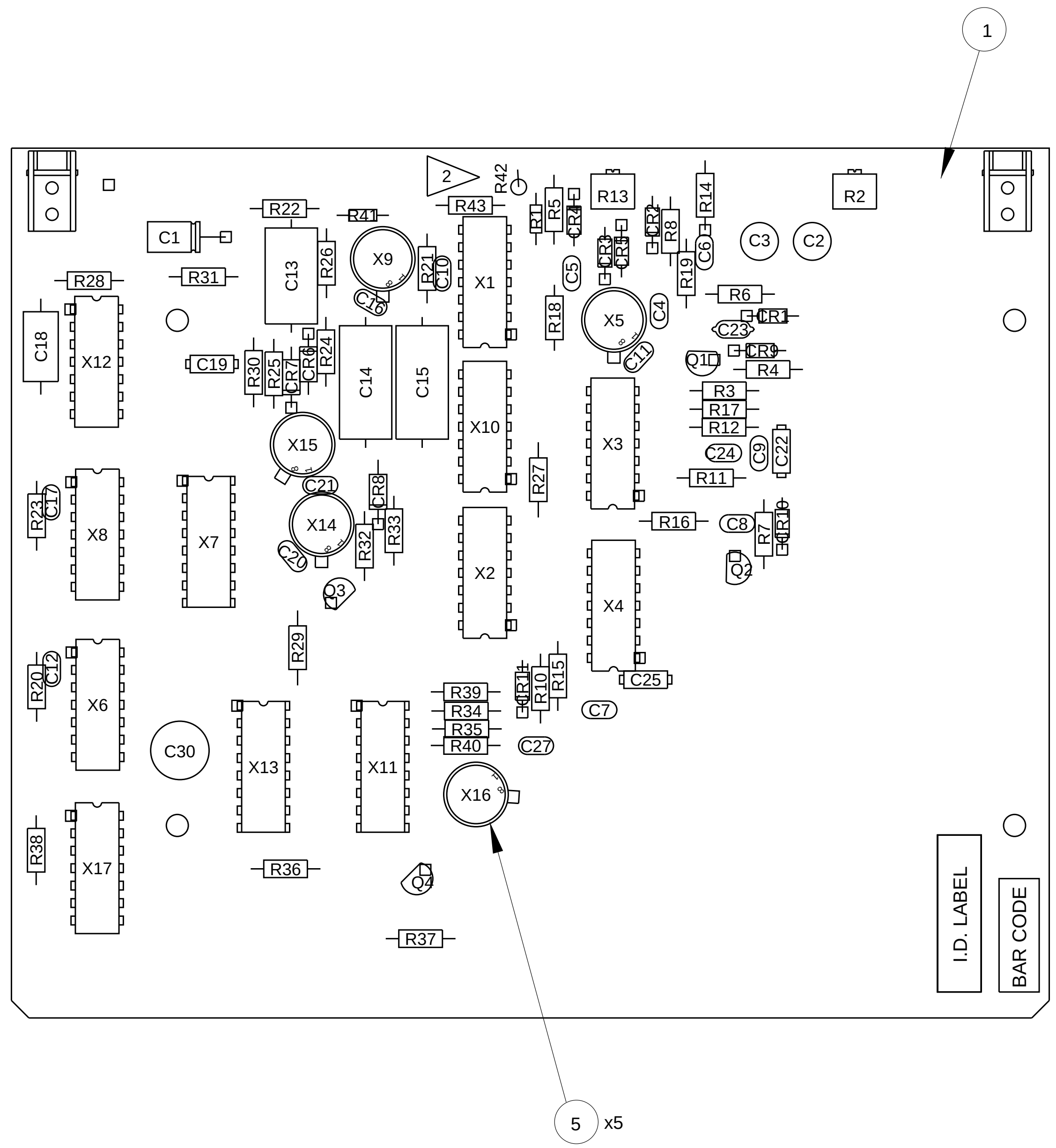
(7010-3034-200-E)

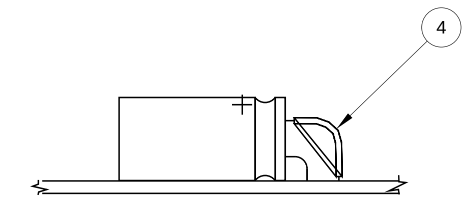
Discriminator Assembly (5 of 7)
Discriminator PC Board Assembly Circuit Schematic
Figure 89

CAUTION:
CONTAINS PARTS AND ASSEMBLIES
SUSCEPTIBLE TO DAMAGE BY
ELECTROSTATIC DISCHARGE (ESD).

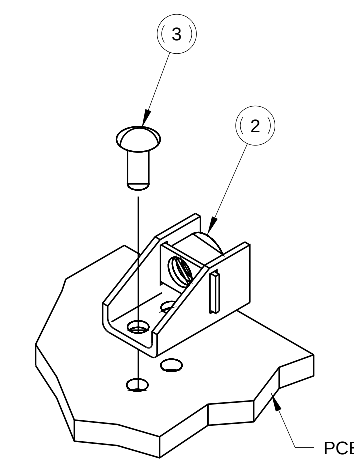
NOTES:

1. BASIC REFERENCE DESIGNATORS SHOWN, FOR COMPLETE DESIGNATOR PREFIXES REFER TO PRODUCT STRUCTURE, AND SYSTEM INTERCONNECT FOR APPLICATIONS WHERE USED.
2. R42 IMPLEMENTED ON REV. D.





DETAIL "A"

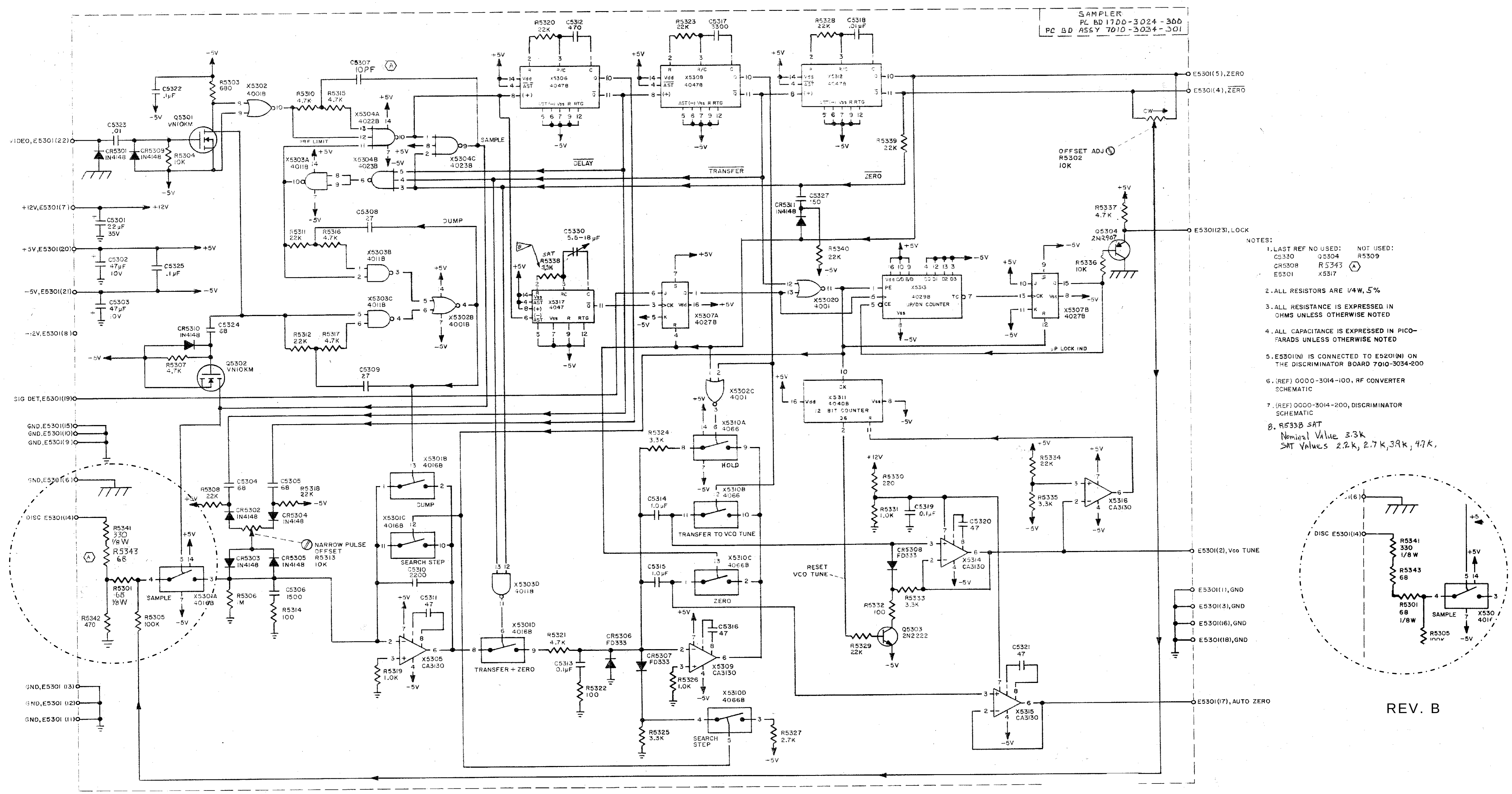


DETAIL "B"
TOP VIEW

030343D0

(7010-3034-301-D)

Discriminator Assembly (6 of 7)
Sampler PC Board Assembly
Figure 89



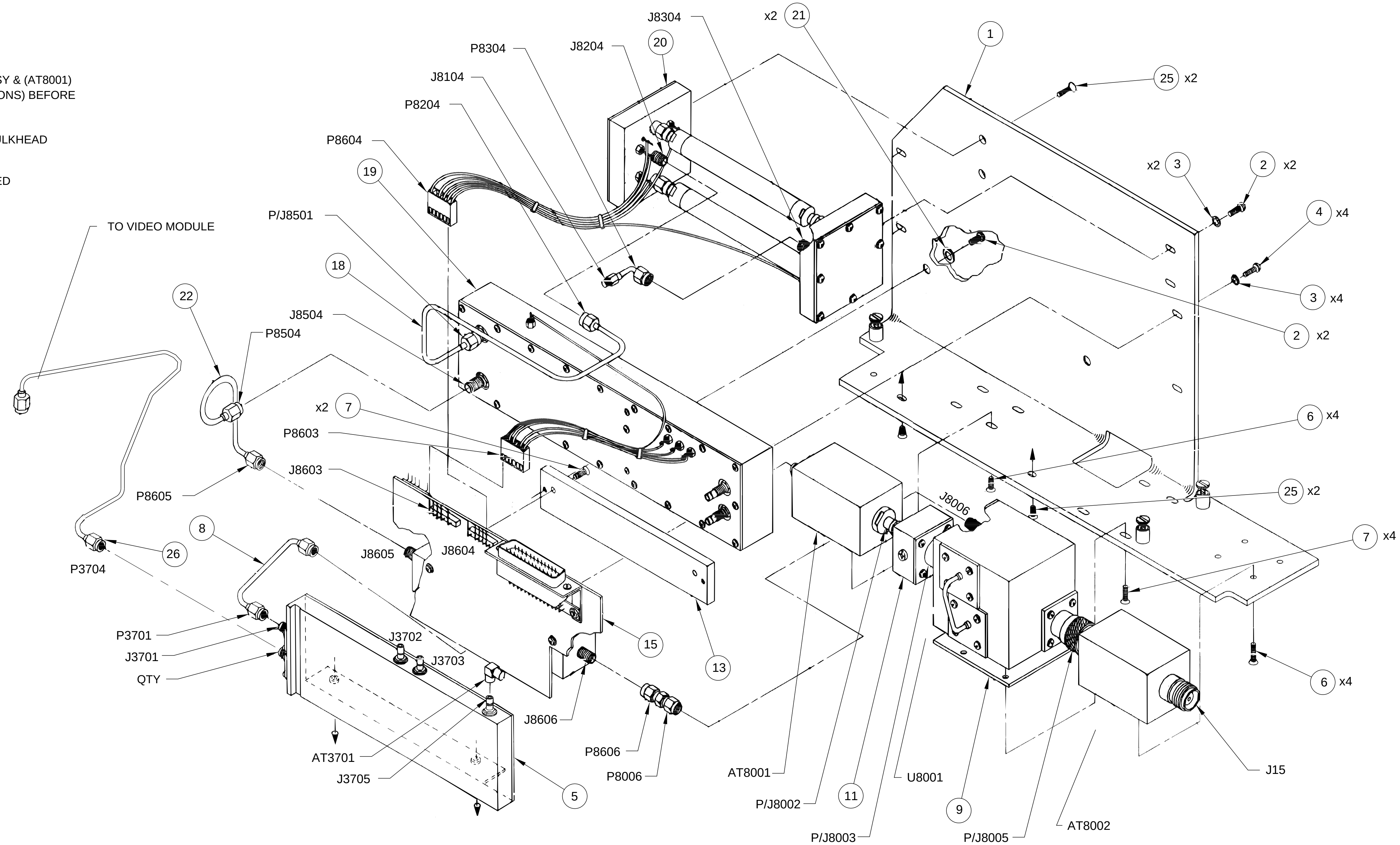
(0000-3014-301-C)

Discriminator Assembly (7 of 7)
Sampler PC Board Assembly Circuit Schematic
Figure 89

CAUTION:
CONTAINS PARTS AND ASSEMBLIES
SUSCEPTIBLE TO DAMAGE BY
ELECTROSTATIC DISCHARGE (ESD).

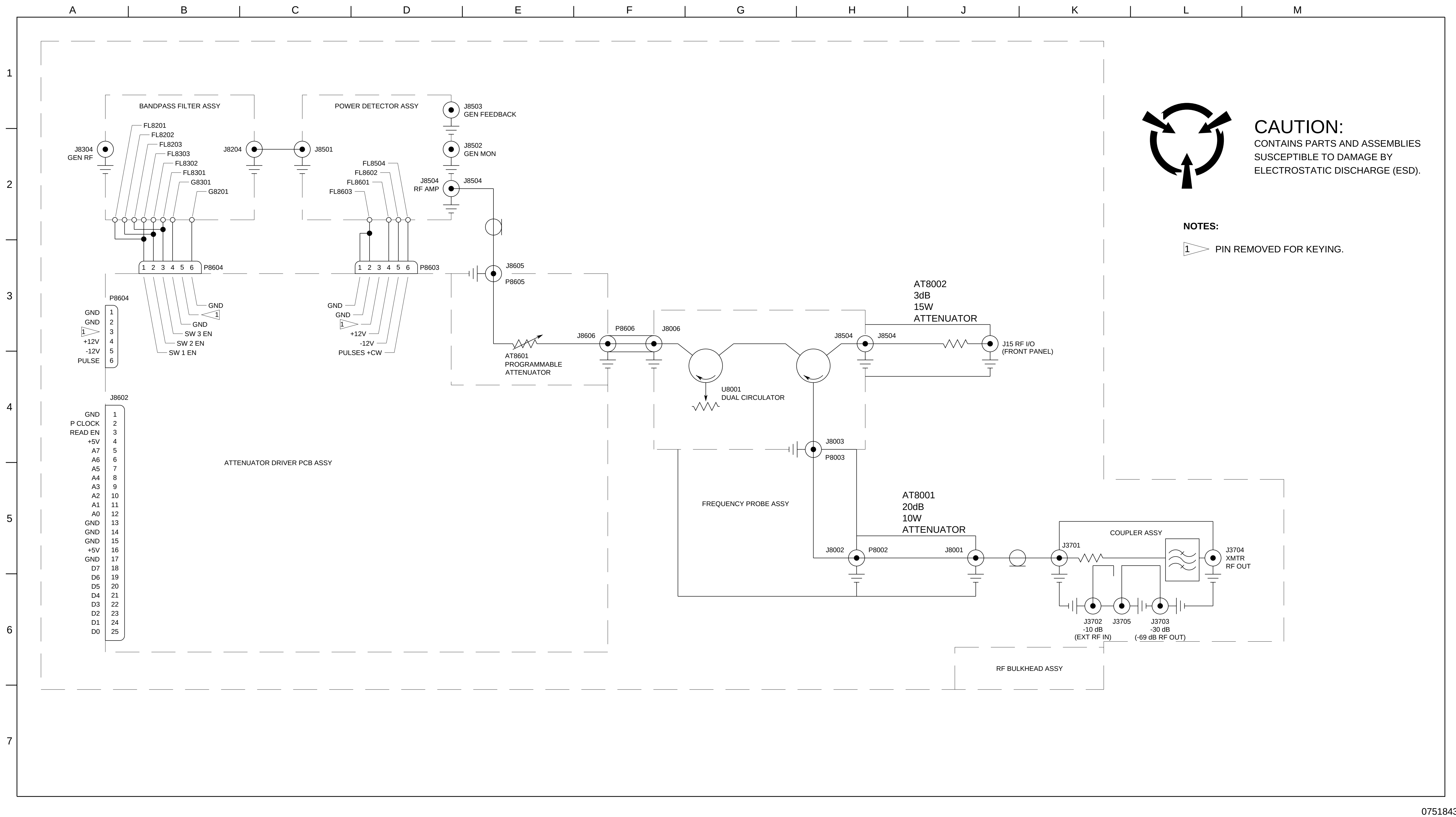
NOTES:

1. (AT8002) ATTEN, (U8001) CIRCULATOR, (11) PROBE ASSY & (AT8001) ATTEN MUST BE TIGHTENED (ALL COAXIAL CONNECTIONS) BEFORE ITEMS ARE SECURED TO (ITEM 1) RF BULKHEAD.
2. (AT8002) ATTEN. MUST BE SECURED TO (ITEM 1) RF BULKHEAD FOR PROPER ALIGNMENT WITH FRONT PANEL.
3. ALL OTHER MAJOR COMPONENTS MUST BE ATTATCHED PRIOR TO CONNECTING ITEM 5 CABLES & COAXES.
4. BASIC REFERENCE DESIGNATORS SHOWN, FOR COMPLETE DESIGNATOR PREFIXES REFER TO PRODUCT STRUCTURE, AND SYSTEM INTERCONNECT FOR APPLICATIONS WHERE USED.



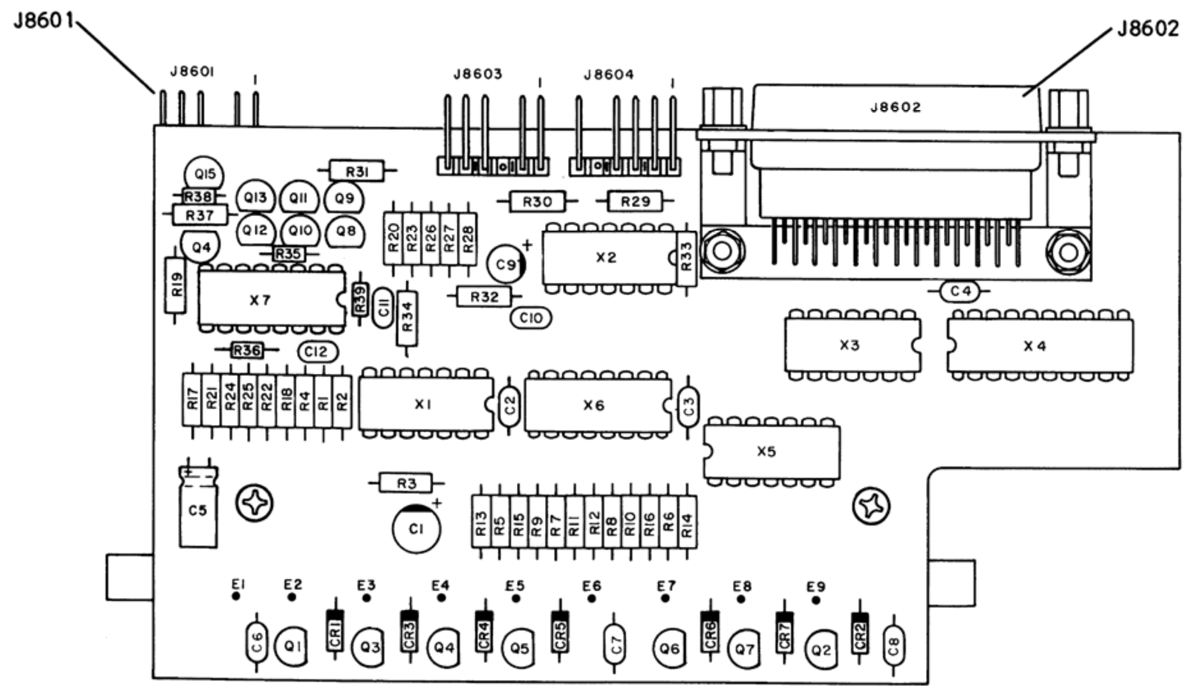
(7005-7542-500-B)

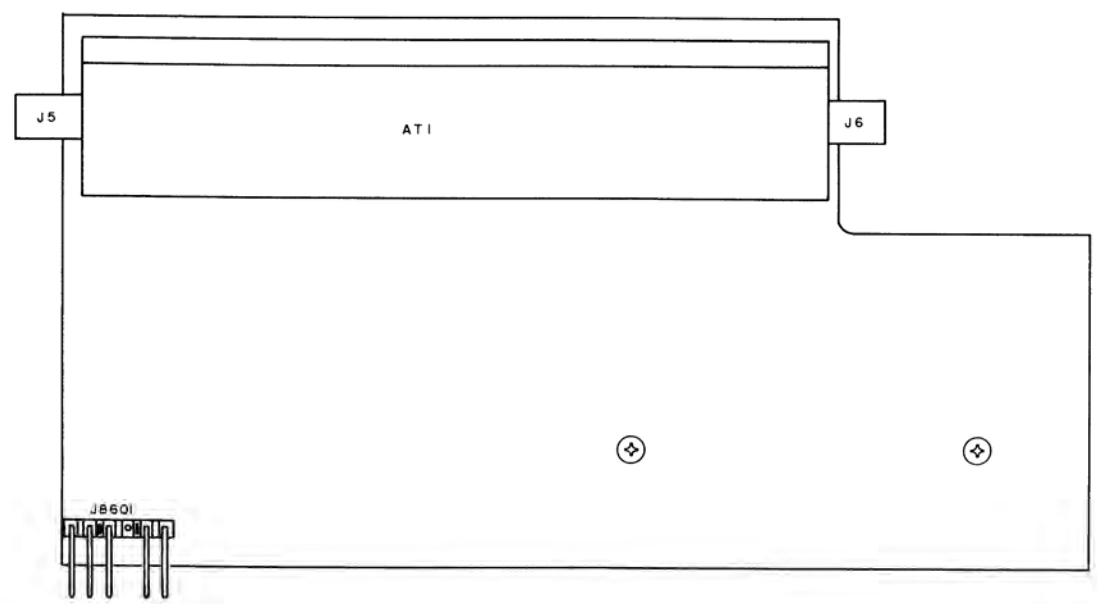
RF Bulkhead Assembly (1 of 9)
RF Bulkhead Assembly
Figure 90



(0000-7512-500-A2)

RF Bulkhead Assembly (2 of 9)
RF Bulkhead Assembly Interconnect Diagram
Figure 90





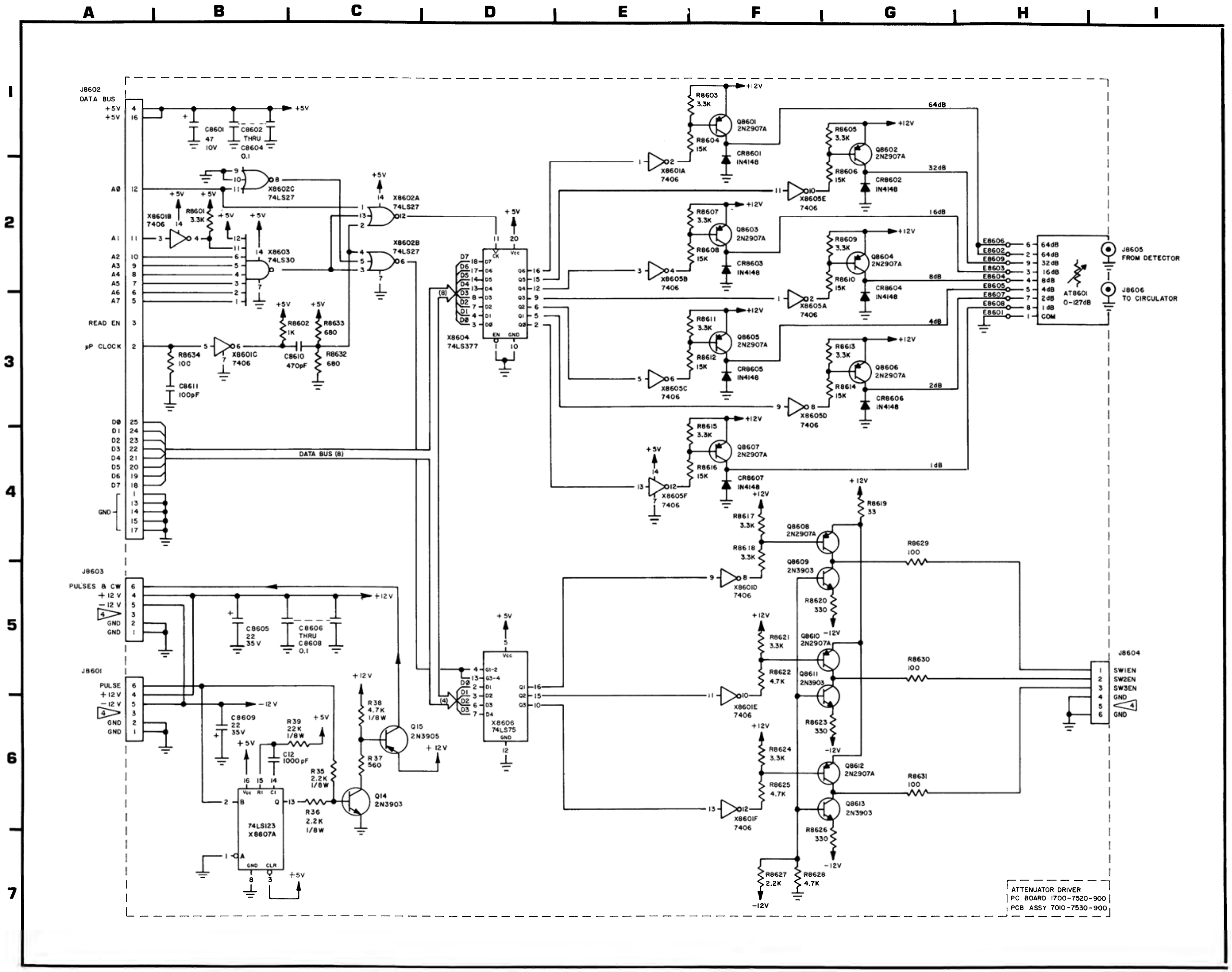
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS DRAWING CARRIES SERIES: 8600 (i.e., R1 IS R8601).

07512425

(7010-7530-900-B)

RF Bulkhead Assembly (3 of 9)
Attenuator Driver PC Board Assembly
Figure 90



CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

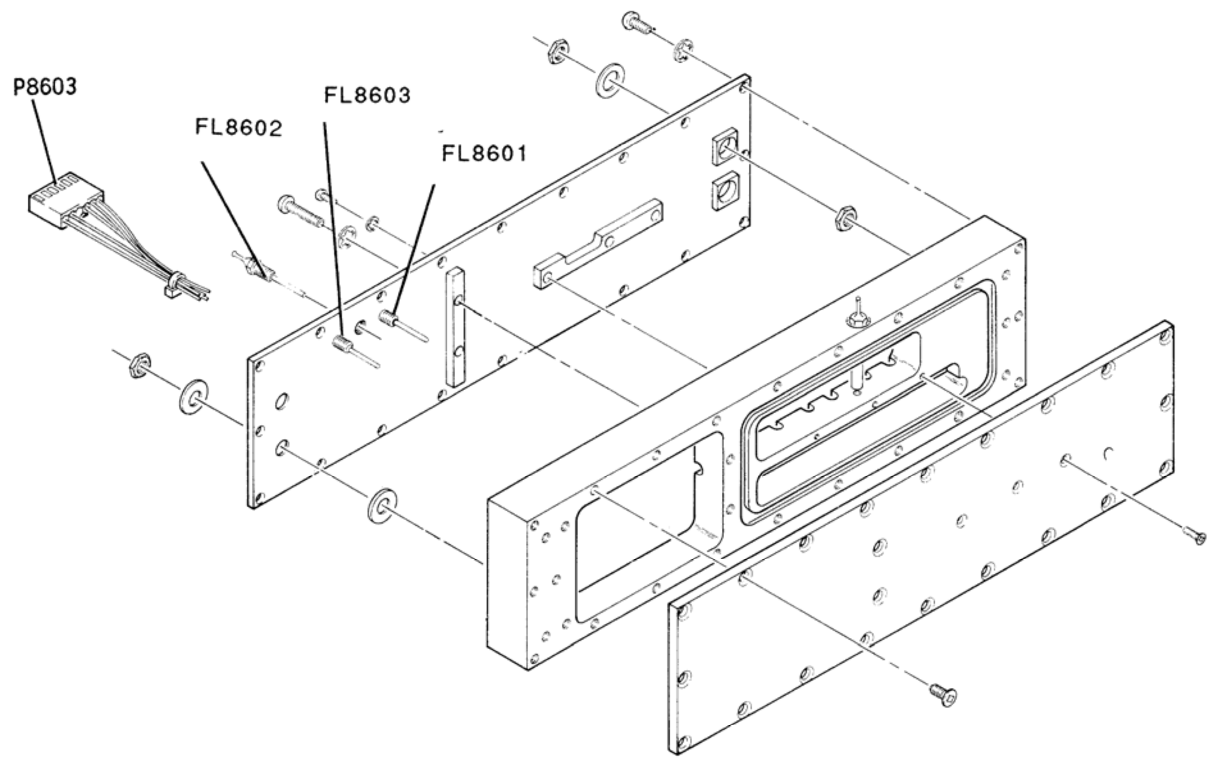
NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL RESISTORS ARE 5%, 1/4 W.
2. ALL RESISTANCE IS EXPRESSED IN OHMS.
3. ALL CAPACITANCE IS EXPRESSED IN PICO-FARADS.

4. PIN REMOVED FOR KEYING.

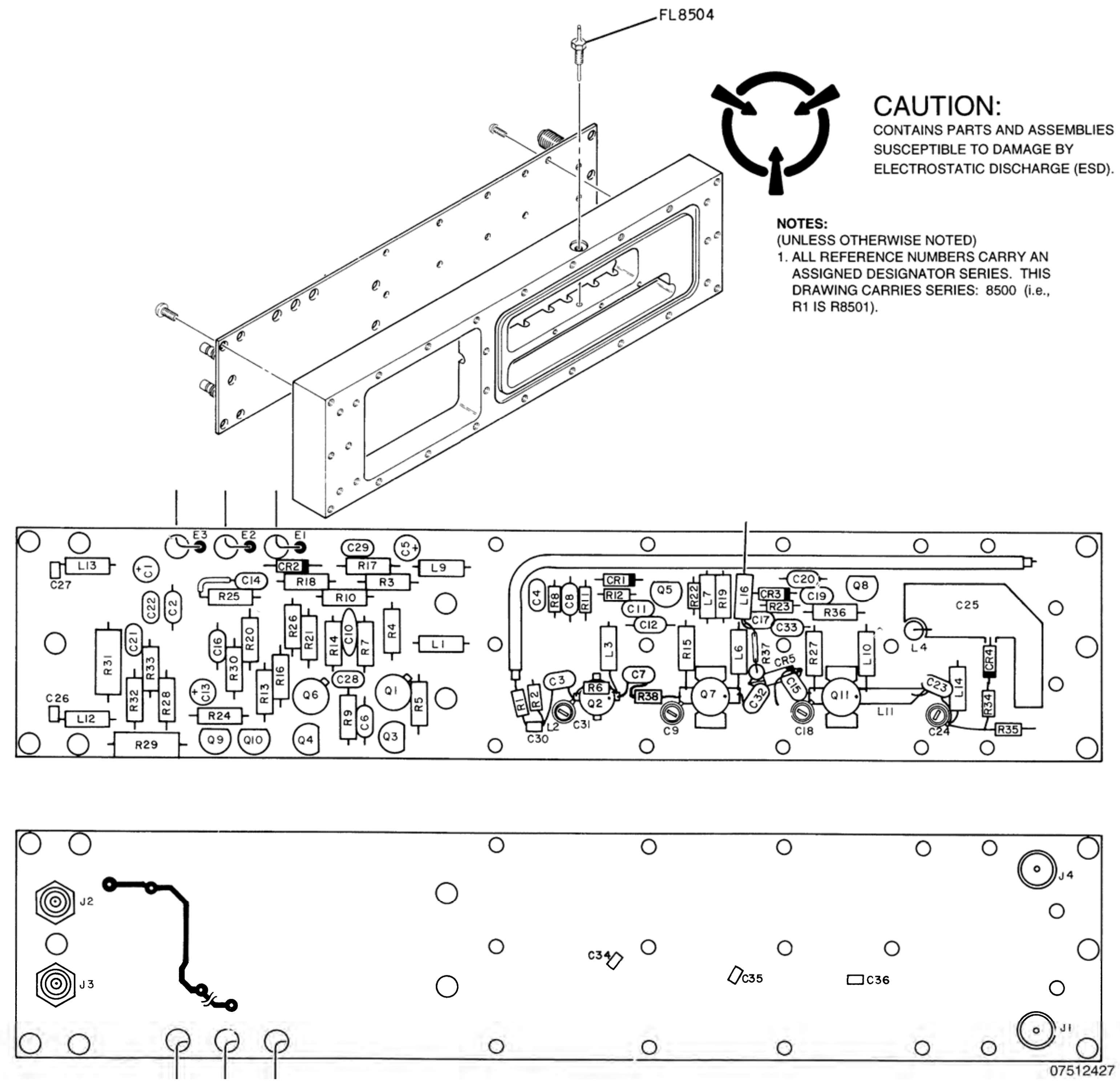
07512426

(0000-7510-900-A2)

RF Bulkhead Assembly (4 of 9)
Attenuator Driver PC Board Assembly Circuit Schematic
Figure 90



Power Detector Assembly
(7005-3041-801-E)

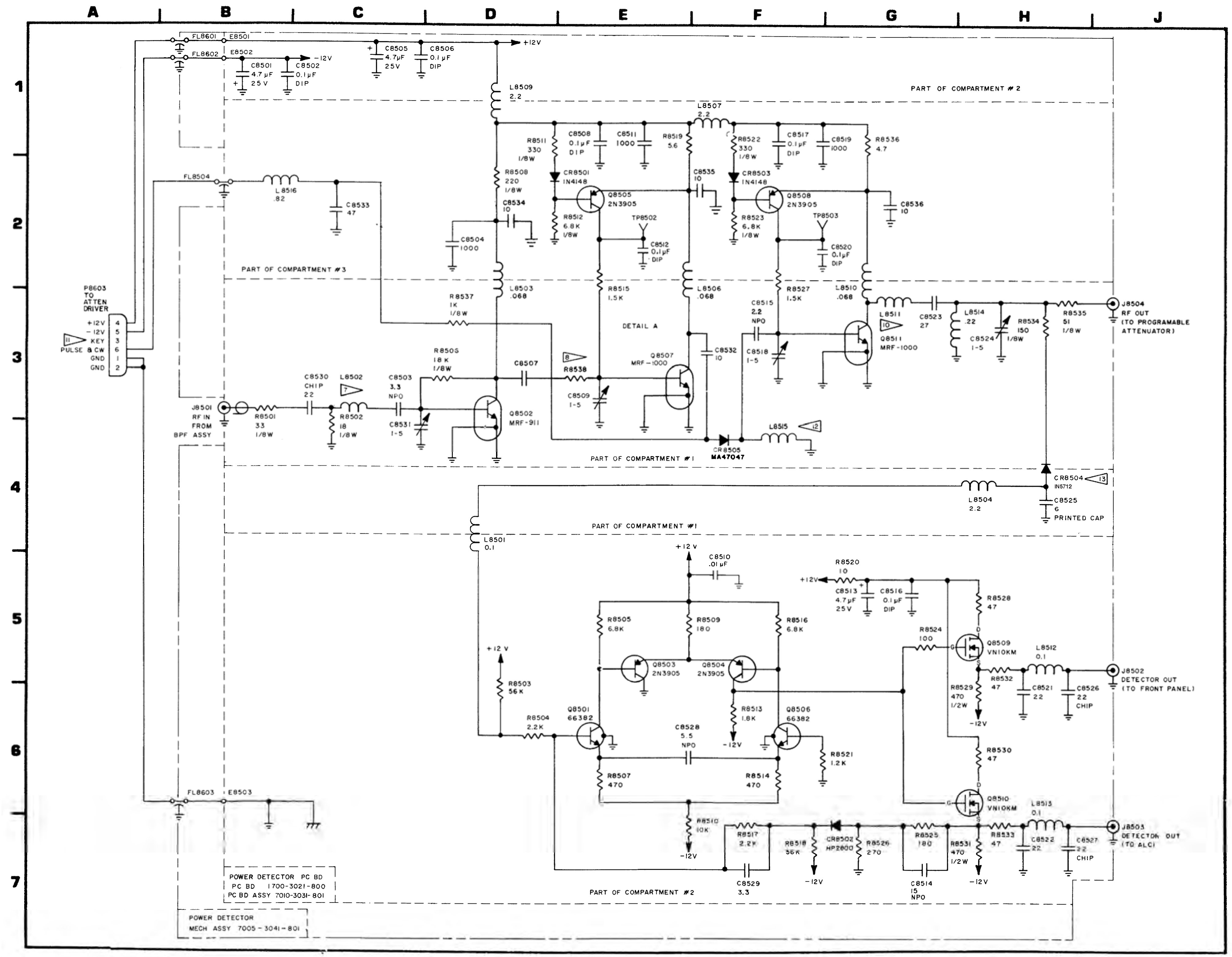


CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS DRAWING CARRIES SERIES: 8500 (i.e., R1 IS R8501).

Power Detector PC Board Assembly
(7010-3031-801-E)

RF Bulkhead Assembly (5 of 9)
Figure 90



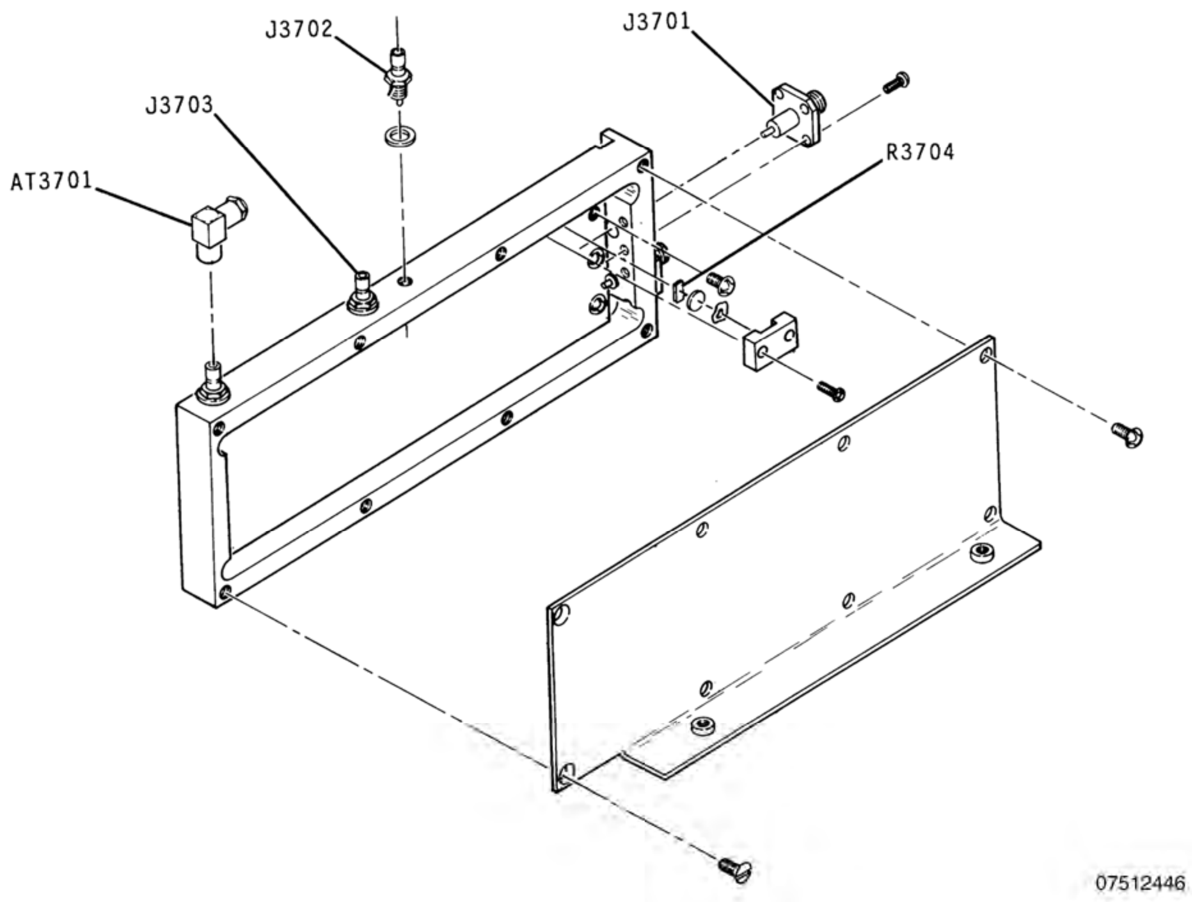
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

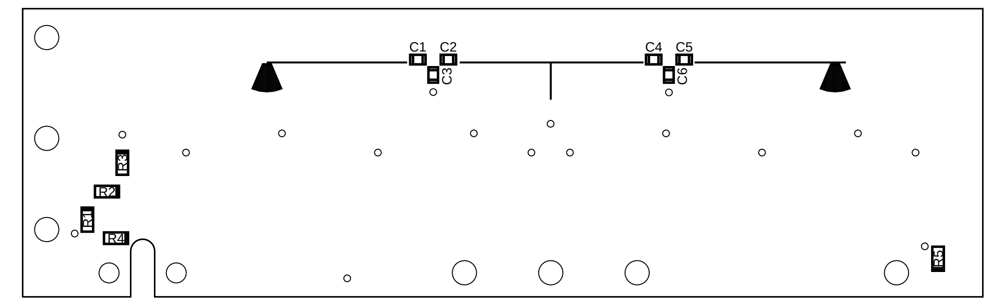
NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL RESISTORS ARE 5%, 1/8 W.
2. ALL RESISTANCE IS EXPRESSED IN OHMS.
3. ALL CAPACITANCE IS EXPRESSED IN PICO-FARADS.
4. ALL INDUCTANCE IS EXPRESSED IN MICRO-HENRIES.
5. NOT USED.
6. NOT USED.
7. L8502 IS CR8503 LEAD (0.15") INDUCTANCE.
8. R8538 IS SELECTED AT TEST, NOMINAL: 10 OHMS RANGE: 5.6 THROUGH 18 OHMS
9. NOT USED.
10. L8511 IS C8523 LEAD (0.1") AND Q8511 FLAT COLLECTOR STRIP INDUCTANCE.
11. P8603, CONTACT 3 REMOVED FOR KEYING.
12. L8515 IS CR8505 LEAD (0.5") INDUCTANCE.
13. REV. A5 CR8504, HP2301.

07512428

(0000-3011-801-B)

RF Bulkhead Assembly (6 of 9)
Power Detector Assembly Circuit Schematic
Figure 90





CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

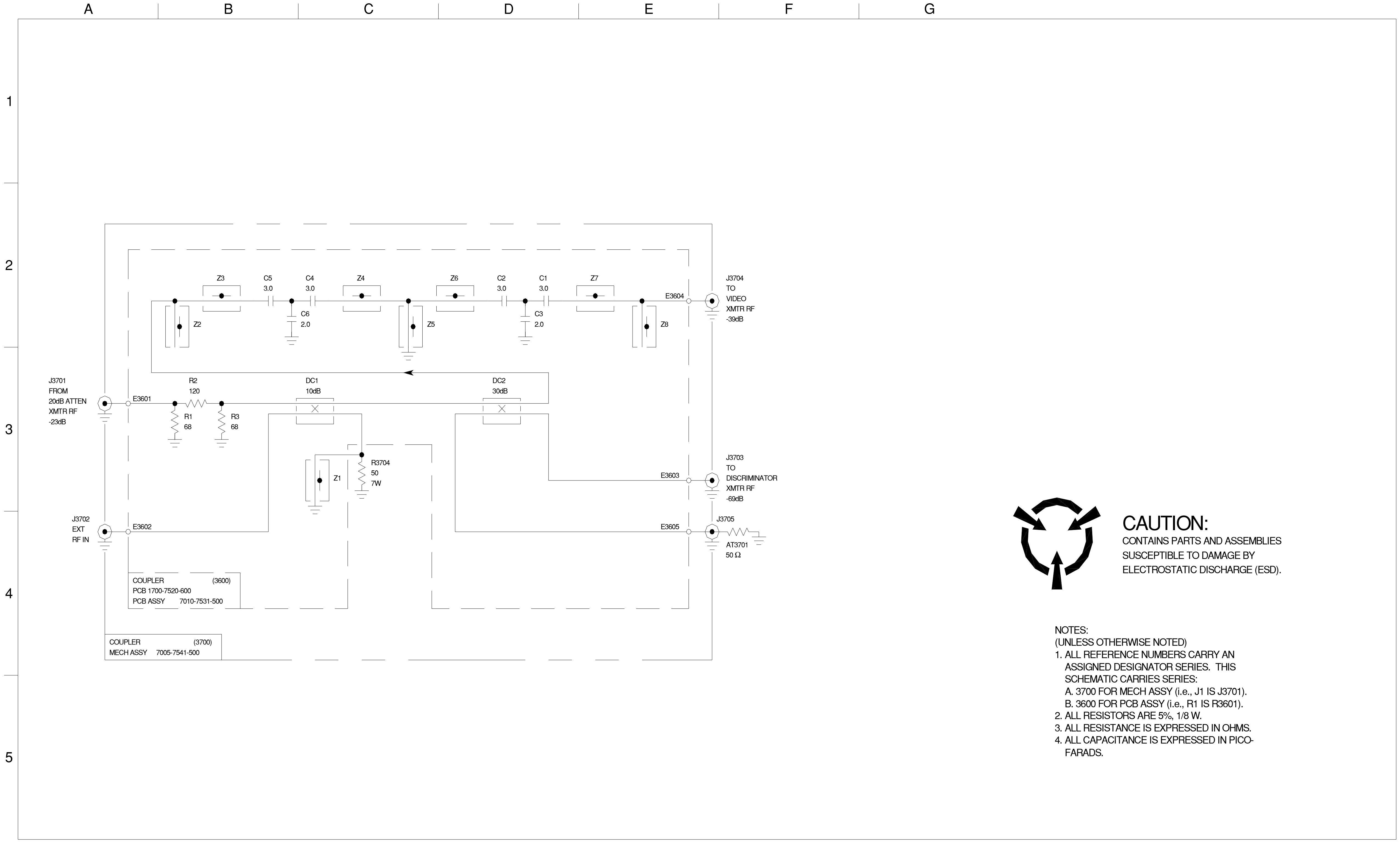
NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS DRAWING CARRIES SERIES: 3600 (i.e., R1 IS R3601).

7520015P

Coupler Assembly
(7005-7541-500-A)

Coupler PC Board Assembly
(7010-7531-500-C)

RF Bulkhead Assembly (7 of 9)
Figure 90



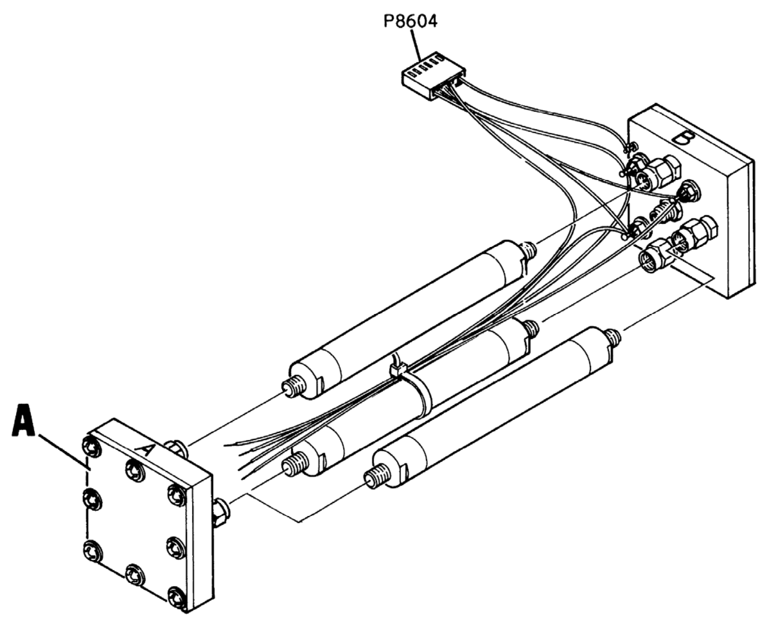
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS SCHEMATIC CARRIES SERIES:
   A. 3700 FOR MECH ASSY (i.e., J1 IS J3701).
   B. 3600 FOR PCB ASSY (i.e., R1 IS R3601).
2. ALL RESISTORS ARE 5%, 1/8 W.
3. ALL RESISTANCE IS EXPRESSED IN OHMS.
4. ALL CAPACITANCE IS EXPRESSED IN PICO-FARADS.

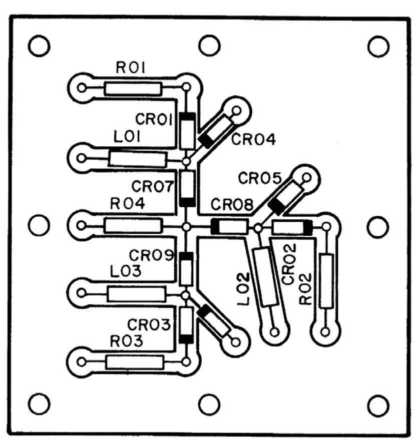
0751822S

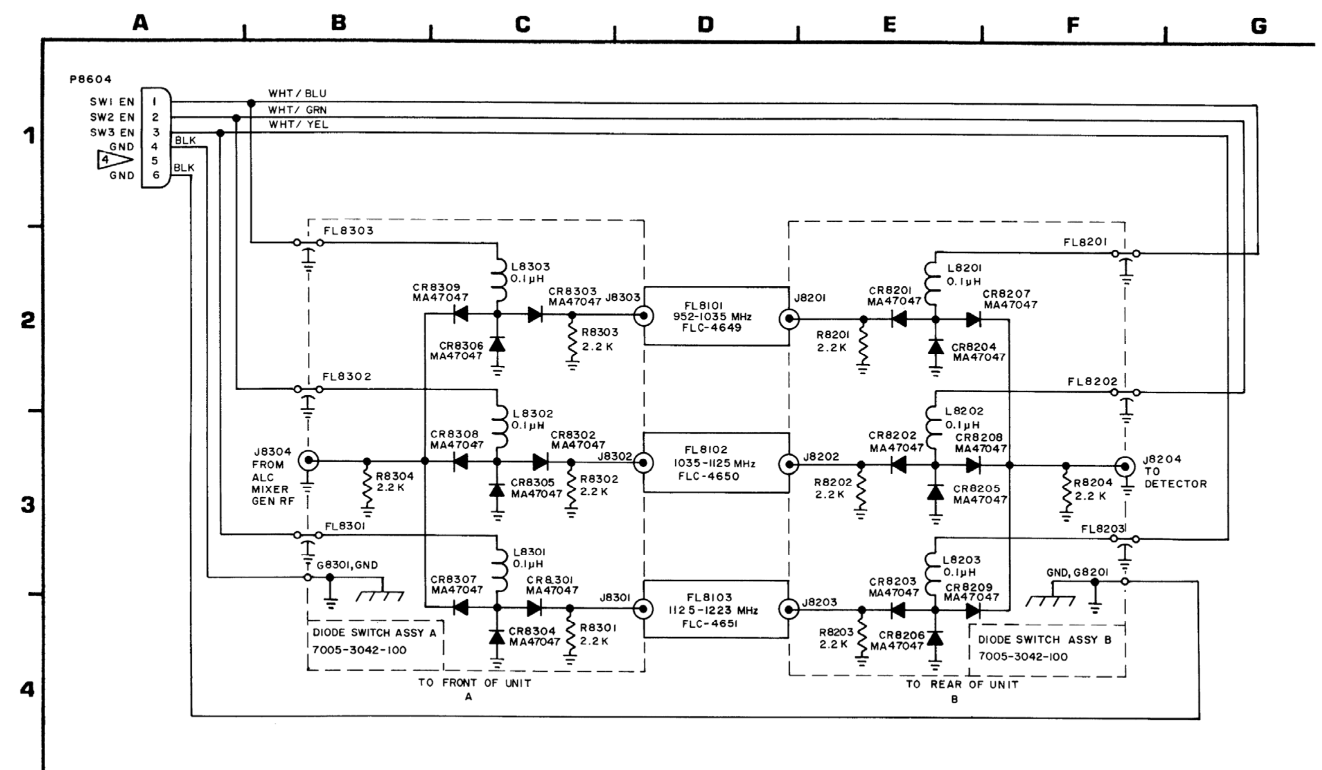
(0000-7511-500-C)

RF Bulkhead Assembly (8 of 9)
Coupler Assembly Circuit Schematic
Figure 90



Bandpass Filter Assembly (7005-3046-000-C)





CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL RESISTORS ARE 5%, 1/4 W.
2. ALL RESISTANCE IS EXPRESSED IN OHMS.
3. NOT USED.
4. P8604, CONTACT 5 FILLED IN FOR KEYING.

07512430

Bandpass Filter Assembly Circuit Schematic
(0000-3016-000-A)

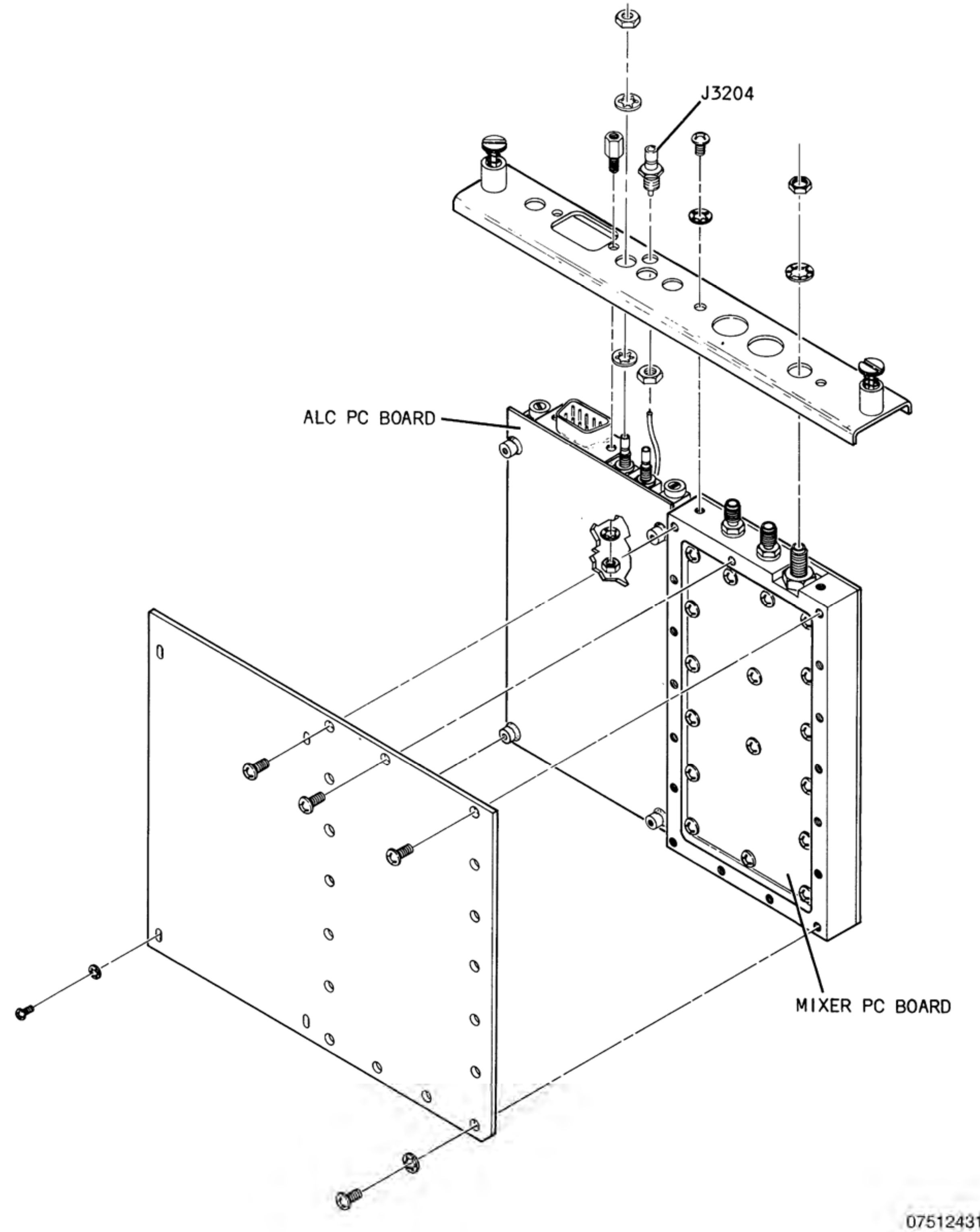
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS DRAWING CARRIES SERIES: 8200 (UNIT B) OR 8300 (UNIT A) (i.e., R01 IS R8201 OR R8301).

DETAIL A

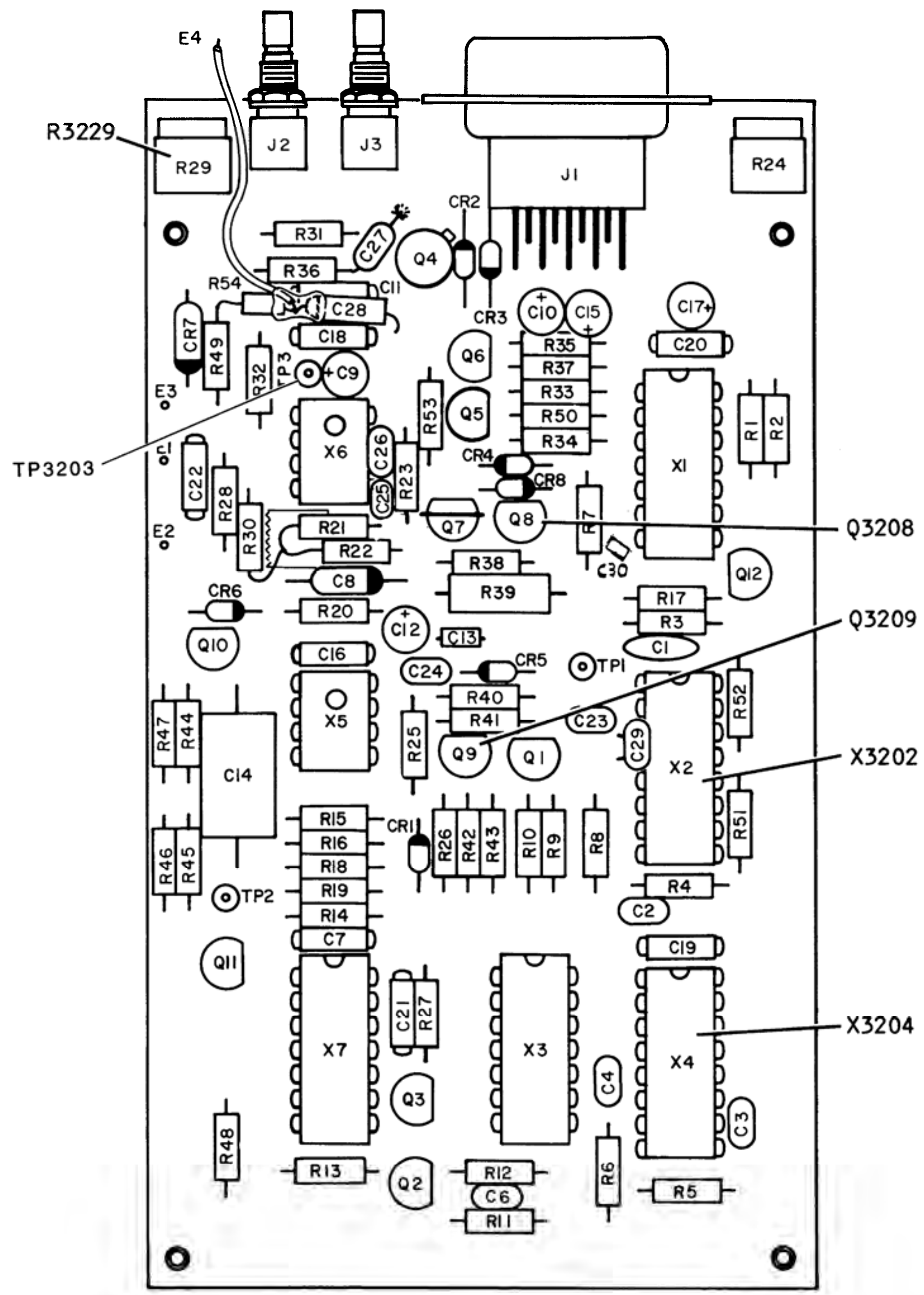
Diode Switch Assembly
(7005-3042-100-E)

RF Bulkhead Assembly (9 of 9)
Figure 90



(7005-3041-401-B)

ALC/Mixer Assembly (1 of 5)
Figure 91



CAUTION:

CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:

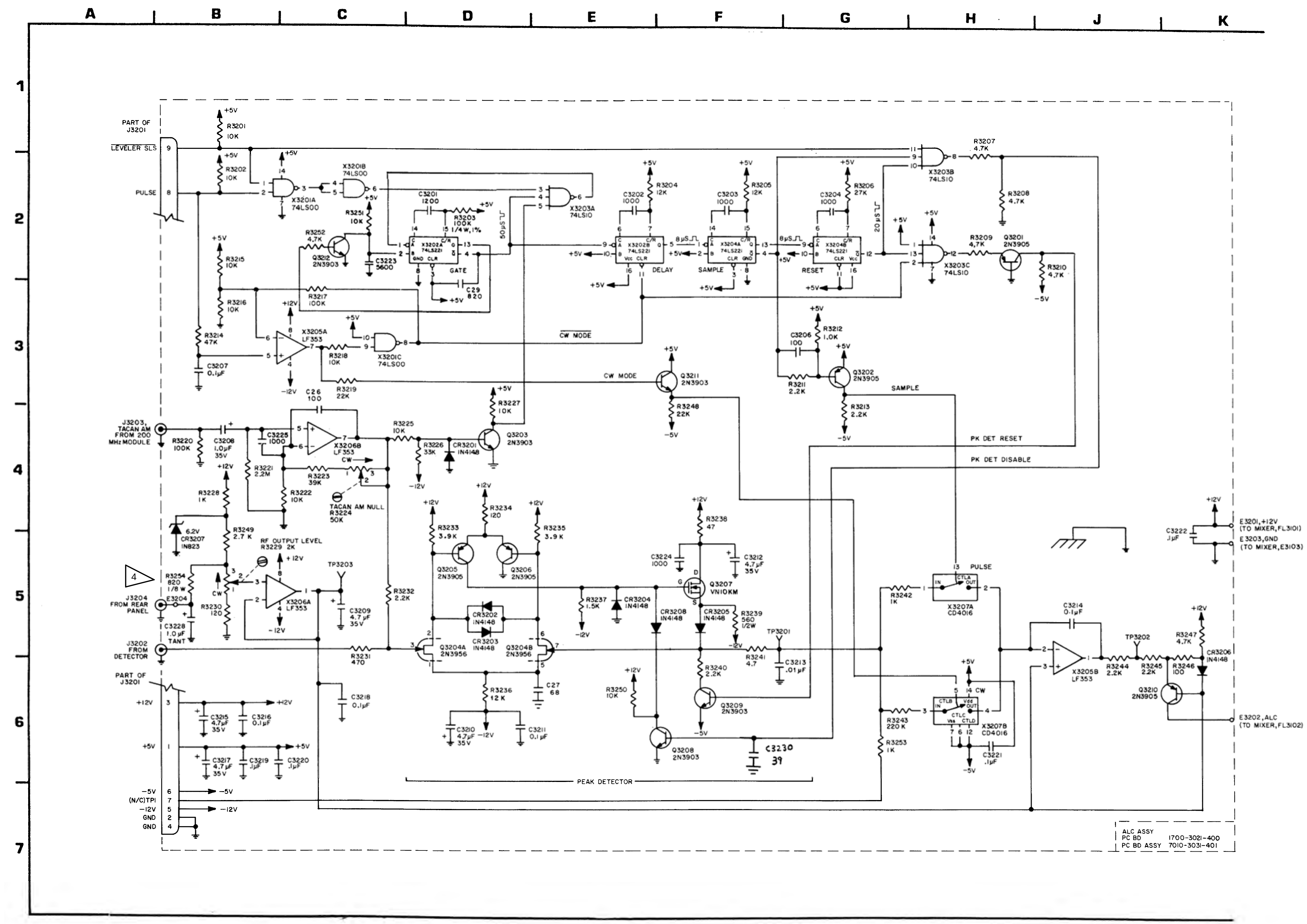
(UNLESS OTHERWISE NOTED)

1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS DRAWING CARRIES SERIES: 3200 (i.e., R1 IS R3201).

07512432

(7010-3031-401-C)

ALC/Mixer Assembly (2 of 5)
ALC PC Board Assembly
Figure 91



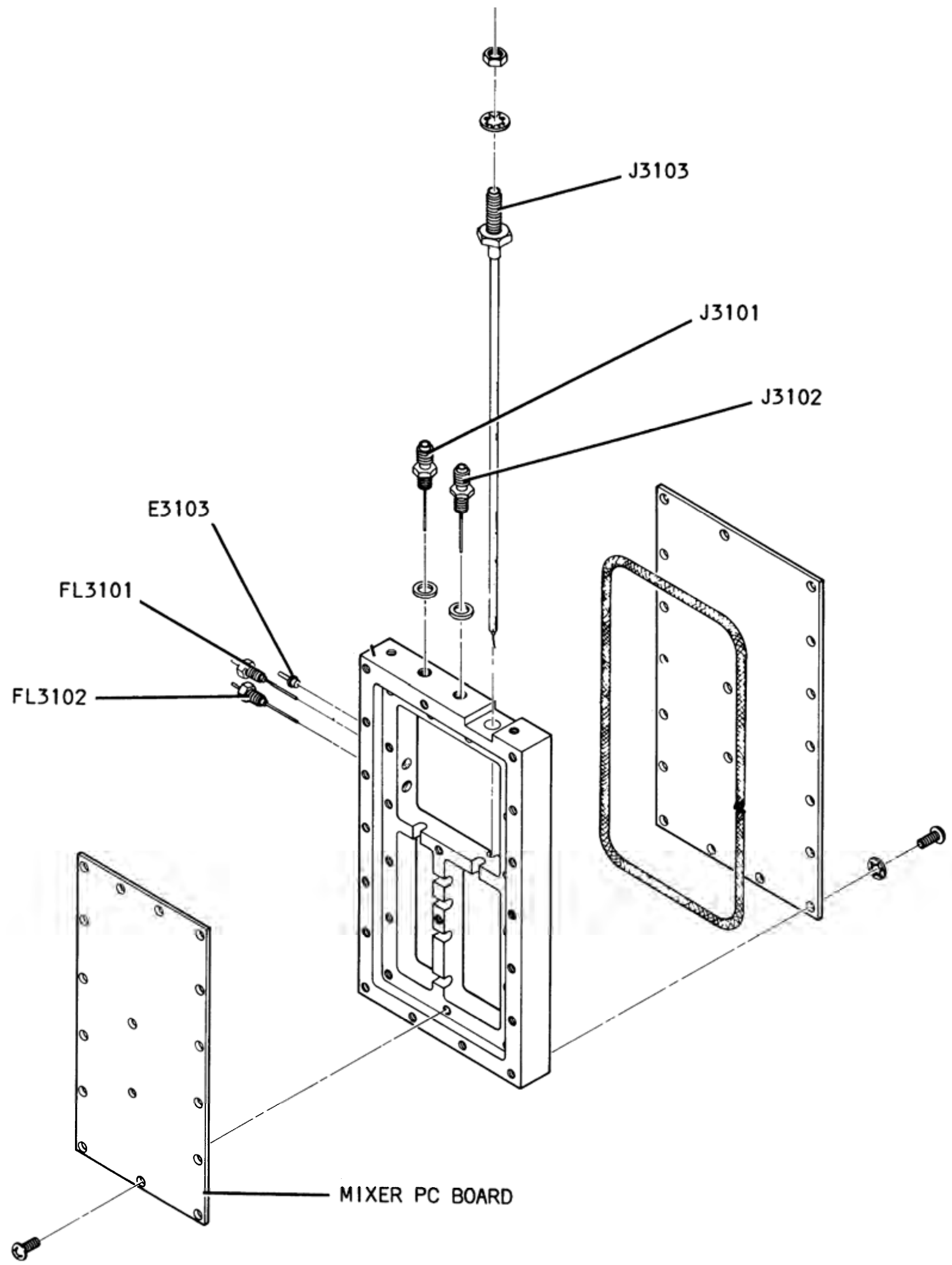
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL RESISTORS ARE 5%, 1/4 W.
2. ALL RESISTANCE IS EXPRESSED IN OHMS.
3. ALL CAPACITANCE IS EXPRESSED IN PICO-FARADS.
4. REV. B R3254 1.2k OHM.

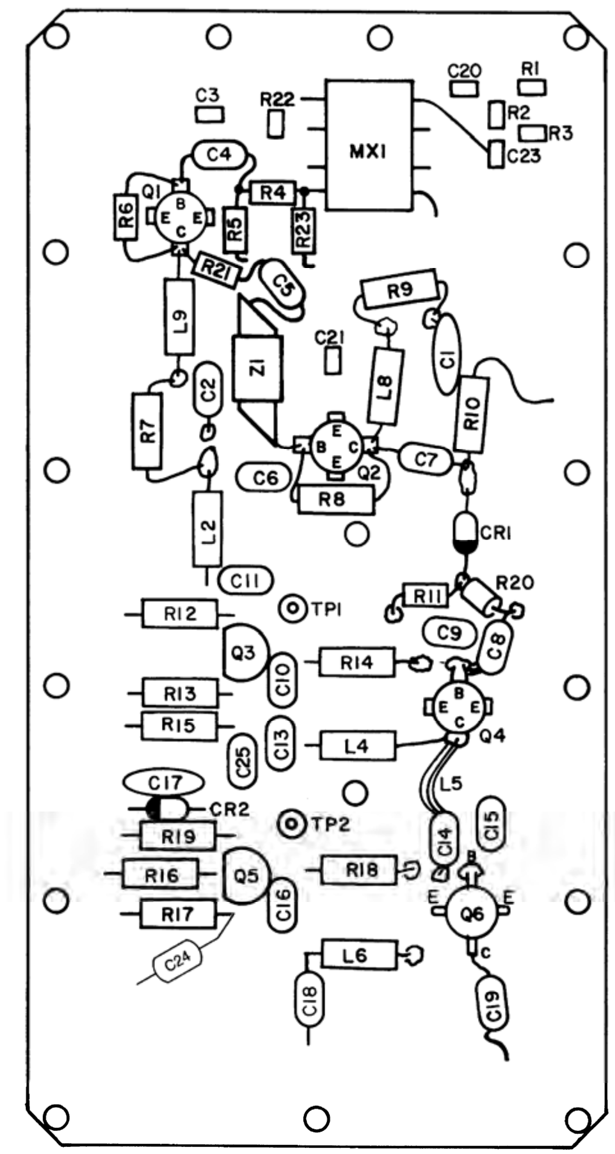
07512433

(0000-3011-401-C)

ALC/Mixer Assembly (3 of 5)
ALC PC Board Assembly Circuit Schematic
Figure 91



Mixer Assembly
(7005-3041-500-D)



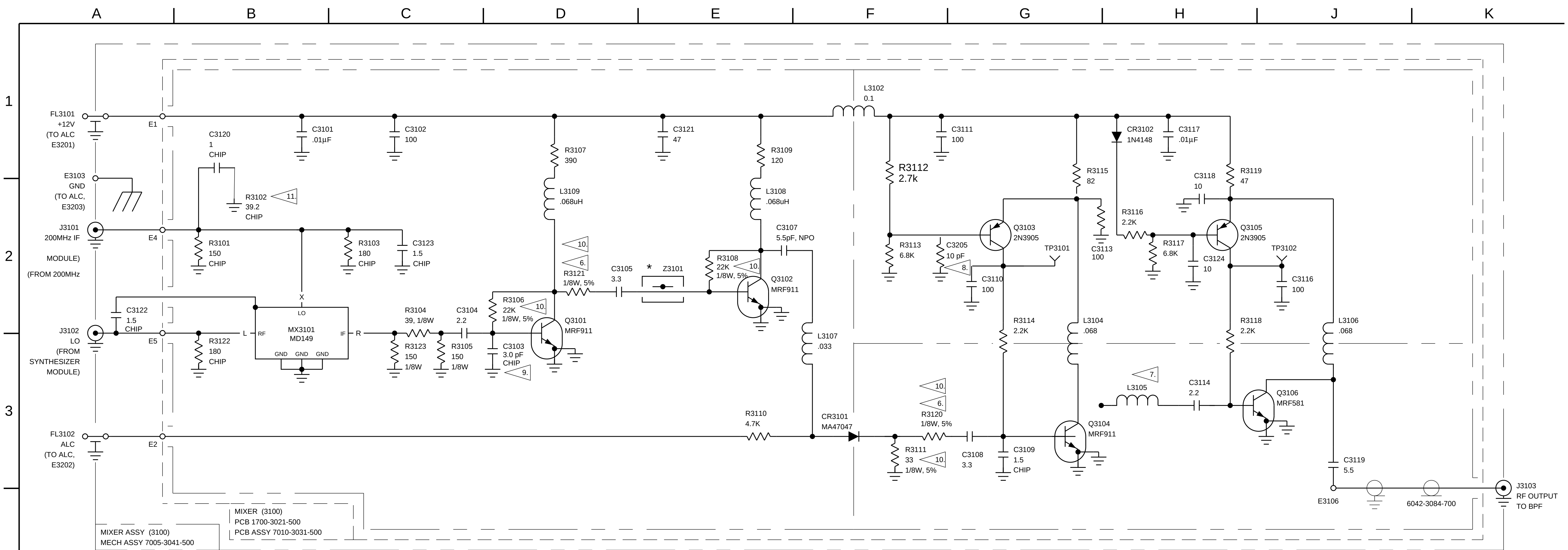
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

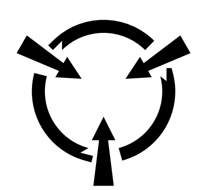
NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS DRAWING CARRIES SERIES: 3100 (i.e., R1 IS R3101).
2. C25 IMPLEMENTED ON REV. E.

07512434

Mixer PC Board Assembly
(7010-3031-500-F1)

ALC/Mixer Assembly (4 of 5)
Figure 91





CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)

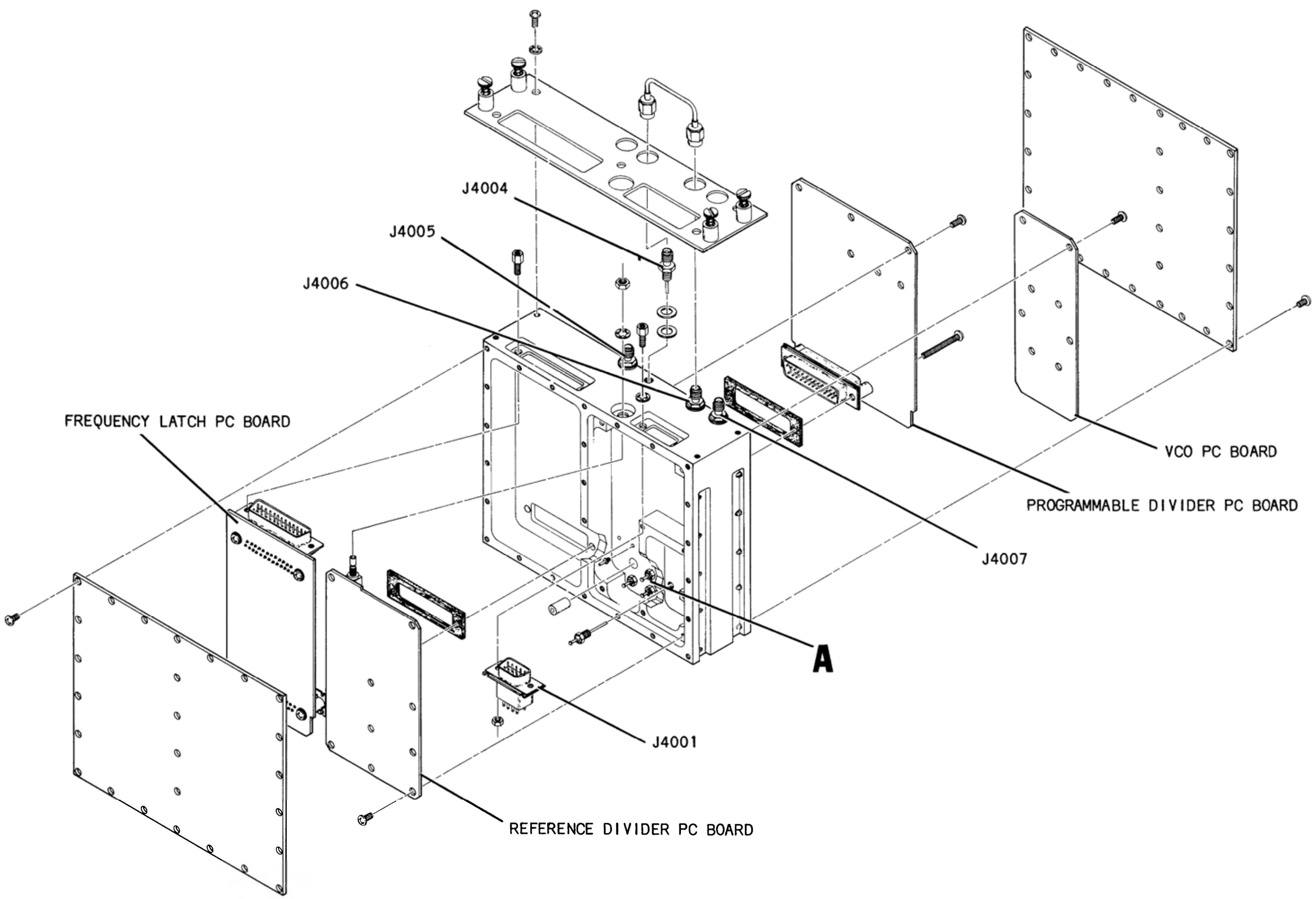
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS SCHEMATIC CARRIES SERIES: 3100 (i.e., R1 IS R3101).
2. ALL RESISTORS ARE 5%, 1/4 W.
3. ALL RESISTANCE IS EXPRESSED IN OHMS.
4. ALL CAPACITANCE IS EXPRESSED IN PICO-FARADS.
5. ALL INDUCTANCE IS EXPRESSED IN MICRO-HENRIES.
6. R3120 AND R3121 ARE SELECTED AT TEST. SELECTED VALUES: 33, 39, 47, 51, 56, 68, 82 AND 100 OHMS.
   PRIOR TO REV. C, R3120 AND R3121 NOMINAL VALUE: 47 OHMS, RANGE: 33 TO 68 OHMS.
   REV. D, R3120 AND R3121 NOMINAL VALUE 56 OHMS.
7. L3105 IS FORMED BY THE STRAY INDUCTANCE OF THE LEAD OF C3114.
8. IMPLEMENTED ON REV. D.
9. IMPLEMENTED ON REV. E. PRIOR REVISIONS C3103 4.0 pF.
10. IMPLEMENTED ON REV. E. PRIOR REVISIONS 10%.
11. IMPLEMENTED ON REV. E. PRIOR REVISIONS 39.

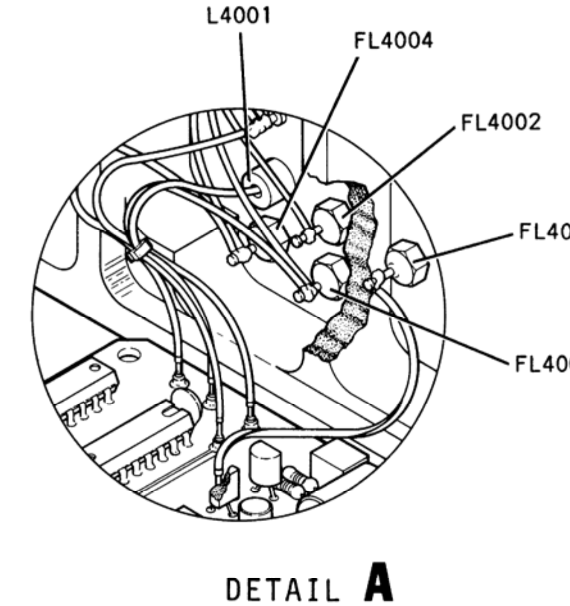
* - INDICATES PRINTED TRANSMISSION LINES OF OTHER THAN 50 OHMS IMPEDANCE WHICH CONSTITUTE CIRCUIT ELEMENTS. 50 OHM TRANSMISSION LINES ARE NOT SHOWN.

0751848S

(0000-3011-500-E1)

ALC/Mixer Assembly (5 of 5)
Mixer Assembly Circuit Schematic
Figure 91



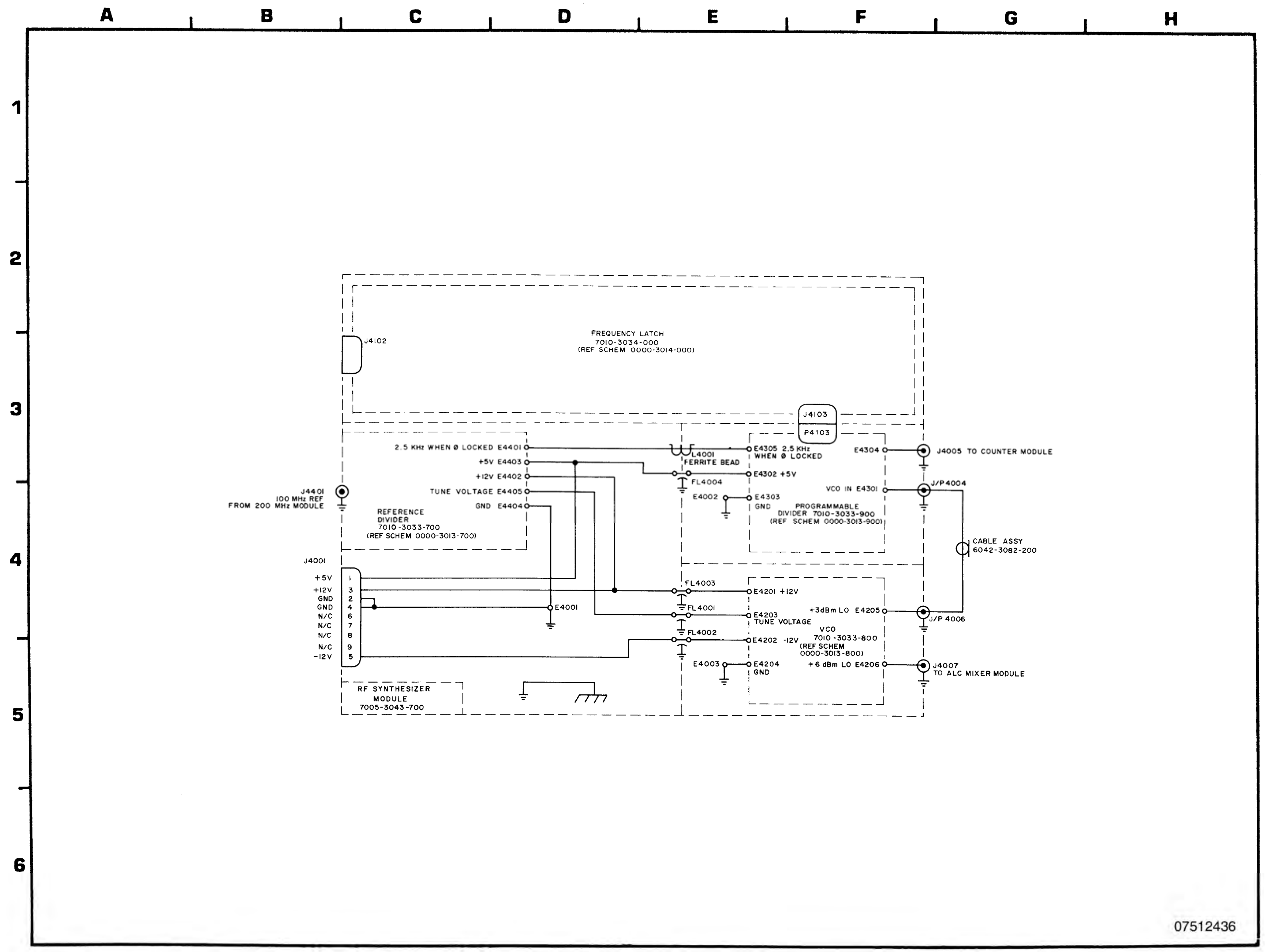


WIRE RUNNING LIST			
FROM	TO	COLOR	AWG
J4001-1	FL4004	ORANGE	26
J4001-2	E4001	BLACK	26
J4001-3	FL4003	RED	26
J4001-4	E4001	BLACK	26
J4001-5	FL4002	RED/WHITE	26
E4401 (Through L4001)	E4305	YELLOW	26
E4001	E4404	BLACK	26
FL4001	E4405	BLUE/WHITE	26
FL4003	E4402	RED	26
FL4004	E4403	ORANGE	26
FL4001	E4203	BLUE/WHITE	26
FL4002	E4202	RED/WHITE	26
FL4003	E4201	RED	26
FL4004	E4302	ORANGE	26
E4002	E4303	BLACK	26
E4003	E4204	BLACK	26

07512435

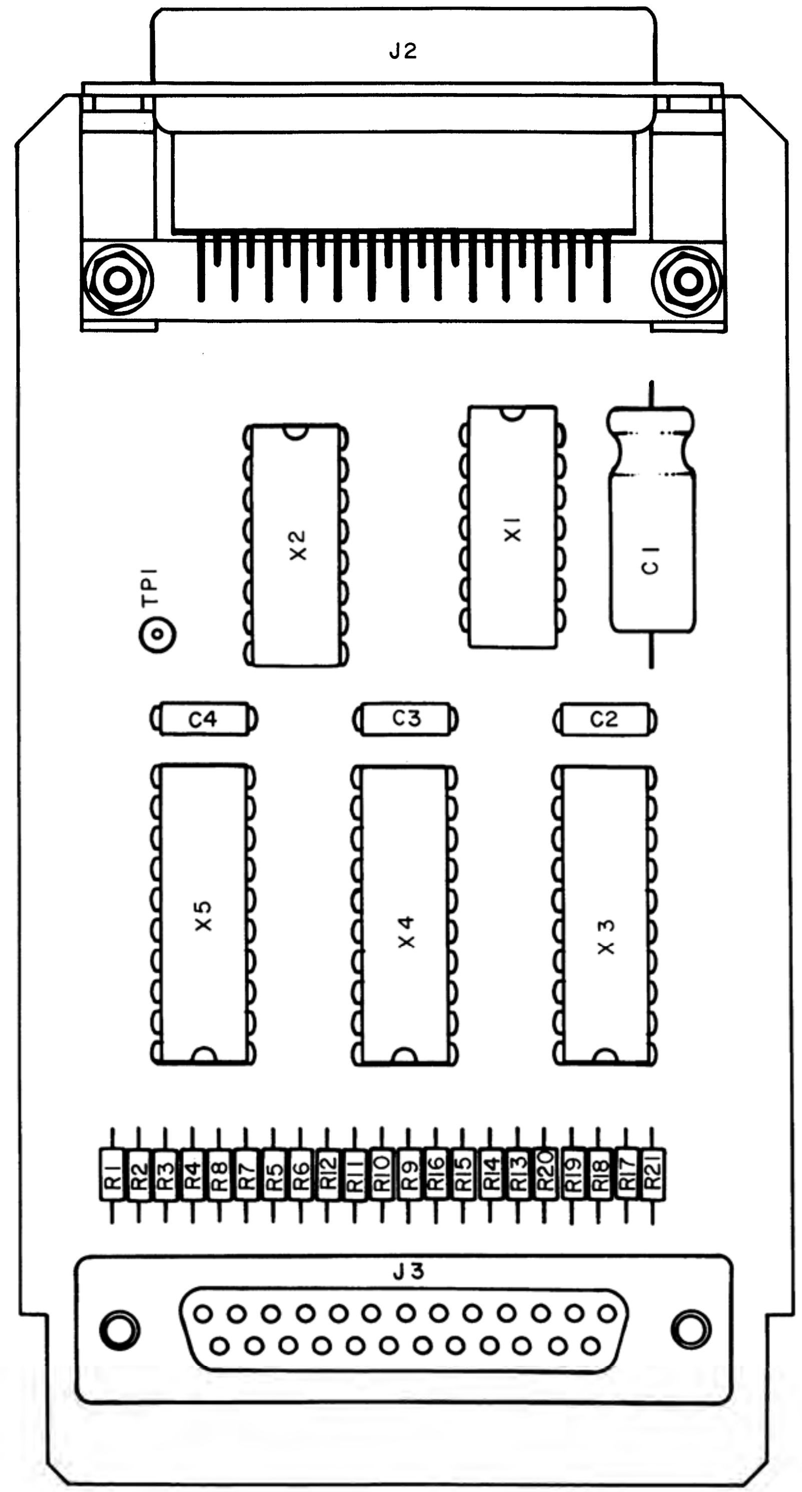
(7005-3043-700-J)

RF Synthesizer Assembly (1 of 12)
Figure 92



(0000-3013-700-C1)

RF Synthesizer Assembly (2 of 12)
RF Synthesizer Assembly Interconnect Diagram
Figure 92



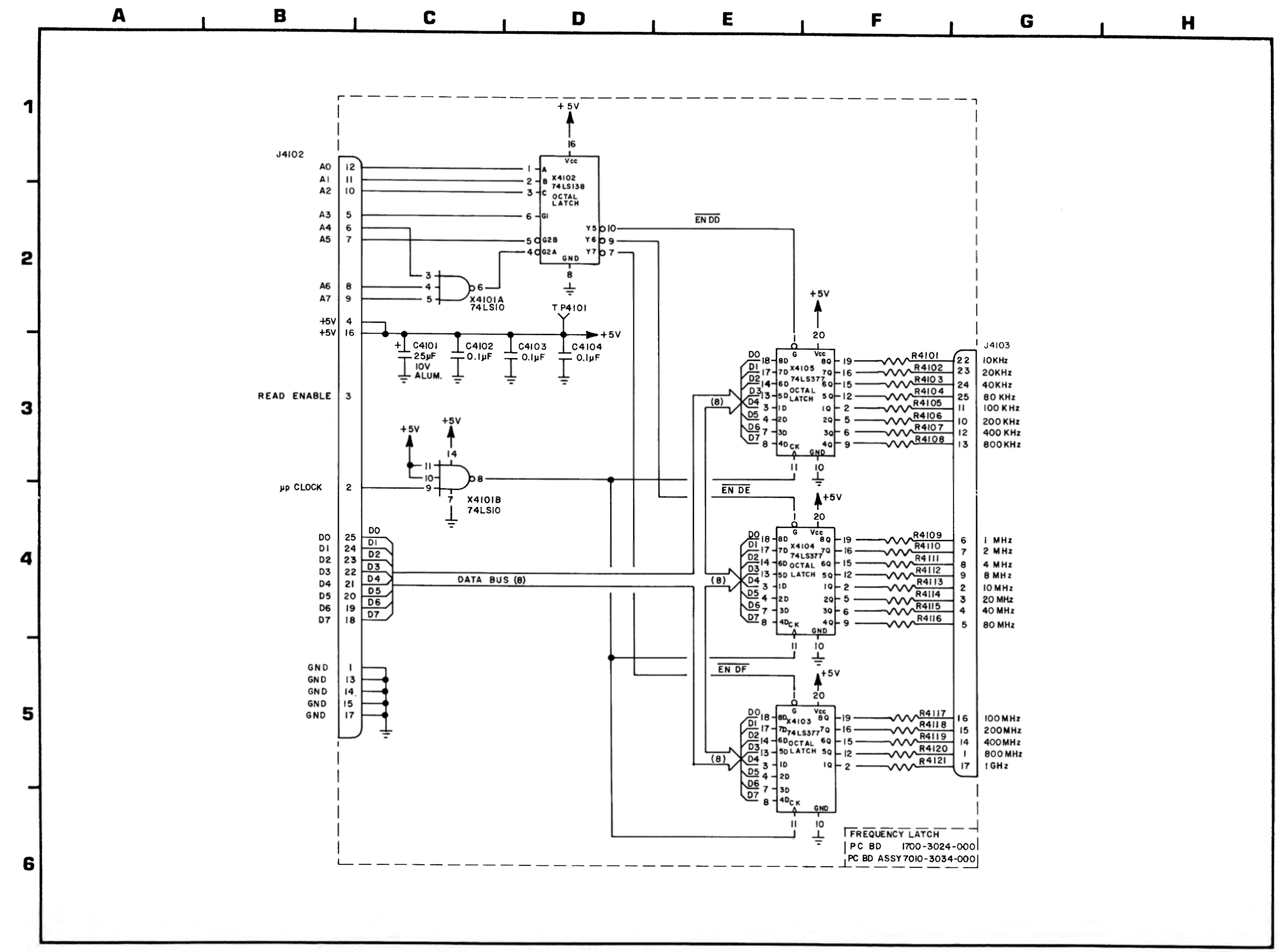
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

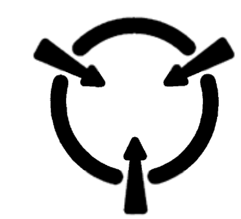
NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS DRAWING CARRIES SERIES: 4100 (i.e., R1 IS R4101).

07512437

(7010-3034-000-A1)

RF Synthesizer Assembly (3 of 12)
Frequency Latch PC Board Assembly
Figure 92





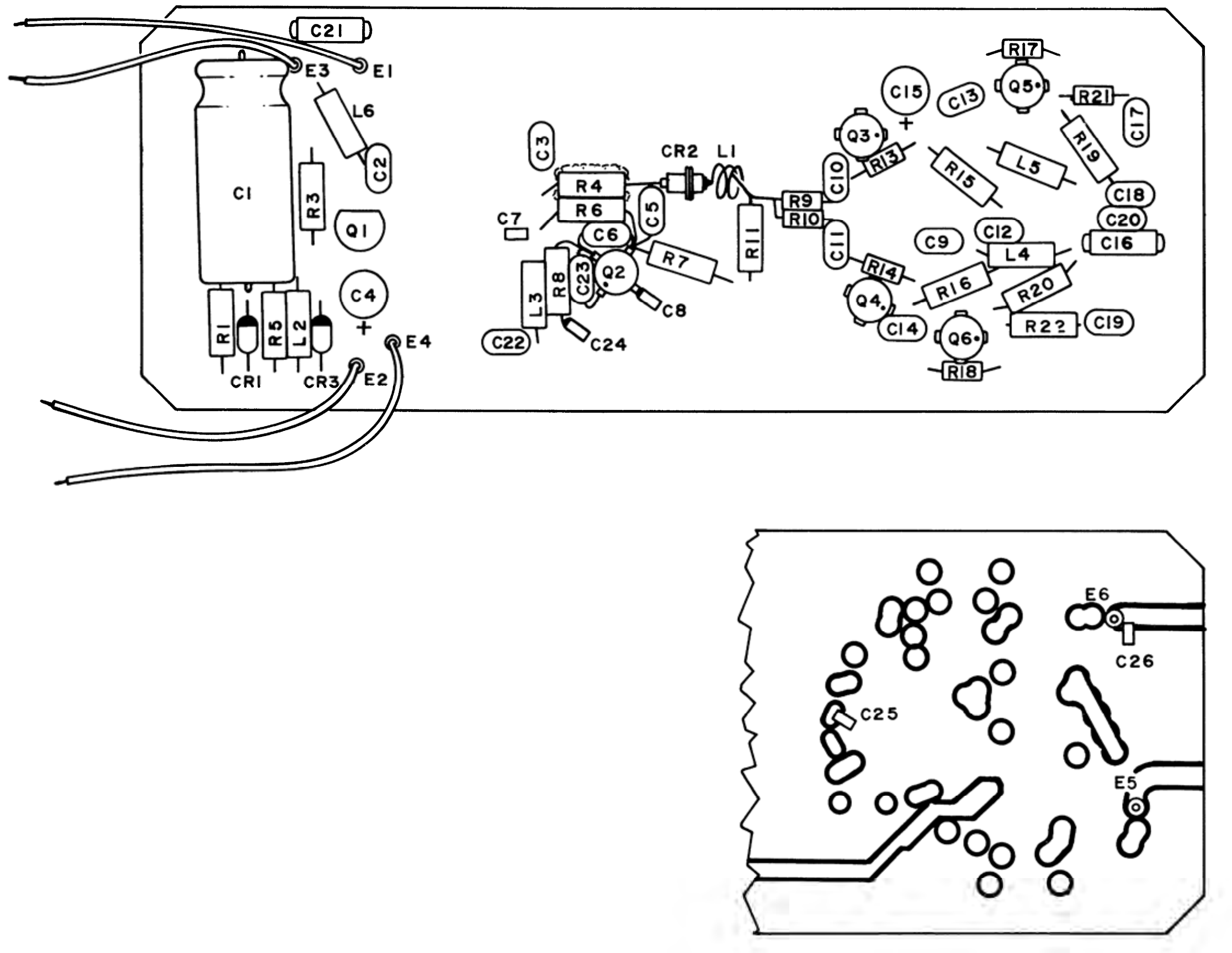
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL RESISTORS ARE 100 OHM, 5%, 1/8 W.

07512438

(0000-3014-000-A)

RF Synthesizer Assembly (4 of 12)
Frequency Latch PC Board Assembly Circuit Schematic
Figure 92



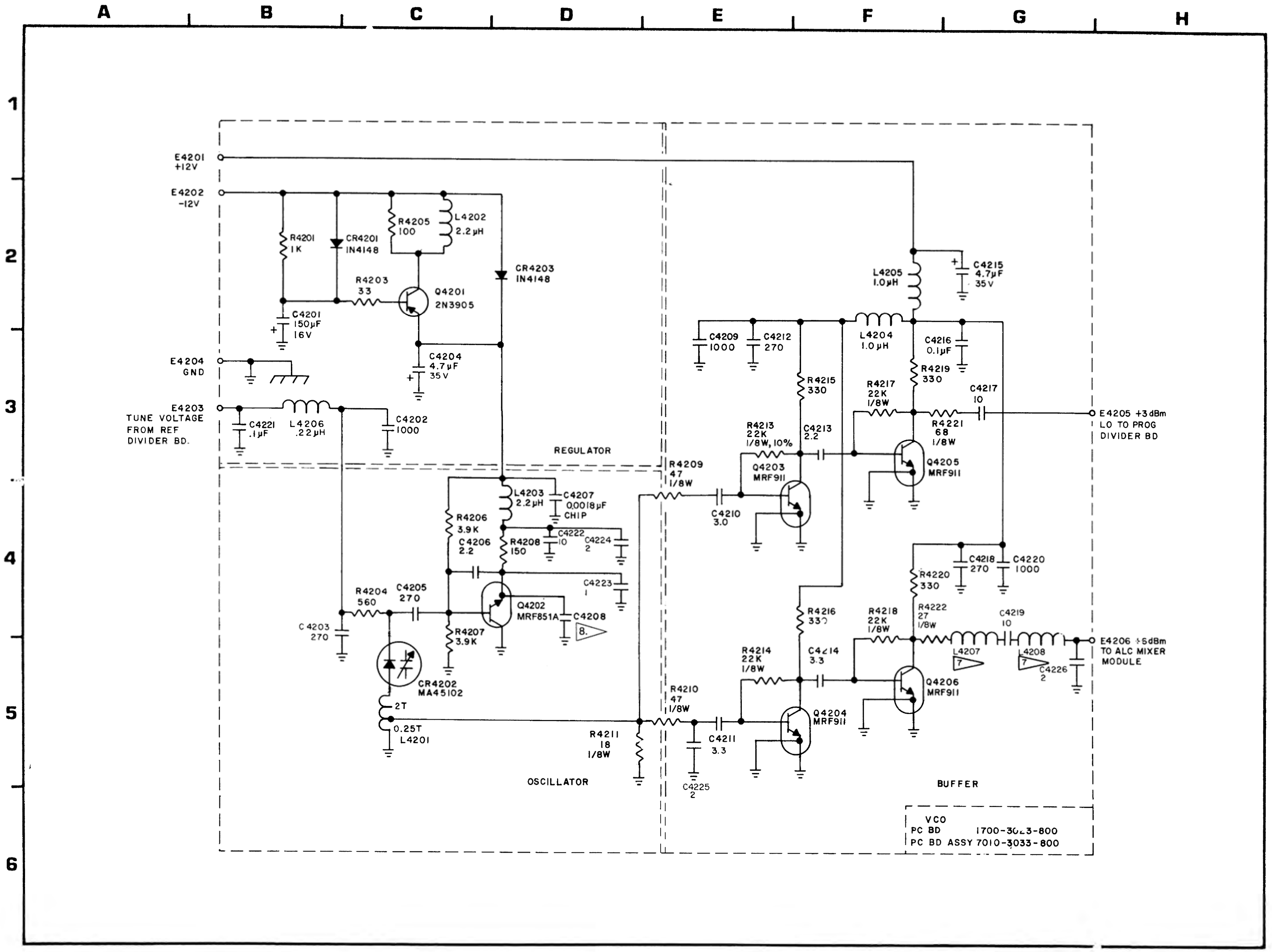
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS DRAWING CARRIES SERIES: 4200 (i.e., R1 IS R4201).

07512439

(7010-3033-800-A9)

RF Synthesizer Assembly (5 of 12)
VCO PC Board Assembly
Figure 92



CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

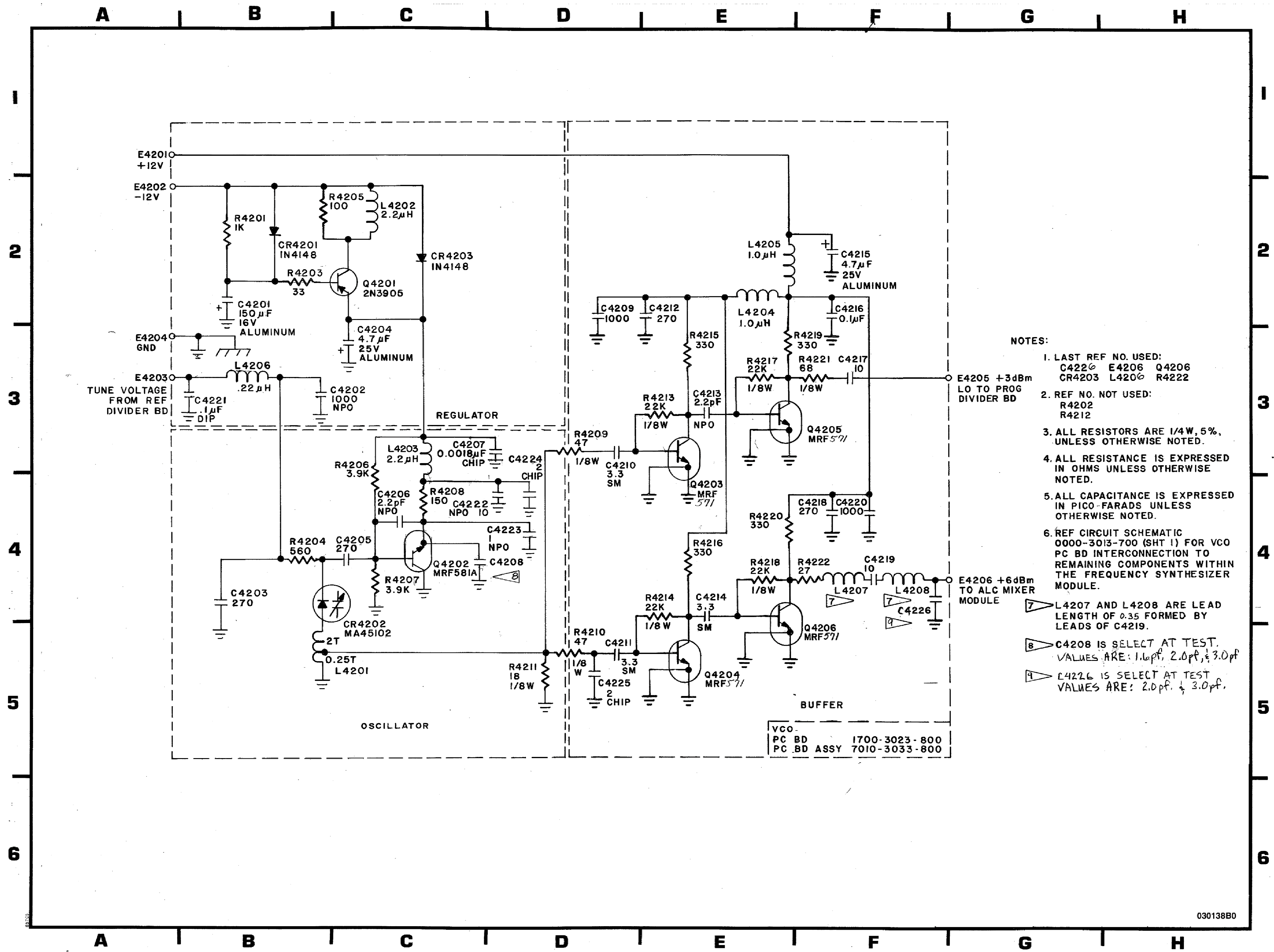
NOTES:
(UNLESS OTHERWISE NOTED)

1. ALL RESISTORS ARE 5%, 1/4 W.
2. ALL RESISTANCE IS EXPRESSED IN OHMS.
3. ALL CAPACITANCE IS EXPRESSED IN PICO-FARADS.
4. NOT USED.
5. NOT USED.
6. NOT USED.
7. L4207 AND L4208 ARE FORMED BY C4219 LEAD (0.35") INDUCTANCE.
8. C4208 IS SELECTED AT TEST, NOMINAL: 2 pF RANGE: 1.6 pF, 2 pF OR 3 pF

07512440

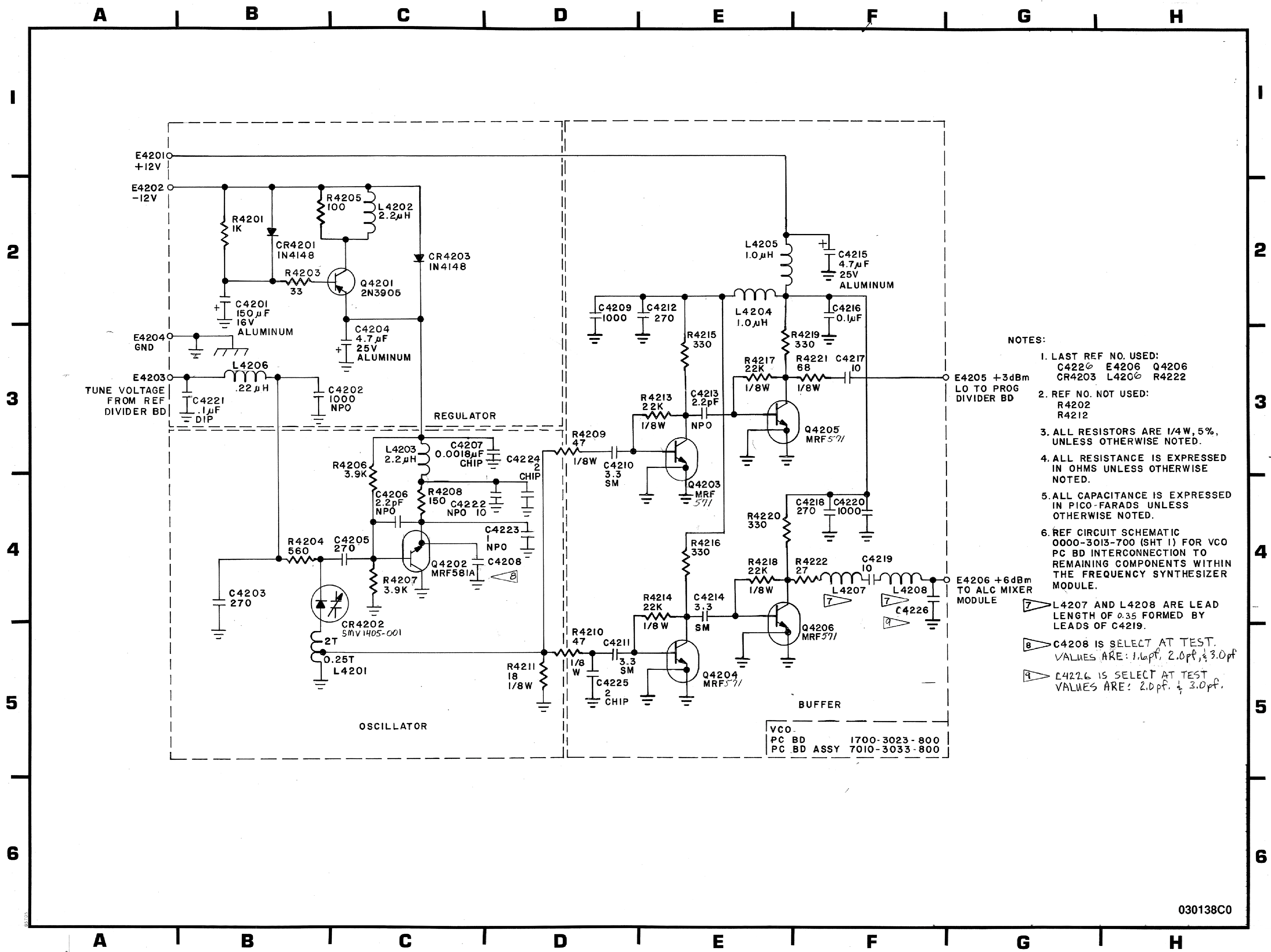
(0000-3013-800-A7)

RF Synthesizer Assembly (6 of 12)
VCO PC Board Assembly Circuit Schematic
Figure 92



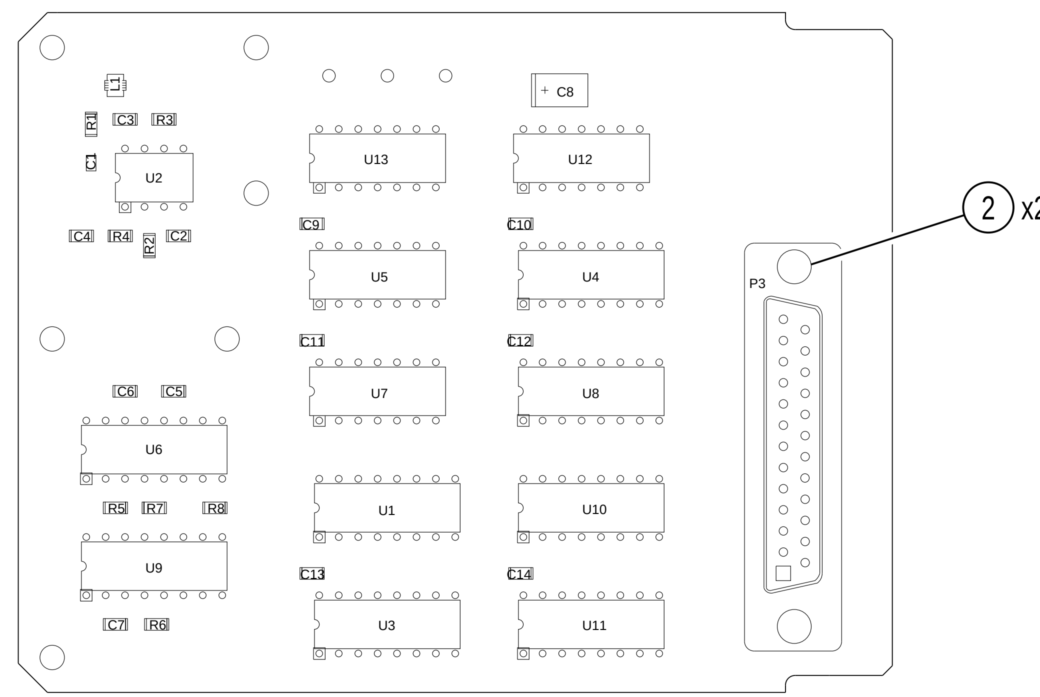
(0000-3013-800-B)

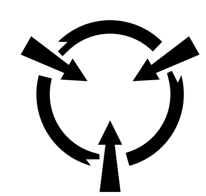
RF Synthesizer Assembly (7 of 12)
VCO PC Board Assembly Circuit Schematic
Figure 92



(0000-3013-800-C)

RF Synthesizer Assembly (8 of 12)
VCO PC Board Assembly Circuit Schematic
Figure 92





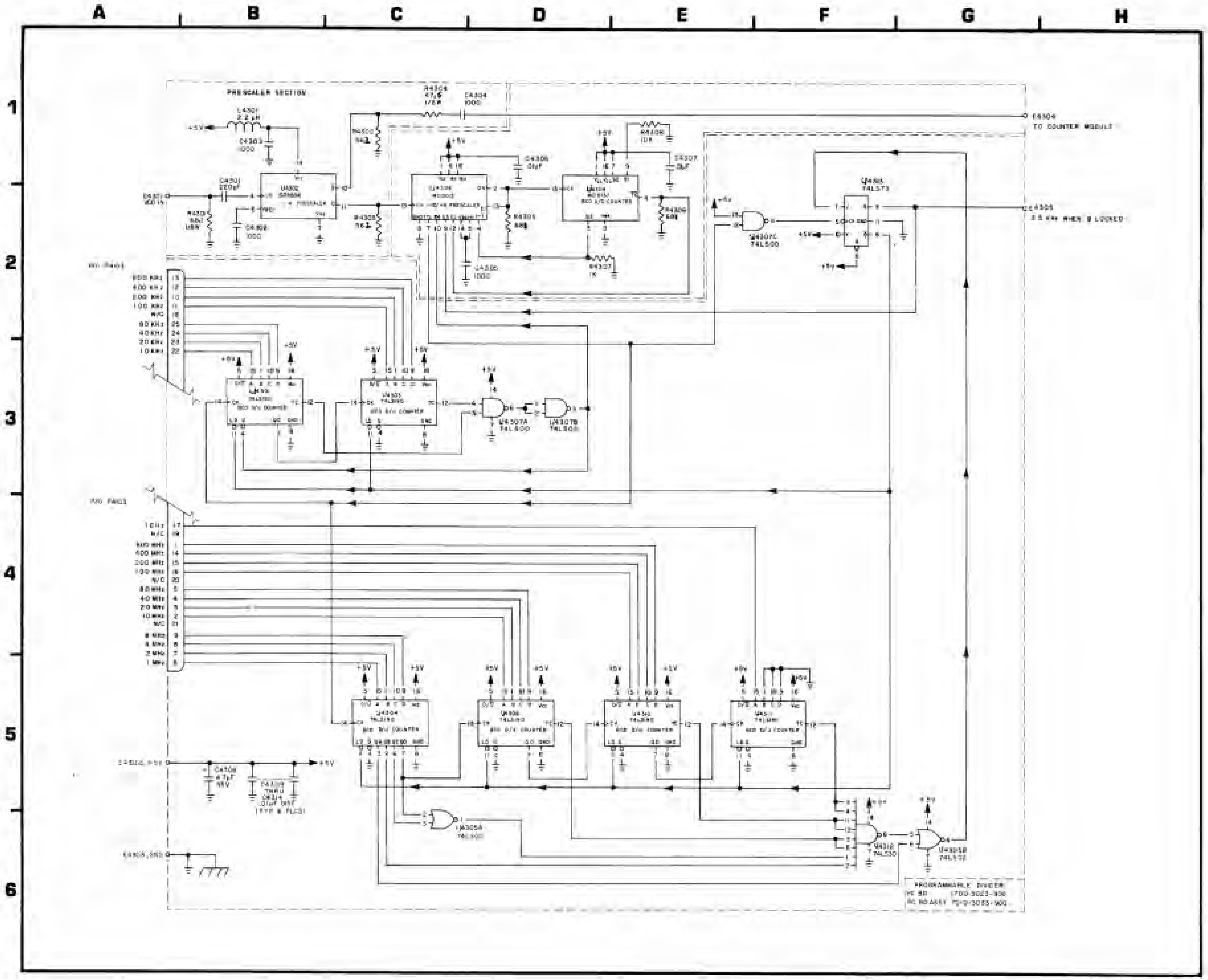
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS DRAWING CARRIES SERIES: 4300 (i.e., R1 IS R4301).

7520000P

(7010-3033-900-E)

RF Synthesizer Assembly (9 of 12)
Programmable Divider PC Board Assembly
Figure 92

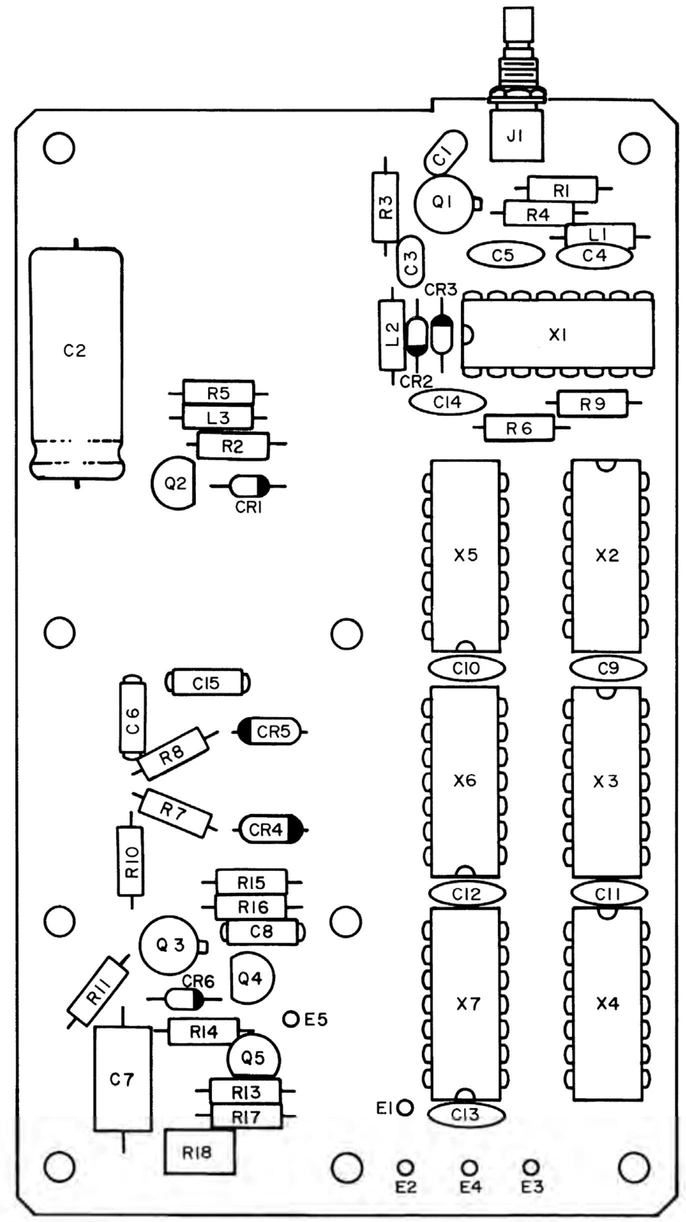


CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL RESISTORS ARE 5%, 1/4 W.
2. ALL RESISTANCE IS EXPRESSED IN OHMS.
3. ALL CAPACITANCE IS EXPRESSED IN PICO-FARADS.

(0000-3013-900-E)

RF Synthesizer Assembly (10 of 12)
Programmable Divider PC Board Assembly Circuit Schematic
Figure 92



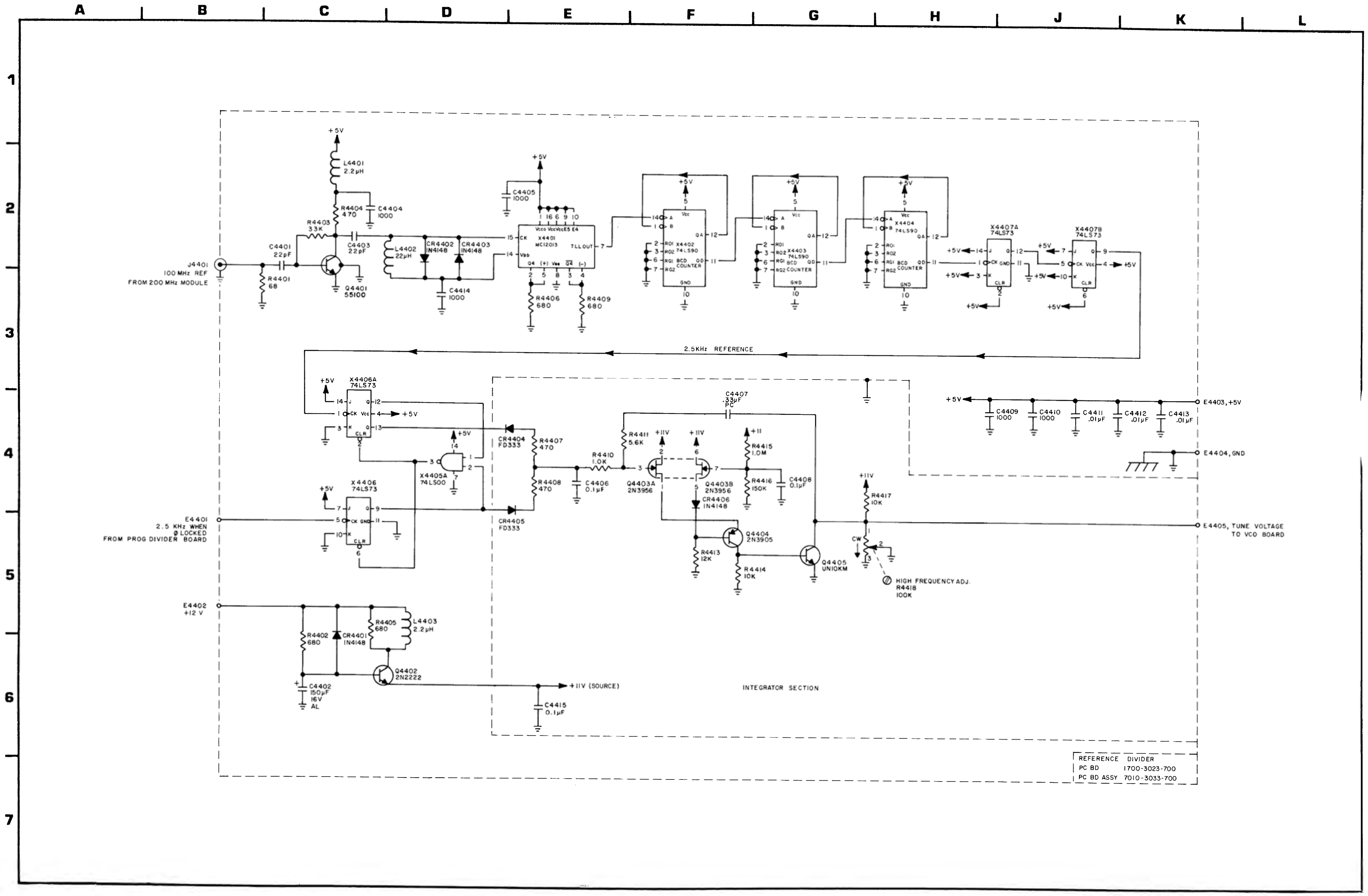
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS DRAWING CARRIES SERIES: 4400 (i.e., R1 IS R4401).

07512441

(7010-3033-700-C3)

RF Synthesizer Assembly (11 of 12)
Reference Divider PC Board Assembly
Figure 92



CAUTION:

CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:

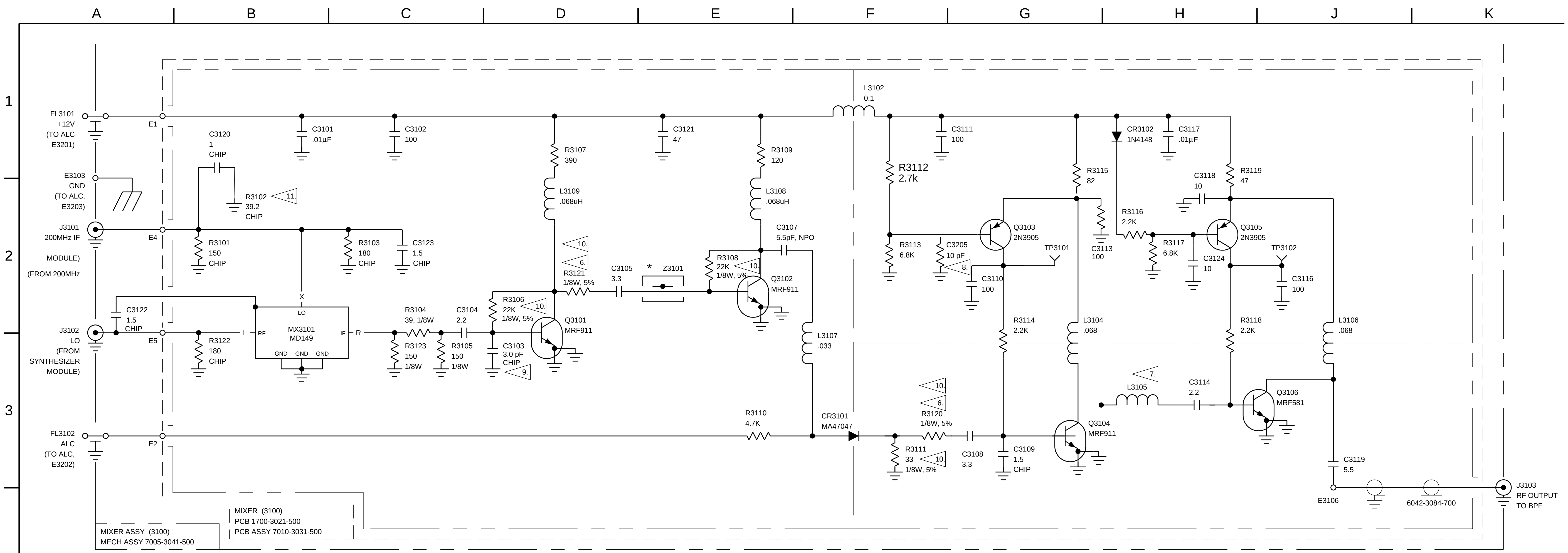
(UNLESS OTHERWISE NOTED)

1. ALL RESISTORS ARE 5%, 1/4 W.
2. ALL RESISTANCE IS EXPRESSED IN OHMS.
3. ALL CAPACITANCE IS EXPRESSED IN PICO-FARADS.

07512442

(0000-3013-700-C1)

RF Synthesizer Assembly (12 of 12)
Reference Divider PC Board Assembly Circuit Schematic
Figure 92



CAUTION:

CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:

(UNLESS OTHERWISE NOTED)

1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS SCHEMATIC CARRIES SERIES: 3100 (i.e., R1 IS R3101).
2. ALL RESISTORS ARE 5%, 1/4 W.
3. ALL RESISTANCE IS EXPRESSED IN OHMS.
4. ALL CAPACITANCE IS EXPRESSED IN PICO-FARADS.
5. ALL INDUCTANCE IS EXPRESSED IN MICRO-HENRIES.

6. R3120 AND R3121 ARE SELECTED AT TEST. SELECTED VALUES: 33, 39, 47, 51, 56, 68, 82 AND 100 OHMS.

   PRIOR TO REV. C, R3120 AND R3121 NOMINAL VALUE: 47 OHMS, RANGE: 33 TO 68 OHMS.

   REV. D, R3120 AND R3121 NOMINAL VALUE 56 OHMS.

7. L3105 IS FORMED BY THE STRAY INDUCTANCE OF THE LEAD OF C3114.

8. IMPLEMENTED ON REV. D.

9. IMPLEMENTED ON REV. E. PRIOR REVISIONS C3103 4.0 pF.

10. IMPLEMENTED ON REV. E. PRIOR REVISIONS 10%.

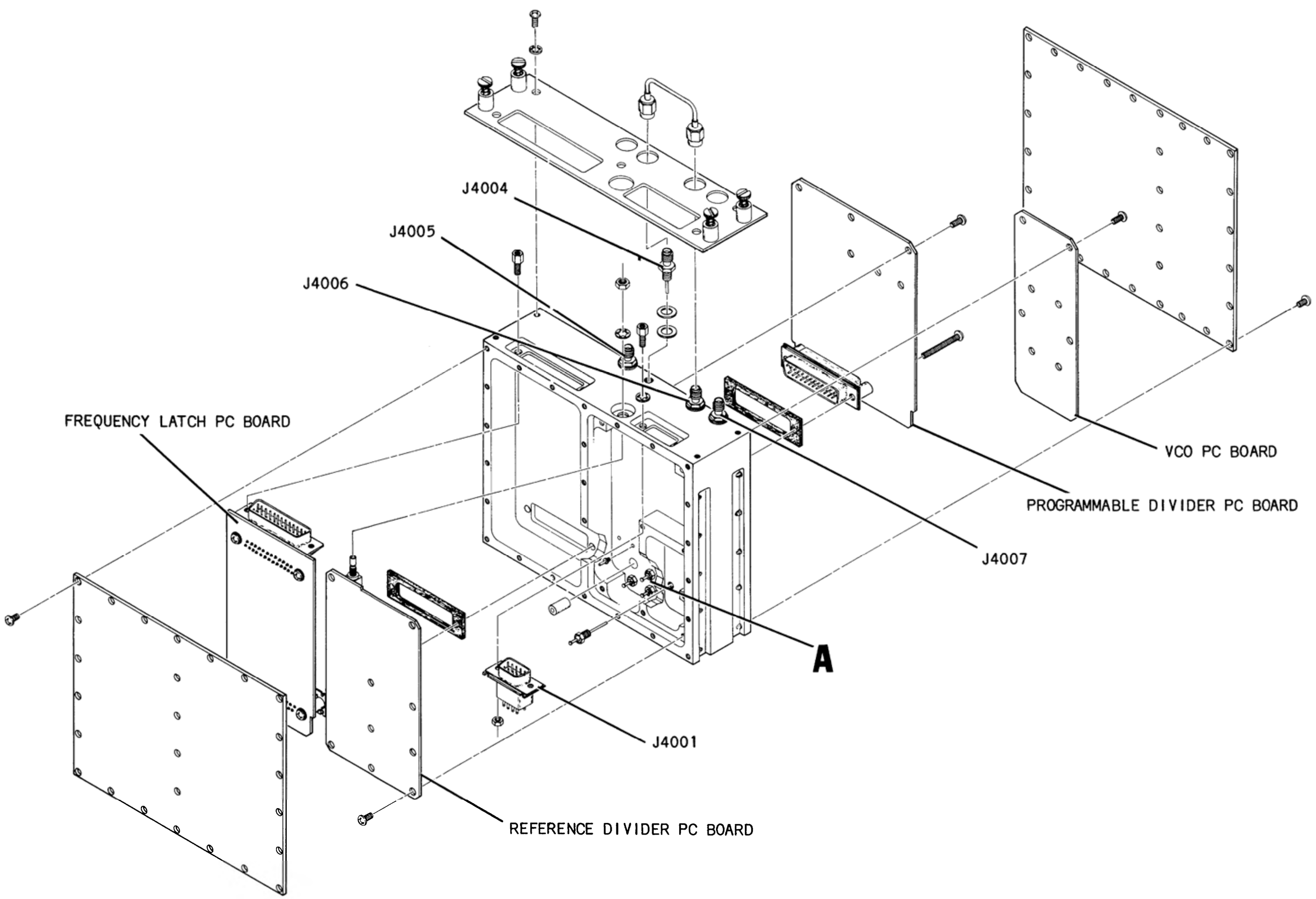
11. IMPLEMENTED ON REV. E. PRIOR REVISIONS 39.

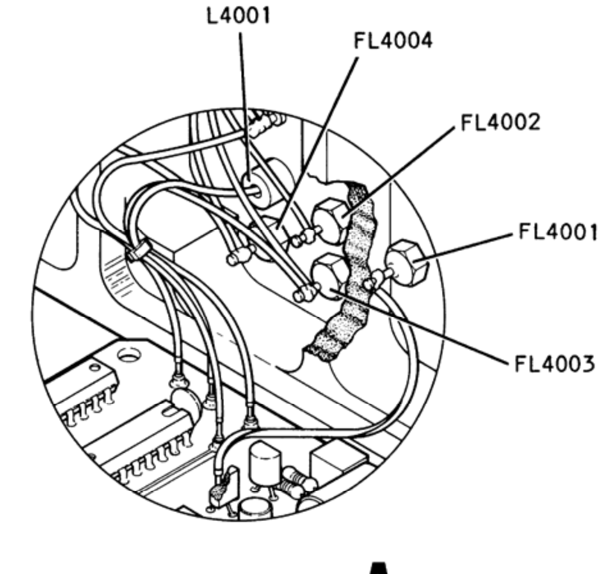
* - INDICATES PRINTED TRANSMISSION LINES OF OTHER THAN 50 OHMS IMPEDANCE WHICH CONSTITUTE CIRCUIT ELEMENTS. 50 OHM TRANSMISSION LINES ARE NOT SHOWN.

0751848S

(0000-3011-500-E1)

ALC/Mixer Assembly (5 of 5)
Mixer Assembly Circuit Schematic
Figure 91





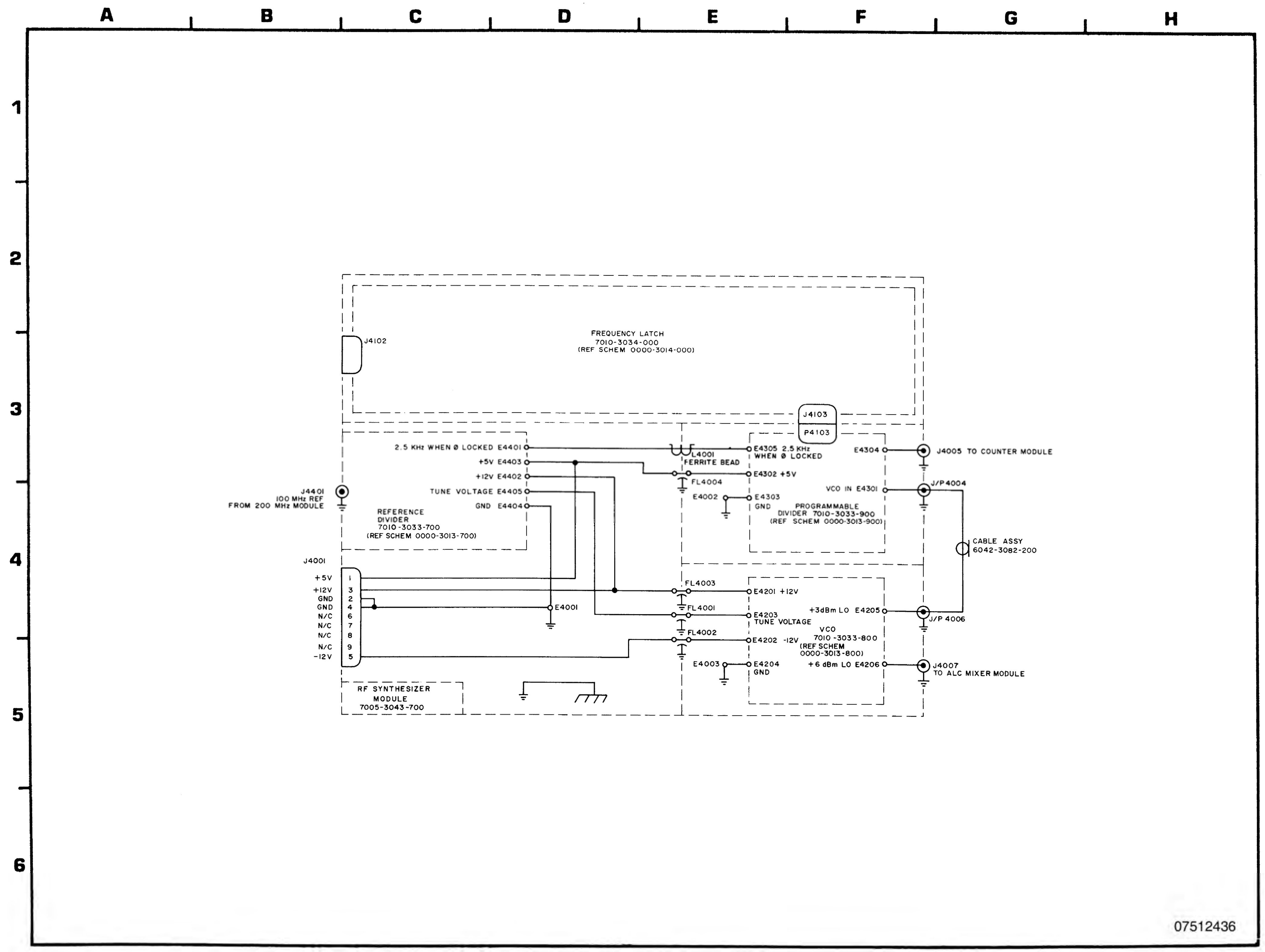
DETAIL A

WIRE RUNNING LIST			
FROM	TO	COLOR	AWG
J4001-1	FL4004	ORANGE	26
J4001-2	E4001	BLACK	26
J4001-3	FL4003	RED	26
J4001-4	E4001	BLACK	26
J4001-5	FL4002	RED/WHITE	26
E4401 (Through L4001)	E4305	YELLOW	26
E4001	E4404	BLACK	26
FL4001	E4405	BLUE/WHITE	26
FL4003	E4402	RED	26
FL4004	E4403	ORANGE	26
FL4001	E4203	BLUE/WHITE	26
FL4002	E4202	RED/WHITE	26
FL4003	E4201	RED	26
FL4004	E4302	ORANGE	26
E4002	E4303	BLACK	26
E4003	E4204	BLACK	26

07512435

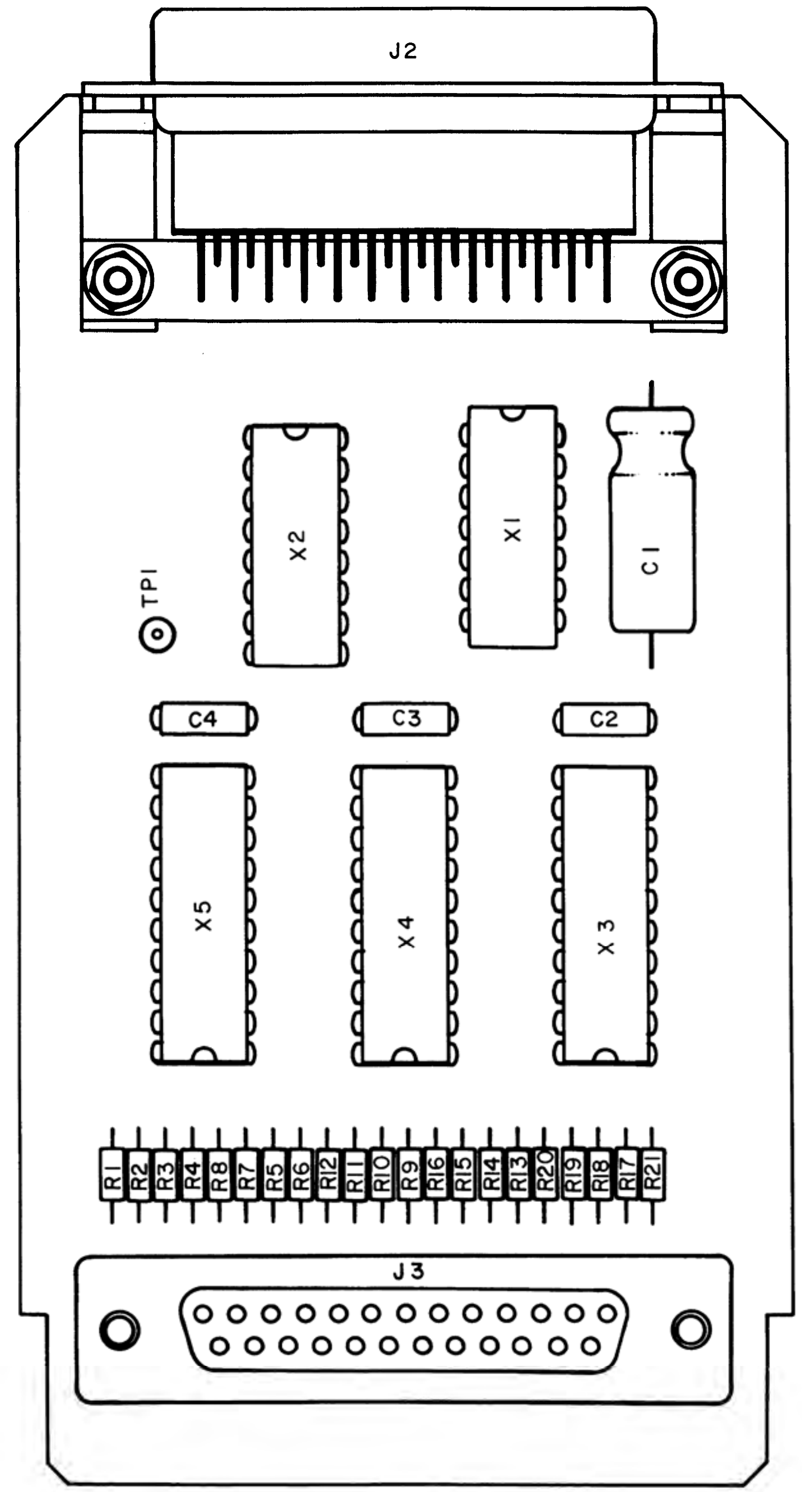
(7005-3043-700-J)

RF Synthesizer Assembly (1 of 12)
Figure 92



(0000-3013-700-C1)

RF Synthesizer Assembly (2 of 12)
RF Synthesizer Assembly Interconnect Diagram
Figure 92



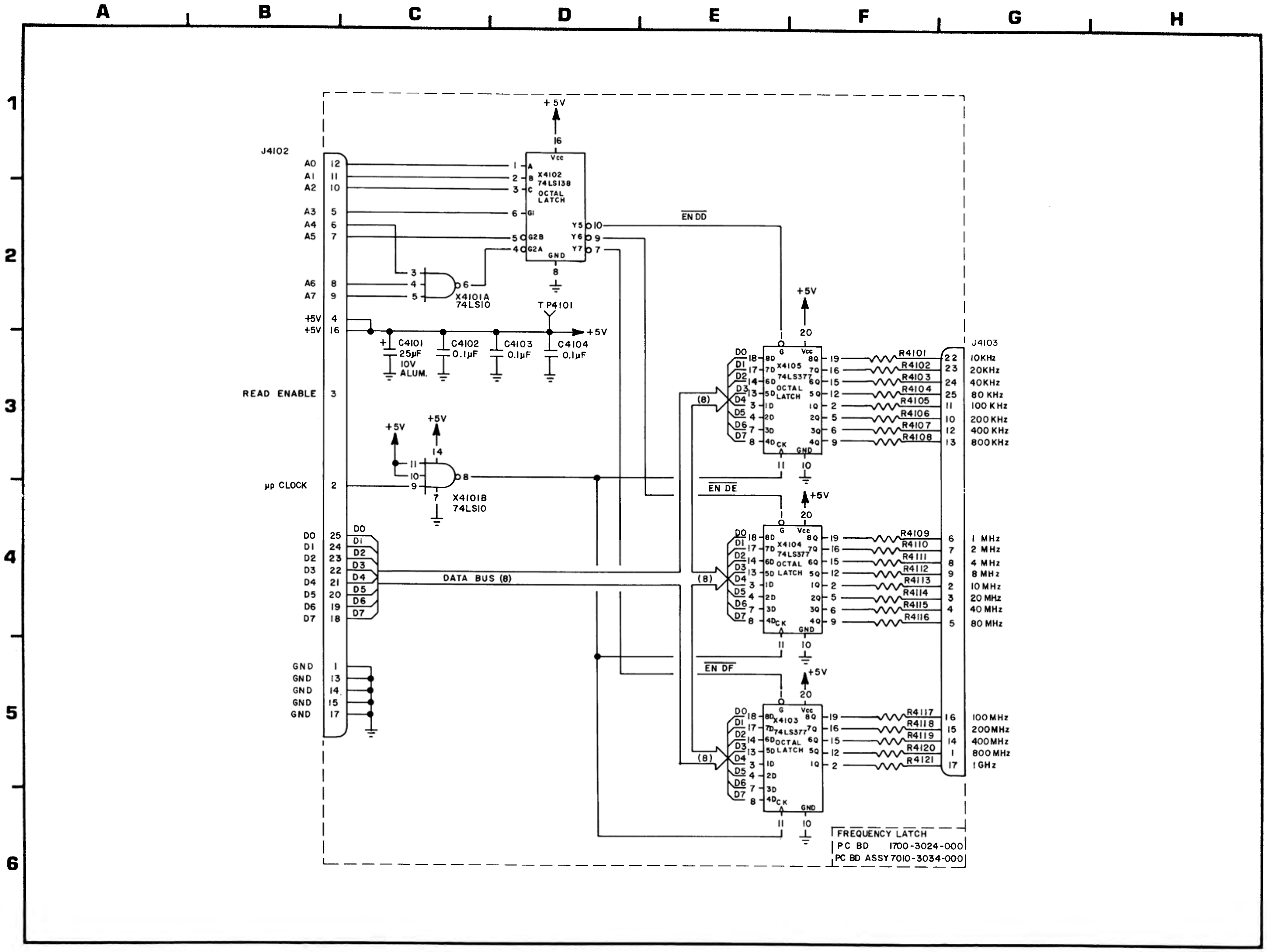
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS DRAWING CARRIES SERIES: 4100 (i.e., R1 IS R4101).

07512437

(7010-3034-000-A1)

RF Synthesizer Assembly (3 of 12)
Frequency Latch PC Board Assembly
Figure 92



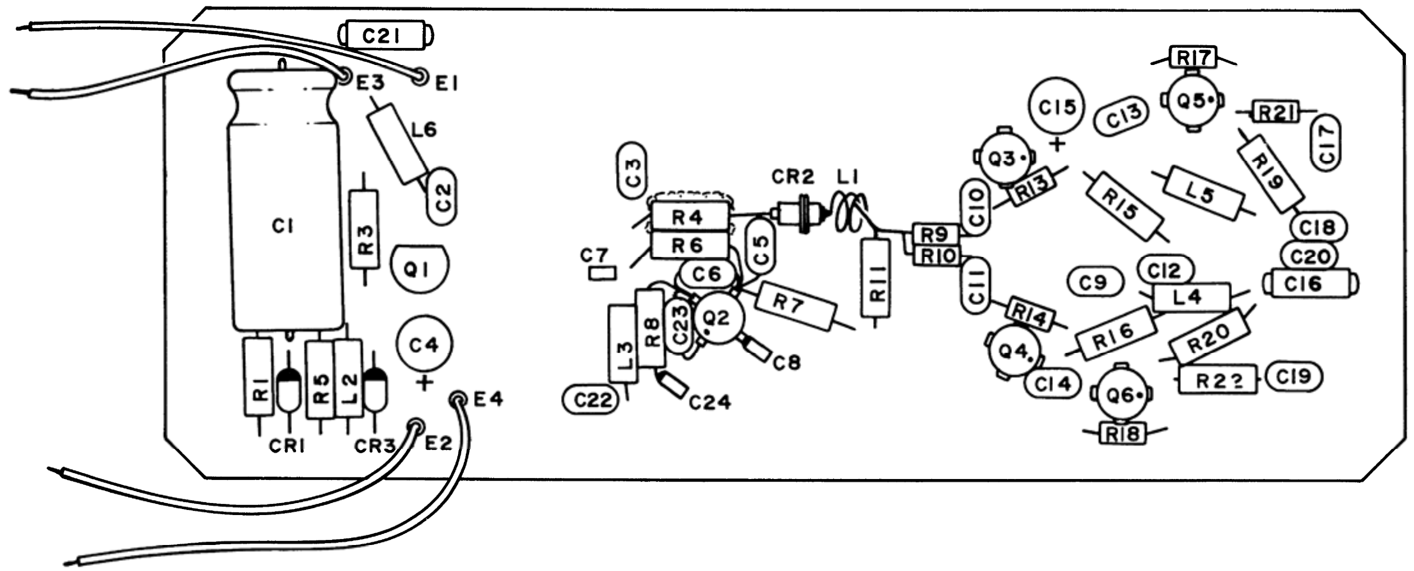
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

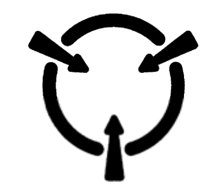
NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL RESISTORS ARE 100 OHM, 5%, 1/8 W.

07512438

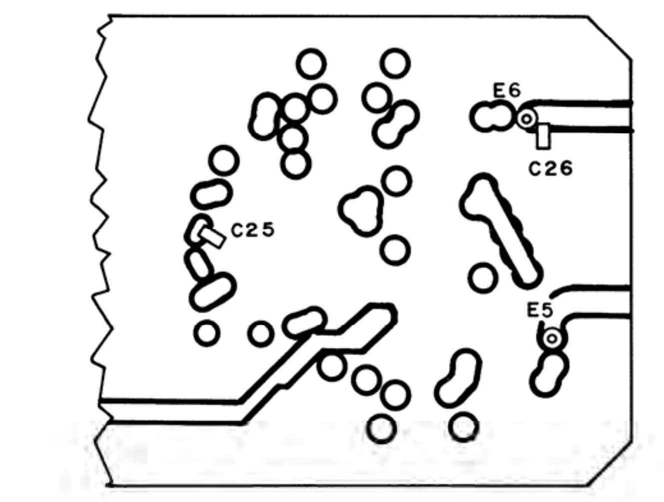
(0000-3014-000-A)

RF Synthesizer Assembly (4 of 12)
Frequency Latch PC Board Assembly Circuit Schematic
Figure 92





CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

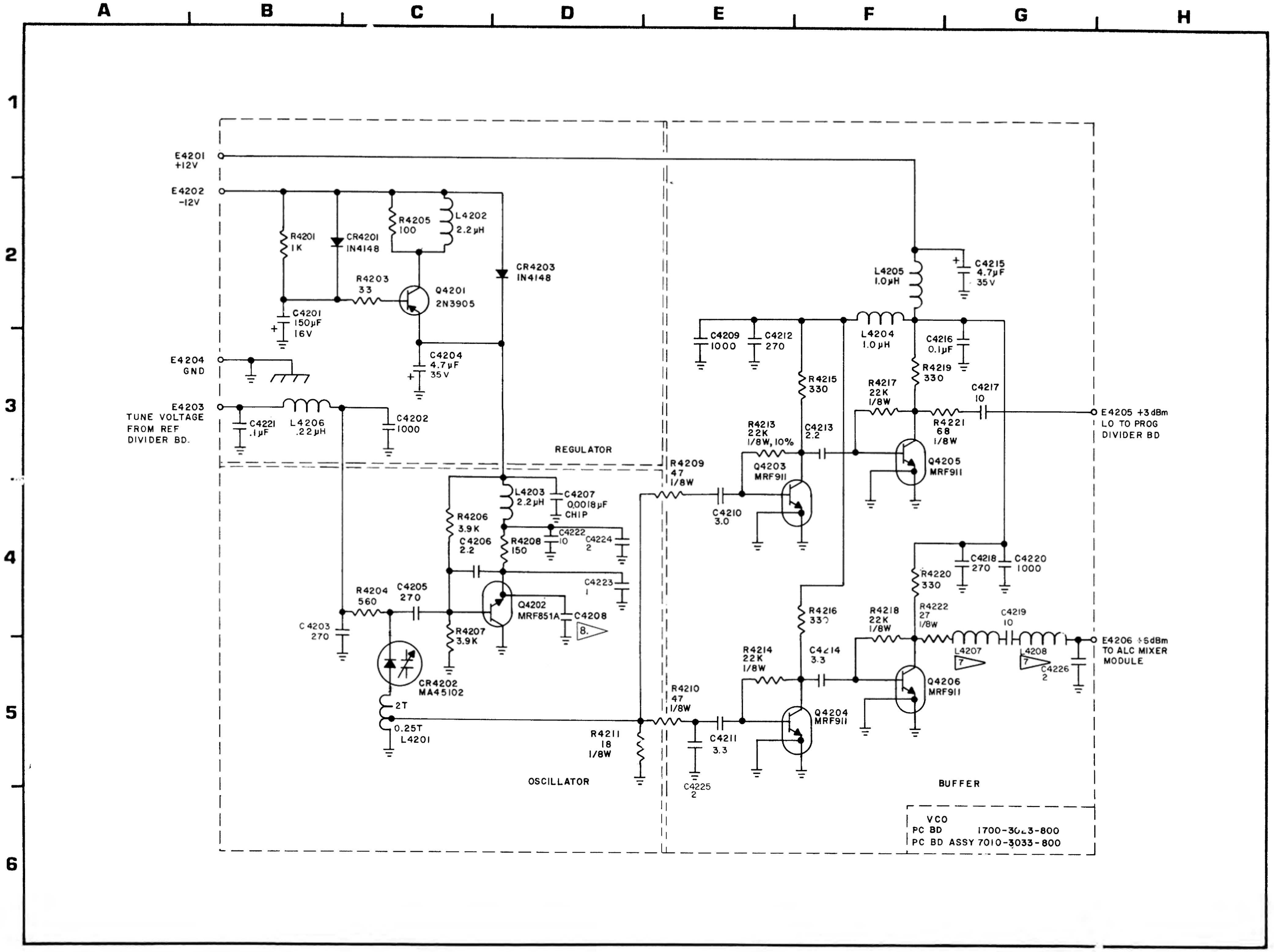


NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS DRAWING CARRIES SERIES: 4200 (i.e., R1 IS R4201).

07512439

(7010-3033-800-A9)

RF Synthesizer Assembly (5 of 12)
VCO PC Board Assembly
Figure 92



CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

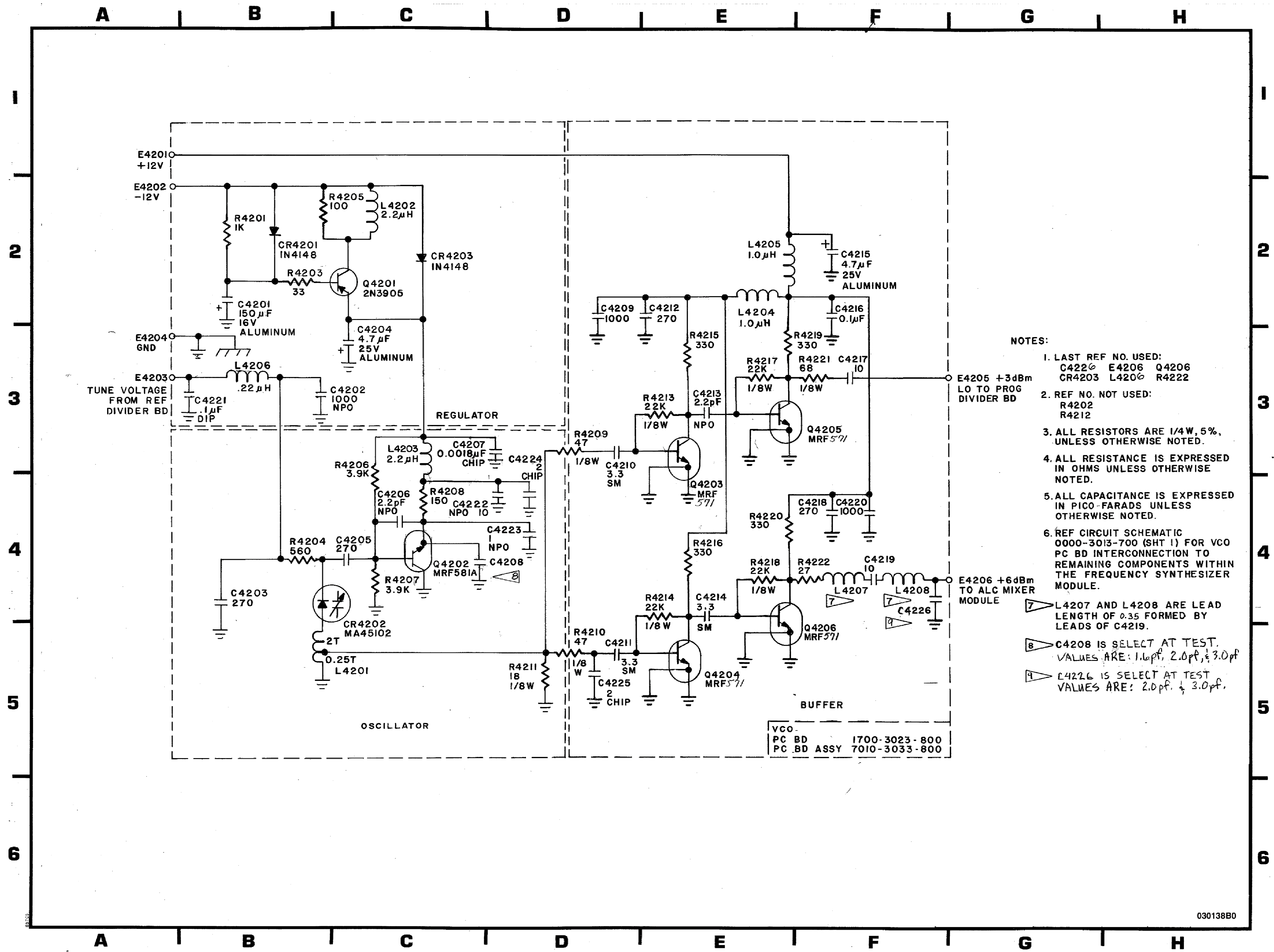
NOTES:
(UNLESS OTHERWISE NOTED)

1. ALL RESISTORS ARE 5%, 1/4 W.
2. ALL RESISTANCE IS EXPRESSED IN OHMS.
3. ALL CAPACITANCE IS EXPRESSED IN PICO-FARADS.
4. NOT USED.
5. NOT USED.
6. NOT USED.
7. L4207 AND L4208 ARE FORMED BY C4219 LEAD (0.35") INDUCTANCE.
8. C4208 IS SELECTED AT TEST, NOMINAL: 2 pF RANGE: 1.6 pF, 2 pF OR 3 pF

07512440

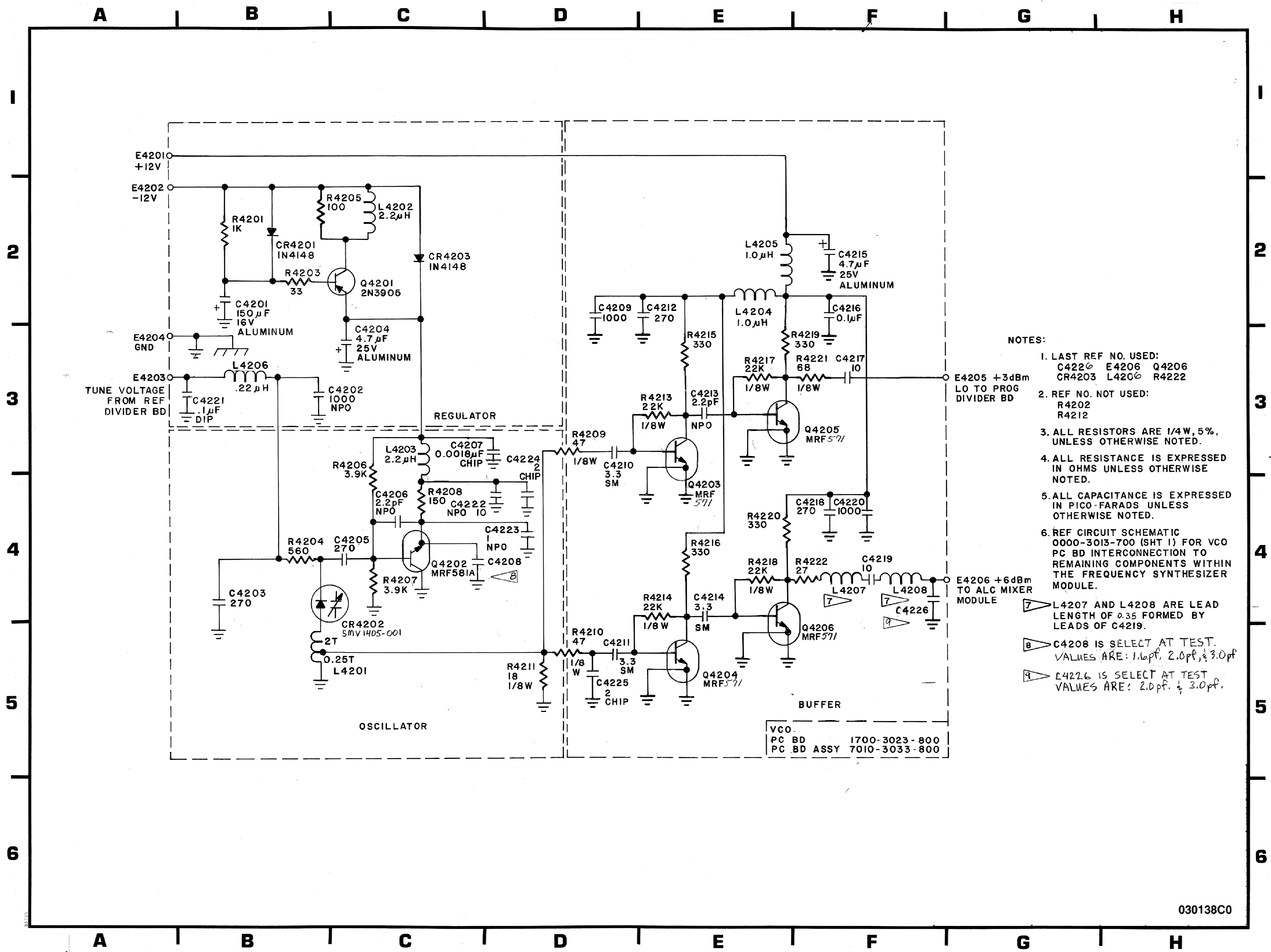
(0000-3013-800-A7)

RF Synthesizer Assembly (6 of 12)
VCO PC Board Assembly Circuit Schematic
Figure 92



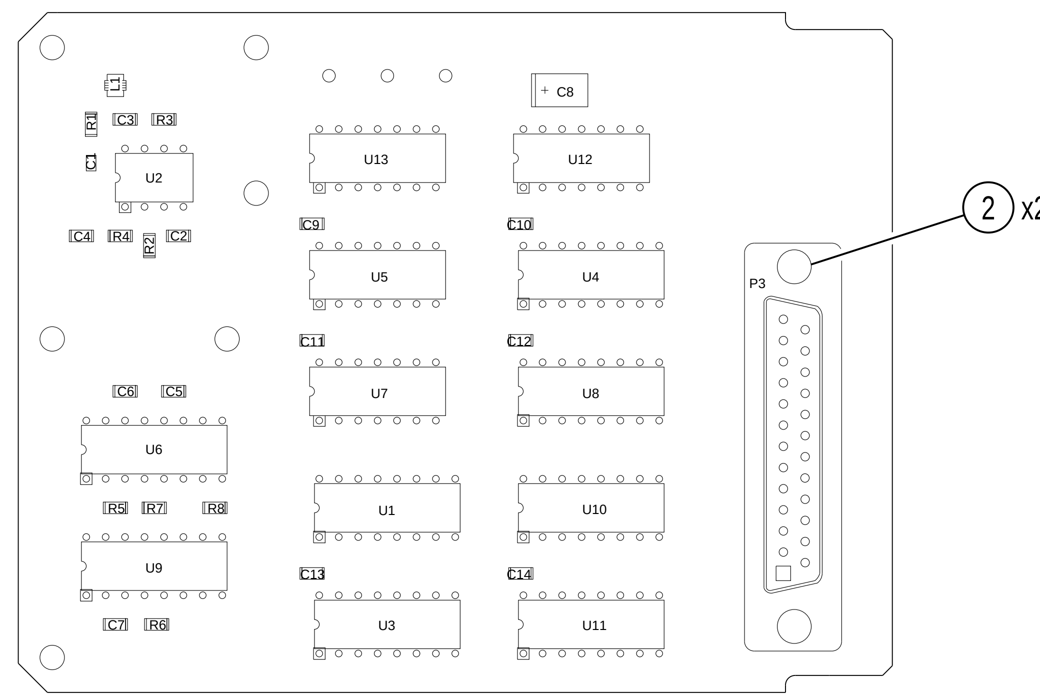
(0000-3013-800-B)

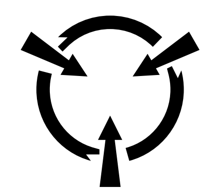
RF Synthesizer Assembly (7 of 12)
VCO PC Board Assembly Circuit Schematic
Figure 92



(0000-3013-800-C)

RF Synthesizer Assembly (8 of 12)
VCO PC Board Assembly Circuit Schematic
Figure 92





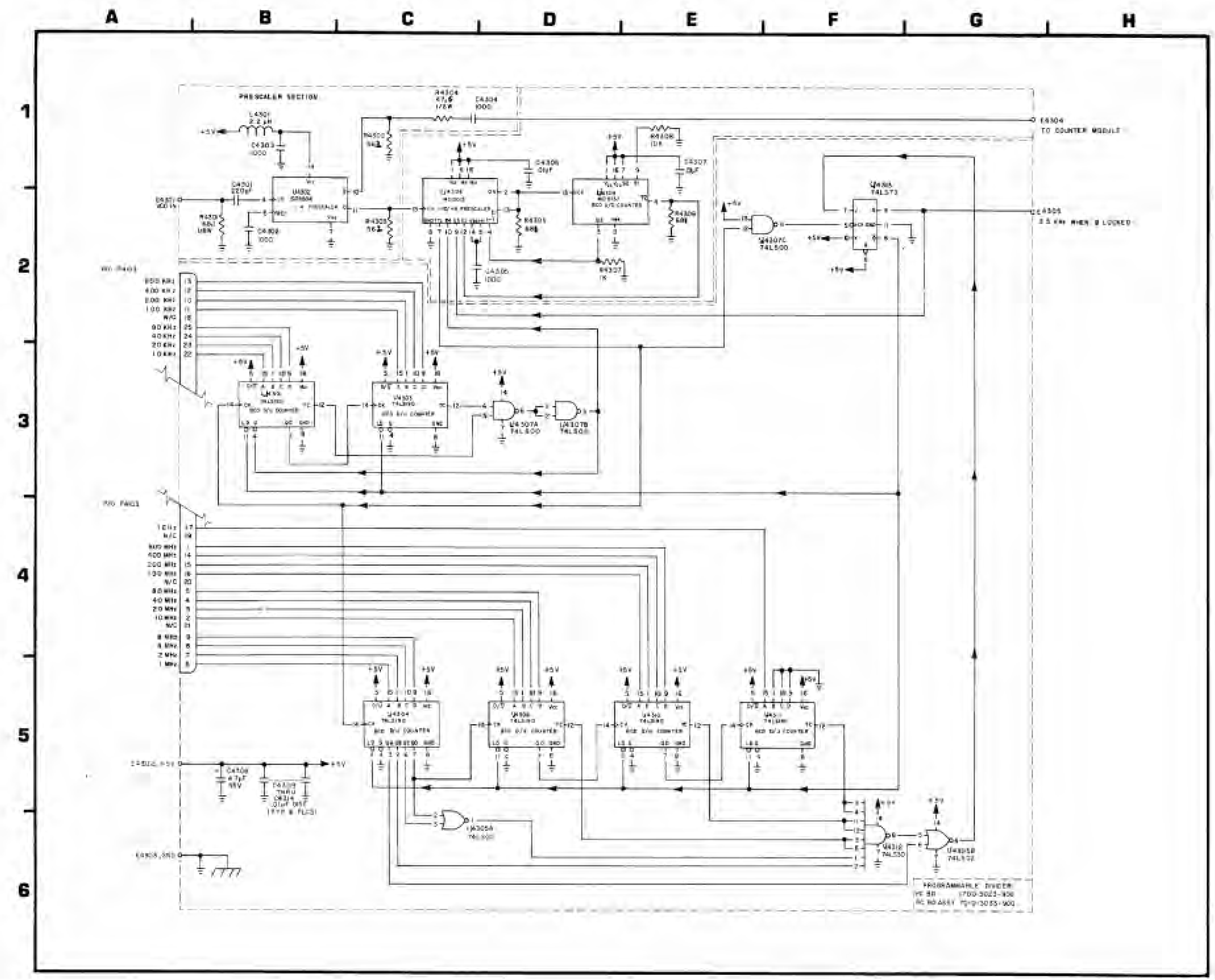
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS DRAWING CARRIES SERIES: 4300 (i.e., R1 IS R4301).

7520000P

(7010-3033-900-E)

RF Synthesizer Assembly (9 of 12)
Programmable Divider PC Board Assembly
Figure 92

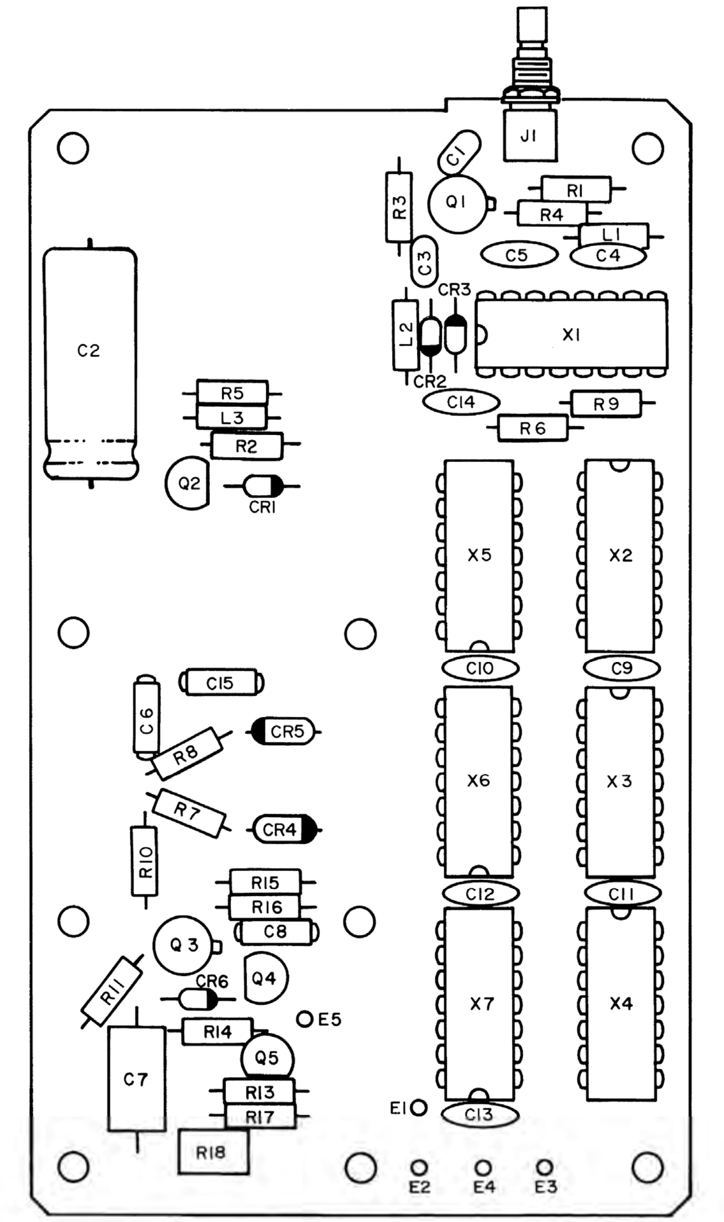


CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL RESISTORS ARE 5%, 1/4 W.
2. ALL RESISTANCE IS EXPRESSED IN OHMS.
3. ALL CAPACITANCE IS EXPRESSED IN PICO-FARADS.

(0000-3013-900-E)

RF Synthesizer Assembly (10 of 12)
Programmable Divider PC Board Assembly Circuit Schematic
Figure 92



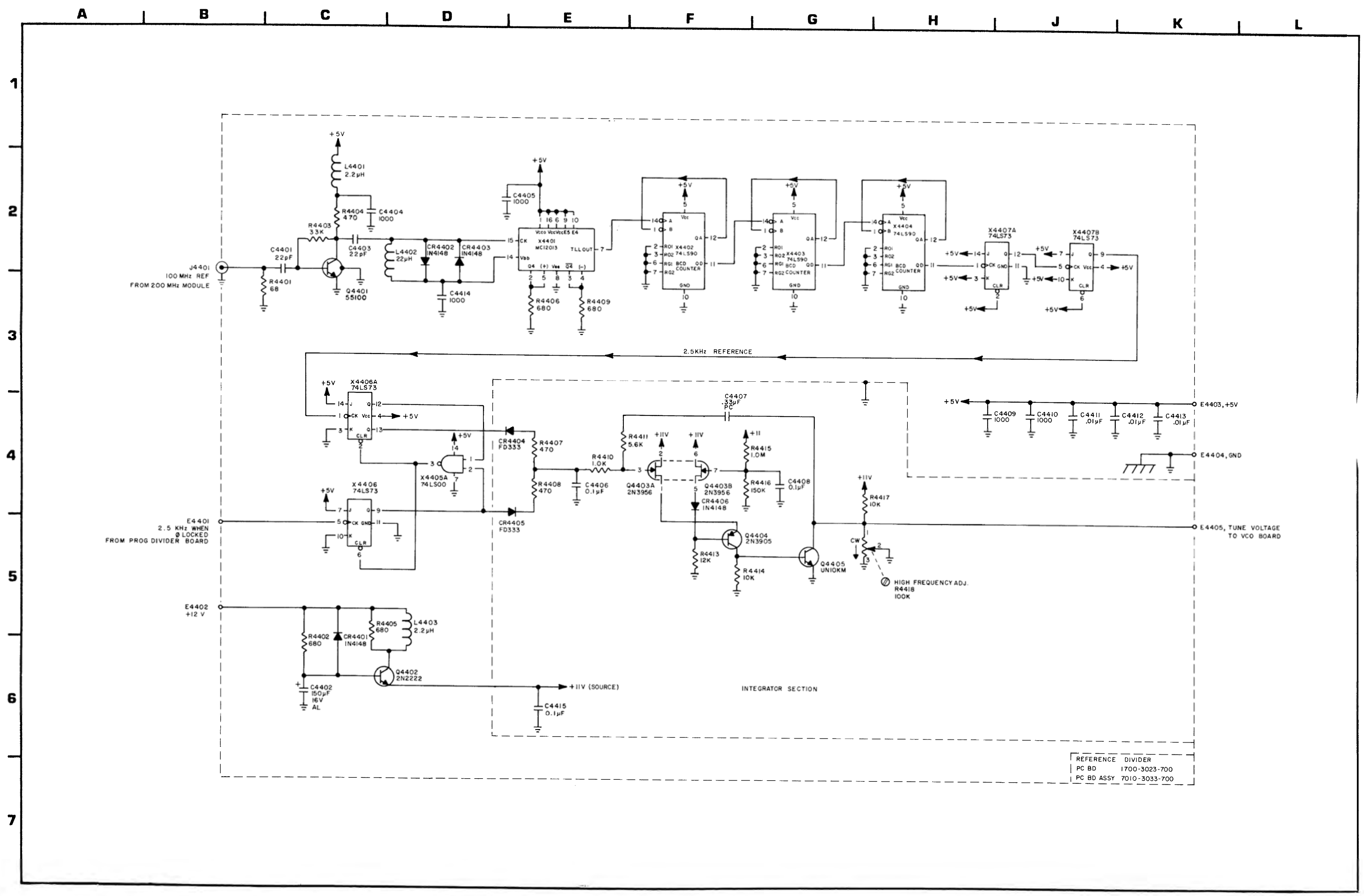
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS DRAWING CARRIES SERIES: 4400 (i.e., R1 IS R4401).

07512441

(7010-3033-700-C3)

RF Synthesizer Assembly (11 of 12)
Reference Divider PC Board Assembly
Figure 92



CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

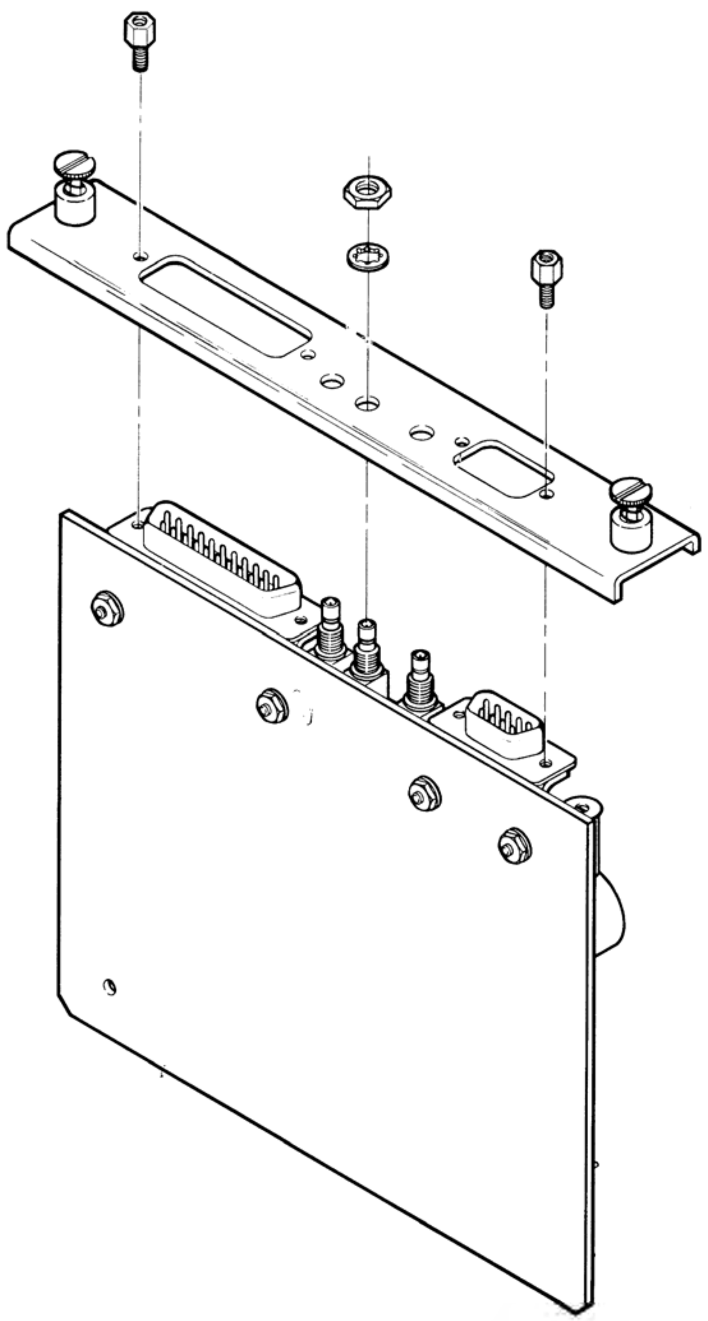
NOTES:
(UNLESS OTHERWISE NOTED)

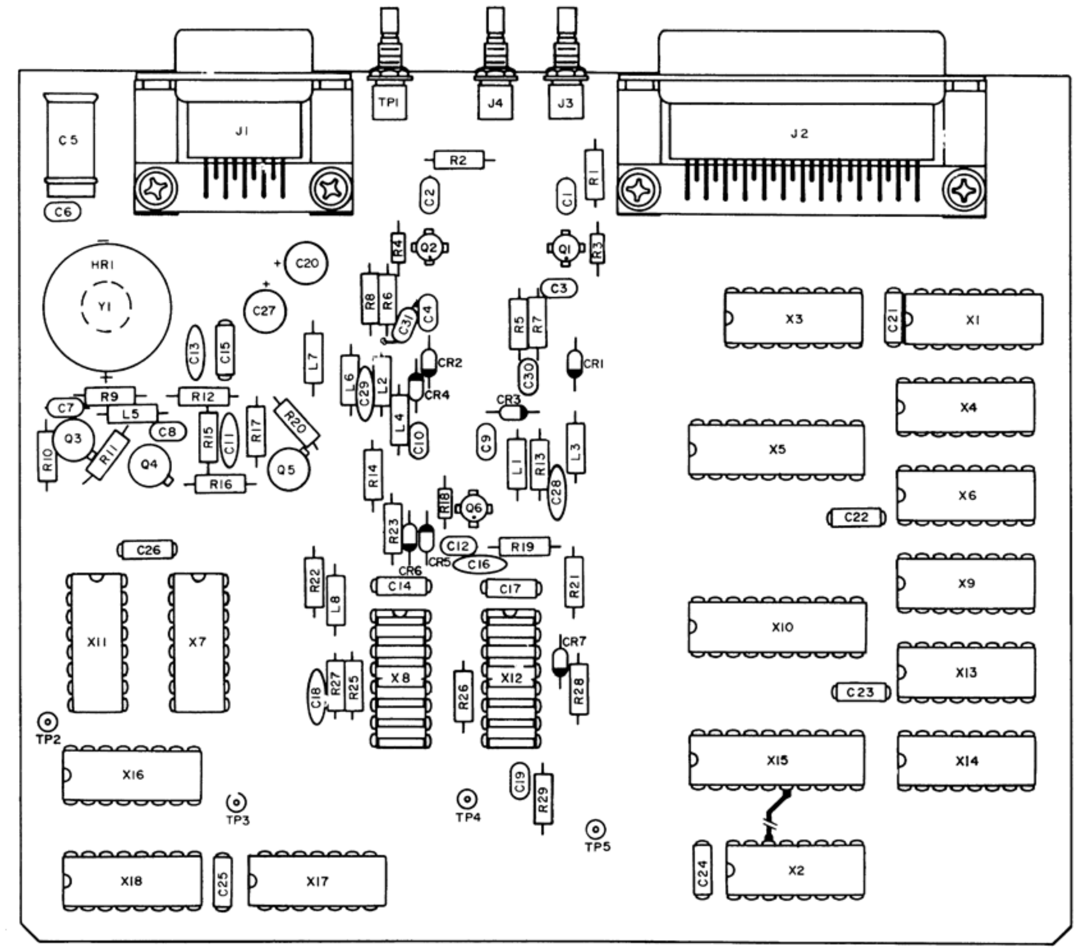
1. ALL RESISTORS ARE 5%, 1/4 W.
2. ALL RESISTANCE IS EXPRESSED IN OHMS.
3. ALL CAPACITANCE IS EXPRESSED IN PICO-FARADS.

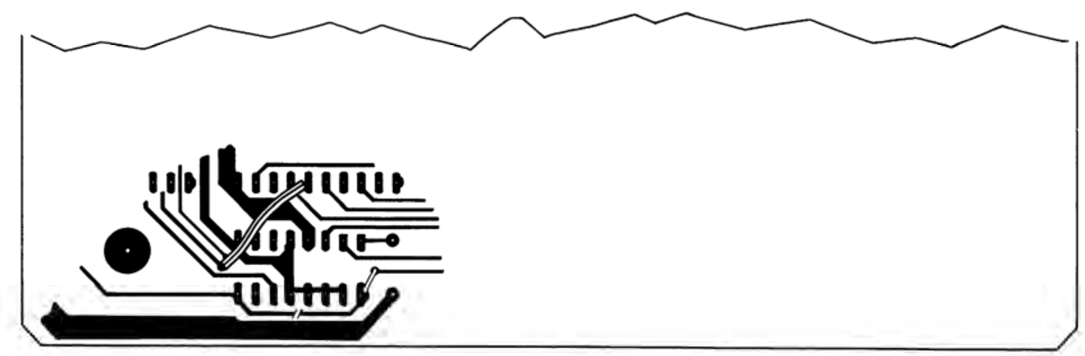
07512442

(0000-3013-700-C1)

RF Synthesizer Assembly (12 of 12)
Reference Divider PC Board Assembly Circuit Schematic
Figure 92







CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

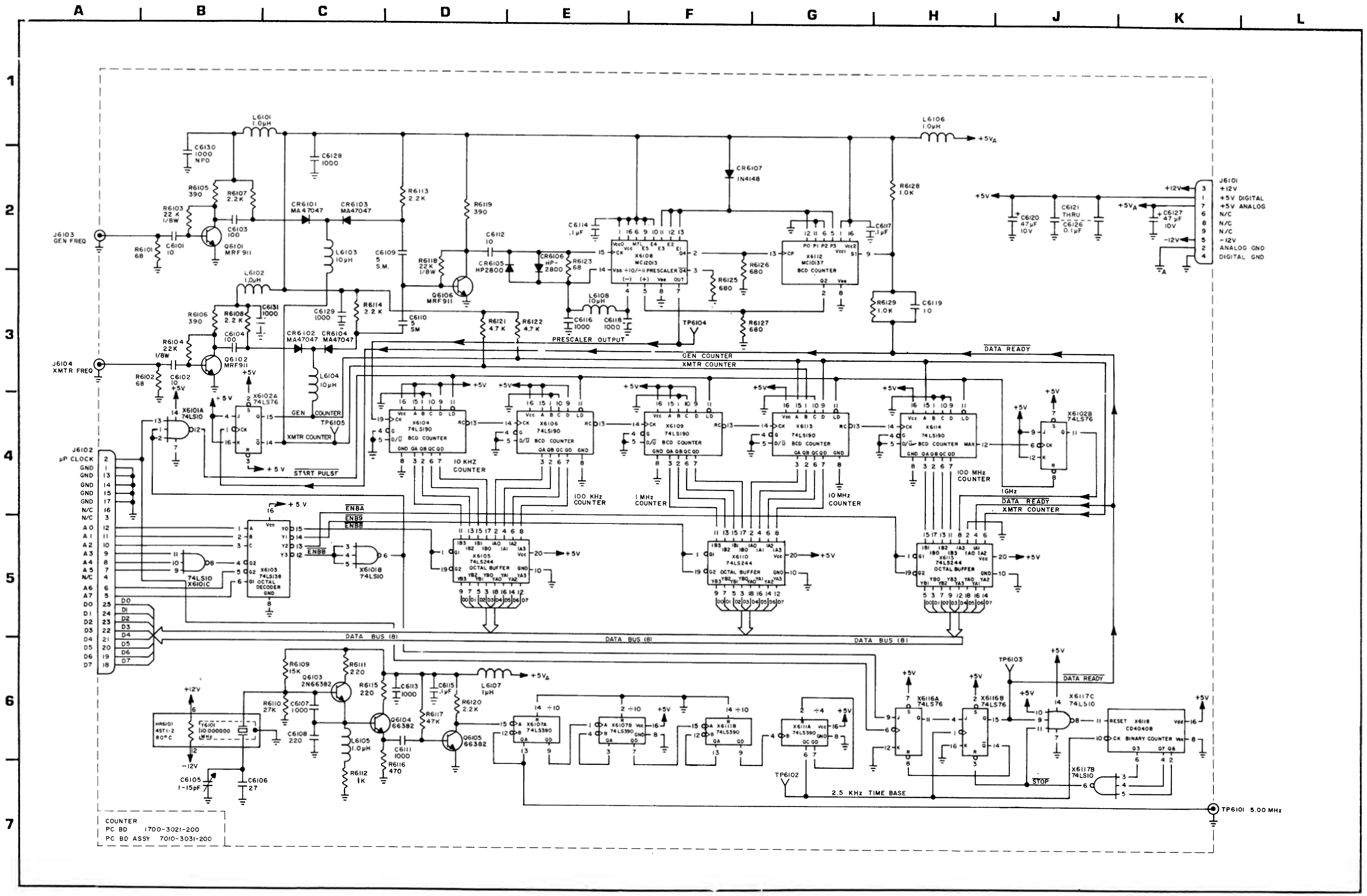
NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS DRAWING CARRIES SERIES: 6100 (i.e., R1 IS R6101).

07512443

Counter Assembly
(7005-3041-200-A1)

Counter PC Board Assembly
(7010-3031-200-C)

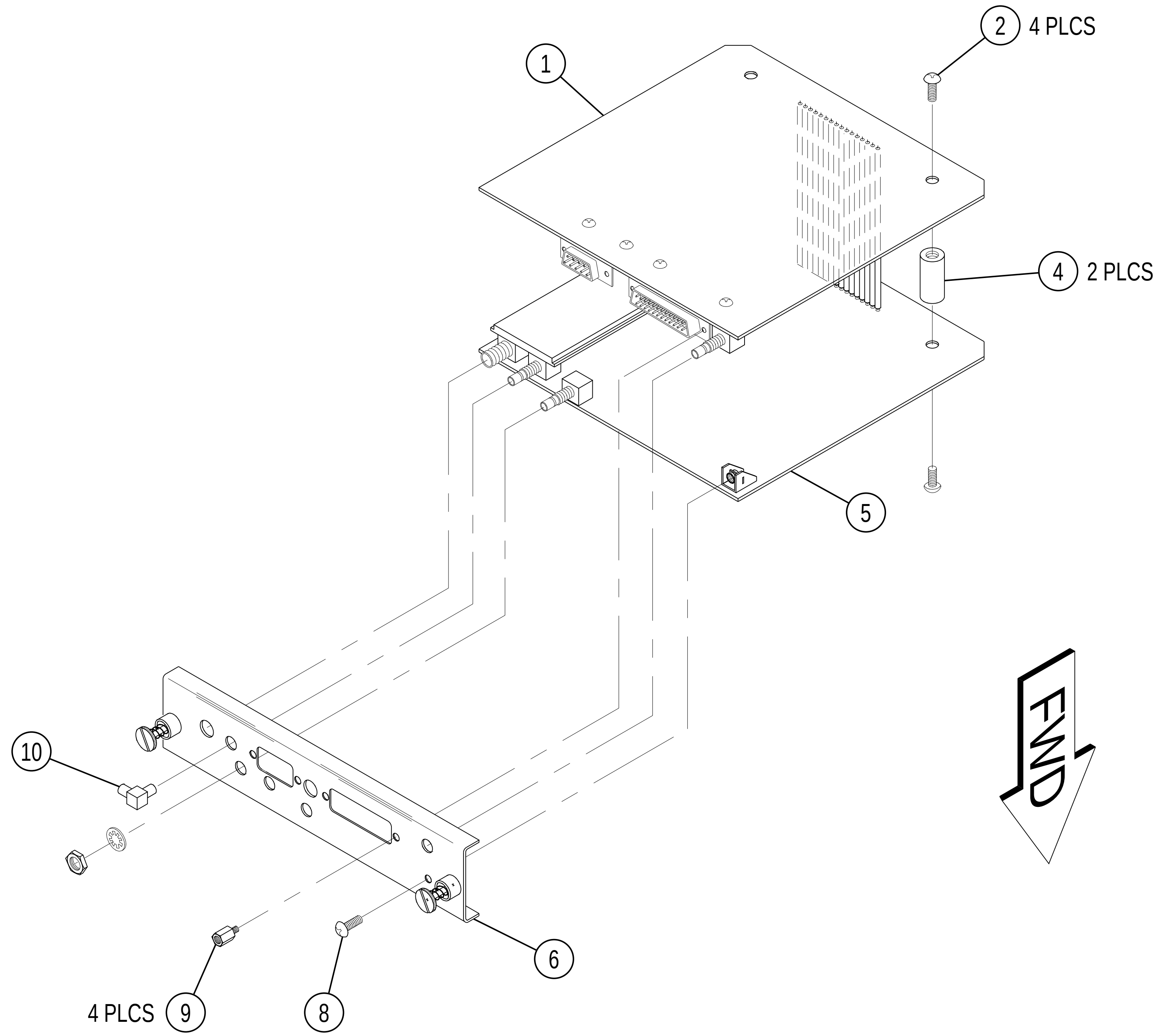
Counter Assembly (1 of 2)
Figure 93



NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL RESISTORS ARE 5%, 1/4 W.
2. ALL RESISTANCE IS EXPRESSED IN OHMS.
3. ALL CAPACITANCE IS EXPRESSED IN PICO-FARADS.

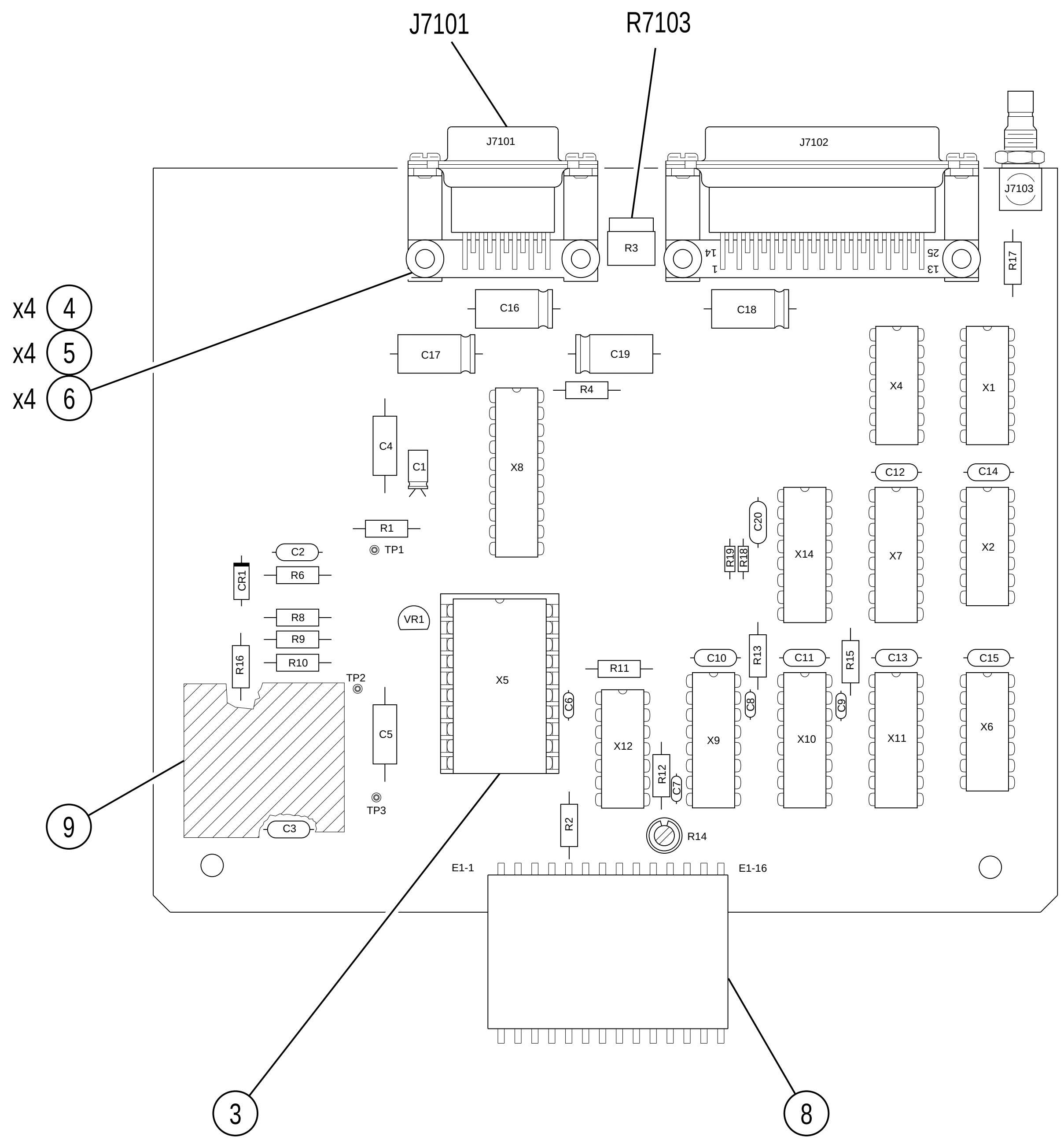
(0000-3011-200-C)

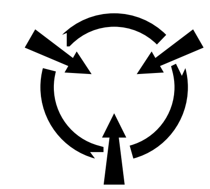
Counter Assembly (2 of 2)
Counter PC Board Assembly Circuit Schematic
Figure 93



(7005-7542-600-A1)

Video Assembly (1 of 7)
Figure 94





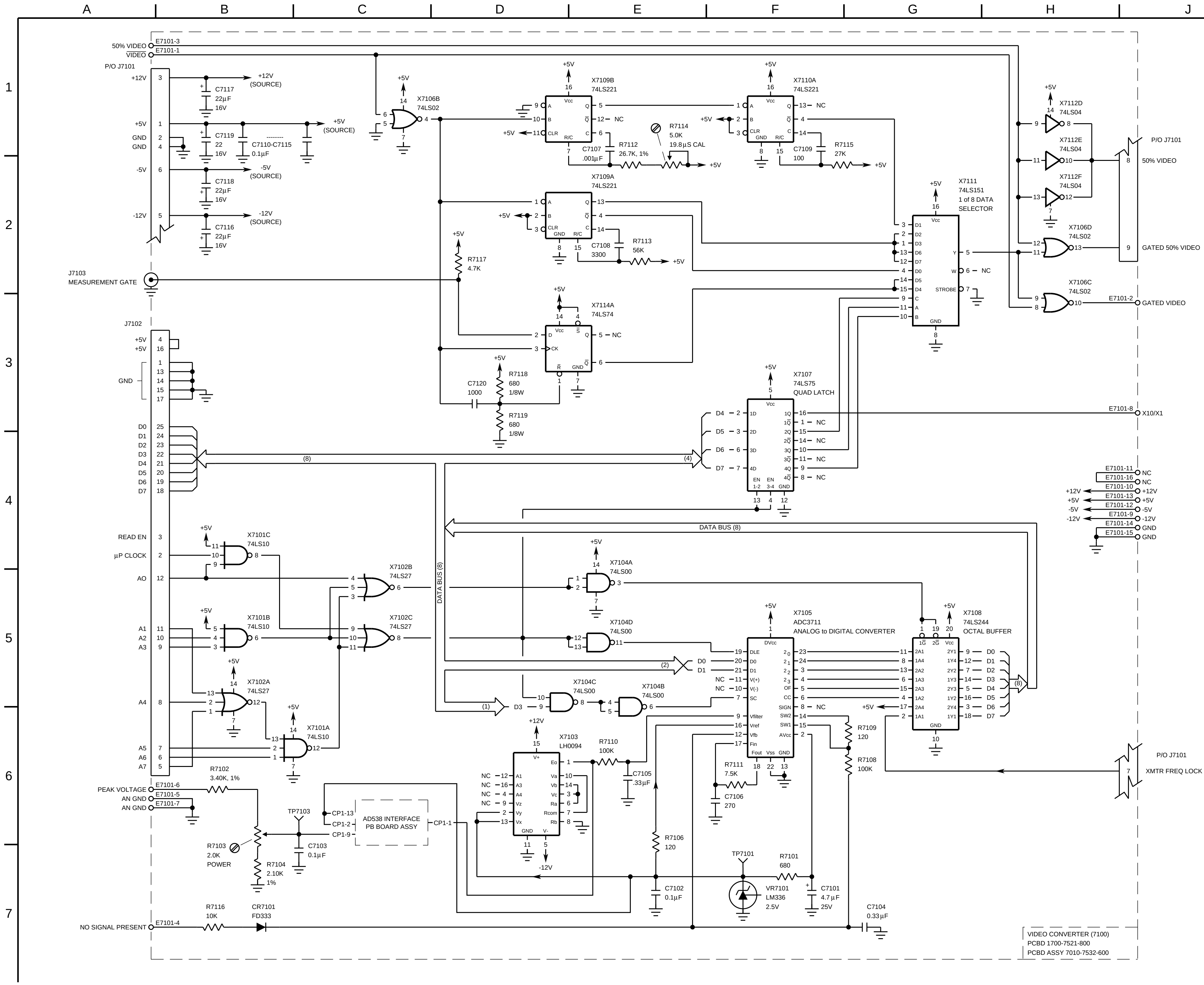
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

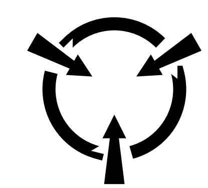
NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS DRAWING CARRIES SERIES: 7100 (i.e., R1 IS R7101).

7520025p

(7010-7532-600-C)

Video Assembly (2 of 7)
Video Converter PC Board Assembly
Figure 94





CAUTION:

CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:

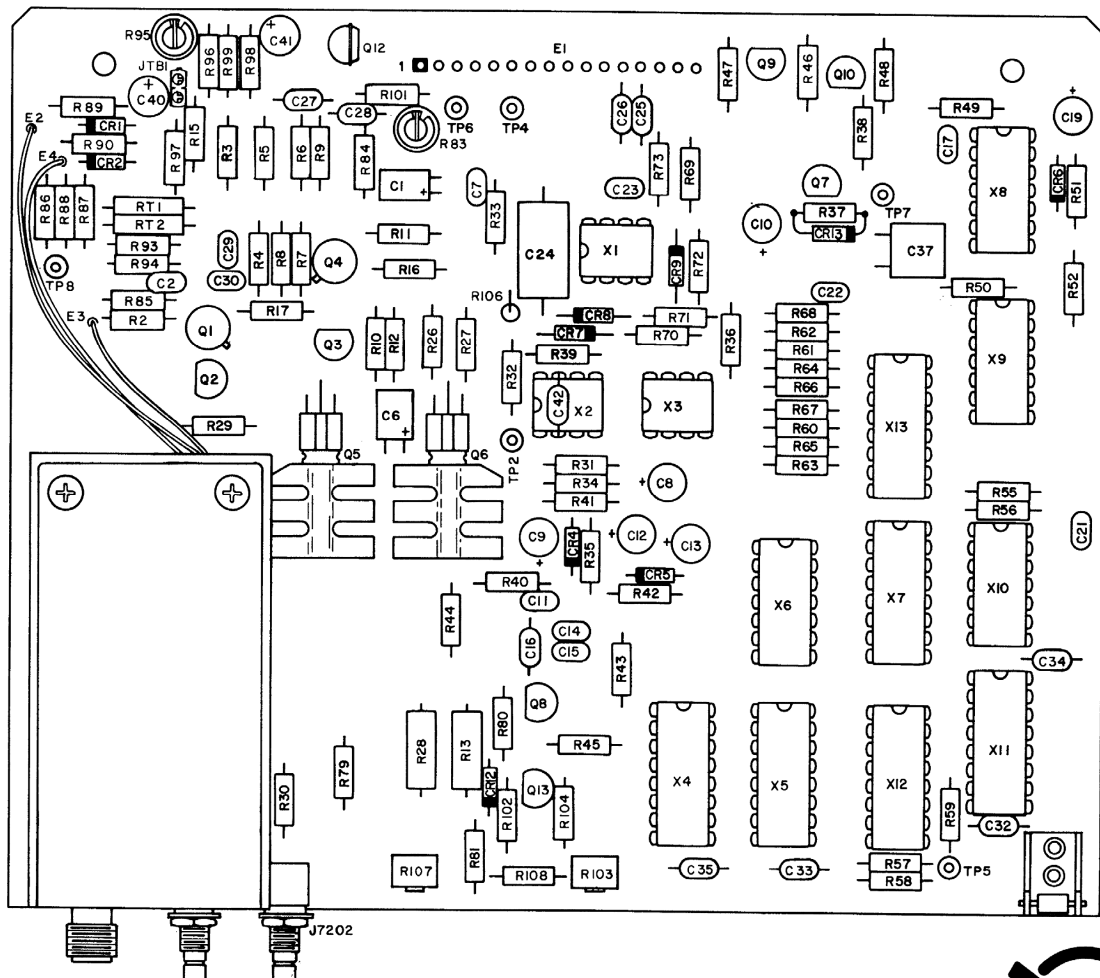
(UNLESS OTHERWISE NOTED)

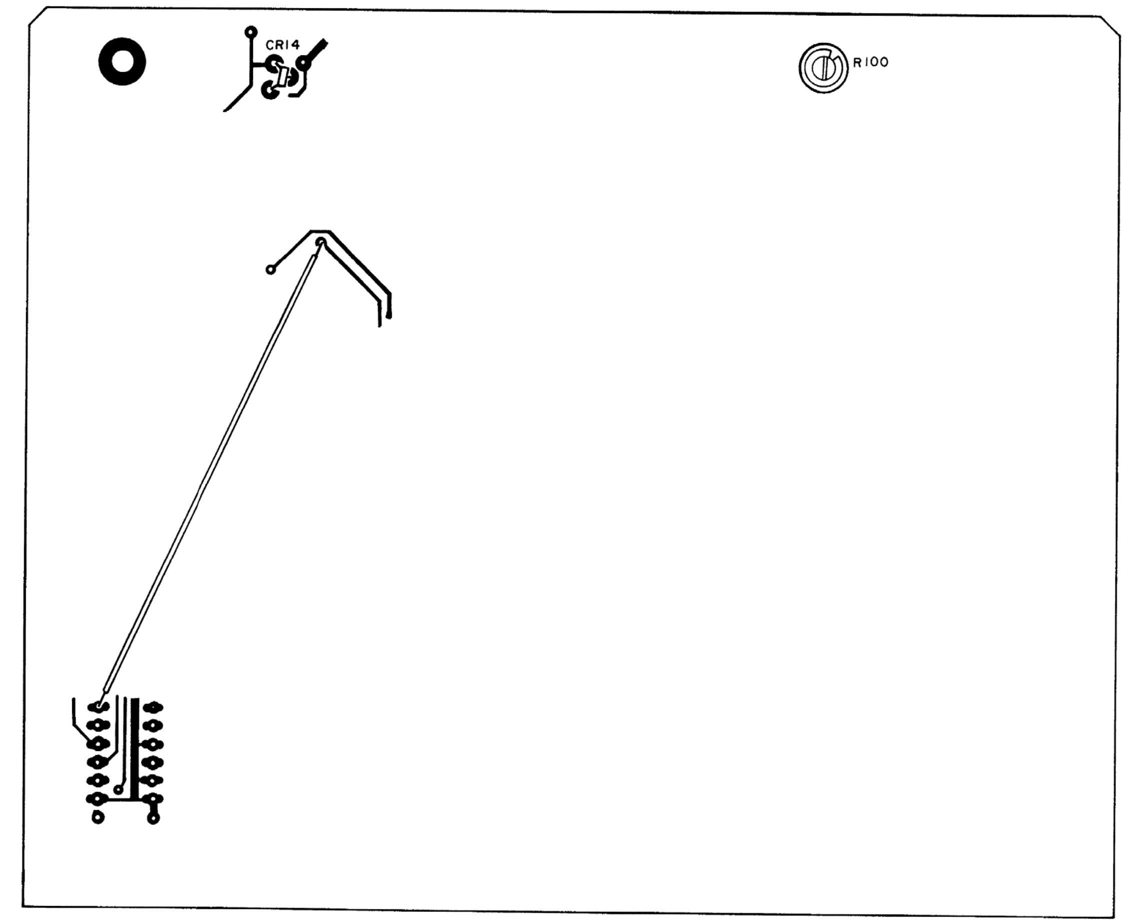
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS SCHEMATIC CARRIES SERIES: 7100 (i.e., R1 IS 7101).
2. ALL RESISTORS ARE 5%, 1/4 W.
3. ALL RESISTANCE IS EXPRESSED IN OHMS.
4. ALL CAPACITANCE IS EXPRESSED IN PICO-FARADS.
5. E7101 IS CONNECTED TO E7201(N) ON VIDEO BUFFER PC BOARD ASSEMBLY

0751858S

(0000-7512-600-B)

Video Assembly (3 of 7)
Video Converter PC Board Assembly Circuit Schematic
Figure 94





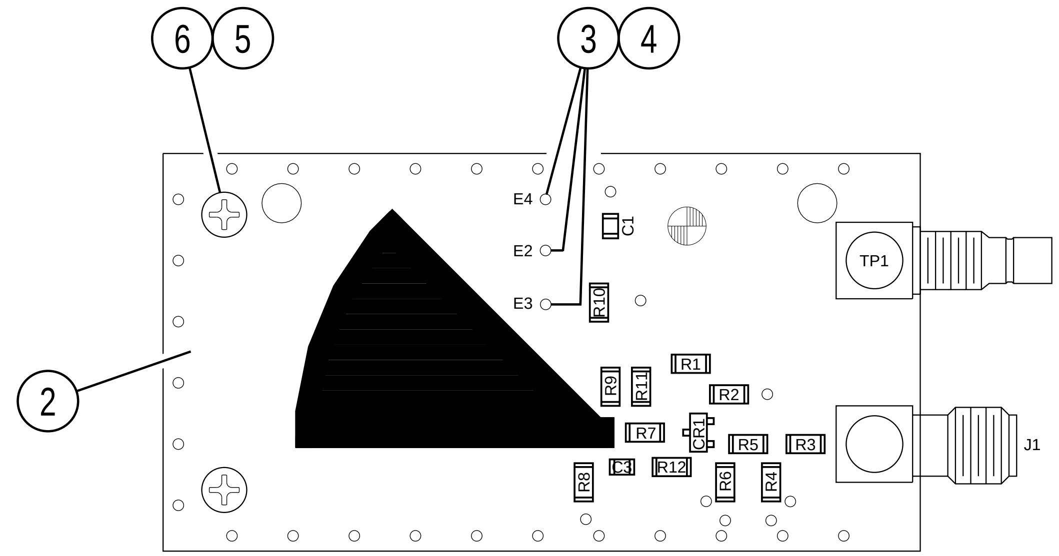
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS DRAWING CARRIES SERIES: 4200 (i.e.,
   A. 7200 FOR REFERENCE NUMBERS <100 (i.e., R1 IS R7201).
   B. 7500 FOR REFERENCE NUMBERS >99 (i.e., R100 IS R7500).

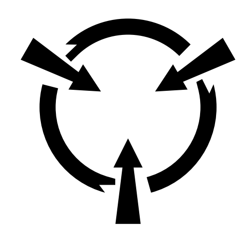
07512445

(7010-7530-800-D)

Video Assembly (4 of 7)
Video Buffer PC Board Assembly
Figure 94



WIRE LIST			
FROM	COLOR	GAUGE	LENGTH
E2	RED	26	4.5IN
E3	WHITE-VIOLET	26	4.5IN
E4	BLACK	26	4.5IN



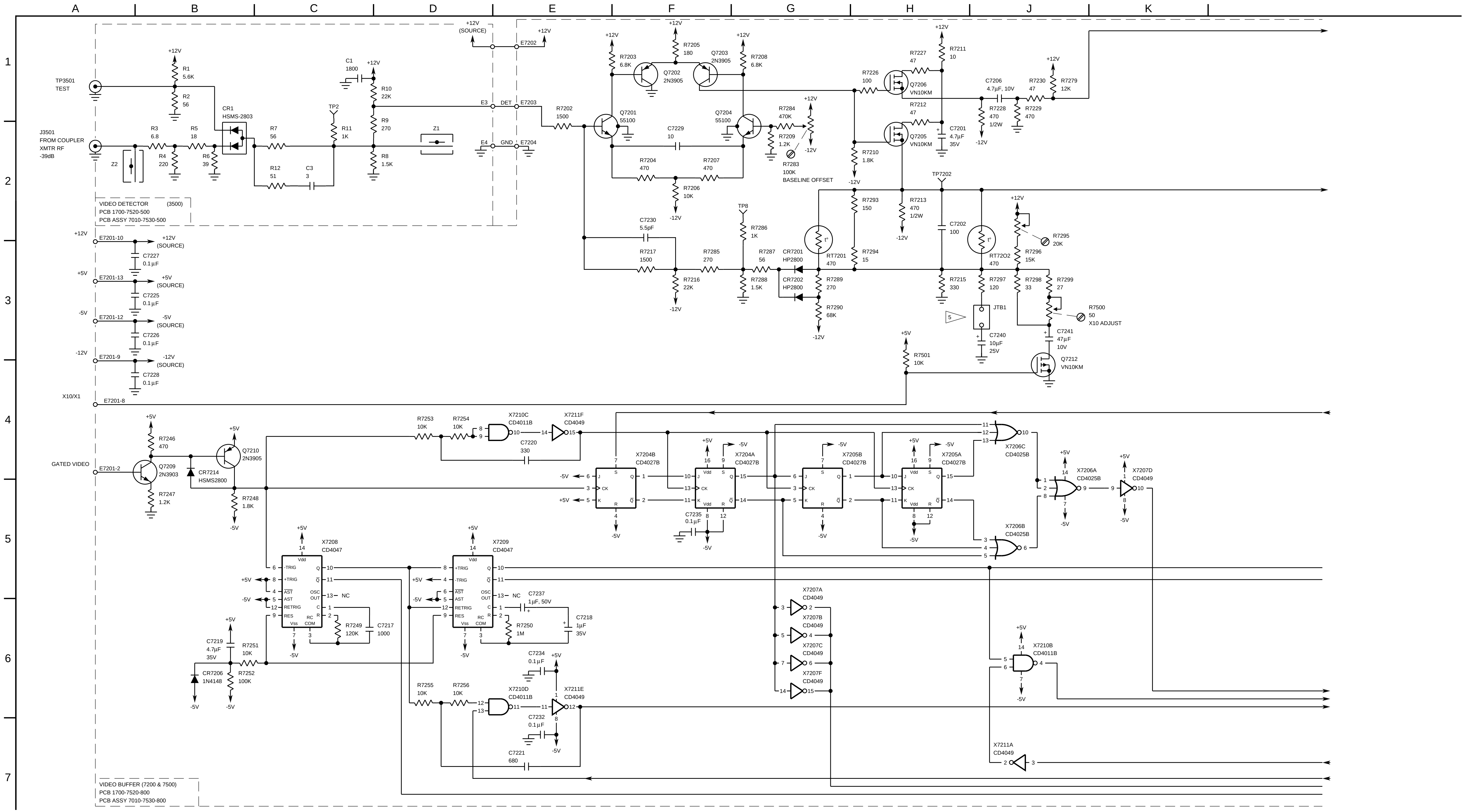
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS DRAWING CARRIES SERIES: 3500 (i.e., R1 IS R3501).

7520001P

(7010-7530-500-E)

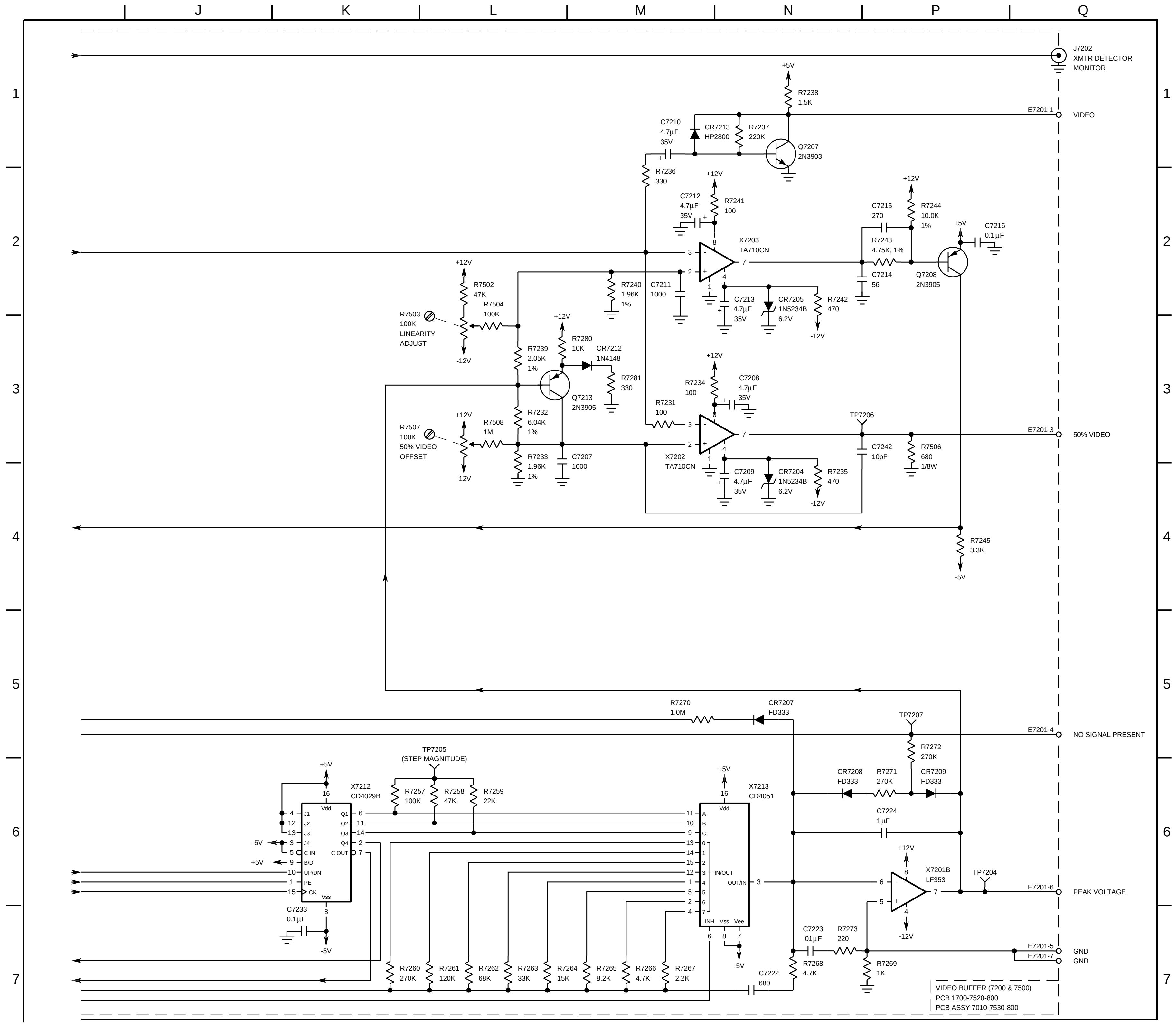
Video Assembly (5 of 7)
Video Detector PC Board Assembly
Figure 94



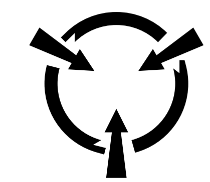
0751859s

(0000-7510-800-B9)

Video Assembly (6 of 7)
Video Buffer PC Board Assembly Circuit Schematic
Figure 94



(0000-7510-800-B9)



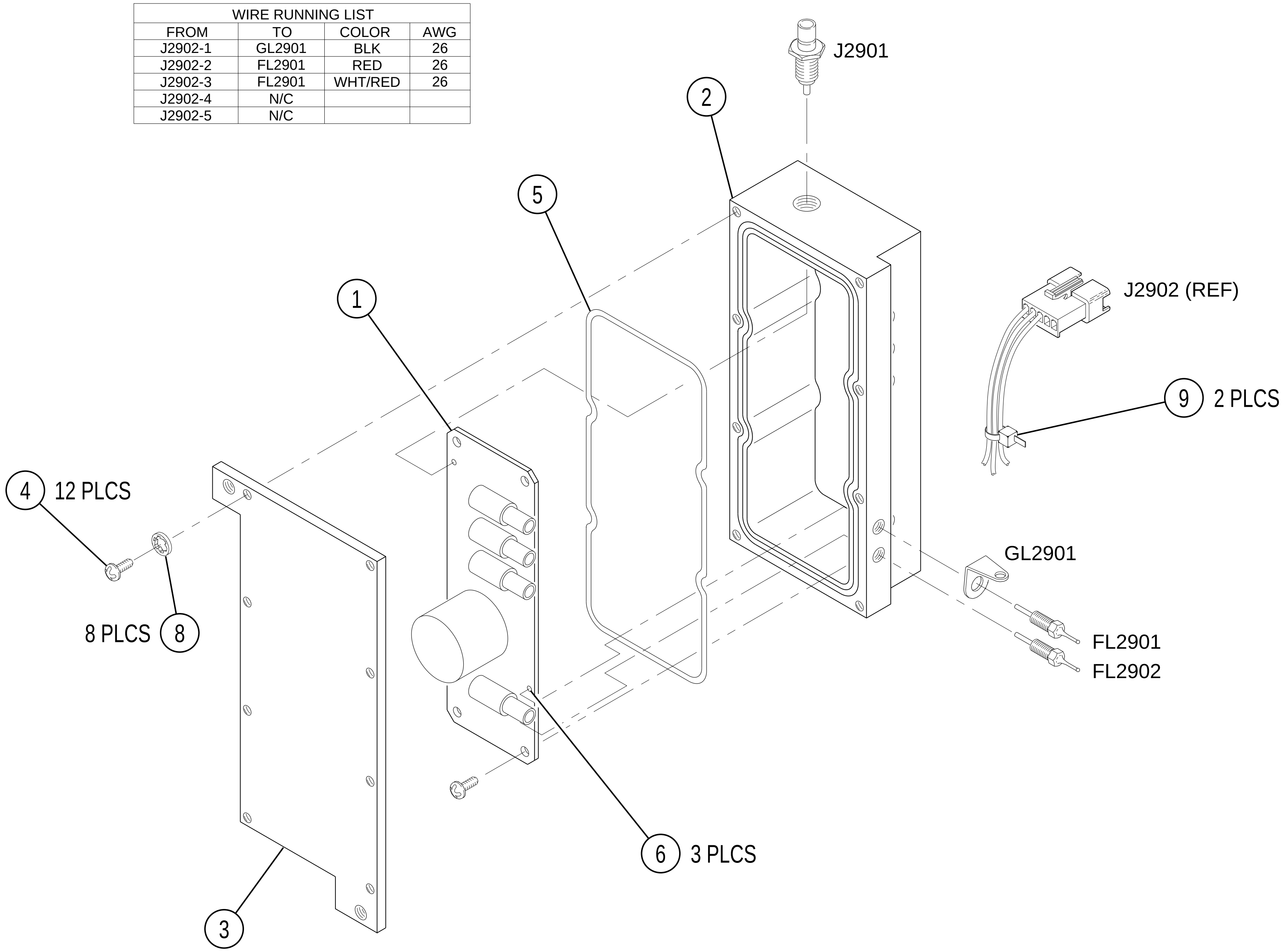
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS SCHEMATIC CARRIES SERIES:
   A. 7200 FOR PCB ASSY (7010-7530-800) REFERENCE NUMBERS <100 (i.e., R1 IS R7201).
   B. 7500 FOR PCB ASSY (7010-7530-800) REFERENCE NUMBERS >99 (i.e., R100 IS R7500).
   C. 3500 FOR PCB ASSY (7010-7530-500) (i.e., R1 IS R3501).
2. ALL RESISTORS ARE 5%, 1/8 W (3500) OR 5%, 1/4 W (7200 AND 7500).
3. ALL RESISTANCE IS EXPRESSED IN OHMS.
4. ALL CAPACITANCE IS EXPRESSED IN PICO-FARADS.
5. NO JUMPER INSTALLED FOR 4kW. INSTALL JUMPER FOR 2kW

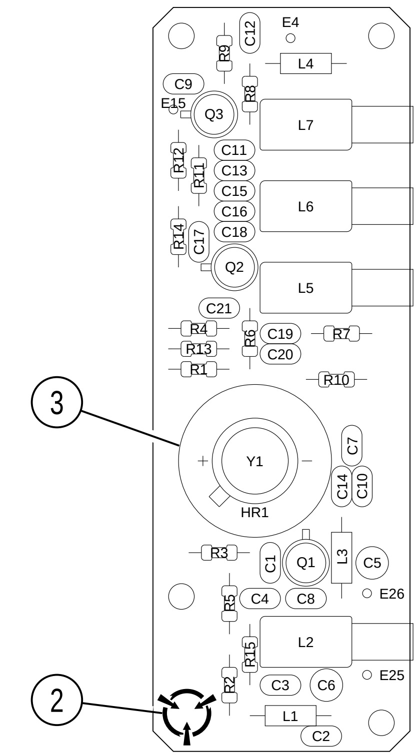
0751860s

Video Assembly (7 of 7)
Video Buffer PC Board Assembly Circuit Schematic
Figure 94

WIRE RUNNING LIST			
FROM	TO	COLOR	AWG
J2902-1	GL2901	BLK	26
J2902-2	FL2901	RED	26
J2902-3	FL2901	WHT/RED	26
J2902-4	N/C		
J2902-5	N/C		



200 MHz SLS Source Assembly
(SLS Modification) (7005-7542-200-A)



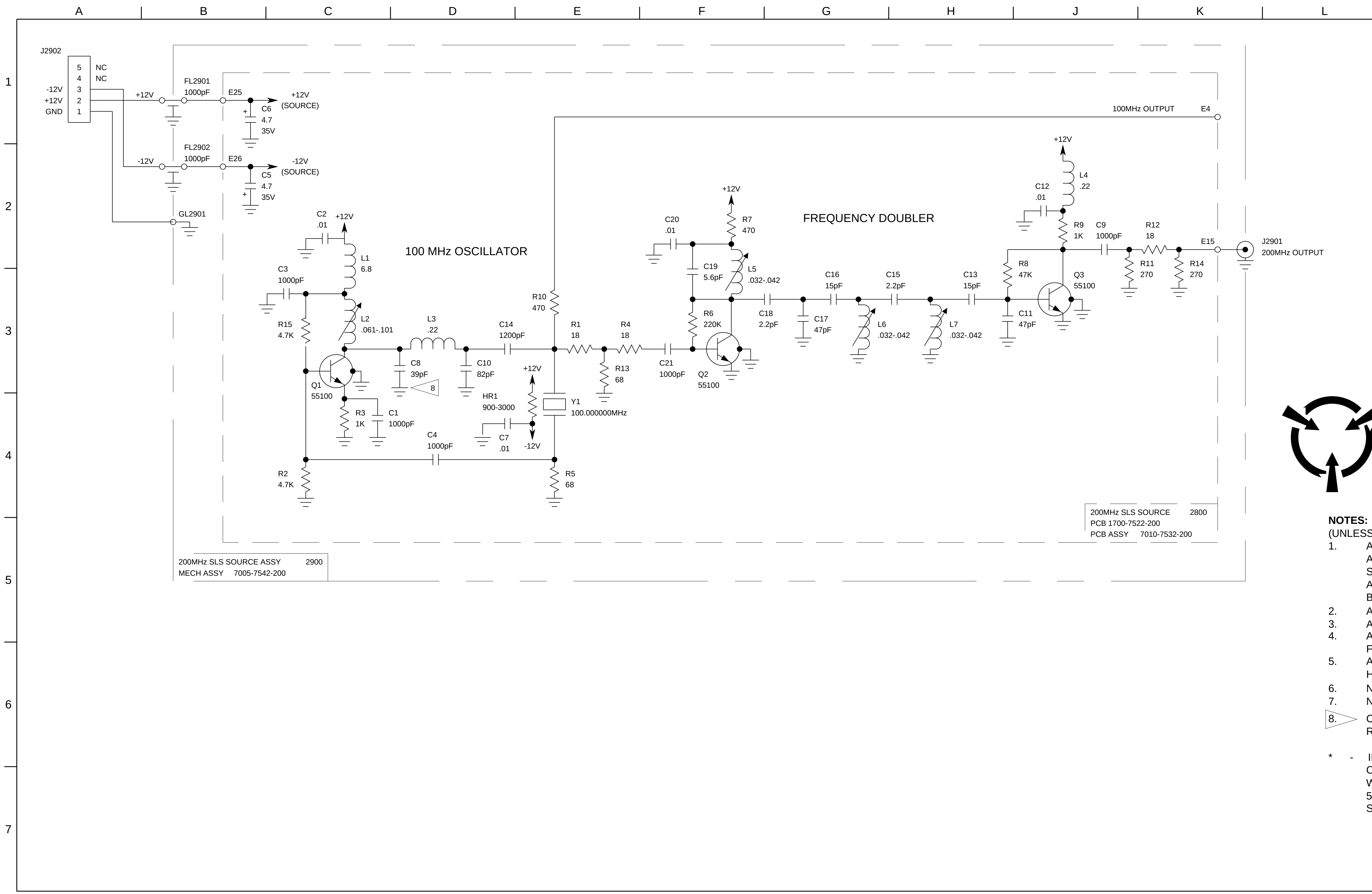
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS DRAWING CARRIES SERIES: 2800 (i.e., R1 IS R2801).

7521002P

200 MHz SLS Source PC Board Assembly
(SLS Modification) (7010-7532-200-B)

200 MHz SLS Source Assembly (1 of 2)
Figure 95



CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE NOTED)

1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS SCHEMATIC CARRIES SERIES:
   A. 2900 FOR MECH ASSY (i.e., J1 IS J2901).
   B. 2800 FOR PCB ASSY (i.e., R1 IS R2801).
2. ALL RESISTORS ARE 5%, 1/8 W.
3. ALL RESISTANCE IS EXPRESSED IN OHMS.
4. ALL CAPACITANCE IS EXPRESSED IN MICRO-FARADS.
5. ALL INDUCTANCE IS EXPRESSED IN MICRO-HENRIES.
6. NOT USED.
7. NOT USED.
8. C8 IS SELECTED AT TEST. NOMINAL: 39pF RANGE: 27pF, 39pF OR 56pF

* - INDICATES PRINTED TRANSMISSION LINES OF OTHER THAN 50 OHMS IMPEDANCE WHICH CONSTITUTE CIRCUIT ELEMENTS. 50 OHM TRANSMISSION LINES ARE NOT SHOWN.

0751824S

(0000-7542-200-A)

200 MHz SLS Source Assembly (2 of 2)
200 MHz Source Assembly Circuit Schematic (SLS Modification)
Figure 95

SECTION 3 - DISASSEMBLY/REASSEMBLY

1. Disassembly

A. General

This section contains instructions necessary to remove and disassemble assemblies within the ATC-1400A-2. Most assembly removals are reflected in 2-3-1, Figure 1, composite disassembly. However, due to the complexity of the composite, further details of assembly disassembly are shown in the individual disassembly drawing for that assembly.

B. Preliminary Considerations

(1) Tools Required

(a) Wrenches

Allen Hex-head: .050, 3/32"
Open end: 5/16" and 1/2"
Knurl Nut Wrench: 5/8"
Nut-Driver, Set

(b) Screwdrivers

Cross-Recessed & Spade (slotted)

(c) Soldering Iron

(2) Disassembly Precautions

CAUTION: TAG EACH WIRE AND CABLE PRIOR TO REMOVAL.

CAUTION: TAG LOCATION OF PLASTIC FASTENERS PRIOR TO REMOVAL.

CAUTION: AVOID BENDING OR TWISTING SEMI-RIGID COAXIAL CABLES.

CAUTION: PLACE ALL RIBBON CABLES TO LIE FLAT AND NEATLY FOLDED.

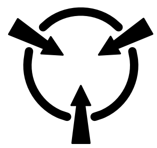
CAUTION: AVOID PLACING UNDUE STRAIN ON ANY WIRE OR CABLE.

CAUTION: AVOID DISCARDING LOOSE ITEMS (NUTS, SCREWS, WASHERS, ETC.)

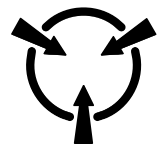
CAUTION: AVOID EXPOSING COMPONENTS TO EXCESSIVE HEAT WHEN REMOVING SOLDER.

(3) ESD

CAUTION: THE POWER SUPPLY, DIGITAL IF PCB ASSY, FRONT PANEL PULSE PCB ASSY, RF ASSY AND FRONT PANEL ASSY CONTAIN PARTS SENSITIVE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD). ALL PERSONNEL PERFORMING CALIBRATION PROCEDURES SHOULD HAVE KNOWLEDGE OF ACCEPTED ESD PRACTICES AND/OR BE ESD CERTIFIED.



CAUTION



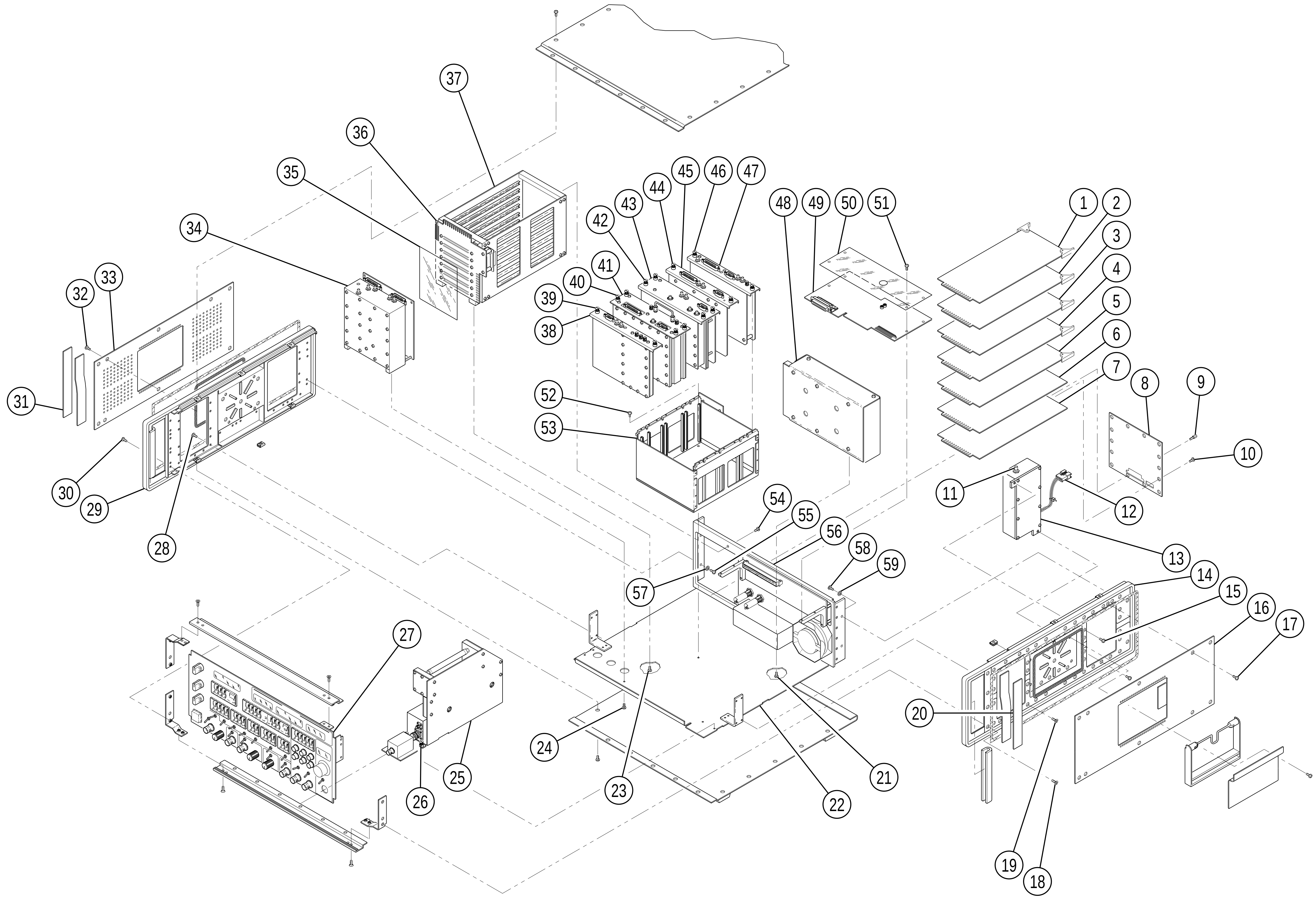
THIS EQUIPMENT CONTAINS PARTS
SENSITIVE TO DAMAGE
BY ELECTROSTATIC DISCHARGE (ESD)

(4) EMC and Safety Compliance

All assemblies, cables, connectors, plastic fasteners, gaskets, fingerstock and miscellaneous hardware within the Test Set are configured to satisfy the safety and EMC compliance standards.

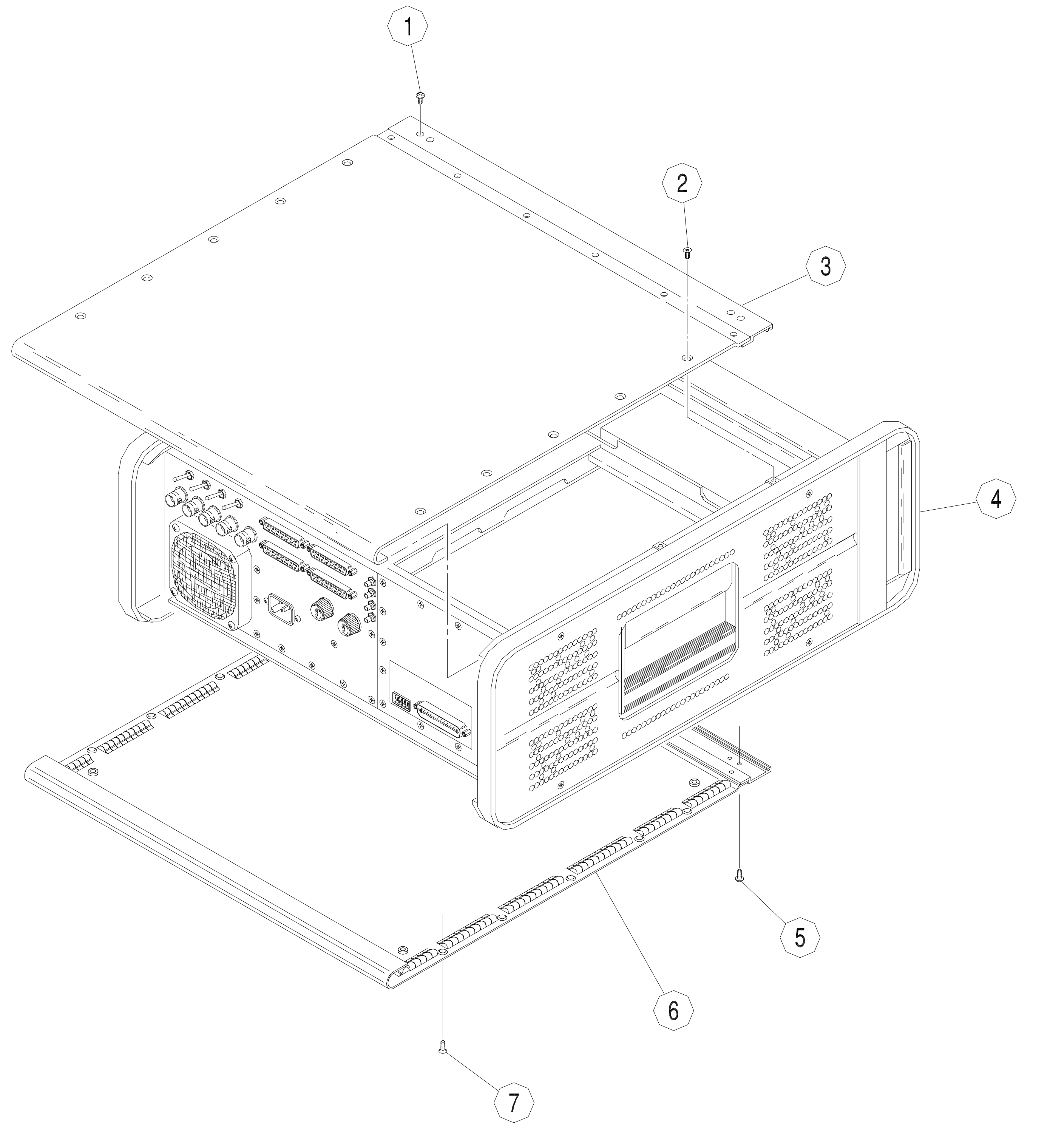
CAUTION: UPON COMPLETION OF ANY MAINTENANCE ACTION; ALL ASSEMBLIES, CABLES, CONNECTORS, PLASTIC FASTENERS, GASKETS, FINGERSTOCK AND MISCELLANEOUS HARDWARE MUST BE CONFIGURED AS INSTALLED AT THE FACTORY.

C. Index of Disassembly Procedures



7521004

Composite Assembly Disassembly
Figure 1



Covers Removal
Figure 2

D. Disassembly Procedures

NOTE: Semi-rigid coaxial cable connectors are threaded. Other coaxial cable connectors are pull apart connectors unless indicated as being threaded.

(1) Covers Removal

(a) Top Cover Removal (2-3-1, Figure 2)

STEP	PROCEDURE
1.	Remove four front top cover screws (1).
2.	Remove ten side top cover screws (2).
3.	Slide top cover (3) approximately 1 inch (≈2.5 centimeters) to rear and lift from ATC-1400A-2 (4).

(b) Bottom Cover Removal (2-3-1, Figure 2)

STEP	PROCEDURE
1.	Configure ATC-1400A-2 (3) with bottom side up.
2.	Remove four front bottom cover screws (5).
3.	Remove 11 side and rear bottom cover screws (7).
4.	Slide bottom cover (6) approximately 1 inch (≈2.5 centimeters) to rear and lift from ATC-1400A-2 (4).

(c) Right Side Frame Removal (2-3-1, Figure 1)

STEP	PROCEDURE
1.	Remove top and bottom covers per 2-3-1D(1).
2.	Remove ten screws (17) securing side cover (16).
3.	Remove two screws (58) and washers (59).
4.	Carefully pry adhesive-backed strip (20) from right side frame (14).
5.	Remove four screws (18) and two screws (19) securing right side frame (14).
6.	Remove right side frame (14).

(d) Left Side Frame Removal (2-3-1, Figure 1)

STEP	PROCEDURE
1.	Remove top and bottom covers per 2-3-1D(1).
2.	Remove ten screws (32) securing side cover (33).
3.	Remove two screws (54) and washers (57).
4.	Carefully pry adhesive-backed strip (31) from left side frame (29).
5.	Remove four screws (30) and two screws (28) securing left side frame (29).
6.	Remove left side frame (29).

(2) ALC/Mixer Assembly

(a) Removal

Unless otherwise specified, refer to 2-3-1, Figure 1 for item number references. Refer to Composite Assembly (3 of 4) in 2-2-5, Figure 77 for location of cables and connectors.

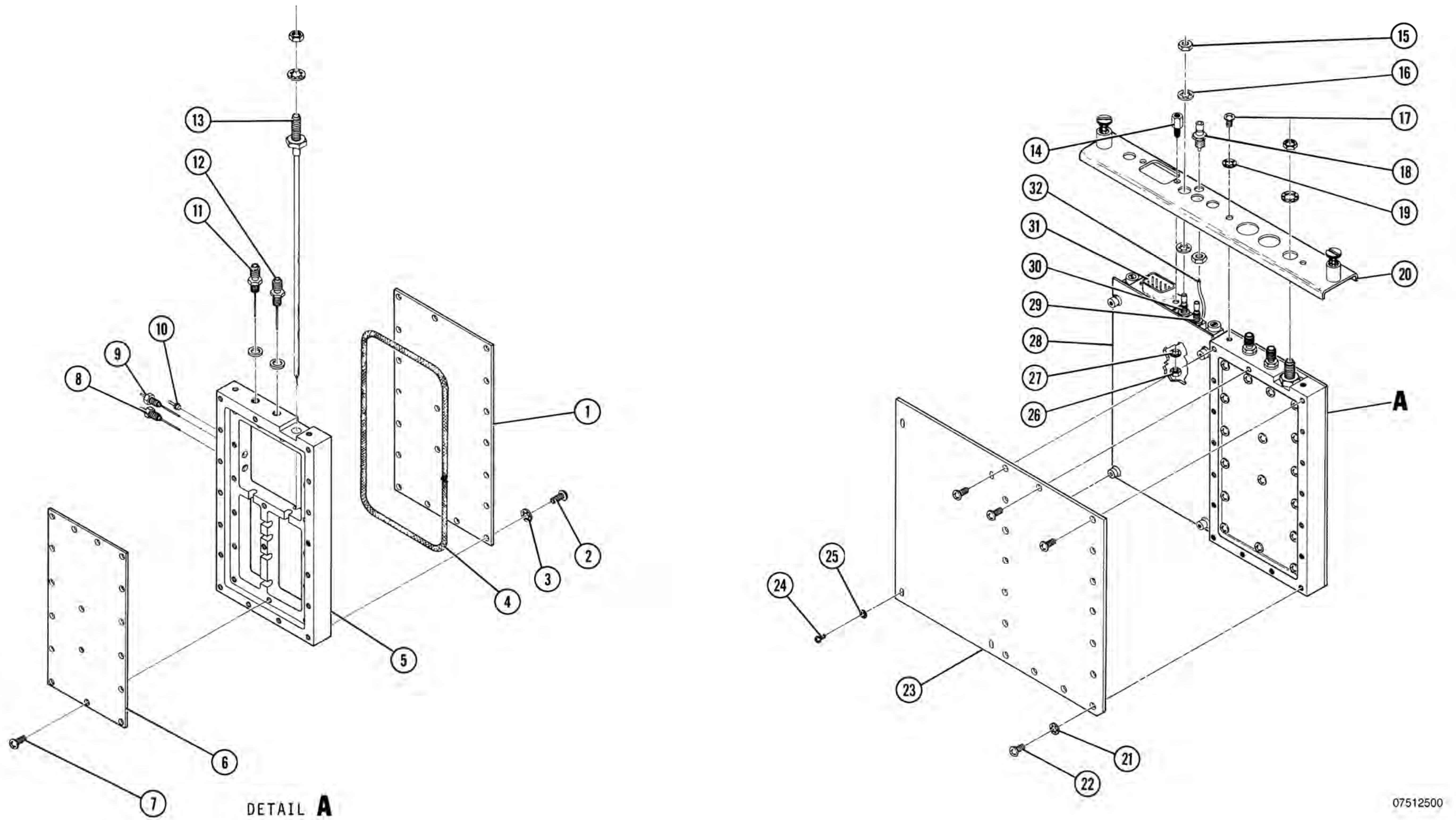
STEP	PROCEDURE

1. Remove top cover per 2-3-1D(1)(a).
2. Loosen semi-rigid coaxial cable connector P/J8104 on RF Bulkhead Assembly (25).
3. Disconnect semi-rigid coaxial cable connector P/J3103 on ALC/Mixer Assembly (38) and rotate out of the way.
4. Remove semi-rigid coaxial cable by disconnecting P/J3102 from ALC/Mixer Assembly (38) and P/J4007 on RF Synthesizer Assembly (41).
5. Loosen two captive screws and disconnect wire harness P/J3201 on ALC/Mixer Assembly (38).
6. Disconnect four flexible coaxial cable connectors on ALC/Mixer Assembly (38):
   - P/J3101
   - P/J3202
   - P/J3203
   - P/J3204
7. Loosen two captive screws (39) attaching ALC/Mixer Assembly (38). Do not remove screws from mounting sockets.
8. Lift ALC/Mixer Assembly (38) from Module Rack Assembly (53).

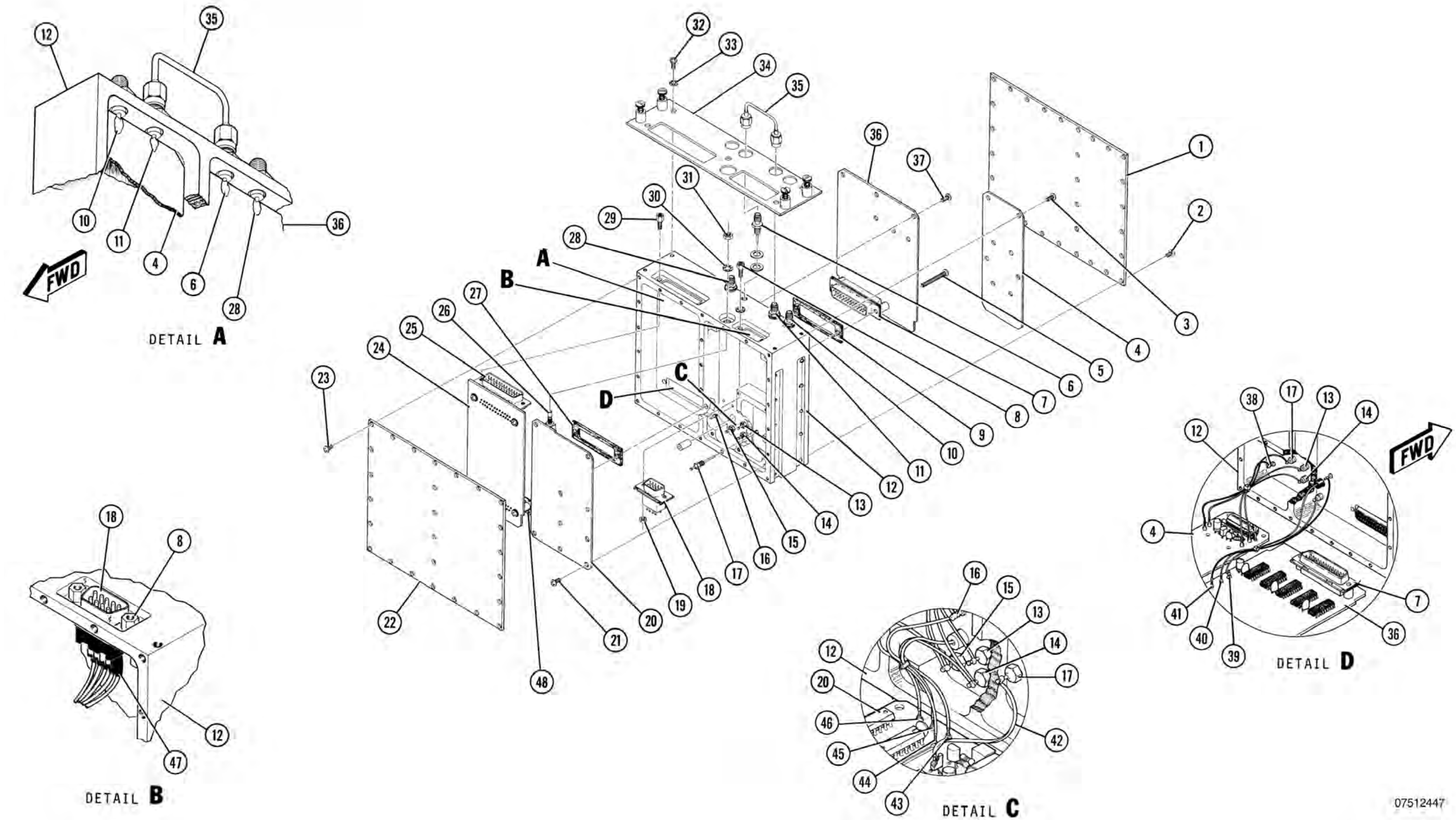
(b) ALC/Mixer Disassembly (Refer to 2-3-1, Figure 3)

STEP	PROCEDURE
1.	Remove five nuts (15) and lock washers (16) mounting coaxial cable connectors (11, 12, 13, 29, 30) to face plate assembly (20).
2.	Remove two screws (17) and lock washers (19) mounting face plate assembly (20).
3.	Remove two nuts (26), shell nuts (14) and lock washers (27) mounting connector (31).
4.	Desolder lead (32) from connector (18).
5.	Remove four screws (24) and lock washers (25) mounting ALC PC Board Assembly (28) to mounting plate (23). Remove ALC PC Board Assembly (28).
6.	Desolder three leads to filters (8, 9) and terminal (10).
7.	Remove 17 screws (2) and lock washers (3) mounting mixer assembly cover (1).
8.	Remove 15 screws (22) and lock washers (21) mounting Mixer Assembly (5) to mounting plate (23). Remove Mixer Assembly (5).
9.	Desolder coaxial cable connectors (11, 12, 13) and filters (8, 9) from Mixer PC Board Assembly (6).
10.	Remove 17 screws (7) mounting Mixer PC Board Assembly (6) to mixer block (5) and remove Mixer PC Board Assembly (6).

THIS PAGE INTENTIONALLY LEFT BLANK.



ALC/Mixer Assembly Disassembly
Figure 3



RF Synthesizer Assembly Disassembly
Figure 4

(3) RF Synthesizer Assembly

(a) Removal

Unless otherwise specified, refer to 2-3-1, Figure 1 for item number references. Refer to Composite Assembly (2 of 4) or (3 of 4) in 2-2-5, Figure 77 for location of cables and connectors.

STEP	PROCEDURE

1. Remove top cover per 2-3-1D(1)(a).
2. Loosen two captive screws and disconnect ribbon cable connector P/J4102 on RF Synthesizer Assembly (41).
3. Loosen two captive screws and disconnect wire harness connector P/J4001 on RF Synthesizer Assembly (41).
4. Remove semi-rigid coaxial cable by disconnecting P/J4007 on RF Synthesizer Assembly (41) and P/J3102 from ALC/Mixer Assembly (38) .
5. Disconnect two flexible coaxial cable connectors on RF Synthesizer Assembly (41):
   - P/J4005 (threaded)
   - P/J4401
6. Loosen four captive screws (40) securing RF Synthesizer Assembly (41). Do not remove screws from mounting sockets.
7. Lift RF Synthesizer Assembly (41) from Module Rack Assembly (53).

(b) Disassembly (Refer to 2-3-1, Figure 4)

STEP	PROCEDURE

1. Remove semi-rigid coaxial cable (35) from connectors (6, 11).
2. Remove five screws (32) and lock washers (33) securing face plate assembly (34) to enclosure block (12). Remove face plate assembly (34).
3. Remove twenty-six screws (23) securing cover (22) to enclosure block (12). Remove cover (22).
4. Remove thirty screws (2) securing cover (1) to enclosure block (12). Remove cover (1).
5. Remove Programmable Divider PC Board Assembly (36) as follows:
   - Remove two long screws (5) and six short screws (37) mounting Programmable Driver PC Board Assembly (36) to enclosure block (12).
   - Desolder leads to coaxial cable connectors (6, 28) and unscrew connectors sufficiently to clear PC board (36).
   - Carefully pry PC board (36) at end opposite connectors to disengage plug (7) and to loosen RTV, which is used as a heat sink for IC packs in enclosure block (12). Lift PC board (36) from enclosure block (12).
   - Remove gasket (9) from connector (7).
   - Tag and desolder wires (39, 40, 41) (refer to 2-3-1, Figure 4, Detail D) from PC board (36).

STEP PROCEDURE

6. Remove Frequency Latch PC Board Assembly (24) as follows:

- Remove two shell nuts (29) securing plug (25) to enclosure block (12).
- Carefully pry up (and out) on opposite end of PC board (24) to disengage connector J4103 (48) and lift PC board from enclosure block (12).
- Remove gasket (27) from connector (48).

7. Remove VCO PC Board Assembly (4) as follows:

- Unscrew connectors if necessary to clear PC board (4).
- Remove 8 screws (3) securing PC board (4) to enclosure block (12). Lift PC board (4) from enclosure block (12).
- Desolder wires connected to PC board from feedthrough filters (13, 14, 17) and ground post (38) (Detail D).

8. Remove Reference Divider PC Board Assembly (20) as follows:

- Remove nut (31) and lock washer (30) securing coaxial cable connector (26) to enclosure block (12).
- Remove nine screws (21) securing PC board (20) to enclosure block (12). Lift PC board from enclosure block.
- Tag and desolder five wires (42 through 46) as follows: Remove yellow wire (44) from PC board (20). Desolder other four wires (42, 43, 45 and 46) from the enclosure block (12) (Detail C).

9. Remove connector (18) as follows:

- Remove heat-shrink tubing (47). Tag and desolder five wires from connector (18) (Detail B).
- Remove two shell nuts (8), and nuts (19) securing connector (18) to enclosure block (12). Remove connector.

(4) Discriminator Assembly

(a) Removal

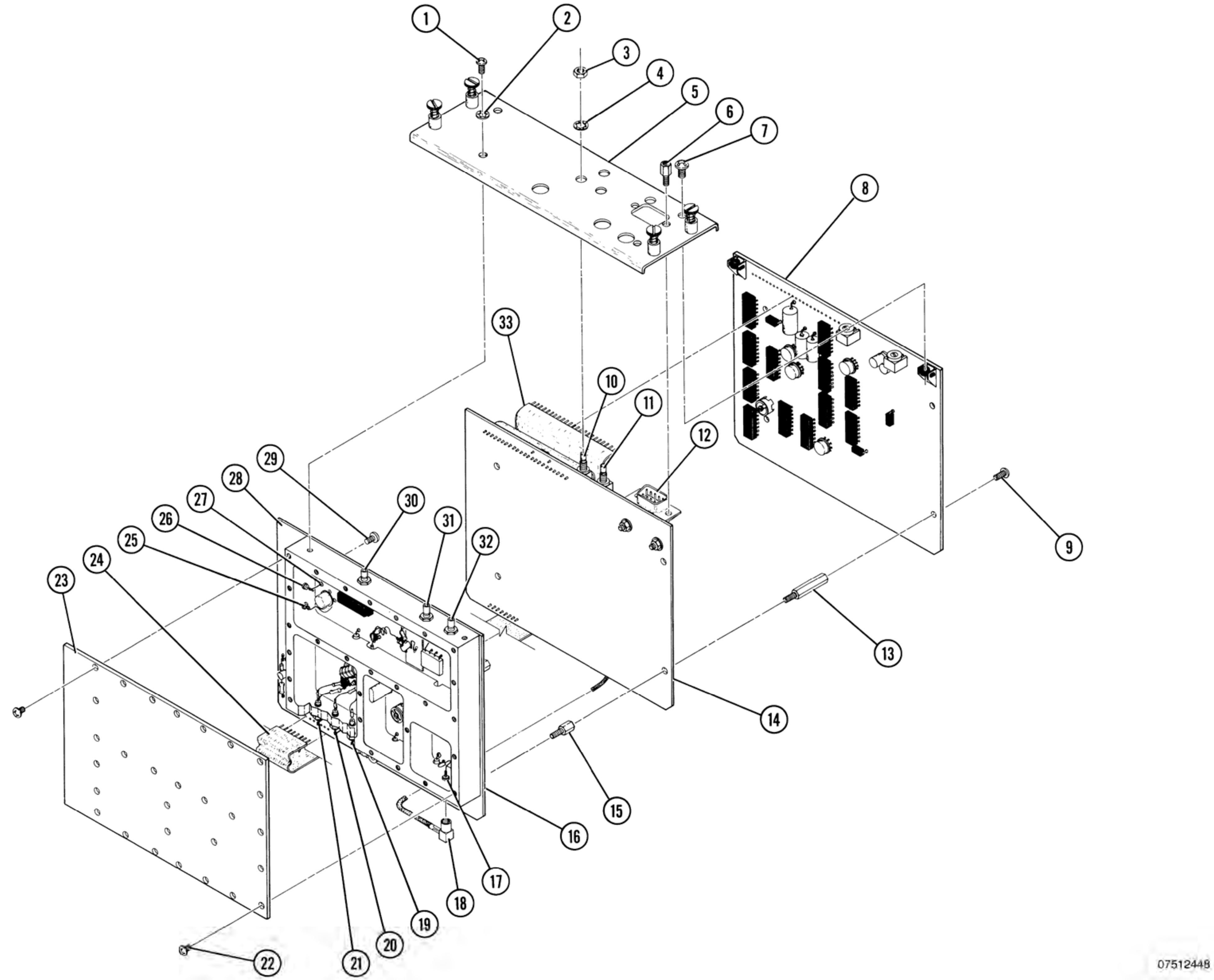
Unless otherwise specified, refer to 2-3-1, Figure 1 for item number references. Refer to Composite Assembly (2 of 4) or (3 of 4) in 2-2-5, Figure 77 for location of cables and connectors.

STEP	PROCEDURE
1.	Remove top cover per 2-3-1D(1)(a).
2.	Disconnect flexible coaxial cable connector P/J6103 on Counter Assembly (45).
3.	Loosen two captive screws and disconnect ribbon cable connector P/J4102 on RF Synthesizer Assembly (41).
4.	Loosen two captive screws and disconnect wire harness connector P/J5201 on Discriminator Assembly (43).
5.	Disconnect three flexible coaxial cable connectors on Discriminator Assembly (43): ● P/J5101 ● P/J5102 ● P/J5202
6.	Loosen four captive screws (42) securing Discriminator Assembly (43). Do not remove screws from mounting sockets.
7.	Lift Discriminator Assembly (43) from Module Rack Assembly (53).

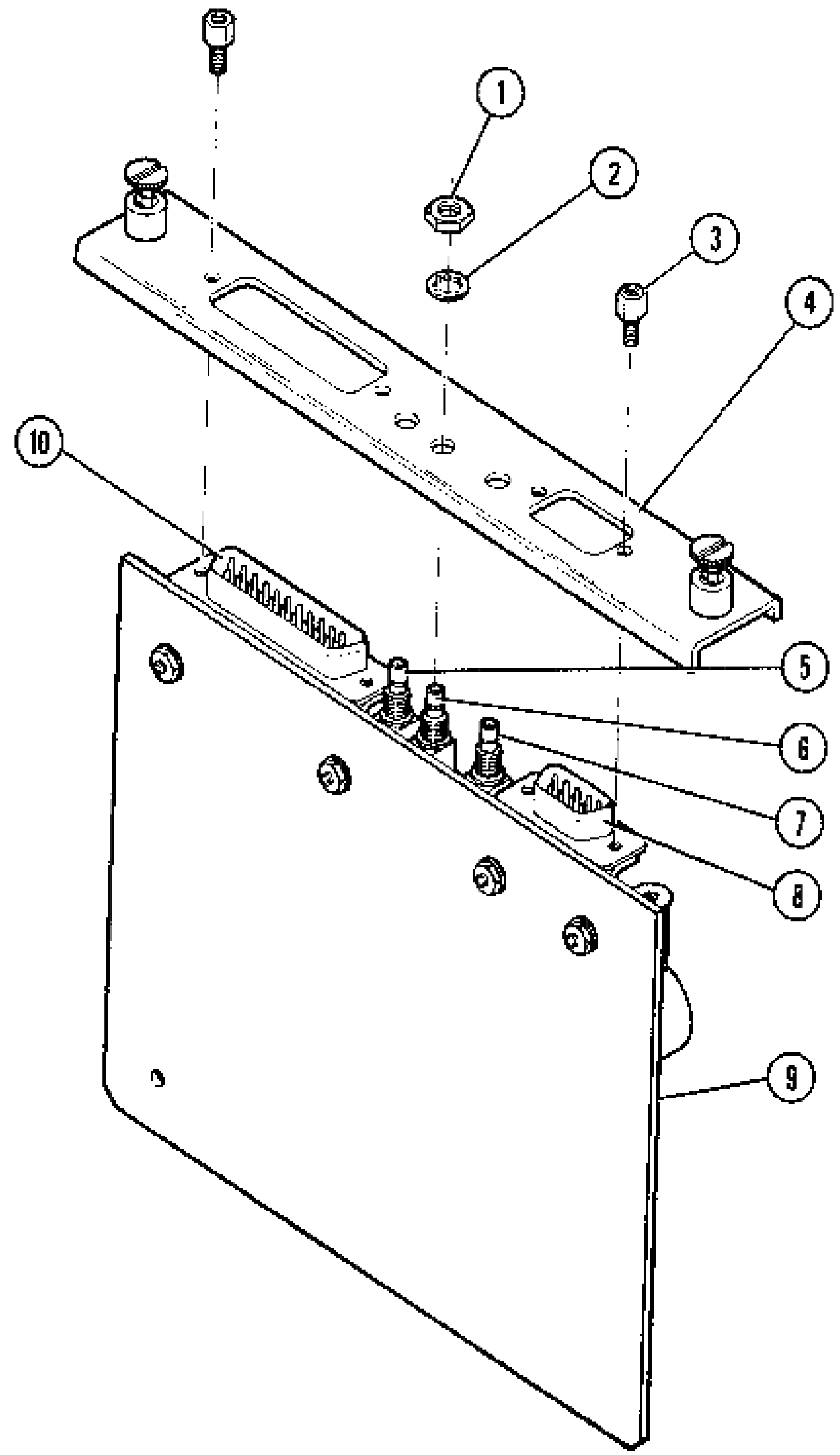
(b) Disassembly (Refer to 2-3-1, Figure 5).

STEP	PROCEDURE
1.	Remove two shell nuts (6) mounting connector (12) to face plate assembly (5).
2.	Remove two nuts (3) and lock washers (4) securing two coaxial cable connectors (10, 11) to face plate assembly (5).
3.	Remove four screws (two each) (1, 7) and two lock washers (2) securing face plate assembly (5) to Sampler PC Board Assembly (8).
4.	Remove four screws (9) mounting Sampler PC Board Assembly (8) to shell nuts (13). Unfold PC board.
5.	Desolder flex strip (33) from Sampler PC Board Assembly (8).
6.	Remove four long shell nuts (13) mounting Discriminator PC Board Assembly (14) to short shell nuts (15). Unfold PC board.
7.	Desolder flex strip (24) from RF Converter PC Board Assembly (16).
8.	Disconnect flexible coaxial cable (18) from RF Converter PC Board Assembly connector (17).
9.	Remove RF Converter PC Board Assembly (16) from enclosure block (28) as follows:

- Remove twenty-nine screws (22) securing RF Converter cover (23) on enclosure block (28).
- Desolder leads from both ends of feed through filters (19, 20, 21, 26, 27).
- Desolder leads from five coaxial cable connectors (17, 25, 30, 31, 32).
- Remove four shell nuts (15).
- Remove twenty-five screws (29) and separate enclosure block (28) and RF Converter PC Board Assembly (16).



Discriminator Assembly Disassembly
Figure 5



Counter Assembly Disassembly
Figure 6

(5) Counter Assembly

(a) Removal

Unless otherwise specified, refer to 2-3-1, Figure 1 for item number references. Refer to Composite Assembly (2 of 4) or (3 of 4) in 2-2-5, Figure 77 for location of cables and connectors.

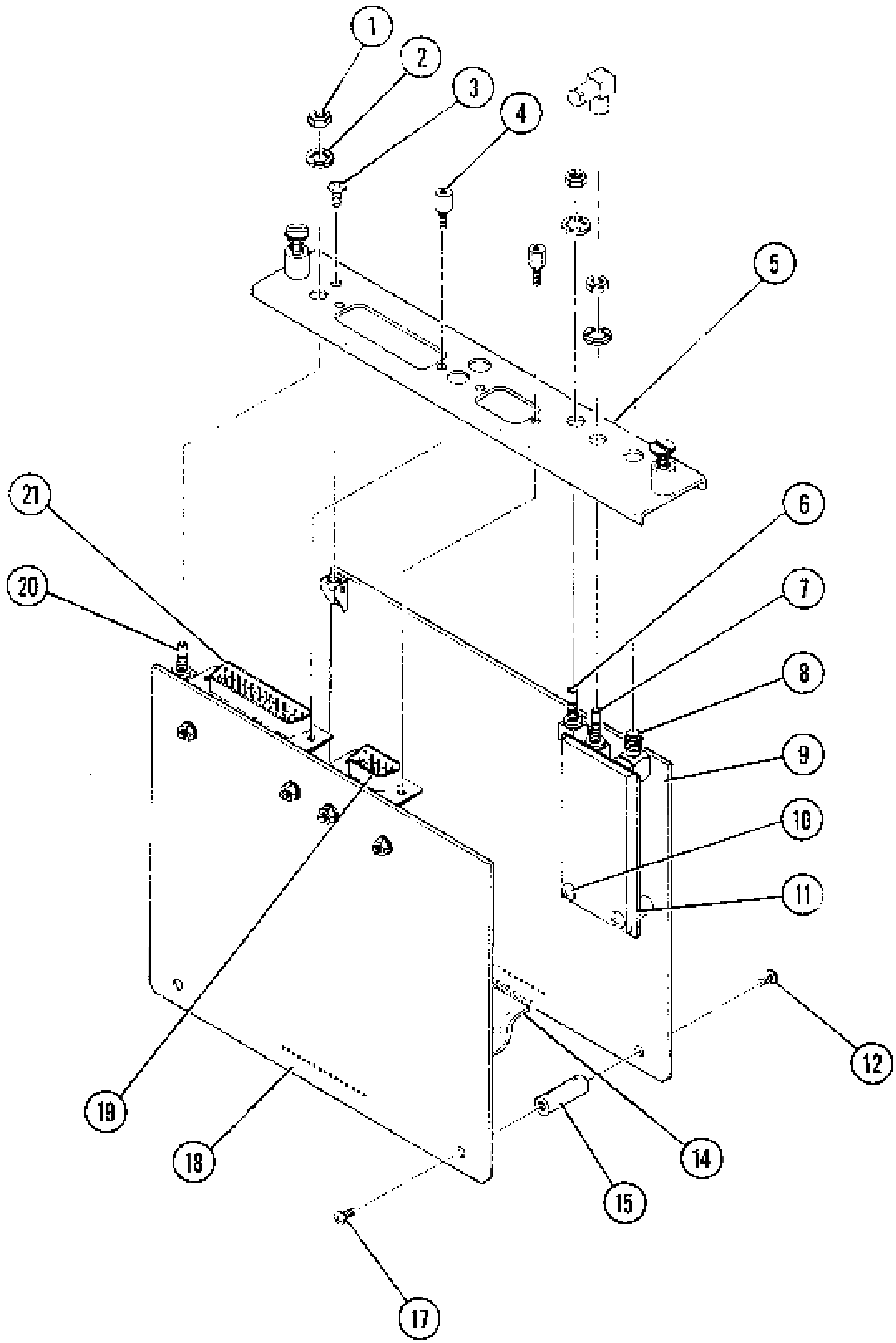
STEP	PROCEDURE

1. Remove top cover per 2-3-1D(1)(a).
2. Loosen two captive screws and disconnect ribbon cable connectors:
   - P/J4102 on RF Synthesizer Assembly (41)
   - P/J6102 on Counter Assembly (45).
3. Loosen two captive screws and disconnect wiring harness connector P/J6101 on Counter Assembly (45).
4. Disconnect two flexible coaxial cable cables from connectors on Counter Assembly (45):
   - P/J6103
   - P/J6104
5. Loosen two captive screws (44) securing Counter Assembly (45). Do not remove screws from mounting sockets.
6. Lift Counter Assembly (45) from Module Rack Assembly (53).

(b) Disassembly (Refer to 2-3-1, Figure 6)

STEP	PROCEDURE

1. Remove two shell nuts (3) securing each wiring connector (8 and 10) to face plate assembly (4).
2. Remove nut (1) and lock washer (2) securing each coaxial cable connector (5, 6, 7) to face plate assembly (4).
3. Remove face plate assembly (4) from Counter PC Board Assembly (9).



Video Assembly Disassembly
Figure 7

(6) Video Assembly

(a) Removal

Unless otherwise specified, refer to 2-3-1, Figure 1 for item number references. Refer to Composite Assembly (2 of 4) or (3 of 4) in 2-2-5, Figure 77 for location of cables and connectors.

STEP	PROCEDURE

1. Remove top cover per 2-3-1D(1)(a).
2. Loosen captive screws and disconnect ribbon cable connectors:
   - P/J4102 on RF Synthesizer Assembly (41)
   - P/J6102 on Counter Assembly (45).
   - P/J7102 on Video Assembly (47)
   - P/J9202 on Interface PC Board Assembly (49).
3. Loosen two captive screws and disconnect wire harness connector P/J7101 on Video Assembly (47).
4. Disconnect semi-rigid coaxial cable connector P/J3501 on Video Assembly (47).
5. Disconnect two flexible coaxial cable connectors on Video Assembly (47):
   - P/J7103
   - P/J7202
6. Loosen two captive screws (46) securing Video Assembly (47). Do not remove screws from mounting sockets.
7. Lift Video Assembly (47) from Module Rack Assembly (53).

(b) Disassembly (Refer to 2-3-1, Figure 7)

STEP	PROCEDURE

1. Remove four shell nuts (4) securing wire cable connector (19) and ribbon cable connector (21) to face plate assembly (5).
2. Remove three nuts (1) and lock washers (2) securing coaxial cable connectors (6, 7, 20) to face plate assembly (5).
3. Remove one screw (3) securing face plate assembly (5) to PC board assembly (9). Remove face plate assembly.
4. Remove two screws (17) securing Video Converter PC Board Assembly (18) to spacers (15). Unfold PC board.
5. Remove two screws (12) securing spacers (15) to Video Buffer PC Board Assembly (9).
6. Desolder flex strip (14) from either PC boards (9 or 18).
7. Remove two screws (10) securing Video Detector (11) to Video Buffer PC Board Assembly (9).
8. Desolder cover (11) from Video Buffer PC Board Assembly (9).

(7) Interface PC Board Assembly

Unless otherwise specified, refer to 2-3-1, Figure 1 for item number references. Refer to Composite Assembly (2 of 4) or (3 of 4) in 2-2-5, Figure 77 for location of cables and connectors.

STEP	PROCEDURE
1.	Remove top cover per 2-3-1D(1)(a).
2.	Loosen two captive screws and disconnect ribbon cable connector P/J9202 on Interface PC Board Assembly (49).
3.	Disconnect wire cable connector P/J9201 on Interface PC Board Assembly (49).
4.	Disconnect ribbon cable connector P/J9203 on Interface PC Board Assembly (49).
5.	Remove four screws (51) securing insulator (50) and Interface PC Board Assembly (49).
6.	Pull Interface PC Board Assembly (49) straight forward to disengage rear card edge connector P/J9112 and allow back of Interface PC Board Assembly to rise clear of rear panel frame (56).

(8) Module Rack Assembly

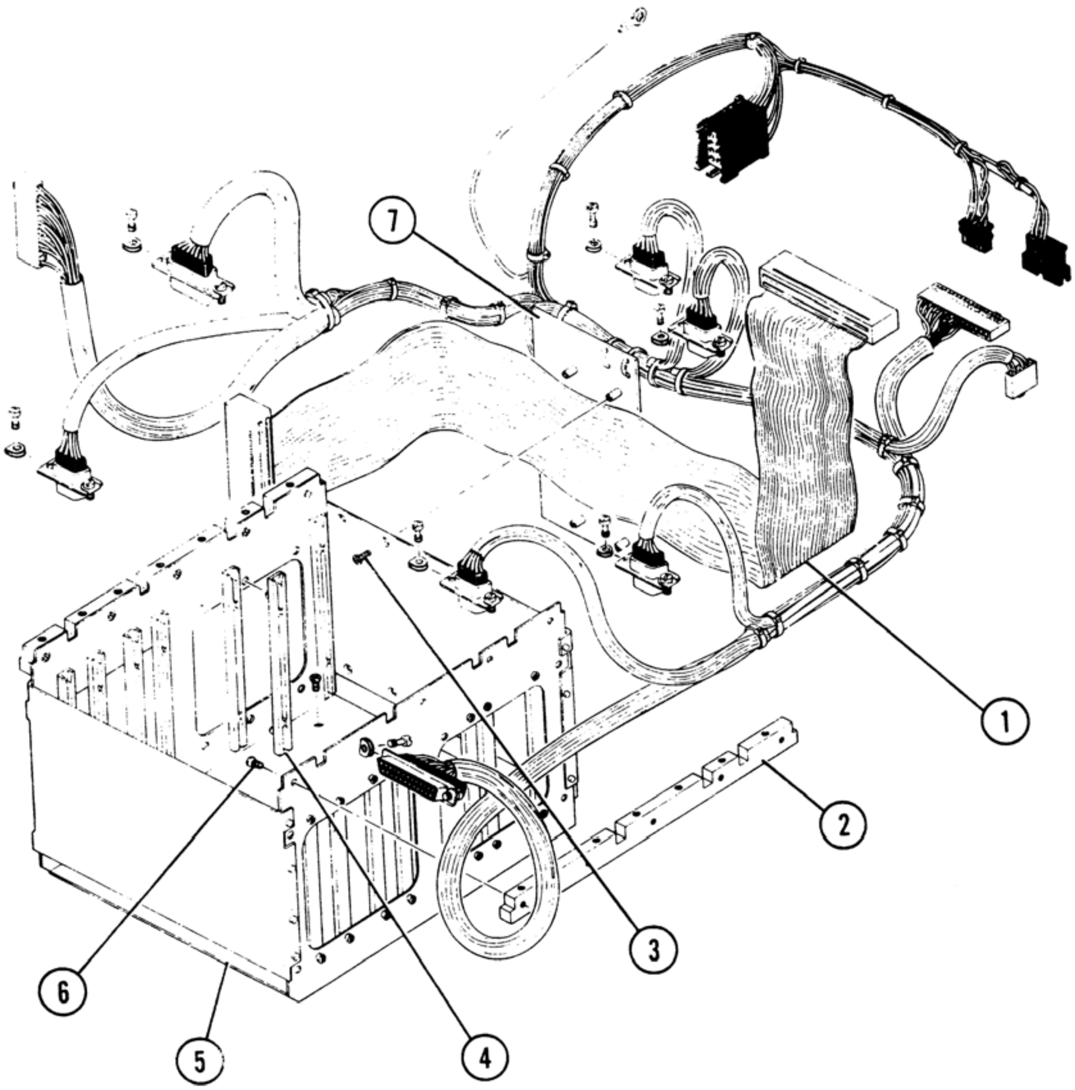
(a) Removal

Unless otherwise specified, refer to 2-3-1, Figure 1 for item number references. Refer to Composite Assembly (2 of 4) or (3 of 4) in 2-2-5, Figure 77 for location of cables and connectors.

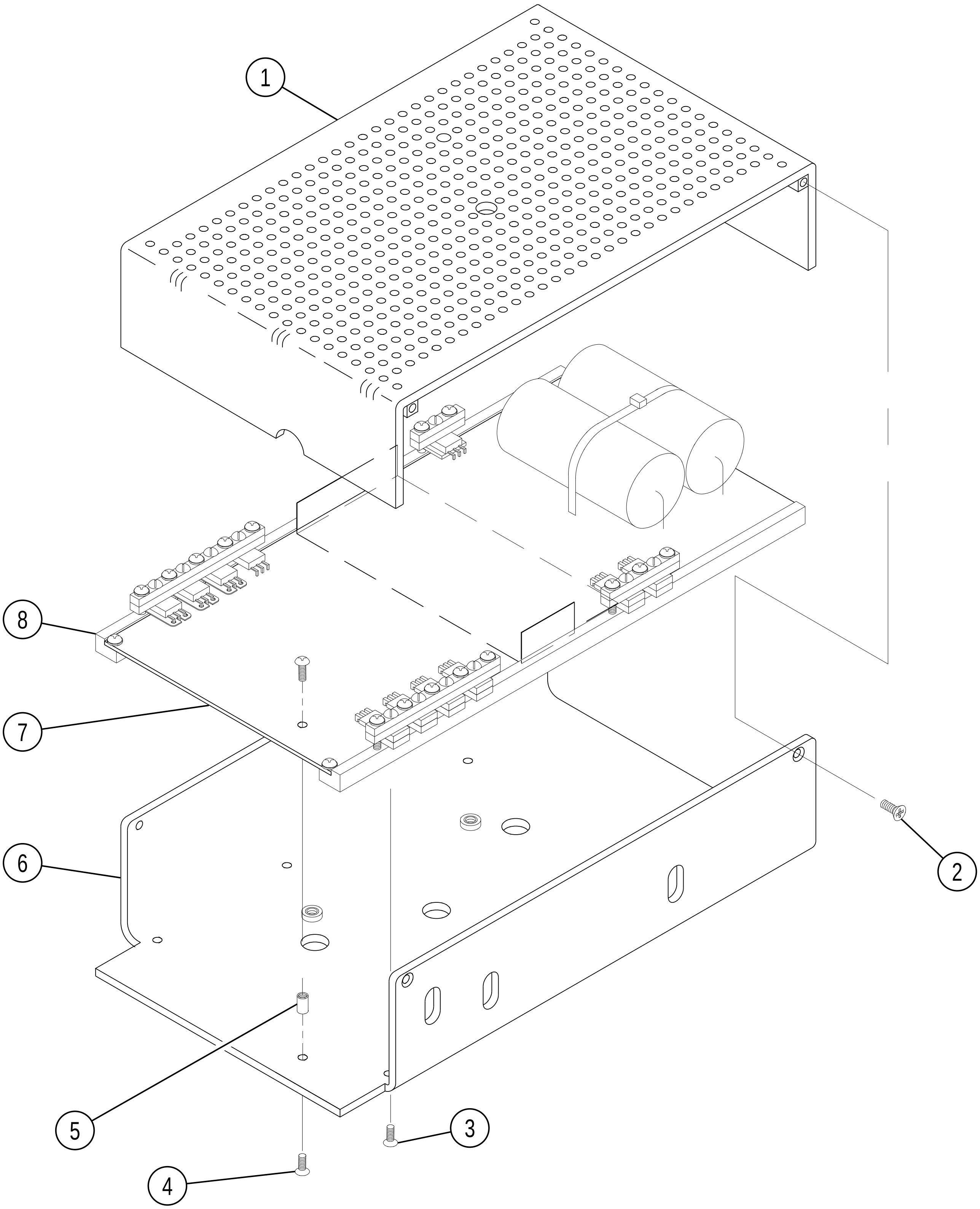
STEP	PROCEDURE
1.	Remove top and bottom covers per 2-3-1D(1).
2.	Remove five assemblies from Module Rack Assembly (53): ● ALC/Mixer Assembly (38) per 2-3-1D(2)(a) ● RF Synthesizer Assembly (41) per 2-3-1D(3)(a) ● Discriminator Assembly (43) per 2-3-1D(4)(a) ● Counter Assembly (45) per 2-3-1D(5)(a) ● Video Assembly (47) per 2-3-1D(6)(a)
3.	Remove Interface PC Board Assembly (49) per 2-3-1D(7).
4.	Disconnect wire cable connector P/J8601 on RF Bulkhead Assembly (25).
5.	Loosen captive screws where needed and disconnect wire cable connectors: ● P/J1001 on Front Panel Assembly (27) ● P/J901 on Motherboard PC Board Assembly (36) ● P/J2601 on 200 MHz Generator Assembly (34)
6.	Loosen captive screws where needed and disconnect ribbon cable connectors as follows: ● P/J8602 on RF Bulkhead Assembly (25). ● P/J1401 on Front Panel Assembly (27). ● P/J902 on Motherboard PC Board Assembly (36) ● P/J903 on Motherboard PC Board Assembly (36)
7.	Refer to 2-3-1, Figure 8. Remove four flathead screws (3) securing Power Distribution PC Board Assembly (7) to Module Rack Assembly (5). Allow ribbon cable (1) to drop out of the way.
8.	Remove six flat-head screws (52) securing Module Rack Assembly (53) to Floor Assembly (22).
9.	Remove tie wraps as required and carefully lift Module Rack Assembly (53) from ATC-1400A-2.

(b) Disassembly (Refer to 2-3-1, Figure 8)

STEP	PROCEDURE
1.	Unsnap assembly guide (4) from Module Rack Assembly (5).
2.	Remove five screws (6) securing each mounting rail (2) to Module Rack Assembly (5).



Module Rack Assembly Disassembly
Figure 8



Power Supply Assembly Disassembly
Figure 9

(9) Power Supply Assembly

(a) Removal

Unless otherwise specified, refer to 2-3-1, Figure 1 for item number references. Refer to Composite Assembly (2 of 4) or (3 of 4) in 2-2-5, Figure 77 for location of cables and connectors.

STEP	PROCEDURE
1.	Remove top and bottom covers per 2-3-1D(1).
2.	Remove Interface PC Board Assembly (49) per 2-3-1 D(7)(a).
3.	From bottom of ATC-1400A, remove two screws (21) securing Power Supply Assembly (48) to Floor Assembly (22).
4.	Carefully lift Power Supply Assembly (48) from Floor Assembly (22).
5.	Disconnect wire cable connectors: ● P/J9502 ● P/J9902
6.	Disconnect wire harness connector P/J9901 on Power Supply Assembly (48).

(b) Disassembly (Refer to 2-3-1, Figure 9.)

STEP	PROCEDURE
1.	Remove four screws (2) securing cover (1) to housing (6).
2.	Remove screw (4) securing housing (6) to shell nut (5).
3.	Remove six screws (3) securing rails (8) to housing (6).
4.	Lift and slide Power Supply PC Board Assembly (7) out of housing (6) at either end.

10) Rear Panel Assembly

(a) Removal

Unless otherwise specified, refer to Floor Assembly (1 of 14) in 2-2-5, Figure 88.

STEP	PROCEDURE
1.	Remove top cover per 2-3-1D(1)(a).
2.	Remove Interface PC Board Assembly per 2-3-1D(7)(a).
3.	Refer to Composite Assembly (3 of 4) in 2-2-5, Figure 77 and disconnect five flexible coaxial cable connectors on Rear Panel Assembly: ● P/J9121 (threaded) ● P/J9126 ● P/J9127 ● P/J9128 ● P/J9129
4.	Disconnect wire cable connectors: ● P/J9502 ● P/J9503
5.	Remove 20 screws (9) securing Rear Panel Assembly (10) to rear panel frame (7).
6.	Carefully slide Rear Panel Assembly (10) out rear panel frame (7), tilting to maneuver the wire clip (5) (2-3-1, Figure 10) on the bottom of FL9501 (4) (2-3-1, Figure 10) out of the rear panel frame (7).
7.	Remove fan wire from wire clip (5) (2-3-1, Figure 10).

(b) Disassembly (Refer to 2-3-1, Figure 10.)

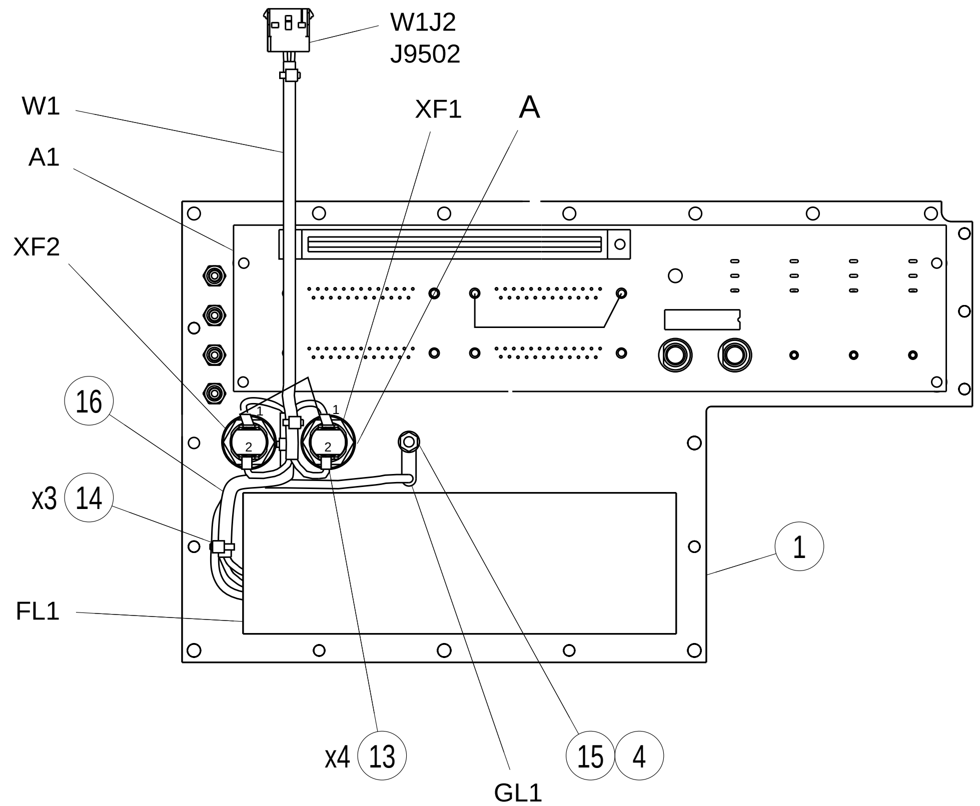
STEP PROCEDURE

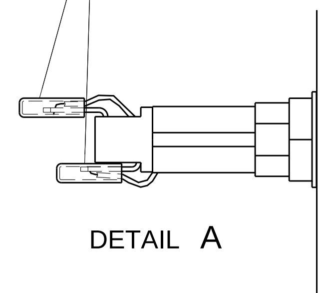
1. Remove four screws (17), washers (18) and spacers (6); securing interface PCB support bracket (3) to Rear Panel Assembly (1).
3. Desolder three coaxial cable jacks on Connector PC Board Assembly (2):
   - J3509 (16)
   - J3510 (15)
   - J3511 (14)
4. Remove four nuts (13) and washers (12).
5. Remove eight standoff nuts (11) and remove Connector PC Board Assembly (2) from Rear Panel Assembly (1).
6. Remove FL3501 (4):
   - Remove nut and washer (19) and ground lug (20) from Rear Panel Assembly (1).
   - Desolder one wire (22) from each fuse holder (10).
   - Remove three screws (9) and remove FL3501 (4) from Rear Panel Assembly (1).
7. Remove fuse holders (10):
   - Desolder two wires (21 and 22, if needed) from each Fuse Holder (10).
   - Remove two nuts (7) and washers (8).
   - Press Fuse Holders (10) through Rear Panel Assembly (1).

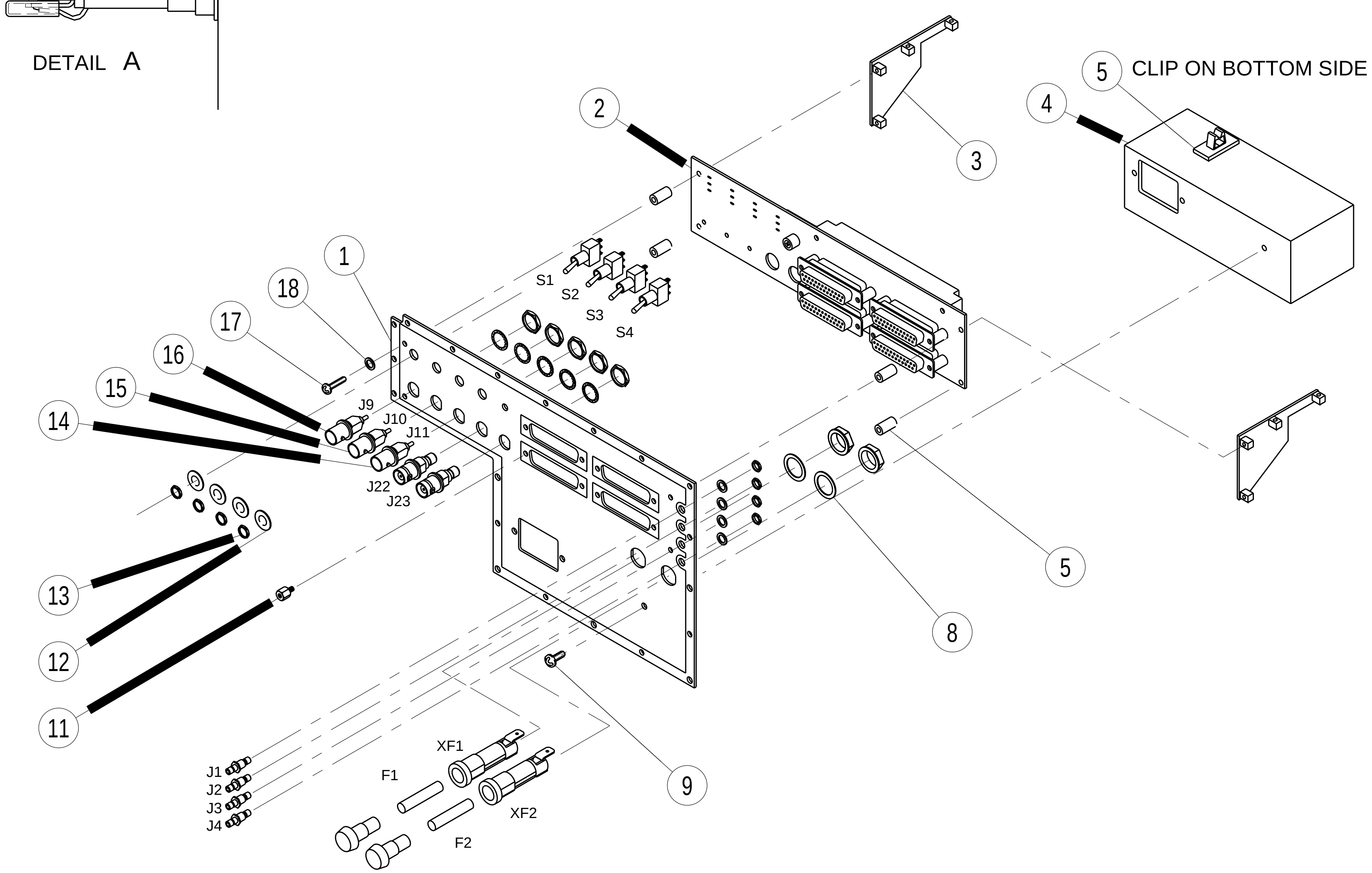
(11) Fan Assembly

Unless otherwise specified, refer to Floor Assembly (1 of 14) in 2-2-5, Figure 88.

STEP	PROCEDURE
1.	Remove top cover per 2-3-1D(1)(a).
2.	Remove four screws (13) attaching screen (15) and Fan Assembly (12) to rear panel frame (7).
3.	Remove fan wire from wire clip (5) (2-3-1, Figure 10).
4.	Withdraw Fan Assembly (12) from rear panel frame (7) and disconnect wire cable connector P/J9504.



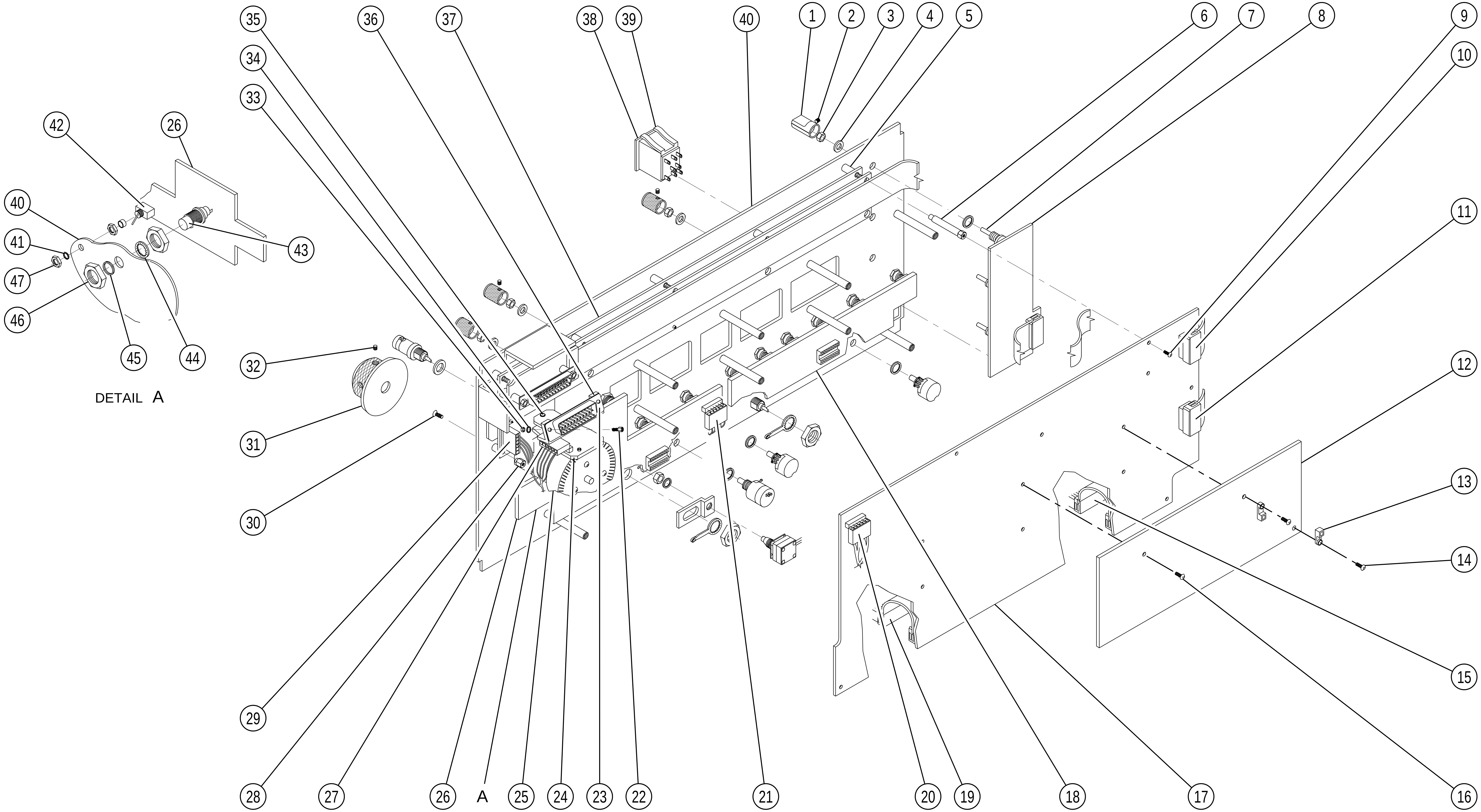




WIRE RUNNING LIST				
DESG	FROM	TO	COLOR	AWG
W1W1	W1J2-1	XF1-2	BROWN	18
W1W2	W1J2-2	XF2-2	BLUE	18
FL1W1	FL1-N	XF2-1	BLUE	16
FL1W2	FL1-L	XF1-1	BRN	16
FL1W3	FL1-E	GL1	GRN/YEL	16

7543025M

Rear Panel Assembly Disassembly
Figure 10



Front Panel Assembly
Figure 11

(12) Front Panel Assembly

(a) Removal

Unless otherwise specified, refer to 2-3-1, Figure 1 for item number references. Refer to Composite Assembly (2 of 4) or (3 of 4) in 2-2-5, Figure 77 for location of cables and connectors.

STEP	PROCEDURE

1. Remove top and bottom covers per 2-3-1D(1).
2. Remove right side frame per 2-3-1D(1)(c).
3. Loosen two captive screws and disconnect ribbon cable connector P/J1401 on Front Panel Assembly (27).
4. Loosen two captive screws and disconnect wiring harness cable connector P/J1001 on Front Panel Assembly (27).
5. Disconnect wire cable P/J9902.
6. Disconnect flexible coaxial cable connectors:
   - P/J6103 on Discriminator Assembly (43)
   - P/J7202 on Video Assembly (47)
   - P/J8502 (lower connector) on RF Bulkhead Assembly (25)

(b) Disassembly (Refer to 2-3-1, Figure 11).

STEP	PROCEDURE

1. Remove Thumbwheel Switch PC Board Assembly (17) as follows:
   - Disconnect two ribbon cable connectors, P/J1501 (10) and P/J1502 (11).
   - Disconnect wire cable connector P/J1505 (20).
   - Remove eleven screws (9).
   - Remove two screws (14) and two tie wrap holders (13).
   - Remove screw (16) and insulator (12).
   - Raise Thumbwheel Switch PC Board Assembly (17) and disconnect ribbon cable connectors, P/J1701 (15) and P/J1802 (19).
   - Remove Thumbwheel Switch PC Board Assembly (17) from Front Panel Assembly (40).
2. Remove Toggle Switch PC Board Assembly (18) as follows:
   - Remove nut (47) and flat washer (41), from each of nine toggle switches (42). (Detail A shows the Pushbutton Switch PC Board Assembly but the items are the same on the Toggle Switch PC Board Assembly.)
   - Remove Toggle Switch PC Board Assembly (18) from Front Panel Assembly (40).

STEP PROCEDURE

3. Remove Pushbutton Switch PC Board Assembly (26) as follows:

- Remove nut (47) and flat washers (41), from each of seven toggle switches (42).
- Remove nut (46) and washer (45) from each of six pushbutton switches (43).

  CAUTION: AVOID TURNING THE SWITCH WHILE REMOVING MOUNTING NUT TO PREVENT POSSIBLE DAMAGE TO THE JUNCTION WITH THE PC BOARD.

- Disconnect wire cable connector P/J1801 (21).
- Remove Pushbutton Switch PC Board Assembly (26) from Front Panel Assembly (40).

4. Remove Rotary Switch PC Board Assembly (8) as follows:

- Loosen two set screws (2) and remove knob (1) from each rotary switch (7).
- Remove nut (37) and flat washer (38).
- Remove Rotary Switch PC Board Assembly (8) from Front Panel Assembly (40).

5. Remove Attenuator Control Assembly (25) as follows:

- Disconnect plug P/J1101 (27).
- Loosen two set screws (32) and remove attenuator knob (31).
- Remove four screws (30).
- Remove Attenuator Control Assembly (25) from Front Panel Assembly (40).
- Remove two nuts (33), lock washers (34) and shell nuts (22) fastening wire harness connector (23) to mounting bracket (36).
- Remove two hex head screws (35), lock washers and spacers securing mounting bracket (36).
- Remove Optical Counter PC board Assembly (22) from Attenuator Control Assembly (25).

6. Remove Display PC Board Assembly (37) as follows:

- Disconnect wire cable connector P/J1201 (29).
- Remove two nuts (28) and five spacer screws (6).
- Remove Display PC Board Assembly (37) from Front Panel Assembly (40).

7. Remove POWER Switch (38) as follows:

- Tag and desolder wire leads from POWER Switch (38).
- Squeeze four tabs (39) and slide POWER Switch (38) out through front of Front Panel Assembly (40).

(b) Disassembly (Refer to 2-3-1, Figure 12).

STEP PROCEDURE

1. Remove Bandpass Filter Assembly (41) as follows:

- Disconnect semi-rigid coaxial cable (42) from Power Detector Assembly (43).
- Disconnect wafer connector P8604 (19) from J8604 (31) on Attenuator Driver PC Board Assembly (33).
- Remove four screws (8) and lock washers (7) securing Bandpass Filter Assembly (41) to mounting plate (6).
- Simultaneously disconnect all three bandpass filters (2, 3, 4) from one Diode Switch Assembly (1 or 5).

  CAUTION: AVOID DISCONNECTING ONLY ONE OR TWO FILTERS AT A TIME. ALL THREE MUST BE DISCONNECTED SIMULTANEOUSLY TO PREVENT DAMAGE.

- Note position and remove each filter (2, 3, 4) from remaining Diode Switch Assembly (1 or 5).

2. Remove Power Detector Assembly (44) as follows:

- Disconnect semi-rigid coaxial cable connectors P/J8504 (36) on Power Detector Assembly (44) and P/J8605 (37) on Programmable Attenuator AT8601 (35).
- Disconnect P8603 (43) from Attenuator Driver PC Board Assembly (33).
- Remove four screws (10) and four lock washers (9) securing Power Detector (44) to mounting plate (6).
- Slide Power Detector (44) from behind Attenuator Driver PC Board Assembly (33).

3. Remove Coupler Assembly (24) as follows:

- Remove semi-rigid coaxial cable (28) by disconnecting P/J3704 (27) on Coupler Assembly (24).
- Remove two screws (15) attaching Coupler Assembly (24) to mounting plate (6) and remove Coupler Assembly (24).

STEP	PROCEDURE

4. Remove Attenuator Driver PC Board Assembly (33) as follows:
   - Disconnect plugs from connectors (30, 31, 32, 34) on Attenuator Driver PC Board Assembly (33).
   - Remove two screws (12) and lock washers (11) attaching Attenuator Driver PC Board Assembly (33) to mounting plate (6).
   - Disconnect coaxial cable connector (23) from Programmable Attenuator AT8601 (35) and remove Attenuator Driver PC Board Assembly (33).
   - Disconnect semi-rigid coaxial cable connector J8605 (37) on Programmable Attenuator AT8601 (35).
   - Remove two flat-head screws (40) securing shim (38) to Programmable Attenuator AT8601 (35).
5. Remove 20 dB Attenuator AT8001 (18) as follows:
   - Remove Attenuator Driver PC Board Assembly (33) per Step 4.
   - Remove four screws (13) securing 20 dB Attenuator AT8001 (18) to mounting bracket (6).
   - Disconnect coaxial cable coupler between 20 dB Attenuator (18) and Frequency Probe Assembly (19).
6. Remove Frequency Probe Assembly (19) as follows:
   - Remove Attenuator Driver PC Board Assembly (33) and 20 dB Attenuator AT8001 (18) per Steps 4 and 5.
   - Disconnect coupler between Frequency Probe Assembly (19) and Circulator U8001 (22).
7. Circulator (22)
   - Remove Attenuator Driver PC Board Assembly (33), 20 dB Attenuator AT8001 (18), and Frequency Probe Assembly (19) per Steps 4, 5 and 6.
   - Remove four screws (14) securing Circulator U8001 (22) to mounting plate (6).
   - Disconnect coupler between Circulator U8001 (22) and 3 dB Attenuator AT8002 (20). Remove Circulator U8001 (22) and shim (21).
8. Remove 3 dB Attenuator AT8002 (20) as follows:
   - Remove Attenuator Driver PC Board Assembly (33), 20 dB Attenuator AT8001 (18), Frequency Probe Assembly (19) and Circulator U8001 (22) per Steps 4, 5, 6 and 7.
   - Remove four screws (16) securing 3 dB Attenuator AT8002 (20) to mounting plate (6).

(13) RF Bulkhead Assembly

(a) Removal

Unless otherwise specified, refer to 2-3-1, Figure 1 for item number references. Refer to Composite Assembly (2 of 4) or (3 of 4) in 2-2-5, Figure 77 for location of cables and connectors.

STEP	PROCEDURE
1.	Remove top and bottom covers per 2-3-1D(1).
2.	Remove right side frame per 2-3-1D(1)(c).
3.	Loosen two captive screws and disconnect ribbon cable connector P/J8602 on RF Bulkhead Assembly (25).
4.	Loosen semi-rigid coaxial cable connector P/J3103 on ALC/Mixer Assembly (37).
5.	Disconnect two semi-rigid coaxial cable connectors: ● P/J3501 on Video Assembly (47) ● P/J8104 on RF Bulkhead Assembly (25)
6.	Loosen three captive screws (26) securing RF Bulkhead Assembly (25) to Floor Assembly (22). Do not remove screws from mounting sockets.
7.	Disconnect wire harness connector P/J8601 on RF Bulkhead Assembly (25).
8.	Rotate rear of RF Bulkhead Assembly (25) sufficiently to clear Power Supply Assembly (48) and partially withdraw it from the mounting space.
9.	Disconnect four flexible coaxial cable connectors on RF Bulkhead Assembly (25): ● P/J8503 (higher connector) ● P/J8502 (lower connector) ● P/J3703 ● P/J3702
9.	Remove RF Bulkhead Assembly (25).

(14) Card Cage Assembly

(a) PC Board Removals (Refer to 2-3-1, Figure 1)

STEP	PROCEDURE
1.	Remove top and bottom covers per 2-3-1D(1).
2.	Loosen two captive screws (10) securing Card Cage Assembly cover (8) to rear panel frame (56).
3.	Remove two shell nuts (9) securing GPIB Connector to Card Cage Assembly cover (8). Remove Card Cage Assembly cover (8).
4.	Spread ejectors on each PC Board to disengage card edge connector from Motherboard PC Board Assembly (36). Withdraw PC Boards Assemblies (1, 2, 3, 4, 5, 6 and 7) from Card Cage Assembly (37):

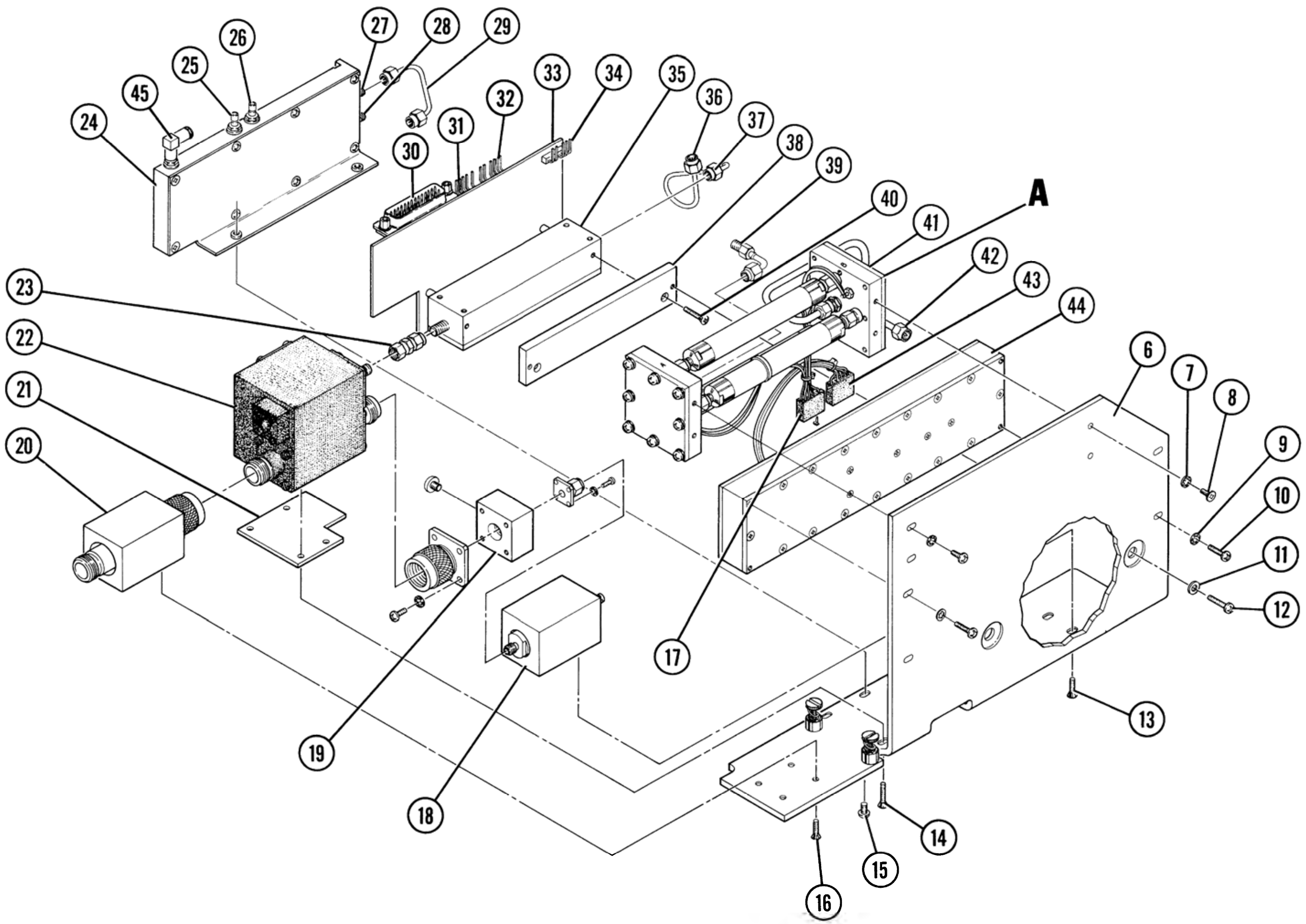
(b) Card Cage Assembly Removal

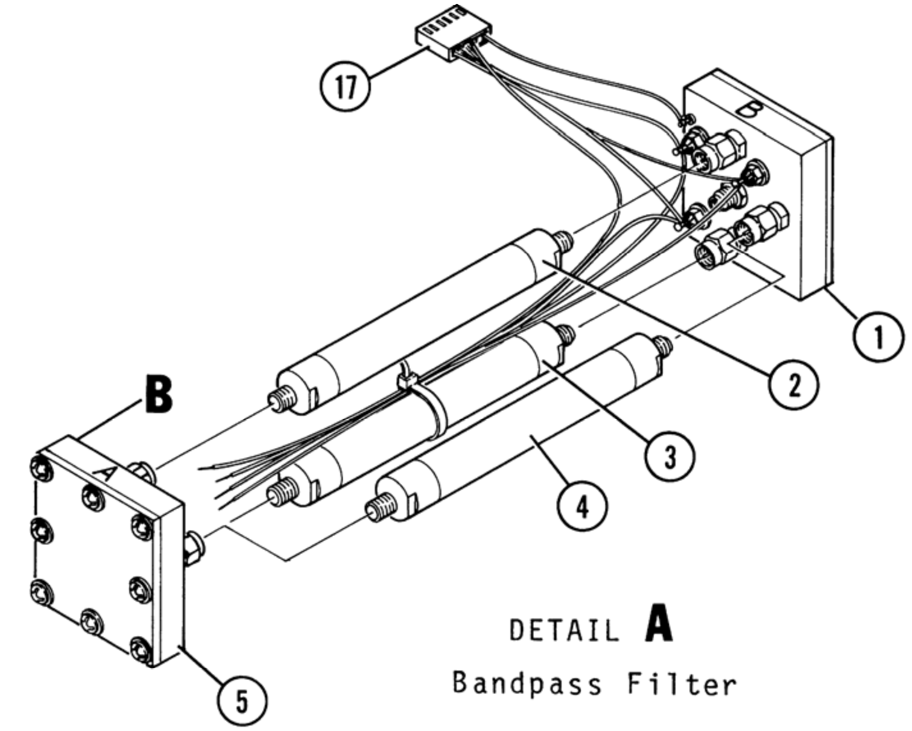
Unless otherwise specified, refer to 2-3-1, Figure 1 for item number references. Refer to Composite Assembly (2 of 4) or (3 of 4) in 2-2-5, Figure 77 for location of cables and connectors.

STEP	PROCEDURE
1.	Remove PC boards per 2-3-1(14)(a).
2.	Remove four screws (54) securing Card Cage Assembly (37) to rear panel frame (56).
3.	Remove two screws (23) securing Card Cage Assembly (37) to Floor Assembly (22).
4.	Note location before cutting and removing tie wraps securing wires to Card Cage Assembly (37).
5.	Slide Card Cage Assembly (37) forward to clear rear panel frame (56) panel, then lift Card Cage Assembly (37) approximately 1-1/2 inches (≈4 centimeters) to loosen two captive screws and disconnect ribbon cable connector P/J902 on Motherboard PC Board Assembly (36).
6.	Disconnect wire harness connector P/J901 on Motherboard PC Board Assembly (36).
7.	Disconnect ribbon cable connector P/J903 on Motherboard PC Board Assembly (36).
8.	Carefully withdraw Card Cage Assembly (37) from ATC-1400A-2.

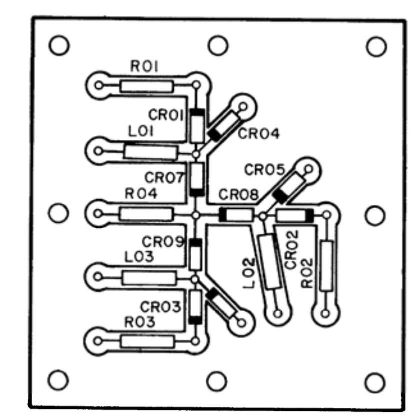
(c) Disassembly (Refer to 2-3-1, Figure 13)

STEP	PROCEDURE
1.	Remove fourteen screws (7) and lock washers (6) securing Motherboard PC Board Assembly (5) to mounting brackets (2).
2.	Remove two screws (4) and lock washers (3) securing each mounting bracket (2) to Card Cage Assembly (1).
3.	Unsnap card guides (8) from Card Cage Assembly (1). **NOTE:** Guides are color coded from top to bottom: brown, red, orange, yellow, green, blue and violet.





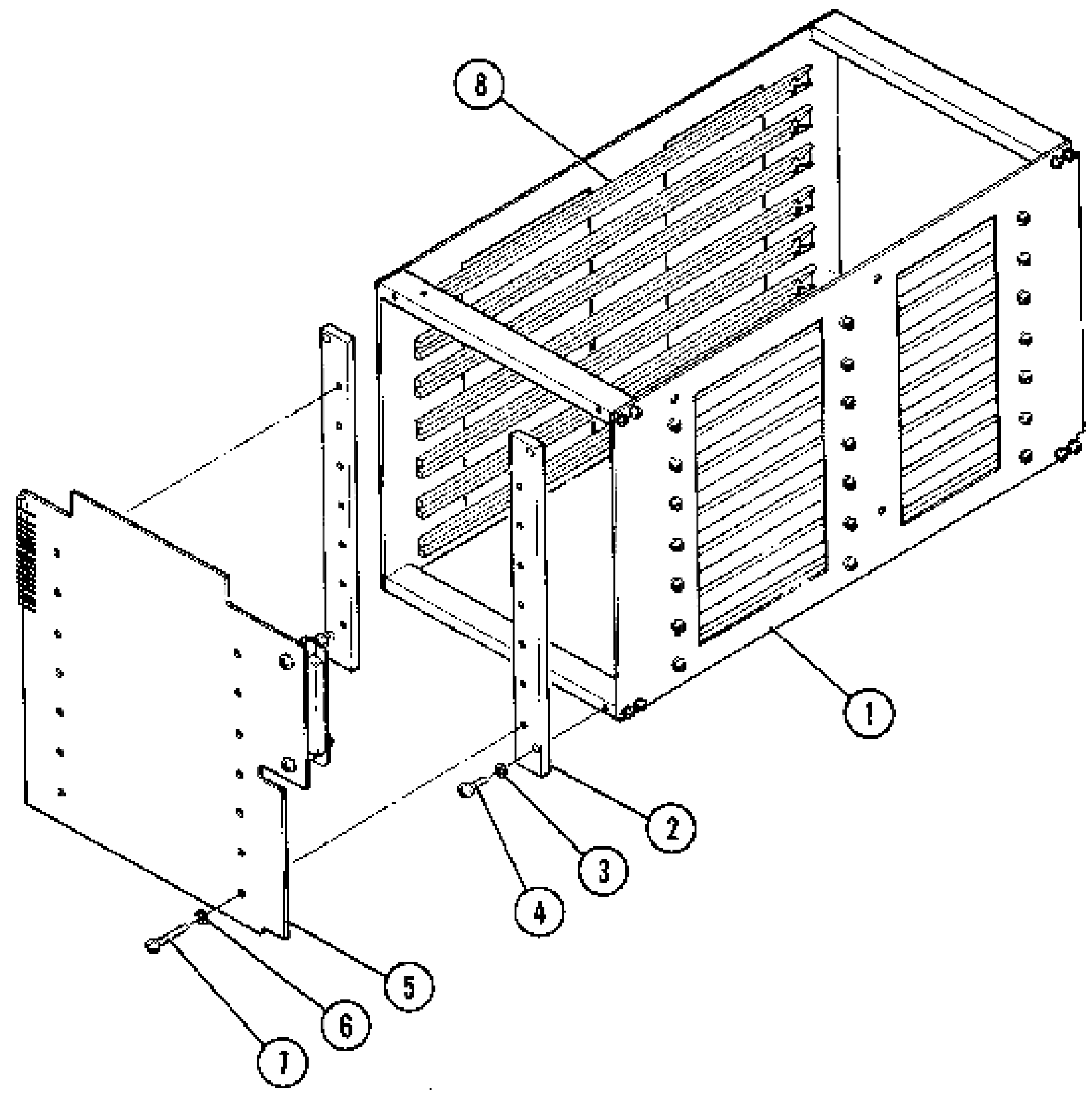
DETAIL A
Bandpass Filter



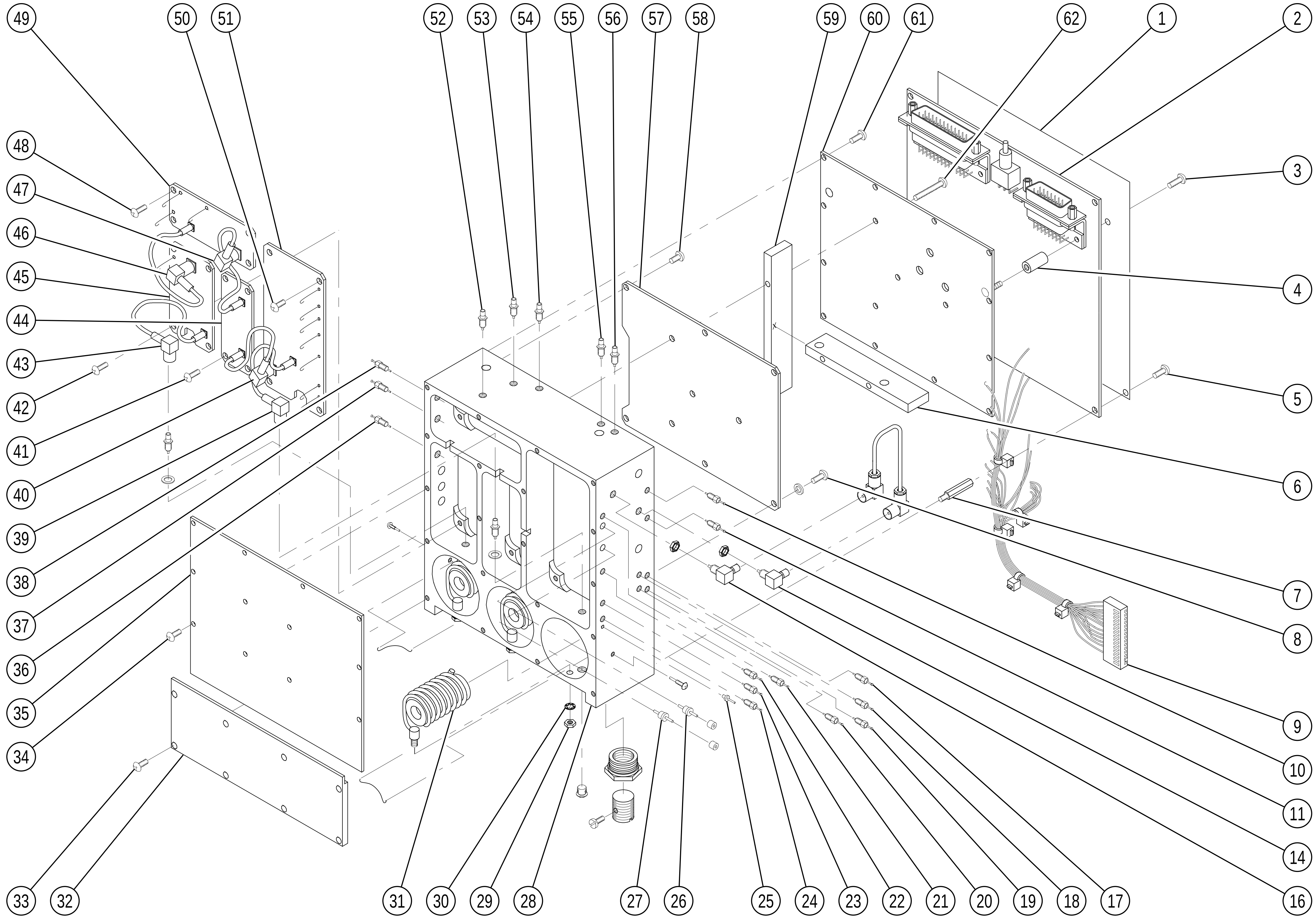
DETAIL B
Diode Switch

07512449

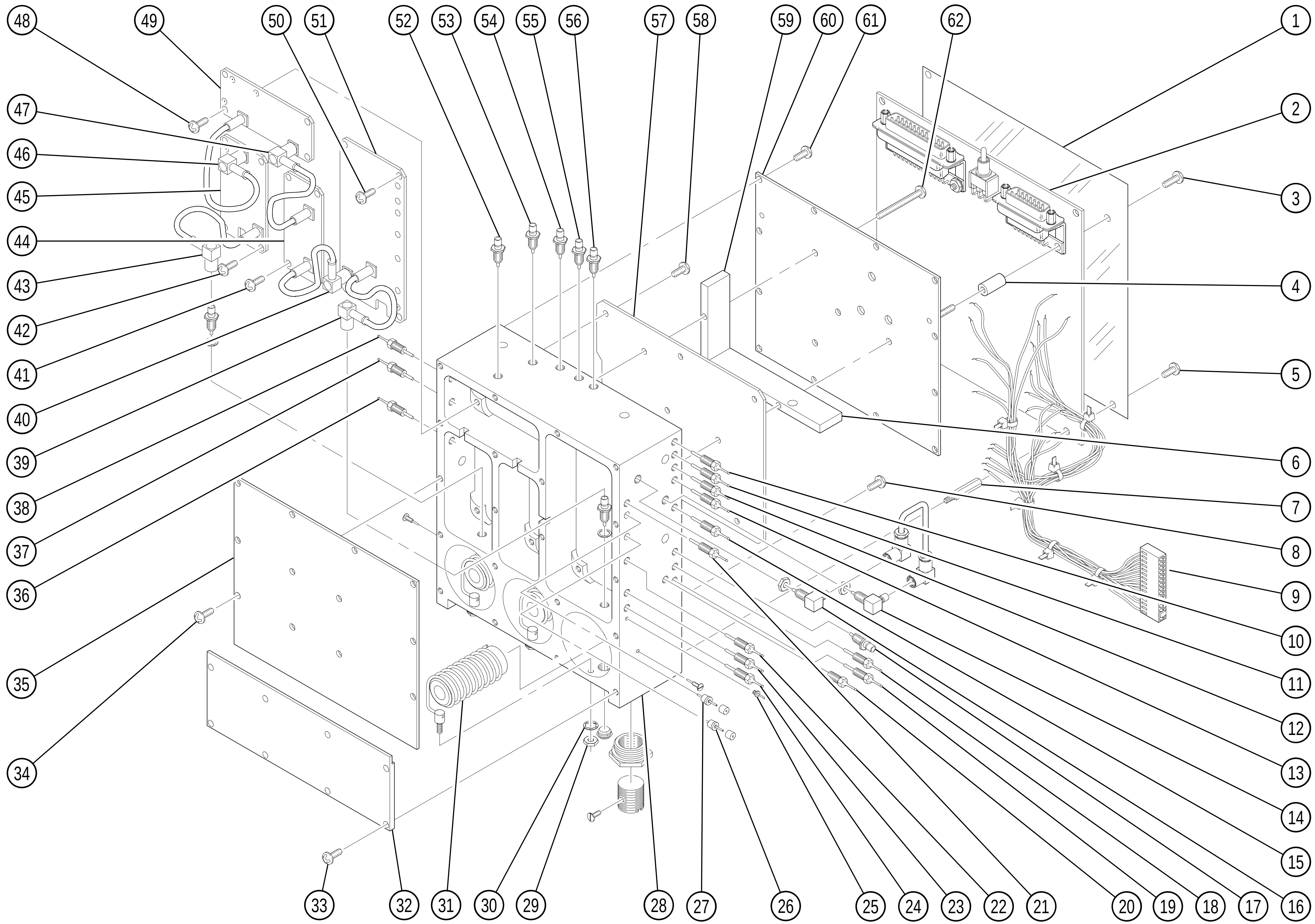
RF Bulkhead Assembly Disassembly
Figure 12



Card Cage Assembly Disassembly
Figure 13



200 MHz Generator Assembly Disassembly
Figure 14



200 MHz Generator Assembly (SLS Modification) Disassembly
Figure 15

(15) 200 MHz Generator Assembly

(a) Removal

Unless otherwise specified, refer to 2-3-1, Figure 1 for item number references. Refer to Composite Assembly (2 of 4) or (3 of 4) in 2-2-5, Figure 77 for location of cables and connectors.

STEP	PROCEDURE
1.	Remove top and bottom covers per 2-3-1D(1).
2.	Loosen two captive screws and disconnect ribbon cable connector P/J2602.
3.	Loosen two captive screws and disconnect wire harness connector P/J2601 connector.
4.	Disconnect five or six (SLS Modification) coaxial cable connectors on 200 MHz Generator Assembly (34): ● P/J2001 ● P/J2002 ● P/J2003 ● P/J2005 ● P/J2004 (on the right side with SLS Modification) ● P/J2012 (SLS Modification)
4.	Remove four screws (24) securing 200 MHz Generator Assembly (34) to Floor Assembly (22).
5.	Lift 200 MHz Generator Assembly (34) from ATC-1400A-2

(b) Disassembly (Refer to 2-3-1, Figure 14 or Figure 15 [SLS Modification])

STEP	PROCEDURE

1. Remove two top screws (3) and threaded spacers (4) mounting fish paper insulator (1) and 200 MHz Control PC Board Assembly (2) to Connector plate (60).
2. Remove two bottom screws (5) securing fish paper insulator (1) and 200 MHz Control PC Board Assembly (2) to spacer screws (7) attached to enclosure block (28).
3. Disconnect wire cable connector P/J2603 (9) from 200 MHz Control PC Board Assembly (2).
4. Remove twelve screws (61) securing connector plate (60) to enclosure block (28).
5. Remove four screws (62) securing connector plate (60), vertical (59) and horizontal (6) mounting spacers (6) to enclosure block (28).
6. Remove eight screws (33) securing cover (32) to tuning coil assemblies (31).
7. Remove 12 screws (34) securing cover (35) to enclosure block (28).

   NOTE: For Steps 8 through 13, only the steps pertaining to the desired disassembly need to be performed.

8. Remove Output Switch PC Board Assembly (49) as follows:
   - Desolder leads from PC board (49) to filters (37 and 38).
   - Desolder lead from PC board (49) to coaxial cable connector (52).
   - Unscrew connector (52) and filters (37 and 38) sufficiently to clear PC board (49).
   - Disconnect flexible coaxial cable connectors P/J2301 (46) and P/J2401 (47).
   - Remove four screws (48) securing PC board (49) to enclosure block (28). Lift Output Switch PC Board Assembly (49) from compartment.
9. Remove Pulse Modulator PC Board Assembly (51) as follows:
   - Desolder leads from PC board (51) to filters (21, 22, 23 and 24).
   - Desolder lead from PC board (51) to coaxial cable connector (16).
   - Desolder leads from PC board (51) to terminals (25, 26 and 27).
   - Disconnect coaxial cable connectors P/J2009 (39) and P/J2101 (40).
   - Unscrew filters (21, 22, 23 and 24), connector (16) and terminals (25, 26 and 27) sufficiently to clear PC board (51).
   - Remove four screws (50) securing PC board (51) to enclosure block (28). Lift Pulse Modulator PC Board Assembly (51) from compartment.

STEP PROCEDURE

10. Remove Transponder Filter PC Board Assembly (44) as follows:

- Disconnect coaxial cable connectors P/J2101 (40) and P/J2401 (47).
- Remove four screws (41) securing PC board (44) to enclosure block (28). Lift Transponder Filter PC Board Assembly (44) from compartment.

11. Remove DME AMP PC Board Assembly (45) as follows:

- Disconnect coaxial cable connector P/J2301 (46).
- Desolder lead from PC board (45) to filter (36).
- Unscrew filter (36) sufficiently to clear PC board (45).
- Remove four screws (42) securing PC board (45) to enclosure block (28). Lift DME AMP PC Board Assembly (45) from compartment.

12. Remove Modulator/Leveler PC Board Assembly (57) as follows:

- Desolder leads from PC board (57) to coaxial cable connectors (14, 17 [SLS Modification], 53, 54, 55, and 56).
- Desolder leads from PC board (57) to filters (10, 11, 12 [SLS Modification], 13 [SLS Modification], 15 [SLS Modification], 17 [w/o SLS Modification], 18, 19 and 20).
- Unscrew filters (10, 11, 12 [SLS Modification], 13 [SLS Modification], 15 [SLS Modification], 17 [w/o SLS Modification], 18, 19 and 20) and coaxial cable connectors (14, 17 [SLS Modification], 53, 54, 55, and 56) sufficiently to clear PC board (57).
- Remove six screws (58) securing PC board (57) to enclosure block (28). Lift Modulator/Leveler PC Board Assembly (57) from compartments.

CAUTION: ONLY REMOVE COIL(S) IF NECESSARY AS POSITIONING AND LENGTH OF COIL WIRE IS CRITICAL FOR PROPER OPERATION OF FILTER.

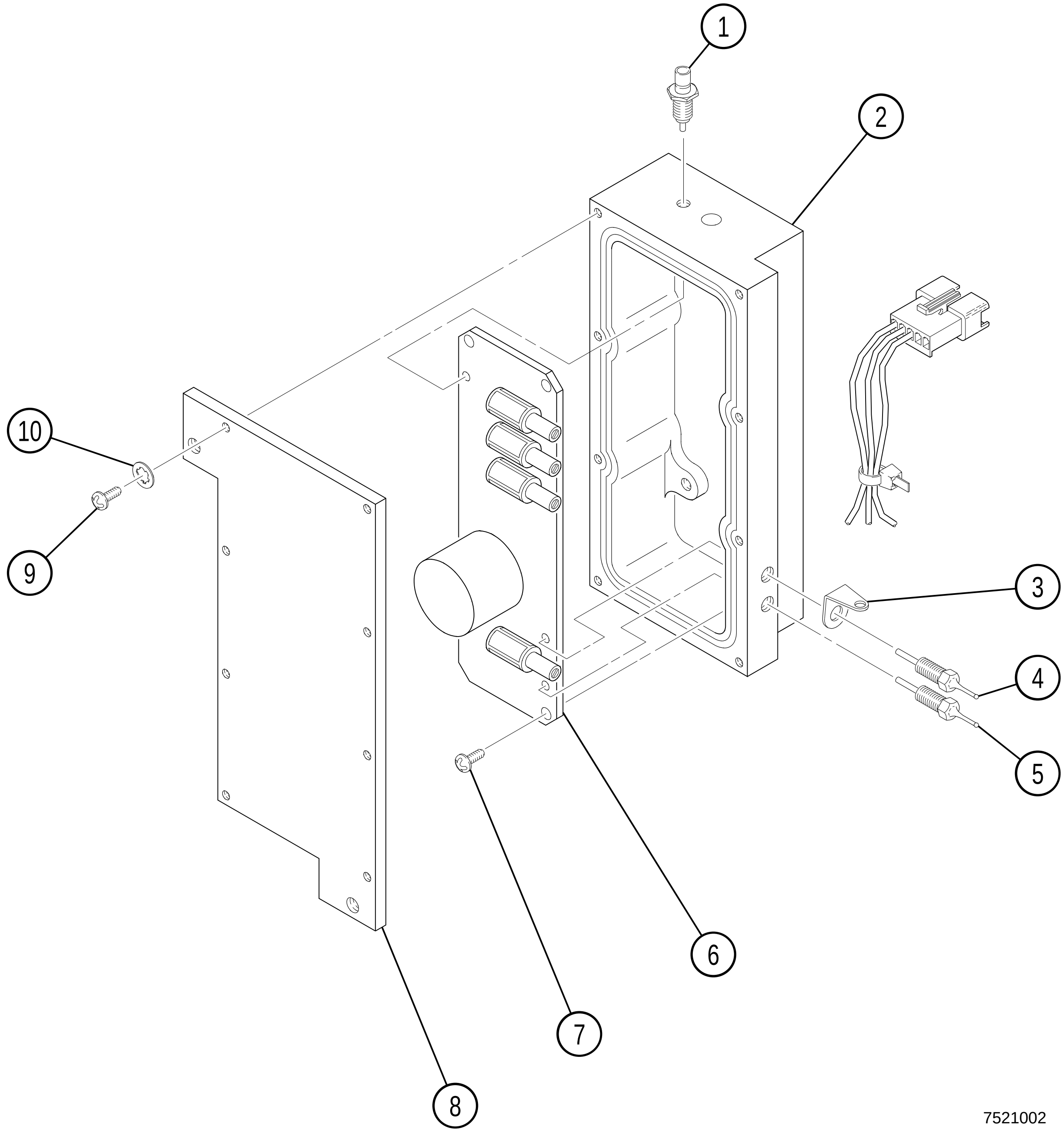
13. Remove three Coil Assemblies (31) as follows:

- Remove screw (8) and lock washer securing each coil (31) to enclosure block (28).
- Remove nut (29) and lock washer (30) securing each coil (31) to enclosure block (28).
- Remove each coil assembly (31) from the chamber.

(16) 200 MHz SLS Source Assembly (SLS Modification)

(a) Removal (2-3-1, Figure 1)

STEP	PROCEDURE
1.	Remove top and bottom covers per 2-3-1D(1).
2.	Remove ten screws (17) and right side cover (16).
3.	Remove two screws (15) securing 200 MHz SLS Source Assembly (13) to right side frame (14).
4.	Disconnect wire cable connector P/J2902 (12).
5.	Disconnect coaxial cable connector P/J2901 (11).
6.	Remove 200 MHz SLS Source Assembly (13) from ATC-1400A-2.



200 MHz SLS Source Assembly Disassembly
Figure 16

(b) Disassembly (Refer to 2-3-1, Figure 15)

STEP	PROCEDURE
1.	Remove eight screws (9) and lock washers (10) securing cover (8) to assembly block (2).
2.	Desolder leads from 200 MHz SLS Source PC Board Assembly (6) to filters (4 and 5).
3.	Desolder lead from 200 MHz SLS Source PC Board Assembly (6) to coaxial cable connector (1).
4.	Unscrew filters (4 and 5) and coaxial connector (1) sufficiently to clear PC board (6).
5.	Remove four screws (7) securing 200 MHz SLS Source PC Board Assembly (6) to assembly block (2). Lift 200 MHz SLS Source PC Board Assembly (6) from compartment.
6.	Unscrew filter (4) completely from assembly block (2) to remove ground lug (3).

2. <u>Reassembly</u>

A. General

Contains special instructions necessary to reassemble assemblies within the ATC-1400A-2.

B. Preliminary Considerations

(1) Tools Required

Reassembly requires a #6 Cross-Recessed Torque Screwdriver in addition to tools required for disassembly.

(2) Reassembly Precautions

CAUTION: INSURE ALL COAXIAL CONNECTIONS ARE PROPERLY MATED.

CAUTION: AVOID BENDING OR TWISTING SEMI-RIGID COAXIAL CABLES.

CAUTION: PLACE ALL RIBBON CABLES TO LIE FLAT AND NEATLY FOLDED.

CAUTION: AVOID PLACING UNDUE STRAIN ON ANY WIRE OR CABLE.

CAUTION: AVOID OVER TIGHTENING BRASS SCREWS AND NUTS INCLUDING COAXIAL CONNECTORS.

CAUTION: REPLACE EACH REMOVED TIE WRAP IN SAME LOCATION AS MARKED AND CONFIGURED AS IT WAS PRIOR TO REMOVAL.

CAUTION: AVOID EXPOSING COMPONENTS TO EXCESSIVE HEAT WHEN REMOVING SOLDER.

(3) ESD

CAUTION: THE POWER SUPPLY, DIGITAL IF PCB ASSY, FRONT PANEL PULSE PCB ASSY, RF ASSY AND FRONT PANEL ASSY CONTAIN PARTS SENSITIVE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD). ALL PERSONNEL PERFORMING CALIBRATION PROCEDURES SHOULD HAVE KNOWLEDGE OF ACCEPTED ESD PRACTICES AND/OR BE ESD CERTIFIED.

CAUTION

THIS EQUIPMENT CONTAINS PARTS
SENSITIVE TO DAMAGE
BY ELECTROSTATIC DISCHARGE (ESD)

(4) EMC and Safety Compliance

All assemblies, cables, connectors, plastic fasteners, gaskets, fingerstock and miscellaneous hardware within the Test Set are configured to satisfy the safety and EMC compliance standards.

CAUTION: UPON COMPLETION OF ANY MAINTENANCE ACTION; ALL ASSEMBLIES, CABLES, CONNECTORS, PLASTIC FASTENERS, GASKETS, FINGERSTOCK AND MISCELLANEOUS HARDWARE MUST BE CONFIGURED AS INSTALLED AT THE FACTORY.

C. Index of Reassembly Procedures

D. Reassembly Procedures

Reassembly depends upon extent of disassembly and should be performed with normal repair and/or cleaning. Perform reassembly in reverse sequence of disassembly procedures. Incorporate following directives as required:

(1) Covers Assembly

None required.

(2) ALC/Mixer Assembly

- Verify wire mesh shield (4) (2-3-1, Figure 3) stays within its groove and does not prevent complete closure of cover.
- When working on the Mixer PC Board Assembly, avoid placing any solder where the block fits onto the PC board. Also, keep all component leads as short as possible except for C3114 (lead should be 0.7 in [≈1.78 cm]).
- If applicable, install capacitors (except C3104, C3105, C3108 and C3114) as close as possible to the PC board (Mixer PC Board Assembly).
- If applicable, position MX3101 lead without touching C3120 on Mixer PC Board Assembly.

(3) RF Synthesizer Assembly

- Apply thin coat of Type 120 Thermal Joint Compound to IC wells in enclosure block and a bead of RTV (Aeroflex PN: 1050-0000-013) to new or replaced IC's prior to reassembly.
- If applicable, solder wire(s) as close as possible to body of feed through(s) FL4001, FL4002, FL4003 and/or FL4004. Cut off excess lead on any replaced feed through.
- If applicable, cut all component leads on the Frequency Latch and Reference Divider PC Board Assemblies as short as possible.
- If replacing on the VCO PC Board Assembly, use RTV to secure R4204 to PC board after making all solder connections.
- If replacing on the VCO PC Board Assembly, position lead from junction of R4209, R4210 and R4211 to tap L4201 at a point 0.32 in (≈0.81 cm) up from ground plane.
- If replacing on the VCO PC Board Assembly, position R4208, R4206 and/or Q4202 with minimum lead length before soldering.
- If replacing on the VCO PC Board Assembly, install C4206 and/or C4223 as close to Q4202 as possible with minimum lead length.

(4) Discriminator Assembly

- If applicable, refer to RF Converter PC Board Assembly Circuit Schematic in 2-2-5, Figure 88 (3 of 7) for component information.
- When working on the RF Converter PC Board Assembly, avoid placing any solder where the block fits onto the PC board.
- If replacing on the RF Converter PC Board Assembly, install L5101 from 0.1 in (0.254 cm) to 0.15 in (0.38 cm) from PC board using RTV (Aeroflex PN: 1050-0000-013)

(5) Counter Assembly

- If replacing on the Counter PC Board Assembly, fasten heat sink(s) to X8 and/or X12 using RTV (Aeroflex PN: 1050-0000-013). Clean mating surfaces before assembly. Use minimum amount of silicone rubber and press heat sink firmly onto IC to force out excess material.
- If replacing on the Counter PC Board Assembly, cut center leg off of oven HR6101 and apply thermal compound (Aeroflex PN: 1050-0000-019) to cavity before installing crystal Y6101.

(6) Video Assembly

- If replacing on the Video Buffer PC Board Assembly, place heat sink(s) in a position not touching any traces, transistor tabs or standoffs. Apply a small amount of RTV (Aeroflex PN: 1050-0000-013) between the heat sinks.
- If replacing on the Video Converter PC Board Assembly, place R7116 as close as possible to CR7101.
- If replacing on the Video Buffer PC Board Assembly, prepare R7507 leads the same as the replaced R7507 before installing.
- If replacing on the Video Detector PC Board Assembly, only cut the center pins on TP3501 and/or J3501 (not the outside pins). Solder shields on the topside of the PC board on three sides with one continuous solder bead. Solder TP3501 and/or J3501 leads to shields in eight places.

(7) Interface PC Board

None required.

(8) Module Rack Assembly

Verify 50-Conductor Ribbon Cable (1) (2-3-1, Figure 8) is in place between power Distribution PC Board (7) and Assembly Rack (5). Do not allow cable to be pinched by PC Boards.

(9) Power Supply Assembly

- Refer to 2-3-1, Figure 9. Attach shell nut (5) to housing (6) before attaching Power Supply PC Board Assembly (7).
- Refer to 2-3-1, Figure 9. If needed, apply thermal compound (Aeroflex PN: 1050-0000-019) to the side of the rails (8) coming in contact with the housing (6) before installing Power Supply PC Board Assembly (7) to housing (6).

  Avoid applying thermal compound to Q10001, Q10004, Q10007, CR10016, CR10017, CR10018, CR10019, insulators and the rail at those points.
- If replacing, apply silicon compound (Aeroflex PN: 1050-0000-018) regulator(s) U10001, U10002, U10003, U10009, insulators and the rail at those points.
- If replacing L10001 and/or L10002, apply RTV silicon around hubs before assembling L10001 and L10002 onto hubs.
- If replacing, install R10040 raised 0.25 in (±0.05 in)/≈0.64 cm (±0.13) off of the Power Supply PC Board Assembly.
- If replacing, clip 0.1 in (≈0.254 cm) off of screw securing U10003 to the rail.
- If replaced, clip screws securing J9901 on Power Supply PC Board Assembly, even with the nuts.
- If replacing wiring harness, secure tie wrap and tubing as close to PC board as possible at the end connected to the PC board.
- If replacing, install RT10001 raised 0.20 in (±0.05 in)/≈0.5 cm (±0.13) off of the Power Supply PC Board Assembly without bending the leads near the body.

  Cut tubing to extend from the body of RT10001 to the PC board.

(10) Rear Panel Assembly

If replacing fuse holders, install with longer lug orientated to the top of panel.

(11) Fan Assembly

None required.

(12) Front Panel Assembly

- Do not allow switch to turn while installing mounting nut. If the switch turns, the junction of the PC Board may be damaged.
- Refer to 2-3-1, Figure 11. Reinstall six washers (44) mounted between Pushbutton Switches (43) and Front Panel Assembly (40) prior to reassembling to maintain proper clearance between switches and front panel.
- Switches SW1601 through SW1603 on the Rotary Switch PC Board Assembly must be keyed after replacement in the PC board as follows: SW1601 positions 1 through 6 (five clicks), SW1602 positions 1 through 11 (ten clicks) and SW1603 positions 1 through 9 (eight clicks). Pin 1 goes to square pad on all switches. Set switch stop positions according to 2-3-2, Table 1.

	GRAYHILL SWITCH		**GRIGSBY STD SWITCH**	
SWITCH	**PIN #1**	**PIN #2**	**PIN #1**	**PIN #2**
SW1601	8-1	6-7	-----	-----
SW1602	12-1	11-12	2-3	1-2
SW1603	12-1	9-10	2-3	11-12
Set flat side of SW1601 between pins 2 and 3 before installing stop pins. Set flat side of SW1602 and SW1603 between pins 8 and 9 before installing stop pins.				

Rotary Switch Stop Pin Positions
Table 1

- If replacing the display(s) (DS1301 through DS1323), position the display(s) with the decimal point(s) located in the bottom right hand corner looking from the front.

(13) RF Bulkhead Assembly

- Verify Bandpass Filter Assembly connector pins engage properly before tightening connectors.
- Verify Bandpass Filters are installed in correct positions. Item 2 (top) (2-3-1, Figure 12, Detail A) is labeled on filter as 4651; Item 3 (bottom) is labeled on filter as 4619; Item 4 (middle) is labeled on filter as 4650.
- Refer to 2-3-1, Figure 12. Secure 3 dB Attenuator (20) to Mounting Plate (6) prior to installing Programmable Attenuator (35), 20 dB Attenuator (18), Frequency Probe Assembly (19) and Circulator (22) to Mounting Plate (6). Loosely connect all components to each other and to Mounting Plate (6). Leave mounting screws loose so components can slide on Mounting Plate (6). Secure and tighten all coaxial connections before tightening all mounting screws.
- Attach all major components before connecting coaxial cable connectors on the Coupler Assembly.
- When working on the Power Detector PC Board Assembly, avoid placing any solder where the block fits onto the PC board. Also, keep all component leads as short as possible except for CR8505 (lead should be 0.5 in [≈1.27 cm]).
- If replacing on the Power Detector PC Board Assembly, keep the highest points of R8529 and/or R8531 within 0.40 in (≈1.1 cm) from the PC board surface.
- If replacing on the Power Detector PC Board Assembly, solder around Q8507 and/or Q8511 leads completely.
- If applicable solder shielding of the coaxial cable on the Power Detector PC Board Assembly at both ends of the board with solder flowing underneath the coaxial cable, not on the side.
- If replacing any of the connectors on the Power Detector PC Board Assembly, solder completely around shoulders of connector(s).
- If replacing on the Power Detector PC Board Assembly, install L8516 and/or C8533 after attaching the block to the PC board. Use L8516 lead to connect to R8537.
- If replacing on the Power Detector PC Board Assembly, solder C8509, C8518, C8524 and/or C8531 from the bottom of the PC board only.
- If replacing on the Power Detector PC Board Assembly, lap solder leads of L8512 and L8513 to tops of C8526 and C8527. Position J8502 and J8503 so leads from L8512 and L8513 align with notch in top of connector center conductor. Solder L8512 and L8513 leads into the notches of J8502 and J8503.
- If replacing connector(s) (J8201, J8202, J8203, J8301, J8302 and/or J8303) on one of the Diode Switch Assemblies, install to 20 in/lbs using a torque wrench.
- If replacing connector(s) J8204 or J8304 on one of the Diode Switch Assemblies, trim Teflon dielectric flush with end of connector trim center same as the replaced connector.

(14) Card Cage Assembly

CAUTION: TO AVOID DAMAGE, DO NOT APPLY HEAT TO CRYSTAL CASES (Y301 ON TRANSPONDER DECODER PC BOARD ASSEMBLY AND Y701 ON MICROPROCESSOR PC BOARD ASSEMBLY). DO NOT ALLOW SOLDER TO FLOW OR COME IN CONTACT WITH CRYSTAL CASE.

- The Microprocessor Board must be installed in the bottom position in the Card Cage Assembly. The remaining six PC Boards are interchangeable for testing purposes, but must be returned to the original positions for peak performance prior to returning to service. Card guides are color coded to agree with card ejectors.
- Fish paper insulator (35) (2-3-1, Figure 1) must be in place before installation of card cage. Verify all wiring is insulated from Motherboard (84) and 200 MHz Control PC Board (34).
- Verify wire cable connector P/J901 (2-2-5, Figure 78 [3 of 4]) is properly connected. Both mechanical and electrical damage can occur from improper connection.
- If needed, use adhesive (Aeroflex PN: 1051-0100-100) as needed to secure jumper wires to PC boards.
- If removed, use RTV (Aeroflex PN: 1050-0000-013) to secure R613 to DME Timing PC Board Assembly, L302 to Transponder Decoder PC Board Assembly

(15) 200 MHz Generator Assembly

If replacing Y2501 or HR2501 on the Modulator/Leveler PC Board Assembly, apply thermal compound (Aeroflex PN: 1050-0000-019) to inside of HR2501 before installing Y2501. Refer to 2-2-5, Figure 88 (12 of 20) or (18 of 20) (SLS Modification).

(16) 200 MHz SLS Source Assembly

Refer to 2-2-5, Figure 96 (1 of 2). If replacing, cut ends of gasket (5) must meet under compression when installed.

SECTION 4 - ATC-1400A-2 PARTS LIST

ASSEMBLY	PAGE
Rotary Switch PC Board Assembly	29
Sampler PC Board Assembly	98
Shippable Unit, ATC-1400A-2	3
Thumbwheel Switch PC Board Assembly	34
Toggle Switch PC Board Assembly	32
Transponder (XPDR) CONTROL PC Board Assembly	8
Transponder (XPDR) DECODER PC Board Assembly	12
Transponder (XPDR) FILTER PC Board Assembly	45
Transponder (XPDR) PULSE PC Board Assembly	10
VCO PC Board Assembly	103
Video Assembly	111
Video Buffer PC Board Assembly	114
Video Converter PC Board Assembly	112
Video Detector PC Board Assembly	118
Wire Harn Assembly, 1400A-2	122

9001-7502-900 SHIP UNIT, ATC-1400A-2 A

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	1000-1000-900	CARTON,SHIPPING
	1002-7504-200	ATC-1400A-2 OP MANUAL
	1003-0001-500	BINDER,MANUAL,1.5 WIDE
	1007-0001-000	WARRANTY PACKET,2 YEAR
	1100-1002-900	ENVELOPE, BUSINESS REPLY
	2400-8501-000	LABEL,RECEIVING/UNPACKING
	7003-7544-200	COMPOSITE ASSY, ATC-1400A-2
	8180-0002-010	URETHANE CTLST
	8180-0002-020	URETHANE RESIN
	8181-0001-000	POLY FILM,36" CENTERFOLD WHITE

7003-7544-200 COMPOSITE ASSY, ATC-1400A-2 D1

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
1	7005-7548-700	MECH ASSY, FLOOR
2	7005-7549-000	MECH ASSY, 200MHz
3	7010-7530-300	PCB ASSY,TRANSPONDER CONTROL
4	7010-3030-501	PCB ASSY,TRANSPONDER PULSE
5	7010-7532-700	PCB ASSY,TRANSPONDER DECODER
6	7010-7530-200	PCB ASSY,DME REPLY
7	7010-3030-600	PCB ASSY,DME TIMING
8	7010-7532-100	PCB ASSY,DME RANGE
9	7010-7530-100	PCB ASSY PROCESSOR CONTROL
10	1414-3052-600	COVER, CARD CAGE
11	6045-3082-300	RIBBON CABLE ASSY,25 COND,58.2
12	7010-7532-300	PCB ASSY, INTERFACE
13	2803-0250-006	SCREW,4-40 X 1/4 PPHM
14	7005-7542-500	MECH ASSY,RF BULKHEAD
15	7005-7542-600	MECH ASSY,VIDEO MODULE
16	7005-3041-200	MECH ASSY,COUNTER
17	7005-3044-101	MECH ASSY, DISCRIMINATOR
18	7005-3043-700	MECH ASSY,RF SYNTHESIZER
19	7005-3041-401	MECH ASSY, ALC/MIXER
20	2809-0313-003	SCREW,10-32 X 5/16 PFHM
21	6050-0041-050	COAX ASSY,316,R F SMB/R F SMB
22	6050-0040-250	COAX ASSY,FLEXIBLE,RG 316/U
24	6050-0320-720	COAX ASSY,316,R F SMB/R F SMB
25	6050-0041-620	COAX ASSY,316,R F SMB/R F SMB
26	6050-0320-720	COAX ASSY,316,R F SMB/R F SMB
27	6042-3081-700	COAX ASSY,SEMI-RIGID,.086 DIA
28	6042-3081-900	COAX ASSY,SEMI-RIGID,.086 DIA
29	6050-0560-350	COAX ASSY,316,R M SMA/R F SMB
30	6050-0041-620	COAX ASSY,316,R F SMB/R F SMB
31	6050-0040-570	COAX ASSY,316,R F SMB/R F SMB
31 (SLS Mod)	6050-0040-700	COAX ASSY,316,R F SMB/R F SMB
32	6050-0040-950	COAX ASSY,316,R F SMB/R F SMB
33	6050-0560-900	COAX ASSY,316,R M SMA/R F SMB
34	2805-0250-006	SCREW,8-32X1/4,PPHMSSS
35	7005-7548-600	MECH ASSY, COVER TOP
36	2804-0188-006	SCREW 6-32X3/16 PHIL BIND HD
37	2804-0500-003	SCREW,6-32 X 1/2 PFHM
38	1415-3056-100	SIDE FRAME, 7" RACK MOUNT
39	2850-0000-001	SPEED NUT TIMMERMAN C11351632
40	1414-3052-300	SIDE CV, RACK MOUNT CASE LEFT
41	2804-0250-003	SCREW 6-32X1/4 PFHMS
42	2506-7606-900	PLATE,HANDLE MTG,PAINTED
43	1407-7632-400	HANDLE ASSY
44	2805-0375-003	SCREW 8-32 X 3/8 PFHMS
45	2400-7607-001	DECAL TRIM STRIP D
46	1050-0000-170	TAPE, VINYL FOAM 3/4" 2-SIDED
47	1407-7632-700	HANDLE EXTRUSION
48	2525-0006-000	GASKET ROPE, 13.5 FT
49	7005-7548-500	MECH ASSY, COVER BOTTOM
50	7005-7545-200	MECH ASSY, FRONT PANEL
52	6004-6005-400	TY-RAP,4.0 LG
53	3107-3067-700	INSUL,INTERFACE PCBA,FISHPAPER
55	1414-3053-200	SIDE COVER, RK MT CASE, RIGHT
56	2804-0250-006	SCREW,6-32 X 1/4 PPHM
57	2840-0000-002	WASHER,LOCK,INT TOOTH,8

7003-7544-200 COMPOSITE ASSY, ATC-1400A-2 (cont) D1

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
58	2400-3056-300	LABEL, GPIB ADDRESS IEEE
59	2410-3052-400	TRIM BAR, FRONT PANEL
60	1400-4980-101	BRKT,RIGHT FRONT PANEL MOUNT
61	1400-4980-100	BRKT,LEFT FRONT PANEL MOUNTING
62	2803-0250-003	SCREW,4-40 X 1/4 PFHM
63	6050-0561-150	COAX ASSY 316 R,MSMA/RF SMB
65	6050-0041-420	RG 316/U FLEX COAX ASSY
	2400-9908-000	FOIL DECAL, FIRMWARE/HARDWARE
70 (SLS Mod)	7005-7542-200	MECH ASSY, 200 MHz SLS SOURCE
71 (SLS Mod)	6050-0042-020	COAX ASSY,316,R F SMB/R F SMB
72	7005-7545-100	MECH ASSY, POWER SUPPLY (part of Floor Assembly)
AT9103	5650-1405-000	TERMINATION 50 OHM TYPE BNC

7003-7544-200 COMPOSITE ASSY, ATC-1400A-2 E

Revision E contains all items in Revision D.

7003-7544-200 COMPOSITE ASSY, ATC-1400A-2 F

Revision F contains all items in Revision E except the following:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
53	3107-3067-700	INSUL,INTERFACE PCBA,FISHPAPER

Revision F contains all items in Revision E with the following changes:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
10	1414-3057-600	COVER, CARD CAGE
11	6045-7583-000	RIBBON CABLE ASSY, 25 COND,58.2

7003-7544-200 COMPOSITE ASSY, ATC-1400A-2 G

Revision G contains all items in Revision F plus the following:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
6	7010-7530-201	TESTED,DME RELAY
3	7010-7530-301	TESTED,TRANSPONDER CONTROL

7010-7532-100 PCB ASSY, DME RANGE F

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
2	4104-0000-002	CARD GUIDE & EJECTOR S-203
3	2108-0000-008	PIN FOR S-203 EJECTOR N/C
4	2301-0000-003	CRYSTAL HOLDER AUGAT 8000DG2 5
5	1051-0100-100	ADHESIVE,WIRE TACKING,20ML BTL
6	2801-0188-006	SCREW 2-56 X 3/16 PPHMS
7	2840-0000-004	WASHER,LOCK,INT TOOTH,2
8	2850-0000-012	NUT,HEX,SMALL PAT,2-56
9	3107-0010-400	INSULATOR
10	6003-0001-005	WIRE,HOOK,TFE,30GA,SOLID,GRN, 1 FT
11	1050-0000-227	ACCELERATOR, TAC PAC 7452
C501	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C502	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C503	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C504	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C505	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C506	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C507	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C508	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C509	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C510	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C511	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C512	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C513	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C514	1506-0103-017	CAP,0.01µF,100V,NPO
C515	1506-0103-017	CAP,0.01µF,100V,NPO
C516	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C517	1506-0560-017	CAP,56pF,100V,5%,NPO
C518	1506-0103-017	CAP,0.01µF,100V,NPO
C519	1580-4702-105	CAP,47µF,10V,ELE,RDL
C520	1554-0100-102	CAP VAR,3.5-65pF,GYD65000
C521	1506-0102-017	CAP,1000pF,100V,5%,NPO
C522	1506-0102-017	CAP,1000pF,100V,5%,NPO
C523	1506-0102-017	CAP,1000pF,100V,5%,NPO
C524	1506-0102-017	CAP,1000pF,100V,5%,NPO
C525	1506-0221-017	CAP,220pF,100V,5%,NPO
C526	1506-0102-017	CAP,1000pF,100V,5%,NPO
C527	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C528	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C529	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
R501	4702-0103-003	RES,10K,1/4W,5%
R502	4702-0103-003	RES,10K,1/4W,5%
R504	4702-0561-003	RES,560,1/4W,5%
R505	4702-0561-003	RES,560,1/4W,5%
R506	4702-0103-003	RES,10K,1/4W,5%
R507	4702-0103-003	RES,10K,1/4W,5%
S501	5130-0010-045	SWITCH,DIP,SPST,S ACT, 4-POS
TP501	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP502	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP503	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP504	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP505	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP506	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
U501	3214-4040-101	IC,4040B,12-STAGE COUNTER,5MHz
U502	3214-5027-100	IC,4527B,BCD RATE MULTIPLIER
U503	3214-5027-100	IC,4527B,BCD RATE MULTIPLIER

7010-7532-100 PCB ASSY, DME RANGE (cont) F

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
U504	3214-5027-100	IC,4527B,BCD RATE MULTIPLIER
U505	3133-0000-012	IC,4029B,SYN U/D COUNTER
U506	3131-0000-029	IC,74LS190,BCD SYN U/D COUNTER
U507	3133-0000-012	IC,4029B,SYN U/D COUNTER
U508	3131-0000-029	IC,74LS190,BCD SYN U/D COUNTER
U509	3133-0000-012	IC,4029B,SYN U/D COUNTER
U510	3131-0000-029	IC,74LS190,BCD SYN U/D COUNTER
U511	3133-0000-012	IC,4029B,SYN U/D COUNTER
U512	3131-0000-029	IC,74LS190,BCD SYN U/D COUNTER
U513	3133-0000-012	IC,4029B,SYN U/D COUNTER
U514	3131-0000-029	IC,74LS190,BCD SYN U/D COUNTER
U515	3131-0000-027	IC,74LS30,8-INPUT NAND
U516	3131-0000-028	IC,74LS90,DECADE COUNTER
U517	3131-0000-034	IC,74LS73,DUAL JK FLIP-FLOP
U518	3131-0000-032	IC,74LS02,QUAD 2-INPUT NOR
U519	3133-0000-004	IC,4027B,DUAL JK MS FLIP-FLOP
U520	3131-0000-025	IC,74LS27,TRIPLE 3-INPUT NOR
U521	3131-0000-043	IC,74LS377,OCTAL D FLIP-FLOP
U522	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
U523	3131-0000-043	IC,74LS377,OCTAL D FLIP-FLOP
U524	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
U525	3131-0000-043	IC,74LS377,OCTAL D FLIP-FLOP
U526	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
U527	3131-0000-043	IC,74LS377,OCTAL D FLIP-FLOP
U528	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
U529	3131-0000-035	IC,74LS93,4-BIT BINARY COUNTER
U530	3131-0000-017	IC,74LS221,DUAL MULTIVIBRATOR
U531	3131-0000-032	IC,74LS02,QUAD 2-INPUT NOR
U532	3131-0000-044	IC,74LS00,QUAD 2-INPUT NAND
U533	3131-0000-033	IC,74LS04,HEX INVERTER
U534	3131-0000-027	IC,74LS30,8-INPUT NAND
U535	3214-4040-101	IC,4040B,12-STAGE COUNTER,5MHz
U536	3214-5027-100	IC,4527B,BCD RATE MULTIPLIER
U537	3133-0000-012	IC,4029B,SYN U/D COUNTER
U538	3214-5027-100	IC,4527B,BCD RATE MULTIPLIER
U539	3133-0000-012	IC,4029B,SYN U/D COUNTER
U540	3214-5027-100	IC,4527B,BCD RATE MULTIPLIER
U541	3133-0000-012	IC,4029B,SYN U/D COUNTER
U542	3131-0000-045	IC,74LS138,3-TO-8 DCDR/MPLXR
U543	3131-0000-033	IC,74LS04,HEX INVERTER
U544	3131-0000-037	IC,74LS20,DUAL 4-INPUT NAND
U545	3131-0000-002	IC,74LS10,TRIPLE 3-INPUT NAND
U546	3131-0000-032	IC,74LS02,QUAD 2-INPUT NOR
U547	3131-0000-044	IC,74LS00,QUAD 2-INPUT NAND
U548	3131-0000-002	IC,74LS10,TRIPLE 3-INPUT NAND
Y501	2363-0008-000	XTAL, 8.091269MHz,F S,HC-6/U

7010-7530-300 PCB ASSY, DME RANGE G

Revision G contains all items in Revision F except the following:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
6	2801-0188-006	SCREW 2-56 X 3/16 PPHMS
7	2840-0000-004	WASHER,LOCK,INT TOOTH,2
8	2850-0000-012	NUT,HEX,SMALL PAT,2-56
9	3107-0010-400	INSULATOR

7010-7530-300 PCB ASSY, TRANSPONDER CONTROL E

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
2	4104-0000-002	CARD GUIDE & EJECTOR S-203
3	2108-0000-008	PIN FOR S-203 EJECTOR N/C
C101	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C102	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C103	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C104	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C105	1580-2202-016	CAP,22µF,16V,ELE,20
C106	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C107	1506-0392-017	CAP,3900pF,100V,5%,NPO
C108	1506-0470-017	CAP,47pF,100V,NPO
C109	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C110	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C111	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C112	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C113	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C114	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C115	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C116	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C117	1506-0101-017	CAP,100pF,100V,5%,NPO
C118	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C119	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C120	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C121	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C122	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C123	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C124	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C125	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C126	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C127	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C128	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C129	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C130	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C131	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C132	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C133	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C134	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C135	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C136	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
Q101	4807-0000-002	TRANS, 2N3905 ,PNP HS SW
Q103	5050-2401-000	TRANS,VN10KM N-CH VMOSFET
R101	4702-0123-003	RES,12k,1/4W,5%
R102	4702-0472-003	RES,4.7k,1/4W,5%
R103	4702-0472-003	RES,4.7k,1/4W,5%
R104	4702-0103-003	RES,10k,1/4W,5%
R105	4701-0103-003	RES,10k,1/8W,5%
R106	4702-0222-003	RES,2.2k,1/4W,5%
R107	4702-0222-003	RES,2.2k,1/4W,5%
R113	4702-0331-003	RES,330,1/4W,5%
X101	3131-0000-044	IC,74LS00,QUAD 2-INPUT NAND
X102	3211-3165-000	IC,74LS165,8-BIT REGISTER
X103	3131-0000-043	IC,74LS377,OCTAL D FLIP-FLOP
X104	3131-0000-043	IC,74LS377,OCTAL D FLIP-FLOP
X105	3131-0000-043	IC,74LS377,OCTAL D FLIP-FLOP
X106	3131-0000-043	IC,74LS377,OCTAL D FLIP-FLOP

7010-7530-300 PCB ASSY, TRANSPONDER CONTROL (cont) E

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
X107	3131-0000-043	IC,74LS377,OCTAL D FLIP-FLOP
X108	3131-0000-043	IC,74LS377,OCTAL D FLIP-FLOP
X109	3131-0000-043	IC,74LS377,OCTAL D FLIP-FLOP
X110	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
X111	3131-0000-028	IC,74LS90,DECADE COUNTER
X112	3131-0000-017	IC,74LS221,DUAL MULTIVIBRATOR
X113	3131-0000-006	IC,74LS76A,DUAL JK FLIP-FLOP
X114	3131-0000-049	IC,74LS132,4X 2-INP NAND,SCHTR
X115	3211-3165-000	IC,74LS165,8-BIT REGISTER
X116	3131-0000-029	IC,74LS190,BCD SYN U/D COUNTER
X117	3131-0000-029	IC,74LS190,BCD SYN U/D COUNTER
X118	3130-0000-031	IC,74167,SYN DEC RATE MULTR
X119	3130-0000-031	IC,74167,SYN DEC RATE MULTR
X120	3131-0000-045	IC,74LS138,3-TO-8 DCDR/MPLXR
X121	3131-0000-044	IC,74LS00,QUAD 2-INPUT NAND
X122	3211-3390-000	IC,74LS390,DUAL DECADE COUNTER
X123	3131-0000-037	IC,74LS20,DUAL 4-INPUT NAND
X124	3131-0000-026	IC,74LS11,TRIPLE 3-INPUT AND
X125	3131-0000-029	IC,74LS190,BCD SYN U/D COUNTER
X126	3131-0000-029	IC,74LS190,BCD SYN U/D COUNTER
X127	3130-0000-031	IC,74167,SYN DEC RATE MULTR
X128	3130-0000-031	IC,74167,SYN DEC RATE MULTR
X129	3131-0000-033	IC,74LS04,HEX INVERTER
X130	3131-0000-002	IC,74LS10,TRIPLE 3-INPUT NAND
X131	3214-9412-500	IC,74HCT125,QUAD BUF/LINE DRVR

7010-3030-501 **PCB ASSY, TRANSPONDER PULSE** **D**

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
2	4104-0000-002	CARD GUIDE & EJECTOR S-203
3	2108-0000-008	PIN FOR S-203 EJECTOR N/C
6	6008-0000-003	WIRE,UL 1213, 30GA, RED, 1.25 FT
C201	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C202	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C203	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C204	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C205	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C206	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C207	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C208	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C209	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C210	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C211	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C212	1501-0330-001	CAP,33pF,1000V,10%,DISC
C213	1501-0270-001	CAP,27pF,1000V,10%,DISC
C214	1507-0105-118	CAP,1µF,35V,5%,TANT
C215	1501-0330-001	CAP,33pF,1000V,10%,DISC
C216	1501-0330-001	CAP,33pF,1000V,10%,DISC
C217	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C218	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C219	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C220	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C221	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C222	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C223	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C224	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C225	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C226	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C227	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C228	1580-2202-016	CAP,22µF,16V,ELE,20
C229	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C230	1506-0101-017	CAP,100pF,100V,5%,NPO
Q201	4807-0000-002	TRANS, 2N3905 ,PNP HS SW
Q202	4807-0000-002	TRANS, 2N3905 ,PNP HS SW
Q203	4807-0000-002	TRANS, 2N3905 ,PNP HS SW
R201	4702-0472-003	RES,4.7k,1/4W,5%
R202	4702-0472-003	RES,4.7k,1/4W,5%
R203	4702-0472-003	RES,4.7k,1/4W,5%
R204	4702-0472-003	RES,4.7k,1/4W,5%
R205	4702-0472-003	RES,4.7k,1/4W,5%
R206	4702-0472-003	RES,4.7k,1/4W,5%
R207	4702-0472-003	RES,4.7k,1/4W,5%
R208	4702-0472-003	RES,4.7k,1/4W,5%
R209	4702-0472-003	RES,4.7k,1/4W,5%
R210	4702-0472-003	RES,4.7k,1/4W,5%
R211	4702-0472-003	RES,4.7k,1/4W,5%
R212	4702-0472-003	RES,4.7k,1/4W,5%
R213	4702-0472-003	RES,4.7k,1/4W,5%
R214	4702-0472-003	RES,4.7k,1/4W,5%
R215	4702-0472-003	RES,4.7k,1/4W,5%
R216	4702-0472-003	RES,4.7k,1/4W,5%
R217	4702-0223-003	RES,22k,1/4W,5%
R218	4753-0203-002	POT 20k OHM
R219	4702-0472-003	RES,4.7k,1/4W,5%

7010-3030-501 PCB ASSY, TRANSPONDER PULSE (cont) D

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R220	4702-0472-003	RES,4.7k,1/4W,5%
R221	4702-0472-003	RES,4.7k,1/4W,5%
R222	4702-0471-003	RES,470,1/4W,5%
R223	4702-0331-003	RES,330,1/4W,5%
TP201	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP202	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP203	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP204	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP205	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP206	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP207	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP208	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP209	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
X201	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
X202	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
X203	3211-3374-000	IC,74LS374,OCTAL D FLIP-FLOP
X204	3211-3374-000	IC,74LS374,OCTAL D FLIP-FLOP
X205	3211-3374-000	IC,74LS374,OCTAL D FLIP-FLOP
X206	3211-3374-000	IC,74LS374,OCTAL D FLIP-FLOP
X207	3211-3374-000	IC,74LS374,OCTAL D FLIP-FLOP
X208	3211-3374-000	IC,74LS374,OCTAL D FLIP-FLOP
X209	3211-3374-000	IC,74LS374,OCTAL D FLIP-FLOP
X210	3211-3374-000	IC,74LS374,OCTAL D FLIP-FLOP
X211	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
X212	3131-0000-024	IC,74LS123,DUAL MULTIVIBRATOR
X213	3131-0000-026	IC,74LS11,TRIPLE 3-INPUT AND
X214	3131-0000-016	IC,74LS196,DEC COUNTER/LATCH
X215	3131-0000-016	IC,74LS196,DEC COUNTER/LATCH
X216	3131-0000-016	IC,74LS196,DEC COUNTER/LATCH
X217	3131-0000-032	IC,74LS02,QUAD 2-INPUT NOR
X218	3131-0000-026	IC,74LS11,TRIPLE 3-INPUT AND
X219	3131-0000-016	IC,74LS196,DEC COUNTER/LATCH
X220	3131-0000-016	IC,74LS196,DEC COUNTER/LATCH
X221	3131-0000-016	IC,74LS196,DEC COUNTER/LATCH
X222	3131-0000-045	IC,74LS138,3-TO-8 DCDR/MPLXR
X223	3131-0000-024	IC,74LS123,DUAL MULTIVIBRATOR
X224	3131-0000-012	IC,74LS162A,4-BIT DEC COUNTER
X225	3131-0000-012	IC,74LS162A,4-BIT DEC COUNTER
X226	3131-0000-006	IC,74LS76A,DUAL JK FLIP-FLOP
X227	3131-0000-006	IC,74LS76A,DUAL JK FLIP-FLOP
X228	3131-0000-044	IC,74LS00,QUAD 2-INPUT NAND
X229	3131-0000-033	IC,74LS04,HEX INVERTER
X230	3211-3164-000	IC,74LS164,8-BIT REGISTER
X231	3131-0000-006	IC,74LS76A,DUAL JK FLIP-FLOP
X232	3131-0000-002	IC,74LS10,TRIPLE 3-INPUT NAND
X233	3131-0000-037	IC,74LS20,DUAL 4-INPUT NAND
X234	3131-0000-033	IC,74LS04,HEX INVERTER

7010-7532-700 PCB ASSY, TRANSPONDER DECODER A2

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
2	4104-0000-002	CARD GUIDE & EJECTOR S-203
3	2108-0000-008	PIN FOR S-203 EJECTOR N/C
5	1050-0000-075	WIRE,BUS,TINNED COPPER,26GA
6	6011-0018-001	TUBING,TF,26 AWG,NATURAL,TW, 0.2 FT
7	6011-0027-001	TUBING,TF,22 AWG,NATURAL,TW, 0.25 FT
8	6000-0002-000	WIRE,WRAP,KYNAR,30 AWG,RED, 1 FT
C301	1580-2202-016	CAP,22µF,16V,ELE,20
C302	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C303	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C304	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C305	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C306	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C307	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C308	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C309	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C310	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C311	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C312	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C313	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C314	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C315	1501-0103-005	CAP,0.01µF,50V,20%,DISC
C316	1506-0102-017	CAP,1000pF,100V,5%,NPO
C317	1506-0270-017	CAP,27pF,100V,5%,NPO
C318	1506-0102-017	CAP,1000pF,100V,5%,NPO
C319	1506-0102-017	CAP,1000pF,100V,5%,NPO
C320	1506-0121-017	CAP,120pF,100V,5%,NPO
C321	1506-0102-017	CAP,1000pF,100V,5%,NPO
C322	1506-0102-017	CAP,1000pF,100V,5%,NPO
C323	1506-0102-017	CAP,1000pF,100V,5%,NPO
C324	1506-0331-017	CAP,330pF,100V,5%,NPO
C325	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C326	1506-0330-017	CAP,33pF,100V,5%,NPO
C327	1506-0680-017	CAP,68pF,100V,5%,NPO
C328	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C330	1506-0820-017	CAP,82pF,100V,5%,NPO
C331	1506-0101-017	CAP,100pF,100V,5%,NPO
C332	1506-0101-017	CAP,100pF,100V,5%,NPO
C333	1506-0221-017	CAP,220pF,100V,5%,NPO
C334	1501-0103-005	CAP,0.01µF,50V,20%,DISC
C336	1506-0331-017	CAP,330pF,100V,5%,NPO
C337	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C338	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C339	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C340	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C341	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C342	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C343	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C344	1506-0102-017	CAP,1000pF,100V,5%,NPO
C345	1506-0122-017	CAP,1200pF,100V,5%,NPO
C346	1506-0331-017	CAP,330pF,100V,5%,NPO
C347	1506-0331-017	CAP,330pF,100V,5%,NPO
C348	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C349	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C351	1506-0331-017	CAP,330pF,100V,5%,NPO
C352	1506-0102-017	CAP,1000pF,100V,5%,NPO

7010-7532-700 PCB ASSY, TRANSPONDER DECODER (cont) A2

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
C353	1506-0102-017	CAP,1000pF,100V,5%,NPO
CR301	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
L301	1801-0479-001	IND, 4.7 µH,1.2OHM
L302	1804-0000-004	IND,VAR, .054-.104µH,ORG 426
L303	1801-0228-001	IND, .22µH,.14OHM,1025-04
L304	1801-0479-001	IND, 4.7 µH,1.2OHM
L305	1801-0479-001	IND, 4.7 µH,1.2OHM
L306	1801-0109-001	IND, 1.0 µH, 1 OHM,1025-20
L307	1801-0109-001	IND, 1.0 µH, 1 OHM,1025-20
L308	1801-0109-001	IND, 1.0 µH, 1 OHM,1025-20
Q301	4809-0000-005	TRANS,66382 ,NPN HF AMP
Q302	4803-0000-004	TRANS,NPN,LP/VHF AMP
Q305	4807-0000-001	TRANS, 2N3903 ,NPN HS SW
R301	4702-0222-003	RES,2.2k,1/4W,5%
R302	4702-0393-003	RES,39k,1/4W,5%
R303	4702-0680-003	RES,68,1/4W,5%
R304	4702-0471-003	RES,470,1/4W,5%
R305	4702-0471-003	RES,470,1/4W,5%
R306	4702-0472-003	RES,4.7k,1/4W,5%
R307	4702-0330-003	RES,33,1/4W,5%
R308	4702-0271-003	RES,270,1/4W,5%
R311	4702-0471-003	RES,470,1/4W,5%
R312	4702-0561-003	RES,560,1/4W,5%
R314	4702-0103-003	RES,10k,1/4W,5%
R315	4702-0181-003	RES,180,1/4W,5%
R316	4702-0471-003	RES,470,1/4W,5%
R318	4702-0182-003	RES,1.8k,1/4W,5%
R325	4702-0471-003	RES,470,1/4W,5%
R327	4756-3120-200	POT, 2k OHM, 3339W-1-202
R328	4702-0222-003	RES,2.2k,1/4W,5%
R329	4702-0472-003	RES,4.7k,1/4W,5%
R330	4756-3120-200	POT, 2k OHM, 3339W-1-202
R331	4702-0222-003	RES,2.2k,1/4W,5%
R332	4702-0123-003	RES,12k,1/4W,5%
R333	4706-3401-001	RES,3.40k,1/4W,1%
R334	4702-0473-003	RES,47k,1/4W,5%
R336	4702-0222-003	RES,2.2k,1/4W,5%
R337	4702-0222-003	RES,2.2k,1/4W,5%
R338	4702-0222-003	RES,2.2k,1/4W,5%
R339	4702-0222-003	RES,2.2k,1/4W,5%
R341	4702-0103-003	RES,10k,1/4W,5%
R342	4701-0681-003	RES,680,1/8W,5%
R343	4701-0681-003	RES,680,1/8W,5%
R344	4701-0681-003	RES,680,1/8W,5%
R345	4701-0681-003	RES,680,1/8W,5%
R346	4702-0102-003	RES,1.0k,1/4W,5%
R349	4702-0103-003	RES,10k,1/4W,5%
R350	4702-0331-003	RES,330,1/4W,5%
R351	4702-0102-003	RES,1.0k,1/4W,5%
R352	4702-0101-003	RES,100,1/4W,5%
SW001	5130-0010-025	SWITCH,DIP,SPST,S ACT, 2-POS
TP301	2200-2010-400	CONN,M SMB,PC MTG,STR,.453LG
TP302	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP303	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP304	2106-0000-007	TERM,GND,USECO 90518-5 OR-7

7010-7532-700 PCB ASSY, TRANSPONDER DECODER (cont) A2

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
TP305	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP307	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
X301	3131-0000-033	IC,74LS04,HEX INVERTER
X302	3131-0000-037	IC,74LS20,DUAL 4-INPUT NAND
X303	3131-0000-033	IC,74LS04,HEX INVERTER
X304	3211-3160-000	IC, DECADE COUNTER
X305	3211-3160-000	IC, DECADE COUNTER
X307	3131-0000-038	IC,74LS74A,DUAL D FLIP-FLOP
X308	3131-0000-044	IC,74LS00,QUAD 2-INPUT NAND
X309	3131-0000-024	IC,74LS123,DUAL MULTIVIBRATOR
X310	3131-0000-017	IC,74LS221,DUAL MULTIVIBRATOR
X311	3131-0000-017	IC,74LS221,DUAL MULTIVIBRATOR
X312	3131-0000-038	IC,74LS74A,DUAL D FLIP-FLOP
X313	3131-0000-045	IC,74LS138,3-TO-8 DCDR/MPLXR
X314	3131-0000-038	IC,74LS74A,DUAL D FLIP-FLOP
X315	3211-3390-000	IC,74LS390,DUAL DECADE COUNTER
X316	3211-3390-000	IC,74LS390,DUAL DECADE COUNTER
X317	3211-3390-000	IC,74LS390,DUAL DECADE COUNTER
X318	3211-3164-000	IC,74LS164,8-BIT REGISTER
X319	3211-3164-000	IC,74LS164,8-BIT REGISTER
X320	3211-3390-000	IC,74LS390,DUAL DECADE COUNTER
X321	3211-3390-000	IC,74LS390,DUAL DECADE COUNTER
X322	3211-3390-000	IC,74LS390,DUAL DECADE COUNTER
X323	3211-3090-001	IC,74LS90,DEC COUNTER(SPECIAL)
X324	3131-0000-043	IC,74LS377,OCTAL D FLIP-FLOP
X325	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
X326	3211-3374-000	IC,74LS374,OCTAL D FLIP-FLOP
X327	3211-3374-000	IC,74LS374,OCTAL D FLIP-FLOP
X328	3211-3374-000	IC,74LS374,OCTAL D FLIP-FLOP
X329	3211-3374-000	IC,74LS374,OCTAL D FLIP-FLOP
X330	3211-3374-000	IC,74LS374,OCTAL D FLIP-FLOP
X331	3211-3374-000	IC,74LS374,OCTAL D FLIP-FLOP
X332	3211-3374-000	IC,74LS374,OCTAL D FLIP-FLOP
X333	3211-3390-000	IC,74LS390,DUAL DECADE COUNTER
X334	3211-3390-000	IC,74LS390,DUAL DECADE COUNTER
X335	3131-0000-033	IC,74LS04,HEX INVERTER
X336	3131-0000-009	IC,74LS151,1-0F-8 SEL/MPLXR
X337	3131-0000-044	IC,74LS00,QUAD 2-INPUT NAND
X338	3131-0000-038	IC,74LS74A,DUAL D FLIP-FLOP
X339	3131-0000-017	IC,74LS221,DUAL MULTIVIBRATOR
X340	3211-3390-000	IC,74LS390,DUAL DECADE COUNTER
X341	3213-1013-800	IC,BI-QUINARY COUNTER
X342	3213-1200-900	IC,12009,OR12509,D/5/6,PRESCL
Y301	2363-0011-000	XTAL,100.000000MHz,5 S,HC-18/U

7010-7532-700 PCB ASSY, TRANSPONDER DECODER B

Revision B contains all items in Revision A2.

7010-3030-600 PCB ASSY, DME TIMING E

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
2	4104-0000-002	CARD GUIDE & EJECTOR S-203
3	2108-0000-008	PIN FOR S-203 EJECTOR N/C
5	6011-0018-001	TUBING,TF,26 AWG,NATURAL,TW, 1 FT
6	1050-0000-075	WIRE,BUS,TINNED COPPER,26GA
C601	1506-0271-017	CAP,270pF,100V,5%,NPO
C602	1506-0102-017	CAP,1000pF,100V,5%,NPO
C603	1502-0103-010	CAP,0.01µF,50V,2%,PC
C604	1506-0100-017	CAP,10pF,100V,5%,NPO
C605	1506-0221-017	CAP,220pF,100V,5%,NPO
C606	1506-0221-017	CAP,220pF,100V,5%,NPO
C607	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C608	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C609	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C610	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C611	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C612	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C613	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C614	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C615	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C616	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C617	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C618	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C619	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C620	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C621	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C622	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C623	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C624	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C625	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C626	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C627	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C628	1580-2202-016	CAP,22µF,16V,ELE,20
C629	1506-0331-017	CAP,330pF,100V,5%,NPO
R601	4702-0472-003	RES,4.7k,1/4W,5%
R602	4702-0221-003	RES,220,1/4W,5%
R603	4702-0333-003	RES,33k,1/4W,5%
R604	4702-0333-003	RES,33k,1/4W,5%
R605	4702-0123-003	RES,12k,1/4W,5%
R606	4702-0223-003	RES,22k,1/4W,5%
R607	4702-0103-003	RES,10k,1/4W,5%
R608	4702-0103-003	RES,10k,1/4W,5%
R609	4702-0103-003	RES,10k,1/4W,5%
R610	4702-0103-003	RES,10k,1/4W,5%
R611	4702-0103-003	RES,10k,1/4W,5%
R612	4702-0103-003	RES,10k,1/4W,5%
R613	4752-0103-002	POT 10k OHM
TP601	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP602	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP603	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP604	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP605	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP606	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP607	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP608	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
X601	3214-4098-100	IC,4098B,DUAL MULTIVIBRATOR

7010-3030-600 PCB ASSY, DME TIMING (cont) E

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
X602	3214-4017-100	IC,4017B,5-STAGE DEC COUNTER
X603	3214-4017-100	IC,4017B,5-STAGE DEC COUNTER
X604	3131-0000-038	IC,74LS74A,DUAL D FLIP-FLOP
X605	3131-0000-006	IC,74LS76A,DUAL JK FLIP-FLOP
X606	3131-0000-038	IC,74LS74A,DUAL D FLIP-FLOP
X607	3131-0000-038	IC,74LS74A,DUAL D FLIP-FLOP
X608	3211-3086-000	IC,74LS86,QUAD 2-INPUT EXCL-OR
X609	3131-0000-044	IC,74LS00,QUAD 2-INPUT NAND
X610	3131-0000-002	IC,74LS10,TRIPLE 3-INPUT NAND
X611	3131-0000-033	IC,74LS04,HEX INVERTER
X612	3131-0000-044	IC,74LS00,QUAD 2-INPUT NAND
X613	3131-0000-013	IC,74LS163A,4-BIT BIN COUNTER
X614	3131-0000-035	IC,74LS93,4-BIT BINARY COUNTER
X615	3133-0000-011	IC,4011B,QUAD 2-INPUT NAND
X616	3131-0000-025	IC,74LS27,TRIPLE 3-INPUT NOR
X617	3131-0000-030	IC,74LS191,BIN SYN U/D COUNTER
X618	3131-0000-044	IC,74LS00,QUAD 2-INPUT NAND
X619	3131-0000-032	IC,74LS02,QUAD 2-INPUT NOR
X620	3211-3165-000	IC,74LS165,8-BIT REGISTER
X621	3131-0000-043	IC,74LS377,OCTAL D FLIP-FLOP
X622	3131-0000-019	IC,74LS323,8-BIT REGISTER
X623	3131-0000-019	IC,74LS323,8-BIT REGISTER
X624	3131-0000-019	IC,74LS323,8-BIT REGISTER
X625	3134-0000-001	IC,4040B,12-STAGE COUNTER
X626	3214-4023-100	IC,4023B,TRIPLE 3-INPUT NAND
X627	3133-0000-003	IC,4025B,TRIPLE 3-INPUT NOR
X628	3133-0000-001	IC,4001B,QUAD 2-INPUT NOR
X629	3133-0000-012	IC,4029B,SYN U/D COUNTER
X630	3133-0000-004	IC,4027B,DUAL JK MS FLIP-FLOP
X631	3214-4013-100	IC,DUAL D FLIP FLOP
X632	3131-0000-043	IC,74LS377,OCTAL D FLIP-FLOP
X633	3131-0000-045	IC,74LS138,3-TO-8 DCDR/MPLXR
X634	3131-0000-045	IC,74LS138,3-TO-8 DCDR/MPLXR
X635	3133-0000-011	IC,4011B,QUAD 2-INPUT NAND
X636	3214-4052-100	IC,4052B,4-CH ANALOG MPLXR
X637	3214-4006-100	IC,4006B,18-STAGE SS REGISTER
X638	3133-0000-001	IC,4001B,QUAD 2-INPUT NOR
X639	3133-0000-019	IC,4069UB,HEX INVERTER
X640	3214-4013-100	IC,DUAL D FLIP FLOP
X641	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
X642	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
X644	3131-0000-044	IC,74LS00,QUAD 2-INPUT NAND
X645	3131-0000-032	IC,74LS02,QUAD 2-INPUT NOR

7010-3030-600 PCB ASSY, DME TIMING (cont) F

Revision F contains all items in Revision E plus the following:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R605SAT	4702-0153-003	RES,15k,1/4W,5%
R605SAT	4702-0123-003	RES,12k,1/4W,5%

Revision F contains all items in Revision E with the following changes:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R605	4702-0183-003	RES,18k,1/4W,5%

7010-7530-200 PCB ASSY, DME REPLY C7

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
2	4104-0000-002	CARD GUIDE & EJECTOR S-203
3	2108-0000-008	PIN FOR S-203 EJECTOR N/C
4	3101-0000-007	SOCKET ICN-203-S3G
C401	1506-0562-017	CAP,5600pF,100V,5%,NPO
C402	1506-0392-017	CAP,3900pF,100V,5%,NPO
C403	1506-0221-017	CAP,220pF,100V,5%,NPO
C404	1506-0681-017	CAP,680pF,100V,5%,NPO
C405	1506-0221-017	CAP,220pF,100V,5%,NPO
C406	1506-0102-017	CAP,1000pF,100V,5%,NPO
C407	1506-0272-017	CAP,2700pF,100V,NPO
C408	1506-0272-017	CAP,2700pF,100V,NPO
C409	1506-0271-017	CAP,270pF,100V,5%,NPO
C410	1506-0101-017	CAP,100pF,100V,5%,NPO
C411	1502-0223-006	CAP,0.022µF,100V,5%,MPC
C412	1506-0680-017	CAP,68pF,100V,5%,NPO
C413	1506-0562-017	CAP,5600pF,100V,5%,NPO
C414	1506-0221-017	CAP,220pF,100V,5%,NPO
C415	1507-0105-018	CAP,1µF,35V,20%,TANT
C416	1501-0103-005	CAP,0.01µF,50V,20%,DISC
C418	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C419	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C420	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C421	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C422	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C423	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C424	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C425	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C426	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C427	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C428	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C429	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C430	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C431	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C432	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C433	1580-2202-016	CAP,22µF,16V,ELE,20
C434	1506-0221-017	CAP,220pF,100V,5%,NPO
C436	1506-0102-017	CAP,1000pF,100V,5%,NPO
C437	1620-1010-100	CAP,100pF,100V,CHIP,NPO
C460	1506-0562-017	CAP,5600pF,100V,5%,NPO
C461	1506-0562-017	CAP,5600pF,100V,5%,NPO
C462	1506-0221-017	CAP,220pF,100V,5%,NPO
C463	1523-0000-011	CAP,0.01µF,50V,X7R,CHIP
C464	1507-0105-018	CAP,1µF,35V,20%,TANT
Q401	4807-0000-002	TRANS, 2N3905 ,PNP HS SW
Q402	4807-0000-001	TRANS, 2N3903 ,NPN HS SW
R401	4702-0103-003	RES,10k,1/4W,5%
R402	4702-0103-003	RES,10k,1/4W,5%
R403	4702-0103-003	RES,10k,1/4W,5%
R404	4706-1692-001	RES,16.9k,1/4W,1%
R405	4702-0103-003	RES,10k,1/4W,5%
R407	4702-0103-003	RES,10k,1/4W,5%
R408	4702-0103-003	RES,10k,1/4W,5%
R409	4706-1432-001	RES,14.3k,1/4W,1%
R410	4702-0102-003	RES,1.0k,1/4W,5%
R406	4702-0103-003	RES,10k,1/4W,5%

7010-7530-200 PCB ASSY, DME REPLY (cont) C7

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R411	4702-0102-003	RES,1.0k,1/4W,5%
R412	4753-0502-002	POT 5k OHM
R413	4706-1782-001	RES,17.8k,1/4W,1%
R414	4702-0102-003	RES,1.0k,1/4W,5%
R415	4702-0102-003	RES,1.0k,1/4W,5%
R416	4702-0183-003	RES,18k,1/4W,5%
R417	4753-0502-002	POT 5k OHM
R418	4706-9091-001	RES,9.09k,1/4W,1%
R419	4753-0502-002	POT 5k OHM
R420	4706-1652-001	RES,16.5k,1/4W,1%
R421	4706-2492-001	RES,24.9k,1/4W,1%
R422	4706-2372-001	RES,23.7k,1/4W,1%
R423	4706-2002-001	RES,20.0k,1/4W,1%
R424	4706-3832-001	RES,38.3k,1/4W,1%
R425	4706-1782-001	RES,17.8k,1/4W,1%
R426	4702-0102-003	RES,1.0k,1/4W,5%
R427	4702-0102-003	RES,1.0k,1/4W,5%
R428	4702-0474-003	RES,470k,1/4W,5%
R430	4702-0472-003	RES,4.7k,1/4W,5%
R431	4702-0104-003	RES,100k,1/4W,5%
R439	4702-0102-003	RES,1.0k,1/4W,5%
R440	4702-0102-003	RES,1.0k,1/4W,5%
R441	4702-0103-003	RES,10k,1/4W,5%
R442	4753-0502-002	POT 5k OHM
R445	4702-0472-003	RES,4.7k,1/4W,5%
R446	4702-0472-003	RES,4.7k,1/4W,5%
R447	4702-0683-003	RES,68k,1/4W,5%
R448	4706-1433-001	RES,143k,1/4W,1%
R449	4702-0272-003	RES,2.7k,1/4W,5%
R450	4706-3162-001	RES,31.6k,1/4W,1%
R451	4753-0103-002	POT, 10k OHM
R452	4702-0222-003	RES,2.2k,1/4W,5%
R453	4702-0103-003	RES,10k,1/4W,5%
R454	4702-0222-003	RES,2.2k,1/4W,5%
R455	4702-0472-003	RES,4.7k,1/4W,5%
R456	4702-0102-003	RES,1.0k,1/4W,5%
R457	4722-2210-001	RES,221,1/8W,1%
R458	4722-8252-001	RES,82.5k,1/8W,1%
TP401	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP402	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP403	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP404	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP405	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP406	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP407	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP408	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
X402	3131-0000-017	IC,74LS221,DUAL MULTIVIBRATOR
X403	3211-3164-000	IC,74LS164,8-BIT REGISTER
X404	3211-3086-000	IC,74LS86,QUAD 2-INPUT EXCL-OR
X405	3211-3164-000	IC,74LS164,8-BIT REGISTER
X407	3131-0000-043	IC,74LS377,OCTAL D FLIP-FLOP
X409	3131-0000-024	IC,74LS123,DUAL MULTIVIBRATOR
X411	3211-3164-000	IC,74LS164,8-BIT REGISTER
X412	3131-0000-044	IC,74LS00,QUAD 2-INPUT NAND
X413	3131-0000-029	IC,74LS190,BCD SYN U/D COUNTER

7010-7530-200 PCB ASSY, DME REPLY (cont) C7

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
X414	3131-0000-043	IC,74LS377,OCTAL D FLIP-FLOP
X415	3131-0000-038	IC,74LS74A,DUAL D FLIP-FLOP
X416	3131-0000-006	IC,74LS76A,DUAL JK FLIP-FLOP
X417	3131-0000-030	IC,74LS191,BIN SYN U/D COUNTER
X419	3131-0000-032	IC,74LS02,QUAD 2-INPUT NOR
X420	3131-0000-029	IC,74LS190,BCD SYN U/D COUNTER
X421	3131-0000-043	IC,74LS377,OCTAL D FLIP-FLOP
X422	3131-0000-017	IC,74LS221,DUAL MULTIVIBRATOR
X423	3131-0000-017	IC,74LS221,DUAL MULTIVIBRATOR
X424	3131-0000-017	IC,74LS221,DUAL MULTIVIBRATOR
X425	3131-0000-017	IC,74LS221,DUAL MULTIVIBRATOR
X426	3131-0000-038	IC,74LS74A,DUAL D FLIP-FLOP
X427	3131-0000-033	IC,74LS04,HEX INVERTER
X428	3131-0000-029	IC,74LS190,BCD SYN U/D COUNTER
X429	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
X430	3131-0000-044	IC,74LS00,QUAD 2-INPUT NAND
X431	3131-0000-002	IC,74LS10,TRIPLE 3-INPUT NAND
X432	3131-0000-002	IC,74LS10,TRIPLE 3-INPUT NAND
X433	3131-0000-038	IC,74LS74A,DUAL D FLIP-FLOP
X434	3131-0000-044	IC,74LS00,QUAD 2-INPUT NAND
X435	3131-0000-045	IC,74LS138,3-TO-8 DCDR/MPLXR
X436	3131-0000-037	IC,74LS20,DUAL 4-INPUT NAND
X437	3131-0000-002	IC,74LS10,TRIPLE 3-INPUT NAND
X438	3131-0000-044	IC,74LS00,QUAD 2-INPUT NAND
X439	3131-0000-038	IC,74LS74A,DUAL D FLIP-FLOP
X440	3131-0000-038	IC,74LS74A,DUAL D FLIP-FLOP
X441	3131-0000-024	IC,74LS123,DUAL MULTIVIBRATOR

7010-7530-200 PCB ASSY, DME REPLY D

Revision D contains all items in Revision C7 with the following change:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
C402	1506-0392-100	CAP,3900pF,100V,1%,NPO

7010-7530-200 PCB ASSY, DME REPLY E

Revision E contains all items in Revision D plus the following:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R421SAT	4706-2492-001	RES,24.9k,1/4W,1%
R421SAT	4706-2552-001	RES,25.5k,1/4W,1%
R421SAT	4706-2672-001	RES,26.7k,1/4W,1%
R421SAT	4706-2742-001	RES,27.4k,1/4W,1%

Revision E contains all items in Revision D with the following change:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R421	4706-2612-001	RES,26.1k,1/4W,1%

7010-7530-100 PCB ASSY, MICROPROCESSOR H

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
2	6002-0000-001	WIRE,HOOK,TFE,22GA, 7S,BLACK, 0.5 FT
3	3101-0000-024	SOCKET 16-823-90
4	3101-0500-820	SOCKET,40-P DIP,ICN-406-S5-G
5	3101-0000-007	SOCKET ICN-203-S3G
6	3101-0000-029	SOCKET,28-P DIP,GOLD,LO PROFIL
8	4104-7608-200	EJECTOR VIO MOD SCANBE 5-203 2
9	2108-0000-008	PIN FOR S-203 EJECTOR N/C
10	2100-1691-700	MOUNTING BLOCK, IEEE-488 CONN
11	2840-0000-004	WASHER,LOCK,INT TOOTH,2
12	2801-0375-006	SCREW,2-56 X 3/8 PPHM
13	2850-1692-600	SCREW,.340L35-6.25HH,4-40X.410
14	1050-0000-074	WIRE,BUS,TINNED COPPER,24GA
C701	1580-2202-016	CAP,22µF,16V,ELE,20
C702	1580-2202-016	CAP,22µF,16V,ELE,20
C703	1580-2202-016	CAP,22µF,16V,ELE,20
C704	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C705	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C706	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C707	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C708	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C709	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C710	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C711	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C713	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C715	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C716	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C717	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C718	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C724	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C725	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C726	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C727	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
CR701	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
J701	2116-0000-029	CONN,FEMALE 24PIN IEEE-488
R701	4701-0332-003	RES,3.3k,1/8W,5%
R702	4701-0182-003	RES,1.8k,1/8W,5%
R703	4701-0182-003	RES,1.8k,1/8W,5%
R704	4701-0103-003	RES,10k,1/8W,5%
R705	4701-0103-003	RES,10k,1/8W,5%
R706	4701-0332-003	RES,3.3k,1/8W,5%
R707	4701-0332-003	RES,3.3k,1/8W,5%
R708	4701-0332-003	RES,3.3k,1/8W,5%
R709	4701-0332-003	RES,3.3k,1/8W,5%
R710	4701-0331-003	RES,330,1/8W,5%
R711	4701-0332-003	RES,3.3k,1/8W,5%
R712	4701-0332-003	RES,3.3k,1/8W,5%
R713	4701-0332-003	RES,3.3k,1/8W,5%
R714	4701-0472-003	RES,4.7k,1/8W,5%
R715	4701-0332-003	RES,3.3k,1/8W,5%
R716	4701-0332-003	RES,3.3k,1/8W,5%
RN701	4690-0747-200	RES NETWORK,4.7k,BUSS,8-P,SIP
SW701	5115-0000-008	SWITCH 4351665
TP702	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP703	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP704	2106-0000-007	TERM,GND,USECO 90518-5 OR-7

7010-7530-100 PCB ASSY, MICROPROCESSOR (cont) H

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
TP705	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
X702	F010-7500-409	IC,27256 DUAL,HEX V4.09
X703	3260-1004-000	IC,HS CMOS,8192 X 8 STATIC RAM
X709	3130-0000-003	IC,7404,HEX INVERTER
X710	3131-0000-044	IC,74LS00,QUAD 2-INPUT NAND
X711	3131-0000-045	IC,74LS138,3-TO-8 DCDR/MPLXR
X712	3131-0000-030	IC,74LS191,BIN SYN U/D COUNTER
X716	3131-0000-032	IC,74LS02,QUAD 2-INPUT NOR
X717	3250-5001-000	IC,8304,8-BIT BIDI TRANSCEIVER
X718	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
X719	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
X720	3135-0000-225	IC,Z8OB,CPU 6MHz
X721	3250-5001-000	IC,8304,8-BIT BIDI TRANSCEIVER
X722	3250-5001-000	IC,8304,8-BIT BIDI TRANSCEIVER
X723	3131-0000-032	IC,74LS02,QUAD 2-INPUT NOR
X724	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
X725	3135-0000-016	IC,7414,INV HEX SCHMITT TRIG
X726	3131-0000-045	IC,74LS138,3-TO-8 DCDR/MPLXR
X727	3251-0001-000	IC,80-PIO,I/O INTF CONTROLLER
X728	3226-0002-000	IC,80-CTC,4-CH COUNTER/TIMER
X729	3271-0002-001	IC,7210,GPIB INTFC CONTROLLER
X730	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
X731	3130-0000-003	IC,7404,HEX INVERTER
X732	3134-0000-015	IC,QUAD 3-STATE BUS XCVR
X733	3134-0000-015	IC,QUAD 3-STATE BUS XCVR
X734	3134-0000-015	IC,QUAD 3-STATE BUS XCVR
X735	3134-0000-015	IC,QUAD 3-STATE BUS XCVR
Y701	2363-0100-000	XTAL, 8.000000MHz,F P,HC-18/U

7010-7530-100 PCB ASSY, MICROPROCESSOR J

Revision J contains all items in Revision H with the following change:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
X702	F010-7500-411	IC,27C256 DUAL,HEX V4.11

7010-7530-100 PCB ASSY, MICROPROCESSOR K

Revision K contains all items in Revision J with the following change:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
X702	F010-7500-412	IC,27C256 DUAL,HEX V4.12

7010-7532-300 PCB ASSY, INTERFACE C

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
2	2803-0313-006	SCREW,4-40 X 5/16 PPHM
3	2840-0000-003	WASHER,LOCK,INT TOOTH,4
4	2850-0000-020	NUT,HEX,SMALL PAT,4-40
6	2850-7866-300	STANDOFF,HEX,MALE-FEMALE
10	4835-0000-018	MTG PAD,8-PIN TO-5 IC
C9201	1580-2202-420	CAP,22µF,35V,ELE,RDL
C9202	1580-2202-420	CAP,22µF,35V,ELE,RDL
C9203	1580-4702-105	CAP,47µF,10V,ELE,RDL
C9204	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C9205	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C9206	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C9207	1506-0222-017	CAP,2200pF,50V,NPO
C9208	1506-0471-017	CAP,470pF,100V,5%,NPO
C9209	1580-2202-420	CAP,22µF,35V,ELE,RDL
C9210	1580-2202-420	CAP,22µF,35V,ELE,RDL
C9211	1580-2202-420	CAP,22µF,35V,ELE,RDL
C9212	1580-2202-420	CAP,22µF,35V,ELE,RDL
C9213	1580-2202-420	CAP,22µF,35V,ELE,RDL
C9214	1506-0182-017	CAP,1800pF,100V,5%,NPO
C9215	1580-4792-305	CAP,4.7µF,35V
C9216	1506-0102-017	CAP,1000pF,100V,5%,NPO
C9217	1506-0102-017	CAP,1000pF,100V,5%,NPO
C9218	1506-0102-017	CAP,1000pF,100V,5%,NPO
C9219	1506-0102-017	CAP,1000pF,100V,5%,NPO
C9220	1506-0102-017	CAP,1000pF,100V,5%,NPO
C9221	1506-0102-017	CAP,1000pF,100V,5%,NPO
C9222	1506-0102-017	CAP,1000pF,100V,5%,NPO
C9223	1506-0102-017	CAP,1000pF,100V,5%,NPO
C9224	1506-0102-017	CAP,1000pF,100V,5%,NPO
C9225	1507-0685-020	CAP,6.8µF,15V,20%,TANT
C9226	1506-0102-017	CAP,1000pF,100V,5%,NPO
C9227	1506-0102-017	CAP,1000pF,100V,5%,NPO
C9228	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C9229	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C9230	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C9231	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C9232	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C9233	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C9234	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C9235	1507-0105-018	CAP,1µF,35V,20%,TANT
C9236	1506-0101-017	CAP,100pF,100V,5%,NPO
C9237	1506-0181-017	CAP,180pF,100V,5%,NPO
CR9201	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR9202	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR9203	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR9204	4815-0000-002	DIODE, 1N4004 ,RECT, 400V, 1A
CR9205	4815-0000-002	DIODE, 1N4004 ,RECT, 400V, 1A
CR9206	4815-0000-002	DIODE, 1N4004 ,RECT, 400V, 1A
CR9207	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR9208	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR9209	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR9210	4815-0000-002	DIODE, 1N4004 ,RECT, 400V, 1A
CR9211	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR9212	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR9213	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV

7010-7532-300 PCB ASSY, INTERFACE (cont) C

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
CR9214	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR9215	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR9217	4815-0000-002	DIODE, 1N4004 ,RECT, 400V, 1A
CR9218	4815-0000-002	DIODE, 1N4004 ,RECT, 400V, 1A
CR9219	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR9220	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
J9201	2115-0000-021	CONN MOLEX 22-05-2181
J9202	2116-0000-021	CONN,D-SUB,M,25-P,PCM,R.A
Q9201	4807-0000-001	TRANS, 2N3903 ,NPN HS SW
Q9202	4801-0000-004	TRANS, 2N2905 ,PNP HS SW
Q9203	4807-0000-002	TRANS, 2N3905 ,PNP HS SW
Q9204	4801-0000-001	TRANSISTOR NPN HS SW
Q9205	4807-0000-002	TRANS, 2N3905 ,PNP HS SW
Q9206	4801-0000-001	TRANSISTOR NPN HS SW
Q9207	4801-0000-001	TRANSISTOR NPN HS SW
Q9208	4801-0000-004	TRANS, 2N2905 ,PNP HS SW
Q9209	4801-0000-001	TRANSISTOR NPN HS SW
Q9210	4801-0000-004	TRANS, 2N2905 ,PNP HS SW
R9201	4702-0472-003	RES,4.7k,1/4W,5%
R9202	4702-0472-003	RES,4.7k,1/4W,5%
R9203	4702-0223-003	RES,22k,1/4W,5%
R9204	4702-0223-003	RES,22k,1/4W,5%
R9205	4702-0223-003	RES,22k,1/4W,5%
R9206	4702-0471-003	RES,470,1/4W,5%
R9207	4702-0102-003	RES,1.0k,1/4W,5%
R9208	4703-0100-003	RES,10,1/2W,5%
R9209	4702-0271-003	RES,270,1/4W,5%
R9210	4702-0102-003	RES,1.0k,1/4W,5%
R9211	4702-0100-003	RES,10,1/4W,5%
R9212	4702-0279-003	RES,2.7,1/4W,5%
R9213	4702-0100-003	RES,10,1/4W,5%
R9214	4702-0102-003	RES,1.0k,1/4W,5%
R9215	4702-0102-003	RES,1.0k,1/4W,5%
R9216	4702-0101-003	RES,100,1/4W,5%
R9217	4702-0102-003	RES,1.0k,1/4W,5%
R9218	4702-0472-003	RES,4.7k,1/4W,5%
R9219	4702-0472-003	RES,4.7k,1/4W,5%
R9220	4702-0102-003	RES,1.0k,1/4W,5%
R9221	4702-0471-003	RES,470,1/4W,5%
R9222	4702-0473-003	RES,47k,1/4W,5%
R9223	4702-0473-003	RES,47k,1/4W,5%
R9224	4706-6040-001	RES,604,1/4W,1%
R9225	4706-6040-001	RES,604,1/4W,1%
R9226	4702-0103-003	RES,10k,1/4W,5%
R9227	4702-0103-003	RES,10k,1/4W,5%
R9228	4706-6040-001	RES,604,1/4W,1%
R9229	4706-6040-001	RES,604,1/4W,1%
R9230	4702-0103-003	RES,10k,1/4W,5%
R9231	4702-0103-003	RES,10k,1/4W,5%
R9232	4706-6040-001	RES,604,1/4W,1%
R9233	4706-6040-001	RES,604,1/4W,1%
R9234	4702-0103-003	RES,10k,1/4W,5%
R9235	4702-0103-003	RES,10k,1/4W,5%
R9236	4702-0223-003	RES,22k,1/4W,5%
R9237	4702-0104-003	RES,100k,1/4W,5%

7010-7532-300 **PCB ASSY, INTERFACE (cont)** **C**

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R9238	4702-0103-003	RES,10k,1/4W,5%
R9239	4702-0122-003	RES,1.2k,1/4W,5%
R9240	4702-0470-003	RES,47,1/4W,5%
R9241	4702-0122-003	RES,1.2k,1/4W,5%
R9242	4702-0470-003	RES,47,1/4W,5%
R9243	4706-1820-001	RES,182,1/4W,1%
R9244	4706-1001-001	RES,1.00k,1/4W,1%
R9245	4706-0536-001	RES,536,1/4W,1%
R9247	4702-0681-003	RES,680,1/4W,5%
R9248	4702-0470-003	RES,47,1/4W,5%
R9249	4706-0536-001	RES,536,1/4W,1%
R9251	4702-0681-003	RES,680,1/4W,5%
R9252	4702-0470-003	RES,47,1/4W,5%
R9253	4706-0536-001	RES,536,1/4W,1%
R9255	4702-0103-003	RES,10k,1/4W,5%
R9256	4752-0103-002	POT 10k OHM
R9257	4752-0103-002	POT 10k OHM
R9258	4702-0103-003	RES,10k,1/4W,5%
R9259	4706-0536-001	RES,536,1/4W,1%
R9261	4706-0536-001	RES,536,1/4W,1%
R9263	4703-0100-003	RES,10,1/2W,5%
R9265	4702-0224-003	RES,220k,1/4W,5%
R9266	4702-0472-003	RES,4.7k,1/4W,5%
R9267	4702-0472-003	RES,4.7k,1/4W,5%
R9268	4702-0102-003	RES,1.0k,1/4W,5%
R9269	4702-0471-003	RES,470,1/4W,5%
R9270	4702-0473-003	RES,47k,1/4W,5%
R9271	4702-0473-003	RES,47k,1/4W,5%
R9272	4702-0681-003	RES,680,1/4W,5%
R9274	4702-0680-003	RES,68,1/4W,5%
R9275	4702-0681-003	RES,680,1/4W,5%
R9277	4702-0680-003	RES,68,1/4W,5%
R9278	4702-0681-003	RES,680,1/4W,5%
R9280	4702-0681-003	RES,680,1/4W,5%
R9282	4702-0153-003	RES,15k,1/4W,5%
R9283	4706-0536-001	RES,536,1/4W,1%
R9285	4702-0223-003	RES,22k,1/4W,5%
R9286	4702-0222-003	RES,2.2k,1/4W,5%
R9287	4702-0222-003	RES,2.2k,1/4W,5%
R9288	4702-0390-003	RES,39,1/4W,5%
R9289	4703-0103-003	RES,10k,1/2W,5%
R9291	4701-0680-003	RES,68,1/8W,5%
R9292	4701-0680-003	RES,68,1/8W,5%
R9293	4701-0331-003	RES,330,1/8W,5%
R9294	4701-0152-003	RES,1.5k,1/8W,5%
R9296	4702-0102-003	RES,1.0k,1/4W,5%
RN9201	4690-0910-200	RES NETWORk,1k,BUSS,10-P,SIP
RN9202	4690-0910-200	RES NETWORk,1k,BUSS,10-P,SIP
U9201	3131-0000-002	IC,74LS10,TRIPLE 3-INPUT NAND
U9202	3131-0000-045	IC,74LS138,3-TO-8 DCDR/MPLXR
U9203	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
U9204	3131-0000-043	IC,74LS377,OCTAL D FLIP-FLOP
U9205	3131-0000-043	IC,74LS377,OCTAL D FLIP-FLOP
U9206	3130-0000-027	IC,7406,HEX INV BUFFER/DRIVER
U9207	3130-0000-027	IC,7406,HEX INV BUFFER/DRIVER
U9208	3130-0000-027	IC,7406,HEX INV BUFFER/DRIVER

7010-7532-300 PCB ASSY, INTERFACE (cont) C

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
U9209	3131-0000-043	IC,74LS377,OCTAL D FLIP-FLOP
U9210	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
U9211	3250-5001-000	IC,8304,8-BIT BIDI TRANSCEIVER
U9212	3133-0000-019	IC,4069UB,HEX INVERTER
U9213	3133-0000-001	IC,4001B,QUAD 2-INPUT NOR
U9214	3224-0004-000	IC,317T,1.5A 1.2-37V REGULATOR
U9215	3133-0000-014	IC,3130,BIMOS OP AMP,METAL CAN
U9216	3133-0000-019	IC,4069UB,HEX INVERTER
U9217	3133-0000-014	IC,3130,BIMOS OP AMP,METAL CAN
U9218	3133-0000-014	IC,3130,BIMOS OP AMP,METAL CAN
U9219	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
U9220	3224-0004-000	IC,317T,1.5A 1.2-37V REGULATOR
U9221	3131-0000-033	IC,74LS04,HEX INVERTER
U9222	3130-0000-027	IC,7406,HEX INV BUFFER/DRIVER
U9223	3131-0000-038	IC,74LS74A,DUAL D FLIP-FLOP
U9224	3131-0000-017	IC,74LS221,DUAL MULTIVIBRATOR
U9225	3131-0000-017	IC,74LS221,DUAL MULTIVIBRATOR
U9226	3131-0000-032	IC,74LS02,QUAD 2-INPUT NOR
U9227	3131-0000-024	IC,74LS123,DUAL MULTIVIBRATOR

7005-7545-200 ASSY, FRONT PANEL B

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
1	2402-0005-603	KNOB
2	2803-0188-001	SCREW 4-40 X 3/16 SHSS
3	2800-7554-600	SPACER,.250OD,.140ID,.174LG
4	2800-7600-186	SPACER,AL,.19 OD,4-40ID,1.50LG
5	2818-7556-600	STANDOFF, DISPLAY
6	7010-3033-400	PCB ASSY,ROTARY SWITCH
7	2803-0188-006	SCREW,4-40 X 3/16 PPHM A
8	7010-3033-500	PCB ASSY,TOGGLE SWITCH
10	3107-7556-000	INSULATOR, FRONT PANEL
11	7010-7532-400	PCB ASSY, THUMBWHEEL SWITCH
12	6004-7800-200	TY-RAP,#4 SCREW MOUNT,5.5L
13	2803-0375-006	SCREW, 4-40 X 3/8 PPHM
14	1400-5064-400	BRKT,FRONT PANEL REF POT MTG
17	2850-7866-300	STANDOFF,HEX,MALE-FEMALE
18	7005-3640-101	MECH ASSY,ATTEN CONTROL,1400
19	7010-3033-600	PCB ASSY,PUSHBUTTON SWITCH
20	2840-0000-003	WASHER,LOCK,INT TOOTH,4
21	2850-0000-020	NUT,HEX,SMALL PAT,4-40
23	2803-0250-003	SCREW,4-40 X 1/4 PFHM
24	7005-7543-700	MECH ASSY, DISPLAY
26	2402-0013-000	KNOB ASSY
27	2840-7600-208	WASHER,ALUM,.38OD,.250ID,.020T
28	2803-0250-001	SCREW,4-40 X 1/4 SHS
29	2402-0921-900	KNOB,RND, .438OD,.128ID,.520LG
30	2803-0125-001	SCREW,4-40 X 1/8 SHS
34	6500-7582-800	MINOR ASSY, FT PNL,1400A-2
36	6004-6005-400	TY-RAP,4.0 LG
45	1400-3059-700	BRKT FNT PNL MTG TRIM BAR
46	1400-3059-600	BRKT FNT PNL MTG RIGHT TOP
47	2850-0000-002	NUT,HEX,SMALL PAT,6-32
48	2840-0000-001	WASHER,LOCK,INT TOOTH,6
49	2840-3070-100	WASHER,FNT PNL .56 OD X .47 ID
50	6020-0125-200	TUBING, HS 1/8ID BLACK UL, 0.333 FT
51	6020-0188-200	TUBING, HS 3/16ID BLACK UL, 0.166 FT
52	2840-0000-042	WASHER,.430D*.375ID*.02T(BNC)
53	2800-7554-500	SPACER, DISPLAY
G1001	2850-1180-100	LUG,GROUND,IT,3/8,ZIERICK 814
G1002	2850-1180-100	LUG,GROUND,IT,3/8,ZIERICK 814
G1003	2850-1180-100	LUG,GROUND,IT,3/8,ZIERICK 814
G1004	2850-1180-100	LUG,GROUND,IT,3/8,ZIERICK 814
G1005	2850-1180-100	LUG,GROUND,IT,3/8,ZIERICK 814
G1006	2850-1180-100	LUG,GROUND,IT,3/8,ZIERICK 814
J1016	2113-0000-020	CONN UG1094/U
J1017	2113-0000-020	CONN UG1094/U
J1018	2113-0000-018	CONN UG1094A/U
J1019	2113-0000-020	CONN UG1094/U
J1020	2113-0000-020	CONN UG1094/U
J1021	2113-0000-020	CONN UG1094/U
R1002	4751-0254-003	POT,250k OHM,1/2W,LIN,CARBON
R1003	4750-7626-200	POT, 20k OHM, 381N-20K-S .60
R1004	4757-5125-350	POT, 25k OHM, 389L-25K-S
R1001/S1001	4780-6325-450	POT,250k OHM, 381NS-250K-S .62
SW1002	5115-0000-016	SWITCH, POWER VDE
W1	7007-7581-300	WIRE HARN ASSY, FRONT PANEL
W2	7007-7582-900	WIRE HARN ASSY, POWER SWITCH
W7	6002-0000-001	WIRE,HOOK,TFE,22GA, 7S,BLACK, 0.83 FT

7005-7545-200 ASSY, FRONT PANEL (cont) B

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
W9	6002-0000-001	WIRE,HOOK,TFE,22GA, 7S,BLACK, 0.83 FT
W11	6002-0000-001	WIRE,HOOK,TFE,22GA, 7S,BLACK, 0.83 FT
W12	6002-0000-001	WIRE,HOOK,TFE,22GA, 7S,BLACK, 0.83 FT
W1006	6050-0261-600	COAX ASSY,316,R F SMB/ES-14
W1008	6050-0261-100	COAX ASSY,316,R F SMB/ES-14
W1010	6050-0262-500	COAX ASSY,316,R F SMB/ES-14

7010-3033-400 PCB ASSY, ROTARY SWITCH A1

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
J1601	6045-3781-401	RIBBON CABLE ASSY,16 COND, 3.5
RN1601	4690-0947-200	RES NETWORK,4.7k,BUSS,10P,SIP
RN1602	4690-0947-200	RES NETWORK,4.7k,BUSS,10P,SIP
RN1603	4690-0947-200	RES NETWORK,4.7k,BUSS,10P,SIP
SW1601	5111-5016-200	SWITCH,ROT,PCM,SP, 8POS, 45TA
SW1602	5111-5013-000	SWITCH,ROT,PCM,SP,12POS, 30TA
SW1603	5111-5013-000	SWITCH,ROT,PCM,SP,12POS, 30TA
X1601	3131-0000-008	IC,74LS147,10-TO-4 LINE ENCDR
X1602	3131-0000-008	IC,74LS147,10-TO-4 LINE ENCDR
X1603	3131-0000-008	IC,74LS147,10-TO-4 LINE ENCDR

7005-3640-101 ASSY, ATTEN CONTROL,1400 G

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
1	2513-1609-800	SHAFT
2	2405-0000-010	SNAP RING X5133-31 TRUARC
3	7010-3630-100	PCB ASSY,OPTICAL COUNTER
5	2840-0000-003	WASHER,LOCK,INT TOOTH,4
6	2803-0250-006	SCREW,4-40 X 1/4 PPHM
7	2409-3662-600	SHUTTER,OPTICAL COUNTER
8	2804-0500-001	SCREW 6-32 X 1/2 SHSS
9	6500-3681-100	MIN ASSY,BEARING BLK ATTN
10	1400-3061-600	BRKT,MTG,25-P M D-SUB CONN
11	2800-7600-128	SPACER,AL,.250OD,.140ID,.300LG
12	2510-3662-400	HUB,SHUTTER,OPTICAL COUNTER
15	2803-0625-002	SCREW,4-40 X 5/8 SHC

7010-3630-100 PCB ASSY, OPTICAL COUNTER A2

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
2	2803-0313-006	SCREW,4-40 X 5/16 PPHM
3	2840-0000-003	WASHER,LOCK,INT TOOTH,4
4	2850-0000-020	NUT,HEX,SMALL PAT,4-40
J1101	2115-1002-006	CONN,MOLEX 22-05-2061
R1101	4703-0331-003	RES,330,1/2W,5%
R1102	4702-0223-003	RES,22k,1/4W,5%
R1103	4702-0223-003	RES,22k,1/4W,5%
U1101	3135-0000-012	OPTO ISOLATOR,H13A1,INTERRUPTA
U1102	3135-0000-012	OPTO ISOLATOR,H13A1,INTERRUPTA

7010-3033-500 PCB ASSY, TOGGLE SWITCH P1

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
2	2800-7600-111	SPACER,AL,.312OD,.260ID,.125LG
J1701	3101-0000-010	SOCKET,16-P DIP,ICN-163-S3-G
S1701	5120-0012-000	SWITCH TOG SPDT ON-ON PC
S1702	5121-6012-000	SWITCH TOG DPDT ON-ON-ON PC
S1703	5120-0012-000	SWITCH TOG SPDT ON-ON PC
S1704	5121-6012-000	SWITCH TOG DPDT ON-ON-ON PC
S1705	5121-6012-000	SWITCH TOG DPDT ON-ON-ON PC
S1706	5121-6012-000	SWITCH TOG DPDT ON-ON-ON PC
S1707	5120-0012-000	SWITCH TOG SPDT ON-ON PC
S1708	5121-6012-000	SWITCH TOG DPDT ON-ON-ON PC
S1709	5120-0012-000	SWITCH TOG SPDT ON-ON PC

7010-3033-600 PCB ASSY, PUSHBUTTON SWITCH B2

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
2	2840-7600-208	WASHER,ALUM,.38OD,.250ID,.020T
3	2850-0700-100	NUT,RING,15/32-32,ALCO N12
4	6011-0022-001	TUBING,TF,24 AWG,NATURAL,TW, 0.083 FT
C1801	1580-4702-105	CAP,47µF,10V,ELE,RDL
C1802	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C1803	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C1804	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C1805	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C1806	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C1807	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C1808	1501-0103-005	CAP,0.01µF,50V,20%,DISC
J1801	2115-1002-006	CONN,MOLEX 22-05-2061
J1802	3101-0000-010	SOCKET,16-P DIP,ICN-163-S3-G
Q1801	4801-0000-001	TRANSISTOR NPN HS SW
R1801	4702-0272-003	RES,2.7k,1/4W,5%
R1802	4702-0472-003	RES,4.7k,1/4W,5%
R1803	4702-0472-003	RES,4.7k,1/4W,5%
R1804	4702-0472-003	RES,4.7k,1/4W,5%
R1805	4702-0105-003	RES,1.0MEG,1/4W,5%
R1806	4702-0105-003	RES,1.0MEG,1/4W,5%
R1807	4702-0105-003	RES,1.0MEG,1/4W,5%
R1808	4702-0105-003	RES,1.0MEG,1/4W,5%
R1809	4702-0105-003	RES,1.0MEG,1/4W,5%
R1810	4702-0105-003	RES,1.0MEG,1/4W,5%
R1811	4702-0472-003	RES,4.7k,1/4W,5%
R1812	4702-0473-003	RES,47k,1/4W,5%
R1813	4702-0472-003	RES,4.7k,1/4W,5%
SW1801	5120-0012-000	SWITCH TOG SPDT ON-ON PC
SW1802	5120-0012-000	SWITCH TOG SPDT ON-ON PC
SW1803	5120-3012-000	SWITCH TOG SPDT ON-OFF-MOM PC
SW1804	5120-0012-000	SWITCH TOG SPDT ON-ON PC
SW1805	5115-0501-572	SWITCH,C&K 8531TCQ W/BLK PB
SW1806	5115-0501-572	SWITCH,C&K 8531TCQ W/BLK PB
SW1807	5115-0501-572	SWITCH,C&K 8531TCQ W/BLK PB
SW1808	5115-0501-572	SWITCH,C&K 8531TCQ W/BLK PB
SW1809	5115-0501-572	SWITCH,C&K 8531TCQ W/BLK PB
SW1810	5115-0501-572	SWITCH,C&K 8531TCQ W/BLK PB
SW1811	5120-0012-000	SWITCH TOG SPDT ON-ON PC
SW1812	5120-0012-000	SWITCH TOG SPDT ON-ON PC
SW1813	5121-6012-000	SWITCH TOG DPDT ON-ON-ON PC
X1801	3226-0001-000	IC,7555,LOW POWER TIMER
X1802	3214-5084-100	IC,4584B,HEX SCHMITT TRIGGER

7010-7532-400 **PCB ASSY, THUMBWHEEL SWITCH** **F**

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
2	3101-0000-007	SOCKET ICN-203-S3G
3	3101-0000-010	SOCKET,16-P DIP,ICN-163-S3-G
4	3101-0000-005	SOCKET ICN-143-S3G
5	7105-5102-001	MECH ASSY,TW SW,DBL INTERR
6	7105-5102-002	MECH ASSY,TW SW,FREQ SEL,1400
7	7105-5102-017	1400A RANGE THMBWL
8	7105-5102-004	MECH ASSY,TW SW,PRF/SQTR
9	7105-5102-005	MECH ASSY,TW SW,XPDR DEV&PULSE
10	7105-5102-006	MECH ASSY,TW SW,DME P2 DEV
11	7105-5102-007	MECH ASSY,TW SW,SLS/ECHO
12	6011-0027-001	TUBING,TF,22 AWG,NATURAL,TW, 0.3 FT
13	6003-0001-005	WIRE,HOOK,TFE,30GA,SOLID,GRN, 0.25 FT
C1501	1580-2202-016	CAP,22µF,16V,ELE,20
C1502	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C1503	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C1504	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C1505	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C1506	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C1507	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C1508	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C1509	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C1510	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C1511	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C1512	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C1513	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C1514	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C1515	1501-0103-005	CAP,0.01µF,50V,20%,DISC
C1516	1501-0102-001	CAP,1000pF,500V,CERAMIC,DISC
C1517	1507-0335-020	CAP,3.3µF,15V,20%,TANT
C1518	1507-0105-023	CAP,1µF,10V,20%,TANT
CR1501	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR1502	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR1503	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
J1501	3101-0000-010	SOCKET,16-P DIP,ICN-163-S3-G
J1502	3101-0000-010	SOCKET,16-P DIP,ICN-163-S3-G
J1503 (P1701)	6045-3781-401	RIBBON CABLE ASSY,16 COND, 3.5
J1504 (P1802)	6045-3781-401	RIBBON CABLE ASSY,16 COND, 3.5
J1505	2115-1002-010	CONN, MOLEX, 22-12-2064
R1501	4702-0683-003	RES,68k,1/4W,5%
R1502	4702-0683-003	RES,68k,1/4W,5%
R1503	4702-0103-003	RES,10k,1/4W,5%
R1504	4702-0103-003	RES,10k,1/4W,5%
R1505	4702-0472-003	RES,4.7k,1/4W,5%
R1506	4702-0103-003	RES,10k,1/4W,5%
R1507	4702-0472-003	RES,4.7k,1/4W,5%
R1508	4702-0472-003	RES,4.7k,1/4W,5%
R1509	4702-0472-003	RES,4.7k,1/4W,5%
R1510	4702-0472-003	RES,4.7k,1/4W,5%
R1511	4702-0472-003	RES,4.7k,1/4W,5%
R1512	4702-0472-003	RES,4.7k,1/4W,5%
R1513	4702-0472-003	RES,4.7k,1/4W,5%
R1514	4702-0472-003	RES,4.7k,1/4W,5%
R1515	4702-0472-003	RES,4.7k,1/4W,5%
R1516	4702-0472-003	RES,4.7k,1/4W,5%
R1517	4702-0472-003	RES,4.7k,1/4W,5%

7010-7532-400 PCB ASSY, THUMBWHEEL SWITCH (cont) F

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R1518	4702-0472-003	RES,4.7k,1/4W,5%
R1519	4702-0472-003	RES,4.7k,1/4W,5%
R1520	4702-0472-003	RES,4.7k,1/4W,5%
R1521	4702-0472-003	RES,4.7k,1/4W,5%
R1522	4702-0472-003	RES,4.7k,1/4W,5%
R1523	4702-0472-003	RES,4.7k,1/4W,5%
R1524	4702-0472-003	RES,4.7k,1/4W,5%
R1525	4702-0472-003	RES,4.7k,1/4W,5%
R1526	4702-0472-003	RES,4.7k,1/4W,5%
R1527	4702-0472-003	RES,4.7k,1/4W,5%
R1528	4702-0472-003	RES,4.7k,1/4W,5%
R1529	4702-0472-003	RES,4.7k,1/4W,5%
R1530	4702-0472-003	RES,4.7k,1/4W,5%
R1531	4702-0472-003	RES,4.7k,1/4W,5%
R1532	4702-0472-003	RES,4.7k,1/4W,5%
R1533	4702-0472-003	RES,4.7k,1/4W,5%
R1534	4702-0472-003	RES,4.7k,1/4W,5%
R1535	4702-0472-003	RES,4.7k,1/4W,5%
R1536	4702-0472-003	RES,4.7k,1/4W,5%
R1537	4702-0472-003	RES,4.7k,1/4W,5%
R1538	4702-0472-003	RES,4.7k,1/4W,5%
R1539	4702-0472-003	RES,4.7k,1/4W,5%
R1540	4701-0471-003	RES,470,1/8W,5%
R1541	4701-0471-003	RES,470,1/8W,5%
R1542	4701-0471-003	RES,470,1/8W,5%
R1543	4701-0471-003	RES,470,1/8W,5%
R1544	4701-0270-003	RES,27,1/8W,5%
R1545	4701-0270-003	RES,27,1/8W,5%
R1546	4701-0270-003	RES,27,1/8W,5%
R1547	4701-0270-003	RES,27,1/8W,5%
R1548	4701-0270-003	RES,27,1/8W,5%
R1549	4701-0270-003	RES,27,1/8W,5%
R1550	4701-0270-003	RES,27,1/8W,5%
R1551	4701-0270-003	RES,27,1/8W,5%
X1501	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
X1502	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
X1503	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
X1504	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
X1505	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
X1506	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
X1507	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
X1508	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
X1509	3131-0000-033	IC,74LS04,HEX INVERTER
X1510	3131-0000-045	IC,74LS138,3-TO-8 DCDR/MPLXR
X1511	3131-0000-045	IC,74LS138,3-TO-8 DCDR/MPLXR
X1512	3131-0000-002	IC,74LS10,TRIPLE 3-INPUT NAND
X1513	3131-0000-045	IC,74LS138,3-TO-8 DCDR/MPLXR
X1514	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
X1515	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
X1516	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
X1517	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
X1518	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
X1519	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
X1520	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
X1521	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
X1522	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR

7010-7532-400 PCB ASSY, THUMBWHEEL SWITCH (cont) F

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
X1523	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
X1524	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
X1525	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
X1526	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
X1527	3131-0000-032	IC,74LS02,QUAD 2-INPUT NOR
X1528	3131-0000-034	IC,74LS73,DUAL JK FLIP-FLOP
X1529	3214-5084-100	IC,4584B,HEX SCHMITT TRIGGER
X1530	3131-0000-044	IC,74LS00,QUAD 2-INPUT NAND
X1531	3131-0000-017	IC,74LS221,DUAL MULTIVIBRATOR
X1532	3131-0000-030	IC,74LS191,BIN SYN U/D COUNTER
X1533	3131-0000-030	IC,74LS191,BIN SYN U/D COUNTER

7010-7532-400 PCB ASSY, THUMBWHEEL SWITCH F1

Revision F1 includes all items in Revision F plus the following:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
12	6011-0022-001	TUBING,TF,24 AWG,NATURAL,TW, 0.3 FT

7005-7543-700 ASSY, DISPLAY B

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
3	2800-0501-000	SPACER,SNAP,TF,.187OD,.250LG
4	2501-7600-112	SPACER,AL,.250OD,.140ID,.250LG
6	2803-0563-006	SCREW,4-40 X 9/16 PPHM
A1	7010-7533-800	PCB ASSY, DISPLAY LOGIC
A2	7010-7533-700	PCB ASSY, DISPLAY

7010-7533-800 PCB ASSY, DISPLAY LOGIC D1

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
2	2850-7866-300	STANDOFF,HEX,MALE-FEMALE
3	2800-7600-141	SPACER,AL,.25 OD,4-40ID,.440LG
4	2803-0188-006	SCREW,4-40 X 3/16 PPHM
7	6045-3080-701	RIBBON CABLE ASSY,16 COND,14.9
C1	1622-0104-001	CAP,0.1µF,50V,CHIP,X7R
C2	1622-0104-001	CAP,0.1µF,50V,CHIP,X7R
C3	1622-0104-001	CAP,0.1µF,50V,CHIP,X7R
C4	1622-0104-001	CAP,0.1µF,50V,CHIP,X7R
C5	1622-0104-001	CAP,0.1µF,50V,CHIP,X7R
C6	1622-0104-001	CAP,0.1µF,50V,CHIP,X7R
C7	1622-0104-001	CAP,0.1µF,50V,CHIP,X7R
C8	1622-0104-001	CAP,0.1µF,50V,CHIP,X7R
C9	1622-0104-001	CAP,0.1µF,50V,CHIP,X7R
C10	1622-0104-001	CAP,0.1µF,50V,CHIP,X7R
C11	1622-0104-001	CAP,0.1µF,50V,CHIP,X7R
C12	1622-0104-001	CAP,0.1µF,50V,CHIP,X7R
C13	1622-0104-001	CAP,0.1µF,50V,CHIP,X7R
C14	1622-0104-001	CAP,0.1µF,50V,CHIP,X7R
C15	1621-0106-016	CAP,10µF,16V,TANT,SMD
C16	1622-0104-001	CAP,0.1µF,50V,CHIP,X7R
C17	1622-0104-001	CAP,0.1µF,50V,CHIP,X7R
C18	1622-0104-001	CAP,0.1µF,50V,CHIP,X7R
C19	1622-0103-001	CAP,0.01µF,50V,CHIP,X7R
J1401	2116-0000-018	CONN,D-SUB,M,25-P,PCM,STR,.125
P2	2129-0123-132	CONN,SOCKET,DUAL,2MM,32-P
P3	2129-0123-132	CONN,SOCKET,DUAL,2MM,32-P
Q1	4801-0000-006	TRANS,2N2222,NPN HS SW,*SOT*
R1	4722-1500-001	RES,150,1/8W,1%
R2	4722-1500-001	RES,150,1/8W,1%
R3	4722-1002-001	RES,10.0k,1/8W,1%
R4	4722-1500-001	RES,150,1/8W,1%
R5	4722-1500-001	RES,150,1/8W,1%
R6	4722-1500-001	RES,150,1/8W,1%
R7	4722-1500-001	RES,150,1/8W,1%
R8	4722-1500-001	RES,150,1/8W,1%
R9	4722-1500-001	RES,150,1/8W,1%
R10	4722-1500-001	RES,150,1/8W,1%
R11	4722-1500-001	RES,150,1/8W,1%
R12	4722-1001-001	RES,1.0k,1/8W,1%
R13	4722-1500-001	RES,150,1/8W,1%
R14	4722-1500-001	RES,150,1/8W,1%
R15	4722-1500-001	RES,150,1/8W,1%
R16	4722-1500-001	RES,150,1/8W,1%
R17	4722-1500-001	RES,150,1/8W,1%
R18	4722-1500-001	RES,150,1/8W,1%
R19	4722-1500-001	RES,150,1/8W,1%
R20	4722-1500-001	RES,150,1/8W,1%
R21	4722-1500-001	RES,150,1/8W,1%
R22	4722-1500-001	RES,150,1/8W,1%
R23	4722-1500-001	RES,150,1/8W,1%
R24	4722-1500-001	RES,150,1/8W,1%
R25	4722-1500-001	RES,150,1/8W,1%
R26	4722-1500-001	RES,150,1/8W,1%
R27	4722-4641-001	RES,4.64k,1/8W,1%
R28	4722-1002-001	RES,10.0k,1/8W,1%

7010-7533-800 PCB ASSY, DISPLAY LOGIC (cont) D1

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R29	4722-1502-001	RES,15.0k,1/8W,1%
U1	3210-3000-009	IC,OCT-BUS XCVR,3-STATE INDL
U2	3210-3000-009	IC,OCT-BUS XCVR,3-STATE INDL
U3	3210-3000-009	IC,OCT-BUS XCVR,3-STATE INDL
U4	3134-0000-034	IC,PRPHL DRVR ARRAY SO-16
U5	3134-0000-034	IC,PRPHL DRVR ARRAY SO-16
U6	3134-0000-034	IC,PRPHL DRVR ARRAY SO-16
U7	3134-0000-034	IC,PRPHL DRVR ARRAY SO-16
U8	3223-0005-002	IC, WATCHDOG TMR/BAT SWOV
U9	3210-3101-012	IC,OCTAL BUS TRANSCEIVER
U10	3210-3000-004	IC,HEX INPUT, ST SO-14 INDL
U11	3271-3042-270	IC, 3042A, -7, 100-P
U12	F380-7520-100	IC,XC1736D DISPLAY LOGIC V1.00
U13	3226-0007-000	IC, TIMER S0-8
U14	3210-3101-012	IC,OCTAL BUS TRANSCEIVER
W1	6008-0000-009	WIRE,HOOK,TFE,30GA,SOLID,WHT, 0.1 FT
XU12	3101-0000-013	SOCKET,8P DIP, DUAL WIPE

7010-7533-700 PCB ASSY, DISPLAY B1

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
DS1301	4600-7500-000	DISPLAY, 10MM 7-SEG
DS1302	4600-7500-000	DISPLAY, 10MM 7-SEG
DS1303	4600-7500-000	DISPLAY, 10MM 7-SEG
DS1304	4600-7500-000	DISPLAY, 10MM 7-SEG
DS1305	4600-7500-000	DISPLAY, 10MM 7-SEG
DS1306	4600-7500-000	DISPLAY, 10MM 7-SEG
DS1307	4600-7500-000	DISPLAY, 10MM 7-SEG
DS1308	4600-7500-000	DISPLAY, 10MM 7-SEG
DS1309	4600-7500-000	DISPLAY, 10MM 7-SEG
DS1310	4600-7500-000	DISPLAY, 10MM 7-SEG
DS1311	4600-7500-000	DISPLAY, 10MM 7-SEG
DS1312	4600-7500-000	DISPLAY, 10MM 7-SEG
DS1313	4600-7500-000	DISPLAY, 10MM 7-SEG
DS1314	4600-7500-000	DISPLAY, 10MM 7-SEG
DS1315	4600-7500-000	DISPLAY, 10MM 7-SEG
DS1316	4600-7500-000	DISPLAY, 10MM 7-SEG
DS1317	4600-7500-000	DISPLAY, 10MM 7-SEG
DS1318	4600-7500-000	DISPLAY, 10MM 7-SEG
DS1319	4600-7500-000	DISPLAY, 10MM 7-SEG
DS1320	4600-7500-000	DISPLAY, 10MM 7-SEG
DS1321	4600-7500-000	DISPLAY, 10MM 7-SEG
DS1322	4600-7500-000	DISPLAY, 10MM 7-SEG
DS1323	4600-7500-000	DISPLAY, 10MM 7-SEG
J1201	2115-1001-006	CONN,MOLEX 22-03-2061
J1302	2129-1023-032	CONN,HEADER,DUAL,2MM,32-P
J1303	2129-1023-032	CONN,HEADER,DUAL,2MM,32-P

7005-7549-000 ASSY, 200 MHz GENERATOR C

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
1	7010-7533-000	PCB ASSY, 200 MHz CONTROL
2	2803-0250-006	SCREW,4-40 X 1/4 PPHM
3	2840-0000-003	WASHER,LOCK,INT TOOTH,4
4	1414-7554-100	COVER, MODULATOR/LEVELER
5	7010-7533-300	PCB ASSY, MODULATOR/LEVELER
5 (SLS Mod)	7010-7533-500	PCB ASSY, MODULATOR/LEVELER
6	6042-7580-800	COAX ASSY, S/R .086,MODULATOR
7	1414-7553-300	COVER, DME FILTER
8	1415-7553-100	ENCL. BLK, 200 MHz RF
9	2104-1427-300	PLUG,BR,1/4-28 X .140
10	3107-7556-100	INSULATOR, CONTROL, 200MHz
11	2106-0000-009	TERM,GND,BR,2-56X.31/.040DX.16
12	1050-0000-073	WIRE,BUS,TINNED COPPER,22GA
13	7010-3034-900	PCB ASSY,OUTPUT SWITCH
14	7010-7532-800	PCB ASSY,PULSE MODULATOR
15	1414-7553-200	COVER,200 MHz RF BLOCK
16	2803-0188-006	SCREW,4-40 X 3/16 PPHM
17	7010-7533-200	PCB ASSY, XPDR FILTER
18	7010-7532-900	PCB ASSY,DME AMP
19	6011-0027-001	TUBING,TF,22 AWG,NATURAL,TW, 0.25 FT
20	2804-0375-051	SCREW,6-32 X 3/8 SPHM,NYLON
21	2104-3050-600	PLUG,TUNNING,BR,1/2-40 X .52
22	2850-0000-008	NUT,HEX,REG PAT,4-40
23	2840-7600-229	WASHER,ALUM,.305D,.196ID,.038T
25	2850-7601-308	SCREW,.680L4-40.19HH,4-40X.190
26	2517-3066-601	BULKHEAD,MOD/LEV,200MHz RF,3.7
27	2517-7554-000	BULKHEAD,MOD/LEVELER 200 MHz
28	2803-0313-006	SCREW,4-40 X 5/16 PPHM
29	2803-0875-006	SCREW 4-40X7/8 PHIL BIND HD
30	2850-3050-800	NUT,JAM,1/2-40,13/16HEX X .38L
33	6004-6005-400	TY-RAP,4.0 LG
36	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
38	2800-7600-106	SPACER,AL,.250OD,4-40ID,.500LG
R2001SAT	4701-0151-003	RES,150,1/8W,5%
R2001SAT	4701-0181-003	RES,180,1/8W,5%
R2001SAT	4701-0271-003	RES,270,1/8W,5%
R2001SAT	4701-0471-003	RES,470,1/8W,5%
R2002SAT	4701-0120-003	RES,12,1/8W,5%
R2002SAT	4701-0180-003	RES,18,1/8W,5%
R2002SAT	4701-0330-003	RES,33,1/8W,5%
R2002SAT	4701-0390-003	RES,39,1/8W,5%
R2003SAT	4701-0151-003	RES,150,1/8W,5%
R2003SAT	4701-0181-003	RES,180,1/8W,5%
R2003SAT	4701-0271-003	RES,270,1/8W,5%
R2003SAT	4701-0471-003	RES,470,1/8W,5%
E2002	2813-0000-002	TERM,SEALECTRO STFM-2C4
E2003	2813-0000-002	TERM,SEALECTRO STFM-2C4
FL2001	5801-0000-006	PI FILTER,EMI/RFI 1500pF 8-32
FL2002	5801-0000-006	PI FILTER,EMI/RFI 1500pF 8-32
FL2003	5801-0000-006	PI FILTER,EMI/RFI 1500pF 8-32
FL2004	5801-0000-006	PI FILTER,EMI/RFI 1500pF 8-32
FL2005	5801-0000-006	PI FILTER,EMI/RFI 1500pF 8-32
FL2006	5801-0000-006	PI FILTER,EMI/RFI 1500pF 8-32
FL2007	5801-0000-006	PI FILTER,EMI/RFI 1500pF 8-32
FL2008	5801-0000-006	PI FILTER,EMI/RFI 1500pF 8-32

7005-7549-000 ASSY, 200 MHz GENERATOR (cont) C

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
FL2009	5801-0000-006	PI FILTER,EMI/RFI 1500pF 8-32
FL2010	5801-0000-006	PI FILTER,EMI/RFI 1500pF 8-32
FL2011	5801-0000-006	PI FILTER,EMI/RFI 1500pF 8-32
FL2012	5801-0000-006	PI FILTER,EMI/RFI 1500pF 8-32
FL2013	5801-0000-006	PI FILTER,EMI/RFI 1500pF 8-32
FL2014	5801-0000-006	PI FILTER,EMI/RFI 1500pF 8-32
FL2015	1526-0000-006	CAP,100pF,200V,FEEDTHRU
FL2016	1526-0000-006	CAP,100pF,200V,FEEDTHRU
FL2017 (SLS Mod)	5801-0000-006	PI FILTER,EMI/RFI 1500pF 8-32
FL2018 (SLS Mod)	5801-0000-006	PI FILTER,EMI/RFI 1500pF 8-32
J2001	2123-0000-038	CONN,M SMB,W/TERM,STR BULKHD
J2002	2123-0000-038	CONN,M SMB,W/TERM,STR BULKHD
J2003	2123-0000-038	CONN,M SMB,W/TERM,STR BULKHD
J2004	2123-0000-038	CONN,M SMB,W/TERM,STR BULKHD
J2005	2123-0000-038	CONN,M SMB,W/TERM,STR BULKHD
J2006	2200-2990-200	CONN,M SMB,W/TERM,R.A,BULKHEAD
J2007	2200-2990-200	CONN,M SMB,W/TERM,R.A,BULKHEAD
J2009	2123-0000-038	CONN,M SMB,W/TERM,STR BULKHD
J2010	2123-0000-038	CONN,M SMB,W/TERM,STR BULKHD
J2012 (SLS Mod)	2123-0000-038	CONN,M SMB,W/TERM,STR BULKHD
L2002	2750-0150-500	CORE,BEAD,STACKPOLE 57-0180
L2003	2750-0150-500	CORE,BEAD,STACKPOLE 57-0180
L2005	6500-7580-700	MINOR ASSY,INDUCTOR 200MHz RF
L2006	6500-7580-700	MINOR ASSY,INDUCTOR 200MHz RF
L2007	6500-7580-700	MINOR ASSY,INDUCTOR 200MHz RF
R2001	4701-0221-003	RES,220,1/8W,5%
R2002	4701-0220-003	RES,22,1/8W,5%
R2003	4701-0221-003	RES,220,1/8W,5%
W2001	6047-7581-800	WIRE ASSY, 200MHz
	6003-0000-003	WIRE,HOOK,TFE,26GA, 7S,RED, 1.5 FT
	6003-0000-005	WIRE,HOOK,TFE,26GA, 7S,YELLOW, 1.3 FT
	6003-0000-009	WIRE,HOOK,TFE,26GA, 7S,GRAY, 1.3 FT

7005-7549-000 ASSY, 200 MHz GENERATOR D

Revision D contains all items in Revision C plus the following:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
39	2850-0000-100	LUG, GND, #8 RT ANG NON-LOCKING
C2001	1506-0470-017	CAP, 47pF, 100V, NPO

7005-7549-000 ASSY, 200 MHz GENERATOR E

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION

Revision E contains all items in Revision D.

7005-7549-000 ASSY, 200 MHz GENERATOR F

Revision F contains all items in Revision E plus the following:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
L2012	1801-0228-001	IND, .22UH, .140 OHM, 1025-04

7010-7532-800 PCB ASSY, PULSE MODULATOR B

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
2	6051-0440-350	COAX ASSY,178,R F SMB/S TERMNR
C2101	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U9
C2102	1506-0220-017	CAP,22pF,100V,5%,NPO
C2103	1506-0103-017	CAP,0.01µF,100V,NPO
C2104	1508-0476-018	CAP,47µF,35V,TANT,RDL
C2105	1506-0470-017	CAP,47pF,100V,NPO
C2106	1506-0220-017	CAP,22pF,100V,5%,NPO
C2106 (SLS Mod)	1506-0221-017	CAP,220pF,100V,5%,NPO
C2107	1580-4792-305	CAP,4.7µF,35V
C2108	1506-0103-017	CAP,0.01µF,100V,NPO
C2109	1506-0221-017	CAP,220pF,100V,5%,NPO
C2110	1506-0221-017	CAP,220pF,100V,5%,NPO
C2111	1506-0103-017	CAP,0.01µF,100V,NPO
C2112	1506-0103-017	CAP,0.01µF,100V,NPO
C2114	1506-0102-017	CAP,1000pF,100V,5%,NPO
C2115	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
CR2101	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR2102	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR2103	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR2104	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR2105	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR2106	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR2107	4816-0000-001	DIODE,5082-2800,S BAR, 70VBR
CR2108	4816-0000-001	DIODE,5082-2800,S BAR, 70VBR
J2101	2200-2010-400	CONN,M SMB,PC MTG,STR,.453LG
L2101	1801-0109-001	IND, 1.0 µH, 1 OHM,1025-20
L2102	1801-0109-001	IND, 1.0 µH, 1 OHM,1025-20
L2103	1801-0109-001	IND, 1.0 µH, 1 OHM,1025-20
L2104	1801-0109-001	IND, 1.0 µH, 1 OHM,1025-20
L2105	1801-0109-001	IND, 1.0 µH, 1 OHM,1025-20
L2106	1801-0109-001	IND, 1.0 µH, 1 OHM,1025-20
MXR2101	5250-0100-100	MIXER,RF,DBL BAL, 1-500MHz
MXR2102	5250-0100-100	MIXER,RF,DBL BAL, 1-500MHz
Q2101	5050-2401-000	TRANS,VN10KM N-CH VMOSFET
Q2102	4807-0000-002	TRANS, 2N3905 ,PNP HS SW
Q2103	4809-0100-100	TRANS,55100 NPN HF AMP
Q2104	5050-2401-000	TRANS,VN10KM N-CH VMOSFET
Q2105	4807-0000-002	TRANS, 2N3905 ,PNP HS SW
Q2106	4803-0000-004	TRANS,NPN,LP/VHF AMP
Q2106 (SLS Mod)	5010-0504-000	TRANS,RF NPN LO PWR MACRO-X
Q2108	4807-0000-002	TRANS, 2N3905 ,PNP HS SW
Q2109	4807-0000-001	TRANS, 2N3903 ,NPN HS SW
R2102	4701-0101-003	RES,100,1/8W,5%
R2103	4702-0220-003	RES,22,1/4W,5%
R2104	4702-0220-003	RES,22,1/4W,5%
R2105	4701-0152-003	RES,1.5k,1/8W,5%
R2106	4701-0101-003	RES,100,1/8W,5%
R2107	4701-0473-003	RES,47k,1/8W,5%
R2108	4701-0471-003	RES,470,1/8W,5%
R2110	4701-0101-003	RES,100,1/8W,5%
R2111	4701-0101-003	RES,100,1/8W,5%
R2112	4701-0152-003	RES,1.5k,1/8W,5%
R2113	4702-0101-003	RES,100,1/4W,5%
R2113 (SLS Mod)	4702-0221-003	RES,220,1/4W,5%
R2114	4706-2212-001	RES,22.1k,1/4W,1%

7010-7532-800 PCB ASSY, PULSE MODULATOR (cont) B

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R2114 (SLS Mod)	4702-2102-003	RES,1.0k,1/4W,1%
R2115	4702-0331-003	RES,330,1/4W,5%
R2115 (SLS Mod)	4703-0121-003	RES,120,1/2W,5%
R2116	4702-0102-003	RES,1.0k,1/4W,5%
R2117	4702-0102-003	RES,1.0k,1/4W,5%
R2121	4701-0271-003	RES,270,1/8W,5%
R2122	4701-0221-003	RES,220,1/8W,5%
R2123	4701-0472-003	RES,4.7k,1/8W,5%
R2124	4701-0222-003	RES,2.2k,1/8W,5%
R2125	4752-0102-002	POT 1k OHM
TP2101	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
	1050-0000-073	WIRE,BUS,TINNED COPPER,22GA

7010-7533-200 PCB ASSY, TRANSPONDER (XPDR) FILTER B1

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
2	6051-0440-350	COAX ASSY,178,R F SMB/S TERMNR
C2201	1506-0180-017	CAP,18pF,100V,5%,NPO
C2202	1506-0159-017	CAP,1.5pF,100V,5%,NPO
C2203	1506-0030-017	CAP,3.3pF,100V,MICA,17
C2204	1506-0120-017	CAP,12pF,100V,5%,NPO
C2205	1506-0180-017	CAP,18pF,100V,5%,NPO
L2201	1801-0108-001	IND, .10µH,.08OHM,1025-94
L2202	1804-0000-014	IND,VAR, .032-.042µH,RED 618
L2203	1804-0000-003	IND,VAR, .036-.062µH,RED 426
L2205	1804-0000-014	IND,VAR, .032-.042µH,RED 618
L2206	1801-0108-001	IND, .10µH,.08OHM,1025-94

7010-7533-200 PCB ASSY, XPDR FILTER C

Revision C includes all items in Revision B1 with the following change:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
C2204	1506-0100-017	CAP,10pF,100V,5%,NPO

7010-7532-900 PCB ASSY, DME AMP B2

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
2	6051-0440-350	COAX ASSY,178,R F SMB/S TERMNR
3	2400-7856-800	LABEL,ESD
C2301	1506-0471-017	CAP,470pF,100V,5%,NPO
C2302	1506-0221-017	CAP,220pF,100V,5%,NPO
C2303	1506-0221-017	CAP,220pF,100V,5%,NPO
C2304	1506-0220-017	CAP,22pF,100V,5%,NPO
C2305	1508-0476-018	CAP,47µF,35V,TANT,RDL
C2306	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C2307	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
J2302	2200-2010-400	CONN,M SMB,PC MTG,STR,.453LG
L2301	1801-0109-001	IND, 1.0 µH, 1 OHM,1025-20
L2302	1801-0109-001	IND, 1.0 µH, 1 OHM,1025-20
L2303	1801-0109-001	IND, 1.0 µH, 1 OHM,1025-20
R2301	4702-0221-003	RES,220,1/4W,5%
R2302	4701-0220-003	RES,22,1/8W,5%
R2303	4753-0101-002	POT,TRIM 100 OHM
R2304	4701-0100-003	RES,10,1/8W,5%
R2306	4701-0220-003	RES,22,1/8W,5%
R2307	4702-0181-003	RES,180,1/4W,5%
U2301	5050-2501-300	IC,MSA-0385,AMPLIFIER
U2302	5050-2501-300	IC,MSA-0385,AMPLIFIER

7010-3034-900 PCB ASSY, OUTPUT SWITCH A1

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
2	1050-0000-073	WIRE,BUS,TINNED COPPER,22GA
C2401	1506-0220-017	CAP,22pF,100V,5%,NPO
C2402	1501-0103-005	CAP,0.01µF,50V,20%,DISC
C2403	1501-0103-005	CAP,0.01µF,50V,20%,DISC
C2404	1506-0221-017	CAP,220pF,100V,5%,NPO
C2405	1506-0221-017	CAP,220pF,100V,5%,NPO
CR2401	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR2402	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR2403	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR2404	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR2405	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR2406	4828-0000-002	DIODE,PIN,.3 pF,100 ns
E2404	6051-0440-350	COAX ASSY,178,R F SMB/S TERMNR
J2401	2200-2010-400	CONN,M SMB,PC MTG,STR,.453LG
L2401	1801-0108-001	IND, .10µH,.08OHM,1025-94
L2402	1801-0108-001	IND, .10µH,.08OHM,1025-94
L2403	1801-0109-001	IND, 1.0 µH, 1 OHM,1025-20
L2404	1801-0109-001	IND, 1.0 µH, 1 OHM,1025-20
L2405	1801-0109-001	IND, 1.0 µH, 1 OHM,1025-20
L2406	1801-0109-001	IND, 1.0 µH, 1 OHM,1025-20
R2401	4702-0102-003	RES,1.0k,1/4W,5%

7010-7533-300 PCB ASSY, MODULATOR/LEVELER F1

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
2	2400-7856-800	LABEL,ESD
3	4835-0000-012	PAD,MTG,TO-5 TRANS, 511-038
4	1050-0000-073	WIRE,BUS,TINNED COPPER,22GA
C2501	1506-0102-017	CAP,1000pF,100V,5%,NPO
C2502	1506-0103-017	CAP,0.01µF,100V,NPO
C2503	1506-0102-017	CAP,1000pF,100V,5%,NPO
C2504	1506-0102-017	CAP,1000pF,100V,5%,NPO
C2505	1506-0101-017	CAP,100pF,100V,5%,NPO
C2506	1506-0180-017	CAP,18pF,100V,5%,NPO
C2507	1506-0470-017	CAP,47pF,100V,NPO
C2508SAT	1506-0390-017	CAP,39pF,100V,5%,NPO
C2509	1506-0470-017	CAP,47pF,100V,NPO
C2510	1506-0820-017	CAP,82pF,100V,5%,NPO
C2511	1506-0103-017	CAP,0.01µF,100V,NPO
C2512	1506-0103-017	CAP,0.01µF,100V,NPO
C2513	1506-0101-017	CAP,100pF,100V,5%,NPO
C2514	1506-0122-017	CAP,1200pF,100V,5%,NPO
C2515	1506-0101-017	CAP,100pF,100V,5%,NPO
C2516	1506-0101-017	CAP,100pF,100V,5%,NPO
C2517	1506-0101-017	CAP,100pF,100V,5%,NPO
C2518	1506-0103-017	CAP,0.01µF,100V,NPO
C2519	1506-0103-017	CAP,0.01µF,100V,NPO
C2520	1506-0103-017	CAP,0.01µF,100V,NPO
C2521	1506-0102-017	CAP,1000pF,100V,5%,NPO
C2524	1506-0050-017	CAP,5.6pF,100V,5%,NPO
C2525	1506-0470-017	CAP,47pF,100V,NPO
C2526	1506-0470-017	CAP,47pF,100V,NPO
C2527	1506-0020-017	CAP,2.2pF,100V,NPO,25
C2528	1506-0470-017	CAP,47pF,100V,NPO
C2529	1506-0470-017	CAP,47pF,100V,NPO
C2530	1506-0470-017	CAP,47pF,100V,NPO
C2531	1506-0470-017	CAP,47pF,100V,NPO
C2532	1506-0470-017	CAP,47pF,100V,NPO
C2533	1506-0150-017	CAP,15pF,100V,5%,NPO
C2534	1506-0020-017	CAP,2.2pF,100V,NPO,25
C2537	1506-0150-017	CAP,15pF,100V,5%,NPO
C2538	1506-0331-017	CAP,330pF,100V,5%,NPO
C2539	1506-0331-017	CAP,330pF,100V,5%,NPO
C2540	1506-0103-017	CAP,0.01µF,100V,NPO
C2541	1506-0470-017	CAP,47pF,100V,NPO
C2542	1506-0102-017	CAP,1000pF,100V,5%,NPO
C2543	1506-0680-017	CAP,68pF,100V,5%,NPO
C2544	1506-0680-017	CAP,68pF,100V,5%,NPO
C2545	1580-4792-305	CAP,4.7µF,35V
C2546	1580-4792-305	CAP,4.7µF,35V
C2547	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C2548	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C2549	1506-0103-017	CAP,0.01µF,100V,NPO
C2550	1506-0103-017	CAP,0.01µF,100V,NPO
C2551	1506-0103-017	CAP,0.01µF,100V,NPO
C2552	1506-0103-017	CAP,0.01µF,100V,NPO
C2553	1506-0680-017	CAP,68pF,100V,5%,NPO
C2554	1506-0103-017	CAP,0.01µF,100V,NPO
C2555	1506-0103-017	CAP,0.01µF,100V,NPO
C2556	1506-0100-017	CAP,10pF,100V,5%,NPO

7010-7533-300 PCB ASSY, MODULATOR/LEVELER (cont) F1

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
CR2501	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR2502	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR2503	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR2504	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR2505	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR2506	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR2507	4915-0500-101	DIODE,5082-2301,S BAR, 70VBR
CR2508	4915-0500-101	DIODE,5082-2301,S BAR, 70VBR
CR2509	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR2510	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR2511	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR2512	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR2513	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR2514	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR2515	4915-0500-101	DIODE,5082-2301,S BAR, 70VBR
CR2516	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR2517	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR2518	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR2519	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR2520	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR2521	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR2522	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR2523	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
HR2501	5300-0000-002	CRYSTAL OVEN
L2501	1801-0689-001	IND, 6.8 µH, 2 OHM,1025-40
L2502	1804-0000-010	IND,VAR, .061-.101µH,YEL 618
L2503	1804-0000-014	IND,VAR, .032-.042µH,RED 618
L2504	1804-0000-014	IND,VAR, .032-.042µH,RED 618
L2505	1804-0000-014	IND,VAR, .032-.042µH,RED 618
L2506	1801-0229-001	IND, 2.2 µH,.4 OHM,1025-28
L2507	1801-0229-001	IND, 2.2 µH,.4 OHM,1025-28
L2508	1804-0000-014	IND,VAR, .032-.042µH,RED 618
L2509	1804-0000-014	IND,VAR, .032-.042µH,RED 618
L2512	1801-0228-001	IND, .22µH,.14OHM,1025-04
L2513	1801-0109-001	IND, 1.0 µH, 1 OHM,1025-20
L2514	1801-0109-001	IND, 1.0 µH, 1 OHM,1025-20
L2515	1801-0228-001	IND, .22µH,.14OHM,1025-04
L2516	1801-0228-001	IND, .22µH,.14OHM,1025-04
L2517	1801-0228-001	IND, .22µH,.14OHM,1025-04
L2518	1801-0228-001	IND, .22µH,.14OHM,1025-04
L2519	1801-0228-001	IND, .22µH,.14OHM,1025-04
MXR2501	5250-0100-100	MIXER,RF,DBL BAL, 1-500MHz
Q2501	4809-0100-100	TRANS,55100 NPN HF AMP
Q2502	4803-0000-004	TRANS,NPN,LP/VHF AMP
Q2503	4803-0000-004	TRANS,NPN,LP/VHF AMP
Q2504	4809-0100-100	TRANS,55100 NPN HF AMP
Q2505	4809-0100-100	TRANS,55100 NPN HF AMP
Q2506	4807-0000-002	TRANS, 2N3905, PNP HS SW
R2501	4701-0472-003	RES,4.7k,1/8W,5%
R2502	4701-0472-003	RES,4.7k,1/8W,5%
R2503	4701-0102-003	RES,1.0k,1/8W,5%
R2504	4701-0332-003	RES,3.3k,1/8W,5%
R2505	4701-0680-003	RES,68,1/8W,5%
R2506	4701-0332-003	RES,3.3k,1/8W,5%
R2507	4701-0332-003	RES,3.3k,1/8W,5%

7010-7533-300 PCB ASSY, MODULATOR/LEVELER (cont) F1

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R2508	4701-0332-003	RES,3.3k,1/8W,5%
R2509	4706-6342-001	RES,63.4k,1/4W,1%
R2510	4701-0471-003	RES,470,1/8W,5%
R2511	4701-0332-003	RES,3.3k,1/8W,5%
R2512	4701-0332-003	RES,3.3k,1/8W,5%
R2513	4701-0180-003	RES,18,1/8W,5%
R2514	4706-4322-001	RES,43.2k,1/4W,1%
R2515	4701-0680-003	RES,68,1/8W,5%
R2516	4701-0223-003	RES,22k,1/8W,5%
R2517	4701-0223-003	RES,22k,1/8W,5%
R2518	4701-0180-003	RES,18,1/8W,5%
R2519	4702-0331-003	RES,330,1/4W,5%
R2520	4702-0331-003	RES,330,1/4W,5%
R2521	4701-0223-003	RES,22k,1/8W,5%
R2522	4701-0472-003	RES,4.7k,1/8W,5%
R2523	4706-3322-001	RES,33.2k,1/4W,1%
R2524	4701-0224-003	RES,220k,1/8W,5%
R2525	4701-0273-003	RES,27k,1/8W,5%
R2526	4701-0471-003	RES,470,1/8W,5%
R2527	4701-0224-003	RES,220k,1/8W,5%
R2528	4701-0561-003	RES,560,1/8W,5%
R2529	4701-0471-003	RES,470,1/8W,5%
R2530	4701-0103-003	RES,10k,1/8W,5%
R2531	4701-0391-003	RES,390,1/8W,5%
R2532	4701-0471-003	RES,470,1/8W,5%
R2533	4701-0224-003	RES,220k,1/8W,5%
R2534	4701-0680-003	RES,68,1/8W,5%
R2535	4701-0680-003	RES,68,1/8W,5%
R2536	4701-0103-003	RES,10k,1/8W,5%
R2537	4701-0473-003	RES,47k,1/8W,5%
R2538	4701-0224-003	RES,220k,1/8W,5%
R2539	4701-0102-003	RES,1.0k,1/8W,5%
R2540	4701-0471-003	RES,470,1/8W,5%
R2541	4701-0222-003	RES,2.2k,1/8W,5%
R2542	4701-0470-003	RES,47,1/8W,5%
R2543	4701-0470-003	RES,47,1/8W,5%
R2544	4701-0102-003	RES,1.0k,1/8W,5%
R2545	4701-0471-003	RES,470,1/8W,5%
R2546	4706-1623-001	RES,162k,1/4W,1%
R2547	4752-0203-002	POT 20k OHM
R2548	4701-0103-003	RES,10k,1/8W,5%
R2549	4701-0104-003	RES,100k,1/8W,5%
R2550	4753-0203-002	POT 20k OHM
R2551	4701-0330-003	RES,33,1/8W,5%
R2552	4701-0151-003	RES,150,1/8W,5%
R2553	4701-0151-003	RES,150,1/8W,5%
R2554	4752-0103-002	POT 10k OHM
R2555	4701-0270-003	RES,27,1/8W,5%
R2556	4701-0222-003	RES,2.2k,1/8W,5%
R2557	4701-0222-003	RES,2.2k,1/8W,5%
R2558	4701-0270-003	RES,27,1/8W,5%
R2559	4701-0180-003	RES,18,1/8W,5%
R2560	4701-0150-003	RES,15,1/8W,5%
R2561	4701-0270-003	RES,27,1/8W,5%
R2562	4701-0222-003	RES,2.2k,1/8W,5%

7010-7533-300 PCB ASSY, MODULATOR/LEVELER (cont) F1

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R2563	4701-0222-003	RES,2.2k,1/8W,5%
R2564	4701-0270-003	RES,27,1/8W,5%
R2565	4701-0680-003	RES,68,1/8W,5%
R2566	4701-0680-003	RES,68,1/8W,5%
R2567	4752-0504-002	POT 500k OHM
R2568	4701-0153-003	RES,15k,1/8W,5%
R2569	4701-0104-003	RES,100k,1/8W,5%
R2570	4701-0180-003	RES,18,1/8W,5%
TP2501	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP2502	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
U2501	3221-0006-000	IC,5532,DUAL LOW NOISE OP AMP
U2502	3221-0006-000	IC,5532,DUAL LOW NOISE OP AMP
Y2501	2363-0114-000	XTAL,100.000000MHz,3 S,HC-35/U

7010-7533-300 PCB ASSY, MODULATOR/LEVELER G

Revision G includes all items in Revision F1 with a change to the following:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
Y2501	2363-0114-000	XTAL,100MHZ,3 S,HC-35/U,OVEN

7010-7533-300 PCB ASSY, MODULATOR/LEVELER H

Revision H includes all items in Revision G.

7010-7533-300 PCB ASSY, MODULATOR/LEVELER J

Revision J includes all items in Revision H plus the following:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
C2522	1523-0000-014	CAP,3pF,50V,NPO,CHIP
C2522SAT	1523-0000-017	CAP,2pF,100V,CHIP
C2522SAT	1620-1090-511	CAP,1pF,50V,CHIP
TP2501	2114-0000-007	TEST POINT, LOOP PROFILE, WHITE
TP2502	2114-0000-007	TEST POINT, LOOP PROFILE, WHITE

7010-7533-300 PCB ASSY, MODULATOR/LEVELER K

Revision K includes all items in Revision J with the following change:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
C2548	1508-0107-020	CAP,100µF,20V,TANT,RDL

7010-7533-500 PCB ASSY, MODULATOR/LEVELER (SLS Modification) A

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
2	2400-7856-800	LABEL,ESD
3	4835-0000-012	PAD,MTG,TO-5 TRANS, 511-038
4	1050-0000-073	WIRE,BUS,TINNED COPPER,22GA
C2501	1506-0102-017	CAP,1000pF,100V,5%,NPO
C2502	1506-0103-017	CAP,0.01µF,100V,NPO
C2503	1506-0102-017	CAP,1000pF,100V,5%,NPO
C2504	1506-0102-017	CAP,1000pF,100V,5%,NPO
C2505	1506-0101-017	CAP,100pF,100V,5%,NPO
C2506	1506-0101-017	CAP,100pF,100V,5%,NPO
C2507	1506-0470-017	CAP,47pF,100V,NPO
C2508SAT	1506-0390-017	CAP,39pF,100V,5%,NPO
C2508SAT	1506-0330-017	CAP,33pF,100V,5%,NPO
C2508SAT	1506-0470-017	CAP,47pF,100V,NPO
C2509	1506-0470-017	CAP,47pF,100V,NPO
C2510	1506-0820-017	CAP,82pF,100V,5%,NPO
C2511	1506-0103-017	CAP,0.01µF,100V,NPO
C2512	1506-0103-017	CAP,0.01µF,100V,NPO
C2513	1506-0101-017	CAP,100pF,100V,5%,NPO
C2514	1506-0122-017	CAP,1200pF,100V,5%,NPO
C2515	1506-0101-017	CAP,100pF,100V,5%,NPO
C2516	1506-0101-017	CAP,100pF,100V,5%,NPO
C2517	1506-0101-017	CAP,100pF,100V,5%,NPO
C2518	1506-0103-017	CAP,0.01µF,100V,NPO
C2519	1506-0103-017	CAP,0.01µF,100V,NPO
C2520	1506-0103-017	CAP,0.01µF,100V,NPO
C2521	1506-0102-017	CAP,1000pF,100V,5%,NPO
C2524	1506-0050-017	CAP,5.6pF,100V,5%,NPO
C2525	1506-0470-017	CAP,47pF,100V,NPO
C2526	1506-0470-017	CAP,47pF,100V,NPO
C2527	1506-0020-017	CAP,2.2pF,100V,NPO,25
C2528	1506-0470-017	CAP,47pF,100V,NPO
C2529	1506-0470-017	CAP,47pF,100V,NPO
C2530	1506-0470-017	CAP,47pF,100V,NPO
C2531	1506-0470-017	CAP,47pF,100V,NPO
C2532	1506-0470-017	CAP,47pF,100V,NPO
C2533	1506-0150-017	CAP,15pF,100V,5%,NPO
C2534	1506-0020-017	CAP,2.2pF,100V,NPO,25
C2537	1506-0150-017	CAP,15pF,100V,5%,NPO
C2538	1506-0331-017	CAP,330pF,100V,5%,NPO
C2539	1506-0331-017	CAP,330pF,100V,5%,NPO
C2540	1506-0103-017	CAP,0.01µF,100V,NPO
C2541	1506-0470-017	CAP,47pF,100V,NPO
C2542	1506-0102-017	CAP,1000pF,100V,5%,NPO
C2543	1506-0680-017	CAP,68pF,100V,5%,NPO
C2544	1506-0680-017	CAP,68pF,100V,5%,NPO
C2545	1580-4792-305	CAP,4.7µF,35V
C2546	1580-4792-305	CAP,4.7µF,35V
C2547	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C2548	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C2549	1506-0103-017	CAP,0.01µF,100V,NPO
C2550	1506-0103-017	CAP,0.01µF,100V,NPO
C2551	1506-0103-017	CAP,0.01µF,100V,NPO
C2552	1506-0103-017	CAP,0.01µF,100V,NPO
C2553	1506-0680-017	CAP,68pF,100V,5%,NPO
C2554	1506-0103-017	CAP,0.01µF,100V,NPO

7010-7533-500 PCB ASSY, MODULATOR/LEVELER (SLS Modification) (cont) A

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
C2555	1506-0103-017	CAP,0.01µF,100V,NPO
C2556	1506-0680-017	CAP,68pF,100V,5%,NPO
C2557	1506-0680-017	CAP,68pF,100V,5%,NPO
C2558	1506-0220-017	CAP,22pF,100V,5%,NPO
C2559	1506-0220-017	CAP,22pF,100V,5%,NPO
C2560	1580-4792-305	CAP,4.7µF,35V
C2561	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C2562	1506-0102-017	CAP,1000pF,100V,5%,NPO
C2563	1506-0102-017	CAP,1000pF,100V,5%,NPO
C2564	1506-0102-017	CAP,1000pF,100V,5%,NPO
C2565	1506-0102-017	CAP,1000pF,100V,5%,NPO
C2566	1506-0103-017	CAP,0.01µF,100V,NPO
C2567	1506-0103-017	CAP,0.01µF,100V,NPO
C2568	1506-0103-017	CAP,0.01µF,100V,NPO
C2569	1506-0103-017	CAP,0.01µF,100V,NPO
C2570	1506-0103-017	CAP,0.01µF,100V,NPO
CR2501	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR2502	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR2503	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR2504	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR2505	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR2506	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR2507	4915-0500-101	DIODE,5082-2301,S BAR, 70VBR
CR2508	4915-0500-101	DIODE,5082-2301,S BAR, 70VBR
CR2509	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR2510	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR2511	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR2512	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR2513	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR2514	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR2515	4915-0500-101	DIODE,5082-2301,S BAR, 70VBR
CR2516	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR2517	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR2518	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR2519	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR2520	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR2521	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR2522	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR2523	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
HR2501	5300-0000-002	CRYSTAL OVEN
L2501	1801-0689-001	IND, 6.8 µH, 2 OHM,1025-40
L2502	1804-0000-010	IND,VAR, .061-.101µH,YEL 618
L2503	1801-0337-002	IND, .033µH,.035OHM102604
L2504	1801-0337-002	IND, .033µH,.035OHM102604
L2505	1804-0000-014	IND,VAR, .032-.042µH,RED 618
L2506	1801-0229-001	IND, 2.2 µH,.4 OHM,1025-28
L2507	1801-0229-001	IND, 2.2 µH,.4 OHM,1025-28
L2508	1804-0000-014	IND,VAR, .032-.042µH,RED 618
L2509	1804-0000-014	IND,VAR, .032-.042µH,RED 618
L2512	1801-0228-001	IND, .22µH,.14OHM,1025-04
L2513	1801-0109-001	IND, 1.0 µH, 1 OHM,1025-20
L2514	1801-0109-001	IND, 1.0 µH, 1 OHM,1025-20
L2515	1801-0228-001	IND, .22µH,.14OHM,1025-04
L2516	1801-0228-001	IND, .22µH,.14OHM,1025-04
L2517	1801-0228-001	IND, .22µH,.14OHM,1025-04

7010-7533-500 PCB ASSY, MODULATOR/LEVELER (SLS Modification) (cont) A

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
L2518	1801-0228-001	IND, .22µH,.14OHM,1025-04
L2519	1801-0228-001	IND, .22µH,.14OHM,1025-04
L2520	1801-0159-001	IND, 1.5 µH,.22OHM,1025-24
L2521	1801-0159-001	IND, 1.5 µH,.22OHM,1025-24
MXR2501	5250-0100-100	MIXER,RF,DBL BAL, 1-500MHz
Q2501	4809-0100-100	TRANS,55100 NPN HF AMP
Q2502	4803-0000-004	TRANS,NPN,LP/VHF AMP
Q2503	4803-0000-004	TRANS,NPN,LP/VHF AMP
Q2504	4809-0100-100	TRANS,55100 NPN HF AMP
Q2505	4809-0100-100	TRANS,55100 NPN HF AMP
Q2506	4807-0000-002	TRANS, 2N3905 ,PNP HS SW
Q2507	4803-0000-004	TRANS,NPN,LP/VHF AMP
Q2508	4803-0000-004	TRANS,NPN,LP/VHF AMP
R2501	4701-0472-003	RES,4.7k,1/8W,5%
R2502	4701-0472-003	RES,4.7k,1/8W,5%
R2503	4701-0102-003	RES,1.0k,1/8W,5%
R2504	4701-0332-003	RES,3.3k,1/8W,5%
R2505	4701-0680-003	RES,68,1/8W,5%
R2506	4701-0332-003	RES,3.3k,1/8W,5%
R2507	4701-0332-003	RES,3.3k,1/8W,5%
R2508	4701-0332-003	RES,3.3k,1/8W,5%
R2509	4706-6342-001	RES,63.4k,1/4W,1%
R2510	4701-0471-003	RES,470,1/8W,5%
R2511	4701-0332-003	RES,3.3k,1/8W,5%
R2512	4701-0332-003	RES,3.3k,1/8W,5%
R2513	4701-0180-003	RES,18,1/8W,5%
R2514	4706-4322-001	RES,43.2k,1/4W,1%
R2515	4701-0680-003	RES,68,1/8W,5%
R2516	4701-0223-003	RES,22k,1/8W,5%
R2517	4701-0223-003	RES,22k,1/8W,5%
R2518	4701-0180-003	RES,18,1/8W,5%
R2519	4702-0331-003	RES,330,1/4W,5%
R2520	4702-0331-003	RES,330,1/4W,5%
R2521	4701-0223-003	RES,22k,1/8W,5%
R2522	4701-0472-003	RES,4.7k,1/8W,5%
R2523	4706-3322-001	RES,33.2k,1/4W,1%
R2524	4701-0224-003	RES,220k,1/8W,5%
R2525	4701-0333-003	RES,33k,1/8W,5%
R2526	4701-0471-003	RES,470,1/8W,5%
R2527	4701-0224-003	RES,220k,1/8W,5%
R2528	4701-0561-003	RES,560,1/8W,5%
R2529	4701-0471-003	RES,470,1/8W,5%
R2530	4701-0103-003	RES,10k,1/8W,5%
R2531	4701-0391-003	RES,390,1/8W,5%
R2532	4701-0471-003	RES,470,1/8W,5%
R2533	4701-0224-003	RES,220k,1/8W,5%
R2534	4701-0680-003	RES,68,1/8W,5%
R2535	4701-0680-003	RES,68,1/8W,5%
R2536	4701-0103-003	RES,10k,1/8W,5%
R2537	4701-0473-003	RES,47k,1/8W,5%
R2538	4701-0224-003	RES,220k,1/8W,5%
R2539	4701-0102-003	RES,1.0k,1/8W,5%
R2540	4701-0471-003	RES,470,1/8W,5%
R2541	4701-0222-003	RES,2.2k,1/8W,5%
R2542	4701-0470-003	RES,47,1/8W,5%

7010-7533-500 PCB ASSY, MODULATOR/LEVELER (SLS Modification) (cont) A

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R2543	4701-0470-003	RES,47,1/8W,5%
R2544	4701-0102-003	RES,1.0k,1/8W,5%
R2545	4701-0471-003	RES,470,1/8W,5%
R2546	4706-1623-001	RES,162k,1/4W,1%
R2547	4752-0203-002	POT 20k OHM
R2548	4701-0103-003	RES,10k,1/8W,5%
R2549	4701-0104-003	RES,100k,1/8W,5%
R2550	4753-0203-002	POT 20k OHM
R2551	4701-0330-003	RES,33,1/8W,5%
R2552	4701-0151-003	RES,150,1/8W,5%
R2553	4701-0151-003	RES,150,1/8W,5%
R2554	4752-0103-002	POT 10k OHM
R2555	4701-0270-003	RES,27,1/8W,5%
R2556	4701-0222-003	RES,2.2k,1/8W,5%
R2557	4701-0102-003	RES,1.0k,1/8W,5%
R2558	4701-0270-003	RES,27,1/8W,5%
R2559	4701-0470-003	RES,47,1/8W,5%
R2560	4701-0150-003	RES,15,1/8W,5%
R2561	4701-0270-003	RES,27,1/8W,5%
R2562	4701-0222-003	RES,2.2k,1/8W,5%
R2563	4701-0102-003	RES,1.0k,1/8W,5%
R2564	4701-0270-003	RES,27,1/8W,5%
R2565	4701-0680-003	RES,68,1/8W,5%
R2566	4701-0680-003	RES,68,1/8W,5%
R2567	4752-0504-002	POT 500k OHM
R2568	4701-0153-003	RES,15k,1/8W,5%
R2569	4701-0104-003	RES,100k,1/8W,5%
R2570	4701-0470-003	RES,47,1/8W,5%
R2571	4701-0330-003	RES,33,1/8W,5%
R2572	4701-0101-003	RES,100,1/8W,5%
R2573	4701-0223-003	RES,22k,1/8W,5%
R2574	4701-0152-003	RES,1.5k,1/8W,5%
R2575	4701-0330-003	RES,33,1/8W,5%
R2576	4701-0101-003	RES,100,1/8W,5%
R2577	4701-0223-003	RES,22k,1/8W,5%
R2578	4701-0681-003	RES,680,1/8W,5%
R2579	4701-0390-003	RES,39,1/8W,5%
TP2501	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP2502	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
U2501	3221-0006-000	IC,5532,DUAL LOW NOISE OP AMP
U2502	3221-0006-000	IC,5532,DUAL LOW NOISE OP AMP
Y2501	2363-0114-000	XTAL,100.000000MHz,3 S,HC-35/U

7010-7533-500 PCB ASSY, MODULATOR/LEVELER (SLS Modification) A1

Revision A1 contains all items in Revision A.

7010-7533-500 PCB ASSY, MODULATOR/LEVELER (SLS Modification) B

Revision B contains all items in Revision A1 with the following change:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
Y2501	2363-0114-100	XTAL,100.000000MHz,3 S,HC-35/U,OVEN

7010-7533-000 PCB ASSY, 200 MHz CONTROL B3

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
2	2803-0313-006	SCREW,4-40 X 5/16 PPHM
3	2840-0000-003	WASHER,LOCK,INT TOOTH,4
4	2850-0000-020	NUT,HEX,SMALL PAT,4-40
5	2850-7866-300	STANDOFF,HEX,MALE-FEMALE
6	2400-7856-800	LABEL,ESD
7	1050-0000-075	WIRE,BUS,TINNED COPPER,26GA
8	6011-0018-001	TUBING,TF,26 AWG,NATURAL,TW, 2 FT
C2601	1506-0101-017	CAP,100pF,100V,5%,NPO
C2602	1506-0271-017	CAP,270pF,100V,5%,NPO
C2603	1506-0271-017	CAP,270pF,100V,5%,NPO
C2604	1506-0681-017	CAP,680pF,100V,5%,NPO
C2607	1506-0680-017	CAP,68pF,100V,5%,NPO
C2608	1506-0102-017	CAP,1000pF,100V,5%,NPO
C2609	1506-0221-017	CAP,220pF,100V,5%,NPO
C2610	1506-0221-017	CAP,220pF,100V,5%,NPO
C2611	1502-0104-010	CAP,0.1µF,50V,5%,PC
C2612	1646-2240-112	CAP,0.22µF,50V,5%,MPC
C2613	1502-0104-010	CAP,0.1µF,50V,5%,PC
C2614	1502-0104-010	CAP,0.1µF,50V,5%,PC
C2615	1502-0334-012	CAP,0.33µF,50V,5%,MPC
C2616	1646-6840-154	CAP,0.68µF,50V,5%,MPC
C2617	1502-0334-012	CAP,0.33µF,50V,5%,MPC
C2618	1502-0334-012	CAP,0.33µF,50V,5%,MPC
C2619	1585-4700-016	CAP,47µF,16V,NON-POLAR,RDL
C2621	1506-0331-017	CAP,330pF,100V,5%,NPO
C2622	1506-0101-017	CAP,100pF,100V,5%,NPO
C2623	1506-0103-017	CAP,0.01µF,100V,NPO
C2624	1580-4702-105	CAP,47µF,10V,ELE,RDL
C2625	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C2626	1506-0103-017	CAP,0.01µF,100V,NPO
C2627	1506-0103-017	CAP,0.01µF,100V,NPO
C2628	1506-0103-017	CAP,0.01µF,100V,NPO
C2629	1580-4792-305	CAP,4.7µF,35V
C2630	1506-0103-017	CAP,0.01µF,100V,NPO
C2631	1506-0103-017	CAP,0.01µF,100V,NPO
C2632	1580-4792-305	CAP,4.7µF,35V
C2633	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C2634	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C2635	1580-4792-305	CAP,4.7µF,35V
C2636	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C2637	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C2638	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C2639	1506-0103-017	CAP,0.01µF,100V,NPO
C2640	1506-0103-017	CAP,0.01µF,100V,NPO
J2601	2205-3510-103	CONN,D-SUB,M,15-P,PCM,R.A
J2602	2116-0000-021	CONN,D-SUB,M,25-P,PCM,R.A
J2603	2115-1002-015	CONN,MOLEX 22-05-2151
L2601	1801-0022-001	IND, 22µH 3.3 OHM 1025-52
Q2601	4807-0000-001	TRANS, 2N3903 ,NPN HS SW
Q2602	4807-0000-002	TRANS, 2N3905 ,PNP HS SW
Q2603	4807-0000-001	TRANS, 2N3903 ,NPN HS SW
Q2604	4807-0000-002	TRANS, 2N3905 ,PNP HS SW
Q2605	4807-0000-001	TRANS, 2N3903 ,NPN HS SW
Q2606	4807-0000-002	TRANS, 2N3905 ,PNP HS SW

7010-7533-000 PCB ASSY, 200 MHz CONTROL (cont) B3

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
Q2607	4807-0000-001	TRANS, 2N3903 ,NPN HS SW
Q2608	4807-0000-002	TRANS, 2N3905 ,PNP HS SW
R2601	4702-0182-003	RES,1.8k,1/4W,5%
R2602	4702-0272-003	RES,2.7k,1/4W,5%
R2603	4753-0501-002	POT 500 OHM
R2604	4702-0221-003	RES,220,1/4W,5%
R2605	4702-0472-003	RES,4.7k,1/4W,5%
R2606	4702-0472-003	RES,4.7k,1/4W,5%
R2607	4702-0472-003	RES,4.7k,1/4W,5%
R2608	4702-0472-003	RES,4.7k,1/4W,5%
R2609	4702-0271-003	RES,270,1/4W,5%
R2610	4702-0222-003	RES,2.2k,1/4W,5%
R2611	4702-0472-003	RES,4.7k,1/4W,5%
R2612	4702-0472-003	RES,4.7k,1/4W,5%
R2613	4702-0472-003	RES,4.7k,1/4W,5%
R2614	4702-0472-003	RES,4.7k,1/4W,5%
R2615	4702-0271-003	RES,270,1/4W,5%
R2616	4702-0222-003	RES,2.2k,1/4W,5%
R2617	4702-0103-003	RES,10k,1/4W,5%
R2618	4706-4751-001	RES,4.75k,1/4W,1%
R2619	4753-0502-002	POT 5k OHM
R2620	4706-4751-001	RES,4.75k,1/4W,1%
R2621	4753-0502-002	POT 5k OHM
R2622	4706-4751-001	RES,4.75k,1/4W,1%
R2623	4753-0502-002	POT 5k OHM
R2628	4702-0103-003	RES,10k,1/4W,5%
R2629	4702-0103-003	RES,10k,1/4W,5%
R2630	4702-0103-003	RES,10k,1/4W,5%
R2631	4702-0103-003	RES,10k,1/4W,5%
R2632	4702-0472-003	RES,4.7k,1/4W,5%
R2633	4702-0102-003	RES,1.0k,1/4W,5%
R2634	4702-0102-003	RES,1.0k,1/4W,5%
R2635	4702-0271-003	RES,270,1/4W,5%
R2636	4702-0332-003	RES,3.3k,1/4W,5%
R2637	4702-0472-003	RES,4.7k,1/4W,5%
R2638	4702-0472-003	RES,4.7k,1/4W,5%
R2639	4702-0102-003	RES,1.0k,1/4W,5%
R2640	4702-0102-003	RES,1.0k,1/4W,5%
R2641	4702-0271-003	RES,270,1/4W,5%
R2642	4702-0332-003	RES,3.3k,1/4W,5%
R2643	4702-0102-003	RES,1.0k,1/4W,5%
R2644	4702-0103-003	RES,10k,1/4W,5%
R2645	4702-0103-003	RES,10k,1/4W,5%
R2646	4706-1103-001	RES,110k,1/4W,1%
R2647	4706-1332-001	RES,13.3k,1/4W,1%
R2648	4706-1212-001	RES,12.1k,1/4W,1%
R2649	4752-0502-002	POT 5k OHM
R2650	4706-6811-001	RES,6.81k,1/4W,1%
R2651	4752-0202-002	POT, 2k OHM
R2652	4706-6811-001	RES,6.81k,1/4W,1%
R2653	4706-3013-001	RES,301k,1/4W,1%
R2654	4706-3652-001	RES,36.5k,1/4W,1%
R2655	4706-3322-001	RES,33.2k,1/4W,1%
R2656	4752-0203-002	POT 20k OHM
R2657	4706-1692-001	RES,16.9k,1/4W,1%

7010-7533-000 PCB ASSY, 200 MHz CONTROL (cont) B3

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R2658	4706-1692-001	RES,16.9k,1/4W,1%
R2659	4752-0103-002	POT 10k OHM
R2660	4706-3652-001	RES,36.5k,1/4W,1%
R2661	4706-3652-001	RES,36.5k,1/4W,1%
R2662	4706-1002-001	RES,10.0k,1/4W,1%
R2663	4706-1003-001	RES,100k,1/4W,1%
R2664	4706-2002-001	RES,20.0k,1/4W,1%
R2665	4706-1501-001	RES,1.50k,1/4W,1%
R2666	4706-1001-001	RES,1.00k,1/4W,1%
R2667	4702-0101-003	RES,100,1/4W,5%
R2668	4706-4991-001	RES,4.99k,1/4W,1%
R2669	4702-0222-003	RES,2.2k,1/4W,5%
R2670	4706-1001-001	RES,1.00k,1/4W,1%
R2671	4753-0202-002	POT, 2k OHM
R2672	4706-2211-001	RES,2.21k,1/4W,1%
R2673	4702-0102-003	RES,1.0k,1/4W,5%
R2674	4702-0222-003	RES,2.2k,1/4W,5%
R2675	4702-0222-003	RES,2.2k,1/4W,5%
S2601	5120-2016-800	SWITCH TOG SPDT MOM-OFF-MOM PC
TP2601	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP2602	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP2603	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP2604	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP2605	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP2606	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP2607	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP2608	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP2609	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP2610	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP2611	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
U2601	3131-0000-044	IC,74LS00,QUAD 2-INPUT NAND
U2602	3131-0000-045	IC,74LS138,3-TO-8 DCDR/MPLXR
U2603	3131-0000-033	IC,74LS04,HEX INVERTER
U2604	3131-0000-043	IC,74LS377,OCTAL D FLIP-FLOP
U2605	3131-0000-032	IC,74LS02,QUAD 2-INPUT NOR
U2606	3131-0000-044	IC,74LS00,QUAD 2-INPUT NAND
U2607	3131-0000-017	IC,74LS221,DUAL MULTIVIBRATOR
U2608	3131-0000-024	IC,74LS123,DUAL MULTIVIBRATOR
U2610	3131-0000-002	IC,74LS10,TRIPLE 3-INPUT NAND
U2612	3133-0000-011	IC,4011B,QUAD 2-INPUT NAND
U2613	3221-0001-000	IC,353,DUAL JFET OP AMP
U2614	3221-0001-000	IC,353,DUAL JFET OP AMP
U2615	3221-0001-000	IC,353,DUAL JFET OP AMP
U2616	3131-0000-043	IC,74LS377,OCTAL D FLIP-FLOP
U2617	3131-0000-043	IC,74LS377,OCTAL D FLIP-FLOP
U2618	3228-0001-000	IC,561,10-BIT D/A CONVERTER
U2619	3224-0008-000	IC,5V 3-TERM REG TO-92

7005-7548-700 ASSY, FLOOR A

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
1	1400-7554-800	BRACKET, FLOOR, RIGHT
2	1406-7555-800	FLOOR
3	2805-0250-006	SCREW,8-32X1/4,PPHMSSS
4	7005-7549-100	MECH ASSY, CARD CAGE
5	2803-0313-003	SCREW 4-40 X 5/16 PFHMS
6	1400-3060-200	BRKT,MTG,REAR PANEL
7	1405-3055-100	PANEL, REAR
8	2803-0438-003	SCREW 4-40 X 7/16 PFHMS
9	2804-0250-006	SCREW,6-32 X 1/4 PPHM
10	7005-7548-800	MECH ASSY, REAR PANEL
11	1400-7554-700	BRACKET, FLOOR, LEFT
12	6500-7581-500	MINOR ASSY, FAN 1400A-2
13	2804-0625-003	SCREW 6-32 X 5/8 PFHMS
14	6004-6005-400	TY-RAP,4.0 LG
15	2603-7552-300	GUARD, FAN 3 1/8"
16	7005-7545-100	MECH ASSY, POWER SUPPLY
17	7005-3047-701	MECH ASSY,MOD RACK,UNV PWR SUP
18	2804-0250-003	SCREW 6-32X1/4 PFHMS
20	2805-0375-003	SCREW 8-32 X 3/8 PFHMS
21	2803-0250-003	SCREW,4-40 X 1/4 PFHM
22	7007-7581-400	WIRE HARN ASSY, 1400A-2
23	2801-0375-003	SCREW 2-56 X 3/8 PFHMS

7005-3047-701 ASSY, MOD RACK,UNV PWR SUP B

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
1	6500-3086-800	MINOR ASSY,MODULE RACK
2	4104-0003-000	GUIDE,CARD,NYLON,4.OLG,NATURAL
4	1402-3066-700	RAIL,MTG,FACE PLT,MODULE RACK
5	6045-3082-400	RIBBON CABLE ASSY,50 COND,16.5
7	2803-0313-003	SCREW 4-40 X 5/16 PFHMS

7005-7549-100 ASSY, CARD CAGE A

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
1	4104-1603-600	PC CARD CAGE
2	2803-0625-006	SCREW,4-40 X 5/8 PPHM
3	2840-0000-003	WASHER,LOCK,INT TOOTH,4
4	7010-3032-801	PCB ASSY,MOTHERBOARD
5	2803-0313-006	SCREW,4-40 X 5/16 PPHM
6	1400-3054-900	BRKT,MTG,CARD CAGE
7	3107-7555-900	INSULATOR, CNTRL, 200MHz, #2

7010-3032-801 PCB ASSY, MOTHERBOARD A1

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
2	2850-7866-300	STANDOFF,HEX,MALE-FEMALE
3	2840-0000-003	WASHER,LOCK,INT TOOTH,4
4	2800-7600-141	SPACER,AL,.25 OD,4-40ID,.440LG
5	2803-0250-006	SCREW,4-40 X 1/4 PPHM
6	1050-0000-075	WIRE,BUS,TINNED COPPER,26GA
7	6011-0018-001	TUBING,TF,26 AWG,NATURAL,TW, 0.5 FT
J101	2226-4023-000	CONN,CARD,.100C,DR,FS, 30-POS
J201	2226-4023-000	CONN,CARD,.100C,DR,FS, 30-POS
J301	2226-4023-000	CONN,CARD,.100C,DR,FS, 30-POS
J401	2226-4023-000	CONN,CARD,.100C,DR,FS, 30-POS
J501	2226-4023-000	CONN,CARD,.100C,DR,FS, 30-POS
J601	2226-4023-000	CONN,CARD,.100C,DR,FS, 30-POS
J701	2226-4023-000	CONN,CARD,.100C,DR,FS, 30-POS
J901	2115-0000-021	CONN MOLEX 22-05-2181
J902	2116-0000-018	CONN,D-SUB,M,25-P,PCM,STR,.125

7010-3032-801 PCB ASSY, MOTHERBOARD B

Revision B contains all items in Revision A1 except the following:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
7	6011-0018-001	TUBING,TF,26 AWG,NATURAL,TW, 0.5 FT

Revision B contains all items in Revision A1 with the following change:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
6	6008-0000-003	WIRE,UL,1213,30GA,RED,0.5 FT

7005-7548-800 ASSY, REAR PANEL B

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
1	2506-7555-300	PLATE, REAR
2	2403-7555-200	OVERLAY, REAR PANEL
3	2111-0001-001	CLIP, ADHESIVE, .25 BUNDLE
4	2840-0000-006	WASHER,FLAT,ID.160OD.306TK.039
5	1400-3068-501	BRACKET,INTERFACE PCB SUPPORT
6	2800-7600-193	SPACER,AL,1/4 OD,.125ID,.47 LG
7	2840-0000-003	WASHER,LOCK,INT TOOTH,4
8	2803-0875-006	SCREW 4-40X7/8 PHIL BIND HD
9	2850-7866-300	STANDOFF,HEX,MALE-FEMALE
11	2840-0000-034	WASHER, FLAT .505ID,.6850D,.02
12	2804-0313-006	SCREW 6-32X5/16 PHIL BIND HD
13	6020-0250-200	TUBING, HS 1/4ID BLACK UL, 0.166 FT
14	6004-6005-400	TY-RAP,4.0 LG
15	2850-0000-066	NUT,HEX,REG PAT,6-32
16	6012-0300-000	TUBING, PVC-105, 3AWG, BLACK, 0.125 FT
A1	7010-7538-100	PCB ASSY, CONNECTOR
F1	5106-0300-600	FUSE,1.25,GL,FAST,250V,3.0A
F2	5106-0300-600	FUSE,1.25,GL,FAST,250V,3.0A
FL1	5801-0000-021	FILTER, RFI
GL1	2850-0000-022	LUG,GND,6
J1	2123-0000-016	CONN,ADAPT,M2M SMB,STR BULKHD
J2	2123-0000-016	CONN,ADAPT,M2M SMB,STR BULKHD
J3	2123-0000-016	CONN,ADAPT,M2M SMB,STR BULKHD
J4	2123-0000-016	CONN,ADAPT,M2M SMB,STR BULKHD
J9	2113-0000-018	CONN UG1094A/U
J10	2113-0000-018	CONN UG1094A/U
J11	2113-0000-018	CONN UG1094A/U
J22	2200-0410-100	CONN,ADAPT,F BNC/F SMASTR BHD
J23	2200-0410-100	CONN,ADAPT,F BNC/F SMASTR BHD
S1	5120-0012-000	SWITCH TOG SPDT ON-ON PC
S2	5120-0012-000	SWITCH TOG SPDT ON-ON PC
S3	5120-0012-000	SWITCH TOG SPDT ON-ON PC
S4	5120-0012-000	SWITCH TOG SPDT ON-ON PC
W1	7007-7581-200	WIRE HARN ASSY, REAR PANEL
XF1	5105-0017-000	HOLDER,FUSE,PANEL MOUNT,3AG
XF2	5105-0017-000	HOLDER,FUSE,PANEL MOUNT,3AG

7010-7538-100 PCB ASSY, CONNECTOR B

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
2	2800-7600-141	SPACER,AL,.25 OD,4-40ID,.440LG
3	2803-0250-006	SCREW,4-40 X 1/4 PPHM
C9101	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
J9105	2116-0000-019	CONN,D-SUB,F,25-P,PCM,STR,.188
J9106	2116-0000-019	CONN,D-SUB,F,25-P,PCM,STR,.188
J9107	2116-0000-019	CONN,D-SUB,F,25-P,PCM,STR,.188
J9108	2116-0000-019	CONN,D-SUB,F,25-P,PCM,STR,.188
J9112	2226-4023-600	CONN,CARD,.100C,DR,FS, 36-POS
R9101	4756-3050-300	POT, 50k OHM, 3339H-1-503
R9102	4701-0472-003	RES,4.7k,1/8W,5%
R9103	4701-0472-003	RES,4.7k,1/8W,5%
R9104	4701-0472-003	RES,4.7k,1/8W,5%
R9105	4701-0472-003	RES,4.7k,1/8W,5%
R9106	4701-0472-003	RES,4.7k,1/8W,5%
R9107	4701-0472-003	RES,4.7k,1/8W,5%
U9101	3214-8244-000	IC 74HCT244 OCTAL BUF/DR/RCV

7005-7545-100 **ASSY, POWER SUPPLY** **A**

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
1	1414-7555-700	COVER, POWER SUPPLY
2	3107-7555-400	INSULATOR, POWER SUPPLY
5	2803-0250-003	SCREW,4-40 X 1/4 PFHM
6	2800-2397-000	SPACER,AL.25 OD 4-40 ID.25 LG
7	1415-7555-600	ENCLOSURE, POWER SUPPLY
8	7010-7535-100	PCB ASSY, POWER SUPPLY
9	2803-0188-006	SCREW,4-40 X 3/16 PPHM

7010-7535-100 PCB ASSY, POWER SUPPLY B

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
2	2803-0250-006	SCREW,4-40 X 1/4 PPHM
4	6004-6005-550	TY-RAP,5.5 LG
5	2803-0500-006	SCREW,4-40 X 1/2 PPHM
6	2803-0500-051	SCREW 4-40 X 1/2 SPHM
8	2803-1500-006	SCREW 4-40 X 1 1/2 PBHMS
10	2803-0438-006	SCREW,4-40 X 7/16 PPHM
11	2840-0000-003	WASHER,LOCK,INT TOOTH,4
12	2840-0000-009	WASHER,FLAT,4,MS15795-803
13	2850-0000-008	NUT,HEX,REG PAT,4-40
15	2840-7600-216	WASHER,PHEN,.63OD,.140ID,.060T
16	3107-3854-600	INSUL,G-10 NAT,3 TO-220 TRANS
17	3107-3854-700	INSUL,G-10 NAT,5 TO-220 TRANS
18	4503-3852-600	RETAINER,ALUM,3 TO-220 TRANS
19	4503-3852-700	RETAINER,ALUM,5 TO-220 TRANS
20	3107-0417-700	INSUL,CER,.062 X .562 X .687
21	1400-3852-001	BRKT,MTG,POWER SUPPLY PCB
23	4835-0000-103	INSUL,MICA,TO-220 TRANS,DF103B
26	2510-2327-102	HUB,MTG,INDUCTOR
30	4503-7553-700	RETAINER, PWR SUPPLY TRANS
31	3107-7553-800	INSULATOR, TO-220 PWR SUP TRAN
32	1400-7553-900	BRACKET, MTG PWR SUPPLY BD
42	6011-0027-001	TUBING,TF,22 AWG,NATURAL,TW
43	2800-7555-500	SPACER, TO-5 X 1/4"
44	6011-0053-001	TUBING,TF,16 AWG,NATURAL,TW
45	6012-0085-100	TUBING,PVC-105,12 AWG,CLEAR
46	7007-7581-700	W.H.,PWR SUPPLY/FT. PANEL
R10031SAT	4701-0123-003	RES,12K,1/8W,5%
R10031SAT	4701-0183-003	RES,18K,1/8W,5%
R10031SAT	4701-0223-003	RES,22K,1/8W,5%
BR10001	4823-2010-600	RECT,PH60 ,BRIDGE, 600V, 5A
C10001	1501-0332-001	CAP,3300pF,1000V,20%,DISC
C10002	1501-0332-001	CAP,3300pF,1000V,20%,DISC
C10003	1501-0332-001	CAP,3300pF,1000V,20%,DISC
C10004	1580-4010-800	CAP,400µF,180V,ELE,100
C10005	1501-0332-001	CAP,3300pF,1000V,20%,DISC
C10006	1580-4010-800	CAP,400µF,180V,ELE,100
C10007	1506-0562-017	CAP,5600pF,100V,5%,NPO
C10008	1506-0562-017	CAP,5600pF,100V,5%,NPO
C10009	1507-0476-018	CAP,47µF,35V,20%,TANT
C10010	1507-0685-018	CAP,6.8µF,35V,20%,TANT
C10011	1503-0104-009	CAP,0.1µF,200V,5%,PE
C10012	1507-0476-018	CAP,47µF,35V,20%,TANT
C10013	1507-0475-021	CAP,4.7µF,20V,20%,TANT
C10014	1507-0685-018	CAP,6.8µF,35V,20%,TANT
C10016	1501-0103-005	CAP,0.01µF,50V,20%,DISC
C10017	1501-0103-005	CAP,0.01µF,50V,20%,DISC
C10018	1515-0202-075	CAP,2000µF,7V,ELE,4L
C10019	1515-0471-006	CAP,470µF,10V,ELE,10
C10020	1507-0105-018	CAP,1µF,35V,20%,TANT
C10021	1506-0152-017	CAP,1500pF,100V,NPO
C10022	1506-0103-017	CAP,0.01µF,100V,NPO
C10023	1506-0471-017	CAP,470pF,100V,5%,NPO
C10024	1506-0680-017	CAP,68pF,100V,5%,NPO
C10025	1506-0103-017	CAP,0.01µF,100V,NPO
C10026	1506-0680-017	CAP,68pF,100V,5%,NPO

7010-7535-100 PCB ASSY, POWER SUPPLY (cont) B

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
C10027	1507-0685-018	CAP,6.8µF,35V,20%,TANT
C10028	1507-0105-018	CAP,1µF,35V,20%,TANT
C10029	1580-2202-420	CAP,22µF,35V,ELE,RDL
CR10001	4901-4937-000	DIODE, IN4937, RECT, 600V,1A
CR10002	4901-4937-000	DIODE, IN4937, RECT, 600V,1A
CR10003	4901-4937-000	DIODE, IN4937, RECT, 600V,1A
CR10004	4901-4937-000	DIODE, IN4937, RECT, 600V,1A
CR10005	4901-4937-000	DIODE, IN4937, RECT, 600V,1A
CR10007	4901-4937-000	DIODE, IN4937, RECT, 600V,1A
CR10008	4901-4937-000	DIODE, IN4937, RECT, 600V,1A
CR10009	4945-0150-050	DIODE,5KP5.0 ,TZORB, 5V,5kW
CR10010	4901-5245-200	DIODE, 1N5245B ,ZENER, 15V,.5W
CR10011	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR10012	4816-0000-001	DIODE,5082-2800,S BAR, 70VBR
CR10013	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR10014	4818-0000-004	DIODE, 1N5234B ,ZENER,6.2V,.5W
CR10015	4818-0000-001	DIODE, 1N5240B ,ZENER, 10V,.5W
CR10016	4822-3010-045	RECT,20CTQ045,SHOTKY, 45V,20A
CR10017	4822-6010-150	RECT,UES2403 ,F RCVY, 150V,16A
CR10018	4822-6010-150	RECT,UES2403 ,F RCVY, 150V,16A
CR10019	4822-6010-150	RECT,UES2403 ,F RCVY, 150V,16A
CR10020	4901-4937-000	DIODE, IN4937, RECT, 600V,1A
CR10021	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
E10002	0006-0000-000	**E'POINT**
E10004	0006-0000-000	**E'POINT**
E10007	0006-0000-000	**E'POINT**
E10008	0006-0000-000	**E'POINT**
J9901	2115-8001-440	CONN,BURNDY SMS12RE-4-D70
L10001	1800-7626-000	INDUCTOR,TOROID,58T,22GA
L10002	1800-7626-000	INDUCTOR,TOROID,58T,22GA
L10003	1800-3881-900	INDUCTOR,TORROID,14GA,18T
L10004	1800-3882-000	INDUCTOR,TORROID,16GA, 4T
Q10001	4811-0000-006	TRANS,MJE8501,B1POLAR NPN PWR
Q10002	4801-0000-001	TRANSISTOR NPN HS SW
Q10003	4805-0000-001	TRANS,2N2907A,PNP HS SW (3251)
Q10004	5050-2445-100	TRANS,MTP3N60,N-CH TMOSFET
Q10005	4801-0000-001	TRANSISTOR NPN HS SW
Q10006	4801-0000-001	TRANSISTOR NPN HS SW
Q10007	4811-0000-008	TRANS, SCR 800V
Q10008	4801-0000-001	TRANSISTOR NPN HS SW
R10001	4703-0104-003	RES,100k,1/2W,5%
R10002	4703-0104-003	RES,100k,1/2W,5%
R10003	4704-0104-003	RES,100k,1W,5%
R10004	4704-0102-003	RES,1.0k,1W,5%
R10005	4709-0103-004	RES,10k,7W,5%,WW
R10006	4703-0274-002	RES,270k,1/2W,5%
R10007	4703-0274-002	RES,270k,1/2W,5%
R10008	4702-0103-003	RES,10k,1/4W,5%
R10009	4702-0681-003	RES,680,1/4W,5%
R10010	4701-0333-003	RES,33k,1/8W,5%
R10011	4701-0333-003	RES,33k,1/8W,5%
R10012	4702-0154-003	RES,150k,1/4W,5%
R10013	4702-0270-003	RES,27,1/4W,5%
R10014	4701-0124-003	RES,120k,1/8W,5%
R10015	4702-0102-003	RES,1.0k,1/4W,5%

7010-7535-100 PCB ASSY, POWER SUPPLY (cont) B

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R10016	4702-0560-003	RES,56,1/4W,5%
R10017	4701-0183-003	RES,18k,1/8W,5%
R10018	4701-0153-003	RES,15k,1/8W,5%
R10019	4701-0183-003	RES,18k,1/8W,5%
R10020	4701-0103-003	RES,10k,1/8W,5%
R10021	4701-0472-003	RES,4.7k,1/8W,5%
R10022	4701-0224-003	RES,220k,1/8W,5%
R10023	4703-0109-003	RES,1,1/2W,5%
R10024	4703-0109-003	RES,1,1/2W,5%
R10025	4703-0109-003	RES,1,1/2W,5%
R10026	4701-0183-003	RES,18k,1/8W,5%
R10027	4702-0560-003	RES,56,1/4W,5%
R10028	4701-0102-003	RES,1.0k,1/8W,5%
R10029	4703-0331-003	RES,330,1/2W,5%
R10030	4702-0103-003	RES,10k,1/4W,5%
R10031	4701-0153-003	RES,15k,1/8W,5%
R10032	4753-0502-001	POT 5k OHM
R10033	4701-0333-003	RES,33k,1/8W,5%
R10034	4701-0103-003	RES,10k,1/8W,5%
R10035	4701-0102-003	RES,1.0k,1/8W,5%
R10036	4702-0100-003	RES,10,1/4W,5%
R10037	4709-0103-004	RES,10k,7W,5%,WW
R10039	4701-0153-003	RES,15k,1/8W,5%
R10040	4703-0159-003	RES,1.5,1/2W,5%
R10041	4701-0103-003	RES,10k,1/8W,5%
R10042	4702-0472-003	RES,4.7k,1/4W,5%
R10043	4701-0103-003	RES,10k,1/8W,5%
RT10001	4800-0000-017	VRIS,LMTR CUR INRUSH 3 AMP
T10002	5604-0000-023	XFMR,LINE,ATC-1400A-2 P.S.
TP10001	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP10002	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP10004	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP10005	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
U10001	3224-0079-121	IC,7912CT,1.5A -12V REGULATOR
U10002	3224-0001-000	IC,7905C,1.5A -5V REGULATOR
U10003	3224-0078-121	IC,78T12,3A 12V 2% V REGULATOR
U10005	3133-0000-024	IC,3130,BIMOS OP AMP,PLAST DIP
U10006	3133-0000-024	IC,3130,BIMOS OP AMP,PLAST DIP
U10007	3133-0000-024	IC,3130,BIMOS OP AMP,PLAST DIP
U10008	3133-0000-024	IC,3130,BIMOS OP AMP,PLAST DIP
U10009	3224-0079-121	IC,7912CT,1.5A -12V REGULATOR
U10010	4819-0000-005	6N135 SCREENED CTR 15-22 VCE=2
W10005	1050-0000-073	WIRE,BUS,TINNED COPPER,22GA

7010-7535-100 PCB ASSY, POWER SUPPLY C

Revision C includes all items in Revision B.

7010-7535-100 PCB ASSY, POWER SUPPLY (cont) D

Revision D includes all items in Revision C plus the following:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
47	6008-5009-007	WIRE,UL,600V 18GA,75,BLUE,0.5FT

Revision D includes all items in Revision C with the following changes:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
C10004	1580-0471-020	CAP,470µF,200V,20%,ELE
C10006	1580-0471-020	CAP,470µF,200V,20%,ELE

7010-3032-600 PCB ASSY, POWER DISTRIBUTION A1

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
2	2155-1010-020	TERM STRIP,.100C,STR,20-P
3	2800-0000-008	SPACER 350-2188-19-07 CAMBION
CR801	4815-0000-002	DIODE, 1N4004 ,RECT, 400V, 1A
CR802	4815-0000-002	DIODE, 1N4004 ,RECT, 400V, 1A
CR803	4815-0000-002	DIODE, 1N4004 ,RECT, 400V, 1A
CR804	4815-0000-002	DIODE, 1N4004 ,RECT, 400V, 1A
CR805	4815-0000-002	DIODE, 1N4004 ,RECT, 400V, 1A

7005-7542-500 ASSY, RF BULKHEAD A1

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
1	6500-3085-201	MINOR ASSY RF BULKHEAD
2	2803-0250-006	SCREW,4-40 X 1/4 PPHM
3	2840-0000-003	WASHER,LOCK,INT TOOTH,4
4	2803-0438-006	SCREW,4-40 X 7/16 PPHM
5	7005-7541-500	MECH ASSY,COUPLER BD
6	2803-0313-003	SCREW 4-40 X 5/16 PFHMS
7	2803-0438-003	SCREW 4-40 X 7/16 PFHMS
8	6042-7580-200	COAX ASSY086 COUPLER TO ATTEN
9	2519-3065-100	SHIM,CIRCULATOR,.05 X 1.75 X 2
11	7005-3041-901	MECH ASSY,FREQUENCY PROBE
13	2519-3065-200	SHIM,ATTENUATOR,.2 X .87 X 4.4
15	7010-7530-900	PCB ASSY, ATTEN. DRIVER
18	6042-3085-600	COAX ASSY,SEMI-RIGID,.141 DIA
19	7005-3041-801	MECH ASSY,POWER DETECTOR
20	7005-3046-000	MECH ASSY,BAND PASS FILTER
21	2840-0000-024	WASHER,FLAT,ID.160OD.375TK.032
22	6042-7580-000	COAX ASSY S/R ATTEN.TO DET AMP
25	2803-0250-003	SCREW,4-40 X 1/4 PFHM
26	6042-7580-100	COAX ASSY, .086, COUPLER-VIDEO
AT8001	2901-0151-020	ATTEN, 20dB, 15W,SMA, 1.155GHz
AT8002	2901-0651-003	ATTEN, 3dB, 15W, N , 1.225GHz
J8104/P8304	2200-0190-100	CONN,ADAPT,M2F SMA,SWEPT R.A
P8606/P8006	2200-0110-200	CONN,ADAPT,M2M SMA,STRAIGHT
U8001	3401-7603-000	CIRCULATOR, 3 PORT

7010-7530-900 **PCB ASSY, ATTEN DRIVER** **A2**

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
2	2850-7866-300	STANDOFF,HEX,MALE-FEMALE
3	2840-0000-003	WASHER,LOCK,INT TOOTH,4
4	2850-0000-020	NUT,HEX,SMALL PAT,4-40
5	2803-0313-006	SCREW,4-40 X 5/16 PPHM
6	2803-0438-006	SCREW,4-40 X 7/16 PPHM
7	2800-7600-132	SPACER,AL,.187OD,.125ID,.250LG
AT8601	2901-7633-000	ATTEN,STEP,1-127dB,1W,SMA,PROG
C8601	1580-4702-105	CAP,47µF,10V,ELE,RDL
C8602	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C8603	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C8604	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C8605	1580-2202-420	CAP,22µF,35V,ELE,RDL
C8606	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C8607	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C8608	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C8609	1580-2202-420	CAP,22µF,35V,ELE,RDL
C8610	1506-0471-017	CAP,470pF,100V,5%,NPO
C8611	1506-0101-017	CAP,100pF,100V,5%,NPO
C8612	1506-0102-017	CAP,1000pF,100V,5%,NPO
CR8601	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR8602	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR8603	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR8604	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR8605	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR8606	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR8607	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
J8601	2115-1002-006	CONN,MOLEX 22-05-2061
J8602	2116-0000-021	CONN,D-SUB,M,25-P,PCM,R.A
J8603	2115-1002-006	CONN,MOLEX 22-05-2061
J8604	2115-1002-006	CONN,MOLEX 22-05-2061
Q8601	4805-0000-001	TRANS,2N2907A,PNP HS SW (3251)
Q8602	4805-0000-001	TRANS,2N2907A,PNP HS SW (3251)
Q8603	4805-0000-001	TRANS,2N2907A,PNP HS SW (3251)
Q8604	4805-0000-001	TRANS,2N2907A,PNP HS SW (3251)
Q8605	4805-0000-001	TRANS,2N2907A,PNP HS SW (3251)
Q8606	4805-0000-001	TRANS,2N2907A,PNP HS SW (3251)
Q8607	4805-0000-001	TRANS,2N2907A,PNP HS SW (3251)
Q8608	4805-0000-001	TRANS,2N2907A,PNP HS SW (3251)
Q8609	4807-0000-001	TRANS, 2N3903 ,NPN HS SW
Q8610	4805-0000-001	TRANS,2N2907A,PNP HS SW (3251)
Q8611	4807-0000-001	TRANS, 2N3903 ,NPN HS SW
Q8612	4805-0000-001	TRANS,2N2907A,PNP HS SW (3251)
Q8613	4807-0000-001	TRANS, 2N3903 ,NPN HS SW
Q8614	4807-0000-001	TRANS, 2N3903 ,NPN HS SW
Q8615	4807-0000-002	TRANS, 2N3905 ,PNP HS SW
R8601	4702-0332-003	RES,3.3k,1/4W,5%
R8602	4702-0102-003	RES,1.0k,1/4W,5%
R8603	4702-0332-003	RES,3.3k,1/4W,5%
R8604	4702-0153-003	RES,15k,1/4W,5%
R8605	4702-0332-003	RES,3.3k,1/4W,5%
R8606	4702-0153-003	RES,15k,1/4W,5%
R8607	4702-0332-003	RES,3.3k,1/4W,5%
R8608	4702-0153-003	RES,15k,1/4W,5%
R8609	4702-0332-003	RES,3.3k,1/4W,5%
R8610	4702-0153-003	RES,15k,1/4W,5%

7010-7530-900 PCB ASSY, ATTEN DRIVER (cont) A2

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R8611	4702-0332-003	RES,3.3k,1/4W,5%
R8612	4702-0153-003	RES,15k,1/4W,5%
R8613	4702-0332-003	RES,3.3k,1/4W,5%
R8614	4702-0153-003	RES,15k,1/4W,5%
R8615	4702-0332-003	RES,3.3k,1/4W,5%
R8616	4702-0153-003	RES,15k,1/4W,5%
R8617	4702-0332-003	RES,3.3k,1/4W,5%
R8618	4702-0472-003	RES,4.7k,1/4W,5%
R8619	4702-0330-003	RES,33,1/4W,5%
R8620	4702-0331-003	RES,330,1/4W,5%
R8621	4702-0332-003	RES,3.3k,1/4W,5%
R8622	4702-0472-003	RES,4.7k,1/4W,5%
R8623	4702-0331-003	RES,330,1/4W,5%
R8624	4702-0332-003	RES,3.3k,1/4W,5%
R8625	4702-0472-003	RES,4.7k,1/4W,5%
R8626	4702-0331-003	RES,330,1/4W,5%
R8627	4702-0222-003	RES,2.2k,1/4W,5%
R8628	4702-0472-003	RES,4.7k,1/4W,5%
R8629	4702-0101-003	RES,100,1/4W,5%
R8630	4702-0101-003	RES,100,1/4W,5%
R8631	4702-0101-003	RES,100,1/4W,5%
R8632	4702-0681-003	RES,680,1/4W,5%
R8633	4702-0681-003	RES,680,1/4W,5%
R8634	4702-0101-003	RES,100,1/4W,5%
R8635	4701-0222-003	RES,2.2k,1/8W,5%
R8636	4701-0222-003	RES,2.2k,1/8W,5%
R8637	4702-0561-003	RES,560,1/4W,5%
R8638	4701-0472-003	RES,4.7k,1/8W,5%
R8639	4701-0223-003	RES,22k,1/8W,5%
X8601	3130-0000-027	IC,7406,HEX INV BUFFER/DRIVER
X8602	3131-0000-025	IC,74LS27,TRIPLE 3-INPUT NOR
X8603	3131-0000-027	IC,74LS30,8-INPUT NAND
X8604	3131-0000-043	IC,74LS377,OCTAL D FLIP-FLOP
X8605	3130-0000-027	IC,7406,HEX INV BUFFER/DRIVER
X8606	3131-0000-005	IC,74LS75,4-BIT BISTABLE LATCH
X8607	3131-0000-024	IC,74LS123,DUAL MULTIVIBRATOR

7010-7530-900 PCB ASSY, ATTEN DRIVER B

Revision B contains all items in Revision A with the following change:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
AT8601	2901-3401-001	ATTEN,0-127dB,1Db STEPS

7005-3041-801 ASSY, POWER DETECTOR D

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
1	1414-7553-600	COVER,B ENCL,PWR DETECT,OUTER
2	2803-0500-006	SCREW,4-40 X 1/2 PPHM
3	2840-0000-003	WASHER,LOCK,INT TOOTH,4
6	2840-0000-025	WASHER,FLAT,10
7	2803-0250-006	SCREW,4-40 X 1/4 PPHM
11	7010-3031-801	PCB ASSY, POWER DETECTOR
12	2803-0250-003	SCREW,4-40 X 1/4 PFHM
13	2801-0250-003	SCREW,2-56 X 1/4 PFHM
14	1414-3067-800	COVER,BOTTOM,POWER DETECTOR
15	6040-0010-012	CORD,SHLD,AL MESH,.062 DIA
16	6004-6005-400	TY-RAP,4.0 LG
17	2127-9900-100	KEY,POLARIZIN,MOLEX 15-04-9209
18	2114-0000-022	CONTACT,DCANT,CRIMP,22-30,GOLD
20	2840-7600-208	WASHER,ALUM,.38OD,.250ID,.020T
21	6002-0000-001	WIRE,HOOK,TFE,22GA, 7S,BLACK, 1 FT
22	6002-0000-003	WIRE,HOOK,TFE,22GA, 7S,RED, 0.5 FT
23	6002-0000-013	WIRE,HOOK,TFE,22GA, 7S,WHT/RED, 0.5 FT
24	2850-0000-076	NUT,HEX,EX SM PAT,1/4-36
25	6003-0000-018	WIRE,HOOK,TFE,26GA, 7S,WHT/VIO, 0.8 FT
26	6010-0125-200	TUBING,HS, 1/8 ID,BLACK, 0.1 FT
27	2801-0438-006	SCREW,2-56 X 7/16 PPHM A
FL8601	5801-0000-006	PI FILTER,EMI/RFI 1500pF
FL8602	5801-0000-006	PI FILTER,EMI/RFI 1500pF
FL8603	5801-0000-006	PI FILTER,EMI/RFI 1500pF
P8603	2115-0001-006	CONN,MOLEX 22-01-2061

7010-3031-801 **PCB ASSY, POWER DETECTOR** **B**

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
2	2801-0188-006	SCREW 2-56 X 3/16 PPHMS
3	2803-0250-006	SCREW,4-40 X 1/4 PPHM
4	1415-3053-501	BLOCK,POWER DETECTOR
5	6042-3066-500	COAX DETAIL,SEMI-RIGID,.086DIA
6	6000-6050-220	WIRE,MAG,SINGLE BELDSOL,22 GA, 0.1 FT
7	6003-0000-001	WIRE,HOOK,TFE,26GA, 7S,BLACK, 0.2 FT
8	6003-0000-003	WIRE,HOOK,TFE,26GA, 7S,RED, 0.2 FT
9	6003-0000-013	WIRE,HOOK,TFE,26GA, 7S,WHT/RED, 0.205 FT
10	6011-0018-001	TUBING,TF,26 AWG,NATURAL,TW, 0.1 FT
11	6011-0027-001	TUBING,TF,22 AWG,NATURAL,TW, 0.1 FT
C5807	1506-0689-017	CAP,6.8pF,100V,5%,NPO
C8501	1580-4792-305	CAP,4.7µF,35V
C8502	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C8503	1506-0030-017	CAP,3.3pF,100V,MICA,17
C8504	1506-0102-017	CAP,1000pF,100V,5%,NPO
C8505	1580-4792-305	CAP,4.7µF,35V
C8506	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C8508	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C8509	1521-0000-004	CAP VAR,0.6-4.5pF,500V,7273
C8510	1501-0103-005	CAP,0.01µF,50V,20%,DIS4C
C8511	1506-0102-017	CAP,1000pF,100V,5%,NPO
C8512	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C8513	1580-4792-305	CAP,4.7µF,35V
C8514	1506-0150-017	CAP,15pF,100V,5%,NPO
C8515	1506-0020-017	CAP,2.2pF,100V,NPO,25
C8516	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C8517	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C8518	1521-0000-004	CAP VAR,0.6-4.5pF,500V,7273
C8519	1506-0102-017	CAP,1000pF,100V,5%,NPO
C8520	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C8521	1506-0220-017	CAP,22pF,100V,5%,NPO
C8522	1506-0220-017	CAP,22pF,100V,5%,NPO
C8523	1506-0270-017	CAP,27pF,100V,5%,NPO
C8524	1521-0000-004	CAP VAR,0.6-4.5pF,500V,7273
C8526	1620-2200-500	CAP,22pF,100V,CHIP,NPO
C8527	1620-2200-500	CAP,22pF,100V,CHIP,NPO
C8528	1506-0050-017	CAP,5.6pF,100V,5%,NPO
C8529	1506-0030-017	CAP,3.3pF,100V,MICA,17
C8530	1620-2200-500	CAP,22pF,100V,CHIP,NPO
C8531	1521-0000-004	CAP VAR,0.6-4.5pF,500V,7273
C8532	1506-0100-017	CAP,10pF,100V,5%,NPO
C8533	1506-0470-017	CAP,47pF,100V,NPO
C8534	1622-0100-001	CAP,10pF,100V,CHIP
C8535	1622-0100-001	CAP,10pF,100V,CHIP
C8536	1622-0100-001	CAP,10pF,100V,CHIP
CR8501	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR8502	4816-0000-001	DIODE,5082-2800,S BAR, 70VBR
CR8503	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR8504	4915-0500-101	DIODE,5082-2301,S BAR, 70VBR
CR8505	4828-0000-002	DIODE,PIN,.3 pF,100 nS
FL8504	1526-0000-006	CAP,100pF,200V,FEEDTHRU
J8501	2200-1890-100	CONN,F SMA,LAUNCHER,STRAIGHT
J8502	2123-0000-036	CONN,M SMB,W/TERM,STR BULKHEAD
J8503	2123-0000-036	CONN,M SMB,W/TERM,STR BULKHEAD
J8504	2200-1890-100	CONN,F SMA,LAUNCHER,STRAIGHT

7010-3031-801 PCB ASSY, POWER DETECTOR (cont) B

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
L8501	1801-0108-001	IND, .10µH,.08OHM,1025-94
L8503	1801-0000-007	IND, .068 µH, .060 OHM
L8504	2750-0150-500	CORE,BEAD,STACKPOLE 57-0180
L8506	1801-0000-007	IND, .068 µH, .060 OHM
L8507	1801-0229-001	IND, 2.2 µH,.4 OHM,1025-28
L8509	1801-0229-001	IND, 2.2 µH,.4 OHM,1025-28
L8510	1801-0000-007	IND, .068 µH, .060 OHM
L8512	1801-0108-001	IND, .10µH,.08OHM,1025-94
L8513	1801-0108-001	IND, .10µH,.08OHM,1025-94
L8514	1801-0228-001	IND, .22µH,.14OHM,1025-04
L8516	1801-0828-001	IND, .82µH.85OHM,1025-18
Q8501	4809-0000-005	TRANS,66382 ,NPN HF AMP
Q8502	4803-0000-004	TRANS,NPN,LP/VHF AMP
Q8503	4807-0000-002	TRANS, 2N3905 ,PNP HS SW
Q8504	4807-0000-002	TRANS, 2N3905 ,PNP HS SW
Q8505	4807-0000-002	TRANS, 2N3905 ,PNP HS SW
Q8506	4809-0000-005	TRANS,66382 ,NPN HF AMP
Q8507	5010-0503-000	TRANS,MRF1000MB,NPN PWR HF AMP
Q8508	4807-0000-002	TRANS, 2N3905 ,PNP HS SW
Q8509	5050-2401-000	TRANS,VN10KM N-CH VMOSFET
Q8510	5050-2401-000	TRANS,VN10KM N-CH VMOSFET
Q8511	5010-0503-000	TRANS,MRF1000MB,NPN PWR HF AMP
R8501	4701-0330-003	RES,33,1/8W,5%
R8502	4701-0180-003	RES,18,1/8W,5%
R8503	4702-0563-003	RES,56k,1/4W,5%
R8504	4702-0222-003	RES,2.2k,1/4W,5%
R8505	4702-0682-003	RES,6.8k,1/4W,5%
R8506	4701-0183-003	RES,18k,1/8W,5%
R8507	4702-0471-003	RES,470,1/4W,5%
R8508	4701-0221-003	RES,220,1/8W,5%
R8509	4702-0181-003	RES,180,1/4W,5%
R8510	4702-0103-003	RES,10k,1/4W,5%
R8511	4701-0331-003	RES,330,1/8W,5%
R8512	4701-0682-003	RES,6.8k,1/8W,5%
R8513	4702-0182-003	RES,1.8k,1/4W,5%
R8514	4702-0471-003	RES,470,1/4W,5%
R8515	4702-0152-003	RES,1.5k,1/4W,5%
R8516	4702-0682-003	RES,6.8k,1/4W,5%
R8517	4702-0222-003	RES,2.2k,1/4W,5%
R8518	4702-0563-003	RES,56k,1/4W,5%
R8519	4702-0569-003	RES,5.6,1/4W,5%
R8520	4702-0100-003	RES,10,1/4W,5%
R8521	4702-0122-003	RES,1.2k,1/4W,5%
R8522	4701-0331-003	RES,330,1/8W,5%
R8523	4701-0682-003	RES,6.8k,1/8W,5%
R8524	4702-0101-003	RES,100,1/4W,5%
R8525	4702-0181-003	RES,180,1/4W,5%
R8526	4702-0271-003	RES,270,1/4W,5%
R8527	4702-0152-003	RES,1.5k,1/4W,5%
R8528	4702-0470-003	RES,47,1/4W,5%
R8529	4703-0471-003	RES,470,1/2W,5%
R8530	4702-0470-003	RES,47,1/4W,5%
R8531	4703-0471-003	RES,470,1/2W,5%
R8532	4702-0470-003	RES,47,1/4W,5%
R8533	4702-0470-003	RES,47,1/4W,5%

7010-3031-801 PCB ASSY, POWER DETECTOR (cont) B

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R8534	4701-0151-003	RES,150,1/8W,5%
R8535	4701-0510-003	RES,51,1/8W,5%
R8536	4702-0479-003	RES,4.7,1/4W,5%
R8537	4701-0102-003	RES,1.0k,1/8W,5%
R8538SAT	4701-0100-003	RES,10,1/8W,5%

7005-7541-500 **ASSY, COUPLER BD** **A**

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
1	7010-7531-500	PC. BD. ASSY, COUPLER
2	1414-7550-700	COVER,COUPLER
3	1415-7550-800	ENCLOSURE,COUPLER
4	2840-7600-229	WASHER,ALUM,.305D,.196ID,.038T
5	2803-0125-006	SCREW,4-40 X 1/8 PPHM
6	2803-0188-003	SCREW,4-40 X 3/16 PFHM
7	2801-0188-006	SCREW 2-56 X 3/16 PPHMS
8	2801-0250-006	SCREW,2-56 X 1/4 PPHM
9	4503-7551-400	RETAINER, COUPLER BD. RESISTOR
10	2806-7551-600	SLUG, COUPLER BD. RESISTOR
11	2803-0250-006	SCREW,4-40 X 1/4 PPHM
12	2800-7551-500	SPACER, COUPLER BD. RESISTOR
14	2855-7552-200	STRIP,RESISTOR TRANS
15	2840-0000-048	WSHR,WAVE,SPR .20500X.093I.D.
AT3701	5650-7552-100	TERMINATION, SMB 50OHM
J3701	2105-7605-202	CONN, MODIFIED SMA JACK
J3702	2123-0000-038	CONN,M SMB,W/TERM,STR BULKHD
J3703	2123-0000-038	CONN,M SMB,W/TERM,STR BULKHD
J3704	2105-7605-202	CONN, MODIFIED SMA JACK
J3705	2123-0000-038	CONN,M SMB,W/TERM,STR BULKHD
R3704	5650-0000-004	TERM,50 OHM,7W,FLIP-CHIP

7010-7531-500 PCB ASSY, COUPLER C

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
C3601	1523-0000-014	CAP,3pF,50V,NPO,CHIP
C3602	1523-0000-014	CAP,3pF,50V,NPO,CHIP
C3603	1523-0000-017	CAP,2pF,100V,CHIP
C3604	1523-0000-014	CAP,3pF,50V,NPO,CHIP
C3605	1523-0000-014	CAP,3pF,50V,NPO,CHIP
C3606	1523-0000-017	CAP,2pF,100V,CHIP
R3601	4722-6819-001	RES,68.1,1/8W,1%
R3602	4722-1210-001	RES,121,1/8W,1%
R3603	4722-6819-001	RES,68.1,1/8W,1%

7005-3046-000 ASSY, BANDPASS FILTER C

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
1	2803-0313-006	SCREW,4-40 X 5/16 PPHM
2	2840-0000-003	WASHER,LOCK,INT TOOTH,4
3	1414-3054-200	COVER,B ENCL,DIODE SWITCH
4	7005-3042-100	MECH ASSY,DIODE SWITCH
6	2114-0000-022	CONTACT,DCANT,CRIMP,22-30,GOLD
7	6004-6005-400	TY-RAP,4.0 LG
8	2127-9900-100	KEY,POLARIZIN,MOLEX 15-04-9209
12	6002-0000-015	WIRE,HOOK,TFE,22GA,7S,WHT/YEL,1.63 FT
13	6002-0000-016	WIRE,HOOK,TFE,22GA,7S,WHT/GRN,1 FT
14	6002-0000-017	WIRE,HOOK,TFE,22GA,7S,WHT/BLU,0.817 FT
15	6002-0000-001	WIRE,HOOK,TFE,22GA,7S,BLACK,0.82 FT
BPF8101	5801-0004-000	FILTER,BANDPASS,RLC F-4649
BPF8102	5801-0005-000	FILTER,BANDPASS,RLC F-4650
BPF8103	5801-0006-000	FILTER,BANDPASS,RLC F-4651
P8604	2115-0001-006	CONN,MOLEX 22-01-2061

7005-3042-100 ASSY, DIODE SWITCH (Units A and B) E

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
3	2800-7600-172	SPACER,BR,.31 OD,.26 ID,.075LG
7	2800-7600-179	SPACER,AL,.25 OD,.165ID,.065LG
8	1415-3053-700	ENCL,BLK,DIODE SWITCH
CR8201/CR8301	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR8202/CR8302	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR8203/CR8303	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR8204/CR8304	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR8205/CR8305	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR8206/CR8306	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR8207/CR8307	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR8208/CR8308	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR8209/CR8309	4828-0000-002	DIODE,PIN,.3 pF,100 ns
FL8201/FL8301	5801-0000-006	PI FILTER,EMI/RFI 1500pF 8-32
FL8202/FL8302	5801-0000-006	PI FILTER,EMI/RFI 1500pF 8-32
FL8203/FL8303	5801-0000-006	PI FILTER,EMI/RFI 1500pF 8-32
J8201/J8301	2123-0000-046	CONN,M SMA,LAUNCHER,STRAIGHT
J8202/J8302	2123-0000-046	CONN,M SMA,LAUNCHER,STRAIGHT
J8203/J8303	2123-0000-046	CONN,M SMA,LAUNCHER,STRAIGHT
J8204/J8304	2123-0000-030	CONN,FSMA,W/TERM,STR BULKHEAD
L8201/L8301	1801-0108-001	IND, .10µH,.08OHM,1025-94
L8202/L8302	1801-0108-001	IND, .10µH,.08OHM,1025-94
L8203/L8303	1801-0108-001	IND, .10µH,.08OHM,1025-94
R8201/R8301	4701-0222-003	RES,2.2k,1/8W,5%
R8202/R8302	4701-0222-003	RES,2.2k,1/8W,5%
R8203/R8303	4701-0222-003	RES,2.2k,1/8W,5%
R8204/R8304	4701-0222-003	RES,2.2k,1/8W,5%

7005-3041-401 ASSY, ALC/MIXER B

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
1	7010-3031-401	PCB ASSY,ALC
2	7005-3041-500	MECH ASSY,MIXER
3	2840-0000-004	WASHER,LOCK,INT TOOTH,2
4	2801-0188-006	SCREW 2-56 X 3/16 PPHMS
5	2506-3066-000	PLATE,MTG,ALC/MIXER
6	2840-0000-003	WASHER,LOCK,INT TOOTH,4
7	2803-0250-006	SCREW,4-40 X 1/4 PPHM
8	6500-3086-301	MIN ASY,FACE PLATE,ALC/MIX
9	2803-0188-006	SCREW,4-40 X 3/16 PPHM
10	2850-7866-300	STANDOFF,HEX,MALE-FEMALE
11	2840-7600-229	WASHER,ALUM,.305D,.196ID,.038T
12	2850-0000-020	NUT,HEX,SMALL PAT,4-40
13	6011-0027-001	TUBING,TF,22 AWG,NATURAL,TW, 0.5 FT
J3204	2123-0000-038	CONN,M SMB,W/TERM,STR BULKHD

7010-3031-401 PCB ASSY, ALC C

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
5	2800-0000-002	SPACER,SM,.156OD,2-56ID,.125LG
6	1050-0000-073	WIRE,BUS,TINNED COPPER,22GA
8	6008-0000-009	WIRE,HOOK,TFE,30GA,SOLID,WHT, 0.5 FT
9	6010-0125-100	TUBING,HS, 1/8 ID,CLEAR, 0.1 FT
C3201	1506-0122-017	CAP,1200pF,100V,5%,NPO
C3202	1506-0102-017	CAP,1000pF,100V,5%,NPO
C3203	1506-0102-017	CAP,1000pF,100V,5%,NPO
C3204	1506-0102-017	CAP,1000pF,100V,5%,NPO
C3206	1506-0101-017	CAP,100pF,100V,5%,NPO
C3207	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C3208	1507-0105-018	CAP,1µF,35V,20%,TANT
C3209	1580-4792-305	CAP,4.7µF,35V
C3210	1580-4792-305	CAP,4.7µF,35V
C3211	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C3212	1580-4792-305	CAP,4.7µF,35V
C3213	1506-0103-016	CAP,0.01µF,50V,5%,NPO
C3214	1502-0104-010	CAP,0.1µF,50V,5%,PC
C3215	1580-4792-305	CAP,4.7µF,35V
C3216	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C3217	1580-4792-305	CAP,4.7µF,35V
C3218	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C3219	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C3220	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C3221	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C3222	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C3223	1506-0562-017	CAP,5600pF,100V,5%,NPO
C3224	1506-0102-017	CAP,1000pF,100V,5%,NPO
C3225	1506-0102-017	CAP,1000pF,100V,5%,NPO
C3226	1506-0101-017	CAP,100pF,100V,5%,NPO
C3227	1506-0680-017	CAP,68pF,100V,5%,NPO
C3228	1507-0105-018	CAP,1µF,35V,20%,TANT
C3229	1506-0821-017	CAP,820pF,100V,5%,NPO
C3230	1506-0390-017	CAP,39pF,100V,5%,NPO
CR3201	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR3202	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR3203	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR3204	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR3205	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR3206	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR3207	4814-0000-001	DIODE, 1N823A ,REF,6.2V/7.5MA
CR3208	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
J3201	2205-3510-101	CONN,D-SUB,M, 9-P,PCM,R.A
J3202	2200-2094-200	CONN,M SMB,PC MTG,RIGHT ANGLE
J3203	2200-2094-200	CONN,M SMB,PC MTG,RIGHT ANGLE
Q3201	4807-0000-002	TRANS, 2N3905 ,PNP HS SW
Q3202	4807-0000-002	TRANS, 2N3905 ,PNP HS SW
Q3203	4807-0000-001	TRANS, 2N3903 ,NPN HS SW
Q3204	4802-0000-005	TRANS, 2N3956 ,N-CH JFET,DUAL
Q3205	4807-0000-002	TRANS, 2N3905 ,PNP HS SW
Q3206	4807-0000-002	TRANS, 2N3905 ,PNP HS SW
Q3207	5050-2401-000	TRANS,VN10KM N-CH VMOSFET
Q3208	4807-0000-001	TRANS, 2N3903 ,NPN HS SW
Q3209	4807-0000-001	TRANS, 2N3903 ,NPN HS SW
Q3210	4807-0000-002	TRANS, 2N3905 ,PNP HS SW
Q3211	4807-0000-001	TRANS, 2N3903 ,NPN HS SW

7010-3031-401 PCB ASSY, ALC (cont) C

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
Q3212	4807-0000-001	TRANS, 2N3903 ,NPN HS SW
R3201	4702-0103-003	RES,10k,1/4W,5%
R3202	4702-0103-003	RES,10k,1/4W,5%
R3203	4706-1003-001	RES,100k,1/4W,1%
R3204	4702-0123-003	RES,12k,1/4W,5%
R3205	4702-0123-003	RES,12k,1/4W,5%
R3206	4702-0273-003	RES,27k,1/4W,5%
R3207	4702-0472-003	RES,4.7k,1/4W,5%
R3208	4702-0472-003	RES,4.7k,1/4W,5%
R3209	4702-0472-003	RES,4.7k,1/4W,5%
R3210	4702-0472-003	RES,4.7k,1/4W,5%
R3211	4702-0222-003	RES,2.2k,1/4W,5%
R3212	4702-0102-003	RES,1.0k,1/4W,5%
R3213	4702-0222-003	RES,2.2k,1/4W,5%
R3214	4702-0473-003	RES,47k,1/4W,5%
R3215	4702-0103-003	RES,10k,1/4W,5%
R3216	4702-0103-003	RES,10k,1/4W,5%
R3217	4702-0104-003	RES,100k,1/4W,5%
R3218	4702-0103-003	RES,10k,1/4W,5%
R3219	4702-0223-003	RES,22k,1/4W,5%
R3220	4702-0104-003	RES,100k,1/4W,5%
R3221	4702-0225-003	RES,2.2MEG,1/4W,5%
R3222	4702-0103-003	RES,10k,1/4W,5%
R3223	4702-0393-003	RES,39k,1/4W,5%
R3224	4756-3150-300	POT, 50k OHM, 3339W-1-503
R3225	4702-0103-003	RES,10k,1/4W,5%
R3226	4702-0333-003	RES,33k,1/4W,5%
R3227	4702-0103-003	RES,10k,1/4W,5%
R3228	4702-0102-003	RES,1.0k,1/4W,5%
R3229	4756-3120-200	POT, 2k OHM, 3339W-1-202
R3230	4702-0121-003	RES,120,1/4W,5%
R3231	4702-0471-003	RES,470,1/4W,5%
R3232	4702-0222-003	RES,2.2k,1/4W,5%
R3233	4702-0392-003	RES,3.9k,1/4W,5%
R3234	4702-0121-003	RES,120,1/4W,5%
R3235	4702-0392-003	RES,3.9k,1/4W,5%
R3236	4702-0123-003	RES,12k,1/4W,5%
R3237	4702-0152-003	RES,1.5k,1/4W,5%
R3238	4702-0470-003	RES,47,1/4W,5%
R3239	4703-0561-003	RES,560,1/2W,5%
R3240	4702-0222-003	RES,2.2k,1/4W,5%
R3241	4702-0479-003	RES,4.7,1/4W,5%
R3242	4702-0102-003	RES,1.0k,1/4W,5%
R3243	4702-0224-003	RES,220k,1/4W,5%
R3244	4702-0222-003	RES,2.2k,1/4W,5%
R3245	4702-0222-003	RES,2.2k,1/4W,5%
R3246	4702-0101-003	RES,100,1/4W,5%
R3247	4702-0472-003	RES,4.7k,1/4W,5%
R3248	4702-0223-003	RES,22k,1/4W,5%
R3249	4702-0272-003	RES,2.7k,1/4W,5%
R3250	4702-0103-003	RES,10k,1/4W,5%
R3251	4702-0103-003	RES,10k,1/4W,5%
R3252	4702-0472-003	RES,4.7k,1/4W,5%
R3253	4702-0102-003	RES,1.0k,1/4W,5%
R3254	4701-0122-003	RES,1.2k,1/8W,5%

7010-3031-401 PCB ASSY, ALC (cont) C

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
TP3201	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP3202	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP3203	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
X3201	3131-0000-044	IC,74LS00,QUAD 2-INPUT NAND
X3202	3131-0000-017	IC,74LS221,DUAL MULTIVIBRATOR
X3203	3131-0000-002	IC,74LS10,TRIPLE 3-INPUT NAND
X3204	3131-0000-017	IC,74LS221,DUAL MULTIVIBRATOR
X3205	3221-0001-000	IC,353,DUAL JFET OP AMP
X3206	3221-0001-000	IC,353,DUAL JFET OP AMP
X3207	3133-0000-002	IC,4016B,QUAD BILATERAL SWITCH

7010-3031-401 PCB ASSY, ALC D

Revision D contains all items in Revision C with the following change:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R3254	4701-0821-003	RES,820,1/8W,5%

7005-3041-500 ASSY, MIXER D

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
1	1414-3059-800	COVER,B ENCL,MIXER
2	6040-0010-012	CORD,SHLD,AL MESH,.062 DIA, 1.25 FT
3	1415-3052-500	ENCL,BLK,MIXER
4	7010-3031-500	PCB ASSY,MIXER
5	2803-0250-006	SCREW,4-40 X 1/4 PPHM
6	6042-3084-700	COAX ASSY,SEMI-RIGID,.086 DIA
8	2800-7600-169	SPACER,BR,.31 OD,.26 ID,.045LG
11	1050-0000-073	WIRE,BUS,TINNED COPPER,22GA
12	2840-0000-003	WASHER,LOCK,INT TOOTH,4
C3122	1622-0159-001	CAP,1.5pF,50V,NPO,CHIP
E3103	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
FL3101	5801-0000-006	PI FILTER,EMI/RFI 1500pF 8-32
FL3102	5801-0000-006	PI FILTER,EMI/RFI 1500pF 8-32
J3101	2123-0000-030	CONN,FSMA,W/TERM,STR BULKHEAD
J3102	2123-0000-030	CONN,FSMA,W/TERM,STR BULKHEAD

7010-3031-500 PCB ASSY, MIXER C

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
2	6011-0027-001	TUBING,TF,22 AWG,NATURAL,TW, 0.5 FT
3	6010-0188-100	TUBING,HS, 3/16 ID,CLEAR, 0.04 FT
4	3107-7751-000	INSULATOR, MYLAR ADHESIVE
C3101	1501-0103-005	CAP,0.01µF,50V,20%,DISC
C3102	1506-0101-017	CAP,100pF,100V,5%,NPO
C3103	1620-4090-510	CAP,4pF,50V,CHIP,NPO
C3104	1506-0020-017	CAP,2.2pF,100V,NPO,25
C3105	1506-0030-017	CAP,3.3pF,100V,MICA,17
C3107	1506-0050-017	CAP,5.6pF,100V,5%,NPO
C3108	1506-0030-017	CAP,3.3pF,100V,MICA,17
C3109	1622-0159-001	CAP,1.5pF,50V,NPO,CHIP
C3110	1506-0101-017	CAP,100pF,100V,5%,NPO
C3111	1506-0101-017	CAP,100pF,100V,5%,NPO
C3113	1506-0101-017	CAP,100pF,100V,5%,NPO
C3114	1506-0020-017	CAP,2.2pF,100V,NPO,25
C3116	1506-0101-017	CAP,100pF,100V,5%,NPO
C3117	1501-0103-005	CAP,0.01µF,50V,20%,DISC
C3118	1506-0100-017	CAP,10pF,100V,5%,NPO
C3119	1506-0050-017	CAP,5.6pF,100V,5%,NPO
C3120	1620-1090-511	CAP,1pF,50V,CHIP
C3121	1523-0000-004	CAP,47pF,50V,NPO,CHIP
C3123	1622-0159-001	CAP,1.5pF,50V,NPO,CHIP
C3124	1506-0100-017	CAP,10pF,100V,5%,NPO
CR3101	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR3102	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
L3102	1801-0108-001	IND, .10µH,.08OHM,1025-94
L3104	1801-0000-007	IND, .068 µH, .060 OHM
L3106	1801-0000-007	IND, .068 µH, .060 OHM
L3107	1801-0337-002	IND, .033µH,.035OHM102604
L3108	1801-0000-007	IND, .068 µH, .060 OHM
L3109	1801-0000-007	IND, .068 µH, .060 OHM
MX3101	5250-3100-100	MIXER,DBL BAL,FLTPK,10-1500MHz
Q3101	4803-0000-004	TRANS,NPN,LP/VHF AMP
Q3102	4803-0000-004	TRANS,NPN,LP/VHF AMP
Q3103	4807-0000-002	TRANS, 2N3905 ,PNP HS SW
Q3104	4803-0000-004	TRANS,NPN,LP/VHF AMP
Q3105	4807-0000-002	TRANS, 2N3905 ,PNP HS SW
Q3106	5010-0504-000	TRANS,RF NPN LO PWR MACRO-X
R3101	4722-1500-001	RES,150,1/8W,1%
R3102	4722-3929-001	RES,39.2,1/8W,1%
R3103	4722-1500-001	RES,150,1/8W,1%
R3104	4701-0390-003	RES,39,1/8W,5%
R3105	4701-0151-003	RES,150,1/8W,5%
R3106	4701-0223-003	RES,22k,1/8W,5%
R3107	4702-0391-003	RES,390,1/4W,5%
R3108	4701-0223-003	RES,22k,1/8W,5%
R3109	4702-0121-003	RES,120,1/4W,5%
R3110	4702-0472-003	RES,4.7k,1/4W,5
R3111	4701-0330-003	RES,33,1/8W,5%
R3112	4702-0272-003	RES,2.7k,1/4W,5
R3113	4702-0682-003	RES,6.8k,1/4W,5
R3114	4702-0222-003	RES,2.2k,1/4W,5
R3115	4702-0820-003	RES,82,1/4W,5%
R3116	4702-0222-003	RES,2.2k,1/4W,5
R3117	4702-0682-003	RES,6.8k,1/4W,5

7010-3031-500 PCB ASSY, MIXER (cont) C

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R3118	4702-0222-003	RES,2.2k,1/4W,5
R3119	4702-0470-003	RES,47,1/4W,5%
R3120	4701-0470-003	RES,47,1/8W,5%
R3121	4701-0470-003	RES,47,1/8W,5%
R3122	4722-1820-001	RES,182,1/8W,1%
R3123	4701-0151-003	RES,150,1/8W,5%
T3101	6000-6990-340	WIRE,MAG,BIFILAR,RED/GRN,34GA, 0.3 FT
TP3101	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP3102	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
Z3101	2103-7542-000	IMPEDANCE STRIP,1400A MIXER

7010-3031-500 PCB ASSY, MIXER D

Revision D contains all items in Revision C except the following:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
T3101	6000-6990-340	WIRE,MAG,BIFILAR,RED/GRN,34GA, 0.3 FT

Revision D contains all items in Revision C plus the following:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R3120SAT	4701-0101-003	RES,100,1/8W,5%
R3120SAT	4701-0330-003	RES,33,1/8W,5%
R3120SAT	4701-0390-003	RES,39,1/8W,5%
R3120SAT	4701-0470-003	RES,47,1/8W,5%
R3120SAT	4701-0510-003	RES,51,1/8W,5%
R3120SAT	4701-0680-003	RES,68,1/8W,5%
R3120SAT	4701-0820-003	RES,82,1/8W,5%
R3121SAT	4701-0101-003	RES,100,1/8W,5%
R3121SAT	4701-0330-003	RES,33,1/8W,5%
R3121SAT	4701-0390-003	RES,39,1/8W,5%
R3121SAT	4701-0470-003	RES,47,1/8W,5%
R3121SAT	4701-0510-003	RES,51,1/8W,5%
R3121SAT	4701-0680-003	RES,68,1/8W,5%
R3121SAT	4701-0820-003	RES,82,1/8W,5%

Revision D contains all items in Revision C with the following changes:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R3120	4701-0560-003	RES,56,1/8W,5%
R3121	4701-0560-003	RES,56,1/8W,5%

7010-3031-500 PCB ASSY, MIXER D1

Revision D1 contains all items in Revision D.

7010-3031-500 PCB ASSY, MIXER (cont) E

Revision E contains all items in Revision D1 plus the following:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
C3125	1506-0100-017	CAP,100pF,100V,5%,NPO

Revision E contains all items in Revision D1 with the following changes:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
C3125	1506-0100-017	CAP,100pF,100V,5%,NPO
R3120	4701-0680-003	RES,68,1/8W,5%
R3120SAT	4701-0560-003	RES,56,1/8W,5%
R3121	4701-0680-003	RES,68,1/8W,5%
R3121SAT	4701-0560-003	RES,56,1/8W,5%

7010-3031-500 PCB ASSY, MIXER F

Revision F contains all items in Revision E with the following change:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
C3103	1620-4090-510	CAP,3pF,50V,CHIP,NPO

7010-3031-500 PCB ASSY, MIXER F1

Revision F1 contains all items in Revision F with the following changes:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R3120	4701-0560-003	RES,56,1/8W,5%
R3120	4701-0680-003	RES,68,1/8W,5%
R3121	4701-0560-003	RES,56,1/8W,5%
R3121	4701-0680-003	RES,68,1/8W,5%

7005-3044-101 ASSY, DISCRIMINATOR B2

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
2	7010-3034-100	PCB ASSY,RF CONVERTER
3	2850-7866-300	STANDOFF,HEX,MALE-FEMALE
4	7010-3034-200	PCB ASSY,DISCRIMINATOR
5	2850-7601-307	SCREW,.860L4-40.19HH,4-40X.180
6	2803-0250-006	SCREW,4-40 X 1/4 PPHM
7	7010-3034-301	PCB ASSY, SAMPLER
8	2804-0250-006	SCREW,6-32 X 1/4 PPHM
9	2840-0000-003	WASHER,LOCK,INT TOOTH,4
10	6500-3086-400	MIN ASY,FACE PLATE,DISCRIM

7010-3034-100 PCB ASSY, RF CONVERTER AA

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
2	1700-3026-100	PC BD,1058 MHz U-STRIP BP FLTR
3	6011-0027-001	TUBING,TF,22 AWG,NATURAL,TW, 0.1 FT
4	1050-0000-073	WIRE,BUS,TINNED COPPER,22GA
6	1415-3064-600	ENCL,BLK,RF CONVERTER
7	2803-0188-006	SCREW,4-40 X 3/16 PPHM
8	2850-7866-300	STANDOFF,HEX,MALE-FEMALE
9	1414-3064-700	COVER,B ENCL,RF CONVERTER
10	2840-7600-229	WASHER,ALUM,.305D,.196ID,.038T
C5101	1506-0020-017	CAP,2.2pF,100V,NPO,25
C5102	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C5103	1506-0020-017	CAP,2.2pF,100V,NPO,25
C5104	1506-0030-017	CAP,3.3pF,100V,MICA,1
C5105	1580-2202-016	CAP,22µF,16V,ELE,20
C5106	1506-0050-017	CAP,5.6pF,100V,5%,NPO
C5107	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C5108	1506-0050-017	CAP,5.6pF,100V,5%,NPO
C5109	1506-0101-017	CAP,100pF,100V,5%,NPO
C5110	1506-0820-017	CAP,82pF,100V,5%,NPO
C5111	1523-0000-002	CAP,1800pF,50V,X7R,C
C5112	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C5113	1506-0100-017	CAP,10pF,100V,5%,NPO
C5114	1506-0102-017	CAP,1000pF,100V,5%,NPO
C5115	1506-0121-017	CAP,120pF,100V,5%,NPO
C5117	1506-0102-017	CAP,1000pF,100V,5%,NPO
C5118	1506-0100-017	CAP,10pF,100V,5%,NPO
C5119	1506-0151-017	CAP,150pF,100V,5%,NPO
C5120	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C5121	1506-0220-017	CAP,22pF,100V,5%,NPO
C5122	1506-0220-017	CAP,22pF,100V,5%,NPO
C5123	1506-0820-017	CAP,82pF,100V,5%,NPO
C5124	1506-0010-017	CAP,1pF,100V,MICA,50
C5125	1506-0680-017	CAP,68pF,100V,5%,NPO
C5127	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C5128	1501-0103-005	CAP,0.01µF,50V,20%,DISC
C5130	1506-0102-017	CAP,1000pF,100V,5%,NPO
C5131	1506-0050-017	CAP,5.6pF,100V,5%,NPO
C5132	1506-0220-017	CAP,22pF,100V,5%,NPO
C5133	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C5134	1506-0271-017	CAP,270pF,100V,5%,NPO
C5135	1501-0103-005	CAP,0.01µF,50V,20%,DISC
C5136	1521-0000-001	CAP VAR,9.0-35pF,200V,VPCM
C5137	1506-0100-017	CAP,10pF,100V,5%,NPO
C5138	1506-0820-017	CAP,82pF,100V,5%,NPO
C5139	1506-0820-017	CAP,82pF,100V,5%,NPO
C5140	1506-0271-017	CAP,270pF,100V,5%,NPO
C5141	1506-0220-017	CAP,22pF,100V,5%,NPO
C5142	1506-0102-017	CAP,1000pF,100V,5%,NPO
C5143	1501-0103-005	CAP,0.01µF,50V,20%,DISC
CR5101	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR5102	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR5103	4814-0000-001	DIODE, 1N823A ,REF,6.2V/7.5MA
CR5104	4829-0000-001	DIODE,MA-45102 ,VARC,1.2pF/-4V
CR5105	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR5106	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR5107	4828-0000-002	DIODE,PIN,.3 pF,100 ns

7010-3034-100 PCB ASSY, RF CONVERTER (cont) AA

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
CR5108	4818-0000-004	DIODE, 1N5234B ,ZENER,6.2V,.5W
CR5109	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR5110	4818-0000-004	DIODE, 1N5234B ,ZENER,6.2V,.5W
CR5111	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR5112	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR5113	4828-0000-002	DIODE,PIN,.3 pF,100 ns
FL5101	5801-0000-006	PI FILTER,EMI/RFI 1500pF 8-32
FL5102	5801-0000-006	PI FILTER,EMI/RFI 1500pF 8-32
FL5103	5801-0000-006	PI FILTER,EMI/RFI 1500pF 8-32
FL5104	5801-0000-006	PI FILTER,EMI/RFI 1500pF 8-32
FL5105	5801-0000-006	PI FILTER,EMI/RFI 1500pF 8-32
J5101	2123-0000-038	CONN,M SMB,W/TERM,STR BULKHD
J5102	2123-0000-038	CONN,M SMB,W/TERM,STR BULKHD
J5103	2123-0000-038	CONN,M SMB,W/TERM,STR BULKHD
L5101	1804-0000-009	IND,VAR, .047-.075µH,ORG 618
L5104	1801-0010-001	IND, 10 µH,3.7OHM,1025-44
L5105	1801-0109-001	IND, 1.0 µH, 1 OHM,1025-20
L5106	1801-0010-001	IND, 10 µH,3.7OHM,1025-44
L5107	1801-0338-001	IND, .33 µH,.2 OHM,1025-08
L5108	1801-0010-001	IND, 10 µH,3.7OHM,1025-44
L5109	1801-0338-001	IND, .33 µH,.2 OHM,1025-08
L5111	1801-0010-001	IND, 10 µH,3.7OHM,1025-44
L5112	1801-0159-001	IND, 1.5 µH,.22OHM,1025-24
L5113	1801-0109-001	IND, 1.0 µH, 1 OHM,1025-20
L5114	1801-0010-001	IND, 10 µH,3.7OHM,1025-44
MX5101	5250-0000-002	MIXER,DBL BAL,FLTPK, 5-1000MHz
Q5101	4803-0000-004	TRANS,NPN,LP/VHF AMP
Q5102	4803-0000-004	TRANS,NPN,LP/VHF AMP
Q5103	4801-0000-001	TRANSISTOR NPN HS SW
Q5104	4803-0000-004	TRANS,NPN,LP/VHF AMP
Q5105	4803-0000-004	TRANS,NPN,LP/VHF AMP
Q5106	4809-0000-005	TRANS,66382,NPN HF AMP
Q5107	4803-0000-004	TRANS,NPN,LP/VHF AMP
Q5108	4801-0000-004	TRANS, 2N2905 ,PNP HS SW
Q5109	4807-0000-002	TRANS, 2N3905 ,PNP HS SW
Q5110	4803-0000-004	TRANS,NPN,LP/VHF AMP
R5101	4701-0390-003	RES,39,1/8W,5%
R5102	4701-0100-003	RES,10,1/8W,5%
R5103	4701-0473-003	RES,47k,1/8W,5%
R5104	4702-0471-003	RES,470,1/4W,5%
R5105	4702-0332-003	RES,3.3k,1/4W,5%
R5106	4702-0102-003	RES,1.0k,1/4W,5%
R5107	4702-0470-003	RES,47,1/4W,5%
R5108	4702-0680-003	RES,68,1/4W,5%
R5109	4702-0103-003	RES,10k,1/4W,5%
R5110	4702-0103-003	RES,10k,1/4W,5%
R5111	4752-0103-002	POT 10k OHM
R5112	4752-0103-002	POT 10k OHM
R5113	4702-0103-003	RES,10k,1/4W,5%
R5114	4702-0102-003	RES,1.0k,1/4W,5%
R5115	4702-0332-003	RES,3.3k,1/4W,5%
R5116	4701-0273-003	RES,27k,1/8W,5%
R5117	4702-0102-003	RES,1.0k,1/4W,5%
R5118	4702-0562-003	RES,5.6k,1/4W,5%
R5119	4701-0102-003	RES,1.0k,1/8W,5%

7010-3034-100 PCB ASSY, RF CONVERTER (cont) AA

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R5120	4702-0681-003	RES,680,1/4W,5%
R5121	4702-0471-003	RES,470,1/4W,5%
R5122	4702-0680-003	RES,68,1/4W,5%
R5123	4701-0471-003	RES,470,1/8W,5%
R5124	4702-0820-003	RES,82,1/4W,5%
R5125	4702-0471-003	RES,470,1/4W,5%
R5126	4702-0473-003	RES,47k,1/4W,5%
R5127	4701-0270-003	RES,27,1/8W,5%
R5128	4702-0471-003	RES,470,1/4W,5%
R5129	4702-0222-003	RES,2.2k,1/4W,5%
R5130	4701-0273-003	RES,27k,1/8W,5%
R5131	4702-0331-003	RES,330,1/4W,5%
R5132	4702-0470-003	RES,47,1/4W,5%
R5133	4702-0471-003	RES,470,1/4W,5%
R5134	4702-0331-003	RES,330,1/4W,5%
R5135	4702-0223-003	RES,22k,1/4W,5%
R5136	4701-0471-003	RES,470,1/8W,5%
R5137	4701-0101-003	RES,100,1/8W,5%
R5138	4702-0104-003	RES,100k,1/4W,5%
R5139	4701-0273-003	RES,27k,1/8W,5%
R5140	4702-0152-003	RES,1.5k,1/4W,5%
R5141	4702-0122-003	RES,1.2k,1/4W,5%
R5142	4702-0470-003	RES,47,1/4W,5%
R5143	4702-0102-003	RES,1.0k,1/4W,5%
R5144	4702-0102-003	RES,1.0k,1/4W,5%
R5145	4702-0470-003	RES,47,1/4W,5%
R5146	4702-0102-003	RES,1.0k,1/4W,5%
R5147	4702-0562-003	RES,5.6k,1/4W,5%
R5148	4701-0273-003	RES,27k,1/8W,5%
R5149	4702-0101-003	RES,100,1/4W,5%
R5150	4701-0220-003	RES,22,1/8W,5%
R5151	4701-0470-003	RES,47,1/8W,5%
R5152	4701-0680-003	RES,68,1/8W,5%
TP5101	2123-0000-038	CONN,M SMB,W/TERM,STR BULKHD
TP5102	2123-0000-038	CONN,M SMB,W/TERM,STR BULKHD
X5101	3213-1100-600	IC,11C06,750MHz D FLIP-FLOP
Y5101	2363-0089-000	XTAL, 30.000000MHz,3 P,HC-18/U

7010-3034-100 PCB ASSY, RF CONVERTER AB

Revision AB contains all items in Revision AA plus the following:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
X5101	7010-7534-100	PCB ASSY, DIV-BY-2 DIVIDER

7010-3034-100 PCB ASSY, RF CONVERTER AC

Revision AC contains all items in Revision AB with the following change:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R5115	4702-0152-003	RES,1.5k,1/4W,5%

7010-3034-100 PCB ASSY, RF CONVERTER (cont) AD

Revision AD contains all items in Revision AC.

7010-3034-100 PCB ASSY, RF CONVERTER AE

Revision AE contains all items in Revision AD.

7010-3034-100 PCB ASSY, RF CONVERTER AF

Revision AF contains all items in Revision AE with the following change:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
CR5104	4816-0000-068	DIODE,SMV1504,VAR,SOT-23

7010-3034-200 **PCB ASSY, DISCRIMINATOR** **E**

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
2	2803-0313-006	SCREW,4-40 X 5/16 PPHM
3	2840-0000-003	WASHER,LOCK,INT TOOTH,4
4	2850-0000-020	NUT,HEX,SMALL PAT,4-40
5	4835-0000-018	MTG PAD,8-PIN TO-5 IC
6	6009-0002-000	FLEX STRIP,NM,.10C,180 COND,2"
9	5400-0001-000	HEAT SINK,TO-92 TRANS, 6024U
C5201	1506-0102-017	CAP,1000pF,100V,5%,NPO
C5202	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C5203	1506-0101-017	CAP,100pF,100V,5%,NPO
C5204	1506-0820-017	CAP,82pF,100V,5%,NPO
C5205	1580-4702-105	CAP,47µF,10V,ELE,RDL
C5206	1506-0121-017	CAP,120pF,100V,5%,NPO
C5207	1580-4702-105	CAP,47µF,10V,ELE,RDL
C5208	1580-1000-205	CAP,10µF,25V,ELE,75
C5209	1506-0150-017	CAP,15pF,100V,5%,NPO
C5210	1506-0101-017	CAP,100pF,100V,5%,NPO
C5211	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C5212	1580-1000-205	CAP,10µF,25V,ELE,75
C5213	1506-0560-017	CAP,56pF,100V,5%,NPO
C5214	1522-0000-002	CAP VAR,0.8-11pF,GHC11000
C5215	1506-0680-017	CAP,68pF,100V,5%,NPO
C5215SAT	1506-0470-017	CAP,47pF,100V,NPO
C5215SAT	1506-0560-017	CAP,56pF,100V,5%,NPO
C5215SAT	1506-0820-017	CAP,82pF,100V,5%,NPO
C5216	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C5217	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C5218	1506-0121-017	CAP,120pF,100V,5%,NPO
C5219	1506-0101-017	CAP,100pF,100V,5%,NPO
C5220	1580-4792-305	CAP,4.7µF,35V
C5221	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C5222	1580-4792-305	CAP,4.7µF,35V
C5223	1501-0102-001	CAP,1000pF,500V,CERAMIC,DISC
C5224	1506-0560-017	CAP,56pF,100V,5%,NPO
C5224SAT	1506-0470-017	CAP,47pF,100V,NPO
C5224SAT	1506-0680-017	CAP,68pF,100V,5%,NPO
C5224SAT	1506-0820-017	CAP,82pF,100V,5%,NPO
C5225	1506-0680-017	CAP,68pF,100V,5%,NPO
C5226	1506-0820-017	CAP,82pF,100V,5%,NPO
C5227	1506-0150-017	CAP,15pF,100V,5%,NPO
C5228	1506-0121-017	CAP,120pF,100V,5%,NPO
C5229	1506-0101-017	CAP,100pF,100V,5%,NPO
C5230	1506-0680-017	CAP,68pF,100V,5%,NPO
C5231	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C5232	1506-0101-017	CAP,100pF,100V,5%,NPO
C5233	1506-0221-017	CAP,220pF,100V,5%,NPO
C5234	1506-0101-017	CAP,100pF,100V,5%,NPO
C5235	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C5236	1501-0102-001	CAP,1000pF,500V,CERAMIC,DISC
C5237	1501-0102-001	CAP,1000pF,500V,CERAMIC,DISC
C5238	1506-0101-017	CAP,100pF,100V,5%,NPO
C5239	1506-0221-017	CAP,220pF,100V,5%,NPO
C5240	1506-0101-017	CAP,100pF,100V,5%,NPO
C5241	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C5242	1580-4792-305	CAP,4.7µF,35V
C5243	1580-4792-305	CAP,4.7µF,35V

7010-3034-200 PCB ASSY, DISCRIMINATOR (cont) E

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
C5244	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C5245	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C5246	1501-0102-001	CAP,1000pF,500V,CERAMIC,DISC
CR5201	4816-0000-001	DIODE,5082-2800,S BAR, 70VBR
CR5202	4826-0000-015	DIODE,VARAC 25pF/-3V AXIAL
CR5203	4816-0000-001	DIODE,5082-2800,S BAR, 70VBR
CR5204	4826-0000-015	DIODE,VARAC 25pF/-3V AXIAL
CR5205	4816-0000-001	DIODE,5082-2800,S BAR, 70VBR
E5203	6051-0550-300	COAX ASSY,FLEXIBLE,RG 178B/U
J5201	2205-3510-101	CONN,D-SUB,M, 9-P,PCM,R.A
J5202	2200-2094-200	CONN,M SMB,PC MTG,RIGHT ANGLE
L5201	1801-0338-001	IND, .33µH,.2 OHM,1025-08
L5202	1801-0478-001	IND, .47µH,.35OHM,1025-12
L5203	1801-0478-001	IND, .47µH,.35OHM,1025-12
L5204	1801-0338-001	IND, .33µH,.2 OHM,1025-08
L5206	1801-0338-001	IND, .33µH,.2 OHM,1025-08
L5207	1801-0338-001	IND, .33µH,.2 OHM,1025-08
L5208	1801-0478-001	IND, .47µH,.35OHM,1025-12
L5209	1801-0478-001	IND, .47µH,.35OHM,1025-12
L5210	1801-0229-001	IND, 2.2 µH,.4 OHM,1025-28
L5211	1801-0229-001	IND, 2.2 µH,.4 OHM,1025-28
L5212	1801-0229-001	IND, 2.2 µH,.4 OHM,1025-28
L5213	1801-0229-001	IND, 2.2 µH,.4 OHM,1025-28
MX5201	5250-0100-100	MIXER,RF,DBL BAL, 1-500MHz
Q5201	4807-0000-002	TRANS, 2N3905 ,PNP HS SW
Q5202	4807-0000-001	TRANS, 2N3903 ,NPN HS SW
Q5203	4807-0000-002	TRANS, 2N3905 ,PNP HS SW
Q5204	4807-0000-001	TRANS, 2N3903 ,NPN HS SW
Q5205	4807-0000-001	TRANS, 2N3903 ,NPN HS SW
Q5206	4807-0000-002	TRANS, 2N3905 ,PNP HS SW
Q5207	4807-0000-001	TRANS, 2N3903 ,NPN HS SW
Q5208	4807-0000-001	TRANS, 2N3903 ,NPN HS SW
Q5209	5050-2401-000	TRANS,VN10KM N-CH VMOSFET
Q5210	4809-0000-005	TRANS,66382 ,NPN HF AMP
R5201	4702-0560-003	RES,56,1/4W,5%
R5202	4702-0101-003	RES,100,1/4W,5%
R5203	4702-0470-003	RES,47,1/4W,5%
R5204	4702-0471-003	RES,470,1/4W,5%
R5205	4702-0101-003	RES,100,1/4W,5%
R5206	4702-0471-003	RES,470,1/4W,5%
R5207	4702-0561-003	RES,560,1/4W,5%
R5208	4702-0103-003	RES,10k,1/4W,5%
R5209	4706-1001-001	RES,1.00k,1/4W,1%
R5210	4706-1001-001	RES,1.00k,1/4W,1%
R5211	4706-1001-001	RES,1.00k,1/4W,1%
R5212	4706-1001-001	RES,1.00k,1/4W,1%
R5213	4702-0471-003	RES,470,1/4W,5%
R5214	4702-0104-003	RES,100k,1/4W,5%
R5215	4702-0472-003	RES,4.7k,1/4W,5%
R5216	4702-0471-003	RES,470,1/4W,5%
R5217	4702-0273-003	RES,27k,1/4W,5%
R5218	4753-0202-002	POT, 2k OHM
R5219	4753-0102-002	POT 1k OHM
R5220	4702-0560-003	RES,56,1/4W,5%
R5221	4702-0560-003	RES,56,1/4W,5%

7010-3034-200 PCB ASSY, DISCRIMINATOR (cont) E

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R5222	4702-0104-003	RES,100k,1/4W,5%
R5223	4702-0221-003	RES,220,1/4W,5%
R5224	4702-0390-003	RES,39,1/4W,5%
R5225	4702-0122-003	RES,1.2k,1/4W,5%
R5226	4702-0560-003	RES,56,1/4W,5%
R5227	4702-0222-003	RES,2.2k,1/4W,5%
R5228	4702-0152-003	RES,1.5k,1/4W,5%
R5229	4702-0681-003	RES,680,1/4W,5%
R5230	4702-0470-003	RES,47,1/4W,5%
R5231	4702-0821-003	RES,820,1/4W,5%
R5232	4702-0101-003	RES,100,1/4W,5%
R5233	4702-0471-003	RES,470,1/4W,5%
R5234	4702-0470-003	RES,47,1/4W,5%
R5235	4702-0470-003	RES,47,1/4W,5%
R5236	4703-0471-003	RES,470,1/2W,5%
R5237	4702-0471-003	RES,470,1/4W,5%
R5238	4702-0331-003	RES,330,1/4W,5%
R5239	4702-0680-003	RES,68,1/4W,5%
R5240	4702-0471-003	RES,470,1/4W,5%
R5241	4702-0331-003	RES,330,1/4W,5%
R5242	4702-0470-003	RES,47,1/4W,5%
R5243	4702-0471-003	RES,470,1/4W,5%
R5244	4702-0470-003	RES,47,1/4W,5%
R5245	4702-0470-003	RES,47,1/4W,5%
R5246	4702-0470-003	RES,47,1/4W,5%
R5247	4702-0470-003	RES,47,1/4W,5%
R5248	4702-0101-003	RES,100,1/4W,5%
R5249	4702-0470-003	RES,47,1/4W,5%
TP5201	2200-2094-200	CONN,M SMB,PC MTG,RIGHT ANGLE
TP5202	2200-2094-200	CONN,M SMB,PC MTG,RIGHT ANGLE
X5201	3134-0000-008	IC,10116,TRIPLE LINE RECEIVER
X5202	3133-0000-014	IC,3130,BIMOS OP AMP,METAL CAN
X5203	3134-0000-008	IC,10116,TRIPLE LINE RECEIVER

7010-3034-301 PCB ASSY, SAMPLER B

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
2	2850-0000-016	NUT FLOATING ESNA 22LHA27M2262
3	2820-0001-004	EYELET,.059OD,.125LG, GS-2-4
4	6011-0027-001	TUBING,TF,22 AWG,NATURAL,TW, 0.03 FT
5	4835-0000-018	MTG PAD,8-PIN TO-5 IC
C5301	1580-2202-420	CAP,22µF,35V,ELE,RDL
C5302	1580-4702-105	CAP,47µF,10V,ELE,RDL
C5303	1580-4702-105	CAP,47µF,10V,ELE,RDL
C5304	1506-0680-017	CAP,68pF,100V,5%,NPO
C5305	1506-0680-017	CAP,68pF,100V,5%,NPO
C5306	1506-0152-017	CAP,1500pF,100V,NPO
C5307	1506-0100-017	CAP,10pF,100V,5%,NPO
C5308	1506-0270-017	CAP,27pF,100V,5%,NPO
C5309	1506-0270-017	CAP,27pF,100V,5%,NPO
C5310	1506-0222-017	CAP,2200pF,50V,NPO
C5311	1506-0470-017	CAP,47pF,100V,NPO
C5312	1506-0471-017	CAP,470pF,100V,5%,NPO
C5313	1502-0104-010	CAP,0.1µF,50V,5%,PC
C5314	1502-0105-007	CAP,1µF,50V,5%,MPC
C5315	1502-0105-007	CAP,1µF,50V,5%,MPC
C5316	1506-0470-017	CAP,47pF,100V,NPO
C5317	1506-0332-017	CAP,3000pF,100V,5%,NPO
C5318	1502-0103-010	CAP,0.01µF,50V,2%,PC
C5319	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C5320	1506-0470-017	CAP,47pF,100V,NPO
C5321	1506-0470-017	CAP,47pF,100V,NPO
C5322	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C5323	1501-0103-005	CAP,0.01µF,50V,20%,DISC
C5324	1506-0680-017	CAP,68pF,100V,5%,NPO
C5325	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C5327	1506-0151-017	CAP,150pF,100V,5%,NPO
C5330	1521-0000-002	CAP VAR,5.5-18pF,350V,VPCM
CR5301	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR5302	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR5303	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR5304	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR5305	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR5306	4831-0000-001	DIODE,FDH333 ,SIGNAL,HCLL
CR5307	4831-0000-001	DIODE,FDH333 ,SIGNAL,HCLL
CR5308	4831-0000-001	DIODE,FDH333 ,SIGNAL,HCLL
CR5309	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR5310	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR5311	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
Q5301	5050-2401-000	TRANS,VN10KM N-CH VMOSFET
Q5302	5050-2401-000	TRANS,VN10KM N-CH VMOSFET
Q5303	4801-0000-001	TRANSISTOR NPN HS SW
Q5304	4805-0000-001	TRANS,2N2907A,PNP HS SW (3251)
R5301	4701-0680-003	RES,68,1/8W,5%
R5302	4756-3110-300	POT, 10k OHM, 3339W-1-103
R5303	4702-0681-003	RES,680,1/4W,5%
R5304	4702-0103-003	RES,10k,1/4W,5%
R5305	4702-0104-003	RES,100k,1/4W,5%
R5306	4702-0105-003	RES,1.0MEG,1/4W,5%
R5307	4702-0472-003	RES,4.7k,1/4W,5%
R5308	4702-0223-003	RES,22k,1/4W,5%
R5310	4702-0472-003	RES,4.7k,1/4W,5%

7010-3034-301 **PCB ASSY, SAMPLER (cont)** **B**

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R5311	4702-0223-003	RES,22k,1/4W,5%
R5312	4702-0223-003	RES,22k,1/4W,5%
R5313	4756-3110-300	POT, 10k OHM, 3339W-1-103
R5314	4702-0101-003	RES,100,1/4W,5%
R5315	4702-0472-003	RES,4.7k,1/4W,5%
R5316	4702-0472-003	RES,4.7k,1/4W,5%
R5317	4702-0472-003	RES,4.7k,1/4W,5%
R5318	4702-0223-003	RES,22k,1/4W,5%
R5319	4702-0102-003	RES,1.0k,1/4W,5%
R5320	4702-0223-003	RES,22k,1/4W,5%
R5321	4702-0472-003	RES,4.7k,1/4W,5%
R5322	4702-0101-003	RES,100,1/4W,5%
R5323	4702-0223-003	RES,22k,1/4W,5%
R5324	4702-0332-003	RES,3.3k,1/4W,5%
R5325	4702-0332-003	RES,3.3k,1/4W,5%
R5326	4702-0102-003	RES,1.0k,1/4W,5%
R5327	4702-0272-003	RES,2.7k,1/4W,5%
R5328	4702-0223-003	RES,22k,1/4W,5%
R5329	4702-0223-003	RES,22k,1/4W,5%
R5330	4702-0221-003	RES,220,1/4W,5%
R5331	4702-0102-003	RES,1.0k,1/4W,5%
R5332	4702-0101-003	RES,100,1/4W,5%
R5333	4702-0332-003	RES,3.3k,1/4W,5%
R5334	4702-0223-003	RES,22k,1/4W,5%
R5335	4702-0332-003	RES,3.3k,1/4W,5%
R5336	4702-0103-003	RES,10k,1/4W,5%
R5337	4702-0472-003	RES,4.7k,1/4W,5%
R5338	4702-0332-003	RES,3.3k,1/4W,5%
R5338SAT	4702-0222-003	RES,2.2k,1/4W,5%
R5338SAT	4702-0272-003	RES,2.7k,1/4W,5%
R5338SAT	4702-0392-003	RES,3.9k,1/4W,5%
R5338SAT	4702-0472-003	RES,4.7k,1/4W,5%
R5339	4702-0223-003	RES,22k,1/4W,5%
R5340	4702-0223-003	RES,22k,1/4W,5%
R5341	4701-0331-003	RES,330,1/8W,5%
R5343	4702-0680-003	RES,68,1/4W,5%
X5301	3133-0000-002	IC,4016B,QUAD BILATERAL SWITCH
X5302	3133-0000-001	IC,4001B,QUAD 2-INPUT NOR
X5303	3133-0000-011	IC,4011B,QUAD 2-INPUT NAND
X5304	3214-4023-100	IC,4023B,TRIPLE 3-INPUT NAND
X5305	3133-0000-014	IC,3130,BIMOS OP AMP,METAL CAN
X5306	3133-0000-018	IC,4047B,ASTABLE MULTIVIBRATOR
X5307	3133-0000-004	IC,4027B,DUAL JK MS FLIP-FLOP
X5308	3133-0000-018	IC,4047B,ASTABLE MULTIVIBRATOR
X5309	3133-0000-014	IC,3130,BIMOS OP AMP,METAL CAN
X5310	3133-0000-007	IC,4066B,QUAD BILATERAL SWITCH
X5311	3134-0000-001	IC,4040B,12-STAGE COUNTER
X5312	3133-0000-018	IC,4047B,ASTABLE MULTIVIBRATOR
X5313	3133-0000-012	IC,4029B,SYN U/D COUNTER
X5314	3133-0000-014	IC,3130,BIMOS OP AMP,METAL CAN
X5315	3133-0000-014	IC,3130,BIMOS OP AMP,METAL CAN
X5316	3133-0000-014	IC,3130,BIMOS OP AMP,METAL CAN
X5317	3133-0000-018	IC,4047B,ASTABLE MULTIVIBRATOR

7010-3034-301 PCB ASSY, SAMPLER (cont) C

Revision C includes all items in Revision B with the following change:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
C5315	1502-0106-100	CAP,1.0µF,1000V,5%,MPP

7010-3034-301 PCB ASSY, SAMPLER D

Revision D includes all items in Revision C plus the following:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R5342	4702-0471-003	RES,4.7K,1/4W,5%

7005-3043-700 ASSY, RF SYNTHESIZER J

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
1	2803-0188-006	SCREW,4-40 X 3/16 PPHM
2	2840-0000-003	WASHER,LOCK,INT TOOTH,4
3	1414-3051-100	COVER,B ENCL,RF FREQ SYNTH,F
4	7010-3034-000	PCB ASSY,FREQUENCY LATCH
7	2525-0000-002	COND GASKET 864804-3
8	1415-3051-000	ENCL,BLK,RF SYNTHESIZER
9	2803-1000-006	SCREW 4-40 X 1 PBHMS
10	1414-3051-200	COVER,B ENCL,RF FREQ SYNTH,R
11	2803-0250-006	SCREW,4-40 X 1/4 PPHM
12	7010-3033-900	PCB ASSY,PROGRAMMABLE DIVIDER
13	7010-3033-800	PCB ASSY,VCO
14	2506-3066-800	PLATE,FACE,SYNTHESIZER
16	2840-7600-208	WASHER,ALUM,.38OD,.250ID,.020T
17	6042-3082-200	COAX ASSY,SEMI-RIGID,.086 DIA
18	2850-7866-300	STANDOFF,HEX,MALE-FEMALE
19	6020-0094-200	TUBING, HS 3/32ID BLACK
21	2850-0000-020	NUT,HEX,SMALL PAT,4-40
23	7010-3033-700	PCB ASSY,REFERENCE DIVIDER
E4001	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
E4002	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
E4003	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
FL4001	5801-0000-006	PI FILTER,EMI/RFI 1500pF 8-32
FL4002	5801-0000-006	PI FILTER,EMI/RFI 1500pF 8-32
FL4003	5801-0000-006	PI FILTER,EMI/RFI 1500pF 8-32
FL4004	5801-0000-006	PI FILTER,EMI/RFI 1500pF 8-32
J4001	2205-1510-501	CONN,D-SUB,M, 9-P,FLTR,SOD CUP
J4004	2123-0000-030	CONN,FSMA,W/TERM,STR BULKHEAD
J4005	2123-0000-030	CONN,FSMA,W/TERM,STR BULKHEAD
J4006	2123-0000-030	CONN,FSMA,W/TERM,STR BULKHEAD
J4007	2123-0000-030	CONN,FSMA,W/TERM,STR BULKHEAD
L4001	2750-0150-800	CORE,BEAD,STACKPOLE 57-0257
	6003-0000-001	WIRE,HOOK,TFE,26GA, 7S,BLACK, 1.34 FT
	6003-0000-003	WIRE,HOOK,TFE,26GA, 7S,RED, 0.875 FT
	6003-0000-004	WIRE,HOOK,TFE,26GA, 7S,ORANGE, 0.875 FT
	6003-0000-005	WIRE,HOOK,TFE,26GA, 7S,YELLOW, 0.458 FT
	6003-0000-013	WIRE,HOOK,TFE,26GA, 7S,WHT/RED, 0.667 FT
	6003-0000-017	WIRE,HOOK,TFE,26GA, 7S,WHT/BLU, 0.5 FT

7010-3034-000 PCB ASSY, FREQUENCY LATCH A1

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
2	2803-0313-006	SCREW,4-40 X 5/16 PPHM
3	2840-0000-003	WASHER,LOCK,INT TOOTH,4
4	2800-7600-141	SPACER,AL,.25 OD,4-40ID,.440LG
5	2850-0000-008	NUT,HEX,REG PAT,4-40
7	2803-0250-006	SCREW,4-40 X 1/4 PPHM
C4101	1580-1000-205	CAP,10µF,25V,ELE,75
C4102	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C4103	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C4104	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
J4102	2116-0000-021	CONN,D-SUB,M,25-P,PCM,R.A
J4103	2116-0000-019	CONN,D-SUB,F,25-P,PCM,STR,.188
R4101	4701-0101-003	RES,100,1/8W,5%
R4102	4701-0101-003	RES,100,1/8W,5%
R4103	4701-0101-003	RES,100,1/8W,5%
R4104	4701-0101-003	RES,100,1/8W,5%
R4105	4701-0101-003	RES,100,1/8W,5%
R4106	4701-0101-003	RES,100,1/8W,5%
R4107	4701-0101-003	RES,100,1/8W,5%
R4108	4701-0101-003	RES,100,1/8W,5%
R4109	4701-0101-003	RES,100,1/8W,5%
R4110	4701-0101-003	RES,100,1/8W,5%
R4111	4701-0101-003	RES,100,1/8W,5%
R4112	4701-0101-003	RES,100,1/8W,5%
R4113	4701-0101-003	RES,100,1/8W,5%
R4114	4701-0101-003	RES,100,1/8W,5%
R4115	4701-0101-003	RES,100,1/8W,5%
R4116	4701-0101-003	RES,100,1/8W,5%
R4117	4701-0101-003	RES,100,1/8W,5%
R4118	4701-0101-003	RES,100,1/8W,5%
R4119	4701-0101-003	RES,100,1/8W,5%
R4120	4701-0101-003	RES,100,1/8W,5%
R4121	4701-0101-003	RES,100,1/8W,5%
TP4101	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
X4101	3131-0000-002	IC,74LS10,TRIPLE 3-INPUT NAND
X4102	3131-0000-045	IC,74LS138,3-TO-8 DCDR/MPLXR
X4103	3131-0000-043	IC,74LS377,OCTAL D FLIP-FLOP
X4104	3131-0000-043	IC,74LS377,OCTAL D FLIP-FLOP
X4105	3131-0000-043	IC,74LS377,OCTAL D FLIP-FLOP

7010-3033-800 **PCB ASSY, VCO** **A9**

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
C4201	1580-1510-155	CAP,150µF,16V,ELE
C4202	1506-0102-017	CAP,1000pF,100V,5%,NPO
C4203	1506-0271-017	CAP,270pF,100V,5%,NPO
C4204	1580-4792-305	CAP,4.7µF,35V
C4205	1506-0271-017	CAP,270pF,100V,5%,NPO
C4206	1506-0020-017	CAP,2.2pF,100V,NPO,25
C4207	1523-0000-002	CAP,1800pF,50V,X7R,CHIP
C4208	1523-0000-014	CAP,3pF,50V,NPO,CHIP
C4208SAT	1620-2090-510	CAP,2pF,200V,CHIP,NPO
C4208SAT	1620-1690-511	CAP,1.6pF,100V,CHIP,NPO
C4209	1506-0102-017	CAP,1000pF,100V,5%,NPO
C4210	1506-0030-017	CAP,3.3pF,100V,MICA,17
C4211	1506-0030-017	CAP,3.3pF,100V,MICA,17
C4212	1506-0271-017	CAP,270pF,100V,5%,NPO
C4213	1506-0020-017	CAP,2.2pF,100V,NPO,25
C4214	1506-0030-017	CAP,3.3pF,100V,MICA,17
C4215	1580-4792-305	CAP,4.7µF,35V
C4216	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C4217	1506-0100-017	CAP,10pF,100V,5%,NPO
C4218	1506-0271-017	CAP,270pF,100V,5%,NPO
C4219	1506-0100-017	CAP,10pF,100V,5%,NPO
C4220	1506-0102-017	CAP,1000pF,100V,5%,NPO
C4221	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C4222	1506-0100-017	CAP,10pF,100V,5%,NPO
C4223	1506-0010-017	CAP,1pF,100V,MICA,50C
C4224	1620-2090-510	CAP,2pF,200V,CHIP,NPO
C4225	1620-2090-510	CAP,2pF,200V,CHIP,NPO
C4226	1620-2090-510	CAP,2pF,200V,CHIP,NPO
CR4201	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR4202	4829-0000-001	DIODE,MA-45102 ,VARC,1.2pF/-4V
CR4203	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
L4201	1050-0000-073	WIRE,BUS,TINNED COPPER,22GA
L4202	1801-0229-001	IND, 2.2 µH,.4 OHM,1025-28
L4203	1801-0229-001	IND, 2.2 µH,.4 OHM,1025-28
L4204	1801-0109-001	IND, 1.0 µH, 1 OHM,1025-20
L4205	1801-0109-001	IND, 1.0 µH, 1 OHM,1025-20
L4206	1801-0228-001	IND, .22µH,.14OHM,1025-04
Q4201	4807-0000-002	TRANS, 2N3905 ,PNP HS SW
Q4202	5010-0504-100	TRANS, RF NPN LO NOISE MRF581A
Q4203	4803-0000-004	TRANS,NPN,LP/VHF AMP
Q4204	4803-0000-004	TRANS,NPN,LP/VHF AMP
Q4205	4803-0000-004	TRANS,NPN,LP/VHF AMP
Q4206	4803-0000-004	TRANS,NPN,LP/VHF AMP
R4201	4702-0102-003	RES,1.0k,1/4W,5%
R4203	4702-0330-003	RES,33,1/4W,5%
R4204	4702-0561-003	RES,560,1/4W,5%
R4205	4702-0101-003	RES,100,1/4W,5%
R4206	4702-0392-003	RES,3.9k,1/4W,5%
R4207	4702-0392-003	RES,3.9k,1/4W,5%
R4208	4702-0151-003	RES,150,1/4W,5%
R4209	4701-0470-003	RES,47,1/8W,5%
R4210	4701-0470-003	RES,47,1/8W,5%
R4211	4701-0180-003	RES,18,1/8W,5%
R4213	4701-0223-003	RES,22k,1/8W,5%
R4214	4701-0223-003	RES,22k,1/8W,5%

7010-3033-800 PCB ASSY, VCO (cont) A9

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R4215	4702-0331-003	RES,330,1/4W,5%
R4216	4702-0331-003	RES,330,1/4W,5%
R4217	4701-0223-003	RES,22k,1/8W,5%
R4218	4701-0223-003	RES,22k,1/8W,5%
R4219	4702-0331-003	RES,330,1/4W,5%
R4220	4702-0331-003	RES,330,1/4W,5%
R4221	4701-0680-003	RES,68,1/8W,5%
R4222	4702-0270-003	RES,27,1/4W,5%

7010-3033-800 PCB ASSY, VCO B

Revision B includes all items in Revision A9 with the following change:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
C4226	1523-0000-014	CAP,3pF,50V,NPO,CHIP

7010-3033-800 PCB ASSY, VCO C

Revision C includes all items in Revision B with the following changes:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
C4208	1620-1690-511	CAP,3pF,50V,NPO,CHIP
C4208SAT	1620-2090-510	CAP,1.6pF,100V,CHIP,NPO
C4208SAT	1523-0000-014	CAP,3pF,50V,NPO,CHIP

7010-3033-800 PCB ASSY, VCO C1

Revision C1 includes all items in Revision C plus the following:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
L4209	6000-0003-000	WIRE,MAG,SINGLE FORMAR,30GA

7010-3033-900 PCB ASSY, PROGRAMMABLE DIVIDER E

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
2	2800-3064-200	SPACER,SM,.250OD,.140ID,.400LG
C4301	1620-2210-600	CAP,220pF,100V,CHIP,NPO
C4302	1622-0102-100	CAP,1000pF,50V,1%,1206
C4303	1622-0102-100	CAP,1000pF,50V,1%,1206
C4304	1622-0102-100	CAP,1000pF,50V,1%,1206
C4305	1622-0102-100	CAP,1000pF,50V,1%,1206
C4306	1622-0103-001	CAP,0.01µF,50V,CHIP,X7R
C4307	1622-0103-001	CAP,0.01µF,50V,CHIP,X7R
C4308	1619-0475-035	CAP,4.7µF,35V,TANT,SMD
C4309	1622-0103-001	CAP,0.01µF,50V,CHIP,X7R
C4310	1622-0103-001	CAP,0.01µF,50V,CHIP,X7R
C4311	1622-0103-001	CAP,0.01µF,50V,CHIP,X7R
C4312	1622-0103-001	CAP,0.01µF,50V,CHIP,X7R
C4313	1622-0103-001	CAP,0.01µF,50V,CHIP,X7R
C4314	1622-0103-001	CAP,0.01µF,50V,CHIP,X7R
L4301	1811-6222-001	IND,SM 2.2µH 10% C 1008
P4103	2205-1510-318	CONN,D-SUB,M,25-P,FLTR,PCM,STR
R4301	4722-6819-001	RES,68.1,1/8W,1%
R4302	4722-5620-001	RES,562,1/8W,1%
R4303	4722-5620-001	RES,562,1/8W,1%
R4304	4722-4759-001	RES,47.5,1/8W,1%
R4305	4722-6810-001	RES,681,1/8W,1%
R4306	4722-6810-001	RES,681,1/8W,1%
R4307	4722-1001-001	RES,1.0k,1/8W,1%
R4308	4722-1002-001	RES,10.0k,1/8W,1%
U4301	3131-0000-029	IC,74LS190,BCD SYN U/D COUNTER
U4302	3213-0900-004	IC,.65-3.3GHz,N/4 FIX MOD DIV
U4303	3131-0000-029	IC,74LS190,BCD SYN U/D COUNTER
U4304	3131-0000-029	IC,74LS190,BCD SYN U/D COUNTER
U4305	3131-0000-032	IC,74LS02,QUAD 2-INPUT NOR
U4306	3134-0000-017	IC,12013,D/10/11 PRESCALER
U4307	3131-0000-044	IC,74LS00,QUAD 2-INPUT NAND
U4308	3131-0000-029	IC,74LS190,BCD SYN U/D COUNTER
U4309	3213-0003-000	IC,10137,UNIV DECADE COUNTER
U4310	3131-0000-029	IC,74LS190,BCD SYN U/D COUNTER
U4311	3131-0000-029	IC,74LS190,BCD SYN U/D COUNTER
U4312	3131-0000-027	IC,74LS30,8-INPUT NAND
U4313	3131-0000-034	IC,74LS73,DUAL JK FLIP-FLOP

7010-3033-700 PCB ASSY, REFERENCE DIVIDER C3

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
C4401	1506-0220-017	CAP,22pF,100V,5%,NPO
C4402	1580-1510-155	CAP,150µF,16V,ELE
C4403	1506-0220-017	CAP,22pF,100V,5%,NPO
C4404	1501-0102-001	CAP,1000pF,500V,CERAMIC,DISC
C4405	1501-0102-001	CAP,1000pF,500V,CERAMIC,DISC
C4406	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C4407	1502-0334-012	CAP,0.33µF,50V,5%,MPC
C4408	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C4409	1501-0102-001	CAP,1000pF,500V,CERAMIC,DISC
C4410	1501-0102-001	CAP,1000pF,500V,CERAMIC,DISC
C4411	1501-0103-005	CAP,0.01µF,50V,20%,DISC
C4412	1501-0103-005	CAP,0.01µF,50V,20%,DISC
C4413	1501-0103-005	CAP,0.01µF,50V,20%,DISC
C4414	1501-0102-001	CAP,1000pF,500V,CERAMIC,DISC
C4415	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
CR4401	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR4402	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR4403	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR4404	4831-0000-001	DIODE,FDH333 ,SIGNAL,HCLL
CR4405	4831-0000-001	DIODE,FDH333 ,SIGNAL,HCLL
CR4406	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
J4401	2200-2094-200	CONN,M SMB,PC MTG,RIGHT ANGLE
L4401	1801-0229-001	IND, 2.2 µH,.4 OHM,1025-28
L4402	1801-0022-001	IND, 22µH 3.3 OHM 1025-52
L4403	1801-0229-001	IND, 2.2 µH,.4 OHM,1025-28
Q4401	4809-0100-100	TRANS,55100 PN HF AMP
Q4402	4801-0000-001	TRANSISTOR NPN HS SW
Q4403	4802-0000-005	TRANS, 2N3956 ,N-CH JFET,DUAL
Q4404	4807-0000-002	TRANS, 2N3905 ,PNP HS SW
Q4405	5050-2401-000	TRANS,VN10KM N-CH VMOSFET
R4401	4702-0680-003	RES,68,1/4W,5%
R4402	4702-0681-003	RES,680,1/4W,5%
R4403	4702-0333-003	RES,33k,1/4W,5%
R4404	4702-0471-003	RES,470,1/4W,5%
R4405	4702-0681-003	RES,680,1/4W,5%
R4406	4702-0681-003	RES,680,1/4W,5%
R4407	4702-0471-003	RES,470,1/4W,5%
R4408	4702-0471-003	RES,470,1/4W,5%
R4409	4702-0681-003	RES,680,1/4W,5%
R4410	4702-0102-003	RES,1.0k,1/4W,5%
R4411	4702-0562-003	RES,5.6k,1/4W,5%
R4413	4702-0123-003	RES,12k,1/4W,5%
R4414	4702-0103-003	RES,10k,1/4W,5%
R4415	4702-0105-003	RES,1.0MEG,1/4W,5%
R4416	4702-0154-003	RES,150k,1/4W,5%
R4417	4702-0103-003	RES,10k,1/4W,5%
R4418	4756-2510-400	POT 100k OHM
X4402	3131-0000-028	IC,74LS90,DECADE COUNTER
X4403	3131-0000-028	IC,74LS90,DECADE COUNTER
X4404	3131-0000-028	IC,74LS90,DECADE COUNTER
X4405	3131-0000-044	IC,74LS00,QUAD 2-INPUT NAND
X4406	3131-0000-034	IC,74LS73,DUAL JK FLIP-FLOP
X4407	3131-0000-034	IC,74LS73,DUAL JK FLIP-FLOP

7005-3041-200 ASSY, COUNTER A1

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
1	7010-3031-200	PCB ASSY,COUNTER
2	2850-7866-300	STANDOFF,HEX,MALE-FEMALE
3	6500-3086-500	MIN ASSY,FACE PLATE,CNTR

7010-3031-200 PCB ASSY, COUNTER C

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
2	2803-0313-006	SCREW,4-40 X 5/16 PPHM
3	2840-0000-003	WASHER,LOCK,INT TOOTH,4
4	2850-0000-020	NUT,HEX,SMALL PAT,4-40
5	8010-0000-904	ALUM EXTR,7 FIN,.19 X .73,6012
6	1050-0000-075	WIRE,BUS,TINNED COPPER,26GA
7	6011-0018-001	TUBING,TF,26 AWG,NATURAL,TW, 0.1 FT
8	5300-0000-002	CRYSTAL OVEN
9	4835-0000-012	PAD,MTG,TO-5 TRANS, 511-038
10	6011-0034-000	TUBING,TF,20 AWG,NATURAL,SW, 0.1 FT
C6101	1506-0100-017	CAP,10pF,100V,5%,NPO
C6102	1506-0100-017	CAP,10pF,100V,5%,NPO
C6103	1506-0101-017	CAP,100pF,100V,5%,NPO
C6104	1506-0101-017	CAP,100pF,100V,5%,NPO
C6105	1522-0000-002	CAP VAR,0.8-11pF,GHC11000
C6106	1506-0270-017	CAP,27pF,100V,5%,NPO
C6107	1506-0102-017	CAP,1000pF,100V,5%,NPO
C6108	1506-0221-017	CAP,220pF,100V,5%,NPO
C6109	1506-0050-017	CAP,5.6pF,100V,5%,NPO
C6110	1506-0050-017	CAP,5.6pF,100V,5%,NPO
C6111	1501-0102-001	CAP,1000pF,500V,CERAMIC,DISC
C6112	1506-0100-017	CAP,10pF,100V,5%,NPO
C6113	1501-0102-001	CAP,1000pF,500V,CERAMIC,DISC
C6114	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C6115	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C6116	1501-0102-001	CAP,1000pF,500V,CERAMIC,DISC
C6117	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C6118	1501-0102-001	CAP,1000pF,500V,CERAMIC,DISC
C6119	1506-0100-017	CAP,10pF,100V,5%,NPO
C6120	1580-4702-105	CAP,47µF,10V,ELE,RDL
C6121	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C6122	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C6123	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C6124	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C6125	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C6126	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C6127	1580-4702-105	CAP,47µF,10V,ELE,RDL
C6128	1501-0102-001	CAP,1000pF,500V,CERAMIC,DISC
C6129	1501-0102-001	CAP,1000pF,500V,CERAMIC,DISC
C6130	1506-0102-017	CAP,1000pF,100V,5%,NPO
C6131	1506-0102-017	CAP,1000pF,100V,5%,NPO
CR6101	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR6102	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR6103	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR6104	4828-0000-002	DIODE,PIN,.3 pF,100 ns
CR6105	4816-0000-001	DIODE,5082-2800,S BAR, 70VBR
CR6106	4816-0000-001	DIODE,5082-2800,S BAR, 70VBR
CR6107	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
J6101	2205-3510-101	CONN,D-SUB,M, 9-P,PCM,R.A
J6102	2116-0000-021	CONN,D-SUB,M,25-P,PCM,R.A
J6103	2200-2094-200	CONN,M SMB,PC MTG,RIGHT ANGLE
J6104	2200-2094-200	CONN,M SMB,PC MTG,RIGHT ANGLE
L6101	1801-0109-001	IND, 1.0 µH, 1 OHM,1025-20
L6102	1801-0109-001	IND, 1.0 µH, 1 OHM,1025-20
L6103	1801-0010-001	IND, 10 µH,3.7OHM,1025-44
L6104	1801-0010-001	IND, 10 µH,3.7OHM,1025-44

7010-3031-200 **PCB ASSY, COUNTER (cont)** **C**

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
L6105	1801-0109-001	IND, 1.0 µH, 1 OHM,1025-20
L6106	1801-0109-001	IND, 1.0 µH, 1 OHM,1025-20
L6107	1801-0109-001	IND, 1.0 µH, 1 OHM,1025-20
L6108	1801-0010-001	IND, 10 µH,3.7OHM,1025-44
Q6101	4803-0000-004	TRANS,NPN,LP/VHF AMP
Q6102	4803-0000-004	TRANS,NPN,LP/VHF AMP
Q6103	4809-0000-005	TRANS,66382 ,NPN HF AMP
Q6104	4809-0000-005	TRANS,66382 ,NPN HF AMP
Q6105	4809-0000-005	TRANS,66382 ,NPN HF AMP
Q6106	4803-0000-004	TRANS,NPN,LP/VHF AMP
R6101	4702-0680-003	RES,68,1/4W,5%
R6102	4702-0680-003	RES,68,1/4W,5%
R6103	4701-0223-003	RES,22k,1/8W,5%
R6104	4701-0223-003	RES,22k,1/8W,5%
R6105	4702-0391-003	RES,390,1/4W,5%
R6106	4702-0391-003	RES,390,1/4W,5%
R6107	4702-0222-003	RES,2.2k,1/4W,5%
R6108	4702-0222-003	RES,2.2k,1/4W,5%
R6109	4702-0153-003	RES,15k,1/4W,5%
R6110	4702-0273-003	RES,27k,1/4W,5%
R6111	4702-0221-003	RES,220,1/4W,5%
R6112	4702-0102-003	RES,1.0k,1/4W,5%
R6113	4702-0222-003	RES,2.2k,1/4W,5%
R6114	4702-0222-003	RES,2.2k,1/4W,5%
R6115	4702-0221-003	RES,220,1/4W,5%
R6116	4702-0471-003	RES,470,1/4W,5%
R6117	4702-0473-003	RES,47k,1/4W,5%
R6118	4701-0223-003	RES,22k,1/8W,5%
R6119	4702-0391-003	RES,390,1/4W,5%
R6120	4702-0222-003	RES,2.2k,1/4W,5%
R6121	4702-0472-003	RES,4.7k,1/4W,5%
R6122	4702-0472-003	RES,4.7k,1/4W,5%
R6123	4702-0680-003	RES,68,1/4W,5%
R6125	4702-0681-003	RES,680,1/4W,5%
R6126	4702-0681-003	RES,680,1/4W,5%
R6127	4702-0681-003	RES,680,1/4W,5%
R6128	4702-0102-003	RES,1.0k,1/4W,5%
R6129	4702-0102-003	RES,1.0k,1/4W,5%
TP6101	2200-2094-200	CONN,M SMB,PC MTG,RIGHT ANGLE
TP6102	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP6103	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP6104	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP6105	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
X6101	3131-0000-002	IC,74LS10,TRIPLE 3-INPUT NAND
X6102	3131-0000-006	IC,74LS76A,DUAL JK FLIP-FLOP
X6103	3131-0000-045	IC,74LS138,3-TO-8 DCDR/MPLXR
X6104	3131-0000-029	IC,74LS190,BCD SYN U/D COUNTER
X6105	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
X6106	3131-0000-029	IC,74LS190,BCD SYN U/D COUNTER
X6107	3211-3390-000	IC,74LS390,DUAL DECADE COUNTER
X6108	3134-0000-017	IC,12013,D/10/11 PRESCALER
X6109	3131-0000-029	IC,74LS190,BCD SYN U/D COUNTER
X6110	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
X6111	3211-3390-000	IC,74LS390,DUAL DECADE COUNTER
X6112	3213-0003-000	IC,10137,UNIV DECADE COUNTER

7010-3031-200 PCB ASSY, COUNTER (cont) C

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
X6113	3131-0000-029	IC,74LS190,BCD SYN U/D COUNTER
X6114	3131-0000-029	IC,74LS190,BCD SYN U/D COUNTER
X6115	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
X6116	3131-0000-006	IC,74LS76A,DUAL JK FLIP-FLOP
X6117	3131-0000-002	IC,74LS10,TRIPLE 3-INPUT NAND
X6118	3134-0000-001	IC,4040B,12-STAGE COUNTER
Y6101	2363-0024-001	XTAL,10.000000MHz,F P,HC35/U

7005-7542-600 ASSY, VIDEO A1

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
1	7010-7532-600	PCB ASSY,VIDEO CONVERTER
2	2803-0250-006	SCREW,4-40 X 1/4 PPHM
4	2800-7600-144	SPACER,AL,.25 OD,4-40ID,.700LG
5	7010-7530-800	PC ASSY, VIDEO BUFFER
6	6500-3086-601	MINOR ASSY,FACE PLATE,VIDEO
8	2804-0250-006	SCREW,6-32 X 1/4 PPHM
9	2850-7866-300	STANDOFF,HEX,MALE-FEMALE
10	5650-7552-100	TERMINATION, SMB 50OHM

7010-7532-600 PCB ASSY, VIDEO CONVERTER C

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
3	3101-0000-006	SOCKET ICN-246-S4G
4	2803-0313-006	SCREW,4-40 X 5/16 PPHM
5	2840-0000-003	WASHER,LOCK,INT TOOTH,4
6	2850-0000-020	NUT,HEX,SMALL PAT,4-40
8	6009-0220-010	FLEX STRIP,NM,.100C,20COND,1LG
9	7010-7533-600	PCB ASSY, AD538 INTERFACE
C7101	1580-4792-305	CAP,4.7µF,35V
C7102	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C7103	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C7104	1502-0334-012	CAP,0.33µF,50V,5%,MPC
C7105	1502-0334-012	CAP,0.33µF,50V,5%,MPC
C7106	1506-0271-017	CAP,270pF,100V,5%,NPO
C7107	1506-0102-017	CAP,1000pF,100V,5%,NPO
C7108	1506-0332-017	CAP,3000pF,100V,5%,NPO
C7109	1506-0101-017	CAP,100pF,100V,5%,NPO
C7110	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C7111	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C7112	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C7113	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C7114	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C7115	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C7116	1580-2202-016	CAP,22µF,16V,ELE,20
C7117	1580-2202-016	CAP,22µF,16V,ELE,20
C7118	1580-2202-016	CAP,22µF,16V,ELE,20
C7119	1580-2202-016	CAP,22µF,16V,ELE,20
C7120	1506-0102-017	CAP,1000pF,100V,5%,NPO
CR7101	4831-0000-001	DIODE,FDH333, SIGNAL,HCLL
J7101	2205-3510-101	CONN,D-SUB,M, 9-P,PCM,R.A
J7102	2116-0000-021	CONN,D-SUB,M,25-P,PCM,R.A
J7103	2200-2094-200	CONN,M SMB,PC MTG,RIGHT ANGLE
R7101	4702-0681-003	RES,680,1/4W,5%
R7102	4706-3401-001	RES,3.40k,1/4W,1%
R7103	4756-3120-200	POT, 2k OHM, 3339W-1-202
R7104	4706-2101-001	RES,2.10k,1/4W,1%
R7106	4702-0121-003	RES,120,1/4W,5%
R7108	4702-0104-003	RES,100k,1/4W,5%
R7109	4702-0121-003	RES,120,1/4W,5%
R7110	4702-0104-003	RES,100k,1/4W,5%
R7111	4702-0752-002	RES,7.5k,1/4W,5%
R7112	4706-2672-001	RES,26.7k,1/4W,1%
R7113	4702-0563-003	RES,56k,1/4W,5%
R7114	4752-0502-002	POT 5k OHM
R7115	4702-0273-003	RES,27k,1/4W,5%
R7116	4702-0103-003	RES,10k,1/4W,5%
R7117	4702-0472-003	RES,4.7k,1/4W,5%
R7118	4701-0681-003	RES,680,1/8W,5%
R7119	4701-0681-003	RES,680,1/8W,5%
TP7101	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP7102	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP7103	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
VR7101	3225-0001-000	IC, 336+2.5V/-2.5V REF
X7101	3131-0000-002	IC,74LS10,TRIPLE 3-INPUT NAND
X7102	3131-0000-025	IC,74LS27,TRIPLE 3-INPUT NOR
X7103	3235-9001-000	IC,0094,MULTIFUNCT CONVERTER
X7104	3131-0000-044	IC,74LS00,QUAD 2-INPUT NAND

7010-7532-600 PCB ASSY, VIDEO CONVERTER (cont) C

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
X7105	3135-0000-074	IC, 33/4 DIGIT AID CONVERTER
X7106	3131-0000-032	IC,74LS02,QUAD 2-INPUT NOR
X7107	3131-0000-005	IC,74LS75,4-BIT BISTABLE LATCH
X7108	3211-3244-000	IC,74LS244,OCTAL BUF/DRVR/RCVR
X7109	3131-0000-017	IC,74LS221,DUAL MULTIVIBRATOR
X7110	3131-0000-017	IC,74LS221,DUAL MULTIVIBRATOR
X7111	3131-0000-009	IC,74LS151,1-0F-8 SEL/MPLXR
X7112	3131-0000-033	IC,74LS04,HEX INVERTER
X7114	3131-0000-038	IC,74LS74A,DUAL D FLIP-FLOP

7010-7530-800 PCB ASSY, VIDEO BUFFER D

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
2	2820-0001-004	EYELET,.059OD,.125LG, GS-2-4
3	2850-0000-016	NUT FLOATING ESNA 22LHA27M2262
4	2803-0250-006	SCREW,4-40 X 1/4 PPHM
5	6011-0022-001	TUBING,TF,24 AWG,NATURAL,TW, 0.13 FT
7	5400-0001-000	HEAT SINK,TO-92 TRANS, 6024U
9	7010-7530-500	PCB ASSY, VIDEO DETECTOR
11	6008-0000-009	WIRE,HOOK,TFE,30GA,SOLID,WHT, 0.5 FT
C7201	1580-4792-305	CAP,4.7µF,35V
C7202	1506-0101-017	CAP,100pF,100V,5%,NPO
C7206	1585-4700-016	CAP,47µF,16V,NON-POLAR,RDL
C7207	1506-0102-017	CAP,1000pF,100V,5%,NPO
C7208	1580-4792-305	CAP,4.7µF,35V
C7209	1580-4792-305	CAP,4.7µF,35V
C7210	1580-4792-305	CAP,4.7µF,35V
C7211	1506-0102-017	CAP,1000pF,100V,5%,NPO
C7212	1580-4792-305	CAP,4.7µF,35V
C7213	1580-4792-305	CAP,4.7µF,35V
C7214	1506-0560-017	CAP,56pF,100V,5%,NPO
C7215	1506-0271-017	CAP,270pF,100V,5%,NPO
C7216	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C7217	1506-0102-017	CAP,1000pF,100V,5%,NPO
C7219	1580-4792-305	CAP,4.7µF,35V
C7221	1506-0681-017	CAP,680pF,100V,5%,NPO
C7222	1506-0681-017	CAP,680pF,100V,5%,NPO
C7223	1506-0103-017	CAP,0.01µF,100V,NPO
C7224	1502-0105-007	CAP,1µF,50V,5%,MPC
C7225	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C7226	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C7227	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C7228	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C7229	1506-0100-017	CAP,10pF,100V,5%,NPO
C7230	1506-0050-017	CAP,5.6pF,100V,5%,NPO
C7232	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C7233	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C7234	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C7235	1521-0000-008	CAP,0.1µF,50V,DIP,Z5U
C7237	1502-0105-010	CAP,1µF,50V,10%,MPC
C7240	1580-1000-200	CAP,10µF,25V,ELE,RDL
C7241	1580-4702-105	CAP,47µF,10V,ELE,RDL
C7242	1506-0100-017	CAP,10pF,100V,5%,NPO
CR7201	4816-0000-001	DIODE,5082-2800,S BAR, 70VBR
CR7202	4816-0000-001	DIODE,5082-2800,S BAR, 70VBR
CR7204	4818-0000-004	DIODE, 1N5234B ,ZENER,6.2V,.5W
CR7205	4818-0000-004	DIODE, 1N5234B ,ZENER,6.2V,.5W
CR7206	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR7207	4831-0000-001	DIODE,FDH333 ,SIGNAL,HCLL
CR7208	4831-0000-001	DIODE,FDH333 ,SIGNAL,HCLL
CR7209	4831-0000-001	DIODE,FDH333 ,SIGNAL,HCLL
CR7212	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR7213	4816-0000-001	DIODE,5082-2800,S BAR, 70VBR
CR7214	4816-0000-005	DIODE, HSMS-2800, SOT-23
J7202	2200-2094-200	CONN,M SMB,PC MTG,RIGHT ANGLE
JTB0001	2155-1010-020	TERM STRIP,.100C,STR,20-P
Q7201	4809-0000-005	TRANS,66382 ,NPN HF AMP
Q7202	4807-0000-002	TRANS, 2N3905 ,PNP HS SW

7010-7530-800 PCB ASSY, VIDEO BUFFER (cont) D

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
Q7203	4807-0000-002	TRANS, 2N3905 ,PNP HS SW
Q7204	4809-0000-005	TRANS,66382 ,NPN HF AMP
Q7205	5050-2401-000	TRANS,VN10KM N-CH VMOSFET
Q7206	5050-2401-000	TRANS,VN10KM N-CH VMOSFET
Q7207	4807-0000-001	TRANS, 2N3903 ,NPN HS SW
Q7208	4807-0000-002	TRANS, 2N3905 ,PNP HS SW
Q7209	4807-0000-001	TRANS, 2N3903 ,NPN HS SW
Q7210	4807-0000-002	TRANS, 2N3905 ,PNP HS SW
Q7212	5050-2401-000	TRANS,VN10KM N-CH VMOSFET
Q7213	4807-0000-002	TRANS, 2N3905 ,PNP HS SW
R7202	4702-0152-003	RES,1.5k,1/4W,5%
R7203	4702-0682-003	RES,6.8k,1/4W,5%
R7204	4702-0471-003	RES,470,1/4W,5%
R7205	4702-0181-003	RES,180,1/4W,5%
R7206	4702-0103-003	RES,10k,1/4W,5%
R7207	4702-0471-003	RES,470,1/4W,5%
R7208	4702-0682-003	RES,6.8k,1/4W,5%
R7209	4702-0122-003	RES,1.2k,1/4W,5%
R7210	4702-0182-003	RES,1.8k,1/4W,5%
R7211	4702-0100-003	RES,10,1/4W,5%
R7212	4702-0470-003	RES,47,1/4W,5%
R7213	4703-0471-003	RES,470,1/2W,5%
R7215	4702-0331-003	RES,330,1/4W,5%
R7216	4702-0223-003	RES,22k,1/4W,5%
R7217	4702-0152-003	RES,1.5k,1/4W,5%
R7226	4702-0101-003	RES,100,1/4W,5%
R7227	4702-0470-003	RES,47,1/4W,5%
R7228	4703-0471-003	RES,470,1/2W,5%
R7229	4702-0471-003	RES,470,1/4W,5%
R7230	4702-0470-003	RES,47,1/4W,5%
R7231	4702-0101-003	RES,100,1/4W,5%
R7232	4706-6041-001	RES,6.04k,1/4W,1%
R7233	4706-1961-001	RES,1.96k,1/4W,1%
R7234	4702-0101-003	RES,100,1/4W,5%
R7235	4702-0471-003	RES,470,1/4W,5%
R7236	4702-0331-003	RES,330,1/4W,5%
R7237	4702-0224-003	RES,220k,1/4W,5%
R7238	4702-0152-003	RES,1.5k,1/4W,5%
R7239	4706-2051-001	RES,2.05k,1/4W,1%
R7240	4706-1961-001	RES,1.96k,1/4W,1%
R7241	4702-0101-003	RES,100,1/4W,5%
R7242	4702-0471-003	RES,470,1/4W,5%
R7243	4706-4751-001	RES,4.75k,1/4W,1%
R7244	4706-1002-001	RES,10.0k,1/4W,1%
R7245	4702-0332-003	RES,3.3k,1/4W,5%
R7246	4702-0471-003	RES,470,1/4W,5%
R7247	4702-0122-003	RES,1.2k,1/4W,5%
R7248	4702-0182-003	RES,1.8k,1/4W,5%
R7249	4702-0124-003	RES,120k,1/4W,5%
R7250	4702-0105-003	RES,1.0MEG,1/4W,5%
R7251	4702-0103-003	RES,10k,1/4W,5%
R7252	4702-0104-003	RES,100k,1/4W,5%
R7255	4702-0103-003	RES,10k,1/4W,5%
R7256	4702-0103-003	RES,10k,1/4W,5%
R7257	4702-0104-003	RES,100k,1/4W,5%

7010-7530-800 PCB ASSY, VIDEO BUFFER (cont) D

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R7258	4702-0473-003	RES,47k,1/4W,5%
R7259	4702-0223-003	RES,22k,1/4W,5%
R7260	4702-0274-003	RES,270k,1/4W,5%
R7261	4702-0124-003	RES,120k,1/4W,5%
R7262	4702-0683-003	RES,68k,1/4W,5%
R7263	4702-0333-003	RES,33k,1/4W,5%
R7264	4702-0153-003	RES,15k,1/4W,5%
R7265	4702-0822-003	RES,8.2k,1/4W,5%
R7266	4702-0472-003	RES,4.7k,1/4W,5%
R7267	4702-0222-003	RES,2.2k,1/4W,5%
R7268	4702-0472-003	RES,4.7k,1/4W,5%
R7269	4702-0102-003	RES,1.0k,1/4W,5%
R7270	4702-0105-003	RES,1.0MEG,1/4W,5%
R7271	4702-0274-003	RES,270k,1/4W,5%
R7272	4702-0274-003	RES,270k,1/4W,5%
R7273	4702-0221-003	RES,220,1/4W,5%
R7279	4702-0123-003	RES,12k,1/4W,5%
R7280	4702-0103-003	RES,10k,1/4W,5%
R7281	4702-0331-003	RES,330,1/4W,5%
R7283	4752-0104-002	POT 100k OHM
R7284	4702-0474-003	RES,470k,1/4W,5%
R7285	4702-0271-003	RES,270,1/4W,5%
R7286	4702-0102-003	RES,1.0k,1/4W,5%
R7287	4702-0560-003	RES,56,1/4W,5%
R7288	4702-0152-003	RES,1.5k,1/4W,5%
R7289	4702-0271-003	RES,270,1/4W,5%
R7290	4702-0683-003	RES,68k,1/4W,5%
R7293	4702-0151-003	RES,150,1/4W,5%
R7294	4702-0150-003	RES,15,1/4W,5%
R7295	4752-0203-002	POT 20k OHM
R7296	4702-0153-003	RES,15k,1/4W,5%
R7297	4702-0121-003	RES,120,1/4W,5%
R7298	4702-0330-003	RES,33,1/4W,5%
R7299	4702-0180-003	RES,18,1/4W,5%
R7500	4756-2450-000	POT 50 OHM
R7501	4702-0103-003	RES,10k,1/4W,5%
R7502	4702-0473-003	RES,47k,1/4W,5%
R7503	4756-2510-400	POT 100k OHM
R7504	4702-0104-003	RES,100k,1/4W,5%
R7506	4701-0681-003	RES,680,1/8W,5%
R7507	4756-2510-400	POT 100k OHM
R7508	4702-0105-003	RES,1.0MEG,1/4W,5%
RT7201	4704-0471-010	RES,470,1/4W,5%
RT7202	4704-0471-010	RES,470,1/4W,5%
TP7202	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP7204	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP7205	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP7206	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP7207	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
TP7208	2106-0000-007	TERM,GND,USECO 90518-5 OR-7
X7201	3221-0001-000	IC,353,DUAL JFET OP AMP
X7202	3223-0001-000	IC,710C,DIFF VOLT COMPARATOR
X7203	3223-0001-000	IC,710C,DIFF VOLT COMPARATOR
X7204	3133-0000-004	IC,4027B,DUAL JK MS FLIP-FLOP

7010-7530-800 PCB ASSY, VIDEO BUFFER (cont) D

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
X7205	3133-0000-004	IC,4027B,DUAL JK MS FLIP-FLOP
X7206	3133-0000-003	IC,4025B,TRIPLE 3-INPUT NOR
X7207	3133-0000-006	IC,4049UB,HEX BUFFER/CONVERTER
X7208	3133-0000-016	IC,4047B,ASTABLE MULTIVIBRATOR
X7209	3133-0000-016	IC,4047B,ASTABLE MULTIVIBRATOR
X7210	3133-0000-011	IC,4011B,QUAD 2-INPUT NAND
X7211	3133-0000-006	IC,4049UB,HEX BUFFER/CONVERTER
X7212	3133-0000-012	IC,4029B,SYN U/D COUNTER
X7213	3214-4051-100	IC,4051B,8-CH ANALOG MPLXR

7010-7530-800 PCB ASSY, VIDEO BUFFER E

Revision E contains all items in Revision D plus the following changes:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
Q7201	4809-0001-005	TRANS,66382 ,NPN HF AMP
Q7204	4809-0001-005	TRANS,66382 ,NPN HF AMP

7010-7530-800 PCB ASSY, VIDEO BUFFER E1

Revision E1 contains all items in Revision E.

7010-7530-500 PCB ASSY, VIDEO DETECTOR E

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
2	2508-7550-100	SHIELD,DETECTOR
3	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
4	6010-0063-200	TUBING,HS, 1/16 ID,BLACK, 0.2 FT
5	2800-0000-031	STANDOFF,SM.250D,4-40ID.375 LG
6	2803-0250-006	SCREW,4-40 X 1/4 PPHM
C3501	1523-0000-002	CAP,1800pF,50V,X7R,CHIP
C3503	1523-0000-014	CAP,3pF,50V,NPO,CHIP
CR3501	4816-0000-004	DIODE,HSMS-2803,S-BAR SOT-23
J3501	2123-0000-054	CONN,RF SUB,SMA,PCB RTANG JACK
R3501	4722-5621-001	RES,5.62k,1/8W,1%
R3502	4722-5629-001	RES,56.2,1/8W,1%
R3503	4722-6818-001	RES,6.81,1/8W,1%
R3504	4722-2210-001	RES,221,1/8W,1%
R3505	4722-1829-001	RES,18.2,1/8W,1%
R3506	4722-3929-001	RES,39.2,1/8W,1%
R3507	4722-5629-001	RES,56.2,1/8W,1%
R3508	4722-1501-001	RES,1.50k,1/8W,1%
R3509	4722-2740-001	RES,274,1/8W,1%
R3510	4722-2212-001	RES,22.1k,1/8W,1%
R3511	4722-1001-001	RES,1.0k,1/8W,1%
R3512	4722-5119-001	RES,51.1,1/8W,1%
TP3501	2200-2094-200	CONN,M SMB,PC MTG,RIGHT ANGLE
	6003-0000-001	WIRE,HOOK,TFE,26GA, 7S,BLACK, 0.5 FT
	6003-0000-003	WIRE,HOOK,TFE,26GA, 7S,RED, 0.5 FT
	6003-0000-018	WIRE,HOOK,TFE,26GA, 7S,WHT/VIO, 0.5 FT

7005-7542-200 ASSY, 200 MHz SLS SOURCE (SLS Modification) A

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
1	7010-7532-200	PCB ASSY, 200MHz SLS SOURCE
2	1415-7551-100	ENCL, 200MHz SLS SOURCE
3	1414-7551-200	COVER, 200MHz SLS SOURCE
4	2803-0250-006	SCREW,4-40 X 1/4 PPHM
5	2525-7874-100	GASKET RF,.070 DIA (BLUE), 0.91 FT
6	1050-0000-073	WIRE,BUS,TINNED COPPER,22GA
8	2840-0000-003	WASHER,LOCK,INT TOOTH,4
9	6004-6005-400	TY-RAP,4.0 LG
FL2901	5801-0000-006	PI FILTER,EMI/RFI 1500pF 8-32
FL2902	5801-0000-006	PI FILTER,EMI/RFI 1500pF 8-32
GL2901	2850-0000-100	LUG,GND,#8 RT.ANG NON-LOCKING
J2901	2123-0000-038	CONN,M SMB,W/TERM,STR BULKHD
W1	7007-0180-100	WIRE HARN, 200MHz SLS SOURCE

7010-7532-200 PCB ASSY, 200 MHz SLS SOURCE (SLS Modification) A

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
2	2400-7856-800	LABEL,ESD
3	4835-0000-012	PAD,MTG,TO-5 TRANS, 511-038
C2801	1506-0102-017	CAP,1000pF,100V,5%,NPO
C2802	1506-0103-017	CAP,0.01µF,100V,NPO
C2803	1506-0102-017	CAP,1000pF,100V,5%,NPO
C2804	1506-0102-017	CAP,1000pF,100V,5%,NPO
C2805	1580-4792-305	CAP,4.7µF,35V
C2806	1580-4792-305	CAP,4.7µF,35V
C2807	1506-0103-017	CAP,0.01µF,100V,NPO
C2808SAT	1506-0390-017	CAP,39pF,100V,5%,NPO
C2808SAT	1506-0330-017	CAP,33pF,100V,5%,NPO
C2808SAT	1506-0470-017	CAP,47pF,100V,NPO
C2809	1506-0102-017	CAP,1000pF,100V,5%,NPO
C2810	1506-0820-017	CAP,82pF,100V,5%,NPO
C2811	1506-0470-017	CAP,47pF,100V,NPO
C2812	1506-0103-017	CAP,0.01µF,100V,NPO
C2813	1506-0150-017	CAP,15pF,100V,5%,NPO
C2814	1506-0122-017	CAP,1200pF,100V,5%,NPO
C2815	1506-0020-017	CAP,2.2pF,100V,NPO,25
C2816	1506-0150-017	CAP,15pF,100V,5%,NPO
C2817	1506-0470-017	CAP,47pF,100V,NPO
C2818	1506-0020-017	CAP,2.2pF,100V,NPO,25
C2819	1506-0050-017	CAP,5.6pF,100V,5%,NPO
C2820	1506-0103-017	CAP,0.01µF,100V,NPO
C2821	1506-0102-017	CAP,1000pF,100V,5%,NPO
HR2801	5300-0000-002	CRYSTAL OVEN
L2801	1801-0689-001	IND, 6.8 µH, 2 OHM,1025-40
L2802	1804-0000-010	IND,VAR, .061-.101µH,YEL 618
L2803	1801-0228-001	IND, .22µH,.14OHM,1025-04
L2804	1801-0228-001	IND, .22µH,.14OHM,1025-04
L2805	1804-0000-014	IND,VAR, .032-.042µH,RED 618
L2806	1804-0000-014	IND,VAR, .032-.042µH,RED 618
L2807	1804-0000-014	IND,VAR, .032-.042µH,RED 618
Q2801	4809-0100-100	TRANS,55100 NPN HF AMP
Q2802	4809-0100-100	TRANS,55100 NPN HF AMP
Q2803	4809-0100-100	TRANS,55100 NPN HF AMP
R2801	4701-0180-003	RES,18,1/8W,5%
R2802	4701-0472-003	RES,4.7k,1/8W,5%
R2803	4701-0102-003	RES,1.0k,1/8W,5%
R2804	4701-0180-003	RES,18,1/8W,5%
R2805	4701-0680-003	RES,68,1/8W,5%
R2806	4701-0224-003	RES,220k,1/8W,5%
R2807	4701-0471-003	RES,470,1/8W,5%
R2808	4701-0473-003	RES,47k,1/8W,5%
R2809	4701-0102-003	RES,1.0k,1/8W,5%
R2810	4701-0471-003	RES,470,1/8W,5%
R2811	4701-0271-003	RES,270,1/8W,5%
R2812	4701-0180-003	RES,18,1/8W,5%
R2813	4701-0680-003	RES,68,1/8W,5%
R2814	4701-0271-003	RES,270,1/8W,5%
R2815	4701-0472-003	RES,4.7k,1/8W,5%
Y2801	2363-0114-000	XTAL,100.000000MHz,3 S,HC-35/U

7010-7532-200 PCB ASSY, 200 MHz SLS SOURCE (SLS Modification) (cont) B

Revision B contains all items in Revision A with the following change:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
Y2801	2363-0114-100	XTAL,100MHz,3 S,HC-35/U,OVEN

7007-7581-400 WIRE HARN ASSY, 1400A-2 B1

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	7010-3032-600	PCB ASSY,POWER DISTRIBUTION
2	6012-0313-110	TUBING,PVC,5/16,CLEAR, 3.38 FT
3	6012-0186-110	TUBING, CLEAR, 2.5 FT
4	6004-6005-400	TY-RAP,4.0 LG
5	2118-0000-001	KIT,MTG,D-SUB CONN
6	6020-0188-200	TUBING, HS 3/16ID BLACK UL, 0.249 FT
J9503	2115-9002-005	CONN,RECT.098 PLUG 5-P,SMP05VB
J9503-04	2114-9002-001	CONTACT SKT26-22GA.SHF001T8SS
J9503-05	2114-9002-001	CONTACT SKT26-22GA.SHF001T8SS
P0901	2115-0000-015	CONN,C HSG,.100C,18-P
P0901-01	2114-0000-022	CONTACT,DCANT,CRIMP,22-30,GOLD
P0901-02	2127-9900-100	KEY,POLARIZIN,MOLEX 15-04-9209
P0901-03	2114-0000-022	CONTACT,DCANT,CRIMP,22-30,GOLD
P0901-04	2114-0000-022	CONTACT,DCANT,CRIMP,22-30,GOLD
P0901-05	2114-0000-022	CONTACT,DCANT,CRIMP,22-30,GOLD
P0901-06	2114-0000-022	CONTACT,DCANT,CRIMP,22-30,GOLD
P0901-07	2114-0000-022	CONTACT,DCANT,CRIMP,22-30,GOLD
P0901-08	2114-0000-022	CONTACT,DCANT,CRIMP,22-30,GOLD
P0901-09	2114-0000-022	CONTACT,DCANT,CRIMP,22-30,GOLD
P0901-10	2114-0000-022	CONTACT,DCANT,CRIMP,22-30,GOLD
P0901-11	2114-0000-022	CONTACT,DCANT,CRIMP,22-30,GOLD
P0901-12	2114-0000-022	CONTACT,DCANT,CRIMP,22-30,GOLD
P0901-13	2114-0000-022	CONTACT,DCANT,CRIMP,22-30,GOLD
P0901-14	2114-0000-022	CONTACT,DCANT,CRIMP,22-30,GOLD
P0901-15	2114-0000-022	CONTACT,DCANT,CRIMP,22-30,GOLD
P0901-16	2114-0000-022	CONTACT,DCANT,CRIMP,22-30,GOLD
P1001	2116-0000-005	CONN,D-SUB,F,25-P,CCA(CNI)
P1001-01	2114-0000-004	CONTACT,F D-SUB 24-28G LOOSE
P1001-02	2114-0000-003	CONTACT,F D-SUB 20-24G LOOSE
P1001-03	2114-0000-003	CONTACT,F D-SUB 20-24G LOOSE
P1001-04	2114-0000-027	CONTACT,F D-SUB 20-24G CHAIN
P1001-05	2114-0000-004	CONTACT,F D-SUB 24-28G LOOSE
P1001-06	2114-0000-004	CONTACT,F D-SUB 24-28G LOOSE
P1001-07	2114-0000-027	CONTACT,F D-SUB 20-24G CHAIN
P1001-08	2114-0000-004	CONTACT,F D-SUB 24-28G LOOSE
P1001-14	2114-0000-004	CONTACT,F D-SUB 24-28G LOOSE
P1001-15	2114-0000-003	CONTACT,F D-SUB 20-24G LOOSE
P1001-16	2114-0000-004	CONTACT,F D-SUB 24-28G LOOSE
P1001-17	2114-0000-004	CONTACT,F D-SUB 24-28G LOOSE
P1001-18	2114-0000-004	CONTACT,F D-SUB 24-28G LOOSE
P1001-19	2114-0000-027	CONTACT,F D-SUB 20-24G CHAIN
P1001-20	2114-0000-027	CONTACT,F D-SUB 20-24G CHAIN
P1001-21	2114-0000-004	CONTACT,F D-SUB 24-28G LOOSE
P2601	2116-0000-003	CONN,D-SUB,F,15-P,CCA(CNI)
P2601-01	2114-0000-028	CONTACT,F D-SUB 24-28G CHAIN
P2601-02	2114-0000-028	CONTACT,F D-SUB 24-28G CHAIN
P2601-03	2114-0000-028	CONTACT,F D-SUB 24-28G CHAIN
P2601-04	2114-0000-028	CONTACT,F D-SUB 24-28G CHAIN
P2601-05	2114-0000-028	CONTACT,F D-SUB 24-28G CHAIN
P2601-07	2114-0000-028	CONTACT,F D-SUB 24-28G CHAIN
P2601-08	2114-0000-004	CONTACT,F D-SUB 24-28G LOOSE
P2601-09	2114-0000-028	CONTACT,F D-SUB 24-28G CHAIN
P2601-10	2114-0000-004	CONTACT,F D-SUB 24-28G LOOSE
P2601-11	2114-0000-004	CONTACT,F D-SUB 24-28G LOOSE
P2601-12	2114-0000-028	CONTACT,F D-SUB 24-28G CHAIN

7007-7581-400 WIRE HARN ASSY, 1400A-2 (cont) B1

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION	
P2601-13	2114-0000-004	CONTACT,F D-SUB 24-28G LOOSE	
P2601-14	2114-0000-004	CONTACT,F D-SUB 24-28G LOOSE	
P2601-15	2114-0000-004	CONTACT,F D-SUB 24-28G LOOSE	
P3201	2116-0000-001	CONN,D-SUB,F, 9-P,CCA(CNI)	
P3201-01	2114-0000-004	CONTACT,F D-SUB 24-28G LOOSE	
P3201-02	2114-0000-004	CONTACT,F D-SUB 24-28G LOOSE	
P3201-03	2114-0000-004	CONTACT,F D-SUB 24-28G LOOSE	
P3201-04	2114-0000-004	CONTACT,F D-SUB 24-28G LOOSE	
P3201-05	2114-0000-004	CONTACT,F D-SUB 24-28G LOOSE	
P3201-06	2114-0000-004	CONTACT,F D-SUB 24-28G LOOSE	
P3201-08	2114-0000-004	CONTACT,F D-SUB 24-28G LOOSE	
P3201-09	2114-0000-004	CONTACT,F D-SUB 24-28G LOOSE	
P4001	2116-0000-001	CONN,D-SUB,F, 9-P,CCA(CNI)	
P4001-01	2114-0000-028	CONTACT,F D-SUB 24-28G CHAIN	
P4001-02	2114-0000-028	CONTACT,F D-SUB 24-28G CHAIN	
P4001-03	2114-0000-028	CONTACT,F D-SUB 24-28G CHAIN	
P4001-04	2114-0000-028	CONTACT,F D-SUB 24-28G CHAIN	
P4001-05	2114-0000-028	CONTACT,F D-SUB 24-28G CHAIN	
P5201	2116-0000-001	CONN,D-SUB,F, 9-P,CCA(CNI)	
P5201-01	2114-0000-028	CONTACT,F D-SUB 24-28G CHAIN	
P5201-02	2114-0000-028	CONTACT,F D-SUB 24-28G CHAIN	
P5201-03	2114-0000-028	CONTACT,F D-SUB 24-28G CHAIN	
P5201-04	2114-0000-028	CONTACT,F D-SUB 24-28G CHAIN	
P5201-05	2114-0000-028	CONTACT,F D-SUB 24-28G CHAIN	
P5201-06	2114-0000-028	CONTACT,F D-SUB 24-28G CHAIN	
P5201-08	2114-0000-028	CONTACT,F D-SUB 24-28G CHAIN	
P5201-09	2114-0000-028	CONTACT,F D-SUB 24-28G CHAIN	
P6101	2116-0000-001	CONN,D-SUB,F, 9-P,CCA(CNI)	A
P6101-01	2114-0000-028	CONTACT,F D-SUB 24-28G CHAIN	
P6101-02	2114-0000-028	CONTACT,F D-SUB 24-28G CHAIN	
P6101-03	2114-0000-027	CONTACT,F D-SUB 20-24G CHAIN	
P6101-04	2114-0000-028	CONTACT,F D-SUB 24-28G CHAIN	
P6101-05	2114-0000-027	CONTACT,F D-SUB 20-24G CHAIN	
P6101-07	2114-0000-028	CONTACT,F D-SUB 24-28G CHAIN	
P7101	2116-0000-001	CONN,D-SUB,F, 9-P,CCA(CNI)	
P7101-01	2114-0000-028	CONTACT,F D-SUB 24-28G CHAIN	
P7101-02	2114-0000-028	CONTACT,F D-SUB 24-28G CHAIN	
P7101-03	2114-0000-028	CONTACT,F D-SUB 24-28G CHAIN	
P7101-04	2114-0000-028	CONTACT,F D-SUB 24-28G CHAIN	
P7101-05	2114-0000-028	CONTACT,F D-SUB 24-28G CHAIN	
P7101-06	2114-0000-028	CONTACT,F D-SUB 24-28G CHAIN	
P7101-07	2114-0000-004	CONTACT,F D-SUB 24-28G LOOSE	
P7101-08	2114-0000-004	CONTACT,F D-SUB 24-28G LOOSE	
P7101-09	2114-0000-004	CONTACT,F D-SUB 24-28G LOOSE	
P8601	2115-0001-006	CONN,MOLEX 22-01-2061	
P8601-01	2114-0000-022	CONTACT,DCANT,CRIMP,22-30,GOLD	
P8601-02	2114-0000-022	CONTACT,DCANT,CRIMP,22-30,GOLD	
P8601-03	2127-9900-100	KEY,POLARIZIN,MOLEX 15-04-9209	
P8601-04	2114-0000-022	CONTACT,DCANT,CRIMP,22-30,GOLD	
P8601-05	2114-0000-022	CONTACT,DCANT,CRIMP,22-30,GOLD	
P8601-06	2114-0000-022	CONTACT,DCANT,CRIMP,22-30,GOLD	
P9201	2115-0000-015	CONN,C HSG,.100C,18-P	
P9201-01	2114-0000-022	CONTACT,DCANT,CRIMP,22-30,GOLD	
P9201-02	2114-0000-022	CONTACT,DCANT,CRIMP,22-30,GOLD	
P9201-03	2114-0000-022	CONTACT,DCANT,CRIMP,22-30,GOLD	

7007-7581-400 WIRE HARN ASSY, 1400A-2 (cont) B1

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
P9201-04	2114-0000-022	CONTACT,DCANT,CRIMP,22-30,GOLD
P9201-05	2114-0000-022	CONTACT,DCANT,CRIMP,22-30,GOLD
P9201-06	2114-0000-022	CONTACT,DCANT,CRIMP,22-30,GOLD
P9201-07	2114-0000-022	CONTACT,DCANT,CRIMP,22-30,GOLD
P9201-08	2114-0000-022	CONTACT,DCANT,CRIMP,22-30,GOLD
P9201-09	2114-0000-022	CONTACT,DCANT,CRIMP,22-30,GOLD
P9201-10	2114-0000-022	CONTACT,DCANT,CRIMP,22-30,GOLD
P9201-11	2114-0000-022	CONTACT,DCANT,CRIMP,22-30,GOLD
P9201-12	2114-0000-022	CONTACT,DCANT,CRIMP,22-30,GOLD
P9201-14	2114-0000-022	CONTACT,DCANT,CRIMP,22-30,GOLD
P9201-16	2127-9900-100	KEY,POLARIZIN,MOLEX 15-04-9209
P9901	2115-8001-050	CONN,BURNDY SMS12P-1
P9901-03	2114-0002-000	CONTACT,BURNDY SC20M-1S6
P9901-04	2114-0002-000	CONTACT,BURNDY SC20M-1S6
P9901-05	2114-0002-000	CONTACT,BURNDY SC20M-1S6
P9901-06	2114-0002-000	CONTACT,BURNDY SC20M-1S6
P9901-07	2114-0002-000	CONTACT,BURNDY SC20M-1S6
P9901-08	2114-0002-000	CONTACT,BURNDY SC20M-1S6
P9901-09	2114-0002-000	CONTACT,BURNDY SC20M-1S6
P9901-10	2114-0002-000	CONTACT,BURNDY SC20M-1S6
P9901-11	2114-0002-000	CONTACT,BURNDY SC20M-1S6
P9901-12	2114-0002-000	CONTACT,BURNDY SC20M-1S6
W1	6003-0000-010	WIRE,HOOK,TFE,26GA, 7S,WHITE, 25 FT
W2	6002-0000-006	WIRE,HOOK,TFE,22GA, 7S,GREEN, 15.3 FT
W3	6003-0000-010	WIRE,HOOK,TFE,26GA, 7S,WHITE, 25 FT
W4	6003-0000-010	WIRE,HOOK,TFE,26GA, 7S,WHITE, 25 FT
W5	6003-0000-010	WIRE,HOOK,TFE,26GA, 7S,WHITE, 25 FT
W6	6003-0000-010	WIRE,HOOK,TFE,26GA, 7S,WHITE, 25 FT
W7	6003-0000-010	WIRE,HOOK,TFE,26GA, 7S,WHITE, 25 FT
W8	6003-0000-010	WIRE,HOOK,TFE,26GA, 7S,WHITE, 25 FT
W9	6003-0000-010	WIRE,HOOK,TFE,26GA, 7S,WHITE, 25 FT
W10	6003-0000-010	WIRE,HOOK,TFE,26GA, 7S,WHITE, 25 FT
W11	6002-0000-014	WIRE,HOOK,TFE,22GA, 7S,WHT/ORG, 7 FT
W12	6002-0000-007	WIRE,HOOK,TFE,22GA, 7S,BLUE, 16.7 FT
W13	6002-0000-007	WIRE,HOOK,TFE,22GA, 7S,BLUE, 16.7 FT
W14	6002-0000-006	WIRE,HOOK,TFE,22GA, 7S,GREEN, 15.3 FT
W15	6002-0000-006	WIRE,HOOK,TFE,22GA, 7S,GREEN, 15.3 FT
W16	6003-0000-001	WIRE,HOOK,TFE,26GA, 7S,BLACK, 10.47 FT
W17	6003-0000-001	WIRE,HOOK,TFE,26GA, 7S,BLACK, 10.47 FT
W18	6003-0000-001	WIRE,HOOK,TFE,26GA, 7S,BLACK, 10.47 FT
W19	6040-7725-501	CABLE, 1C,24G 16878DE,ETJ,BSCS, 12.7 FT
W20	6040-7725-501	CABLE, 1C,24G 16878DE,ETJ,BSCS, 12.7 FT
W21	6002-0000-007	WIRE,HOOK,TFE,22GA, 7S,BLUE, 16.7 FT
W23	6003-0000-006	WIRE,HOOK,TFE,26GA, 7S,GREEN, 21 FT
W24	6002-0000-007	WIRE,HOOK,TFE,22GA, 7S,BLUE, 16.7 FT
W25	6003-0000-006	WIRE,HOOK,TFE,26GA, 7S,GREEN, 21 FT
W26	6003-0000-006	WIRE,HOOK,TFE,26GA, 7S,GREEN, 21 FT
W27	6040-7725-501	CABLE, 1C,24G 16878DE,ETJ,BSCS, 12.7 FT
W28	6003-0000-010	WIRE,HOOK,TFE,26GA, 7S,WHITE, 25 FT
W29	6003-0000-006	WIRE,HOOK,TFE,26GA, 7S,GREEN, 21 FT
W30	6002-0000-003	WIRE,HOOK,TFE,22GA, 7S,RED, 10.4 FT
W31	6002-0000-007	WIRE,HOOK,TFE,22GA, 7S,BLUE, 16.7 FT
W32	6003-0000-006	WIRE,HOOK,TFE,26GA, 7S,GREEN, 21 FT
W33	6003-0000-007	WIRE,HOOK,TFE,26GA, 7S,BLUE, 3.1 FT
W34	6003-0000-006	WIRE,HOOK,TFE,26GA, 7S,GREEN, 21 FT

7007-7581-400 WIRE HARN ASSY, 1400A-2 (cont) B1

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
W35	6003-0000-003	WIRE,HOOK,TFE,26GA, 7S,RED, A 6 FT
W36	6003-0000-001	WIRE,HOOK,TFE,26GA, 7S,BLACK, 10.47 FT
W37	6003-0000-013	WIRE,HOOK,TFE,26GA, 7S,WHT/RED, 7.87 FT
W38	6003-0000-010	WIRE,HOOK,TFE,26GA, 7S,WHITE, 25 FT
W39	6003-0000-004	WIRE,HOOK,TFE,26GA, 7S,ORANGE, 8.4 FT
W40	6003-0000-010	WIRE,HOOK,TFE,26GA, 7S,WHITE, 25 FT
W41	6003-0000-007	WIRE,HOOK,TFE,26GA, 7S,BLUE, 3.1 FT
W42	6003-0000-006	WIRE,HOOK,TFE,26GA, 7S,GREEN, 21 FT
W43	6003-0000-003	WIRE,HOOK,TFE,26GA, 7S,RED, A 6 FT
W44	6003-0000-001	WIRE,HOOK,TFE,26GA, 7S,BLACK, 10.47 FT
W45	6003-0000-013	WIRE,HOOK,TFE,26GA, 7S,WHT/RED, 7.87 FT
W46	6003-0000-014	WIRE,HOOK,TFE,26GA, 7S,WHT/ORG, 3.1 FT
W47	6003-0000-004	WIRE,HOOK,TFE,26GA, 7S,ORANGE, 8.4 FT
W48	6003-0000-006	WIRE,HOOK,TFE,26GA, 7S,GREEN, 21 FT
W49	6003-0000-003	WIRE,HOOK,TFE,26GA, 7S,RED A, 6 FT
W50	6003-0000-001	WIRE,HOOK,TFE,26GA, 7S,BLACK, 10.47 FT
W51	6003-0000-013	WIRE,HOOK,TFE,26GA, 7S,WHT/RED, 7.87 FT
W52	6003-0000-004	WIRE,HOOK,TFE,26GA, 7S,ORANGE, 8.4 FT
W53	6003-0000-006	WIRE,HOOK,TFE,26GA, 7S,GREEN, 21 FT
W54	6003-0000-003	WIRE,HOOK,TFE,26GA, 7S,RED, A 6 FT
W55	6003-0000-001	WIRE,HOOK,TFE,26GA, 7S,BLACK, 10.47 FT
W56	6003-0000-013	WIRE,HOOK,TFE,26GA, 7S,WHT/RED, 7.87 FT
W57	6003-0000-014	WIRE,HOOK,TFE,26GA, 7S,WHT/ORG, 3.1 FT
W58	6003-0000-010	WIRE,HOOK,TFE,26GA, 7S,WHITE, 25 FT
W59	6003-0000-010	WIRE,HOOK,TFE,26GA, 7S,WHITE, 25 FT
W60	6003-0000-007	WIRE,HOOK,TFE,26GA, 7S,BLUE, 3.1 FT
W61	6003-0000-006	WIRE,HOOK,TFE,26GA, 7S,GREEN, 21 FT
W62	6002-0000-003	WIRE,HOOK,TFE,22GA, 7S,RED, 10.4 FT
W63	6003-0000-001	WIRE,HOOK,TFE,26GA, 7S,BLACK, 10.47 FT
W64	6002-0000-013	WIRE,HOOK,TFE,22GA, 7S,WHT/RED, 6.6 FT
W65	6003-0000-004	WIRE,HOOK,TFE,26GA, 7S,ORANGE, 8.4 FT
W66	6003-0000-004	WIRE,HOOK,TFE,26GA, 7S,ORANGE, 8.4 FT
W67	6003-0000-006	WIRE,HOOK,TFE,26GA, 7S,GREEN, 21 FT
W68	6003-0000-003	WIRE,HOOK,TFE,26GA, 7S,RED, 6 FT
W69	6003-0000-001	WIRE,HOOK,TFE,26GA, 7S,BLACK, 10.47 FT
W70	6003-0000-013	WIRE,HOOK,TFE,26GA, 7S,WHT/RED, 7.87 FT
W71	6003-0000-014	WIRE,HOOK,TFE,26GA, 7S,WHT/ORG, 3.1 FT
W72	6002-0000-001	WIRE,HOOK,TFE,22GA, 7S,BLACK, 17.1 FT
W73	6002-0000-006	WIRE,HOOK,TFE,22GA, 7S,GREEN, 15.3 FT
W74	6002-0000-003	WIRE,HOOK,TFE,22GA, 7S,RED, 10.4 FT
W75	6002-0000-013	WIRE,HOOK,TFE,22GA, 7S,WHT/RED, 6.6 FT
W76	6003-0000-018	WIRE,HOOK,TFE,26GA, 7S,WHT/VIO, 0.7 FT
W77	6002-0000-007	WIRE,HOOK,TFE,22GA, 7S,BLUE, 16.7 FT
W78	6002-0000-006	WIRE,HOOK,TFE,22GA, 7S,GREEN, 15.3 FT
W79	6002-0000-003	WIRE,HOOK,TFE,22GA, 7S,RED, 10.4 FT
W80	6002-0000-001	WIRE,HOOK,TFE,22GA, 7S,BLACK, 17.1 FT
W81	6002-0000-013	WIRE,HOOK,TFE,22GA, 7S,WHT/RED, 6.6 FT
W82	6003-0000-001	WIRE,HOOK,TFE,26GA, 7S,BLACK, 10.47 FT
W83	6003-0000-001	WIRE,HOOK,TFE,26GA, 7S,BLACK, 10.47 FT
W84	6003-0000-001	WIRE,HOOK,TFE,26GA, 7S,BLACK, 10.47 FT
W85	6002-0000-006	WIRE,HOOK,TFE,22GA, 7S,GREEN, 15.3 FT
W86	6002-0000-001	WIRE,HOOK,TFE,22GA, 7S,BLACK, 17.1 FT
W87	6002-0000-001	WIRE,HOOK,TFE,22GA, 7S,BLACK, 17.1 FT
W88	6002-0000-003	WIRE,HOOK,TFE,22GA, 7S,RED, 10.4 FT
W89	6002-0000-004	WIRE,HOOK,TFE,22GA, 7S,ORANGE, A, 2 FT

7007-7581-400 WIRE HARN ASSY, 1400A-2 (cont) B1

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
W90	6002-0000-004	WIRE,HOOK,TFE,22GA, 7S,ORANGE, A, 2 FT
W91	6003-0000-013	WIRE,HOOK,TFE,26GA, 7S,WHT/RED, 7.87 FT
W92	6002-0000-007	WIRE,HOOK,TFE,22GA, 7S,BLUE, 16.7 FT
W93	6002-0000-013	WIRE,HOOK,TFE,22GA, 7S,WHT/RED, .6 FT
W94	6002-0000-014	WIRE,HOOK,TFE,22GA, 7S,WHT/ORG, 7 FT
W95	6003-0000-001	WIRE,HOOK,TFE,26GA, 7S,BLACK, 10.47 FT

7005-3041-901 **ASSY,FREQUENCY PROBE** **A1**

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
1	2803-0250-000	SCREW,4-40 X 1/4 SHS,NYLON TIP
2	2809-0188-006	SCREW,10-32X3/16 PPHMS
4	2840-0000-004	WASHER,LOCK,INT TOOTH,2
5	2801-0250-006	SCREW,2-56 X 1/4 PPHM
7	2100-3060-800	BLOCK,FREQUENCY PROBE
9	2803-0250-006	SCREW,4-40 X 1/4 PPHM
10	2840-0000-003	WASHER,LOCK,INT TOOTH,4
J8002	2200-1910-001	CONN,M SMA,W/TERM,STR BKHD,MOD
P8003	2200-6910-001	CONN,M N ,W/TERM,STR BKHD,MOD

THIS PAGE INTENTIONALLY LEFT BLANK.

APPENDIX A - MULTI-LINE INTERFACE MESSAGES: ISO CODE REPRESENTATION

b4	b3	b2	b1	b7 b6 b5 (Bits ②) COLUMN / ROW	0 0 0	① MSG	0 0 1	MSG	0 1 0	MSG	0 1 1	MSG	1 0 0	MSG	1 0 1	MSG	1 1 0	MSG	1 1 1	MSG
					0		1		2		3		4		5		6		7	
0	0	0	0	0	NUL		DLE		SP	MLA ASSIGNED TO DEVICE	0	MLA ASSIGNED TO DEVICE	@	MLA ASSIGNED TO DEVICE	P	MLA ASSIGNED TO DEVICE		MLA ASSIGNED TO DEVICE	p	MLA ASSIGNED TO DEVICE
0	0	0	1	1	SOH	GTL	DC1	LLO	!		1		A		Q		a		q	
0	0	1	0	2	STX		DC2		"		2		B		R		b		r	
0	0	1	1	3	ETX		DC3		#		3		C		S		c		s	
0	1	0	0	4	EOT	SDC	DC4	DCL	$		4		D		T		d		t	
0	1	0	1	5	ENQ	PPC	NAK	PPU	%		5		E		U		e		u	
0	1	1	0	6	ACK		SYN		&		6		F		V		f		v	
0	1	1	1	7	BEL		ETB				7		G		W		g		w	
1	0	0	0	8	BS	GET	CAN	SPE	(		8		H		X		h		x	
1	0	0	1	9	HT	TCT	EM	SPD	)		9		I		Y		i		y	
1	0	1	0	10	LF		SUB		*		:		J		Z		j		z	
1	0	1	1	11	VT		ESC		+		;		K		[		k		{	
1	1	0	0	12	FF		FS		,		<		L		\		l		¦	
1	1	0	1	13	CR		GS		-		=		M		]		m		}	
1	1	1	0	14	SO		RS				>		N		^		n		~	
1	1	1	1	15	SI		US		/		?	UNL	O		_	UNT	o		DEL	

Columns 0 and MSG: ADDRESSED COMMAND GROUP (ACG)
Columns 1 and MSG: UNIVERSAL COMMAND GROUP (UCG)
Columns 2, MSG, 3 and MSG: LISTEN ADDRESS GROUP (LAG) ③
Columns 4, MSG, 5 and MSG: TALK ADDRESS GROUP (TAG)
Columns 0 through 5: PRIMARY COMMAND GROUP (PCG)
Columns 6, MSG, 7 and MSG: SECONDARY COMMAND GROUP (SCG)

NOTES:
① MSG= INTERFACE MESSAGE
② b_1 = D101 . . . b_7 = D107
③ DENISE SUBSET (COLUMN 2 THROUGH 5)

7502001

THIS PAGE INTENTIONALLY LEFT BLANK.

APPENDIX B - DME CHANNELING AND VHF FREQUENCY PAIRING

TACAN CHANNEL SPACING	VHF CHANNEL (MHZ)	AIRBORNE DME TRANSMITTER FREQUENCY (MHZ)	SPACING (μS)	GROUND STATION TRANSMITTER FREQUENCY (MHZ)	SPACING (μS)
1X	134.40	1025	12	962	12
1Y	134.45	1025	36	1088	30
2X	134.50	1026	12	963	12
2Y	134.55	1026	36	1089	30
3X	134.60	1027	12	964	12
3Y	134.65	1027	36	1090	30
4X	134.70	1028	12	965	12
4Y	134.75	1028	36	1091	30
5X	134.80	1029	12	966	12
5Y	134.85	1029	36	1092	30
6X	134.90	1030	12	967	12
6Y	134.95	1030	36	1093	30
7X	135.00	1031	12	968	12
7Y	135.05	1031	36	1094	30
8X	135.10	1032	12	969	12
8Y	135.15	1032	36	1095	30
9X	135.20	1033	12	970	12
9Y	135.25	1033	36	1096	30
10X	135.30	1034	12	971	12
10Y	135.35	1034	36	1097	30
11X	135.40	1035	12	972	12
11Y	135.45	1035	36	1098	30
12X	135.50	1036	12	973	12
12Y	135.55	1036	36	1099	30
13X	135.60	1037	12	974	12
13Y	135.65	1037	36	1100	30
14X	135.70	1038	12	975	12
14Y	135.75	1038	36	1101	30
15X	135.80	1039	12	976	12
15Y	135.85	1039	36	1102	30
16X	135.90	1040	12	977	12
16Y	135.95	1040	36	1103	30
17X	108.00	1041	12	978	12
17Y	108.05	1041	36	1104	30
18X	108.10	1042	12	979	12
18Y	108.15	1042	36	1105	30
19X	108.20	1043	12	980	12
19Y	108.25	1043	36	1106	30
20X	108.30	1044	12	981	12
20Y	108.35	1044	36	1107	30
21X	108.40	1045	12	982	12
21Y	108.45	1045	36	1108	30

TACAN CHANNEL SPACING	VHF CHANNEL (MHZ)	AIRBORNE DME TRANSMITTER FREQUENCY (MHZ)	SPACING (µS)	GROUND STATION TRANSMITTER FREQUENCY (MHZ)	SPACING (µS)
22X	108.50	1046	12	983	12
22Y	108.55	1046	36	1109	30
23X	108.60	1047	12	984	12
23Y	108.65	1047	36	1110	30
24X	108.70	1048	12	985	12
24Y	108.75	1048	36	1111	30
25X	108.80	1049	12	986	12
25Y	108.85	1049	36	1112	30
26X	108.90	1050	12	987	12
26Y	108.95	1050	36	1113	30
27X	109.00	1051	12	988	12
27Y	109.05	1051	36	1114	30
28X	109.10	1052	12	989	12
28Y	109.15	1052	36	1115	30
29X	109.20	1053	12	990	12
29Y	109.25	1053	36	1116	30
30X	109.30	1054	12	991	12
30Y	109.35	1054	36	1117	30
31X	109.40	1055	12	992	12
31Y	109.45	1055	36	1118	30
32X	109.50	1056	12	993	12
32Y	109.55	1056	36	1119	30
33X	109.60	1057	12	994	12
33Y	109.65	1057	36	1120	30
34X	109.70	1058	12	995	12
34Y	109.75	1058	36	1121	30
35X	109.80	1059	12	996	12
35Y	109.85	1059	36	1122	30
36X	109.90	1060	12	997	12
36Y	109.95	1060	36	1123	30
37X	110.00	1061	12	998	12
37Y	110.05	1061	36	1124	30
38X	110.10	1062	12	999	12
38Y	110.15	1062	36	1125	30
39X	110.20	1063	12	1000	12
39Y	110.25	1063	36	1126	30
40X	110.30	1064	12	1001	12
40Y	110.35	1064	36	1127	30
41X	110.40	1065	12	1002	12
41Y	110.45	1065	36	1128	30
42X	110.50	1066	12	1003	12
42Y	110.55	1066	36	1129	30

TACAN CHANNEL SPACING	VHF CHANNEL (MHZ)	AIRBORNE DME TRANSMITTER FREQUENCY (MHZ)	SPACING (μS)	GROUND STATION TRANSMITTER FREQUENCY (MHZ)	SPACING (μS)
43X	110.60	1067	12	1004	12
43Y	110.65	1067	36	1130	30
44X	110.70	1068	12	1005	12
44Y	110.75	1068	36	1131	30
45X	110.80	1069	12	1006	12
45Y	110.85	1069	36	1132	30
46X	110.90	1070	12	1007	12
46Y	110.95	1070	36	1133	30
47X	111.00	1071	12	1008	12
47Y	111.05	1071	36	1134	30
48X	111.10	1072	12	1009	12
48Y	111.15	1072	36	1135	30
49X	111.20	1073	12	1010	12
49Y	111.25	1073	36	1136	30
50X	111.30	1074	12	1011	12
50Y	111.35	1074	36	1137	30
51X	111.40	1075	12	1012	12
51Y	111.45	1075	36	1138	30
52X	111.50	1076	12	1013	12
52Y	111.55	1076	36	1139	30
53X	111.60	1077	12	1014	12
53Y	111.65	1077	36	1140	30
54X	111.70	1078	12	1015	12
54Y	111.75	1078	36	1141	30
55X	111.80	1079	12	1016	12
55Y	111.85	1079	36	1142	30
56X	111.90	1080	12	1017	12
56Y	111.95	1080	36	1143	30
57X	112.00	1081	12	1018	12
57Y	112.05	1081	36	1144	30
58X	112.10	1082	12	1019	12
58Y	112.15	1082	36	1145	30
59X	112.20	1083	12	1020	12
59Y	112.25	1083	36	1146	30
60X	133.30	1084	12	1021	12
60Y	133.35	1084	36	1147	30
61X	133.40	1085	12	1022	12
61Y	133.45	1085	36	1148	30
62X	133.50	1086	12	1023	12
62Y	133.55	1086	36	1149	30
63X	133.60	1087	12	1024	12
63Y	133.65	1087	36	1150	30

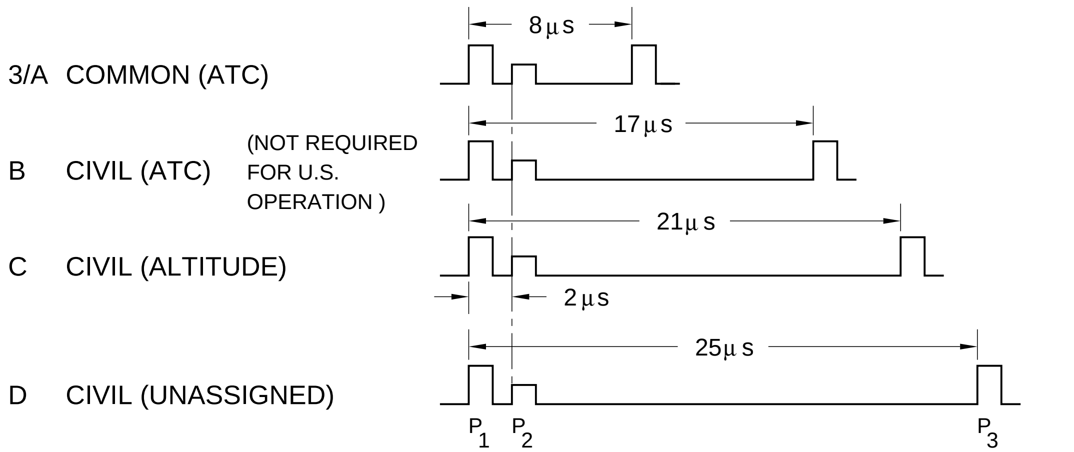
TACAN CHANNEL SPACING	VHF CHANNEL (MHZ)	AIRBORNE DME TRANSMITTER FREQUENCY (MHZ)	SPACING (µS)	GROUND STATION TRANSMITTER FREQUENCY (MHZ)	SPACING (µS)
64X	133.70	1088	12	1151	12
64Y	133.75	1088	36	1025	30
65X	133.80	1089	12	1152	12
65Y	133.85	1089	36	1026	30
66X	133.90	1090	12	1153	12
66Y	133.95	1090	36	1027	30
67X	134.00	1091	12	1154	12
67Y	134.05	1091	36	1028	30
68X	134.10	1092	12	1155	12
68Y	134.15	1092	36	1029	30
69X	134.20	1093	12	1156	12
69Y	134.25	1093	36	1030	30
70X	112.30	1094	12	1157	12
70Y	112.35	1094	36	1031	30
71X	112.40	1095	12	1158	12
71Y	112.45	1095	36	1032	30
72X	112.50	1096	12	1159	12
72Y	112.55	1096	36	1033	30
73X	112.60	1097	12	1160	12
73Y	112.65	1097	36	1034	30
74X	112.70	1098	12	1161	12
74Y	112.75	1098	36	1035	30
75X	112.80	1099	12	1162	12
75Y	112.85	1099	36	1036	30
76X	112.90	1100	12	1163	12
76Y	112.95	1100	36	1037	30
77X	113.00	1101	12	1164	12
77Y	113.05	1101	36	1038	30
78X	113.10	1102	12	1165	12
78Y	113.15	1102	36	1039	30
79X	113.20	1103	12	1166	12
79Y	113.25	1103	36	1040	30
80X	113.30	1104	12	1167	12
80Y	113.35	1104	36	1041	30
81X	113.40	1105	12	1168	12
81Y	113.45	1105	36	1042	30
82X	113.50	1106	12	1169	12
82Y	113.55	1106	36	1043	30
83X	113.60	1107	12	1170	12
83Y	113.65	1107	36	1044	30
84X	113.70	1108	12	1171	12
84Y	113.75	1108	36	1045	30

TACAN CHANNEL SPACING	VHF CHANNEL (MHZ)	AIRBORNE DME TRANSMITTER FREQUENCY (MHZ)	SPACING (µS)	GROUND STATION TRANSMITTER FREQUENCY (MHZ)	SPACING (µS)
85X	113.80	1109	12	1172	12
85Y	113.85	1109	36	1046	30
86X	113.90	1110	12	1173	12
86Y	113.95	1110	36	1047	30
87X	114.00	1111	12	1174	12
87Y	114.05	1111	36	1048	30
88X	114.10	1112	12	1175	12
88Y	114.15	1112	36	1049	30
89X	114.20	1113	12	1176	12
89Y	114.25	1113	36	1050	30
90X	114.30	1114	12	1177	12
90Y	114.35	1114	36	1051	30
91X	114.40	1115	12	1178	12
91Y	114.45	1115	36	1052	30
92X	114.50	1116	12	1179	12
92Y	114.55	1116	36	1053	30
93X	114.60	1117	12	1180	12
93Y	114.65	1117	36	1054	30
94X	114.70	1118	12	1181	12
94Y	114.75	1118	36	1055	30
95X	114.80	1119	12	1182	12
95Y	114.85	1119	36	1056	30
96X	114.90	1120	12	1183	12
96Y	114.95	1120	36	1057	30
97X	115.00	1121	12	1184	12
97Y	115.05	1121	36	1058	30
98X	115.10	1122	12	1185	12
98Y	115.15	1122	36	1059	30
99X	115.20	1123	12	1186	12
99Y	115.25	1123	36	1060	30
100X	115.30	1124	12	1187	12
100Y	115.35	1124	36	1061	30
101X	115.40	1125	12	1188	12
101Y	115.45	1125	36	1062	30
102X	115.50	1126	12	1189	12
102Y	115.55	1126	36	1063	30
103X	115.60	1127	12	1190	12
103Y	115.65	1127	36	1064	30
104X	115.70	1128	12	1191	12
104Y	115.75	1128	36	1065	30
105X	115.80	1129	12	1192	12
105Y	115.85	1129	36	1066	30

TACAN CHANNEL SPACING	VHF CHANNEL (MHZ)	AIRBORNE DME TRANSMITTER FREQUENCY (MHZ)	SPACING (μS)	GROUND STATION TRANSMITTER FREQUENCY (MHZ)	SPACING (μS)
106X	115.90	1130	12	1193	12
106Y	115.95	1130	36	1067	30
107X	116.00	1131	12	1194	12
107Y	116.05	1131	36	1068	30
108X	116.10	1132	12	1195	12
108Y	116.15	1132	36	1069	30
109X	116.20	1133	12	1196	12
109Y	116.25	1133	36	1070	30
110X	116.30	1134	12	1197	12
110Y	116.35	1134	36	1071	30
111X	116.40	1135	12	1198	12
111Y	116.45	1135	36	1072	30
112X	116.50	1136	12	1199	12
112Y	116.55	1136	36	1073	30
113X	116.60	1137	12	1200	12
113Y	116.65	1137	36	1074	30
114X	116.70	1138	12	1201	12
114Y	116.75	1138	36	1075	30
115X	116.80	1139	12	1202	12
115Y	116.85	1139	36	1076	30
116X	116.90	1140	12	1203	12
116Y	116.95	1140	36	1077	30
117X	117.00	1141	12	1204	12
117Y	117.05	1141	36	1078	30
118X	117.10	1142	12	1205	12
118Y	117.15	1142	36	1079	30
119X	117.20	1143	12	1206	12
119Y	117.25	1143	36	1080	30
120X	117.30	1144	12	1207	12
120Y	117.35	1144	36	1081	30
121X	117.40	1145	12	1208	12
121Y	117.45	1145	36	1082	30
122X	117.50	1146	12	1209	12
122Y	117.55	1146	36	1083	30
123X	117.60	1147	12	1210	12
123Y	117.65	1147	36	1084	30
124X	117.70	1148	12	1211	12
124Y	117.75	1148	36	1085	30
125X	117.80	1149	12	1212	12
125Y	117.85	1149	36	1086	30
126X	117.90	1150	12	1213	12
126Y	117.95	1150	36	1087	30

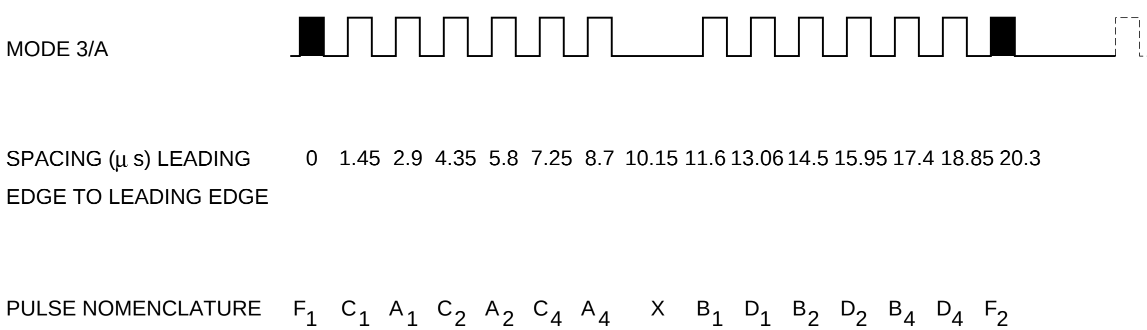
APPENDIX C - ATCRBS INTERROGATION MODES AND XPDR REPLY CODES

1. ATCRBS Interrogation Modes



7502002

2. XPDR Reply Codes



7502003

THIS PAGE INTENTIONALLY LEFT BLANK.

APPENDIX D - ALTITUDE TRANSMISSION CODE CHART

RANGE (Altitude in Thousands)	PULSE POSITION										
	D_2	D_4 and SPI	A_1	A_2	A_4	B_1	B_2	B_4	C_1	C_2	C_4
-1.0	0	0	0	0	0	0	0	0	0	1	0
-0.9	0	0	0	0	0	0	0	0	1	1	0
-0.8	0	0	0	0	0	0	0	0	1	0	0
-0.7	0	0	0	0	0	0	0	1	1	0	0
-0.6	0	0	0	0	0	0	0	1	1	1	0
-0.5	0	0	0	0	0	0	0	1	0	1	0
-0.4	0	0	0	0	0	0	0	1	0	1	1
-0.3	0	0	0	0	0	0	0	1	0	0	1
-0.2	0	0	0	0	0	0	1	1	0	0	1
-0.1	0	0	0	0	0	0	1	1	0	1	1
0.0	0	0	0	0	0	0	1	1	0	1	0
0.1	0	0	0	0	0	0	1	1	1	1	0
0.2	0	0	0	0	0	0	1	1	1	0	0
0.3	0	0	0	0	0	0	1	0	1	0	0
0.4	0	0	0	0	0	0	1	0	1	1	0
0.5	0	0	0	0	0	0	1	0	0	1	0
0.6	0	0	0	0	0	0	1	0	0	1	1
0.7	0	0	0	0	0	0	1	0	0	0	1
0.8	0	0	0	0	0	1	1	0	0	0	1
0.9	0	0	0	0	0	1	1	0	0	1	1
1.0	0	0	0	0	0	1	1	0	0	1	0
1.1	0	0	0	0	0	1	1	0	1	1	0
1.2	0	0	0	0	0	1	1	0	1	0	0
1.3	0	0	0	0	0	1	1	1	1	0	0
1.4	0	0	0	0	0	1	1	1	1	1	0
1.5	0	0	0	0	0	1	1	1	0	1	0
1.6	0	0	0	0	0	1	1	1	0	1	1
1.7	0	0	0	0	0	1	1	1	0	0	1
1.8	0	0	0	0	0	1	0	1	0	0	1
1.9	0	0	0	0	0	1	0	1	0	1	1
2.0	0	0	0	0	0	1	0	1	0	1	0
2.1	0	0	0	0	0	1	0	1	1	1	0
2.2	0	0	0	0	0	1	0	1	1	0	0
2.3	0	0	0	0	0	1	0	0	1	0	0
2.4	0	0	0	0	0	1	0	0	1	1	0
2.5	0	0	0	0	0	1	0	0	0	1	0
2.6	0	0	0	0	0	1	0	0	0	1	1
2.7	0	0	0	0	0	1	0	0	0	0	1
2.8	0	0	0	0	1	1	0	0	0	0	1
2.9	0	0	0	0	1	1	0	0	0	1	1

RANGE (Altitude in Thousands)	PULSE POSITION										
	D_2	D_4 and SPI	A_1	A_2	A_4	B_1	B_2	B_4	C_1	C_2	C_4
3.0	0	0	0	0	1	1	0	0	0	1	0
3.1	0	0	0	0	1	1	0	0	1	1	0
3.2	0	0	0	0	1	1	0	0	1	0	0
3.3	0	0	0	0	1	1	0	1	1	0	0
3.4	0	0	0	0	1	1	0	1	1	1	0
3.5	0	0	0	0	1	1	0	1	0	1	0
3.6	0	0	0	0	1	1	0	1	0	1	1
3.7	0	0	0	0	1	1	0	1	0	0	1
3.8	0	0	0	0	1	1	1	1	0	0	1
3.9	0	0	0	0	1	1	1	1	0	1	1
4.0	0	0	0	0	1	1	1	1	0	1	0
4.1	0	0	0	0	1	1	1	1	1	1	0
4.2	0	0	0	0	1	1	1	1	1	0	0
4.3	0	0	0	0	1	1	1	0	1	0	0
4.4	0	0	0	0	1	1	1	0	1	1	0
4.5	0	0	0	0	1	1	1	0	0	1	0
4.6	0	0	0	0	1	1	1	0	0	1	1
4.7	0	0	0	0	1	1	1	0	0	0	1
4.8	0	0	0	0	1	0	1	0	0	0	1
4.9	0	0	0	0	1	0	1	0	0	1	1
5.0	0	0	0	0	1	0	1	0	0	1	0
5.1	0	0	0	0	1	0	1	0	1	1	0
5.2	0	0	0	0	1	0	1	0	1	0	0
5.3	0	0	0	0	1	0	1	1	1	0	0
5.4	0	0	0	0	1	0	1	1	1	1	0
5.5	0	0	0	0	1	0	1	1	0	1	0
5.6	0	0	0	0	1	0	1	1	0	1	1
5.7	0	0	0	0	1	0	1	1	0	0	1
5.8	0	0	0	0	1	0	0	1	0	0	1
5.9	0	0	0	0	1	0	0	1	0	1	1
6.0	0	0	0	0	1	0	0	1	0	1	0
6.1	0	0	0	0	1	0	0	1	1	1	0
6.2	0	0	0	0	1	0	0	1	1	0	0
6.3	0	0	0	0	1	0	0	0	1	0	0
6.4	0	0	0	0	1	0	0	0	1	1	0
6.5	0	0	0	0	1	0	0	0	0	1	0
6.6	0	0	0	0	1	0	0	0	0	1	1
6.7	0	0	0	0	1	0	0	0	0	0	1
6.8	0	0	0	1	1	0	0	0	0	0	1
6.9	0	0	0	1	1	0	0	0	0	1	1

RANGE (Altitude in Thousands)	PULSE POSITION										
	D_2	D_4 and SPI	A_1	A_2	A_4	B_1	B_2	B_4	C_1	C_2	C_4
7.0	0	0	0	1	1	0	0	0	0	1	0
7.1	0	0	0	1	1	0	0	0	1	1	0
7.2	0	0	0	1	1	0	0	0	1	0	0
7.3	0	0	0	1	1	0	0	1	1	0	0
7.4	0	0	0	1	1	0	0	1	1	1	0
7.5	0	0	0	1	1	0	0	1	0	1	0
7.6	0	0	0	1	1	0	0	1	0	1	1
7.7	0	0	0	1	1	0	0	1	0	0	1
7.8	0	0	0	1	1	0	1	1	0	0	1
7.9	0	0	0	1	1	0	1	1	0	1	1
8.0	0	0	0	1	1	0	1	1	0	1	0
8.1	0	0	0	1	1	0	1	1	1	1	0
8.2	0	0	0	1	1	0	1	1	1	0	0
8.3	0	0	0	1	1	0	1	0	1	0	0
8.4	0	0	0	1	1	0	1	0	1	1	0
8.5	0	0	0	1	1	0	1	0	0	1	0
8.6	0	0	0	1	1	0	1	0	0	1	1
8.7	0	0	0	1	1	0	1	0	0	0	1
8.8	0	0	0	1	1	1	1	0	0	0	1
8.9	0	0	0	1	1	1	1	0	0	1	1
9.0	0	0	0	1	1	1	1	0	0	1	0
9.1	0	0	0	1	1	1	1	0	1	1	0
9.2	0	0	0	1	1	1	1	0	1	0	0
9.3	0	0	0	1	1	1	1	1	1	0	0
9.4	0	0	0	1	1	1	1	1	1	1	0
9.5	0	0	0	1	1	1	1	1	0	1	0
9.6	0	0	0	1	1	1	1	1	0	1	1
9.7	0	0	0	1	1	1	1	1	0	0	1
9.8	0	0	0	1	1	1	0	1	0	0	1
9.9	0	0	0	1	1	1	0	1	0	1	1
10.0	0	0	0	1	1	1	0	1	0	1	0
10.1	0	0	0	1	1	1	0	1	1	1	0
10.2	0	0	0	1	1	1	0	1	1	0	0
10.3	0	0	0	1	1	1	0	0	1	0	0
10.4	0	0	0	1	1	1	0	0	1	1	0
10.5	0	0	0	1	1	1	0	0	0	1	0
10.6	0	0	0	1	1	1	0	0	0	1	1
10.7	0	0	0	1	1	1	0	0	0	0	1
10.8	0	0	0	1	0	1	0	0	0	0	1
10.9	0	0	0	1	0	1	0	0	0	1	1

RANGE (Altitude in Thousands)	PULSE POSITION										
	D_2	D_4 and SPI	A_1	A_2	A_4	B_1	B_2	B_4	C_1	C_2	C_4
11.0	0	0	0	1	0	1	0	0	0	1	0
11.1	0	0	0	1	0	1	0	0	1	1	0
11.2	0	0	0	1	0	1	0	0	1	0	0
11.3	0	0	0	1	0	1	0	1	1	0	0
11.4	0	0	0	1	0	1	0	1	1	1	0
11.5	0	0	0	1	0	1	0	1	0	1	0
11.6	0	0	0	1	0	1	0	1	0	1	1
11.7	0	0	0	1	0	1	0	1	0	0	1
11.8	0	0	0	1	0	1	1	1	0	0	1
11.9	0	0	0	1	0	1	1	1	0	1	1
12.0	0	0	0	1	0	1	1	1	0	1	0
12.1	0	0	0	1	0	1	1	1	1	1	0
12.2	0	0	0	1	0	1	1	1	1	0	0
12.3	0	0	0	1	0	1	1	0	1	0	0
12.4	0	0	0	1	0	1	1	0	1	1	0
12.5	0	0	0	1	0	1	1	0	0	1	0
12.6	0	0	0	1	0	1	1	0	0	1	1
12.7	0	0	0	1	0	1	1	0	0	0	1
12.8	0	0	0	1	0	0	1	0	0	0	1
12.9	0	0	0	1	0	0	1	0	0	1	1
13.0	0	0	0	1	0	0	1	0	0	1	0
13.1	0	0	0	1	0	0	1	0	1	1	0
13.2	0	0	0	1	0	0	1	0	1	0	0
13.3	0	0	0	1	0	0	1	1	1	0	0
13.4	0	0	0	1	0	0	1	1	1	1	0
13.5	0	0	0	1	0	0	1	1	0	1	0
13.6	0	0	0	1	0	0	1	1	0	1	1
13.7	0	0	0	1	0	0	1	1	0	0	1
13.8	0	0	0	1	0	0	0	1	0	0	1
13.9	0	0	0	1	0	0	0	1	0	1	1
14.0	0	0	0	1	0	0	0	1	0	1	0
14.1	0	0	0	1	0	0	0	1	1	1	0
14.2	0	0	0	1	0	0	0	1	1	0	0
14.3	0	0	0	1	0	0	0	0	1	0	0
14.4	0	0	0	1	0	0	0	0	1	1	0
14.5	0	0	0	1	0	0	0	0	0	1	0
14.6	0	0	0	1	0	0	0	0	0	1	1
14.7	0	0	0	1	0	0	0	0	0	0	1
14.8	0	0	1	1	0	0	0	0	0	0	1
14.9	0	0	1	1	0	0	0	0	0	1	1

RANGE (Altitude in Thousands)	PULSE POSITION										
	D_2	D_4 and SPI	A_1	A_2	A_4	B_1	B_2	B_4	C_1	C_2	C_4
15.0	0	0	1	1	0	0	0	0	0	1	0
15.1	0	0	1	1	0	0	0	0	1	1	0
15.2	0	0	1	1	0	0	0	0	1	0	0
15.3	0	0	1	1	0	0	0	1	1	0	0
15.4	0	0	1	1	0	0	0	1	1	1	0
15.5	0	0	1	1	0	0	0	1	0	1	0
15.6	0	0	1	1	0	0	0	1	0	1	1
15.7	0	0	1	1	0	0	0	1	0	0	1
15.8	0	0	1	1	0	0	1	1	0	0	1
15.9	0	0	1	1	0	0	1	1	0	1	1
16.0	0	0	1	1	0	0	1	1	0	1	0
16.1	0	0	1	1	0	0	1	1	1	1	0
16.2	0	0	1	1	0	0	1	1	1	0	0
16.3	0	0	1	1	0	0	1	0	1	0	0
16.4	0	0	1	1	0	0	1	0	1	1	0
16.5	0	0	1	1	0	0	1	0	0	1	0
16.6	0	0	1	1	0	0	1	0	0	1	1
16.7	0	0	1	1	0	0	1	0	0	0	1
16.8	0	0	1	1	0	1	1	0	0	0	1
16.9	0	0	1	1	0	1	1	0	0	1	1
17.0	0	0	1	1	0	1	1	0	0	1	0
17.1	0	0	1	1	0	1	1	0	1	1	0
17.2	0	0	1	1	0	1	1	0	1	0	0
17.3	0	0	1	1	0	1	1	1	1	0	0
17.4	0	0	1	1	0	1	1	1	1	1	0
17.5	0	0	1	1	0	1	1	1	0	1	0
17.6	0	0	1	1	0	1	1	1	0	1	1
17.7	0	0	1	1	0	1	1	1	0	0	1
17.8	0	0	1	1	0	1	0	1	0	0	1
17.9	0	0	1	1	0	1	0	1	0	1	1
18.0	0	0	1	1	0	1	0	1	0	1	0
18.1	0	0	1	1	0	1	0	1	1	1	0
18.2	0	0	1	1	0	1	0	1	1	0	0
18.3	0	0	1	1	0	1	0	0	1	0	0
18.4	0	0	1	1	0	1	0	0	1	1	0
18.5	0	0	1	1	0	1	0	0	0	1	0
18.6	0	0	1	1	0	1	0	0	0	1	1
18.7	0	0	1	1	0	1	0	0	0	0	1
18.8	0	0	1	1	1	1	0	0	0	0	1
18.9	0	0	1	1	1	1	0	0	0	1	1

RANGE (Altitude in Thousands)	PULSE POSITION										
	D_2	D_4 and SPI	A_1	A_2	A_4	B_1	B_2	B_4	C_1	C_2	C_4
19.0	0	0	1	1	1	1	0	0	0	1	0
19.1	0	0	1	1	1	1	0	0	1	1	0
19.2	0	0	1	1	1	1	0	0	1	0	0
19.3	0	0	1	1	1	1	0	1	1	0	0
19.4	0	0	1	1	1	1	0	1	1	1	0
19.5	0	0	1	1	1	1	0	1	0	1	0
19.6	0	0	1	1	1	1	0	1	0	1	1
19.7	0	0	1	1	1	1	0	1	0	0	1
19.8	0	0	1	1	1	1	1	1	0	0	1
19.9	0	0	1	1	1	1	1	1	0	1	1
20.0	0	0	1	1	1	1	1	1	0	1	0
20.1	0	0	1	1	1	1	1	1	1	1	0
20.2	0	0	1	1	1	1	1	1	1	0	0
20.3	0	0	1	1	1	1	1	0	1	0	0
20.4	0	0	1	1	1	1	1	0	1	1	0
20.5	0	0	1	1	1	1	1	0	0	1	0
20.6	0	0	1	1	1	1	1	0	0	1	1
20.7	0	0	1	1	1	1	1	0	0	0	1
20.8	0	0	1	1	1	0	1	0	0	0	1
20.9	0	0	1	1	1	0	1	0	0	1	1
21.0	0	0	1	1	1	0	1	0	0	1	0
21.1	0	0	1	1	1	0	1	0	1	1	0
21.2	0	0	1	1	1	0	1	0	1	0	0
21.3	0	0	1	1	1	0	1	1	1	0	0
21.4	0	0	1	1	1	0	1	1	1	1	0
21.5	0	0	1	1	1	0	1	1	0	1	0
21.6	0	0	1	1	1	0	1	1	0	1	1
21.7	0	0	1	1	1	0	1	1	0	0	1
21.8	0	0	1	1	1	0	0	1	0	0	1
21.9	0	0	1	1	1	0	0	1	0	1	1
22.0	0	0	1	1	1	0	0	1	0	1	0
22.1	0	0	1	1	1	0	0	1	1	1	0
22.2	0	0	1	1	1	0	0	1	1	0	0
22.3	0	0	1	1	1	0	0	0	1	0	0
22.4	0	0	1	1	1	0	0	0	1	1	0
22.5	0	0	1	1	1	0	0	0	0	1	0
22.6	0	0	1	1	1	0	0	0	0	1	1
22.7	0	0	1	1	1	0	0	0	0	0	1
22.8	0	0	1	0	1	0	0	0	0	0	1
22.9	0	0	1	0	1	0	0	0	0	1	1

RANGE (Altitude in Thousands)	PULSE POSITION										
	D_2	D_4 and SPI	A_1	A_2	A_4	B_1	B_2	B_4	C_1	C_2	C_4
23.0	0	0	1	0	1	0	0	0	0	1	0
23.1	0	0	1	0	1	0	0	0	1	1	0
23.2	0	0	1	0	1	0	0	0	1	0	0
23.3	0	0	1	0	1	0	0	1	1	0	0
23.4	0	0	1	0	1	0	0	1	1	1	0
23.5	0	0	1	0	1	0	0	1	0	1	0
23.6	0	0	1	0	1	0	0	1	0	1	1
23.7	0	0	1	0	1	0	0	1	0	0	1
23.8	0	0	1	0	1	0	1	1	0	0	1
23.9	0	0	1	0	1	0	1	1	0	1	1
24.0	0	0	1	0	1	0	1	1	0	1	0
24.1	0	0	1	0	1	0	1	1	1	1	0
24.2	0	0	1	0	1	0	1	1	1	0	0
24.3	0	0	1	0	1	0	1	0	1	0	0
24.4	0	0	1	0	1	0	1	0	1	1	0
24.5	0	0	1	0	1	0	1	0	0	1	0
24.6	0	0	1	0	1	0	1	0	0	1	1
24.7	0	0	1	0	1	0	1	0	0	0	1
24.8	0	0	1	0	1	1	1	0	0	0	1
24.9	0	0	1	0	1	1	1	0	0	1	1
25.0	0	0	1	0	1	1	1	0	0	1	0
25.1	0	0	1	0	1	1	1	0	1	1	0
25.2	0	0	1	0	1	1	1	0	1	0	0
25.3	0	0	1	0	1	1	1	1	1	0	0
25.4	0	0	1	0	1	1	1	1	1	1	0
25.5	0	0	1	0	1	1	1	1	0	1	0
25.6	0	0	1	0	1	1	1	1	0	1	1
25.7	0	0	1	0	1	1	1	1	0	0	1
25.8	0	0	1	0	1	1	0	1	0	0	1
25.9	0	0	1	0	1	1	0	1	0	1	1
26.0	0	0	1	0	1	1	0	1	0	1	0
26.1	0	0	1	0	1	1	0	1	1	1	0
26.2	0	0	1	0	1	1	0	1	1	0	0
26.3	0	0	1	0	1	1	0	0	1	0	0
26.4	0	0	1	0	1	1	0	0	1	1	0
26.5	0	0	1	0	1	1	0	0	0	1	0
26.6	0	0	1	0	1	1	0	0	0	1	1
26.7	0	0	1	0	1	1	0	0	0	0	1
26.8	0	0	1	0	0	1	0	0	0	0	1
26.9	0	0	1	0	0	1	0	0	0	1	1

RANGE (Altitude in Thousands)	PULSE POSITION										
	D_2	D_4 and SPI	A_1	A_2	A_4	B_1	B_2	B_4	C_1	C_2	C_4
27.0	0	0	1	0	0	1	0	0	0	1	0
27.1	0	0	1	0	0	1	0	0	1	1	0
27.2	0	0	1	0	0	1	0	0	1	0	0
27.3	0	0	1	0	0	1	0	1	1	0	0
27.4	0	0	1	0	0	1	0	1	1	1	0
27.5	0	0	1	0	0	1	0	1	0	1	0
27.6	0	0	1	0	0	1	0	1	0	1	1
27.7	0	0	1	0	0	1	0	1	0	0	1
27.8	0	0	1	0	0	1	1	1	0	0	1
27.9	0	0	1	0	0	1	1	1	0	1	1
28.0	0	0	1	0	0	1	1	1	0	1	0
28.1	0	0	1	0	0	1	1	1	1	1	0
28.2	0	0	1	0	0	1	1	1	1	0	0
28.3	0	0	1	0	0	1	1	0	1	0	0
28.4	0	0	1	0	0	1	1	0	1	1	0
28.5	0	0	1	0	0	1	1	0	0	1	0
28.6	0	0	1	0	0	1	1	0	0	1	1
28.7	0	0	1	0	0	1	1	0	0	0	1
28.8	0	0	1	0	0	0	1	0	0	0	1
28.9	0	0	1	0	0	0	1	0	0	1	1
29.0	0	0	1	0	0	0	1	0	0	1	0
29.1	0	0	1	0	0	0	1	0	1	1	0
29.2	0	0	1	0	0	0	1	0	1	0	0
29.3	0	0	1	0	0	0	1	1	1	0	0
29.4	0	0	1	0	0	0	1	1	1	1	0
29.5	0	0	1	0	0	0	1	1	0	1	0
29.6	0	0	1	0	0	0	1	1	0	1	1
29.7	0	0	1	0	0	0	1	1	0	0	1
29.8	0	0	1	0	0	0	0	1	0	0	1
29.9	0	0	1	0	0	0	0	1	0	1	1
30.0	0	0	1	0	0	0	0	1	0	1	0
30.1	0	0	1	0	0	0	0	1	1	1	0
30.2	0	0	1	0	0	0	0	1	1	0	0
30.3	0	0	1	0	0	0	0	0	1	0	0
30.4	0	0	1	0	0	0	0	0	1	1	0
30.5	0	0	1	0	0	0	0	0	0	1	0
30.6	0	0	1	0	0	0	0	0	0	1	1
30.7	0	0	1	0	0	0	0	0	0	0	1
30.8	0	1	1	0	0	0	0	0	0	0	1
30.9	0	1	1	0	0	0	0	0	0	1	1

RANGE (Altitude in Thousands)	PULSE POSITION										
	D_2	D_4 and SPI	A_1	A_2	A_4	B_1	B_2	B_4	C_1	C_2	C_4
31.0	0	1	1	0	0	0	0	0	0	1	0
31.1	0	1	1	0	0	0	0	0	1	1	0
31.2	0	1	1	0	0	0	0	0	1	0	0
31.3	0	1	1	0	0	0	0	1	1	0	0
31.4	0	1	1	0	0	0	0	1	1	1	0
31.5	0	1	1	0	0	0	0	1	0	1	0
31.6	0	1	1	0	0	0	0	1	0	1	1
31.7	0	1	1	0	0	0	0	1	0	0	1
31.8	0	1	1	0	0	0	1	1	0	0	1
31.9	0	1	1	0	0	0	1	1	0	1	1
32.0	0	1	1	0	0	0	1	1	0	1	0
32.1	0	1	1	0	0	0	1	1	1	1	0
32.2	0	1	1	0	0	0	1	1	1	0	0
32.3	0	1	1	0	0	0	1	0	1	0	0
32.4	0	1	1	0	0	0	1	0	1	1	0
32.5	0	1	1	0	0	0	1	0	0	1	0
32.6	0	1	1	0	0	0	1	0	0	1	1
32.7	0	1	1	0	0	0	1	0	0	0	1
32.8	0	1	1	0	0	1	1	0	0	0	1
32.9	0	1	1	0	0	1	1	0	0	1	1
33.0	0	1	1	0	0	1	1	0	0	1	0
33.1	0	1	1	0	0	1	1	0	1	1	0
33.2	0	1	1	0	0	1	1	0	1	0	0
33.3	0	1	1	0	0	1	1	1	1	0	0
33.4	0	1	1	0	0	1	1	1	1	1	0
33.5	0	1	1	0	0	1	1	1	0	1	0
33.6	0	1	1	0	0	1	1	1	0	1	1
33.7	0	1	1	0	0	1	1	1	0	0	1
33.8	0	1	1	0	0	1	0	1	0	0	1
33.9	0	1	1	0	0	1	0	1	0	1	1
34.0	0	1	1	0	0	1	0	1	0	1	0
34.1	0	1	1	0	0	1	0	1	1	1	0
34.2	0	1	1	0	0	1	0	1	1	0	0
34.3	0	1	1	0	0	1	0	0	1	0	0
34.4	0	1	1	0	0	1	0	0	1	1	0
34.5	0	1	1	0	0	1	0	0	0	1	0
34.6	0	1	1	0	0	1	0	0	0	1	1
34.7	0	1	1	0	0	1	0	0	0	0	1
34.8	0	1	1	0	1	1	0	0	0	0	1
34.9	0	1	1	0	1	1	0	0	0	1	1

RANGE (Altitude in Thousands)	PULSE POSITION										
	D_2	D_4 and SPI	A_1	A_2	A_4	B_1	B_2	B_4	C_1	C_2	C_4
35.0	0	1	1	0	1	1	0	0	0	1	0
35.1	0	1	1	0	1	1	0	0	1	1	0
35.2	0	1	1	0	1	1	0	0	1	0	0
35.3	0	1	1	0	1	1	0	1	1	0	0
35.4	0	1	1	0	1	1	0	1	1	1	0
35.5	0	1	1	0	1	1	0	1	0	1	0
35.6	0	1	1	0	1	1	0	1	0	1	1
35.7	0	1	1	0	1	1	0	1	0	0	1
35.8	0	1	1	0	1	1	1	1	0	0	1
35.9	0	1	1	0	1	1	1	1	0	1	1
36.0	0	1	1	0	1	1	1	1	0	1	0
36.1	0	1	1	0	1	1	1	1	1	1	0
36.2	0	1	1	0	1	1	1	1	1	0	0
36.3	0	1	1	0	1	1	1	0	1	0	0
36.4	0	1	1	0	1	1	1	0	1	1	0
36.5	0	1	1	0	1	1	1	0	0	1	0
36.6	0	1	1	0	1	1	1	0	0	1	1
36.7	0	1	1	0	1	1	1	0	0	0	1
36.8	0	1	1	0	1	0	1	0	0	0	1
36.9	0	1	1	0	1	0	1	0	0	1	1
37.0	0	1	1	0	1	0	1	0	0	1	0
37.1	0	1	1	0	1	0	1	0	1	1	0
37.2	0	1	1	0	1	0	1	0	1	0	0
37.3	0	1	1	0	1	0	1	1	1	0	0
37.4	0	1	1	0	1	0	1	1	1	1	0
37.5	0	1	1	0	1	0	1	1	0	1	0
37.6	0	1	1	0	1	0	1	1	0	1	1
37.7	0	1	1	0	1	0	1	1	0	0	1
37.8	0	1	1	0	1	0	0	1	0	0	1
37.9	0	1	1	0	1	0	0	1	0	1	1
38.0	0	1	1	0	1	0	0	1	0	1	0
38.1	0	1	1	0	1	0	0	1	1	1	0
38.2	0	1	1	0	1	0	0	1	1	0	0
38.3	0	1	1	0	1	0	0	0	1	0	0
38.4	0	1	1	0	1	0	0	0	1	1	0
38.5	0	1	1	0	1	0	0	0	0	1	0
38.6	0	1	1	0	1	0	0	0	0	1	1
38.7	0	1	1	0	1	0	0	0	0	0	1
38.8	0	1	1	1	1	0	0	0	0	0	1
38.9	0	1	1	1	1	0	0	0	0	1	1

RANGE (Altitude in Thousands)	PULSE POSITION										
	D_2	D_4 and SPI	A_1	A_2	A_4	B_1	B_2	B_4	C_1	C_2	C_4
39.0	0	1	1	1	1	0	0	0	0	1	0
39.1	0	1	1	1	1	0	0	0	1	1	0
39.2	0	1	1	1	1	0	0	0	1	0	0
39.3	0	1	1	1	1	0	0	1	1	0	0
39.4	0	1	1	1	1	0	0	1	1	1	0
39.5	0	1	1	1	1	0	0	1	0	1	0
39.6	0	1	1	1	1	0	0	1	0	1	1
39.7	0	1	1	1	1	0	0	1	0	0	1
39.8	0	1	1	1	1	0	1	1	0	0	1
39.9	0	1	1	1	1	0	1	1	0	1	1
40.0	0	1	1	1	1	0	1	1	0	1	0
40.1	0	1	1	1	1	0	1	1	1	1	0
40.2	0	1	1	1	1	0	1	1	1	0	0
40.3	0	1	1	1	1	0	1	0	1	0	0
40.4	0	1	1	1	1	0	1	0	1	1	0
40.5	0	1	1	1	1	0	1	0	0	1	0
40.6	0	1	1	1	1	0	1	0	0	1	1
40.7	0	1	1	1	1	0	1	0	0	0	1
40.8	0	1	1	1	1	1	1	0	0	0	1
40.9	0	1	1	1	1	1	1	0	0	1	1
41.0	0	1	1	1	1	1	1	0	0	1	0
41.1	0	1	1	1	1	1	1	0	1	1	0
41.2	0	1	1	1	1	1	1	0	1	0	0
41.3	0	1	1	1	1	1	1	1	1	0	0
41.4	0	1	1	1	1	1	1	1	1	1	0
41.5	0	1	1	1	1	1	1	1	0	1	0
41.6	0	1	1	1	1	1	1	1	0	1	1
41.7	0	1	1	1	1	1	1	1	0	0	1
41.8	0	1	1	1	1	1	0	1	0	0	1
41.9	0	1	1	1	1	1	0	1	0	1	1
42.0	0	1	1	1	1	1	0	1	0	1	0
42.1	0	1	1	1	1	1	0	1	1	1	0
42.2	0	1	1	1	1	1	0	1	1	0	0
42.3	0	1	1	1	1	1	0	0	1	0	0
42.4	0	1	1	1	1	1	0	0	1	1	0
42.5	0	1	1	1	1	1	0	0	0	1	0
42.6	0	1	1	1	1	1	0	0	0	1	1
42.7	0	1	1	1	1	1	0	0	0	0	1
42.8	0	1	1	1	0	1	0	0	0	0	1
42.9	0	1	1	1	0	1	0	0	0	1	1

RANGE (Altitude in Thousands)	PULSE POSITION										
	D_2	D_4 and SPI	A_1	A_2	A_4	B_1	B_2	B_4	C_1	C_2	C_4
43.0	0	1	1	1	0	1	0	0	0	1	0
43.1	0	1	1	1	0	1	0	0	1	1	0
43.2	0	1	1	1	0	1	0	0	1	0	0
43.3	0	1	1	1	0	1	0	1	1	0	0
43.4	0	1	1	1	0	1	0	1	1	1	0
43.5	0	1	1	1	0	1	0	1	0	1	0
43.6	0	1	1	1	0	1	0	1	0	1	1
43.7	0	1	1	1	0	1	0	1	0	0	1
43.8	0	1	1	1	0	1	1	1	0	0	1
43.9	0	1	1	1	0	1	1	1	0	1	1
44.0	0	1	1	1	0	1	1	1	0	1	0
44.1	0	1	1	1	0	1	1	1	1	1	0
44.2	0	1	1	1	0	1	1	1	1	0	0
44.3	0	1	1	1	0	1	1	0	1	0	0
44.4	0	1	1	1	0	1	1	0	1	1	0
44.5	0	1	1	1	0	1	1	0	0	1	0
44.6	0	1	1	1	0	1	1	0	0	1	1
44.7	0	1	1	1	0	1	1	0	0	0	1
44.8	0	1	1	1	0	0	1	0	0	0	1
44.9	0	1	1	1	0	0	1	0	0	1	1
45.0	0	1	1	1	0	0	1	0	0	1	0
45.1	0	1	1	1	0	0	1	0	1	1	0
45.2	0	1	1	1	0	0	1	0	1	0	0
45.3	0	1	1	1	0	0	1	1	1	0	0
45.4	0	1	1	1	0	0	1	1	1	1	0
45.5	0	1	1	1	0	0	1	1	0	1	0
45.6	0	1	1	1	0	0	1	1	0	1	1
45.7	0	1	1	1	0	0	1	1	0	0	1
45.8	0	1	1	1	0	0	0	1	0	0	1
45.9	0	1	1	1	0	0	0	1	0	1	1
46.0	0	1	1	1	0	0	0	1	0	1	0
46.1	0	1	1	1	0	0	0	1	1	1	0
46.2	0	1	1	1	0	0	0	1	1	0	0
46.3	0	1	1	1	0	0	0	0	1	0	0
46.4	0	1	1	1	0	0	0	0	1	1	0
46.5	0	1	1	1	0	0	0	0	0	1	0
46.6	0	1	1	1	0	0	0	0	0	1	1
46.7	0	1	1	1	0	0	0	0	0	0	1
46.8	0	1	0	1	0	0	0	0	0	0	1
46.9	0	1	0	1	0	0	0	0	0	1	1

RANGE (Altitude in Thousands)	PULSE POSITION										
	D_2	D_4 and SPI	A_1	A_2	A_4	B_1	B_2	B_4	C_1	C_2	C_4
47.0	0	1	0	1	0	0	0	0	0	1	0
47.1	0	1	0	1	0	0	0	0	1	1	0
47.2	0	1	0	1	0	0	0	0	1	0	0
47.3	0	1	0	1	0	0	0	1	1	0	0
47.4	0	1	0	1	0	0	0	1	1	1	0
47.5	0	1	0	1	0	0	0	1	0	1	0
47.6	0	1	0	1	0	0	0	1	0	1	1
47.7	0	1	0	1	0	0	0	1	0	0	1
47.8	0	1	0	1	0	0	1	1	0	0	1
47.9	0	1	0	1	0	0	1	1	0	1	1
48.0	0	1	0	1	0	0	1	1	0	1	0
48.1	0	1	0	1	0	0	1	1	1	1	0
48.2	0	1	0	1	0	0	1	1	1	0	0
48.3	0	1	0	1	0	0	1	0	1	0	0
48.4	0	1	0	1	0	0	1	0	1	1	0
48.5	0	1	0	1	0	0	1	0	0	1	0
48.6	0	1	0	1	0	0	1	0	0	1	1
48.7	0	1	0	1	0	0	1	0	0	0	1
48.8	0	1	0	1	0	1	1	0	0	0	1
48.9	0	1	0	1	0	1	1	0	0	1	1
49.0	0	1	0	1	0	1	1	0	0	1	0
49.1	0	1	0	1	0	1	1	0	1	1	0
49.2	0	1	0	1	0	1	1	0	1	0	0
49.3	0	1	0	1	0	1	1	1	1	0	0
49.4	0	1	0	1	0	1	1	1	1	1	0
49.5	0	1	0	1	0	1	1	1	0	1	0
49.6	0	1	0	1	0	1	1	1	0	1	1
49.7	0	1	0	1	0	1	1	1	0	0	1
49.8	0	1	0	1	0	1	0	1	0	0	1
49.9	0	1	0	1	0	1	0	1	0	1	1
50.0	0	1	0	1	0	1	0	1	0	1	0
50.1	0	1	0	1	0	1	0	1	1	1	0
50.2	0	1	0	1	0	1	0	1	1	0	0
50.3	0	1	0	1	0	1	0	0	1	0	0
50.4	0	1	0	1	0	1	0	0	1	1	0
50.5	0	1	0	1	0	1	0	0	0	1	0
50.6	0	1	0	1	0	1	0	0	0	1	1
50.7	0	1	0	1	0	1	0	0	0	0	1
50.8	0	1	0	1	1	1	0	0	0	0	1
50.9	0	1	0	1	1	1	0	0	0	1	1

RANGE (Altitude in Thousands)	PULSE POSITION										
	D_2	D_4 and SPI	A_1	A_2	A_4	B_1	B_2	B_4	C_1	C_2	C_4
51.0	0	1	0	1	1	1	0	0	0	1	0
51.1	0	1	0	1	1	1	0	0	1	1	0
51.2	0	1	0	1	1	1	0	0	1	0	0
51.3	0	1	0	1	1	1	0	1	1	0	0
51.4	0	1	0	1	1	1	0	1	1	1	0
51.5	0	1	0	1	1	1	0	1	0	1	0
51.6	0	1	0	1	1	1	0	1	0	1	1
51.7	0	1	0	1	1	1	0	1	0	0	1
51.8	0	1	0	1	1	1	1	1	0	0	1
51.9	0	1	0	1	1	1	1	1	0	1	1
52.0	0	1	0	1	1	1	1	1	0	1	0
52.1	0	1	0	1	1	1	1	1	1	1	0
52.2	0	1	0	1	1	1	1	1	1	0	0
52.3	0	1	0	1	1	1	1	0	1	0	0
52.4	0	1	0	1	1	1	1	0	1	1	0
52.5	0	1	0	1	1	1	1	0	0	1	0
52.6	0	1	0	1	1	1	1	0	0	1	1
52.7	0	1	0	1	1	1	1	0	0	0	1
52.8	0	1	0	1	1	0	1	0	0	0	1
52.9	0	1	0	1	1	0	1	0	0	1	1
53.0	0	1	0	1	1	0	1	0	0	1	0
53.1	0	1	0	1	1	0	1	0	1	1	0
53.2	0	1	0	1	1	0	1	0	1	0	0
53.3	0	1	0	1	1	0	1	1	1	0	0
53.4	0	1	0	1	1	0	1	1	1	1	0
53.5	0	1	0	1	1	0	1	1	0	1	0
53.6	0	1	0	1	1	0	1	1	0	1	1
53.7	0	1	0	1	1	0	1	1	0	0	1
53.8	0	1	0	1	1	0	0	1	0	0	1
53.9	0	1	0	1	1	0	0	1	0	1	1
54.0	0	1	0	1	1	0	0	1	0	1	0
54.1	0	1	0	1	1	0	0	1	1	1	0
54.2	0	1	0	1	1	0	0	1	1	0	0
54.3	0	1	0	1	1	0	0	0	1	0	0
54.4	0	1	0	1	1	0	0	0	1	1	0
54.5	0	1	0	1	1	0	0	0	0	1	0
54.6	0	1	0	1	1	0	0	0	0	1	1
54.7	0	1	0	1	1	0	0	0	0	0	1
54.8	0	1	0	0	1	0	0	0	0	0	1
54.9	0	1	0	0	1	0	0	0	0	1	1

RANGE (Altitude in Thousands)	PULSE POSITION										
	D_2	D_4 and SPI	A_1	A_2	A_4	B_1	B_2	B_4	C_1	C_2	C_4
55.0	0	1	0	0	1	0	0	0	0	1	0
55.1	0	1	0	0	1	0	0	0	1	1	0
55.2	0	1	0	0	1	0	0	0	1	0	0
55.3	0	1	0	0	1	0	0	1	1	0	0
55.4	0	1	0	0	1	0	0	1	1	1	0
55.5	0	1	0	0	1	0	0	1	0	1	0
55.6	0	1	0	0	1	0	0	1	0	1	1
55.7	0	1	0	0	1	0	0	1	0	0	1
55.8	0	1	0	0	1	0	1	1	0	0	1
55.9	0	1	0	0	1	0	1	1	0	1	1
56.0	0	1	0	0	1	0	1	1	0	1	0
56.1	0	1	0	0	1	0	1	1	1	1	0
56.2	0	1	0	0	1	0	1	1	1	0	0
56.3	0	1	0	0	1	0	1	0	1	0	0
56.4	0	1	0	0	1	0	1	0	1	1	0
56.5	0	1	0	0	1	0	1	0	0	1	0
56.6	0	1	0	0	1	0	1	0	0	1	1
56.7	0	1	0	0	1	0	1	0	0	0	1
56.8	0	1	0	0	1	1	1	0	0	0	1
56.9	0	1	0	0	1	1	1	0	0	1	1
57.0	0	1	0	0	1	1	1	0	0	1	0
57.1	0	1	0	0	1	1	1	0	1	1	0
57.2	0	1	0	0	1	1	1	0	1	0	0
57.3	0	1	0	0	1	1	1	1	1	0	0
57.4	0	1	0	0	1	1	1	1	1	1	0
57.5	0	1	0	0	1	1	1	1	0	1	0
57.6	0	1	0	0	1	1	1	1	0	1	1
57.7	0	1	0	0	1	1	1	1	0	0	1
57.8	0	1	0	0	1	1	0	1	0	0	1
57.9	0	1	0	0	1	1	0	1	0	1	1
58.0	0	1	0	0	1	1	0	1	0	1	0
58.1	0	1	0	0	1	1	0	1	1	1	0
58.2	0	1	0	0	1	1	0	1	1	0	0
58.3	0	1	0	0	1	1	0	0	1	0	0
58.4	0	1	0	0	1	1	0	0	1	1	0
58.5	0	1	0	0	1	1	0	0	0	1	0
58.6	0	1	0	0	1	1	0	0	0	1	1
58.7	0	1	0	0	1	1	0	0	0	0	1
58.8	0	1	0	0	0	1	0	0	0	0	1
58.9	0	1	0	0	0	1	0	0	0	1	1

RANGE (Altitude in Thousands)	PULSE POSITION										
	D_2	D_4 and SPI	A_1	A_2	A_4	B_1	B_2	B_4	C_1	C_2	C_4
59.0	0	1	0	0	0	1	0	0	0	1	0
59.1	0	1	0	0	0	1	0	0	1	1	0
59.2	0	1	0	0	0	1	0	0	1	0	0
59.3	0	1	0	0	0	1	0	1	1	0	0
59.4	0	1	0	0	0	1	0	1	1	1	0
59.5	0	1	0	0	0	1	0	1	0	1	0
59.6	0	1	0	0	0	1	0	1	0	1	1
59.7	0	1	0	0	0	1	0	1	0	0	1
59.8	0	1	0	0	0	1	1	1	0	0	1
59.9	0	1	0	0	0	1	1	1	0	1	1
60.0	0	1	0	0	0	1	1	1	0	1	0
60.1	0	1	0	0	0	1	1	1	1	1	0
60.2	0	1	0	0	0	1	1	1	1	0	0
60.3	0	1	0	0	0	1	1	0	1	0	0
60.4	0	1	0	0	0	1	1	0	1	1	0
60.5	0	1	0	0	0	1	1	0	0	1	0
60.6	0	1	0	0	0	1	1	0	0	1	1
60.7	0	1	0	0	0	1	1	0	0	0	1
60.8	0	1	0	0	0	0	1	0	0	0	1
60.9	0	1	0	0	0	0	1	0	0	1	1
61.0	0	1	0	0	0	0	1	0	0	1	0
61.1	0	1	0	0	0	0	1	0	1	1	0
61.2	0	1	0	0	0	0	1	0	1	0	0
61.3	0	1	0	0	0	0	1	1	1	0	0
61.4	0	1	0	0	0	0	1	1	1	1	0
61.5	0	1	0	0	0	0	1	1	0	1	0
61.6	0	1	0	0	0	0	1	1	0	1	1
61.7	0	1	0	0	0	0	1	1	0	0	1
61.8	0	1	0	0	0	0	0	1	0	0	1
61.9	0	1	0	0	0	0	0	1	0	1	1
62.0	0	1	0	0	0	0	0	1	0	1	0
62.1	0	1	0	0	0	0	0	1	1	1	0
62.2	0	1	0	0	0	0	0	1	1	0	0
62.3	0	1	0	0	0	0	0	0	1	0	0
62.4	0	1	0	0	0	0	0	0	1	1	0
62.5	0	1	0	0	0	0	0	0	0	1	0
62.6	0	1	0	0	0	0	0	0	0	1	1
62.7	0	1	0	0	0	0	0	0	0	0	1
62.8	1	1	0	0	0	0	0	0	0	0	1
62.9	1	1	0	0	0	0	0	0	0	1	1

RANGE (Altitude in Thousands)	PULSE POSITION										
	D_2	D_4 and SPI	A_1	A_2	A_4	B_1	B_2	B_4	C_1	C_2	C_4
63.0	1	1	0	0	0	0	0	0	0	1	0
63.1	1	1	0	0	0	0	0	0	1	1	0
63.2	1	1	0	0	0	0	0	0	1	0	0
63.3	1	1	0	0	0	0	0	1	1	0	0
63.4	1	1	0	0	0	0	0	1	1	1	0
63.5	1	1	0	0	0	0	0	1	0	1	0
63.6	1	1	0	0	0	0	0	1	0	1	1
63.7	1	1	0	0	0	0	0	1	0	0	1
63.8	1	1	0	0	0	0	1	1	0	0	1
63.9	1	1	0	0	0	0	1	1	0	1	1
64.0	1	1	0	0	0	0	1	1	0	1	0
64.1	1	1	0	0	0	0	1	1	1	1	0
64.2	1	1	0	0	0	0	1	1	1	0	0
64.3	1	1	0	0	0	0	1	0	1	0	0
64.4	1	1	0	0	0	0	1	0	1	1	0
64.5	1	1	0	0	0	0	1	0	0	1	0
64.6	1	1	0	0	0	0	1	0	0	1	1
64.7	1	1	0	0	0	0	1	0	0	0	1
64.8	1	1	0	0	0	1	1	0	0	0	1
64.9	1	1	0	0	0	1	1	0	0	1	1
65.0	1	1	0	0	0	1	1	0	0	1	0
65.1	1	1	0	0	0	1	1	0	1	1	0
65.2	1	1	0	0	0	1	1	0	1	0	0
65.3	1	1	0	0	0	1	1	1	1	0	0
65.4	1	1	0	0	0	1	1	1	1	1	0
65.5	1	1	0	0	0	1	1	1	0	1	0
65.6	1	1	0	0	0	1	1	1	0	1	1
65.7	1	1	0	0	0	1	1	1	0	0	1
65.8	1	1	0	0	0	1	0	1	0	0	1
65.9	1	1	0	0	0	1	0	1	0	1	1
66.0	1	1	0	0	0	1	0	1	0	1	0
66.1	1	1	0	0	0	1	0	1	1	1	0
66.2	1	1	0	0	0	1	0	1	1	0	0
66.3	1	1	0	0	0	1	0	0	1	0	0
66.4	1	1	0	0	0	1	0	0	1	1	0
66.5	1	1	0	0	0	1	0	0	0	1	0
66.6	1	1	0	0	0	1	0	0	0	1	1
66.7	1	1	0	0	0	1	0	0	0	0	1
66.8	1	1	0	0	1	1	0	0	0	0	1
66.9	1	1	0	0	1	1	0	0	0	1	1

RANGE (Altitude in Thousands)	PULSE POSITION										
	D_2	D_4 and SPI	A_1	A_2	A_4	B_1	B_2	B_4	C_1	C_2	C_4
67.0	1	1	0	0	1	1	0	0	0	1	0
67.1	1	1	0	0	1	1	0	0	1	1	0
67.2	1	1	0	0	1	1	0	0	1	0	0
67.3	1	1	0	0	1	1	0	1	1	0	0
67.4	1	1	0	0	1	1	0	1	1	1	0
67.5	1	1	0	0	1	1	0	1	0	1	0
67.6	1	1	0	0	1	1	0	1	0	1	1
67.7	1	1	0	0	1	1	0	1	0	0	1
67.8	1	1	0	0	1	1	1	1	0	0	1
67.9	1	1	0	0	1	1	1	1	0	1	1
68.0	1	1	0	0	1	1	1	1	0	1	0
68.1	1	1	0	0	1	1	1	1	1	1	0
68.2	1	1	0	0	1	1	1	1	1	0	0
68.3	1	1	0	0	1	1	1	0	1	0	0
68.4	1	1	0	0	1	1	1	0	1	1	0
68.5	1	1	0	0	1	1	1	0	0	1	0
68.6	1	1	0	0	1	1	1	0	0	1	1
68.7	1	1	0	0	1	1	1	0	0	0	1
68.8	1	1	0	0	1	0	1	0	0	0	1
68.9	1	1	0	0	1	0	1	0	0	1	1
69.0	1	1	0	0	1	0	1	0	0	1	0
69.1	1	1	0	0	1	0	1	0	1	1	0
69.2	1	1	0	0	1	0	1	0	1	0	0
69.3	1	1	0	0	1	0	1	1	1	0	0
69.4	1	1	0	0	1	0	1	1	1	1	0
69.5	1	1	0	0	1	0	1	1	0	1	0
69.6	1	1	0	0	1	0	1	1	0	1	1
69.7	1	1	0	0	1	0	1	1	0	0	1
69.8	1	1	0	0	1	0	0	1	0	0	1
69.9	1	1	0	0	1	0	0	1	0	1	1
70.0	1	1	0	0	1	0	0	1	0	1	0
70.1	1	1	0	0	1	0	0	1	1	1	0
70.2	1	1	0	0	1	0	0	1	1	0	0
70.3	1	1	0	0	1	0	0	0	1	0	0
70.4	1	1	0	0	1	0	0	0	1	1	0
70.5	1	1	0	0	1	0	0	0	0	1	0
70.6	1	1	0	0	1	0	0	0	0	1	1
70.7	1	1	0	0	1	0	0	0	0	0	1
70.8	1	1	0	1	1	0	0	0	0	0	1
70.9	1	1	0	1	1	0	0	0	0	1	1

RANGE (Altitude in Thousands)	PULSE POSITION										
	D_2	D_4 and SPI	A_1	A_2	A_4	B_1	B_2	B_4	C_1	C_2	C_4
71.0	1	1	0	1	1	0	0	0	0	1	0
71.1	1	1	0	1	1	0	0	0	1	1	0
71.2	1	1	0	1	1	0	0	0	1	0	0
71.3	1	1	0	1	1	0	0	1	1	0	0
71.4	1	1	0	1	1	0	0	1	1	1	0
71.5	1	1	0	1	1	0	0	1	0	1	0
71.6	1	1	0	1	1	0	0	1	0	1	1
71.7	1	1	0	1	1	0	0	1	0	0	1
71.8	1	1	0	1	1	0	1	1	0	0	1
71.9	1	1	0	1	1	0	1	1	0	1	1
72.0	1	1	0	1	1	0	1	1	0	1	0
72.1	1	1	0	1	1	0	1	1	1	1	0
72.2	1	1	0	1	1	0	1	1	1	0	0
72.3	1	1	0	1	1	0	1	0	1	0	0
72.4	1	1	0	1	1	0	1	0	1	1	0
72.5	1	1	0	1	1	0	1	0	0	1	0
72.6	1	1	0	1	1	0	1	0	0	1	1
72.7	1	1	0	1	1	0	1	0	0	0	1
72.8	1	1	0	1	1	1	1	0	0	0	1
72.9	1	1	0	1	1	1	1	0	0	1	1
73.0	1	1	0	1	1	1	1	0	0	1	0
73.1	1	1	0	1	1	1	1	0	1	1	0
73.2	1	1	0	1	1	1	1	0	1	0	0
73.3	1	1	0	1	1	1	1	1	1	0	0
73.4	1	1	0	1	1	1	1	1	1	1	0
73.5	1	1	0	1	1	1	1	1	0	1	0
73.6	1	1	0	1	1	1	1	1	0	1	1
73.7	1	1	0	1	1	1	1	1	0	0	1
73.8	1	1	0	1	1	1	0	1	0	0	1
73.9	1	1	0	1	1	1	0	1	0	1	1
74.0	1	1	0	1	1	1	0	1	0	1	0
74.1	1	1	0	1	1	1	0	1	1	1	0
74.2	1	1	0	1	1	1	0	1	1	0	0
74.3	1	1	0	1	1	1	0	0	1	0	0
74.4	1	1	0	1	1	1	0	0	1	1	0
74.5	1	1	0	1	1	1	0	0	0	1	0
74.6	1	1	0	1	1	1	0	0	0	1	1
74.7	1	1	0	1	1	1	0	0	0	0	1
74.8	1	1	0	1	0	1	0	0	0	0	1
74.9	1	1	0	1	0	1	0	0	0	1	1

RANGE (Altitude in Thousands)	PULSE POSITION										
	D_2	D_4 and SPI	A_1	A_2	A_4	B_1	B_2	B_4	C_1	C_2	C_4
75.0	1	1	0	1	0	1	0	0	0	1	0
75.1	1	1	0	1	0	1	0	0	1	1	0
75.2	1	1	0	1	0	1	0	0	1	0	0
75.3	1	1	0	1	0	1	0	1	1	0	0
75.4	1	1	0	1	0	1	0	1	1	1	0
75.5	1	1	0	1	0	1	0	1	0	1	0
75.6	1	1	0	1	0	1	0	1	0	1	1
75.7	1	1	0	1	0	1	0	1	0	0	1
75.8	1	1	0	1	0	1	1	1	0	0	1
75.9	1	1	0	1	0	1	1	1	0	1	1
76.0	1	1	0	1	0	1	1	1	0	1	0
76.1	1	1	0	1	0	1	1	1	1	1	0
76.2	1	1	0	1	0	1	1	1	1	0	0
76.3	1	1	0	1	0	1	1	0	1	0	0
76.4	1	1	0	1	0	1	1	0	1	1	0
76.5	1	1	0	1	0	1	1	0	0	1	0
76.6	1	1	0	1	0	1	1	0	0	1	1
76.7	1	1	0	1	0	1	1	0	0	0	1
76.8	1	1	0	1	0	0	1	0	0	0	1
76.9	1	1	0	1	0	0	1	0	0	1	1
77.0	1	1	0	1	0	0	1	0	0	1	0
77.1	1	1	0	1	0	0	1	0	1	1	0
77.2	1	1	0	1	0	0	1	0	1	0	0
77.3	1	1	0	1	0	0	1	1	1	0	0
77.4	1	1	0	1	0	0	1	1	1	1	0
77.5	1	1	0	1	0	0	1	1	0	1	0
77.6	1	1	0	1	0	0	1	1	0	1	1
77.7	1	1	0	1	0	0	1	1	0	0	1
77.8	1	1	0	1	0	0	0	1	0	0	1
77.9	1	1	0	1	0	0	0	1	0	1	1
78.0	1	1	0	1	0	0	0	1	0	1	0
78.1	1	1	0	1	0	0	0	1	1	1	0
78.2	1	1	0	1	0	0	0	1	1	0	0
78.3	1	1	0	1	0	0	0	0	1	0	0
78.4	1	1	0	1	0	0	0	0	1	1	0
78.5	1	1	0	1	0	0	0	0	0	1	0
78.6	1	1	0	1	0	0	0	0	0	1	1
78.7	1	1	0	1	0	0	0	0	0	0	1
78.8	1	1	1	1	0	0	0	0	0	0	1
78.9	1	1	1	1	0	0	0	0	0	1	1

RANGE (Altitude in Thousands)	PULSE POSITION										
	D_2	D_4 and SPI	A_1	A_2	A_4	B_1	B_2	B_4	C_1	C_2	C_4
79.0	1	1	1	1	0	0	0	0	0	1	0
79.1	1	1	1	1	0	0	0	0	1	1	0
79.2	1	1	1	1	0	0	0	0	1	0	0
79.3	1	1	1	1	0	0	0	1	1	0	0
79.4	1	1	1	1	0	0	0	1	1	1	0
79.5	1	1	1	1	0	0	0	1	0	1	0
79.6	1	1	1	1	0	0	0	1	0	1	1
79.7	1	1	1	1	0	0	0	1	0	0	1
79.8	1	1	1	1	0	0	1	1	0	0	1
79.9	1	1	1	1	0	0	1	1	0	1	1
80.0	1	1	1	1	0	0	1	1	0	1	0
80.1	1	1	1	1	0	0	1	1	1	1	0
80.2	1	1	1	1	0	0	1	1	1	0	0
80.3	1	1	1	1	0	0	1	0	1	0	0
80.4	1	1	1	1	0	0	1	0	1	1	0
80.5	1	1	1	1	0	0	1	0	0	1	0
80.6	1	1	1	1	0	0	1	0	0	1	1
80.7	1	1	1	1	0	0	1	0	0	0	1
80.8	1	1	1	1	0	1	1	0	0	0	1
80.9	1	1	1	1	0	1	1	0	0	1	1
81.0	1	1	1	1	0	1	1	0	0	1	0
81.1	1	1	1	1	0	1	1	0	1	1	0
81.2	1	1	1	1	0	1	1	0	1	0	0
81.3	1	1	1	1	0	1	1	1	1	0	0
81.4	1	1	1	1	0	1	1	1	1	1	0
81.5	1	1	1	1	0	1	1	1	0	1	0
81.6	1	1	1	1	0	1	1	1	0	1	1
81.7	1	1	1	1	0	1	1	1	0	0	1
81.8	1	1	1	1	0	1	0	1	0	0	1
81.9	1	1	1	1	0	1	0	1	0	1	1
82.0	1	1	1	1	0	1	0	1	0	1	0
82.1	1	1	1	1	0	1	0	1	1	1	0
82.2	1	1	1	1	0	1	0	1	1	0	0
82.3	1	1	1	1	0	1	0	0	1	0	0
82.4	1	1	1	1	0	1	0	0	1	1	0
82.5	1	1	1	1	0	1	0	0	0	1	0
82.6	1	1	1	1	0	1	0	0	0	1	1
82.7	1	1	1	1	0	1	0	0	0	0	1
82.8	1	1	1	1	1	1	0	0	0	0	1
82.9	1	1	1	1	1	1	0	0	0	1	1

RANGE (Altitude in Thousands)	PULSE POSITION										
	D_2	D_4 and SPI	A_1	A_2	A_4	B_1	B_2	B_4	C_1	C_2	C_4
83.0	1	1	1	1	1	1	0	0	0	1	0
83.1	1	1	1	1	1	1	0	0	1	1	0
83.2	1	1	1	1	1	1	0	0	1	0	0
83.3	1	1	1	1	1	1	0	1	1	0	0
83.4	1	1	1	1	1	1	0	1	1	1	0
83.5	1	1	1	1	1	1	0	1	0	1	0
83.6	1	1	1	1	1	1	0	1	0	1	1
83.7	1	1	1	1	1	1	0	1	0	0	1
83.8	1	1	1	1	1	1	1	1	0	0	1
83.9	1	1	1	1	1	1	1	1	0	1	1
84.0	1	1	1	1	1	1	1	1	0	1	0
84.1	1	1	1	1	1	1	1	1	1	1	0
84.2	1	1	1	1	1	1	1	1	1	0	0
84.3	1	1	1	1	1	1	1	0	1	0	0
84.4	1	1	1	1	1	1	1	0	1	1	0
84.5	1	1	1	1	1	1	1	0	0	1	0
84.6	1	1	1	1	1	1	1	0	0	1	1
84.7	1	1	1	1	1	1	1	0	0	0	1
84.8	1	1	1	1	1	0	1	0	0	0	1
84.9	1	1	1	1	1	0	1	0	0	1	1
85.0	1	1	1	1	1	0	1	0	0	1	0
85.1	1	1	1	1	1	0	1	0	1	1	0
85.2	1	1	1	1	1	0	1	0	1	0	0
85.3	1	1	1	1	1	0	1	1	1	0	0
85.4	1	1	1	1	1	0	1	1	1	1	0
85.5	1	1	1	1	1	0	1	1	0	1	0
85.6	1	1	1	1	1	0	1	1	0	1	1
85.7	1	1	1	1	1	0	1	1	0	0	1
85.8	1	1	1	1	1	0	0	1	0	0	1
85.9	1	1	1	1	1	0	0	1	0	1	1
86.0	1	1	1	1	1	0	0	1	0	1	0
86.1	1	1	1	1	1	0	0	1	1	1	0
86.2	1	1	1	1	1	0	0	1	1	0	0
86.3	1	1	1	1	1	0	0	0	1	0	0
86.4	1	1	1	1	1	0	0	0	1	1	0
86.5	1	1	1	1	1	0	0	0	0	1	0
86.6	1	1	1	1	1	0	0	0	0	1	1
86.7	1	1	1	1	1	0	0	0	0	0	1
86.8	1	1	1	0	1	0	0	0	0	0	1
86.9	1	1	1	0	1	0	0	0	0	1	1

RANGE (Altitude in Thousands)	PULSE POSITION										
	D_2	D_4 and SPI	A_1	A_2	A_4	B_1	B_2	B_4	C_1	C_2	C_4
87.0	1	1	1	0	1	0	0	0	0	1	0
87.1	1	1	1	0	1	0	0	0	1	1	0
87.2	1	1	1	0	1	0	0	0	1	0	0
87.3	1	1	1	0	1	0	0	1	1	0	0
87.4	1	1	1	0	1	0	0	1	1	1	0
87.5	1	1	1	0	1	0	0	1	0	1	0
87.6	1	1	1	0	1	0	0	1	0	1	1
87.7	1	1	1	0	1	0	0	1	0	0	1
87.8	1	1	1	0	1	0	1	1	0	0	1
87.9	1	1	1	0	1	0	1	1	0	1	1
88.0	1	1	1	0	1	0	1	1	0	1	0
88.1	1	1	1	0	1	0	1	1	1	1	0
88.2	1	1	1	0	1	0	1	1	1	0	0
88.3	1	1	1	0	1	0	1	0	1	0	0
88.4	1	1	1	0	1	0	1	0	1	1	0
88.5	1	1	1	0	1	0	1	0	0	1	0
88.6	1	1	1	0	1	0	1	0	0	1	1
88.7	1	1	1	0	1	0	1	0	0	0	1
88.8	1	1	1	0	1	1	1	0	0	0	1
88.9	1	1	1	0	1	1	1	0	0	1	1
89.0	1	1	1	0	1	1	1	0	0	1	0
89.1	1	1	1	0	1	1	1	0	1	1	0
89.2	1	1	1	0	1	1	1	0	1	0	0
89.3	1	1	1	0	1	1	1	1	1	0	0
89.4	1	1	1	0	1	1	1	1	1	1	0
89.5	1	1	1	0	1	1	1	1	0	1	0
89.6	1	1	1	0	1	1	1	1	0	1	1
89.7	1	1	1	0	1	1	1	1	0	0	1
89.8	1	1	1	0	1	1	0	0	0	0	1
89.9	1	1	1	0	1	1	0	0	0	1	1
90.0	1	1	1	0	1	1	0	0	0	1	0
90.1	1	1	1	0	1	1	0	0	1	1	0
90.2	1	1	1	0	1	1	0	0	1	0	0
90.3	1	1	1	0	1	1	0	0	1	0	0
90.4	1	1	1	0	1	1	0	0	1	1	0
90.5	1	1	1	0	1	1	0	0	0	1	0
90.6	1	1	1	0	1	1	0	0	0	1	1
90.7	1	1	1	0	1	1	0	0	0	0	1
90.8	1	1	1	0	0	1	0	1	0	0	1
90.9	1	1	1	0	0	1	0	1	0	1	1

RANGE (Altitude in Thousands)	PULSE POSITION										
	D_2	D_4 and SPI	A_1	A_2	A_4	B_1	B_2	B_4	C_1	C_2	C_4
91.0	1	1	1	0	0	1	0	0	0	1	0
91.1	1	1	1	0	0	1	0	0	1	1	0
91.2	1	1	1	0	0	1	0	0	1	0	0
91.3	1	1	1	0	0	1	0	1	1	0	0
91.4	1	1	1	0	0	1	0	1	1	1	0
91.5	1	1	1	0	0	1	0	1	0	1	0
91.6	1	1	1	0	0	1	0	1	0	1	1
91.7	1	1	1	0	0	1	0	1	0	0	1
91.8	1	1	1	0	0	1	1	1	0	0	1
91.9	1	1	1	0	0	1	1	1	0	1	1
92.0	1	1	1	0	0	1	1	1	0	1	0
92.1	1	1	1	0	0	1	1	1	1	1	0
92.2	1	1	1	0	0	1	1	1	1	0	0
92.3	1	1	1	0	0	1	1	0	1	0	0
92.4	1	1	1	0	0	1	1	0	1	1	0
92.5	1	1	1	0	0	1	1	0	0	1	0
92.6	1	1	1	0	0	1	1	0	0	1	1
92.7	1	1	1	0	0	1	1	0	0	0	1
92.8	1	1	1	0	0	0	1	0	0	0	1
92.9	1	1	1	0	0	0	1	0	0	1	1
93.0	1	1	1	0	0	0	1	0	0	1	0
93.1	1	1	1	0	0	0	1	0	1	1	0
93.2	1	1	1	0	0	0	1	0	1	0	0
93.3	1	1	1	0	0	0	1	1	1	0	0
93.4	1	1	1	0	0	0	1	1	1	1	0
93.5	1	1	1	0	0	0	1	1	0	1	0
93.6	1	1	1	0	0	0	1	1	0	1	1
93.7	1	1	1	0	0	0	1	1	0	0	1
93.8	1	1	1	0	0	0	0	1	0	0	1
93.9	1	1	1	0	0	0	0	1	0	1	1
94.0	1	1	1	0	0	0	0	1	0	1	0
94.1	1	1	1	0	0	0	0	1	1	1	0
94.2	1	1	1	0	0	0	0	1	1	0	0
94.3	1	1	1	0	0	0	0	0	1	0	0
94.4	1	1	1	0	0	0	0	0	1	1	0
94.5	1	1	1	0	0	0	0	0	0	1	0
94.6	1	1	1	0	0	0	0	0	0	1	1
94.7	1	1	1	0	0	0	0	0	0	0	1
94.8	1	0	1	0	0	0	0	0	0	0	1
94.9	1	0	1	0	0	0	0	0	0	1	1

RANGE (Altitude in Thousands)	PULSE POSITION D_2	D_4 and SPI	A_1	A_2	A_4	B_1	B_2	B_4	C_1	C_2	C_4
95.0	1	0	1	0	0	0	0	0	0	1	0
95.1	1	0	1	0	0	0	0	0	1	1	0
95.2	1	0	1	0	0	0	0	0	1	0	0
95.3	1	0	1	0	0	0	0	1	1	0	0
95.4	1	0	1	0	0	0	0	1	1	1	0
95.5	1	0	1	0	0	0	0	1	0	1	0
95.6	1	0	1	0	0	0	0	1	0	1	1
95.7	1	0	1	0	0	0	0	1	0	0	1
95.8	1	0	1	0	0	0	1	1	0	0	1
95.9	1	0	1	0	0	0	1	1	0	1	1
96.0	1	0	1	0	0	0	1	1	0	1	0
96.1	1	0	1	0	0	0	1	1	1	1	0
96.2	1	0	1	0	0	0	1	1	1	0	0
96.3	1	0	1	0	0	0	1	0	1	0	0
96.4	1	0	1	0	0	0	1	0	1	1	0
96.5	1	0	1	0	0	0	1	0	0	1	0
96.6	1	0	1	0	0	0	1	0	0	1	1
96.7	1	0	1	0	0	0	1	0	0	0	1
96.8	1	0	1	0	0	1	1	0	0	0	1
96.9	1	0	1	0	0	1	1	0	0	1	1
97.0	1	0	1	0	0	1	1	0	0	1	0
97.1	1	0	1	0	0	1	1	0	1	1	0
97.2	1	0	1	0	0	1	1	0	1	0	0
97.3	1	0	1	0	0	1	1	1	1	0	0
97.4	1	0	1	0	0	1	1	1	1	1	0
97.5	1	0	1	0	0	1	1	1	0	1	0
97.6	1	0	1	0	0	1	1	1	0	1	1
97.7	1	0	1	0	0	1	1	1	0	0	1
97.8	1	0	1	0	0	1	0	1	0	0	1
97.9	1	0	1	0	0	1	0	1	0	1	1
98.0	1	0	1	0	0	1	0	1	0	1	0
98.1	1	0	1	0	0	1	0	1	1	1	0
98.2	1	0	1	0	0	1	0	1	1	0	0
98.3	1	0	1	0	0	1	0	0	1	0	0
98.4	1	0	1	0	0	1	0	0	1	1	0
98.5	1	0	1	0	0	1	0	0	0	1	0
98.6	1	0	1	0	0	1	0	0	0	1	1
98.7	1	0	1	0	0	1	0	0	0	0	1
98.8	1	0	1	0	1	1	0	0	0	0	1
98.9	1	0	1	0	1	1	0	0	0	1	1

RANGE (Altitude in Thousands)	PULSE POSITION										
	D_2	D_4 and SPI	A_1	A_2	A_4	B_1	B_2	B_4	C_1	C_2	C_4
99.0	1	0	1	0	1	1	0	0	0	1	0
99.1	1	0	1	0	1	1	0	0	1	1	0
99.2	1	0	1	0	1	1	0	0	1	0	0
99.3	1	0	1	0	1	1	0	1	1	0	0
99.4	1	0	1	0	1	1	0	1	1	1	0
99.5	1	0	1	0	1	1	0	1	0	1	0
99.6	1	0	1	0	1	1	0	1	0	1	1
99.7	1	0	1	0	1	1	0	1	0	0	1
99.8	1	0	1	0	1	1	1	1	0	0	1
99.9	1	0	1	0	1	1	1	1	0	1	1
100.0	1	0	1	0	1	1	1	1	0	1	0
100.1	1	0	1	0	1	1	1	1	1	1	0
100.2	1	0	1	0	1	1	1	1	1	0	0
100.3	1	0	1	0	1	1	1	0	1	0	0
100.4	1	0	1	0	1	1	1	0	1	1	0
100.5	1	0	1	0	1	1	1	0	0	1	0
100.6	1	0	1	0	1	1	1	0	0	1	1
100.7	1	0	1	0	1	1	1	0	0	0	1
100.8	1	0	1	0	1	0	1	0	0	0	1
100.9	1	0	1	0	1	0	1	0	0	1	1
101.0	1	0	1	0	1	0	1	0	0	1	0
101.1	1	0	1	0	1	0	1	0	1	1	0
101.2	1	0	1	0	1	0	1	0	1	0	0
101.3	1	0	1	0	1	0	1	1	1	0	0
101.4	1	0	1	0	1	0	1	1	1	1	0
101.5	1	0	1	0	1	0	1	1	0	1	0
101.6	1	0	1	0	1	0	1	1	0	1	1
101.7	1	0	1	0	1	0	1	1	0	0	1
101.8	1	0	1	0	1	0	0	1	0	0	1
101.9	1	0	1	0	1	0	0	1	0	1	1
102.0	1	0	1	0	1	0	0	1	0	1	0
102.1	1	0	1	0	1	0	0	1	1	1	0
102.2	1	0	1	0	1	0	0	1	1	0	0
102.3	1	0	1	0	1	0	0	0	1	0	0
102.4	1	0	1	0	1	0	0	0	1	1	0
102.5	1	0	1	0	1	0	0	0	0	1	0
102.6	1	0	1	0	1	0	0	0	0	1	1
102.7	1	0	1	0	1	0	0	0	0	0	1
102.8	1	0	1	1	1	0	0	0	0	0	1
102.9	1	0	1	1	1	0	0	0	0	1	1

RANGE (Altitude in Thousands)	PULSE POSITION										
	D_2	D_4 and SPI	A_1	A_2	A_4	B_1	B_2	B_4	C_1	C_2	C_4
103.0	1	0	1	1	1	0	0	0	0	1	0
103.1	1	0	1	1	1	0	0	0	1	1	0
103.2	1	0	1	1	1	0	0	0	1	0	0
103.3	1	0	1	1	1	0	0	1	1	0	0
103.4	1	0	1	1	1	0	0	1	1	1	0
103.5	1	0	1	1	1	0	0	1	0	1	0
103.6	1	0	1	1	1	0	0	1	0	1	1
103.7	1	0	1	1	1	0	0	1	0	0	1
103.8	1	0	1	1	1	0	1	1	0	0	1
103.9	1	0	1	1	1	0	1	1	0	1	1
104.0	1	0	1	1	1	0	1	1	0	1	0
104.1	1	0	1	1	1	0	1	1	1	1	0
104.2	1	0	1	1	1	0	1	1	1	0	0
104.3	1	0	1	1	1	0	1	0	1	0	0
104.4	1	0	1	1	1	0	1	0	1	1	0
104.5	1	0	1	1	1	0	1	0	0	1	0
104.6	1	0	1	1	1	0	1	0	0	1	1
104.7	1	0	1	1	1	0	1	0	0	0	1
104.8	1	0	1	1	1	0	1	0	0	0	1
104.9	1	0	1	1	1	1	1	0	0	1	1
105.0	1	0	1	1	1	1	1	0	0	1	0
105.1	1	0	1	1	1	1	1	0	1	1	0
105.2	1	0	1	1	1	1	1	0	1	0	0
105.3	1	0	1	1	1	1	1	1	1	0	0
105.4	1	0	1	1	1	1	1	1	1	1	0
105.5	1	0	1	1	1	1	1	1	0	1	0
105.6	1	0	1	1	1	1	1	1	0	1	1
105.7	1	0	1	1	1	1	1	1	0	0	1
105.8	1	0	1	1	1	1	0	1	0	0	1
105.9	1	0	1	1	1	1	0	1	0	1	1
106.0	1	0	1	1	1	1	0	1	0	1	0
106.1	1	0	1	1	1	1	0	1	1	1	0
106.2	1	0	1	1	1	1	0	1	1	0	0
106.3	1	0	1	1	1	1	0	0	1	0	0
106.4	1	0	1	1	1	1	0	0	1	1	0
106.5	1	0	1	1	1	1	0	0	0	1	0
106.6	1	0	1	1	1	1	0	0	0	1	1
106.7	1	0	1	1	1	1	0	0	0	0	1
106.8	1	0	1	1	0	1	0	0	0	0	1
106.9	1	0	1	1	0	1	0	0	0	1	1

RANGE (Altitude in Thousands)	PULSE POSITION										
	D_2	D_4 and SPI	A_1	A_2	A_4	B_1	B_2	B_4	C_1	C_2	C_4
107.0	1	0	1	1	0	1	0	0	0	1	0
107.1	1	0	1	1	0	1	0	0	1	1	0
107.2	1	0	1	1	0	1	0	0	1	0	0
107.3	1	0	1	1	0	1	0	1	1	0	0
107.4	1	0	1	1	0	1	0	1	1	1	0
107.5	1	0	1	1	0	1	0	1	0	1	0
107.6	1	0	1	1	0	1	0	1	0	1	1
107.7	1	0	1	1	0	1	0	1	0	0	1
107.8	1	0	1	1	0	1	1	1	0	0	1
107.9	1	0	1	1	0	1	1	1	0	1	1
108.0	1	0	1	1	0	1	1	1	0	1	0
108.1	1	0	1	1	0	1	1	1	1	1	0
108.2	1	0	1	1	0	1	1	1	1	0	0
108.3	1	0	1	1	0	1	1	0	1	0	0
108.4	1	0	1	1	0	1	1	0	1	1	0
108.5	1	0	1	1	0	1	1	0	0	1	0
108.6	1	0	1	1	0	1	1	0	0	1	1
108.7	1	0	1	1	0	1	1	0	0	0	1
108.8	1	0	1	1	0	0	1	0	0	0	1
108.9	1	0	1	1	0	0	1	0	0	1	1
109.0	1	0	1	1	0	0	1	0	0	1	0
109.1	1	0	1	1	0	0	1	0	1	1	0
109.2	1	0	1	1	0	0	1	0	1	0	0
109.3	1	0	1	1	0	0	1	1	1	0	0
109.4	1	0	1	1	0	0	1	1	1	1	0
109.5	1	0	1	1	0	0	1	1	0	1	0
109.6	1	0	1	1	0	0	1	1	0	1	1
109.7	1	0	1	1	0	0	1	1	0	0	1
109.8	1	0	1	1	0	0	0	1	0	0	1
109.9	1	0	1	1	0	0	0	1	0	1	1
110.0	1	0	1	1	0	0	0	1	0	1	0
110.1	1	0	1	1	0	0	0	1	1	1	0
110.2	1	0	1	1	0	0	0	1	1	0	0
110.3	1	0	1	1	0	0	0	0	1	0	0
110.4	1	0	1	1	0	0	0	0	1	1	0
110.5	1	0	1	1	0	0	0	0	0	1	0
110.6	1	0	1	1	0	0	0	0	0	1	1
110.7	1	0	1	1	0	0	0	0	0	0	1
110.8	1	0	0	1	0	0	0	0	0	0	1
110.9	1	0	0	1	0	0	0	0	0	1	1

RANGE (Altitude in Thousands)	PULSE POSITION										
	D_2	D_4 and SPI	A_1	A_2	A_4	B_1	B_2	B_4	C_1	C_2	C_4
111.0	1	0	0	1	0	0	0	0	0	1	0
111.1	1	0	0	1	0	0	0	0	1	1	0
111.2	1	0	0	1	0	0	0	0	1	0	0
111.3	1	0	0	1	0	0	0	1	1	0	0
111.4	1	0	0	1	0	0	0	1	1	1	0
111.5	1	0	0	1	0	0	0	1	0	1	0
111.6	1	0	0	1	0	0	0	1	0	1	1
111.7	1	0	0	1	0	0	0	1	0	0	1
111.8	1	0	0	1	0	0	1	1	0	0	1
111.9	1	0	0	1	0	0	1	1	0	1	1
112.0	1	0	0	1	0	0	1	1	0	1	0
112.1	1	0	0	1	0	0	1	1	1	1	0
112.2	1	0	0	1	0	0	1	1	1	0	0
112.3	1	0	0	1	0	0	1	0	1	0	0
112.4	1	0	0	1	0	0	1	0	1	1	0
112.5	1	0	0	1	0	0	1	0	0	1	0
112.6	1	0	0	1	0	0	1	0	0	1	1
112.7	1	0	0	1	0	0	1	0	0	0	1
112.8	1	0	0	1	0	1	1	0	0	0	1
112.9	1	0	0	1	0	1	1	0	0	1	1
113.0	1	0	0	1	0	1	1	0	0	1	0
113.1	1	0	0	1	0	1	1	0	1	1	0
113.2	1	0	0	1	0	1	1	0	1	0	0
113.3	1	0	0	1	0	1	1	1	1	0	0
113.4	1	0	0	1	0	1	1	1	1	1	0
113.5	1	0	0	1	0	1	1	1	0	1	0
113.6	1	0	0	1	0	1	1	1	0	1	1
113.7	1	0	0	1	0	1	1	1	0	0	1
113.8	1	0	0	1	0	1	0	1	0	0	1
113.9	1	0	0	1	0	1	0	1	0	1	1
114.0	1	0	0	1	0	1	0	1	0	1	0
114.1	1	0	0	1	0	1	0	1	1	1	0
114.2	1	0	0	1	0	1	0	1	1	0	0
114.3	1	0	0	1	0	1	0	0	1	0	0
114.4	1	0	0	1	0	1	0	0	1	1	0
114.5	1	0	0	1	0	1	0	0	0	1	0
114.6	1	0	0	1	0	1	0	0	0	1	1
114.7	1	0	0	1	0	1	0	0	0	0	1
114.8	1	0	0	1	1	1	0	0	0	0	1
114.9	1	0	0	1	1	1	0	0	0	1	1

RANGE (Altitude in Thousands)	PULSE POSITION										
	D_2	D_4 and SPI	A_1	A_2	A_4	B_1	B_2	B_4	C_1	C_2	C_4
115.0	1	0	0	1	1	1	0	0	0	1	0
115.1	1	0	0	1	1	1	0	0	1	1	0
115.2	1	0	0	1	1	1	0	0	1	0	0
115.3	1	0	0	1	1	1	0	1	1	0	0
115.4	1	0	0	1	1	1	0	1	1	1	0
115.5	1	0	0	1	1	1	0	1	0	1	0
115.6	1	0	0	1	1	1	0	1	0	1	1
115.7	1	0	0	1	1	1	0	1	0	0	1
115.8	1	0	0	1	1	1	1	1	0	0	1
115.9	1	0	0	1	1	1	1	1	0	1	1
116.0	1	0	0	1	1	1	1	1	0	1	0
116.1	1	0	0	1	1	1	1	1	1	1	0
116.2	1	0	0	1	1	1	1	1	1	0	0
116.3	1	0	0	1	1	1	1	0	1	0	0
116.4	1	0	0	1	1	1	1	0	1	1	0
116.5	1	0	0	1	1	1	1	0	0	1	0
116.6	1	0	0	1	1	1	1	0	0	1	1
116.7	1	0	0	1	1	1	1	0	0	0	1
116.8	1	0	0	1	1	0	1	0	0	0	1
116.9	1	0	0	1	1	0	1	0	0	1	1
117.0	1	0	0	1	1	0	1	0	0	1	0
117.1	1	0	0	1	1	0	1	0	1	1	0
117.2	1	0	0	1	1	0	1	0	1	0	0
117.3	1	0	0	1	1	0	1	1	1	0	0
117.4	1	0	0	1	1	0	1	1	1	1	0
117.5	1	0	0	1	1	0	1	1	0	1	0
117.6	1	0	0	1	1	0	1	1	0	1	1
117.7	1	0	0	1	1	0	1	1	0	0	1
117.8	1	0	0	1	1	0	0	1	0	0	1
117.9	1	0	0	1	1	0	0	1	0	1	1
118.0	1	0	0	1	1	0	0	1	0	1	0
118.1	1	0	0	1	1	0	0	1	1	1	0
118.2	1	0	0	1	1	0	0	1	1	0	0
118.3	1	0	0	1	1	0	0	0	1	0	0
118.4	1	0	0	1	1	0	0	0	1	1	0
118.5	1	0	0	1	1	0	0	0	0	1	0
118.6	1	0	0	1	1	0	0	0	0	1	1
118.7	1	0	0	1	1	0	0	0	0	0	1
118.8	1	0	0	0	1	0	0	0	0	0	1
118.9	1	0	0	0	1	0	0	0	0	1	1

RANGE (Altitude in Thousands)	PULSE POSITION										
	D_2	D_4 and SPI	A_1	A_2	A_4	B_1	B_2	B_4	C_1	C_2	C_4
119.0	1	0	0	0	1	0	0	0	0	1	0
119.1	1	0	0	0	1	0	0	0	1	1	0
119.2	1	0	0	0	1	0	0	0	1	0	0
119.3	1	0	0	0	1	0	0	1	1	0	0
119.4	1	0	0	0	1	0	0	1	1	1	0
119.5	1	0	0	0	1	0	0	1	0	1	0
119.6	1	0	0	0	1	0	0	1	0	1	1
119.7	1	0	0	0	1	0	0	1	0	0	1
119.8	1	0	0	0	1	0	1	1	0	0	1
119.9	1	0	0	0	1	0	1	1	0	1	1
120.0	1	0	0	0	1	0	1	1	0	1	0
120.1	1	0	0	0	1	0	1	1	1	1	0
120.2	1	0	0	0	1	0	1	1	1	0	0
120.3	1	0	0	0	1	0	1	0	1	0	0
120.4	1	0	0	0	1	0	1	0	1	1	0
120.5	1	0	0	0	1	0	1	0	0	1	0
120.6	1	0	0	0	1	0	1	0	0	1	1
120.7	1	0	0	0	1	0	1	0	0	0	1
120.8	1	0	0	0	1	1	1	0	0	0	1
120.9	1	0	0	0	1	1	1	0	0	1	1
121.0	1	0	0	0	1	1	1	0	0	1	0
121.1	1	0	0	0	1	1	1	0	1	1	0
121.2	1	0	0	0	1	1	1	0	1	0	0
121.3	1	0	0	0	1	1	1	1	1	0	0
121.4	1	0	0	0	1	1	1	1	1	1	0
121.5	1	0	0	0	1	1	1	1	0	1	0
121.6	1	0	0	0	1	1	1	1	0	1	1
121.7	1	0	0	0	1	1	1	1	0	0	1
121.8	1	0	0	0	1	1	0	1	0	0	1
121.9	1	0	0	0	1	1	0	1	0	1	1
122.0	1	0	0	0	1	1	0	1	0	1	0
122.1	1	0	0	0	1	1	0	1	1	1	0
122.2	1	0	0	0	1	1	0	1	1	0	0
122.3	1	0	0	0	1	1	0	0	1	0	0
122.4	1	0	0	0	1	1	0	0	1	1	0
122.5	1	0	0	0	1	1	0	0	0	1	0
122.6	1	0	0	0	1	1	0	0	0	1	1
122.7	1	0	0	0	1	1	0	0	0	0	1
122.8	1	0	0	0	0	1	0	0	0	0	1
122.9	1	0	0	0	0	1	0	0	0	1	1

RANGE (Altitude in Thousands)	PULSE POSITION										
	D_2	D_4 and SPI	A_1	A_2	A_4	B_1	B_2	B_4	C_1	C_2	C_4
123.0	1	0	0	0	0	1	0	0	0	1	0
123.1	1	0	0	0	0	1	0	0	1	1	0
123.2	1	0	0	0	0	1	0	0	1	0	0
123.3	1	0	0	0	0	1	0	1	1	0	0
123.4	1	0	0	0	0	1	0	1	1	1	0
123.5	1	0	0	0	0	1	0	1	0	1	0
123.6	1	0	0	0	0	1	0	1	0	1	1
123.7	1	0	0	0	0	1	0	1	0	0	1
123.8	1	0	0	0	0	1	1	1	0	0	1
123.9	1	0	0	0	0	1	1	1	0	1	1
124.0	1	0	0	0	0	1	1	1	0	1	0
124.1	1	0	0	0	0	1	1	1	1	1	0
124.2	1	0	0	0	0	1	1	1	1	0	0
124.3	1	0	0	0	0	1	1	0	1	0	0
124.4	1	0	0	0	0	1	1	0	1	1	0
124.5	1	0	0	0	0	1	1	0	0	1	0
124.6	1	0	0	0	0	1	1	0	0	1	1
124.7	1	0	0	0	0	1	1	0	0	0	1
124.8	1	0	0	0	0	0	1	0	0	0	1
124.9	1	0	0	0	0	0	1	0	0	1	1
125.0	1	0	0	0	0	0	1	0	0	1	0
125.1	1	0	0	0	0	0	1	0	1	1	0
125.2	1	0	0	0	0	0	1	0	1	0	0
125.3	1	0	0	0	0	0	1	1	1	0	0
125.4	1	0	0	0	0	0	1	1	1	1	0
125.5	1	0	0	0	0	0	1	1	0	1	0
125.6	1	0	0	0	0	0	1	1	0	1	1
125.7	1	0	0	0	0	0	1	1	0	0	1
125.8	1	0	0	0	0	0	0	1	0	0	1
125.9	1	0	0	0	0	0	0	1	0	1	1
126.0	1	0	0	0	0	0	0	1	0	1	0
126.1	1	0	0	0	0	0	0	1	1	1	0
126.2	1	0	0	0	0	0	0	1	1	0	0
126.3	1	0	0	0	0	0	0	0	1	0	0
126.4	1	0	0	0	0	0	0	0	1	1	0
126.5	1	0	0	0	0	0	0	0	0	1	0
126.6	1	0	0	0	0	0	0	0	0	1	1
126.7	1	0	0	0	0	0	0	0	0	0	1

APPENDIX E - CONNECTOR PIN-OUT TABLES

1. Table of User I/O Connectors

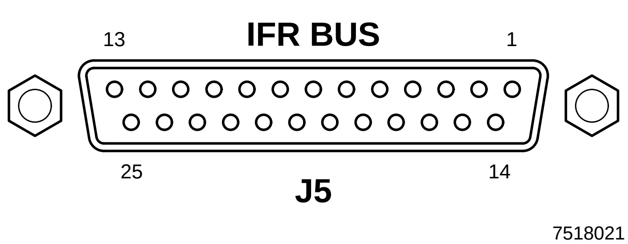
CONNECTOR	TYPE	SIGNAL NAME	INPUT/OUTPUT
J1 (J9101)	SMB Male	DABS	INPUT
J2 (J9102)	SMB Male	TACAN	INPUT
J3 (J9103)	SMB Male	EXT MEASUREMENT GATE	INPUT
J4 (J9104)	SMB Male	RF LEVEL INPUT	INPUT
J5 (J9105)	DB-25 Female	IFR BUS	INPUT/OUTPUT
J6 (J9106)	DB-25 Female	AUXILIARY	INPUT/OUTPUT
J7 (J9107)	DB-25 Female	INDICATOR	INPUT/OUTPUT
J8 (J9108)	DB-25 Female	INTERROGATOR	INPUT/OUTPUT
J9 (J9109)	BNC Female	R/NAV	OUTPUT
J10 (J9110)	BNC Female	GEN	OUTPUT
J11 (J9111)	BNC Female	XMTR	OUTPUT
J12 (J9512)	IEC-320	PRIMARY POWER	INPUT
J701	IEEE-488	GPIB INTERFACE	INPUT/OUTPUT
J15 (J1015)	Type N Female	RF	INPUT/OUTPUT
J16 (J1016)	BNC Female	XMTR	OUTPUT
J17 (J1017)	BNC Female	GEN	OUTPUT
J18 (J1018)	BNC Female	SUPPRESSOR	OUTPUT
J19 (J1019)	BNC Female	CAL MARKS	OUTPUT
J20 (J1020)	BNC Female	SYNC	OUTPUT
J21 (J1015)	BNC Female	DISCRIMINATOR	OUTPUT
J22 (J9122)	BNC Female	EXTERNAL RF	INPUT
J23 (J9123)	BNC Female	Not Used	

I/O Connectors
Table 1

2. IFR BUS Connector (J5) Pin-Out Table

PIN NO.	ASSIGNMENT	INPUT/OUTPUT
1	GROUND	
2	A0	OUTPUT
3	A1	OUTPUT
4	GROUND	
5	A2	OUTPUT
6	D7	INPUT/OUTPUT
7	D6	INPUT/OUTPUT
8	A3	OUTPUT
9	GROUND	
10	GROUND	
11	A4	OUTPUT
12	D5	INPUT/OUTPUT
13	GROUND	
14	A5	OUTPUT
15	D4	INPUT/OUTPUT
16	GROUND	
17	WRITE	OUTPUT
18	D3	INPUT/OUTPUT
19	GROUND	
20	READ	OUTPUT
21	D2	INPUT/OUTPUT
22	$\overline{\text{INTA}}$	OUTPUT
23	$\overline{\text{INTR}}$	OUTPUT
24	D1	INPUT/OUTPUT
25	D0	INPUT/OUTPUT

Pin-Out for IFR BUS Connector
Table 2

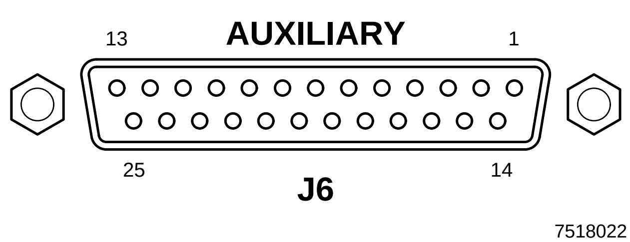


IFR BUS Connector
Figure 1

3. AUXILIARY Connector (J6) Pin-Out Table

PIN NO.	ASSIGNMENT	INPUT/OUTPUT
1	GROUND	
2	$\overline{\text{A / A PRIORITY}}$	INPUT
3	SERIAL DATA	INPUT/OUTPUT
4	SERIAL SYNC	INPUT/OUTPUT
5	$\overline{\text{EXT PULSE}}$	INPUT
6	$\overline{\text{EXT SLS}}$	INPUT
7	$\overline{\text{EXT PRIORITY}}$	INPUT
8	PULSE	OUTPUT
9	20 MHz	OUTPUT
10	A/A INTERROGATIONS	INPUT
11	50% VIDEO	OUTPUT
12	NC	
13	NC	
14	$\overline{\text{SELF INTERR}}$	INPUT/OUTPUT
15	GROUND	
16	SERIAL CLOCK	INPUT/OUTPUT
17	GROUND	
18	GROUND	
19	GROUND	
20	GROUND	
21	GROUND	
22	GROUND	
23	GROUND	
24	GROUND	
25	NC	

Pin-Out for AUXILIARY Connector
Table 3

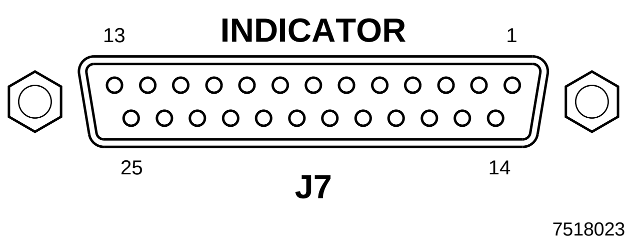


AUXILIARY Connector
Figure 2

4. INDICATOR Connector (J7) Pin-Out Table

PIN NO.	ASSIGNMENT	INPUT/OUTPUT
1	SERIAL DATA HIGH	OUTPUT
2	SERIAL DATA LOW	OUTPUT
3	SERIAL CLOCK HIGH	OUTPUT
4	SERIAL CLOCK LOW	OUTPUT
5	SERIAL SYNC HIGH	OUTPUT
6	SERIAL SYNC LOW	OUTPUT
7	NC	
8	ANALOG DISTANCE HIGH	OUTPUT
9	ANALOG DISTANCE LOW	OUTPUT
10	RANGE RATE HIGH	OUTPUT
11	RANGE RATE LOW	OUTPUT
12	CHASSIS GROUND	
13	Not Used	
14	AC COMMON	OUTPUT
15	WARNING FLAG	OUTPUT
16	CHASSIS GROUND	
17	5 V INSTR LIGHT DIM	OUTPUT
18	RETURN INSTR LIGHT	
19	NC	
20	NC	
21	NC	
22	NC	
23	NC	
24	NC	
25	NC	

Pin-Out for INDICATOR Connector
Table 4

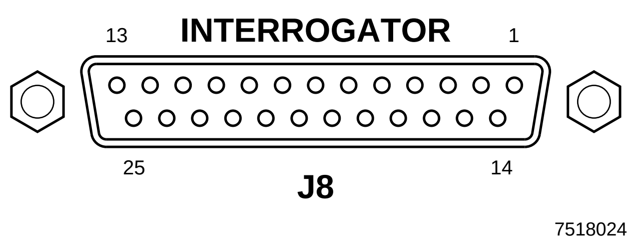


INDICATOR Connector
Figure 3

5. INTERROGATOR Connector (J8) Pin-Out Table

PIN NO.	ASSIGNMENT	INPUT/OUTPUT
1	TENS A	OUTPUT
2	TENS B	OUTPUT
3	UNITS A	OUTPUT
4	UNITS B	OUTPUT
5	UNITS C	OUTPUT
6	UNITS D	OUTPUT
7	UNITS E	OUTPUT
8	TENTHS A	OUTPUT
9	TENTHS B	OUTPUT
10	TENTHS C	OUTPUT
11	TENTHS D	OUTPUT
12	TENTHS E	OUTPUT
13	HUNDREDTHS C	OUTPUT
14	FREQUENCY COMMON	OUTPUT
15	NC	
16	NC	
17	NC	
18	CHASSIS GROUND	
19	CHASSIS GROUND	
20	SERIAL DATA HIGH	INPUT
21	SERIAL DATA LOW	INPUT
22	SERIAL CLOCK HIGH	INPUT
23	SERIAL CLOCK LOW	INPUT
24	SERIAL SYNC HIGH	INPUT
25	SERIAL SYNC LOW	INPUT

Pin-Out for INTERROGATOR Connector
Table 5

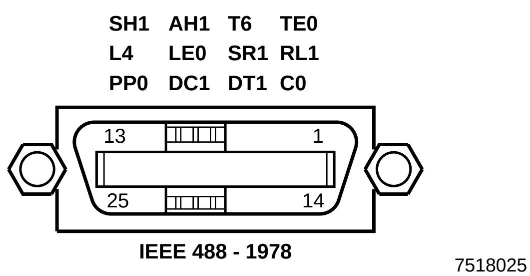


INTERROGATOR Connector
Figure 4

6. GPIB Connector (J701) Pin-Out Table

PIN NO.	SIGNAL NAME	DEFINITION	INPUT/OUTPUT	SIGNAL TYPE
1	DIO1	Data Input/Output	INPUT/OUTPUT	TTL
2	DIO2	Data Input/Output	INPUT/OUTPUT	TTL
3	DIO3	Data Input/Output	INPUT/OUTPUT	TTL
4	DIO4	Data Input/Output	INPUT/OUTPUT	TTL
5	EOI	End or Identify	INPUT	TTL
6	DAV	Data Valid	INPUT	TTL
7	NRFD	Not Ready For Data	OUTPUT	TTL
8	NDAC	Data Not Accepted	OUTPUT	TTL
9	IFC	Interface Clear	INPUT	TTL
10	SRQ	Service Request	OUTPUT	TTL
11	ATN	Attention	INPUT	TTL
12	GROUND			
13	DIO5	Data Input/Output	INPUT/OUTPUT	TTL
14	DIO6	Data Input/Output	INPUT/OUTPUT	TTL
15	DIO7	Data Input/Output	INPUT/OUTPUT	TTL
16	DIO8	Data Input/Output	INPUT/OUTPUT	TTL
17	REN	Remote Enable	INPUT	TTL
18	GROUND			
19	GROUND			
20	GROUND			
21	GROUND			
22	GROUND			
23	GROUND			
24	GROUND			

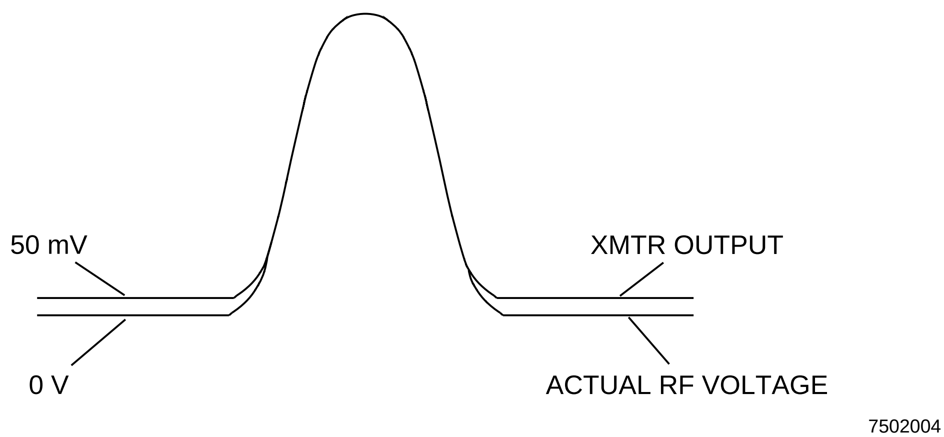
Pin-Out for GPIB Connector
Table 6



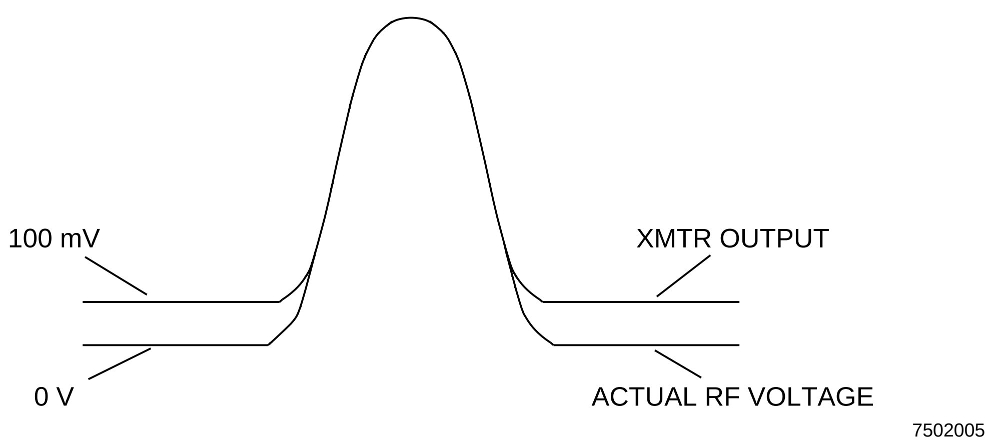
GPIB Connector
Figure 5

APPENDIX F - BASELINE SETTING USING ATC-1400A-2 XMTR DETECTED OUTPUT

The detector is non-linear below 3 W and is offset from zero by a voltage equivalent to 1.5 W (0.2 W in x10 mode) at the RF I/O Connector (J15) input. When measuring the 10%, 50% and 90% points using the XMTR Connector (J16) output, it is necessary to offset the baseline on the Oscilloscope by 50 mV when operating into a 50 Ω load. Use the Oscilloscope ground reference to set the true baseline at 0 V.



Typical XMTR Display for 50 W Transmitter
Figure 1



Typical XMTR Display for 500 W Transmitter
Figure 2

When operating into an open load, the actual baseline is not at 0 V. The actual baseline is 100 mV below the indicated baseline.

THIS PAGE INTENTIONALLY LEFT BLANK.

APPENDIX G - TEST EQUIPMENT REQUIREMENTS

1. General

This Appendix contains a list of test equipment suitable for performing all test procedures contained in this manual. Other equipment meeting specifications of the equipment listed in Appendix G may be substituted in place of recommended models. Equipment listed in this Appendix may exceed minimum required specifications for some procedures contained in this manual.

2. Recommended Test Equipment

TYPE	MODEL
60 dB Attenuator	HP8491A Option 060 or Equivalent
Audio Generator	WAVETEK 145 or Equivalent
Bandpass Filter	Generic
Digital Multimeter (Ohmmeter)	FLUKE 8010A or Equivalent
Directional Coupler	NARDA 3042B-20 or Equivalent
Distortion Analyzer	SOUND TECHNOLOGY 1700B or Equivalent
Frequency Counter	FLUKE 7220A or Equivalent
GPIB Controller	Generic
Heterodyne Monitor	Aeroflex P/N 7018-0013-600 Heterodyne Monitor Assy
L-Band Amplifier	TRONTECH PF1020-33 or Equivalent
Modulation Meter	BOONTON 82AD or Equivalent
Oscilloscope	TEK 5032B or Equivalent
(Peak) Power Meter	BOONTON 4531 with BOONTON 57318 Peak Sensor or BOONTON 51075 CW Sensor or Equivalent
(Variable) Power Supply	LAMBDA LK-351-FM or Equivalent
(Dual or Two) Pulse Generator	WAVETEK 145 or Equivalent
Pulsed RF Power Source	ARINC DME
Signal Generator	IFR NAV-750C or Equivalent
Spectrum Analyzer	IFR 2392A or Equivalent
Tracking Generator	TEKTONIX TR502 or Equivalent
VSWR Bridge	WILTRON 62NF50 or Equivalent

THIS PAGE INTENTIONALLY LEFT BLANK.

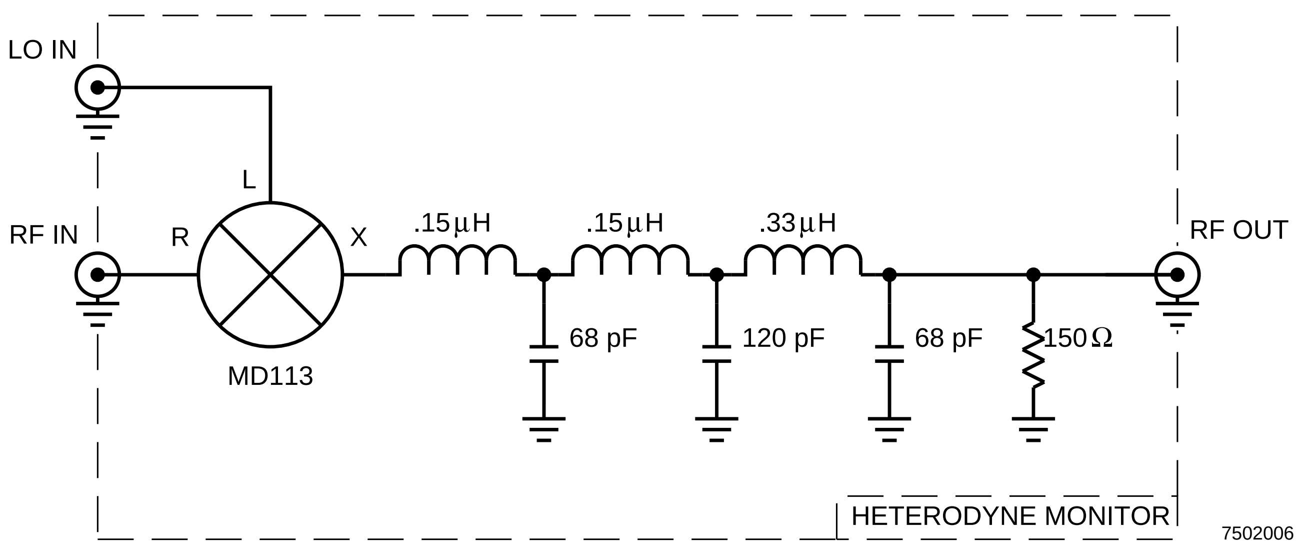
APPENDIX H - CONSTRUCTION OF HETERODYNE MONITOR

The materials required to construct the Heterodyne Monitor used in the maintenance procedures contained in this manual are listed in Appendix H, Table 1. Appendix H, Figure 1 shows the circuit schematic for constructing the Heterodyne Monitor.

CAUTION: KEEP ALL LEADS TO COMPONENTS AS SHORT AS POSSIBLE TO REDUCE STRAY INDUCTANCE.

QUANTITY	DESCRIPTION
1	Shielded Enclosure
2	BNC Connector (Female)
1	BNC Connector (Male)
1	Mixer (ANZAC MD-113)
2	Inductor (0.15 µH)
1	Inductor (0.33 µH)
2	Capacitor (68 pF)
1	Capacitor (120 pF)
1	Resistor (5%, 1/4 W, 150 Ω)

Heterodyne Monitor Components
Table 1



Heterodyne Monitor Circuit Schematic
Figure 1

THIS PAGE INTENTIONALLY LEFT BLANK.

APPENDIX I - SPECIFICATIONS

Following are specifications for the ATC-1400A-2.

NOTE: Specifications and features are subject to change without notice.

A. Signal Generator:

Frequency:

Range:	952.01 to 1222.99 MHz
Accuracy:	±0.001%
Display Resolution:	10 kHz
Channel Selection:	962 to 1213 MHz in 1 MHz increments
ΔF:	±9.99 MHz in 10 kHz increments from selected frequency

RF Output:

Range:	0 to -127 dBm in 1 dB increments
Overall Accuracy:	±2.0 dB, 0 to -90 dBm ±2.5 dB, -90 to -110 dBm
Frequency Flatness:	±0.6 dB maximum
Composite Attenuator Accuracy:	(Measured from 0 dB Reference Level)
	010 (±0.4) 020 (±0.4) 030 (±0.4) 040 (±0.5) 050 (±0.6) 060 (±0.7) 070 (±0.81) 080 (±0.92) 090 (±1.04) 100 (±1.23) 110 (±1.60) 120 (+2.44, -2.62) 127 (+3.8, -4.7)
ON/OFF Ratio:	80 dB minimum
Output Impedance:	50 Ω, VSWR <1.2:1

Spectral Purity (CW):

Residual FM:	5 kHz peak-to-peak maximum in a 300 to 3 kHz bandwidth
Phase Noise:	<-90 dBc/Hz measured at 150 kHz from carrier
Spurious (non-harmonic):	<-60 dBc measured from 350 to 1800 MHz

Suppressor Pulse Output:	(Into a 2 kΩ resistive load)
Pulse Width:	33 μs (±3 μs)
Amplitude:	Adjustable from 3 to 27 V
Timing:	
DME Function:	Nominally 3.5 μs before P_1 of range reply
XPDR Function:	
Single Interrogation:	Nominally 0.8 μs prior to P_3
Interference:	Coincident with INTERF pulse position. (INTERF pulse is removed.)
Double Interrogation:	First Interrogation is removed. Double Interrogation spacing indicates time from leading edge of suppressor to P_1 of second interrogation.

B. DME Mode Characteristics:

Range Delay:	
Range:	-1.00 to 399.99 NMi (selectable in 0.01 NMi increments)
Accuracy:	±0.02 NMi plus ±0.005% of selected range
Velocity:	
Range:	0 to 9990 KTS selectable in 10 KT increments
Accuracy:	±0.05% (including jitter)
Acceleration:	
Range:	0 to 399 ft/sec^2 selectable in 1 ft/sec^2 increments
Accuracy:	±0.5 ft/sec^2
Squitter:	
Range:	Selectable from 10 to 5999 Hz in 1 Hz increments (Average Rate)
Accuracy:	±2% from 200 to 5000 Hz.
Dead Time:	60 μs (±10 μs)
Distribution:	At 2700 Hz, distribution is in compliance with requirements presented in ARINC characteristic 568.
TACAN Simulation (Internal):	
AM Modulation Frequencies:	15 and 135 Hz (±0.02%)
AM Modulation Percent:	21% (±3%) (Each component)
Bearing:	≈180°
Echo Pulse:	
Position:	30 NMi (±1 NMi) (X Channel)
Amplitude:	-19 to 6 dB, selectable in 1 dB increments
Accuracy:	±0.2 dB for -10 to 0 dB ±0.5 dB for -19 to -11 dB

Ident Pulse:	
Rate:	1350 Hz (±0.02%)
Equalizer Pulse:	
Position:	100 µs (±10 µs) after IDENT pulse
Reply Efficiency:	
Range:	0% to 100% selectable in 10% increments (1% under GPIB Control)
Accuracy:	±1.0% of interrogations 0% and 100% ±5.0% of interrogations 10% to 90% (Typical)
Statistics:	Random
Pulse Characteristics:	
Spectrum:	>55 dB down from center frequency measured at ±800 kHz.
Spacing:	12 µs (±0.1 µs) (X Channel), P_1 to P_2, 50% peak 30 µs (±0.1 µs) (Y Channel), P_1 to P_2, 50% peak
P_2 Deviation:	±7.9 µs in 0.1 µs increments (X and Y Channel)

NOTE: In X Channel, P1 and P2 merge when P2 is deviated >-5.0 µs.

Rise Time:	2.0 µs (±0.25 µs) (10% to 90%)
Fall Time:	2.5 µs (±0.25 µs) (90% to 10%)
Width:	3.5 µs (±0.5 µs) (50% to 50%)
R-NAV Pulse:	
Spacing:	50 µs (±0.25 µs) at 0 NMi (X Channel) 56 µs (±0.25 µs) at 0 NMi (Y Channel) P_1 at time of interrogation P_2 at time of reply
Width:	7 µs (±1 µs)
Level:	Logic 0 is 2.8 V (±0.2 V) Logic 1 is 7.5 V (±0.5 V)
Serial Data Output:	ARINC 568 Digital Receiver Test Levels
Level:	Logic 0 is 2.8 V (±0.2 V) Logic 1 is 7.5 V (±0.5 V)
Clock Frequency:	Adjustable from 7 to 15 kHz
Serial Data Input:	Readout front panel, ARINC 568 Digital Transmitter Test Levels and Load
Schmitt Trigger Level:	Logic 0 is <1.0 V Logic 1 is >10.0 V
Input Resistance:	1200 Ω (±10%)

Scope Sync:

TO:	50% of P_1 interrogations
TAC:	15 Hz (coincident with main reference group)
TD:	3.5 µs before range replies (TD_1) 3.5 µs before generator pulses (TD_2) (Internal switch setting selects either TD_1 or TD_2)

Automatic Frequency Stepping:

Period:	1 to 10 seconds adjustable
UUT Pulse Spacing Detector:	(Centered: 12 µs for X Channel, 36 µs for Y Channel)
Window Width:	Accept: <±0.5 µs Reject: >±1.0 µs Referenced to 50% of P_1 for narrow window. Accept: <±2.0 µs Reject: >±3.0 µs Referenced to 50% of P_1 for wide window.

C. XPDR Mode Characteristics:

Interrogation Rate:

Range:	10 to 7999 Hz selectable in 1 Hz increments
Accuracy:	±0.005%

Pulse Characteristics:

RF Pulling:	<10 kHz
Mode Spacing:	03.0 µs (±5 ns) (Mode 1) 05.0 µs (±5 ns) (Mode 2) 06.5 µs (±5 ns) (Mode T) 08.0 µs (±5 ns) (Mode A/Mode 3) 17.0 µs (±5 ns) (Mode B) 21.0 µs (±5 ns) (Mode C) 25.0 µs (±5 ns) (Mode D)
P_2, P_3 Deviation:	±1.85 µs selectable in 0.05 µs increments for both P_2 and P_3 P_2 and P_3 independently variable in direction relative to P_1
Width:	Calibrate 0.8 µs (±5 ns) (CAL Switch position) Variable 0.20 to 1.85 µs (±5 ns), selectable in 0.05 µs increments (VAR Switch position)
Rise Time:	70 ns (+10 ns, -20 ns) (10% to 90%)
Fall Time:	70 ns (+10 ns, -20 ns) (90% to 10%)

Side Lobe Suppression (SLS):

Amplitude:	-19 to 6 dB, relative to P_1, selectable in 1 dB increments
Accuracy:	±0.2 dB for -10 to +3 dB ±0.5 dB for -19 to -11 dB ±0.5 dB for 4 to 6 dB

Interference Pulse:

Amplitude:	-19 to +6 dB, relative to P_1, selectable in 1 dB increments
Position Range:	-17.5 to 399 µs, referenced to P_1 ,selectable in 0.1 µs increments
Accuracy:	±0.05 µs
Width:	Adjustable from 0.2 to 5 µs

Double Interrogation:

Range:	Measured from P_1 first interrogation to P_1 second interrogation, selectable in 0.1 µs increments Minimum: P_3 first interrogation + 20.5 µs Maximum: 399.9 µs
Accuracy:	±5 ns plus 0.005%

Scope Sync:

T_O:	20 µs before P_1
T_D: Leading edge of P_3	

CAL Marks:

Accuracy:	±0.005%
Phase Adjustment:	>360° at 1.45 µs

UUT Pulse Spacing Detector:

Window Width:	220 ns nominal for narrow window 750 ns nominal for wide window
Position:	Centered at 1.45 µs intervals from F_1
Narrow Window Accuracy:	Accept: <±100 ns Reject: >±120 ns Referenced to 50% amplitude of F_1 to F_2 Trailing edge from center, 110 ns (±10 ns)

D. UUT Measurement Characteristics:

NOTE: * indicates measurement of F_2/P_2 or F_2/P_2.

*Transmitter Frequency Counter:

Range:	1020 to 1155 MHz
Accuracy:	±20 kHz (DME Function) ±50 kHz (XPDR Function)

*Transmitter Frequency Discriminator Output:

Response:	1 MHz/Volt (±10%) into an open load 2 MHz/Volt (±10%) into a 50 Ω load
Bandwidth:	10 MHz minimum

*Transmitter Power Meter:

Frequency Range:	1020 to 1155 MHz
Amplitude Range:	0 to 3999 W
Accuracy:	±0.5 dB from a 50 Ω source (100 to 3999 W ±0.7 dB or 5 W from a 50 Ω source (1 to 99 W)
Input Impedance:	50 Ω, VSWR <1.20:1
Absolute Maximum:	5 kW Peak, 10 W Average

*Transmitter Detector Output (XMTR):

Amplitude:	0.5 V Nominal at 500 W Input into a 50 Ω load
Rise Time:	<50 ns
Fall Time:	<50 ns

DME PRF:

Range:	0 to 6000 Hz
Accuracy:	±0.01% (+1, -0 Counts) (1 Hz Resolution)

XPDR Percent Reply:

Range:	0 to 159%
Accuracy:	+1, -0 Counts (1% Resolution)

E. Power Requirements:

Source Voltage and Frequency:	100 to 120 VAC, 60 Hz 220 to 240 VAC, 50 Hz
Power Consumption:	120 W Maximum 94 W Nominal at 115 VAC 86 W Nominal at 230 VAC
Nominal Input Current:	1.49 A at 115 VAC 0.88 A at 230 VAC

F. Fuse Requirements

F1 and F2:

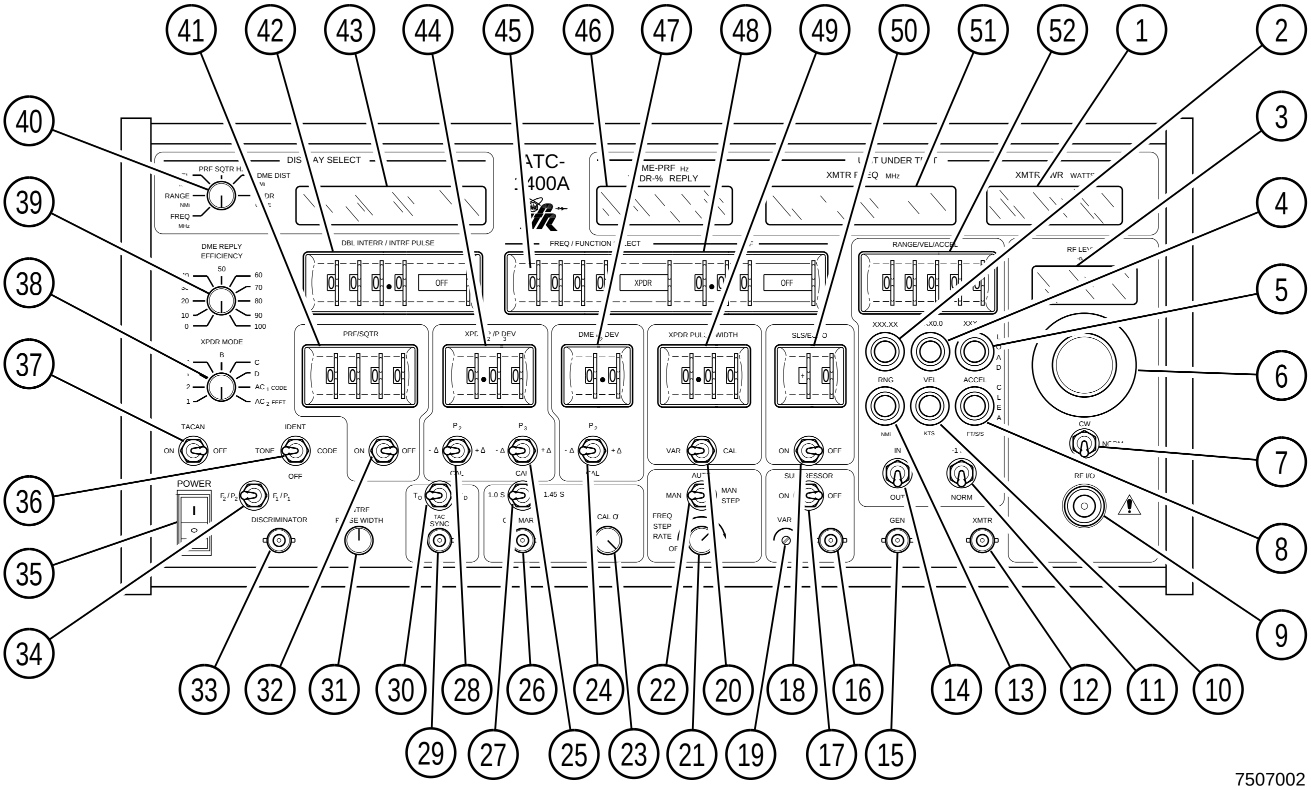
100 to 120 VAC:	3.0 A, Type F
220 to 240 VAC:	3.0 A, Type F

G. Safety Conditions

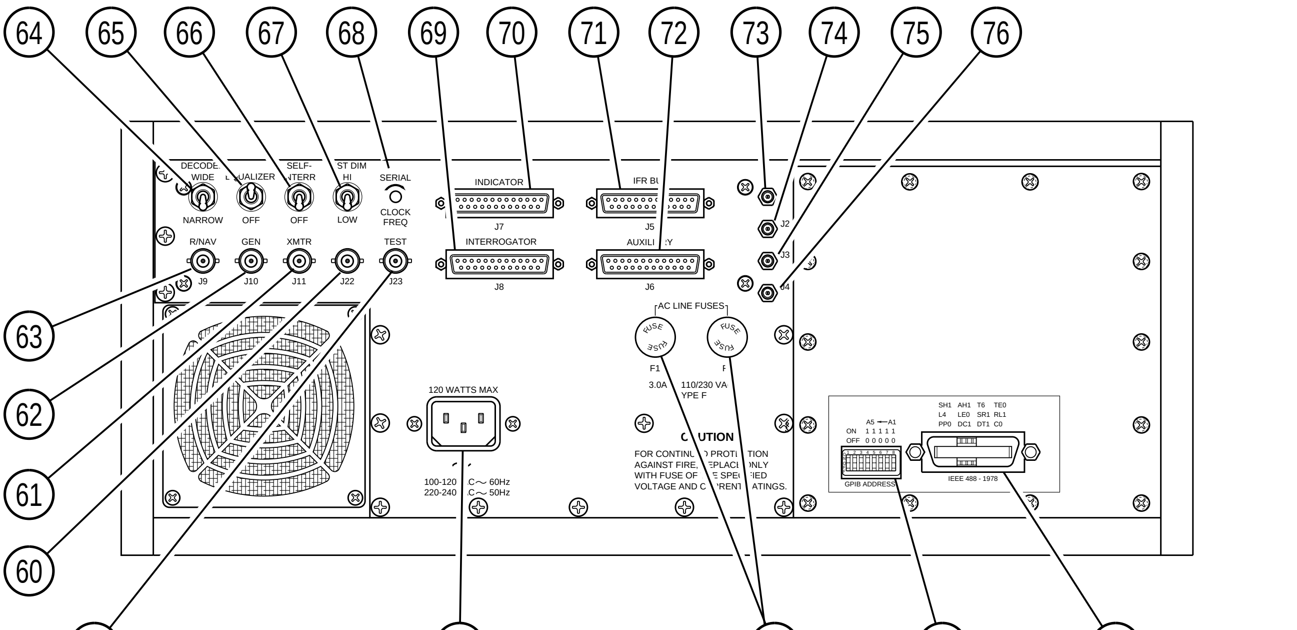
Use:	Indoors
Altitude:	≤4000 meters (13,124 feet)
Temperature:	5° to 40°C
Relative Humidity:	≤80% for temperatures up to 31°C decreasing linearly to 50% at 40°C
Mains Supply Voltage Fluctuations:	≤±10% of the nominal voltage
Transient Overvoltages:	According to Installation Category II
Pollution Degree:	2

THIS PAGE INTENTIONALLY LEFT BLANK.

APPENDIX J - CONTROLS, CONNECTORS AND INDICATORS



7507002



7507008

ATC-1400A-2 Front and Rear Panels
Figure 1

1. XMTR PWR WATTS Display	40. DISPLAY SELECT Control
2. LOAD RNG Pushbutton Switch	41. PRF/SQTR Thumbwheels
3. RF LEVEL -dBm Display	42. DBL INTERR/INTRF PULSE Thumbwheels
4. LOAD VEL Pushbutton Switch	43. DISPLAY SELECT Readout
5. LOAD ACCEL Pushbutton Switch	44. XPDR P_2/P_3 DEV Thumbwheels
6. RF LEVEL Control	45. FREQ/FUNCTION SELECT Thumbwheels
7. CW/NORM/OFF Switch	46. DME-PRF Hz/XPDR-%REPLY Display
8. CLEAR ACCEL Pushbutton Switch	47. DME P_2 DEV Thumbwheels
9. RF I/O Connector	48. ΔF Thumbwheels
10. CLEAR VEL Pushbutton Switch	49. XPDR PULSE WIDTH Thumbwheels
11. -1 NMi/NORM Switch	50. SLS/ECHO Thumbwheels
12. XMTR Connector	51. XMTR FREQ MHz Display
13. CLEAR RNG Pushbutton Switch	52. RANGE/VEL/ACCEL Thumbwheels
14. IN/OUT Switch	53. GPIB Connector
15. GEN Connector	54. GPIB ADDRESS/OPTION Dip Switches
16. SUPPRESSOR OUTPUT Connector	55. AC LINE Fuses
17. SUPPRESSOR ON/OFF Switch	56. Not Used
18. SLS/ECHO ON/OFF Switch	57. AC INPUT Connector
19. SUPPRESSOR VAR Adjustment	58. Not Used
20. XPDR PULSE WIDTH VAR/CAL Switch	59. J23
21. FREQ STEP RATE Control	60. EXTERNAL RF Connector
22. MAN/AUTO/MAN STEP Switch	61. XMTR Connector
23. CAL Ø Control	62. GEN Connector
24. DME DEV P_2/CAL Switch	63. R/NAV Connector
25. XPDR DEV P_3/CAL Switch	64. DECODER WIDE/NARROW Switch
26. CAL MARKS Connector	65. EQUALIZER/OFF Switch
27. 1.0 μs/1.45 μs Switch	66. SELF-INTERR/OFF Switch
28. XPDR DEV P_2/CAL Switch	67. INST-DIM HI/LOW Switch
29. SYNC Connector	68. SERIAL CLOCK FREQ Adjustment
30. T_O/TAC/T_D Switch	69. INTERROGATOR Connector
31. INTRF PULSE WIDTH Control	70. INDICATOR Connector
32. PRF/SQTR ON/OFF Switch	71. IFR BUS Connector
33. DISCRIMINATOR Connector	72. AUXILIARY Connector
34. F_2/P_2 F_1/P_1 Switch	73. DABS INPUT Connector
35. POWER Switch	74. TACAN INPUT Connector
36. IDENT TONE/OFF/CODE Switch	75. EXTERNAL MEASUREMENT GATE Connector
37. TACAN ON/OFF Switch	76. RF LEVEL INPUT Connector
38. XPDR MODE Control	
39. DME REPLY EFFICIENCY Control	

A. ATC-1400A-2 Front Panel (Appendix J, Figure 1)

ITEM	DESCRIPTION

1. XMTR PWR WATTS Display

   Provides continuous visual display of peak power of UUT from 0 to 3999 W and EEEE when over limit. In DME Mode, first or second interrogation pulse is measured. In XPDR Mode, first or second framing pulse is measured.

   NOTE: ATC-1400A-2 recognizes pulses from 0 to 50 W Peak Power and for PRFs as low as 1.4 Hz PRF (0.5 dB accuracy is specified only for signals above 50 W and 10 Hz). ATC-1400A-2 does not filter out undesired DC pulses which may affect power measurement. When measured UUT power is <41 W, resolution of measurement changes to 0.1 W steps. A decimal point appears prior to last digit in display and "100" digit is deleted. Condition remains until power increases to 49.0 W and resolution reverts back to 1 W.

   NOTE: Overshoot on leading edge of XPDR pulse is ignored by power meter if <50 ns in width.

2. LOAD RNG Pushbutton Switch (DME)

   Programs fixed range distance from 000.00 to 399.99 NMi, as selected on RANGE/VEL/ACCEL Thumbwheels. LOAD RNG function automatically clears velocity and acceleration function.

3. RF LEVEL -dBm Display

   Displays programmed peak RF power of generator in dB <1 mW, as selected by RF LEVEL Control or Remote Control (GPIB).

   NOTE: RF Level is programmed from 0 to -127 dBm in 1 dB steps with accuracy specified from 0 to -110 dBm.

4. LOAD VEL Pushbutton Switch (DME)

   Programs velocity from 000.0 to 9990.0 KTS, as selected on RANGE/VEL/ ACCEL Thumbwheels. Selection of LOAD VEL function clears acceleration to zero and presets acceleration to decrease velocity.

5. LOAD ACCEL Pushbutton Switch (DME)

   Programs acceleration from 000.00 to 399.00 FT/S/S, as selected on RANGE/VEL/ACCEL Thumbwheels. Selection of LOAD ACCEL function programs ATC-1400A-2 with last programmed value of velocity. Non-zero acceleration decreases velocity to zero, then automatically switches to outbound and increases. Velocity increases to maximum value of 9990 KTS and stops.

6. RF LEVEL Control

   Slowly turn RF LEVEL Control to adjust RF generator level in 1 dB steps. Spinning RF LEVEL Control rapidly causes RF LEVEL -dBm Display to change rapidly, but does not change RF generator output level. Generator output level is programmed to new value when RF LEVEL Control turning rate is slowed.

7. CW/NORM/OFF Switch

   CW — Supplies continuous-wave output signal for testing and calibration of ATC-1400A-2.

   NORM — Allows ATC-1400A-2 to operate as flight simulator.

   OFF — Inhibits all ATC-1400A-2 generated pulses.

ITEM DESCRIPTION

8. CLEAR ACCEL Pushbutton Switch (DME)

Clears previously loaded acceleration information to 0 FT/S/S. Selection of CLEAR ACCEL function programs ATC-1400A-2 with last programmed value of velocity.

NOTE: ATC-1400A-2 stores last programmed value of velocity in memory.

9. RF I/O Connector ⚠

CAUTION: MAXIMUM INPUT TO THE RF I/O CONNECTOR MUST NOT EXCEED 5 KW PEAK OR 10 W AVERAGE.

Connects all interrogation and reply RF pulses to UUT antenna connector.

10. CLEAR VEL Pushbutton Switch (DME)

Clears previously selected velocity information to 0 KN and acceleration to 0 FT/S/S.

11. -1 NMi/NORM Switch (DME)

NORM Selects normal range on ATC-1400A-2 of 0 to 399.99 NMi.

-1 NMi Subtracts 1 NMi from range, programming ATC-1400A-2 to operate from -1 to 398.99 NMi.

NOTE: Selection of 0.1 NMi allows ATC-1400A-2 to reply to all interrogations, regardless of pulse position errors.

12. XMTR Connector

RF pulses transmitted by UUT are detected by ATC-1400A-2 and present at XMTR Connector. Detected video is seen with Oscilloscope and 50 Ω Coaxial Cable.

13. CLEAR RNG Pushbutton Switch (DME)

Clears previously selected range information to 0 NMi and clears previously selected velocity and acceleration information.

14. IN/OUT Switch (DME)

IN Inbound non-zero velocity decreases range to zero, then automatically switches to outbound and increases range.

Range increases to maximum value of 399.99 NMi or value set internally (only by a qualified service technician), then automatically switches to inbound and decreases range again.

OUT Outbound non-zero velocity increases range to maximum value of 399.99 NMi or value set internally (only by a qualified service technician), then automatically switches to inbound and decreases range.

Range decreases to zero, then automatically switches to outbound and increases range again.

NOTE: If velocity is outbound when IN/OUT Switch is set to IN, set IN/OUT Switch to OUT, then back to IN.

15. GEN Connector

RF output pulses from generator are detected and present at GEN Connector for viewing transponder interrogations and interference pulses, DME TACAN reference groups, TACAN AM, ident and equalizer pulses, range replies and squitter. Detected pulses are seen with Oscilloscope and 50 Ω Coaxial Cable.

ITEM DESCRIPTION

16. SUPPRESSOR OUTPUT Connector

Mutual suppression pulses are provided for XPDR and DME. Level of suppression pulses is adjusted by SUPPRESSOR VAR Adjustment. Pulse occurs prior to range replies in DME Mode and is coincident with P_3 pulse in XPDR Mode.

17. SUPPRESSOR ON/OFF Switch

ON Provides suppressor pulses to XPDR and DME.

OFF Inhibits suppressor pulses within ATC-1400A-2.

18. SLS/ECHO ON/OFF Switch

ON Echo replies are generated in DME mode. P_2 SLS suppression pulses are enabled in XPDR Mode.

OFF Echo replies and P_2 SLS pulses are inhibited.

NOTE: SLS/ECHO Thumbwheel selects amplitude of echo replies, P_2 SLS pulses and interference pulses.

19. SUPPRESSOR VAR Adjustment

Adjusts level of suppression pulse. Clockwise rotation increases level of suppression pulse and counterclockwise rotation decreases level of suppression pulse.

20. XPDR PULSE WIDTH VAR/CAL Switch (XPDR)

VAR Selects variable pulse width (as read from XPDR PULSE WIDTH Thumbwheels from 0.15 to 1.95 μs in 0.05 μs increases.

NOTE: Generator output level is not specified <0.2 μs pulse width.

CAL Selects transponder pulse width of 0.8 μs.

21. FREQ STEP RATE Control

Channel frequency rate is increased automatically. Clockwise rotation increases frequency step rate. Fully counterclockwise disables automatic frequency step rate and enables manual stepping.

22. MAN/AUTO/MAN STEP Switch

MAN Channel frequency is determined by selection of FREQ/FUNCTION SELECT Thumbwheels.

AUTO Channel frequency is increased automatically in 1 MHz steps. Step rate is controlled by positioning of FREQ STEP RATE Control and FREQ/FUNCTION SELECT Thumbwheels are disabled.

Power-up of ATC-1400A-2 with MAN/AUTO/MAN STEP Switch set to AUTO, defaults ATC-1400A-2 to 1031 MHz.

MAN STEP Channel frequency is increased manually in 1 MHz steps.

ITEM DESCRIPTION

22. MAN/AUTO/MAN STEP Switch (cont)

NOTE: In XPDR function, frequency is increased in 1 MHz steps from frequency selected on FREQ/FUNCTION SELECT Thumbwheels and terminated at 1213 MHz. In DME Function, all X and Y Channels are increased automatically by using AUTO Channel feature along with 2-out-of-5 code output at INTERROGATOR Connector. Stepping starts at frequency and channel (X or Y) selected by FREQ/FUNCTION SELECT Thumbwheels after placing MAN/AUTO/MAN STEP Switch to AUTO from MAN, and proceeds in 1 MHz increments as follows.

AUTOMATIC FREQUENCY STEPPING	
X Channel	Y Channel
962 to 1020 MHz 1157 to 1213 MHz Terminate	1088 to 1146 MHz 1031 to 1087 MHz Continue

When channel stepping for X Channel reaches 1213 MHz, "AUTO" stepping terminates. "AUTO" stepping for Y Channel automatically returns to 1088 MHz, after reaching 1087 MHz, and continues stepping.

23. CAL ∅ Control (XPDR)

Adjusts phase of timing calibration pulses with respect to interrogation pulses. Clockwise rotation delays timing pulses and enables operator to align leading edge of timing pulses with P_1 of reply.

24. DME DEV P_2/CAL Switch (DME)

-Δ Advances position of P_2 pulse from nominal, by value selected on DME P_2 DEV Thumbwheels, in µs.

CAL P_2 pulse remains in nominal position. DME P_2 DEV Thumbwheels have no effect on deviating P_2 pulses.

+Δ Delays position of P_2 pulse from nominal, by value selected of DME P_2 DEV Thumbwheels, in µs.

25. XPDR DEV P_3/CAL Switch (XPDR)

-Δ Advances position of P_3 pulse from nominal, by value selected on XPDR P_2/P_3 DEV Thumbwheels, in µs.

CAL P_3 pulse remains in nominal position. XPDR P_2/P_3 DEV Thumbwheels have no effect on deviating P_3 pulses.

+Δ Delays position of P_3 pulse from nominal, by value selected on XPDR P_2/P_3 DEV Thumbwheels, in µs.

26. CAL MARKS Connector

1.0 and 1.45 µs pulses are present for timing measurements of various signals. Output signal of 1.0 or 1.45 µs is controlled by 1.0 µs/1.45 µs Switch.

27. 1.0 µs/1.45 µs Switch

Selects either 1.0 or 1.45 µs calibration pulse at CAL MARKS Connector.

ITEM DESCRIPTION

28. XPDR DEV P_2/CAL Switch

-Δ Advances position of P_2 pulse from nominal, by value selected on the XPDR P_2/P_3 DEV Thumbwheels, in µs.

CAL P_2 pulse remains in nominal position. XPDR P_2/P_3 DEV Thumbwheels have no effect on deviating P_2 pulses.

+Δ Delays position of P_2 pulse from nominal, by value selected on the XPDR P_2/P_3 DEV Thumbwheels, in µs.

29. SYNC Connector

A negative oscilloscope sync pulse is present. Signal output is controlled by T_O/TAC/T_D Switch.

30. T_O/TAC/T_D Switch

T_O Provides sync pulse 17.5 µs before P_1 of interrogation in XPDR Mode and sync pulse coincident with 50% point of P_1 of interrogation in DME Mode.

TAC Provides sync transition pulse at 15 Hz to enable display of TACAN modulation, if TACAN is selected. No sync occurs if TACAN ON/OFF Switch is set to OFF.

T_D Presents sync pulse coincident with P_3 of interrogation in XPDR Mode and sync pulse prior to P_1 of reply in DME Mode.

31. INTRF PULSE WIDTH Control (XPDR)

Adjusts width of interference pulse from 0.2 to 5 µs. Clockwise rotation increases width of pulse.

32. PRF/SQTR ON/OFF Switch

Two-position toggle switch. When set to OFF, inhibits squitter in DME Mode and inhibits interrogations in XPDR Mode.

33. DISCRIMINATOR Connector

Instantaneous frequency of RF input pulses are discriminated and present. Frequency modulation of transmitter under test is monitored within one pulse or between two pulses. Discriminator produces noise when no RF is present.

34. F_2/P_2 F_1/P_1 Switch

Measures UUT frequency and power of F_1 or F_2 reply pulse in XPDR Mode, and frequency and power of P_1 or P_2 reply pulse in DME Mode.

35. POWER Switch I or O

Connects (I) or disconnects (O) external ac power from ATC-1400A-2.

36. IDENT TONE/OFF/CODE Switch (DME)

TONE Enables 1350 Hz CW tone.

OFF Inhibits continuous and code tones.

CODE Modulates 1350 Hz tone with morse code "IFR." Repetition rate is approximately 30 seconds.

37. TACAN ON/OFF Switch (DME)

ON Simulates TACAN ground station. Bearing is fixed at 180°. 15 Hz sync is provided for observing TACAN modulation at SYNC Connector.

OFF Inhibits TACAN signals generated by ATC-1400A-2.

38. XPDR MODE Control (XPDR)

Selects nominal P_3 pulse position of XPDR interrogations. AC_1 and AC_2 positions cause alternating A and C interrogations. Sync occurs before A interrogation when AC_1 is selected, and before C interrogation when AC_2 is selected.

NOTE: Mode A interrogation pulse spacing is similiar to IFF Mode 3.

39. DME REPLY EFFICIENCY Control (DME)

Range replies are produced only in response to a valid interrogation (i.e., P_1 to P_2 spacing of either 12 or 36 μs). Selection of any position selects ATC-1400A-2 reply efficiency rate (i.e., 50 equals 50% and 100 equals 100% reply rates).

40. DISPLAY SELECT Control

DISPLAY SELECT Readout displays particular test condition for setting as follows:

FREQ MHz

Displays A when simulator is in automatic operation.

Displays E for incorrect programming.

Simulator frequency in MHz is counted and displayed when selected on FREQ/FUNCTION SELECT Thumbwheels. Frequency is adjusted within 10 kHz of desired channel by monitoring this display.

Enables serial data output of simulator range replies to INDICATOR Connector

RANGE NMi (DME)

Displays range delay in NMi when LOAD RNG Pushbutton Switchis selected.

Displays C to indicate negative range. Range is <1 NMi. (i.e., display reads C--0.01).

Displays OFF when FREQ/FUNCTION SELECT Thumbwheels are set to XPDR.

Enables serial data output of simulator range to INDICATOR Connector.

NOTE: Display used to monitor range delay when non-zero velocity is loaded.

VEL KTS (DME)

Continuously displays simulator velocity in KTS and is used to monitor velocity while acceleration is loaded.

Displays OFF when FREQ/FUNCTION SELECT Thumbwheels are set to XPDR.

Enable serial data output of simulator range replies to INDICATOR Connector.

ITEM DESCRIPTION

40. DISPLAY SELECT Control (cont)

NOTE: DISPLAY SELECT Readout is used to monitor velocity when acceleration is loaded. Value of acceleration is not displayed, but is read from RANGE/VEL/ACCEL Thumbwheels.

PRF/SQTR Hz (DME)

Total number and type of pulse pairs are counted and displayed:

Reference Groups (Main and Auxiliary)
Identification and Equalizer Pulse
Echo Replies
Range Replies
Squitter Pulses

Displays OFF when CW/NORM/OFF Switch is set to CW or OFF.

Enables serial data output of simulator range replies to INDICATOR Connector.

PRF/SQTR Hz (XPDR)

Total number of interrogations (per sec) selected on PRF/SQTR Thumbwheels are counted and displayed on DISPLAY SELECT Readout.

DME DIST NMi (DME)

Displays serial data input of interrogator range replies on DISPLAY SELECT Readout.

Displays DDDD.DD until ATC-1400A-2 receives valid label from Interrogator through INTERROGATOR Connector. Only data following valid label and last valid data received is displayed.

Enables serial data output of interrogator range replies to indicator under test through INDICATOR Connector. When DISPLAY SELECT Control is set to DME DIST NMi, indicator under test reads only interrogator output. When DISPLAY SELECT Control is in any other position, indicator under test reads ATC-1400A-2 range replies.

DISPLAY SELECT Readout is reset and last valid data received is cleared from display by cycling DISPLAY SELECT Control to any other position, then back to DME DIST NMi.

Displays OFF when FREQ/FUNCTION SELECT Thumbwheels are set to XPDR.

XPDR CODE (XPDR)

Four digit octal code is decoded and displayed for A mode identification replies and C mode altitude replies are displayed either as four digit octal code or altitude in thousands of feet. XPDR MODE Control determines which reply is decoded and which format is displayed on DISPLAY SELECT Readout.

Displays CCCCCC or CCCCC.C when XPDR reply rate is zero.

Displays OFF when FREQ/FUNCTION SELECT Thumbwheels are set to DME.

41. PRF/SQTR Thumbwheels

DME Selects mean squitter rate in Hz.

NOTE: ATC-1400A-2 Squitter is nominal level pulse pairs of random spacing generated at a mean squitter rate, as selected by thumbwheel setting.

XPDR Selects interrogation rate in Hz. When double interrogation rate is selected, interrogation rate is twice thumbwheel setting. When XPDR MODE Control is set to AC_1 or AC_2, interrogations are 50% thumbwheel setting.

42. DBL INTERR/INTRF PULSE Thumbwheels (XPDR)

Selects double interrogation or interference pulse. Numbers, in μs, relate to function viewed in window. Overrides normal XPDR Mode.

43. DISPLAY SELECT Readout

Readout displays information selected on DISPLAY SELECT Control.

44. XPDR P_2/P_3 DEV Thumbwheels (XPDR)

Deviates P_2 or P_3 pulse from nominal position by value selected, in μs, on thumbwheels.

45. FREQ/FUNCTION SELECT Thumbwheels

Selects function of operation and frequency of ATC-1400A-2. Numbers, in MHz, relate to function viewed in window. Function and frequency are as follows:

WINDOW DISPLAY	OPERATION FUNCTION	RANGE	THUMBWHEEL RANGE
XPDR	TRANSPONDER	962 to 1213 MHz	0962 to 1213
TAC X	DME-X Channel	Channel 1 to 126	0001 to 0126
TAC Y	DME-Y Channel	Channel 1 to 126	0001 to 0126
5 VOR PAIR	DME-Y Channel	108.05 to 117.95 MHz	1080 to 1179
0 VOR PAIR	DME-X Channel	108.00 to 117.90 MHz	1080 to 1179
MHz Y	DME-Y Channel	962 to 1213 MHz	0962 to 1213
MHz Z	DME-X Channel	962 to 1213 MHz	0962 to 1213

46. DME-PRF Hz/XPDR - % REPLY Display

DME Number of interrogations per second are counted and displayed continuously. Interrogations are decoded and "F" is displayed for approximately 0.5 seconds if P_2 pulse is not present nor within decoder window.

XPDR Ratio of transponder replies to interrogations are sampled every 100 interrogations and displayed continuously. Display reads "50" when DOUBLE INTERR is set on DBL INTERR/INTRF PULSE Thumbwheels and transponder replies to only one interrogation.

OFF Displayed on DISPLAY SELECT Readout when PRF/SQTR ON/OFF Switch is set to OFF.

47. DME P_2 DEV Thumbwheels (DME)

Deviates P_2 pulse from nominal position, in μs, by value selected on thumbwheels.

ITEM DESCRIPTION

48. ΔF Thumbwheels

Deviates generator frequency from -9.99 to +9.99 MHz. Frequency range is increased from 952.01 to 1222.99 MHz. ΔF Thumbwheels have no effect on X or Y channel selection or 2-out-of-5 code output at INTERROGATOR Connector.

49. XPDR PULSE WIDTH Thumbwheels (XPDR)

Width of P_1, P_2 and P_3 pulses are varied, in µs, by value selected.

50. SLS/ECHO Thumbwheels

Range is -19 to +9 dB with accuracy of -19 to +6 dB.

DME Amplitude of echo reply is selected in dB, above nominal RF level.

XPDR Amplitude of P_2 sidelobe suppression pulse and interference pulse is selected in dB, above nominal RF level.

51. XMTR FREQ MHz Display

Average frequency of UUT RF pulses are measured between 50% amplitude point and displayed continuously. In DME Mode, P_1 or P_2 pulse is measured. In XPDR Mode, F_1 or F_2 pulse is measured.

52. RANGE/VEL/ACCEL Thumbwheels (DME)

Desired value of range, velocity and acceleration is simulated in ATC-1400A-2 by selection of nautical miles (NMi) for range, knots (KTS) for velocity and feet per second per second (Ft/Sec^2) for acceleration.

SELECTION	RANGE	THUMBWHEEL SETTING
Range	0 to 399.99 NMi	00000 to 39999
Velocity	0 to 9990 KTS	000XX to 999XX
Acceleration	0 to 399 Ft/Sec^2	000XX to 399XX
X = Not Used		

B. ATC-1400A-2 Rear Panel (Appendix J, Figure 1)

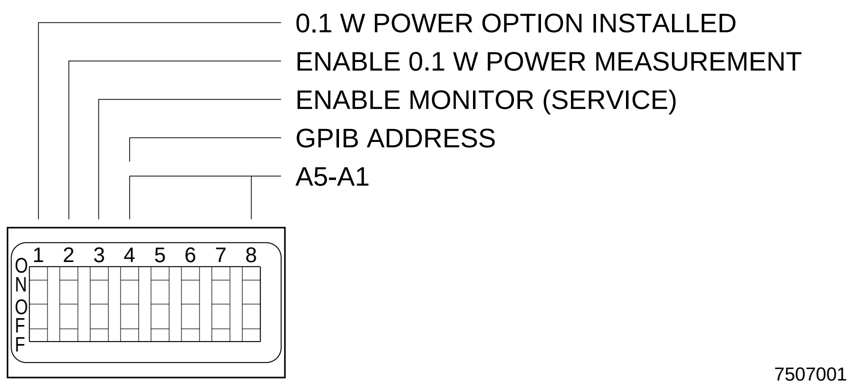
ITEM	DESCRIPTION

53. GPIB Connector

    24-pin female connector conforming to IEEE standard 488-1978 for interface of general purpose programmable instrumentation.

54. GPIB ADDRESS/OPTION Dip Switches

    Eight segment DIP switch for setting configuration options and IEEE-488 bus address for remote control operation:



If left-most switch (SW1) is set to ON, ATC-1400A-2 displays proper power measurements and assumes low-power option has been installed.

NOTE: If SW1 is OFF, the ATC-1400A-2 displays double the actual power measurement.

If second-left switch (SW2) is set to ON, ATC-1400A-2 enables low-power display (tenths of a watt below 40 W) if SW1 is also ON.

NOTE: Some S-1403 tests require this mode to be disabled.

55. AC LINE Fuses

    Fuses input power to the ATC-1400A-2. Refer to Appendix I for correct fuse size and type.

56. Not Used

57. AC INPUT Connector

    Contains standard 3-prong power receptacle for power cord.

58. Not Used

59. J23

    Not used.

60. EXTERNAL RF Connector

    <20 W Peak RF Input.

ITEM DESCRIPTION

61. XMTR Connector

RF pulses transmitted by UUT are detected with a linear voltage detector and resultant video is clipped at 50% point and present at XMTR Connector. TTL-compatible signal is seen with Oscilloscope and 50 Ω Coaxial Cable.

62. GEN Connector

TTL-compatible signal, which modulates ATC-1400A-2 generator output, is buffered and present at GEN Connector. Generate pulses are seen with Oscilloscope and 50 Ω Coaxial Cable.

63. R/NAV Connector

Two 7 µs pulses are present to test area navigation computers. One pulse is coincident with interrogation pulse and one pulse is coincident with reply pulse.

64. DECODER WIDE/NARROW Switch

NARROW Selects 1 µs window, centered at 12 or 3 µs from P_1, in DME Mode. Selects 220 ns window, centered on F_2, in XPDR Mode.

WIDE Selects 4 µs window, centered at 12 or 36 µs from P_1, in DME Mode. Selects 750 ns window, centered on F_2, in XPDR Mode.

NOTE: In DME Mode; if 50% point of P_2 pulse is within ARINC 568 specifications, ATC-1400A-2 generates range replies when in NARROW. If pulse spacing is suspect on UUT, WIDE is set.

65. EQUALIZER/OFF Switch (DME)

Equalizer pulse occurs 100 µs after identification pulse only if IDENT TONE/OFF/CODE Switch is set to TONE or CODE.

66. SELF-INTERR/OFF Switch (DME)

ATC-1400A-2 is interrogated and generates range replies without a DME UUT. Rate of self interrogations is determined by selection on PRF/SQTR Thumbwheels. Squitter rate is uncalibrated when SELF-INTERR is enabled.

67. INST-DIM HI/LOW Switch (DME)

Provided for testing dimming circuits of ARINC 568 DME Indicator.

HI 5 V applied to Pin 7 of INDICATOR Connector.

LOW Open applied to Pin 7 of INDICATOR Connector.

68. SERIAL CLOCK FREQ Adjustment (DME)

Adjusts serial clock frequency output of INDICATOR Connector from 7 to 14 kHz. Clockwise rotation increases frequency output.

69. INTERROGATOR Connector (DME)

25-pin female connector for interface of DME interrogator under test. ATC-1400A-2 channels UUT with 2-out-of-5 code outputs. Range data is received from UUT and displayed on DISPLAY SELECT Readout when DISPLAY SELECT Control is set to DME DIST NMi.

ITEM	DESCRIPTION

70. INDICATOR Connector DME)

25-pin female connector for interface of ARINC 568 DME Indicator. Indicator under test displays exact range data transmitted by interrogator, as displayed on DISPLAY SELECT Readout, when DISPLAY SELECT Control is set to DME DIST NMi. Indicator displays ATC-1400A-2 range in all other positions.

71. IFR BUS Connector

25-pin female connector for Aeroflex use only.

72. AUXILIARY Connector

25-pin female connector used with auxiliary equipment.

73. DABS INPUT Connector (XPDR)

SMB input connector receives PSK modulation from Discrete Address Beacon System (DABS) simulator.

74. TACAN INPUT Connector

SMB input connector for interface of TACAN Simulator.

75. EXTERNAL MEASUREMENT GATE Connector

Allows pulses other than F_2/P_2 and F_1/P_1 to be measured when connected to S-1403 MODE S Test Auxiliary.

76. RF LEVEL INPUT Connector

Additional ±3 dB level control of RF Output.

APPENDIX K - ABBREVIATIONS

A

A	Amperes
AC	Alternating Current
ac	Alternating Current
A/D	Analog-to-Digital
ADDR	Address
Addr	Address
ADLP	Airborne Data Link Processor
ADJ	Adjust
AM	Amplitude Modulation
Amp	Amplifier
AMPL	Amplifier
ANSI	American National Standard Institute
App	Appendix
ARINC	Aeronautical Research
ARINC 572	Aeronautical Radio Inc Characteristic NR 572-1 "Mark 2 Air Traffic Control Transponder"
ASCII	American National Standard Code for Information Interchange
AT	Attenuator
ATC	Air Traffic Control
ATCRBS	Air Traffic Control Radar Beacon System
ATE	Automatic Test Equipment

B

BCD	Binary Coded Data
BPF	Bandpass Filter
bps	Bits per Second

C

C	Celsius or Centigrade
CAL	Calibration or Calibrated
ccw	Counterclockwise
CH	Channel
CHAN	Channel
cm	Centimeter (10^{-2} Meters)
COMP	Compensator
Cont	Continued
CPU	Central Processing Unit
CR	Diode
CW	Continuous Wave
cw	Clockwise

D

DABS	Discrete Address Beacon System
DAC	Digital to Analog Converter
dB	Decibel
DBL	Double
dBm	Decibels above one milliwatt
DET	Detector
DEV	Deviation
DIST	Distance
DMA	Direct Memory Access
DME	Distance Measuring Equipment
DMM	Digital Multimeter
DS	Display or LED
DSP	Digital Signal Processor

E

EMC	Electromagnetic Compatibility
EMI	Electromagnetic Interference
ESD	Electrostatic Discharge
EXT	External
Ext	External

F

F_1	First Framing Pulse (XPDR)
F_2	Second Framing Pulse (XPDR)
Fhi	Frequency High
FL	Filter
Flo	Frequency Low
FPM	Feet Per Minute
FREQ	Frequency
Ft	Foot/Feet
ft/sec	Feet per second
ft/sec^2	Feet per second squared
F/W	Firmware

G

GEN	Generator
GET	Group Execute Trigger
GHz	Gigahertz (10^9 Hertz)
GND	Ground
GPIB	General Purpose Interface Bus
GTL	Go To Local, GPIB Standard

H

h	Hexadecimal
HET	Heterodyne
HEX	Hexadecimal
HY	Hybrid (Coupler, Circulator, etc.)
Hz	Hertz

I

IAW	In accordance with
IC	Integrated Circuit
ID	Identification (4096 Code)
IEEE	Institute of Electrical and Electronics Engineers
IF	Intermediate Frequency
in	Inches
INTRF	Interference
INTERR	Interrogation
INTERRF	Interference
I/O	Input/Output

J

J	Jack Connector

K

kBytes	Kilobytes (10^3 Bytes)
kg	Kilogram (10^3 Grams)
kHz	Kilohertz (10^3 Hertz)
KTS	Knots (Velocity)
Kts	Knots (Velocity)

L

L	Inductor
LCA	Logic Cell Array
LED	Light Emitting Diode
LF	Line Feed
LLO	Local Lockout, GPIB Standard
LO	Local Oscillator
LPF	Low-Pass Filter
LVL	Level

M

MAX	Maximum
MBytes	Megabytes (10^6 Bytes)
MECH	Mechanical
MHz	Megahertz (10^6 Hertz)
µs	Microsecond (10^{-6} Seconds)
MIN	Minimum
MLA	My Listen Address, GPIB Standard
MOD	Modification as in SLS MOD
MOD	Modulator or Modulation
MP	Main Processor
ms	Millisecond (10^{-3} Seconds)
MTA	My Talk Address, GPIB Standard
MTL	Minimum Threshold Level
MX	Mixer

N

NA	Not Applicable
NC	Not connected
NMi	Nautical Mile
NOM	Nominal
NORM	Normal
ns	Nanosecond (10^{-9} Seconds)

O

Ω	Ohm

P

p	Page
P_1	First Interrogation Pulse
P_2	Second Interrogation Pulse
PC	Printed Circuit
PCB	Printed Circuit Board
PLCS	Places
pk	Peak
PN	Part Number
pp	Pages
PPM	Pulse Position Modulation
ppm	Parts per Million
PPMG	Pulse Power Measurement Gate
PP/S	Pulse pairs per second
PRF	Pulse Repetition Frequency
PROM	Programmable Read Only Memory
PWR	Power
Pwr	Power

Q

Q	Transistor

R

RAM	Random Access Memory
RCV	Receive
RCVR	Receiver
RE	Rotary Encoder
RECT	Rectifier
REF	Reference
REG	Regulator
RF	Radio Frequency
RMS	Root Mean Square
RN	Resistive Network
ROM	Read Only Memory
RTCA	Requirements and Technical Concepts for Aviation organization
RX	Receive

S

S	Switch
SAT	Select at Test
SCOPE	Oscilloscope
Sec	Second
SER	Serial
SLS	Side-Lobe Suppression
SPI	Special Identifier Pulse
SPR	Synchronous Phase Reversal
SQTR	Squitter
SRQ	Service Request
SYNC	Synchronous
sync	Synchronous

T

T	Transformer
TACAN	Tactical Air Navigation
T_D	Reply Sync
TEMP	Temperature
TERM	Terminal
T_O	Interrogation Sync
TP	Test Point
TRIG	Trigger
TTL	Transistor-Transistor Logic
TX	Transmit
TYP	Typical

U

U	Integrated Circuit Chip
UART	Universal Asynchronous Receiver-Transmitter
UNL	Unlisten, GPIB Standard
UNT	Untalk, GPIB Standard
UUT	Unit Under Test

V

V	Volt
VAC	Volts, Alternating Current
VAR	Variation
VCO	Voltage Controlled Oscillator
VCXO	Voltage Controlled Crystal Oscillator
Vdc	Volts, Direct Current
VERS	Version
Vih	High Level Input Voltage
Vil	Low Level Input Voltage
Voh	High Level Output Voltage
Vol	Low Level Output Voltage
VOR	Very High Frequency Omni-Directional Radio Range
V_P	Volts, Peak
V_{P-P}	Volts, Peak to Peak
VRAM	Video Random Access Memory
Vrms	Volts Root Mean Square
VSWR	Voltage Standing Wave Ratio

W

W	Watt
w/	With
w/o	Without

X

X	Integrated Circuit Chip and/or Socket
XMTR	Transmitter
XPDR	Transponder

Y

Y	Crystal

THIS PAGE INTENTIONALLY LEFT BLANK.

INDEX

THIS PAGE INTENTIONALLY LEFT BLANK.

As we are always seeking to improve our products, the information in this document gives only a general indication of the product capacity, performance and suitability, none of which shall form part of any contract. We reserve the right to make design changes without notice.

CHINA / Beijing	Tel: [+86] (10) 6539 1166	Fax: [+86] (10) 6539 1778
CHINA / Shanghai	Tel: [+86] (21) 5109 5128	Fax: [+86] (21) 6457 7668
FINLAND	Tel: [+358] (9) 2709 5541	Fax: [+358] (9) 804 2441
FRANCE	Tel: [+33] 1 60 79 96 00	Fax: [+33] 1 60 77 69 22
GERMANY	Tel: [+49] 8131 2926-0	Fax: [+49] 8131 2926-130
HONG KONG	Tel: [+852] 2832 7988	Fax: [+852] 2834 5364
INDIA	Tel: [+91] (0) 80 4115 4501	Fax: [+91] (0) 80 4115 4502
JAPAN	Tel: [+81] 3 3500 5591	Fax: [+81] 3 3500 5592
KOREA	Tel: [+82] (2) 3424 2719	Fax: [+82] (2) 3424 8620
SCANDINAVIA	Tel: [+45] 9614 0045	Fax: [+45] 9614 0047
***SINGAPORE**	Tel: [+65] 6873 0991	Fax: [+65] 6873 0992
UK / Cambridge	Tel: [+44] (0) 1763 262277	Fax: [+44] (0) 1763 285353
***UK / Stevenage**	Tel: [+44] (0) 1438 742200	Fax: [+44] (0) 1438 727601
	Freephone: 0800 282388	
***USA**	Tel: [+1] (316) 522 4981	Fax: [+1] (316) 522 1360
	Toll Free: 800 835 2352	

* Indicates Regional Sales/Service Center

AEROFLEX

EXPORT CONTROL WARNING: This document contains controlled technology or technical data under the jurisdiction of the Export Administration Regulations (EAR), 15 CFR 730-774. It cannot be transferred to any foreign third party without the specific prior approval of the U.S. Department of Commerce Bureau of Industry and Security (BIS). Violations of these regulations are punishable by fine, imprisonment, or both.

Our passion for performance is defined by three attributes represented by these three icons: solution-minded, performance-driven, customer-focused.