AEROFLEX

Ramp Test Set

ATC-601-2

Maintenance Manual

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Issue-2

MAINTENANCE MANUAL

RAMP TEST SET

ATC-601-2

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FOR QUALIFIED SERVICE PERSONNEL ONLY

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Nomenclature Statement:

In this manual Test Set or Unit refers to the ATC-601-2 Ramp Test Set.

Cable Statement:

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

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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

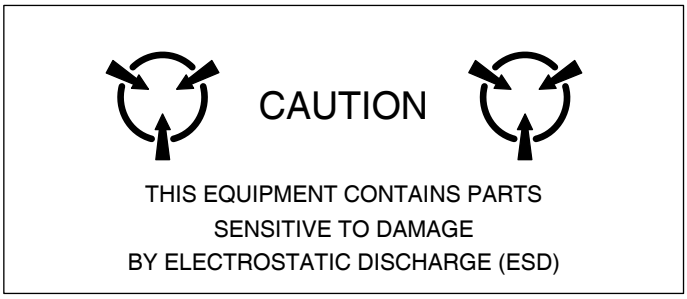
Use only fuses specifically recommended for the equipment at the specified current and voltage ratings.

WARNING: THE ATC-601-2 USES A NICAD BATTERY. THE FOLLOWING WARNINGS CONCERNING NICAD BATTERIES MUST BE HEEDED:

- **DO NOT RECHARGE OUTSIDE THE ATC-601-2.**
- **DO NOT CRUSH, INCINERATE OR DISPOSE OF IN NORMAL WASTE.**
- **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: 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 EQUIPMENT SIDE WITH EXHAUST FAN AND OBJECTS OR WALLS. IF OPERATING IN A RACK, MAXIMUM AMBIENT TEMPERATURE MUST BE AT OR BELOW 40° C.

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INTRODUCTION

This manual contains the information necessary to test and repair the ATC-601-2 Ramp Test Set.

It is strongly recommended that personnel be thoroughly familiar with the contents of this manual before attempting to perform maintenance on this equipment.

Only qualified personnel should perform maintenance on this equipment.

ORGANIZATION

This manual is divided into the following sections:

CHAPTER 2 - MAINTENANCE

Section 1 - SERVICING (preventive maintenance)

Section 2 - TROUBLESHOOTING (theory of operation, calibration/verification, assemblies and schematics)

Section 3 - DISASSEMBLY / REASSEMBLY

Section 4 - ATC-601-2 PARTS LIST

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CHAPTER TWO

ATC-601-2 RAMP TEST SET

MAINTENANCE MANUAL

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SECTION 1 - SERVICING

1. Preventive Maintenance Procedures

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

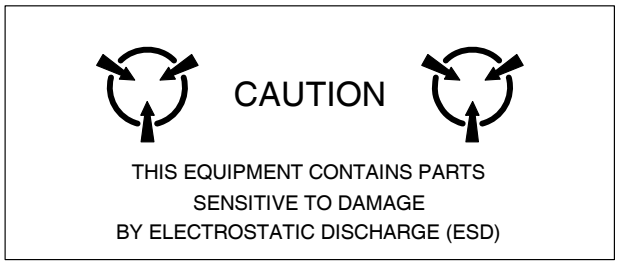
CAUTION: DISCONNECT POWER FROM TEST SET TO AVOID POSSIBLE DAMAGE TO ELECTRONIC CIRCUITS.

A. External Cleaning

STEP	PROCEDURE

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

B. Internal Cleaning



CAUTION: DO NOT MOVE COMPONENTS ON CIRCUIT BOARDS OR DISASSEMBLE CONNECTORS NEEDLESSLY TO AVOID POSSIBLE DAMAGE.

CAUTION: DO NOT OPEN COMPLEX INTERNAL MODULES FOR SOLE PURPOSE OF CLEANING AND INSPECTION.

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.

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 Circuit Boards for:
   - Corrosion or damage to connectors.
   - Damage to mounted components including crystals and ICs.
   - Freedom from foreign material.
5. Inspect Resistors for:
   - Cracked, broken, charred or blistered bodies.
   - Loose or corroded soldering connections.
6. Inspect Semiconductors for:
   - Cracked, broken, charred or discolored bodies.
   - Correct placement and condition of seals around leads.
7. Inspect Wiring for:
   - Broken or loose ends and connections.
   - Proper dress relative to other chassis parts.

   NOTE: Verify wrapped wiring is tight.

SECTION 2 - TROUBLESHOOTING

1. Theory of Operation

A. General

Theory of Operation is divided into three levels:

- System Theory of Operation

  Contains a simplified description of signal flow through the ATC-601-2 with accompanying block diagram.

- Functional Theory of Operation

  Contains simplified descriptions of how the various functions of the ATC-601-2 operate.

- Module Theory of Operation

  Contains a detailed description of each assembly in the ATC-601-2.

Refer to 1-2-2, Figures 2 and 3 in the ATC-601-2 Operation Manual for location of controls, connectors and indicators identified with numeric characters. Refer to appropriate schematics and assembly drawings in para 2-2-3 for controls, connectors, indicators and components identified with alphanumeric characters.

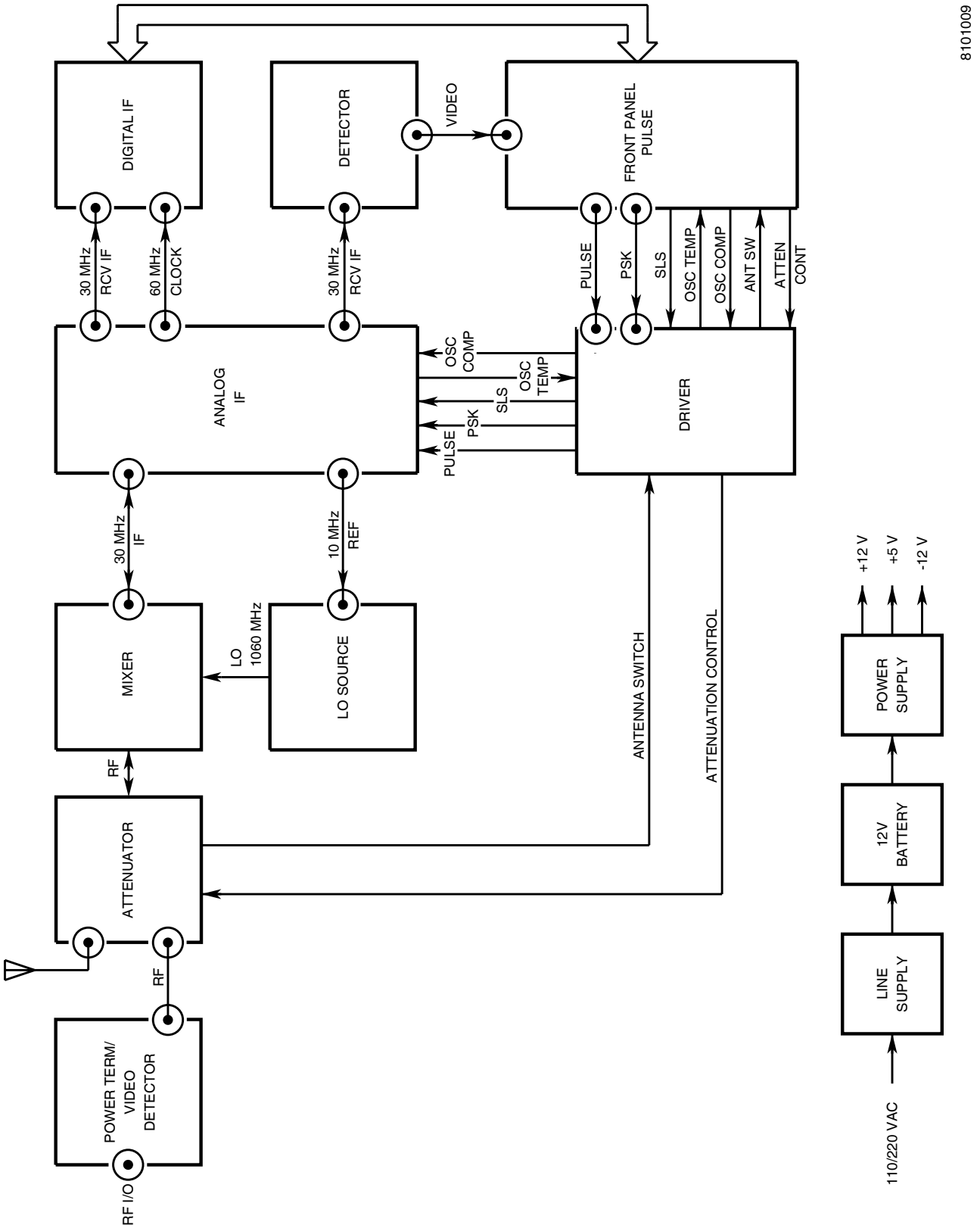
B. System Theory of Operation

The ATC-601-2 Ramp Test Set simulates a ground or air interrogator, transmitting Modes A, C, S and Intermode interrogations. The Test Set analyzes reply pulses, provides reply pulse information and indicates failure to comply with accepted guidelines (RTCA DO-181). Refer to Appendix E for interrogation and reply signals.

C. Functional Theory of Operation

(1) Transmit (2-2-1, Figure 1)

Interrogations are controlled and produced from the Front Panel Pulse PC Board Assembly. Pressing the RUN/STOP Key (9) initiates a trigger that causes the Front Panel Pulse PC Board Assembly to transmit specific pulse and Phase Shift Keying (PSK) information (depending on the current Test Set test function) to the Driver PC Board Assembly. The Driver PC Board Assembly drives the pulse and DPSK information to modulate a 30 MHz signal in the Analog IF Assembly. After amplification and frequency mixing by the Mixer PC Board Assembly, a modulated 1030 MHz interrogation signal is transmitted through the RF I/O Connector (15) or ANTENNA Connector (16) to the unit under test (UUT).



System Block Diagram
Figure 1

(2) Receive (2-2-1, Figure 1)

Replies from the UUT are received on an RF signal at ≈1090 MHz, through the RF I/O Connector (15) or ANTENNA Connector (16). The signal is mixed down to 30 MHz by the Mixer PC Board Assembly, filtered and amplified by the Analog IF Assembly and sent to the Detector and Digital IF PC Board Assemblies. The 30 MHz signal is split into two quadrature phase signals, converted to digital samples and analyzed by the Digital IF PC Board Assembly. Measurement data is stored on the Digital IF PC Board Assembly and accessed by the Front Panel Pulse PC Board Assembly. Reply VIDEO from the Detector Assembly is decoded by the Front Panel Pulse PC Board Assembly. Information is processed, compared with stored guideline information and displayed.

(3) Testing

The ATC-601-2 uses three interrogation processes when testing transponders:

- Background Interrogations

  Background Mode A interrogations are transmitted continuously during any transponder test. Two background interrogations are sent between ATCRBS test interrogations. Eight background interrogations are sent between Mode S test interrogations. Background interrogations determine transponder sensitivity or MTL. Digital-to-Analog Converters (DACs) on the Front Panel Pulse PC Board Assembly provide the voltage used by the Driver PC Board Assembly to drive current through attenuation diodes on the Attenuator PC Board Assembly. Attenuation increases if reply is received or decreases if no reply is received. The attenuation level reached when 50% reply rate occurs is used to calculate MTL on the Digital IF PC Board Assembly. Replies to background interrogations are used by the Digital IF PC Board Assembly to measure power and frequency. Mode C background interrogations are used in the MTL Difference test to verify MTL is the same for both Mode A and Mode C interrogations. Background interrogations are verified using Diagnostics. Refer to para 1-2-3C in ATC-601-2 Operation Manual.

  NOTE: All interrogation and reply signals are attenuated to obtain 50% replies to background interrogations. Displayed MTL is ≈0.6 dB higher than the average background level to indicate the 90% reply point.

- Mode Test

  Mode A, Mode C and Mode S (UF11) interrogations are transmitted in a programmed sequence. Replies determine UUT operating modes. Mode test is the first test run in Auto Test and each Single Test. Mode test uses foreground interrogations. Foreground level is ≈4 dB higher than background level.

- Test Interrogations

  Test interrogations are programmed from ROM to Video RAM by the Processor on the Front Panel Pulse PC Board Assembly according to specific test functions. Test interrogations are transmitted at foreground level and verified using Diagnostics. Refer to para 1-2-3C in ATC-601-2 Operation Manual.

The ATC-601-2 has five testing functions. Test Parameters (Setup Menu), Auto Test, Single Test and Power Test are functions used in testing transponder operation. Self Test is used in evaluating ATC-601-2 operation.

(a) Test Parameters

Information loaded in the Setup Menu is stored in RAM on the Front Panel Pulse PC Board Assembly and used for calculating reply delay and UUT power output.

Reply delay is calculated using the best 8 of 13 replies. Delays are figured in two parts. Total delay (interrogation to reply) is measured with counters on the Digital IF PC Board Assembly, triggered by the Pulse Generator on the Front Panel Pulse PC Board Assembly until reply pulse (50% amplitude) is received. Distance information in Setup Menu is used to figure range delay. The Processor on the Front Panel Pulse PC Board Assembly subtracts the fixed range delay from the average total delay to obtain reply delay.

Refer to para 2-2-1C(3)(d) for calculating UUT power output function.

(b) Auto Test

Auto Test operation control and sequence program, stored in ROM on the Front Panel Pulse PC Board Assembly, directs the Processor on the Front Panel Pulse PC Board Assembly to initiate interrogation pulse generation. Specific interrogations are sent using the transmit function described in para 2-2-1C(1). Replies are received using the receive function described in para 2-2-1C(2). After the series of tests are complete or terminated, results stored in RAM (Front Panel Pulse PC Board Assembly) are entered onto the DISPLAY (14).

NOTE: The Auto Test function stores reply information for all Single Tests. Only modes tested, modes passed, modes failed, UUT Frequency, UUT ERP, UUT MTL and UUT Diversity Isolation are displayed in Auto Test.

(c) Single Test

Single Test operates the same as Auto Test, except each test is one programmed loop. When accessed, each Single Test screen displays latest reply information stored in RAM on the Front Panel Pulse PC Board Assembly. When operating, the program stored in ROM on the Front Panel Pulse PC Board Assembly continues testing until manually terminated.

(d) Power Test

Power Test is a loop program stored in ROM on the Front Panel Pulse PC Board Assembly. The test transmits Mode A background interrogations. Refer to para 2-2-1C(3), Background Interrogations, for MTL calculation. The Digital IF PC Board Assembly splits incoming signals into two quadrature phases to calculate amplitude of F_1 reply pulse. Two power calculations, average and instantaneous, use four samples of each F_1 reply pulse. Average power is calculated using the amplitude of all replies received during Power Test. A small correction factor is subtracted from average power calculations, to offset multipath effects. Instantaneous power is average power calculated using amplitude from replies to latest 100 interrogations. Distance information from the Setup Menu is calculated into path loss on the Front Panel Pulse PC board Assembly. Antenna gain and cable loss from the Setup Menu are added with the path loss and power calculations to provide displayed power readings.

(e) Self Test (2-2-1, Table 1)

Self Test runs as follows:

TEST	THEORY

Non-Volatile RAM Battery (only run on power-up)

Processor on Front Panel Pulse PC Board Assembly reads non-volatile RAM battery bit status from RAM on the Front Panel Pulse PC Board Assembly. Status is set only on power-up.

1. Battery

   Processor on Front Panel Pulse PC Board Assembly reads BATTEST line from Power Supply Assembly through Status Buffer on Front Panel Pulse PC Board Assembly.

2. LO Control

   Processor on Front Panel Pulse PC Board Assembly enables Local Oscillator (LO) through LED Control Register on Front Panel Pulse PC Board Assembly. Processor reads Status Buffer on Front Panel Pulse PC Board Assembly to verify LO is On. LO is then disabled through LED Control Register. Processor reads Status Buffer again to verify LO is Off.

3. Dual Port RAM (DPR)

   Processor on Front Panel Pulse PC Board Assembly writes a sequence using AA55h to fill DPR on Digital IF PC Board Assembly. Processor reads DPR and compares with sequence written. Process repeats using 55AAh. Process repeats a third time loading a number sequence starting at 0000h and increasing one for each address loaded. First two processes verify DPR data transfer. Third process confirms all addresses are being verified.

   NOTE: If DPR test fails, Self Test skips other RAM tests and goes to LED test.

TEST	GROUP	VERIFIES	FAILURE CODE (H)	RUNNING ORDER
Non-Volatile RAM Battery	Power Supply/ Battery	Battery has sufficient power for RAM to retain memory.	00000020	Only on power-up
Battery	Power Supply/ Battery	Voltage is within correct voltage range.	00000010	1
LO Control	RF	Valid ON/OFF status	00000001	2
RAM	Digital	Dual Port RAM (DPR)	01000000	3
		Video RAM	02000000	4
		Display RAM	08000000	5
		Non-Volatile RAM	04000000	6
LED	Digital	Interrogation and reply drivers	80000000	7
Reply Decoder	Digital	Unsolicited Mode S reply (squitter)	00000400	8
		Solicited Mode S reply	00000200	9
		Solicited ATCRBS reply	00000100	10
Pulse Wrap	Digital	PULSE to DPSK timing	00800000	11
UART	Digital	RS-232 loop back	00400000	12
Attenuator #1	Digital	Level at end line diodes	10000000	13
Attenuator #2	Digital	Level at midline diodes	20000000	13
LO Compensation	Digital	DCXO control voltage	40000000	15
LO Detect	RF	LO is locked.	00000002	16
RF Detect	RF	TX level out/Attenuation	00000004	17
DSP Initialization	Digital	Handshake routine	00000040	18
IF Loop	RF	Background level (0 dB)	00020000	19
		SLS/Foreground ratio (9 dB)	00100000	20
		DSP does not measure a non-existent signal.	00200000	21

NOTE: Multiple failures are indicated by the sum of the error codes.

NOTE: If DPR Test fails, subsequent RAM tests are not run.

Self Test
Table 1

4. Video RAM

   Processor on Front Panel PC Board Assembly tests Video RAM on Front Panel Pulse PC Board Assembly in same fashion as DPR on Digital IF PC Board Assembly.

5. Display RAM

   Processor on Front Panel PC Board Assembly copies current screen and transfers visibility to unused secondary page on Liquid Crystal Display (LCD). Processor tests Display RAM on Front Panel Pulse PC Board Assembly using primary page and in same fashion as DPR on Digital IF PC Board Assembly. After test, screen and visibility are returned to primary page.

6. Non-Volatile RAM

   Contents of non-volatile RAM on Front Panel PC Board Assembly are transferred to DPR on Digital IF PC Board Assembly. Processor on Front Panel PC Board Assembly tests non-volatile RAM in same fashion as DPR. After test, original contents are restored in non-volatile RAM.

7. LED

   Processor on Front Panel PC Board Assembly turns On Interrogation and Reply LEDs on Front Panel LED PC Board Assembly through LED Control Register on Front Panel PC Board Assembly. Processor verifies On status through Status Control Register on Front Panel PC Board Assembly. After ≈80 ms, Off status is verified through Status Control Register.

8. Reply Decoder (Unsolicited Mode S reply)

   Processor on Front Panel PC Board Assembly programs Video RAM chips on Front Panel PC Board Assembly with DF11 Mode S squitter. Pulse Generator on Front Panel PC Board Assembly sends squitter from Video RAM chips through RF Assembly to Reply Decoder on Front Panel PC Board Assembly. Decoded reply is stored in RAM on Front Panel PC Board Assembly. Processor compares decoded reply with squitter sent.

   NOTE: Reply Decoder tests fail if RF Assembly is not functioning.

9. Reply Decoder (Solicited Mode S reply)

   Processor on Front Panel PC Board Assembly sends trigger to Reply Decoder on Front Panel Pulse PC Board Assembly to prepare for (solicited) Mode S reply. Processor tests Reply Decoder in same fashion as unsolicited Mode S reply.

10. Reply Decoder (Solicited ATCRBS reply)

    Processor on Front Panel PC Board Assembly tests Reply Decoder on Front Panel Pulse PC Board Assembly using solicited ATCRBS reply in same fashion as solicited Mode S reply.

11. Pulse Wrap

    Processor on Front Panel PC Board Assembly sets up Pulse Generator on Front Panel PC Board Assembly to send a pulse on the $\overline{\text{PULSE}}$ and DPSK lines. Processor uses internal Timer 1 to verify programmed distance between PULSE and DPSK pulses is eight counts (≈3.2 μs).

12. UART

    Processor on Front Panel PC Board Assembly configures UART (RS-232 Interface on Front Panel Pulse PC Board Assembly) to loop back. Processor sends message and verifies reception.

13. Attenuator #1/Attenuator #2

    Processor on Front Panel PC Board Assembly writes values to attenuation DACs on Front Panel PC Board Assembly. Processor reads corresponding status from Analog-to-Digital Converter (ADC) on Front Panel PC Board Assembly to verify DACs are correctly converting attenuation voltage data.

15. LO Compensation

    Processor on Front Panel PC Board Assembly writes values to a DAC on Front Panel PC Board Assembly. Processor reads corresponding status from ADC on Front Panel PC Board Assembly to verify DAC is correctly converting LO compensation voltage data.

16. LO Detect

    Processor on Front Panel PC Board Assembly turns On Local Oscillator on LO Source PC Board Assembly through an LED Control Register on Front Panel PC Board Assembly. Processor verifies LO Detect voltage is 0.35 to 3.1 Vdc by reading 71 to 635 from ADC on Front Panel PC Board Assembly. Test fails if LO is not locked (≈7.5 Hz trapezoidal waveform present at TP27033 on Front Panel Pulse PC Board Assembly).

17. RF Detect

    Pulse Generator on Front Panel PC Board Assembly sends CW at MTL+4 dB with 0 dB attenuation. $\overline{\text{PULSE}}$, $\overline{\text{SLS0}}$ and $\overline{\text{SLS1}}$ lines are activated on Front Panel PC Board Assembly. After going through transmit portion of RF Assembly, the signal returns on RF DETECT line to the ADC on Front Panel PC Board Assembly. Processor on Front Panel PC Board Assembly verifies level after digital conversion. Test is repeated with 3 dB attenuation set by Attenuator Control on Front Panel PC Board Assembly through Driver PC Board Assembly to Attenuator PC Board Assembly. Processor checks 3 dB difference by verifying ratio of unattenuated level to attenuated level is 2 (±0.4).

18. DSP Initialization

    Processor on Front Panel Pulse PC Board Assembly resets Digital IF PC Board Assembly through LED Control Register on Front Panel PC Board Assembly. After reset, Digital Signal Processor (DSP) on Digital IF PC Board Assembly controls RDY output to Status Buffer on Front Panel PC Board Assembly. Processor verifies DSP ready status through Status Buffer.

19. IF Loop (Background level)

    Pulse Generator on Front Panel PC Board Assembly activates $\overline{\text{PULSE}}$ and $\overline{\text{SLS0}}$ lines through Driver PC Board Assembly to modulate 30 MHz CW signal on Analog IF PC Board Assembly. CW signal at background level is sent from Analog IF PC Board Assembly to Digital IF PC Board Assembly. DSP on Digital IF PC Board Assembly measures power level. Processor on Front Panel Pulse PC Board Assembly verifies correct level after digital conversion.

TEST THEORY

20. IF Loop (Foreground/SLS ratio)

    Pulse Generator on Front Panel PC Board Assembly activates $\overline{\text{PULSE}}$, $\overline{\text{SLS0}}$ and $\overline{\text{SLS1}}$ lines through Driver PC Board Assembly to modulate 30 MHz CW signal on Analog IF PC Board Assembly. CW signal at foreground level (MTL+4 dB) is sent from Analog IF PC Board Assembly to Digital IF PC Board Assembly. DSP on Digital IF PC Board Assembly measures power level. Process repeats with $\overline{\text{SLS0}}$ and $\overline{\text{SLS1}}$ lines deactivated to send CW at SLS level (MTL-5 dB). DSP measures power level. Processor on Front Panel Pulse PC Board Assembly checks for 9 dB difference by verifying ratio of foreground level to SLS level is 3 (±1).

21. IF Loop (valid DSP measuring)

    LO is turned Off, disabling CW signal on Analog IF PC Board Assembly. Processor on Front Panel Pulse PC Board Assembly verifies DSP does not measure noise floor as a valid signal.

D. Module Theory of Operation

(1) Power Supply

The Power Supply consists of the Line Supply Assembly and the Power Supply Assembly.

(a) Line Supply Assembly

The Line Supply Assembly is an ac to dc converter containing a power transformer, bridge rectifier and filter.

The AC PWR Connector (J10050) (7) on the Front Panel Assembly is connected to the Line Supply Assembly through P/J11062. Transformer T33001 has two primary windings connected in parallel when 115 VAC is selected by double pole, double throw Switch S15001. The two primary windings are connected in series if 230 VAC is selected. The secondary winding of T33001 is connected to a full wave rectifier BR33001 mounted on the side panel heat sink. Unregulated voltage from BR33001 is applied to the crowbar circuit (over-voltage protection), filtered by C33003 and sent through P33049 to the Power Supply Assembly.

The crowbar circuit includes CR15001, CR15002, R15001, R15002 and Q15001. If voltage becomes excessive, Q15001 turns on, effectively shorting the bridge output and disabling Fuse F12001. F12001 opens when the line reaches approximately 160 VAC (115 VAC operation) or 320 VAC (230 VAC operation).

(b) Power Supply Assembly (2-2-1, Figure 2)

1 Battery Charger

The Battery Charger operates on 15 to 22 V source from the Line Supply Assembly through P23047. The CHARGE Indicator (1) illuminates red when charging and green when battery is more than 80% charged. The CHARGE Indicator (1) is Off when no ac power is applied or the ATC-601-2 is operating.

The Battery Charger requires Test Set power Off and a partially charged battery to initialize. With no battery, the Battery Charger is inoperable. If ATC-601-2 power is On (DISPLAY [14] is illuminated and screen is shown), the Battery Charger is disabled.

When ac power is first applied with Test Set power Off, the Battery Charger provides constant current to the battery. When the battery achieves a 75% charge, voltage across the battery rises rapidly and the Battery Charger switches to voltage regulation mode (at ≈14.6 V).

The 15 V source voltage is applied to the Power Supply Assembly at P23047-8 and P23047-15. Input to the switching section goes through a low-pass filter (C14032, L14006, C14023 and C14038) to Converter/Transformer T14001. Output of T14001 is rectified by CR14003 and filtered by C14001, providing the battery voltage at J11048-1. CR14015 and CR14014 provide back-up voltage separation between the battery, Battery Charger and Output Supply. The battery is grounded through Current Sense Resistor R14001. Regulator U14001 operates on three inputs. The peak current on FET Q23002 is fed back to the Current Sense input (U14001-7). The battery charge voltage is fed back and sensed across a voltage divider (R14003, R14080 and R14007). R14007 (ADJ BATT CHARGER VOLTAGE) adjusts the operating float voltage (14.6 Vdc with charged battery). The charging current sensed at R14001 sets up the reference voltage formed across diodes CR14001 and CR14002. Thermistor RT14001 controls bias current on CR14001 and CR14002. The reference input to U14001-1 is a function of temperature and establishes trickle charge control between 0° C and 70° C. R14073 (GAIN ADJ) controls excess voltage. The pulse output (U14001-13) controls Gate Drivers Q14001 and Q14002. Q14001 and Q14002 drive the Transformer T14001 through Q23002.

The ac voltage at T14001 (E14004) is rectified by CR14011 and C14026. Rectified voltage feeds constant current source Q14015. Q14015 provides ≈20 mA to the CHARGE Indicator (1) through P12001-3. When the line from Q14015 is sourcing current, the CHARGE Indicator (1) is red. When Q14013 and Q14014 are turned on, Q14015 shuts off and sink current through CR14010 causes the CHARGE Indicator (1) to illuminate green. Three conditions must be met to obtain a green indication on the CHARGE Indicator (1):

- Charging current (<≈400 mA) is sensed by U14006C.
- Regulator U14001 is in voltage regulation mode when the compensation output (TP14001) is <≈4 V. The compensation output is sensed by U14006D.
- Regulator U14001 produces enough power to trickle charge the battery when the compensation output (TP14003) is >≈2 V. This indicates a battery is connected and the battery has no open cells. The compensation output is sensed by U14006B.

2 Output Supply

The Output Supply is dependent upon the battery line for the input power. Input voltage to the Output Supply varies with the charge level of the battery. The Output Supply provides operating voltages for the Test Set and is controlled by the POWER Key (11). The Battery Charger is switched Off when the Output Supply is operating.

The POWER Key (11) is connected to P/J23047-1. A switch closure to ground at R14017 turns Q14017 On momentarily, clocking J-K Flip-Flop U14002B connected as a one-shot. At switch closure, U14002B-2 produces a single 100 ms pulse, set by R14019 and discharge time of C24010. The trailing edge of the pulse (going positive) clocks J-K Flip-Flop U14002A. When toggled On, U14002A-15 goes high turning On the Output Supply and U14002A-14 goes low activating $\overline{\text{SHUTDOWN}}$ line to turn Off the Battery Charger. The high at U14002A-15 activates Q14004, Q14005 and Q14006. Q14006 drives the Regulator U14003. Q14005 drives the low voltage sensing circuit.

U14003 regulates using three inputs. Current limit control through FET Q23001 is sensed at U14003-6. The +5 V feedback voltage is set by R14074 and sensed at U14003-1. Feedback current through R14025 sets the negative error sensing input at U14003-2. The pulse output (U14003-13) controls Gate Drivers Q14007 and Q14008 which drive the Transformer T14002 through Q23001. Two outputs from T14002 are rectified, filtered and regulated to provide +12 and -12 Vdc. The other output is rectified and filtered to provide +5 Vdc, regulated by U14003.

The battery voltage is sensed through Q14005 across Voltage Divider R14062, R14060 and R14061. When the battery voltage drops below a threshold determined by temperature (≈+11.3 V at 25° C), U14008C drives a low level through R14068 to the Front Panel Pulse PC Board Assembly causing two blocks to appear on the DISPLAY (14) in the lower left corner (low power indication) and the Battery Test portion of the Self Test to fail. As the battery voltage drops further (to ≈+10.4 V at 25° C), Comparator U14008B senses the low voltage and a high level output activates Q14012. U14002A resets and shuts off the Output Supply. If the Keypad is inactive for ≈15 minutes during operation, Power Disable (PWRDIS) line from the Front Panel Pulse PC Board goes high to Comparator U14008A-6. The high level output causes U14002A to reset and shut off the Output Supply.

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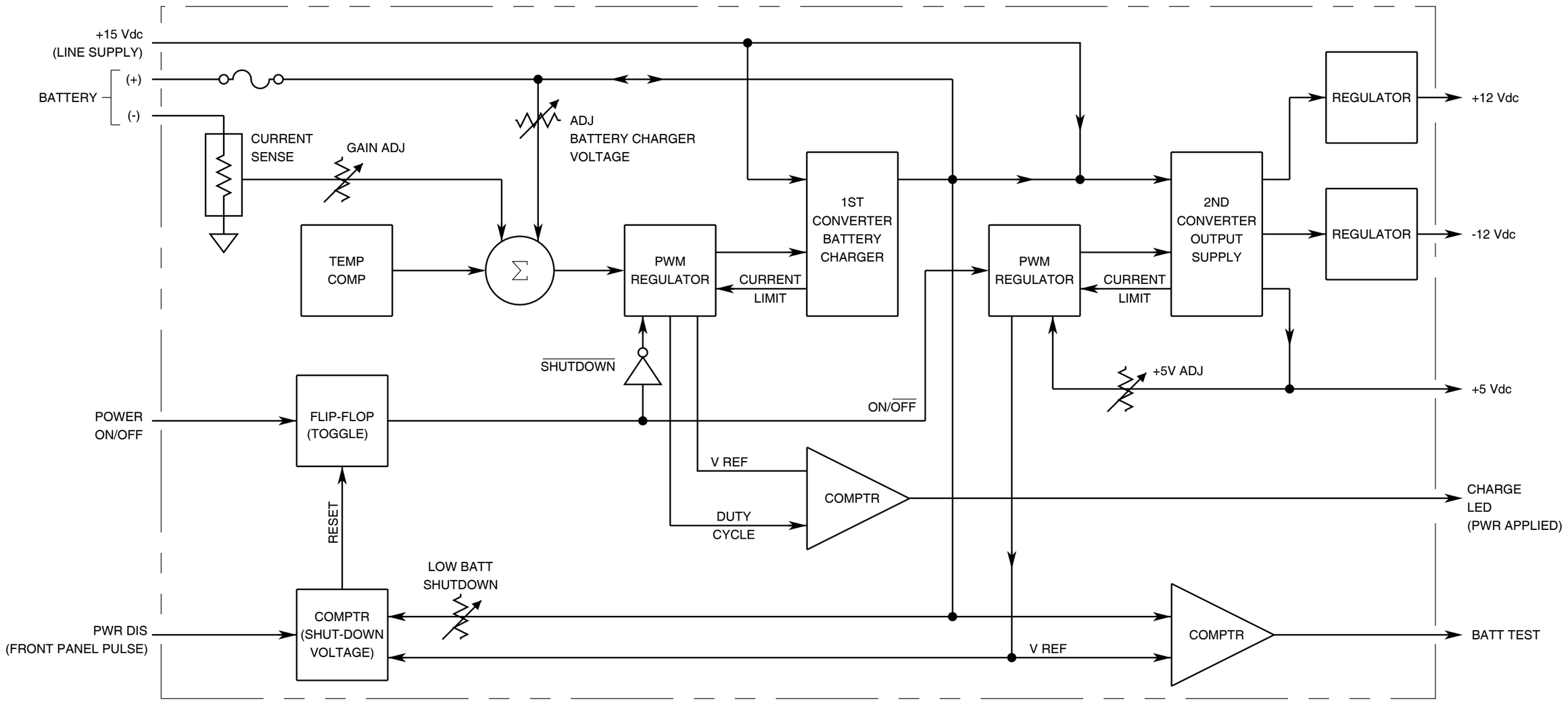
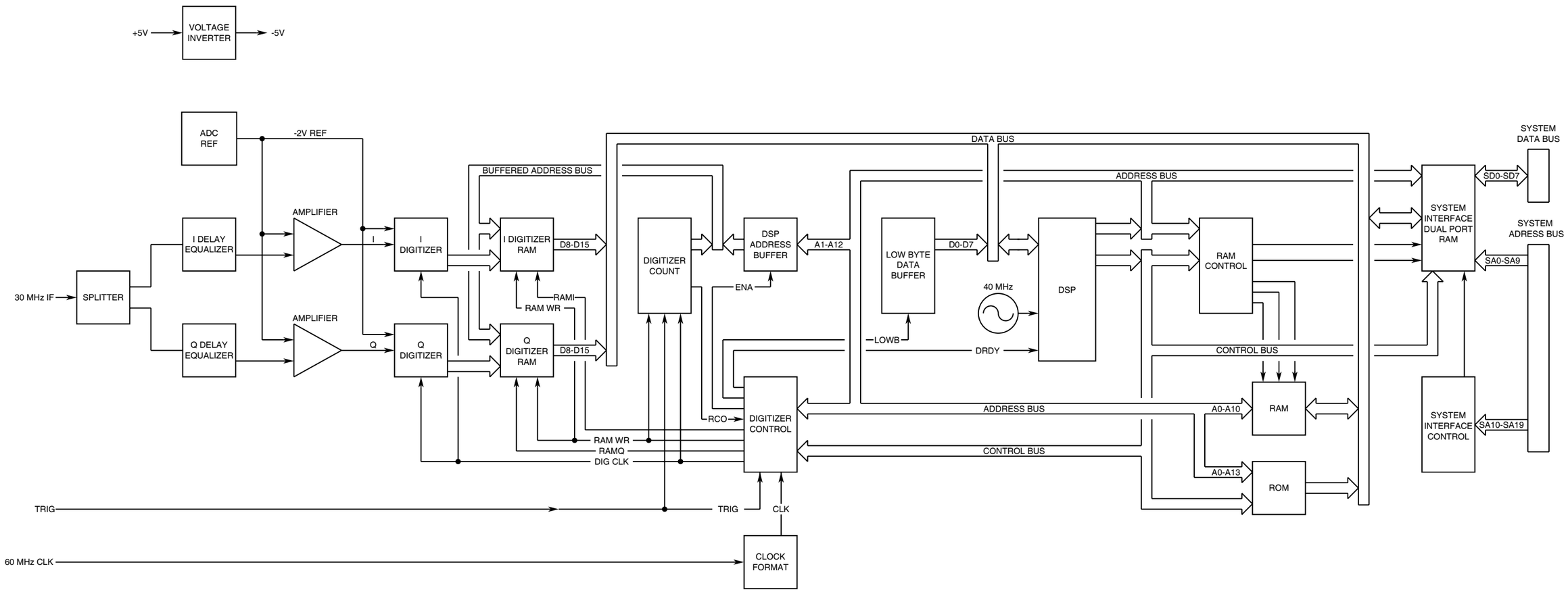


8101002

Power Supply Assembly Block Diagram
Figure 2



8101010

Digital IF PC Board Assembly Block Diagram
Figure 3

(2) Digital IF PC Board Assembly (2-2-1, Figure 3)

The Digital IF PC Board Assembly consists of:

Receive IF
Digitizer
Digital Signal Processor (DSP)
System Interface
Voltage Inverter

The Digital IF PC Board Assembly changes the incoming reply signals from analog to digital and accurately calculates power, frequency, pulse spacing, pulse width, pulse amplitude and reply delay. The Receive IF splits the signal in two and provides a complex representation of the original reply signal. The analog signals are converted to digital by the Digitizer and stored into memory. The DSP conducts calculations with the digital information and provides the results to the Front Panel Pulse PC Board Assembly through the System Interface. The Voltage Inverter provides the necessary voltage to operate the Digital IF PC Board Assembly.

(a) Receive IF

The 30 MHz signal from the Analog IF Assembly, verified at TP26017, goes through a 6 dB resistive splitter (R26032, R26033 and R26034) providing two signals while maintaining 12.8 MHz of bandwidth. Delay equalizers cause a 90° phase difference between the two signals to provide a sine and cosine representation of the received IF signal. Delay equalizers are first order constant-resistance time-domain circuits. One delay equalizer (L26001-L26004, C26057-C27060 and R26011) provides the in phase (I) signal. The other delay equalizer (L26005-L26008, C26061-C27066 and R26012) provides the quadrature phase (Q) signal. C26061 and C26063 (φ ADJ) maintain the 90° phase difference between the two signals. R26011 (I LEVEL ADJ) and R26012 (Q LEVEL ADJ) keep amplitude of both signals equal.

Transformers (T26001 and T26002) convert I and Q signals from bipolar to polar. High-speed integrating operational amplifiers (U26031 and U26032) provide approximately seven times amplification for an output of 2 Vp-p at 30 MHz. The midpoints or zero references (≈-1 V) used in the integration process are tapped from resistor networks (R26018, R26017 and R26023, R26024) across the ADC reference voltage (≈-2 V). R26017 and R26023 (ADC ZERO) also compensate for temperature drift. Diodes CR26006 and CR26007 protect the ADCs by effectively shorting positive voltages (0.4 V) to ground. The I signal is verified at TP26019 and the Q signal is verified at TP26020.

(b) Digitizer

The Digitizer consists of five main circuits:

1 ADC Reference

The ADC reference provides the -2 V reference voltage for the flash ADCs. CR26002 drops 2.5 V. Low Offset Amplifier U26027 and current gain transistor Q26002 convert the 2.5 V to -2 V. The non-adjustable ADC reference voltage (1.96 to 2.08 V) is present at test point TP26023. The -2 V reference is used by flash ADCs (U26001 and U26002) and Receive IF operational amplifiers (U26031 and U26032). Each flash ADC draws 23 mA nominal, 40 mA maximum, and the operational amplifier circuits use 0.7 mA. The ADC reference circuit supplies a maximum of 300 mA.

2 Flash ADCs

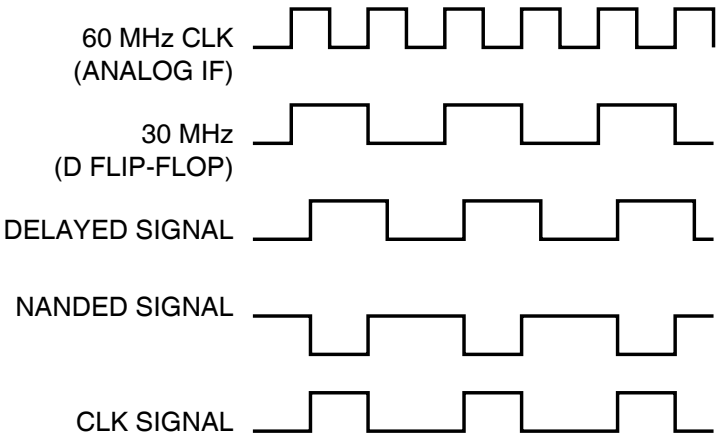
Flash ADCs U26001 and U26002 convert the input analog signals from the Receive IF to digital 8-bit signed values (twos complement). Input signals are set from -2 to 0 V. Voltages >0 V overflow the ADCs. Digital output values range from 80h (-128 decimal), corresponding to -2 V, to 7fh (+127 decimal), corresponding to 0 V. The 30 MHz digital clock from U26015 controls ADC operation.

3 RAM

Digitized data is written into four high-speed RAM chips (U26010- U26013) at a 30 MHz rate. Each RAM chip has a 4k by 4 byte capacity. The RAM chips have separate inputs from outputs. Flash ADCs only write into the RAM chips and the DSP (U26003) only reads from the RAM chips. Address lines are shared by the digitizer control circuit and DSP.

4 Clock Format

The clock format converts the 60 MHz sine wave from the Analog IF Assembly into a 30 MHz TTL clock with a 33% duty cycle. Refer to 2-2-1, Figure 4 for the clock format timing diagram. Transistor Q26001, inverting Schmitt triggers (U26023A and U26023B) and associated circuitry convert the 60 MHz input to TTL. D Flip-Flop U26024A divides the signal by two and the 30 MHz output provides both inputs to NAND Gate U26025A. Because DL26001 delays one input by 5 ns, U26025A has a 67% duty clock output. After being inverted by NAND Gate U26025B, the 30 MHz TTL clock has a high time of 10.67 to 12.67 ns. The clock format output is verified at TP26022.



Clock Format Timing Diagram
Figure 4

5 Digitizer Control

The digitizer control circuit consists of a Programmable Array Logic (PAL) circuit (U26015), three binary counters (U26017, U26018 and U26019), two flip-flops (U26020 and U26028) and two address register buffers (U26021 and U26022). U26015 directs digitizing of data into RAM and reading of data out of RAM. Refer to 2-2-1, Table 2 for description of U26015 inputs and outputs. Refer to Appendix D for PAL equations and Appendix E for timing diagrams.

FLOW	U26015 PINS	NAME	DESCRIPTION
Input	1 and 2	CLK	30 MHz TTL clock with 33% duty cycle from clock format
Input	3	DS	Data Select signal from DSP is high unless made low (active) for communicating to external data memory (DPR).
Input	4	STRB	Strobe signal from DSP is high unless made low (active) to indicate external bus cycle.
Input	5, 6 and 7	A0, A14 and A15	Address lines from DSP
Input	8	TRIG	Inverted trigger from Front Panel Pulse PC Board indicates start of process.
Input	9	RCO	Ripple Count Out from binary counters indicates end of digitizing the data.
Output	12	DIG CLK	Digitizer Clock
Output	13	LOWB	Low Byte selects Line Driver U26026 to keep data lines (D0-D7) low during RAM read.
Output	15	ENA	Enable Address activates two address register buffers (U26021 and U26022) connecting DSP to digitizing RAM.
Output	16	DRDY	Low Data Ready signal indicates digitizing RAM is ready for DSP to read.
Output	17	RAM WR	RAM Write controls RAM access (low for ADCs writing to RAM and high for DSP reading from RAM).
Output	18	RAMQ	Enables Q digitizer RAM.
Output	19	RAMI	Enables I digitizer RAM.

Digitizer PAL Inputs and Outputs
Table 2

Digitizing sequence is:

STEP	ACTION

1. U26023C inverts high TRIG output from Front Panel Pulse PC Board Assembly to low, resetting Binary Counters U26017, U26018 and U26019.
2. On the first rising edge of the clock pulse after TRIG goes low:
   - RAM WR goes low to enable the ADCs to write to RAM.
   - ENA goes high to disable DSP addressing.
   - DRDY goes high indicating data is not ready for DSP to read.
3. RAM WR going low enables Flip-Flops U26020 and U26028 to address RAM by latching address lines to the output of Binary Counters U26017, U26018 and U26019.
4. DIG CLK, RAMI and RAMQ become synchronous with CLK on the first falling edge of the clock pulse after RAM WR goes low.
5. TRIG returns to high and the binary counters start counting on the first rising edge of DIG CLK. Binary Counters U26017, U26018 and U26019 are cascaded together to provide a count from 0 to 4095 (the capacity of the digitizer RAM chips).
6. With each DIG CLK count, the ADCs convert incoming analog data into another byte.
7. With each DIG CLK count, the byte of converted data from the prior clock cycle is stored in the next address in RAM, as stepped by the binary counters (U26017, U26018 and U26019) and latched by the flip-flops (U26020 and U26028).
8. Process continues until the binary counters are full and RCO output U26019-15 goes high.
9. DIG CLK, RAMI and RAMQ stop synchronous operation with CLK and stay high.
10. After U26015 internal switching allows ADCs to write last byte of data into RAM, RAM WR goes high setting RAM for DSP to read.
11. ENA goes low to enable DSP to address digitizing RAM.
12. DRDY goes low to trigger DSP for reading digitizer RAM. DRDY stays low until a read is done at any digitizer RAM address.
13. DSP reads RAMQ (quadrature phase data) using an odd address. A15 and A0 are high while A14, DS and STRB are low.

    DSP reads RAMI (quadrature phase data) using an even address. A15 is high while A0, A14, DS and STRB are low.

(c) Digital Signal Processor (DSP)

U26003 is a TMS320C25 DSP. Two external EPROM chips, U26004 and U26005, provide 8k by 16 bits of ROM containing the program code for U26003. U26003 selects the EPROM chips at addresses from 0 to 3FFFh while the PS (U26003-47) and STRB (U26003-49) lines are both low through OR Gate U26034A. Two external 2k by 8 RAM chips (U26008 and U26009) and internal DSP RAM provide ≈2.6k by 16 bits of RAM. Interface to external RAM is accomplished with the 16V8A PAL U26016. Addresses from 400 to BFFh with STRB low cause SRCS (U26016-19) to go low, selecting the RAM chips. SROE (read) or SRWE (write) goes low depending on R/$\overline{W}$ line (U26003-48). Data lines D0-D7 access U26008 and data lines D8-D15 access U26009. External RAM is contiguous to the internal RAM located through 3FFh. RAM is accessed with no wait states.

The DSP operates using a 40 MHz clock provided by U26035. Inverting Schmitt Trigger U26036A converts clock output to TTL.

In operation, the DSP performs calculations, controlled by ROM, on the data in digitizer RAM. Results are stored in RAM available to the DSP. After reading the digitizer RAM chips, the DSP performs mathematical operations to determine:

- Position of any pulse
- Width of any pulse
- Rise time of any pulse
- Power of any pulse
- Difference in power between pulses
- Frequency of the IF
- Phase changes in the IF

(d) System Interface

The System Interface consists of PAL U26016 and Dual Port RAM (DPR) U26007. The RDY line (P26006-A7), when high, indicates the Digital IF PC Board Assembly is ready to communicate. The RDY line is reset at power-up or when system is reset by the Front Panel Pulse PC Board Assembly. IS, STRB and R/$\overline{W}$ goes low to U26016 causing RDYCS to go low. RDYCS clocks D Flip-Flop U26024B and a high on data line D0 sets the RDY line high. The DSP accesses the DPR at addresses C000 to C3FFh through the PAL. When DS is low with A14 and A15 high (valid DPR address), a high (U26016-15) is sent to J-K Flip-Flop U26029A to add a wait state. On the falling edge of CLK2, U26029A output goes high to U26016-5, setting READY high. When a valid address other than a DPR address is accessed, READY line is set high without a wait state. Refer to wait state timing diagrams in Appendix E. When the DPR is accessed by the Front Panel Pulse PC Board Assembly, the BUSY line from the DPR (U26007-3) goes low causing the READY line to remain low.

(e) Voltage Inverter

The Voltage Inverter converts the +5 V input to a -5 V output. The Voltage Inverter is a pulse width modulated circuit consisting of a relaxation oscillator, Transistor Q26004, Switcher Pass Device Q26005, Clamp Diode CR26005 and associated filtering components.

The relaxation oscillator consists of Comparator U26037, Voltage Divider R26036 and R26037, Resistor R26039 and Capacitor C26079. R26039 and C26079 provide the time constant, setting the oscillation frequency. The voltage divider sets the voltage limitations of the oscillator (centered around +5 V). Comparator U26037 sends a pulse output to control Q26005. The pulse (≈10 V) is based on the input from Transistor Q26004 and the voltage divider.

Transistor Q26004 works as differential amplifier and provides feedback current to modulate duty cycle offset by R26038. R26040 and R26041 provide feedback voltage (≈-0.7 V) on emitter of Q26004. R26041 (-5V ADJ) sets level of feedback necessary to maintain the -5 V output. Diodes CR26003 and CR26004 compensate for voltage drop across the base to emitter of Q26004. C26080 provides lead compensation to dampen feedback loop ringing caused by the delay from input to output.

The pulse output from Comparator U26037 causes current to flow through Q26005 ≈50% of the time. The other part of the time current flows through CR26005. The voltage drop across CR26005 goes from +0.5 to -10 V during the duty cycle averaging out to -5 V. C26081 provides a dc block between the modulating circuit and the output. L26009 and L26010 provide filtering and modulation allowance.

(3) Front Panel Pulse PC Board Assembly (2-2-1, Figure 7)

The Front Panel Pulse PC Board Assembly consists of:

Processor
Pulse Generator
Reply Decoder
Display Control
Keypad Interface
RS-232 Interface
Attenuator Control
Oscillator Compensation
Analog-to-Digital Converter
Status Buffer
LED Control Register
Digital IF PC Board Assembly Access

The Front Panel Pulse PC Board Assembly controls the general operation of the ATC-601-2 Test Set by providing an interface to the user, generating interrogations, decoding replies and controlling both the Digital IF PC Board and RF Assemblies.

(a) Processor

The Processor has four major components: Microprocessor U27001, two 64k ROMs (U27012, U27013) and 32k non-volatile SRAM U27017. U27001, a multi-functional 80188 microprocessor, receives instruction data from the two 64k ROMs and carries out assignments as instructed. U27001 uses 11 chip selects. Refer to 2-2-1, Table 3 for chip select definition. Chip select lines are active low. SRAM U27017 has internal battery back-up to prevent loss of memory.

CHIP SELECT	LINE	SELECTION	ADDRESSES
Upper	$\overline{\text{UCS}}$	64k ROM (U27012)	F0000-FFFFFh
Lower	$\overline{\text{LCS}}$	32k SRAM (U27017)	00000-08000h
Mid-Range	$\overline{\text{MCS0}}$	Digital IF PC Board Assembly (U26007)	C0000-CFFFFh
	$\overline{\text{MCS1}}$	Pulse Generator (U27022)	D0000-DFFFFh
	$\overline{\text{MCS2}}$	64k ROM (U27013)	E0000-EFFFFh
Peripheral	$\overline{\text{PCS0}}$	Control Decoder (U27008)	400-47Xh
	$\overline{\text{PCS1}}$	RS-232 Interface (U27030)	480-487h
	$\overline{\text{PCS2}}$	Keypad Interface (U27027)	500h
	$\overline{\text{PCS3}}$	Control Decoder (U27037)	580-5FXh
	$\overline{\text{PCS4}}$	Control Decoder (U27036)	600-67Xh
	$\overline{\text{PCS5}}$	LCD Controller (U27048)	680-681h

Microprocessor U27001 Chip Selects
Table 3

Instruction sequence is:

STEP	ACTION

1. Address latch enable (BALE) line (U27001-61) to Transparent Latch U27010 goes high, allowing U27001 to set address where data is to be received through data lines to U27010.
2. When address is valid, BALE goes low, causing lower 8 bits of address to be latched onto U27010 address lines. Lower Address Latch U27010 allows U27001 to receive data on data lines without changing address selected.
3. $\overline{UCS}$ line (U27001-34) is low to enable U27012. Read ($\overline{RD}$) line (U27001-62) goes low to enable data byte at address selected (initial address is FFFF0) to be sent to U27001.
4. Data is processed and instruction is carried out in same fashion. BALE goes high, chip is selected, valid address is latched and data is read from or written to address. Write ($\overline{WR}$) line (U27001-63), goes low and $\overline{RD}$ line stays high when sending data to an address.

U27001 also provides Direct Memory Access (DMA) capabilities for Reply Decoder U27044. DRQ0 (U27001-18) and DRQ1 (U27001-19) lines set up DMA, allowing a direct read or write to memory.

DMA sequence is:

STEP	ACTION

1. DRQ0 (from Reply Decoder [U27044-A9], ATCRBS Decoder) or DRQ1 (from Reply Decoder [U27044-B9], Mode S Decoder) goes high (DMA request).
2. U27001 finishes current instruction or bus cycle.
3. DMA takes control and programmed action is initiated.

There are four interrupt lines used on U27001. INT0 (U27001-45) goes high from U27030, informing U27001, a transmit or receive action is required at the RS-232 Interface. INT1 (U27001-44) is high when activated by Keypad operation. Pressing any key generates an interrupt. INT2 (U27001-42) is activated by Pulse Generator U27022 and INT3 is controlled by Reply Decoder U27044.

U27001 operates using an external 20 MHz clock source. D Flip-Flop U27007B divides 40 MHz Oscillator G27001 output by two. The 20 MHz clock is fed into U27001-59. U27001 divides the 20 MHz by two, providing the 10 MHz Clock used internally and sent out on CLKO line U27001-56.

Two internal timer circuits are utilized by the Processor. Timer 1 is used to measure distance between PULSE and DPSK pulses during the Pulse Wrap portion of the Self Test. These pulses are generated by the Pulse Generator. A single output pulse is programmed in Video RAM for each signal. The two pulses are then combined into a set-reset type circuit located in the Pulse Generator, Logic Cell Array (LCA) U27022, and fed to Timer 1 for measurement. Timer 2 provides an internal 4.255 ms interrupt used for interrogation intervals.

A reset circuit consisting of Supervisor U27018, Q27001 and associated components provide a delay after power-up or brown-out. The delay (≈15 ms) allows the +5 V from the Power Supply Assembly and 40 MHz Oscillator G27001 to stabilize. Reset is activated manually through S27001 (low ground to U27018-2) or automatically if the +5 V sensed at U27018-7 drops below approximately 4.55 V. U27018 output initiates Logic Cell Array (LCA) programming. The low at U27018-5 is sent to the Reply Decoder and Pulse Generator. The high at U27018-6 activates Q27001 allowing the low ground at the emitter to be felt on the D/PN line (reset to U27001). The LCA components, Pulse Generator U27022 and Reply Decoder U27044, hold the D/PN line low until programming is complete. U27001 resets and sends out another reset (U27001-57) to other logic components on the Front Panel Pulse PC Board Assembly and Digital IF PC Board Assembly. Reset output is maintained until the +5 V line reaches ≈4.7 V. Refer to Appendix E for reset timing diagram.

The Power Disable circuit saves on battery power when the Keypad is inactive. U27001 monitors Keypad activity and if no key is pressed for approximately 15 minutes, D Flip-Flop U27007A is accessed with $\overline{\text{PCS0}}$+1Xh through U27008 and a low is sent on D0 causing PWRDIS to go high to the Power Supply Assembly. The comparator on the Power Supply Assembly resets the flip-flop and disables the Output Supply, switching off the power. PWRDIS returns to low upon power-up or after reset.

(b) Pulse Generator

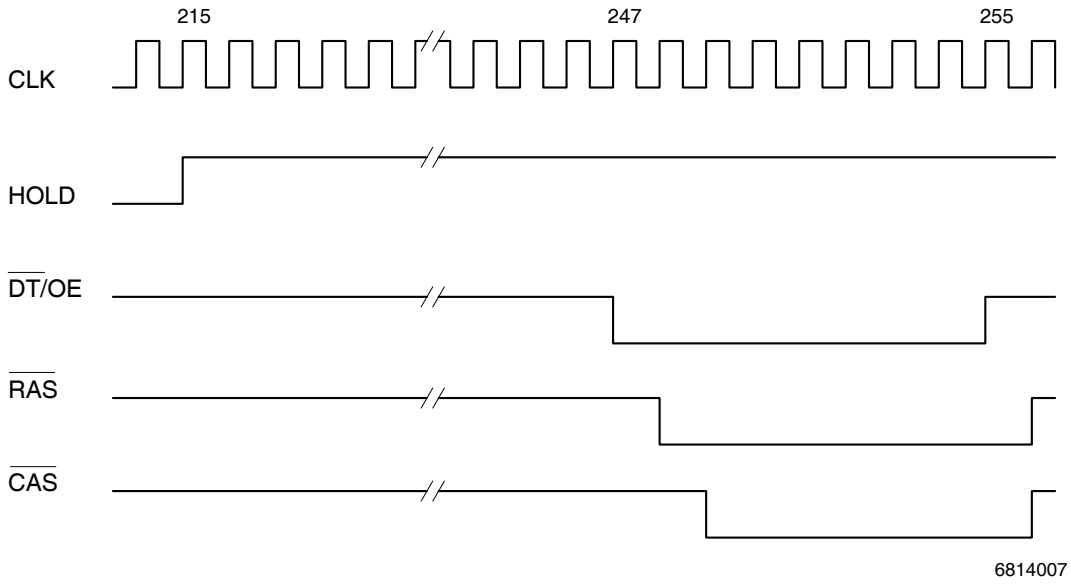
The Pulse Generator section of the Front Panel Pulse PC Board Assembly consists of programmable LCA U27022, Video RAM chips U27023 and U27024, Serial Access Memory (SAM) Counter Reset U27006, Buffer/Driver U27004, Multiplexers (MUX) U27015 and U27016, Delay DL27001, Schmitt Trigger Inverter U27025A, Control Decoder U27008 and PROM U27003.

The Video RAM chips are dual port with random access available to U27001 and serial access to U27022. U27001 reads and writes to the Video RAM chips with access controlled through U27022. Video RAM chips U27023 and U27024 are accessed when $\overline{\text{MCS1}}$, BALE and either $\overline{\text{WR}}$ or $\overline{\text{RD}}$ are activated. Addresses are selected using Multiplexers U27015 and U27016. When $\overline{\text{RAS}}$ goes low, the select line to U27015 and U27016 stays high because the output at U27022-43, changing to high (inverted low by U11025A) when $\overline{\text{RAS}}$ goes low, is delayed 10 ns through DL27001. This allows A8 through A15 to be latched to the Video RAM chips, selecting the row address. After the delay, the multiplexers with the select line low are set to latch A0 through A8 to the Video RAM chips, selecting the column address when $\overline{\text{CAS}}$ goes low. $\overline{\text{DT}}$/OE goes low for a read operation or $\overline{\text{RWR}}$ goes low for a write operation.

Serial access by U27022 is a read only function. The Video RAM chips transfer rows (256 bytes/row) of data into internal serial access registers. Data is sent from the registers to U27022, one byte each clock count. Serialized data is sent out from U27022 with each bit line connected to a specific output according to 2-2-1, Table 4.

VIDEO RAM	PIN NO	U27022	PIN NO
VS0	24	$\overline{\text{BPULSE}}$	28
VS1	29	$\overline{\text{BSLS0}}$	30
VS2	31	BDPSK	32
VS3	33	BTRIG	34
VS4	36	BSYNC	37
VS6	38	$\overline{\text{BSLS1}}$	39

Pulse Generator Serialized Data Output
Table 4



Pulse Generator Data Transfer Timing Diagram
Figure 5

Refer to 2-2-1, Figure 5. Pulse Generator serial sequence is:

STEP	ACTION

1. U27001 programs pulses into the Video RAM chips, as directed by ROM and initiated by the Keypad.
2. U27001 programs a stop byte (10010000) into an address XXFEh (255th byte) corresponding to the desired row to end on.
3. U27001 programs 256 bytes of cleared memory (00h).
4. U27001 programs the starting address using the $\overline{\text{STADD}}$ line ($\overline{\text{PCS0}}$+2Xh) through U27008 for access.
5. U27001, through U27008 ($\overline{\text{PCS0}}$+4Xh), sends a low on the $\overline{\text{START}}$ line to U27022 initiating the start of data transfers and setting the internal counter to 191h.

STEP	ACTION

6. After the 215th byte of cleared memory, U27022 HOLD output (pin 53) goes high to request access to the address lines from U27001.

7. HLDA input (pin 20) goes high informing U27022 that U27001 relinquishes address line control.

8. After 247 bytes, $\overline{DT}$/OE goes low to set up the Video RAM chips for a data transfer to the serial access registers.

9. $\overline{RAS}$ goes low on the next clock count. Row address, determined by the programmed starting address, is selected.

10. $\overline{CAS}$ goes low on the following clock count and a zero address from U27006 (enabled by U27022) causes the data transfer to start at address zero in the serial access registers.

11. After 255 bytes of cleared memory is shifted out of the serial access registers, $\overline{DT}$/OE goes high, triggered by internal counter in U27022. U27022 internal counter tracks 256 clock counts.

12. Data transfer occurs. 256 new bytes from the selected row are loaded into the serial access registers.

13. Each data transfer is followed by a $\overline{CAS}$ before $\overline{RAS}$ refresh.

    NOTE: When no data transfers are occurring, refresh still takes place every 12.8 µs.

14. With each 50 ns (20 MHz) clock count, one byte (one bit for each output) is shifted out of the serial access registers to U27022.

15. Data transfer is repeated every 12.8 µs with each successive row as stepped by internal counter in U27022. New rows are transferred and sent out until the programmed stop byte is encountered. After the stop byte, the last row is transferred and continually shifted out of the serial access registers until the next transfer.

    NOTE: The last row transferred is usually the 256 bytes of cleared memory. For CW transmissions, the last row contains all ones.

16. The stop byte also initiates an interrupt (INT2) to U27001.

    NOTE: If another interrupt is received during operation, Microprocessor U27001 manually stops Pulse Generator operation by activating the $\overline{STOP}$ line ($\overline{PCS0}$+3Xh).

Buffer/Driver U27004 is used to isolate and boost signals off the Front Panel Pulse PC Board Assembly. Buffer U27014D drives the External DPSK Out signal out of the Test Set through the Motherboard PC Board Assembly and COMM Connector (3). Configuration PROM U27003 stores information for reprogramming U27022 on power-up. External PULSE, External DPSK and External SYNC from the COMM Connector (3), when connected, are isolated and converted to TTL before entering the Pulse Generator.

(c) Reply Decoder

Reply Decoder U27044 is a programmable LCA component with more functional capacity than the Pulse Generator. Two independently operating decoders, one each for Mode S and ATCRBS, are incorporated into U27044. The programmed internal operation allows for two operating modes, solicited and monitor (receive all). In solicited mode, the Reply Decoder looks for a reply after receiving a trigger input (U27044-P10) from Pulse Generator U27022. U27022 sends the trigger indicating an interrogation is being transmitted and a reply is expected. Replies are received within
12.8 μs for Mode S and 6.4 μs for ATCRBS, as verified by the Reply Decoder, to be counted as valid. In monitor mode, the Reply Decoder looks for all incoming replies and the trigger input is ignored. When valid replies are received (U27044-P9), the Reply Decoder transfers data to RAM using DMA. Mode S data is transferred by DMA channel #1 (DRQ1) and ATCRBS data is transferred by DMA channel #0 (DRQ0).

Reply Decoder is controlled through an internal control register setup by U27001. Refer to 2-2-1, Table 5 for control register bit definition. Control register sequence is:

STEP	ACTION

1. $\overline{\text{PCS4}}$ +60h through U27036 causes $\overline{\text{ENDEC}}$ (U27044-P11) to go low.
2. $\overline{\text{WR}}$ (U27044-P12) goes low.
3. Data is written to U27044 (A13, B13, C13, D13, A12, B12, C12 and D12) setting the control register.

Mode S sequence is:

STEP	ACTION

1. If in solicited mode, BTRIG is sent from U27022-34 to U27044-P10.
2. U27044 looks for a reply on VIDEO (U27044-P9), inverted by U27051A. If solicited, the start of reply must be received within
   12.8 μs of BTRIG signal to be valid.
3. Mode S reply decoder verifies detected reply contains Mode S preamble. BEGIN (U27044-G1) goes high when detected preamble is valid and control register D2 is high.
4. Mode S reply message is received and DMA1 is activated through DRQ1 (U27044-B9) going high.

BIT #	DEFINITION	SETTING	RESULT
D0	Mode S Function Reset	0	Normal operation
		1	Mode S decoder is reset. All incoming replies and triggers are ignored. DMA line (DRQ1) is cleared.
D1	Mode S Receive All	0	Solicited Mode (12.8 µs reply delay window)
		1	Monitor Mode (Receive All)
D2	Mode S External Trigger Enable	0	BEGIN line disabled
		1	Valid preamble sets BEGIN line to high (1).
D3	Not Used		
D4	ATCRBS Function Reset	0	Normal operation
		1	ATCRBS decoder is reset. All incoming replies and triggers are ignored. DMA line (DRQ0) is cleared.
D5	ATCRBS Receive All	0	Solicited Mode (6.4 µs reply delay window)
		1	Monitor Mode (Receive All)
D6	Not Used		
D7	Video Invert	0	Incoming VIDEO not inverted (Self Test)
		1	Incoming VIDEO inverted (normal operation)

Reply Decoder Control Register Bit Definition
Table 5

STEP	ACTION

5. $\overline{PCS4}$ +61h causes $\overline{ENDEC}$ (U27044-P11) to go low and A0 (U27044-N7) to go high, selecting Mode S reply decoder.

6. $\overline{RD}$ (U27044-P13) goes low.

7. Mode S message is transferred as it is received, one byte at a time, from U27044 (A13, B13, C13, D13, A12, B12, C12 and D12) to RAM Chip U27017. Refer to 2-2-1, Table 6 for reply data byte formation.

STEP	ACTION

8. U27044 verifies message length and presence of message bits, setting Mode S status register byte accordingly. The Mode S status register byte uses two bits. The first bit (D0) indicates valid reply status. A low (0) indicates invalid reply data or a high (1) indicates valid reply data is received. Bit D1 shows the solicited reply status. A low (0) indicates unsolicited reply and a high (1) indicates reply, being within the reply delay window, is a valid reply responding to the interrogation. Bits D2 through D7 are not used.
9. When all data is transferred and last DMA request goes high for transfer of Mode S status register byte, INT3 (U27044-C9) goes high to U27022.
10. Mode S status register is transferred, control register is written to for Mode S reset ($\overline{PCS4}$+60h-D0) and interrupt is cleared at $\overline{PCS4}$+63h.

ATCRBS sequence is:

STEP	ACTION

1. If in solicited mode, BTRIG is sent from U27022-34 to U27044-P10.
2. U27044 looks for a reply on VIDEO (U27044-P9), inverted by U27051A. If solicited, reply must be received within 6.4 μs of BTRIG signal, to be valid. ATCRBS status register solicited reply status bit D0 is set. A low (0) indicates unsolicited reply or a high (1) indicates reply, being within the reply delay window, is a valid reply responding to the interrogation.

   NOTE: Bits D1 through D7 are not used by ATCRBS status register byte.
3. ATCRBS reply decoder verifies detected reply contains correctly positioned F_1 and F_2 pulses.
4. DMA0 is activated through DRQ0 (U27044-A9) going high.
5. $\overline{PCS4}$+62h causes $\overline{ENDEC}$ (U27044-P11) to go low, A0 (U27044-N7) and A1 (U27044-N6) to go high, selecting ATCRBS reply decoder.
6. $\overline{RD}$ (U27044-P13) goes low.
7. When complete ATCRBS reply is received, reply data is transferred, one byte at a time, from U27044 (A6, B6, C6, D6, A5, B5, C5 and D5) to RAM U27017. Refer to 2-2-1, Table 6 for reply data byte formation.
8. When all data is transferred and last DMA request goes high for transfer of ATCRBS status register byte, INT3 (U27044-C9) goes high to U27022 only if in monitor (JTB27001 jumper installed).
9. ATCRBS status register is transferred, control register is written to for ATCRBS reset ($\overline{PCS4}$+60h-D4) and interrupt is cleared at $\overline{PCS4}$+63h.

MODE	TRANSFER ORDER	BIT NUMBER							
	BYTE #	D7	D6	D5	D4	D3	D2	D1	D0
Mode S	1	1	2	3	4	5	6	7	8
	2	9	10	11	12	13	14	15	16
	3	17	18	19	20	21			
(Short	7	 51			52	53	54	55	56
Message)	8	. . . . . Mode S status register							
or (Long	14	 107			108	109	110	111	112
Message)	15	. . . . . Mode S status register							
ATCRBS	1 (HIGH)	SPI	Null2	Null1	X	A4	A2	A1	B4
	2 (LOW)	B2	B1	C4	C2	C1	D4	D2	D1
	3	. . . . . ATCRBS status register							

Reply Data Byte Information
Table 6

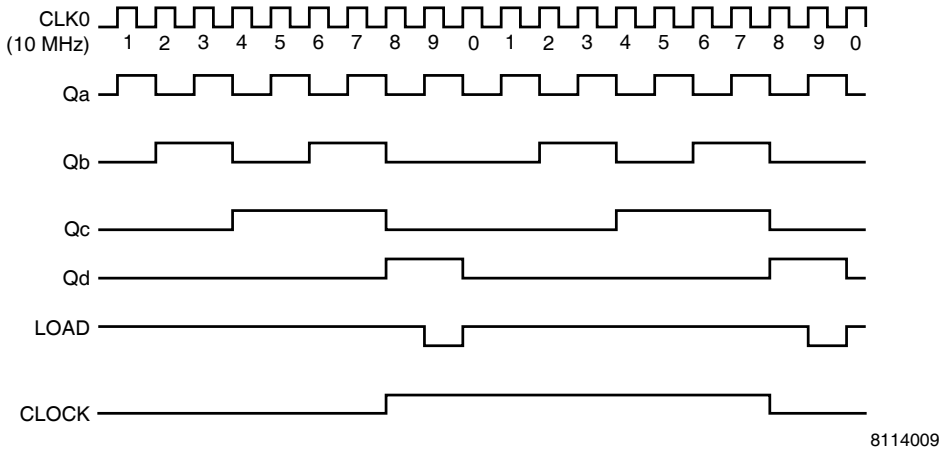
(d) Display Control

Three separate circuits make up the Display Control. The Liquid Crystal Display (LCD) Data Control circuit controls the information entered onto the DISPLAY (14). The Contrast Control and Backlight Control circuits use Digital-to-Analog Converters (DACs) to adjust physical characteristics of the LCD.

1 LCD Data Control

LCD Data Control is accomplished with a 500 kHz Clock, LCD Controller U27048, LCD Control PAL U27029 and Display RAM U27049.

Refer to 2-2-1, Figure 6 for 500 kHz Clock timing. Counter U27039 divides the 10 MHz clock input by 10 (NAND Gate U27011C resets U27039 on each nine count). The 1 MHz output clocks D Flip-Flop U27007B, configured to change state with each clock, providing a 500 kHz clock with a 50% duty cycle. The 500 kHz clock is verified at test point TP27004.



500 kHz Clock Timing Diagram
Figure 6

LCD Controller U27048, an HD61830 Graphic Display Controller operating in the character mode, acts as a memory mapped device to the Processor. U27001 reads from and writes to U27048 on a byte wide basis. U27001 selects U27048 by activating $\overline{PCS5}$, accessing the data register at address X0h (RS input U27048-18 low) and the instruction register at address X1h (RS input U27048-18 high).

U27048 has six outputs to the LCD. D1 is the serial data output for the upper half of the screen and D2 is the serial data output for the lower half of the screen. FLM is the frame signal for display synchronization. CL1 is the display data latch signal for LCD drivers and CL2 is the display data shift clock for LCD drivers. M converts the LCD driving signal to an ac waveform.

PAL U27029 inserts wait states in the processor bus cycle. Refer to Appendix D for PAL equations. U27029 also generates the Enable (U27048-16) and Read/Write (U27048-17) signals for U27048. Wait states, inserted before the ARDY line to U27001 goes low, are required because LCD Controller U27048 operates slower than the microprocessor. Refer to Appendix E for timing diagrams.

Display RAM U27049 stores pixel data (character codes) for U27048 and is accessed by U27001 through U27048.

2 Contrast Control

Contrast Control is based on the input voltage obtained from CR22001 on the Analog IF PC Board Assembly. Ambient temperature conditions are sensed by CR22001 and the resulting voltage (2.73 V at 0° C, changes 33.94 mV/°C) is sent through a differential amplifier U27034C to the ADC (U27045-1). Refer to para 2-2-1D(3)(i) for ADC operation. The information sent from U27045 causes U27001 to send adjustment data to DAC U27032, selected by $\overline{ENCON}$ ($\overline{PCS4}$+1Xh through U27036) going low. U27032 provides a bipolar output of -5 to +5 V, used to control the contrast on the LCD. The -5.1 V, used in powering the LCD, is provided by the voltage drop across Zener Diode CR27011.

3 Backlight Control

Backlight Control is based on the input voltage obtained from R13001 on the Front Panel LED PC Board Assembly. Ambient light conditions are sensed by R13001 and the resulting voltage drop is applied to the ADC (U27045-26). Refer to para 2-2-1D(3)(i) for ADC operation. Information sent from U27045 causes U27001 to send adjustment data to DAC U27033, selected by $\overline{ENBLT}$ ($\overline{PCS4}$+0Xh through U27036) going low. U27033 provides a corresponding voltage output through Driver U27034A with Q27005 to drive Inverter Supply U27035. U27035 provides the increased voltage levels necessary to run the backlight. Capacitors C27082 and C27083 provide noise suppression in the operational amplifier feedback circuit. Zener Diodes CR27016 and CR27017 are clamped to ground to protect circuit if backlight is not connected.

(e) Keypad Interface

Keypad Interface consists of Buffer/Latch U27027, NAND Gate U27011B, resistors, transistors and diodes. U27027 is selected by U27001 with $\overline{PCS2}$. Keypad data, activated when low, is defined in 2-2-1, Table 7.

When the Keypad is inactive, Resistive Network RN27001 holds the row and column lines to a high impedance. When a key is pressed, a row and column line are connected together.

	COLUMN BIT		
ROW BIT	**D1 ($\overline{COL1}$)**	**D2 ($\overline{COL2}$)**	**D3 ($\overline{COL3}$)**
D4 ($\overline{ROW1}$)	AUTO TEST Key (13)	PWR TEST Key (12)	RUN/STOP Key (9)
D5 ($\overline{ROW2}$)	SETUP Key (4)	SELF TEST Key (6)	SLEW Key (↓) (8)
D6 ($\overline{ROW3}$)	SELECT Key (↑) (10)	SELECT Key (↓) (10)	SLEW Key (↑) (8)
D7 ($\overline{ROW4}$)	Not used		
NOTE: D0 is $\overline{ANT\ SW}$ from the ANTENNA PUSH BUTTON Switch (21).			

Keypad Data Definition
Table 7

Keypad Sequence Example is:

STEP	ACTION

1. Pressing the AUTO TEST Key (13) connects row 1 with column 1. Circuit is closed and current flows.
2. Current flowing at the base turns Q27002 on, allowing the low ground on the emitter through the collector and Diode CR27001 to NAND Gate U27011B. The high output sends an interrupt (INT1) to the Microprocessor (U27001-44).
3. The low through Q27002 is also sent through U27027 when selected by U27001 with $\overline{PCS2}$. The low on collector of Q27002 is felt at U27027-4, causing D0 to be read low by U27001 indicating the pressed key is in column 1. The low on the base of Q27002 is felt at U27027-11, causing D4 to be read low indicating the pressed key is in row 1.

(f) RS-232 Interface

RS-232 communications are provided by an INTEL 82510 Universal Asynchronous Receiver-Transmitter (UART U27030). U27030 is selected by U27001 with $\overline{PCS1}$+(addresses from X0h to X7h). Driver/Receiver U27028 drives the serially transmitted signal off the Front Panel Pulse PC Board Assembly through P/J25014 to J10053 COMM Connector (3) and buffers incoming handshake and data signals. U27030 generates an interrupt (INT0) when servicing is required. U27001 polls the internal status registers to determine the cause of the interrupt (TXD or RXD).

(g) Attenuator Control

Two DACs having 0 to 10 Vdc outputs control attenuation. U27041, an 8-bit DAC, provides a +5 V reference and ATTEN1 voltage used to set current on the Driver PC Board Assembly for attenuator end line pin diodes on the Attenuator PC Board Assembly. R27041 (+5V REF ADJ) adjusts the +5 V reference, verified at TP27002. U27041 is accessed by U27001 when $\overline{\text{ENATT1}}$ ($\overline{\text{PCS4}}$+5Xh through U27036) goes low. U27042, a 12-bit DAC, provides the ATTEN2 voltage used to set current on the Driver PC Board Assembly for attenuator midline pin diodes on the Attenuator PC Board Assembly. U27041 is accessed by U27001 when $\overline{\text{ENATT2}}$ ($\overline{\text{PCS4}}$+4Xh through U27036) goes low. Address lines A0-A3 are used to select the data transfer process. Refer to 2-2-1, Table 8. Both output levels are read from ADC U27045.

ADDRESS	OPERATION	BITS
4Eh	Load low nibble	D0-D3
4Dh	Load middle nibble	D4-D7
4Ch	Load low byte (optimum method)	D0-D7
4Bh	Load high nibble	D0-D3, D3 = MSB
47h	Transfer data	XX
43h	Load high nibble and transfer data (optimum method)	D0-D3, D3 = MSB

Attenuator #2 Operation Selection
Table 8

(h) Oscillator Compensation

Oscillator Compensation is based on the input voltage obtained from CR22001 on the Analog IF PC Board Assembly. R27037 (TEMP COMP ADJ) is adjusted at the factory and used in board level calibrations. Ambient temperature conditions are sensed by CR22001. The resulting voltage (2.73 V at 0° C, changes 33.94 mV/°C) is applied through Differential Amplifier U27034C to ADC U27045-1. Refer to para 2-2-1D(3)(i) for ADC operation. Information sent from U27045 causes U27001 to send adjustment data to DAC U27043, selected by $\overline{\text{ENOSC}}$ ($\overline{\text{PCS4}}$+2Xh through U27036) going low. U27043 provides a 0 to 10 V output. Operational Amplifier U27050 and associated components offset, scale and low-pass filter to achieve the desired +2 to +8 Vdc output. Output level is read from ADC U27045.

(i) Analog-to-Digital Converter

ADC U27045 is used for both normal operation and Self Test operation. Refer to 2-2-1, Table 9 for analog input description.

ADC sequence is:

STEP	ACTION

1. U27001 selects channel address with $\overline{\text{PCS3}}$+1X through Control Decoder U27037 and, with $\overline{\text{WR}}$ active, through NOR Gate U27038B (ADLTCH). The high output is sent to U27045-22 along with specific lower address (A0-A2), latching the desired channel to the ADC.

STEP ACTION

2. The start A/D conversion command is sent using address $\overline{PCS3}$+0Xh through U27037, and with $\overline{WR}$ active, through NOR Gate U27038C (SOC). The high output is sent to U27045-6. Conversion begins and End of Conversion (EOC) line to Status Buffer U27026 goes low (within 18 µs from when start command was issued).

3. U27001 polls the EOC signal from the Status Buffer and when the conversion is finished (≈48µs), EOC goes high.

4. Data is read from output Buffer U27046 using address $\overline{PCS3}$+2Xh through U27037, and with $\overline{RD}$ active, through NOR Gate U27038D (DEN). The high output is sent to U27045-9 and through Inverter U27038A to activate U27046. Two data reads are required to receive all 10 bits. Data is sent out in the following fashion:

Data Bit Locations:		D7	D6	D5	D4	D3	D2	D1	D0
First Read:	Bit #	10	9	8	7	6	5	4	3
Second Read:	Bit #	2	1	X	X	X	X	X	X

Bit 10 = MSB, Bit 1 = LSB

INPUT	ADDRESS	DESCRIPTION
PHOTO RES Channel 0	$\overline{PCS3}$+10h	Voltage across Photo Resistor R13001 (Front Panel LED PC Board Assembly), set by ambient light conditions, is used in making Backlight Control adjustments.
RF DETECT Channel 1	$\overline{PCS3}$+11h	Provides indication if RF carrier is present (Self Test). 2.5 V (±0.125 V) indicates passing status (only active in CW mode).
Channel 2	$\overline{PCS3}$+12h	Not used
OSC T RD Channel 3	$\overline{PCS3}$+13h	Voltage across Diode CR19001 (Analog PC Board Assembly), controlled by ambient temperature conditions, is used in making Contrast Control and Oscillator Compensation adjustments.
LO DETECT RD Channel 4	$\overline{PCS3}$+14h	Local Oscillator Detect (Self Test), Pass-constant level between 0.35 and 3.1 Vdc, Fail-oscillation (at ≈7.5 Hz) or level outside Pass voltage window (0 to 0.35, 3.1 to 4.14 V).
ATTEN1 BIT Channel 5	$\overline{PCS3}$+15h	Provides level of Attenuator #1 DAC output (DAC output ÷ 2.5 [± 10%])
ATTEN2 BIT Channel 6	$\overline{PCS3}$+16h	Provides level of Attenuator #2 DAC output (DAC output ÷ 2.5 [± 10%])
OSC COMP BIT Channel 7	$\overline{PCS3}$+17h	Provides oscillator compensation level (DAC output ÷ 2.5 [± 10%])

Analog Input to ADC Description
Table 9

(j) Status Buffer

Status Buffer U27026 enables the current condition of several signals to be read and is accessed with address $\overline{PCS0}$+0Xh through U27008. Refer to 2-2-1, Table 10.

BIT #	DEFINITION	SETTING	RESULT
D0	Current state of INTERR LED output from LED Control Register	0	LED is Off
		1	LED is On
D1	Current state of REPLY LED output from LED Control Register	0	LED is Off
		1	LED is On
D2	Conversion status of ADC (EOC)	0	Conversion in progress
		1	Conversion complete
D3	Ready status of DSP on Digital IF PC Board Assembly	0	DSP not ready
		1	DSP ready and working
D4	Monitor Enable status (JTB27001)	0	Enter Monitor (jumper installed)
		1	Normal operation (jumper not installed)
D5	ac Power status (CHARGE LED)	0	ac Power connected (Q27008 activated)
		1	ac Power not connected (Q27008 turned Off)
D6	Battery Charge Level status (BATTEST)	0	Battery ≈70% discharged (≈36 minutes left)
		1	Battery is charged
D7	Current state of LO CONTROL output from LED Control Register	0	Local Oscillator is enabled
		1	Local Oscillator is shut down

Status Buffer Bit Definition
Table 10

(k) LED Control Register

LED Control Register U27040 controls INTERR Indicator (18), REPLY Indicator (20), Local Oscillator and Digital IF PC Board Assembly reset operation. Refer to 2-2-1, Table 11. U27040 is accessed with address $\overline{PCS4}$+3Xh through U27036.

BIT #	DEFINITION	SETTING	RESULT
D0	Interrogation LED (INTERR Indicator [18])	0	Sets LED ready for turn On
		1	Initially Off or turns LED On for timed period
D1	Reply LED (REPLY Indicator [20])	0	Sets LED ready for turn On
		1	Initially Off or turns LED On for timed period
D2	LO Control	0	Enables Oscillator
		1	Shuts down Oscillator
D3	DSP Reset	0	Enables Digital IF PC Board
		1	Resets Digital IF PC Board
D4 to D7	Not used		

LED Control Register Bit Definition
Table 11

LED bit locations D0 and D1 are set high on power-up. An LED is turned on by writing zero and then one to the respective bit location in the control register. The zero to one transition triggers One-Shot Timer U27047. The high level output from U27047, timed for ≈62 ms, activates transistor Q27006 or Q27007 turning on the respective indicator.

(l) Digital IF PC Board Assembly Access

DPR U26007 on the Digital IF PC Board Assembly is accessed using $\overline{MCS0}$. Access is controlled by PAL U27029. DIR goes high to activate data lines through Transceiver U27009. $\overline{MEMR}$ goes low to read DPR or $\overline{MEMW}$ goes low to write to DPR.

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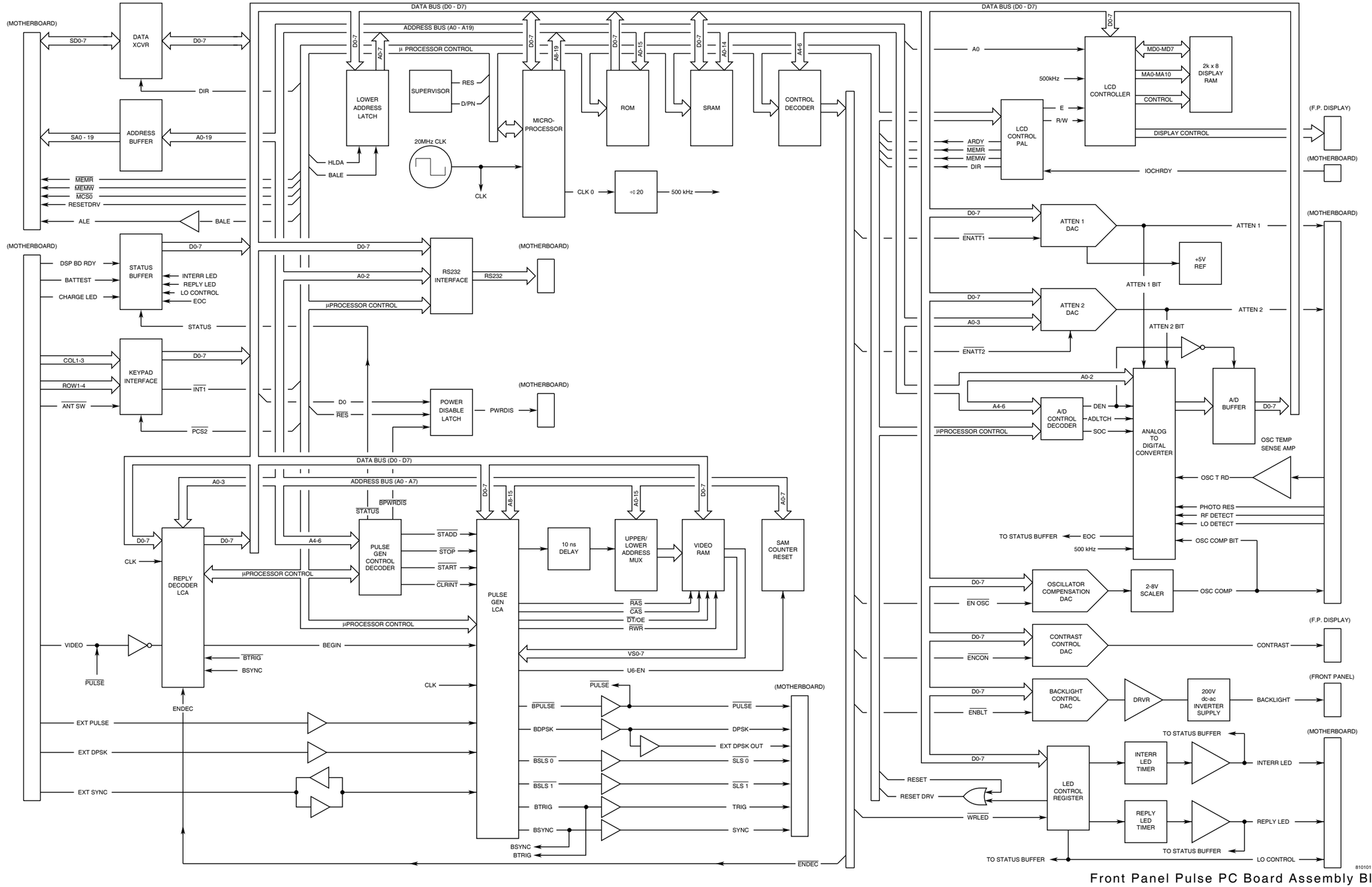
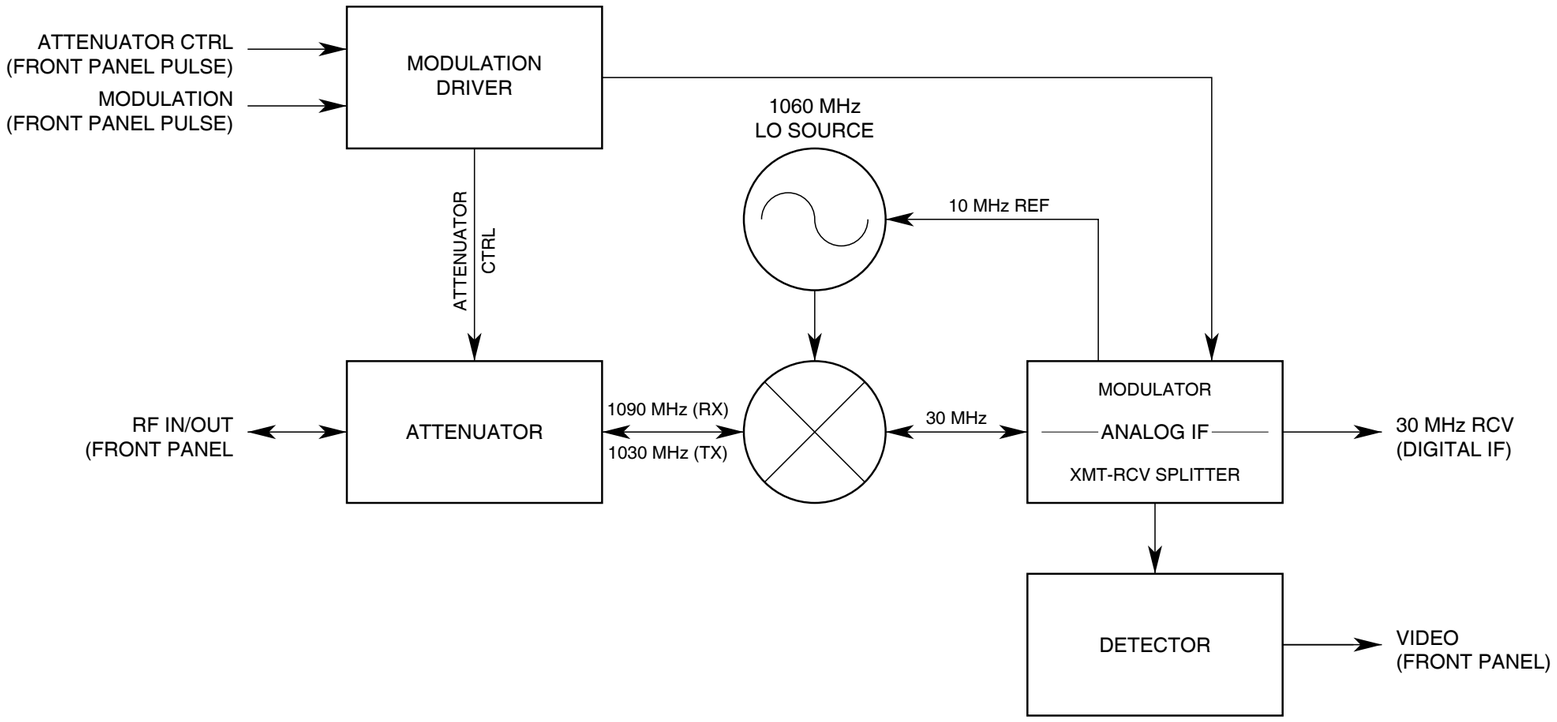


Front Panel Pulse PC Board Assembly Block Diagram
Figure 7



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RF Assembly Block Diagram
Figure 8

(4) RF Assembly (2-2-1, Figure 8)

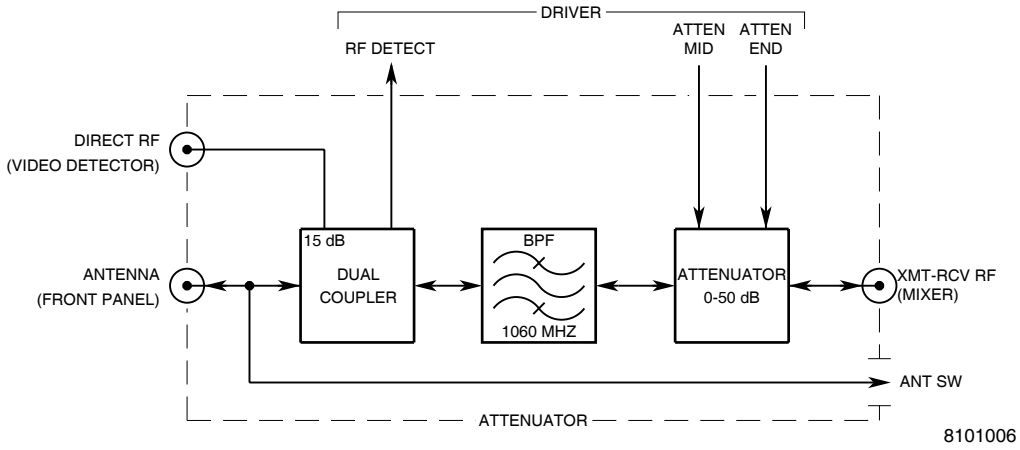
The RF Assembly consists of:

SSB Assembly
Driver PC Board Assembly
Detector Assembly
Analog IF Assembly

(a) SSB Assembly

The Single-Sideband (SSB) Assembly provides a two-way conversion between an IF of 30 MHz and an RF of 1030 MHz (transmit) or 1090 MHz (receive). The SSB Assembly consists of the Attenuator PC Board Assembly, LO Source PC Board Assembly and Mixer PC Board Assembly.

1 Attenuator PC Board Assembly (2-2-1, Figure 9)



Attenuator PC Board Assembly Block Diagram
Figure 9

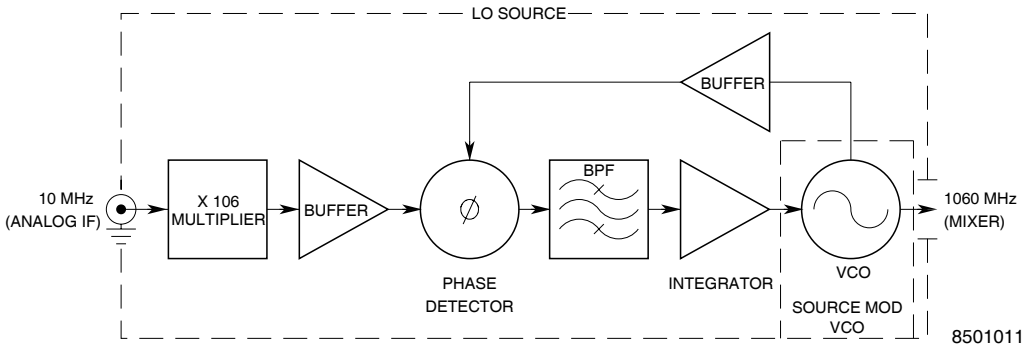
The Attenuator PC Board Assembly provides 0 to 50 dB of variable attenuation for measurement and testing purposes. The Attenuator PC Board Assembly consists of a dual coupler, bandpass filter and pin diode attenuator.

Dual Coupler HY31001 provides two RF signals, 15 dB down from the calibrated level at the ANTENNA Connector (J10057) (16). On transmit, one signal drives biased Diode Detector CR31001. CR31001 provides a dc level proportional to RF level and is used for the RF Detect test (Self Test). On receive or transmit, the signal is coupled, 15 dB down, to the RF I/O Connector (J10058) (15) through the Video Detector PC Board Assembly and Power Termination Assembly.

Microstrip Bandpass Filter HY31002 rejects signals outside the 300 MHz bandwidth (passes 910 to 1210 MHz signals).

The pin diode attenuator consists of four pin diodes (CR31003-CR31006) and associated components. The pin diodes are spaced 1/4 wavelengths apart and act as current controlled resistors. The Driver PC Board Assembly supplies the controlling current. Midline diodes (CR31004 and CR31005) provide most of the attenuation and end line diodes (CR31003 and CR31006) match the circuit. C31013 and C31015 (ATTEN 1060 MHz ADJ) tune out series inductance.

2 LO Source PC Board Assembly (2-2-1, Figure 10)



LO Source PC Board Assembly Block Diagram
Figure 10

The LO Source PC Board Assembly provides a 1060 MHz signal using a Voltage Controlled Oscillator (VCO). The frequency is kept tuned by a Multiplier, Phase Detector, Error Amplifier (Integrator) and Temperature Compensator.

The Digitally Controlled Crystal Oscillator (DCXO) from the Analog IF Assembly provides the 10 MHz frequency reference to the Multiplier. The reference signal drives the base of high current amplifier Q24002. Current controller Q24001 uses the regulated +11 V from the Driver PC Board Assembly to bias Q24002. The high level current output from Q24002 drives the multiplying veractor, Snap Diode CR24002. R24049 sets the voltage reference for CR24002. L24002 and C24004 provide impedance matching to increase the multiplying efficiency of CR24002. CR24002 generates 10 MHz spectral lines. C24005 and Z24001 form a Tank Circuit tuned to 1060 MHz, enhancing the 106th harmonic. The signal, monitored at TP16002, is fed into a three-stage linear Buffer amplifier consisting of saturable transistors, Q24003; Q24004 and Q24005. The Buffer amplifier, tuned to 1060 MHz, increases the power of the desired harmonic and drives an input to Phase Detector HY24001.

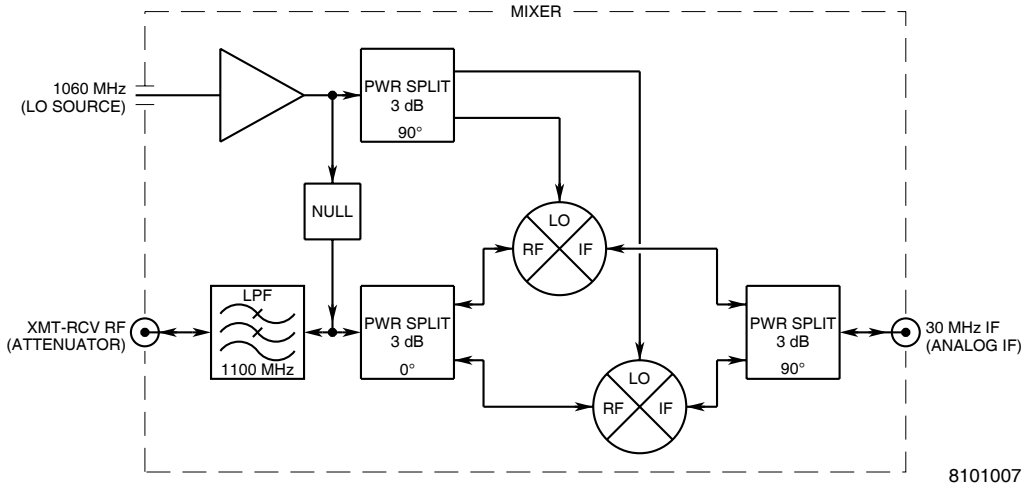
The other HY24001 input is from the Voltage Controlled Oscillator (VCO). Oscillating transistor Q24006, driven with a regulated +11 V from the Driver PC Board Assembly, is matched to the frequency determining element, Resonator Z24013 with Z24024, Z24025, Z24026, C24027, C24028 and C24029. Temperature compensator C24047 and Varactor CR24004 keep the oscillator tuned to 1060 MHz. Power is coupled off the oscillator through Z24014 and is fed through a Buffer amplifier, composed of saturable transistors Q24007, Q24008 and Q24009. The Buffer, also tuned to 1060 MHz, drives the local oscillator input to HY24001.

HY24001 and CR24003 form a Phase Detector providing a dc error voltage proportional to the phase difference detected between the VCO and Multiplier inputs. This voltage is filtered by Bandpass Filter C24021, L24006 and C24022 and sent to Integrator U24001.

When the output frequency of the VCO is the same as the output frequency of the Multiplier (Reference), the Phase Detector voltage (checked at TP16003) output to U24001 is minimal, causing negative feedback. U24001 and associated circuitry act as a phase-locked loop filter. When the frequencies of the VCO and Multiplier become different, U24001-3 becomes more positive. As the frequencies continue to be different, U24001 becomes a Wien Bridge Oscillator. The ac output is fed to the VCO tuning Varactor CR24004. CR24004 adjusts the resonating frequency, fed to HY24001, until error voltage is reduced down and U24001 becomes a phase-locked loop filter again. R24022 (OFFSET) sets a voltage level compensating for imbalances in the Phase Detector and/or Buffers and R24025 (DEVIATION) sets the ac deviation voltage limit to prevent the VCO from setting on the 105th or 107th harmonics.

Q24010 and Q24011 provide temperature compensation. While Q24010 exponentially increases current with temperature, Q24011 is the high impedance load providing temperature compensated voltage to VCO Varactor CR24004. VCO Tune Voltage, nominally 4 Vdc, is checked at TP16001 and is set by R24026 (TUNING).

3 Mixer PC Board Assembly (2-2-1, Figure 11)



Mixer PC Board Assembly Block Diagram
Figure 11

The Mixer PC Board Assembly uses the 1060 MHz source signal to convert the 30 MHz transmit signal to 1030 MHz and the 1090 MHz receive signal to 30 MHz. The Mixer PC Board Assembly consists of a low-pass filter, LO amplifier, mixer null and single-sideband mixer.

The low-pass filter (C18022, L18016, C18023, L18017 and C18024) removes odd harmonics passed by the Attenuator PC Board Assembly. The low-pass filter consist of a lumped element five pole filter with an elliptical response and provides 1.5 GHz of bandwidth.

The LO amplifier (Q18001, Q18002, Q18003, Q18004 and associated components) provides the necessary gain (≈20 dBm output) to drive the single-sideband mixer after driving the mixer null. Input from the LO Source PC Board Assembly (≈0 dBm) is fed to base of transistor Q18002. Q18002 is constant-current biased through Q18004 collector for a gain of ≈10 dB at base of Q18003. Q18003 is constant-current biased through Q18001 collector for another gain of ≈10 dB.

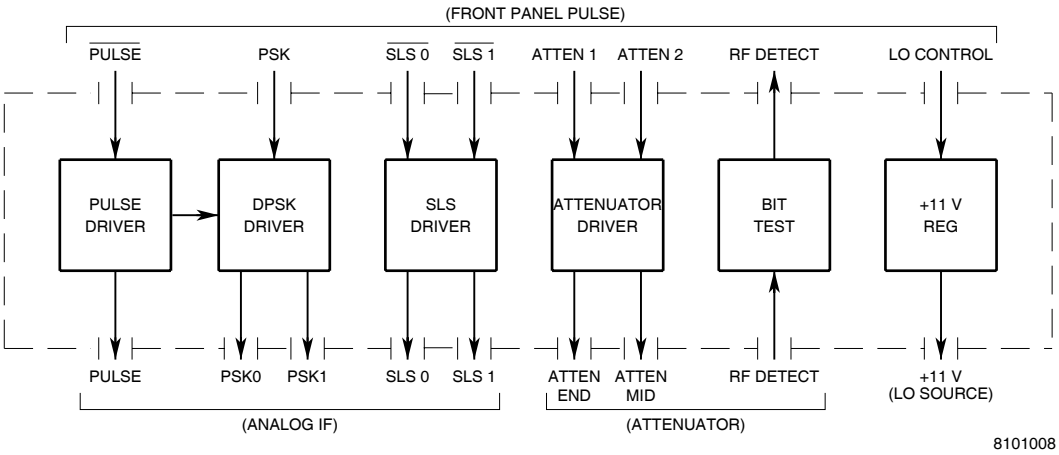
The mixer null adds four vectors, set 90° apart with phase shifts along Transmission Line HY18001. The amplified LO source signal is fed into discrete splitter (L18020, C18031, R18022, L18021 and C18032). One signal is sent to the single-sideband mixer. The other is used as a reference by the mixer null. HY18001 and the summing network filter out 1060 MHz at any phase from the transmit and receive signals going through the single-sideband mixer at Power Splitter HY18002. R18007 and R18008 (1060 MHz NULL ADJ) control the level. L18018 and L18019 tune out stray capacitance on adjusting resistors.

The single-sideband mixer splits the transmit (30 MHz IF), receive (1090 MHz) and LO source (1060 MHz) signals into two each. The resulting signals are phase shifted and summed together, canceling the image sideband (upper sideband on transmit, lower sideband on receive). The LO source signal is split by quadrature microstrip HY18003. One signal at 0° is fed into High-Level Mixer MXR18002 and the other signal at 90° is fed into High-Level Mixer MXR18001. C18034 (1090 MHz NULL PHASE ADJ) sets phase of LO source signal input to MXR18001 for complete sideband cancellation.

On transmit, the 30 MHz signal from the Analog IF PC Board Assembly is split by T18001, C18017 and R18014. The two signals, 90° apart, pass through all-pass filters tuned to maintain equal levels (R18013 and R21015, 1090 MHz NULL AMPLITUDE ADJ) and 90° separation (C18013 and C18015, 1090 MHz NULL PHASE ADJ) One signal (in phase) is fed into MXR18002. MXR18002 mixes the 30 MHz with the 1060 MHz for a mixed output of 1090 MHz and 1030 MHz. The other signal (90° out of phase) is fed into MXR18001. MXR18001 mixes the 30 MHz at 90° with the 1060 MHz at 90° for an output of 1090 MHz at 180° and 1030 MHz at 0°. The signals are added together through Power Splitter HY18002 with the 1090 MHz signals canceling each other leaving the 1030 MHz transmit signal.

On receive, the 1090 MHz signal from the Attenuator PC Board Assembly is split through Power Splitter HY18002. One signal is fed into MXR18002. MXR18002 mixes the 1090 MHz with the 1060 MHz (both in phase) for a mixed output of 30 MHz. (2150 MHz is out of bandwidth.) The other signal is fed into MXR18001. MXR18001 mixes the 1090 MHz at 0° with the 1060 MHz at 90° for an output of 30 MHz at -90°. Signals are sent through the respective all-pass filters and are added together through T18001. Adding the 90° separation factor sets the 30 MHz signal from MXR18001 back to 0°.

(b) Driver PC Board Assembly (2-2-1, Figure 12)



Driver PC Board Assembly Block Diagram
Figure 12

The Driver PC Board Assembly drives the modulating and level control signals from the Front Panel Pulse PC Board Assembly to the Analog IF PC Board and Attenuator PC Board Assemblies. The Driver PC Board Assembly also provides the +11 V for the LO Source PC Board Assembly, the voltage to bias pin attenuator diodes on the Video Detector PC Board Assembly and voltage sources from the Power Supply Assembly to the rest of the RF Assembly. The Driver PC Board Assembly consists of the attenuator drivers, +11 V regulator, SLS level drivers, modulation drivers, RF BIT level driver and Direct Connect Power Adjust.

ATTEN2 line voltage from Front Panel Pulse PC Board Assembly (0 to 10 Vdc) across R20005 sets a voltage controlled current source supplying collector current for half of Q20001. The other half of Q20001 remains constant as determined by R20052 and R20009. Q20001 and associated components form a logarithmic converter. Q20002 and associated components form an exponential amplifier. Both amplifier circuits cascaded together form a power function converter with independent adjustments for gain (R20010, 50 dB ADJ OFFSET) and exponent (R20016, 10 dB ADJ SLOPE). R20009 (ZERO VOLT ADJ) allows independent adjustment of R20010 and R20016. Operational amplifier U20002B, set by power function converter (Q20002-1) and Q20003 feedback, biases Q20003, controlling current flow through midline attenuator diodes on the Attenuator PC Board Assembly. The output voltage of RT20002 and associated components provide temperature compensation for pin diode slope changes over temperature. ATTEN1 line voltage (0 to 10 Vdc from Front Panel Pulse PC Board Assembly) across linear converter amplifier controls the current through end line pin attenuator diodes on the Attenuator PC Board Assembly. Operational amplifier U20001A, set by ATTEN1 line voltage and Q20005 feedback inputs, biases Q20005, controlling current flow. R20019 (VSWR 50 dB ADJ) sets the reference current through Q20005.

Voltage regulator U20008 provides the +11 V to operate the Multiplier on the LO Source PC Board Assembly. U20008 is switched On or Off by the LED Control Register on the Front Panel PC Board Assembly.

SLS level drivers U20005B and U20005C invert the active low $\overline{SLS0}$ and $\overline{SLS1}$ signals from the Front Panel Pulse PC Board Assembly. The output signals, SLS0 and SLS1, bias the SLS gain amplifier output level diodes. Refer to 2-2-1, Table 13 for transmit gain settings.

Modulation drivers convert the modulating signals from the Front Panel Pulse PC Board Assembly to levels necessary to modulate the 30 MHz IF on the Analog IF PC Board Assembly. Active low $\overline{PULSE}$ is inverted by U20006C and sent to Analog IF PC Board Assembly as active high PULSE. $\overline{PULSE}$ is also inverted by U20006A to enable DPSK modulation. DPSK modulation is set according to 2-2-1, Table 12. Phase is only shifted when $\overline{PULSE}$ is active (during P_6 of Mode S interrogation).

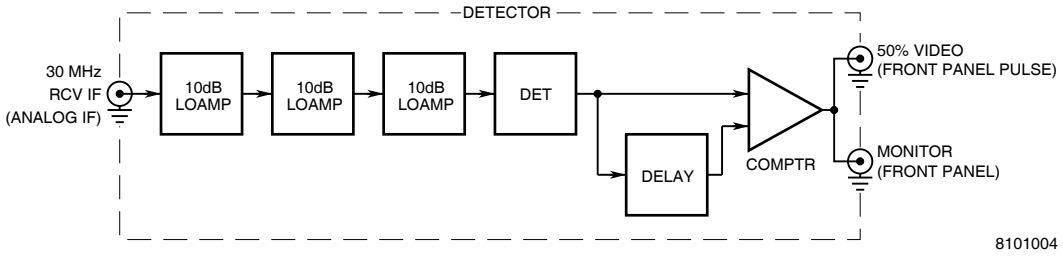
PSK	$\overline{PULSE}$	U20006A OUT	U20005D OUT	U20006B OUT/PSK1	U20005A OUT/PSK0	PHASE
Low	Low	High	High	Low	High	0°
High	Low	High	Low	High	Low	180°
High	High	Low	High	High	High	N/A
Low	High	Low	Low	High	High	N/A

DPSK Modulation
Table 12

The RF BIT level driver biases the diode detector CR31001 on the Attenuator PC Board Assembly. Transmit level detected across CR31001 is used in setting the RF DETECT line during the RF Detect test (Self Test). U20007 output is 0 Vdc when nothing is detected to 2.8 Vdc when transmit level is highest (MTL+4 dB with no attenuation). CR20001 matches U20007-3 input and R20029 (ZERO ADJ) adjusts bias to set U20007 output to 0 Vdc when nothing is transmitted (U20007-3 input ≈-0.3 Vdc). R20032 (RF DET ADJ) sets output voltage to correct level when Test Set is transmitting.

R20020 (DIRECT CONNECT POWER ADJ) adjusts the voltage from 0 to +12 Vdc to bias the pin attenuator diode on the Video Detector PC Board Assembly. R20020 calibrates the RF I/O Connector (J10058) (15) level to -48.25 dB relative to the ANTENNA Connector (J10057) (16) level.

(c) Detector Assembly (2-2-1, Figure 13)



Detector Assembly Block Diagram
Figure 13

The Detector Assembly converts the 30 MHz, pulse modulated input from the Analog IF PC Board Assembly to a TTL level output, preserving original pulse width. The TTL level signal is sent to the Reply Decoder on the Front Panel Pulse PC Board Assembly for decoding. The output signal is monitored through the MONITOR Connector (J10056) (19) on the Front Panel Assembly. The Detector Assembly has a detection range of ≈30 dB (-27 dBm to +3 dBm). Detector Assembly circuits, located on the Detector PC Board Assembly, include the Logarithmic Amplifiers, Detector and Comparator.

1 Logarithmic Amplifiers

The Detector PC Board Assembly has three stages of cascade coupled Logarithmic Amplifiers (Q21001, Q21002, Q21003 and associated components) providing a total gain of ≈30 dB. Each amplifier has ≈10 dB gain, calculated by the collector impedance (set by resistors R21004, R21011 and R21018) divided by the emitter impedance. The resting current through emitter logging diodes (CR21001, CR2002 and CR21003) shunts the emitter resistance, effectively causing the small emitter impedance to change with the input level. With low input levels, emitter impedance is low and gain is high. As input level increases, emitter impedance increases logarithmically and gain decreases, approaching unity gain until compression is reached.

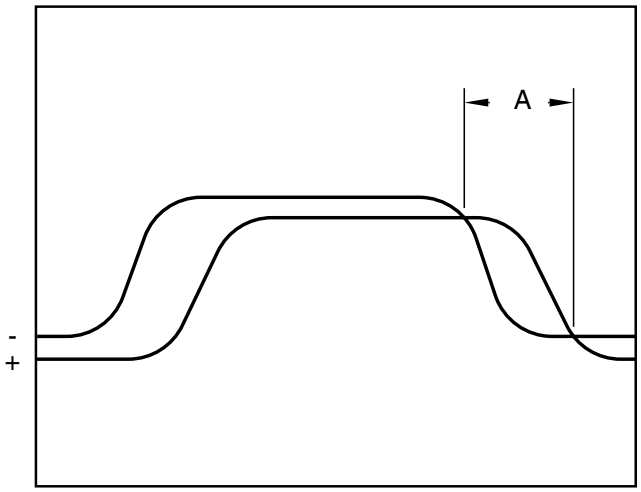
2 Detector

The balanced Detector preserves envelope detection efficiency and consists of an unbalanced to balanced Transformer T21001, Diode CR21004, dual transistor buffer (Q21005 and Q21008) and detector filter (C21018, L21006, C21019, C21020, L21007, C21021, C21022 and R21039). CR21004 balances the output of T21001 and provides a 60 MHz positive half-wave, the width of the modulating pulse, to the dual transistor buffer. The detector filter has a 6.5 MHz bandwidth and a flat time delay response to preserve pulse shape. The detector filter removes the 60 MHz from the detected pulse.

3 Comparator

After detection, the signal is split into two paths: primary and delayed. Buffers Q21008 and Q21009, provide the load for the detector filter. The delayed signal at Q21009 emitter is set through the delay filter (C21024, L21008, C21025, C21026, L21009, C21027, L21010 and C21028). The delay filter has a bandwidth of ≈10 MHz and a flat time delay of 120 ns. The delayed signal is referenced using a resistor network (R21060 and R21046) and applied to the positive inputs to Comparators U21001A, U21001B and U21004A. The primary signal is split. One primary signal is dc adjusted by R21061 to provide a higher level than the delayed signal and is applied to the negative input to trailing edge Comparator U21001A. Refer to 2-2-1, Figure 14 for trailing edge comparator input signals. The other primary signal, applied to the negative input to leading edge Comparator U21001B, is set lower than the delayed signal. Refer to 2-2-1, Figure 15 for leading edge comparator input signals. When preserving correct pulse width, slicing occurs at the 50% amplitude points for a linear pulse. Offsetting input signals cause the comparators to slice pulse 6 dB down (≈-0.15 V), compensating for the level set by the Logarithmic Amplifiers. Comparator outputs provide the clocks for D Flip-Flops U21002A and U21002B. The pulses, shown in 2-2-1, Figure 16; have widths about equal to the filter delay (A and B) and are spaced (rising edge to rising edge) approximately equal to the input pulse width minus the filter delay (C). U21002A, triggered by the leading edge clock, has a negative pulse output to NAND Gate U21003A. U21002B, triggered by the trailing edge clock, resets U21002A through U21003B and U21003C. U21002A $\overline{Q}$ output provides the other input to NAND Gate U21003A. R21058 (PULSE WIDTH) and C21035 provide a timed delay in triggering the One-shot U21003D to reset U21002B. The timed delay provides compensation for the filter delay, offset between flip-flops and comparator delays. The original pulse shape is restored at the output of U21003A. Reset Comparator U21004A and associated circuitry reset U21002A at low signal levels when there is a high output (U21003A-3) with a low input (U21004A-4). The Detector Assembly output is sent to the Reply Decoder on the Front Panel Pulse PC Board Assembly and MONITOR Connector (J10056) (19) on the Front Panel Assembly, balanced by R21056 and R21057 for 50 Ω impedance matching.

NOTE: The leading edge comparator is set to be more sensitive than the trailing edge comparator to eliminate flip-flop reset during DPSK transitions.



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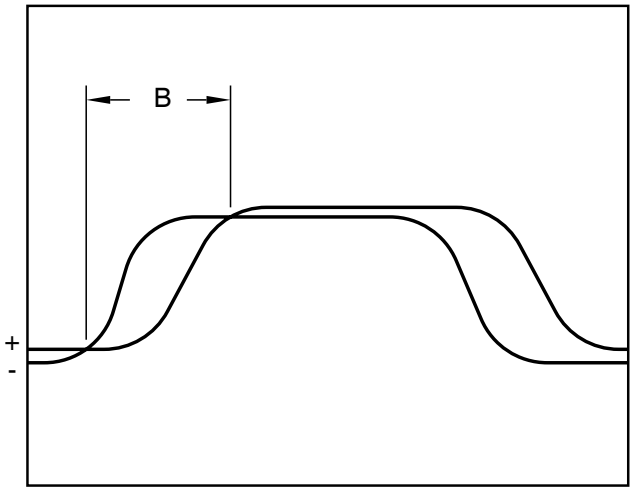
Trailing Edge Comparator Input Signals
Figure 14



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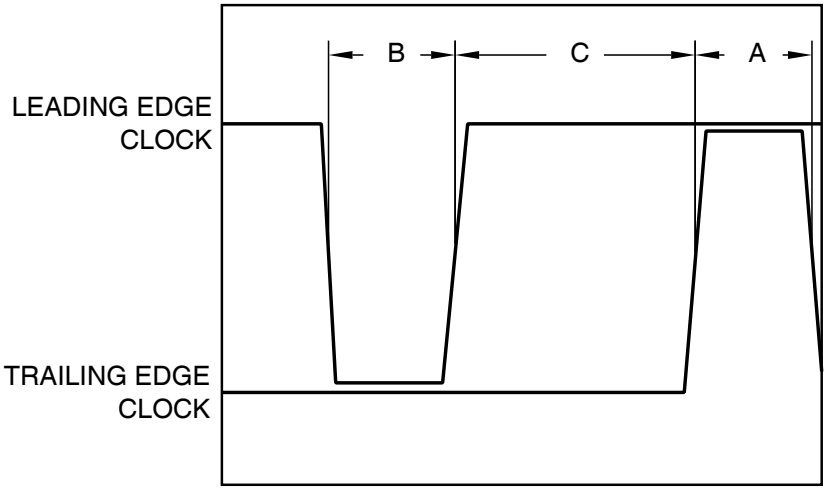
Leading Edge Comparator Input Signals
Figure 15



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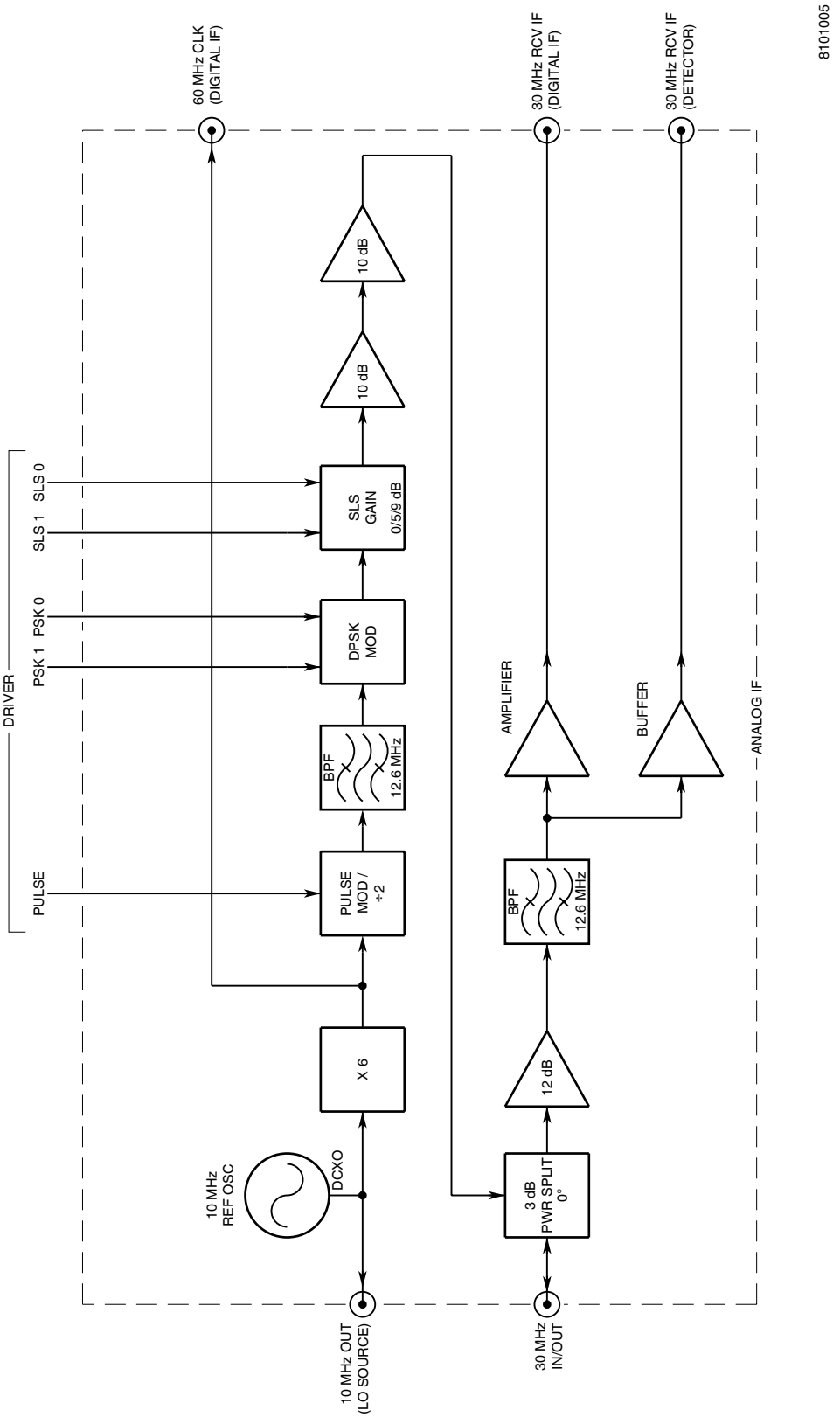
Detector Comparator Pulses
Figure 16



Analog IF Assembly Block Diagram
Figure 17

(d) Analog IF Assembly (2-2-1, Figure 17)

The Analog IF Assembly provides the 10 MHz reference used by the LO Source PC Board Assembly, provides the 60 MHz clock for the Digital IF PC Board Assembly, adds pulse and DPSK modulation to transmit signal and provides temperature compensation. The Analog IF Assembly circuits, contained on the Analog IF PC Board Assembly are: 10 MHz DCXO, Transmit and Receive.

1 10 MHz DCXO

The Digitally Controlled Crystal Oscillator (DCXO) provides a temperature compensated 10 MHz signal. The temperature of the oscillator is transmitted as a voltage to the ADC (Front Panel Pulse PC Board Assembly) by temperature sensor (CR22001). R22001 calibrates CR22001 output voltage. The Front Panel Pulse PC Board Assembly uses the temperature sensor voltage to set contrast on the DISPLAY (14) and provide the correct voltage to drive the DCXO for an output of 10 MHz (±30 Hz) across the temperature range (-20° to +50° C). The corrected voltage (+2 to +8 Vdc) across CR22002 drives the oscillator (Y22001, Q22001 and associated circuitry). C22004 adjusts frequency. At 27° C, R22001 is adjusted to provide +3 Vdc (FL19007) and C22004 is adjusted for 10 MHz (±3 Hz). After amplification by Q22002, the 10 MHz signal is split. One signal is buffered by Q22003 for 1 Vp-p output to the LO Source PC Board Assembly. The other signal is buffered by Q22004 in the Transmit section.

2 Transmit

The 10 MHz signal from the DCXO passes through low-pass filter (C22018, L22002 and C22019) to the X6 Multiplier Transistor Q22005. The 60 MHz bandpass filter (L22003, L22005, L22007, and associated components tuned to the sixth harmonic) provides 60 MHz with a 3 MHz bandwidth. After amplification by Q22006, the 60 MHz signal is split. One signal is buffered by Q22007 for 1 VP-P clock output to the Digital IF PC Board Assembly. The other signal clocks D Flip-Flop U22001B. U22001B, pins 8 and 12 are connected together to divide the signal by two for a 30 MHz output. The active low pulse signal from the Front Panel Pulse PC Board Assembly pulse modulates the signal through U22001B-10.

Resistors R22040 and R220041 reduce amplitude by 10 (checked at TP22003). The transmit bandpass filter is a four pole Bessel wideband filter consisting of four series resonators (C22036-L22010, C22038- L22011, C22040-L22012 and C22042-L22012). The transmit filter is centered at 30 MHz with a 3 dB bandwidth across 12.6 MHz. Signal delay, from U22001B through the transmit filter, shapes the transmit pulse by providing ≈70 ns of rise time.

Mixer MXR22001 adds DPSK modulation. Phase shifting of 0° or 180° is controlled by PSK0 and PSK1 inputs from the Driver PC Board Assembly and set by the Front Panel Pulse PC Board Assembly. When PSK0 is Low and PSK1 is High, phase shift is 0°. When PSK0 is High and PSK1 is Low, phase shift is 180°.

SLS gain amplifier Q22008 provides three output levels according to the SLS0 and SLS1 input lines from the Driver PC Board Assembly. SLS0 line level biases diodes CR22007 and CR22013). SLS1 line level biases diodes CR22006 and CR22012. Refer to 2-2-1, Table 13. R22049 (TX GAIN) adjusts output level of amplifier Q22009. Q22009 provides 10 dB gain for a maximum output of +10 dBm. Inductive coupler L22020 decreases current and increases voltage. Q22010 is the final output amplifier, increasing the 30 MHz IF signal level to ≈+18 dBm. Q22010 emitter circuitry (RT22001, R22055 and R22056) provides temperature compensation for the total transmit circuits. L22027 provides 40 dB isolation between transmit and receive. C22055 and R22062 (ISOLATION) are adjusted for maximum isolation.

SLS0	SLS1	GAIN	NAME	TO UUT
Low	Low	0 dB	SLS	MTL-5
High	Low	5 dB	Background	MTL
High	High	9 dB	Foreground	MTL+4
Low	High	Not Applicable		

Transmit Gain Settings
Table 13

3 Receive

The receive signal, 30 MHz IF from the Mixer PC Board Assembly, is reduced 3 dB by L22027 and applied to Amplifier Q22011. Q22011 amplifies signal 12 dB and provides a 50 Ω output to drive the receive filter. The receive bandpass filter is a four pole Bessel wideband filter comprises series resonators L22029-C22060, L22030-C22062, L22031-C22064 and L22032-C22066. The receive filter has a flat time domain response between the 3 dB points and is centered at 30 MHz with a 12.6 MHz bandwidth. Output is split into two signals. Q22013 buffers and sends one signal to the Detector PC Board Assembly through J19033. Emitter-follower Q22012 amplifies the other signal. R22073 (RX GAIN) adjusts received level. Q22014, with a 50 Ω output, drives the 30 MHz receive signal to the Digital IF PC Board Assembly through J17034 (≈+3 dBm). Q22014 emitter circuitry (RT22002, R22082 and R22084) provides temperature compensation for the total receive circuits.

(5) Front Panel Assembly

The Front Panel Assembly consists of:

Video Detector PC Board Assembly
Power Termination Assembly
Front Panel LED PC Board Assembly
LCD
Keypad

(a) Video Detector PC Board Assembly

The Video Detector PC Board Assembly provides a linear display of UUT replies on the oscilloscope when Test Set is directly connected to UUT. The Video Detector PC Board Assembly also provides a calibrated attenuation of the direct connection signal.

The direct connection receive signal from the Power Termination Assembly or transmit signal from the Attenuator PC Board Assembly is split by a resistive power splitter (R30010, R30002 and R30003). One signal is linearly detected by Schottky Barrier Diode CR30001. Capacitor C30003 is a printed element to provide for fast detection. The detected signal is sent to the REPLY VIDEO Connector (J10054) (17). On receive, the other signal has attenuation level set across a resistive divider (R30011 and R30012). Current through Pin Diode CR30002, controlled by the biasing voltage set on the Driver PC Board Assembly, provides ≈1 dB of attenuation adjustment. Attenuation level is calibrated for accurate power and MTL measurements. On transmit, the other signal is attenuated before splitting and going to the Power Termination Assembly.

(b) Power Termination Assembly

The Power Termination Assembly provides a 50 Ω termination for the UUT and protects the ATC-601-2 Test Set against excessive incoming power through the RF I/O Connector (J10058) (15). The Power Termination Assembly is in the transmit and receive circuit only when a direct connection with UUT is used. The Power Termination Assembly connects the RF I/O Connector (J10058) (15) through P/J28028 with the Video Detector PC Board Assembly through P/J28029.

Transmit and Receive signals are reduced 20 dB across Directional Coupler HY28001. Excessive incoming power and stray spikes are dissipated off through R28002. C22001 and L22001 keep the circuit frequency balanced for 50 Ω impedance.

(c) Front Panel LED PC Board Assembly

The Front Panel LED PC Board Assembly consists of three indicator circuits and a light sensor used in the LCD Backlight Control circuit.

The INTERR Indicator (18) illuminates red when an interrogation is transmitted. When activated, a ground on the emitter of Q27006 (Front Panel Pulse PC Board Assembly) completes the circuit across LED CR13001.

The REPLY Indicator (20) illuminates red when a valid reply is received. When activated, a ground on the emitter of Q27007 (Front Panel Pulse PC Board Assembly) completes the circuit across LED CR13002.

The CHARGE Indicator (1) illuminates only when the Battery Charger on the Power Supply Assembly is operating. The CHARGE Indicator (1) illuminates green (battery is >80% charged) when current flows from the +15 V source through LED CR13003 to the Power Supply Assembly (BATT CHARGER LED line). The circuit is completed through CR27010 and the activated transistors, Q27013 and Q14014.

The CHARGE Indicator (1) illuminates red (battery requires charging) when current flows from the Battery Charger on the Power Supply Assembly through CR27011 and the activated Q27015 to LED CR13003.

Voltage across light sensitive Photo Resistor R13001 is sent to the ADC on the Front Panel Pulse PC Board Assembly. The Front Panel Backlighting voltage to the LCD is adjusted accordingly.

(d) LCD (Modified LCD Display PC Board Assembly)

The LCD is a 64 line by 240 column dot display. The LCD requires 4.75 to 5.25 V (J12059-7) to run logic. +5 V is nominal for ATC-601-2. The LCD drive voltage required is -5.25 to -4.75 V (J12059-9). -5.1 V is nominal for ATC-601-2.

(e) Keypad

The Keypad, consisting of ten keys, is contained in the ATC-601-2 Overlay. When activated, each key momentarily closes contacts between a row ($\overline{\text{ROW}}$) line and column ($\overline{\text{COL}}$) line. Row and column lines go to the Front Panel Pulse PC Board Assembly. Keys operate with <20 ms switch bounce.

2. Calibration/Verification

A. General

VERIFICATION PROCEDURE PAGE

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CALIBRATION PROCEDURE PAGE

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Generator Image ---- 38
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Receive Power ---- 39
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Oscillator Compensation ---- 42
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Mixer Nulls ---- 45

(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-601-2 or any major function thereof fails to meet the performance specifications according to Appendix F, Calibration/Verification Procedures should be performed.

  If any failure occurs during performance of Verification Procedures, pertinent Calibration Procedures should be performed according to 2-2-2, Table 15.

- Module/Assembly Replacement

  If one or more ATC-601-2 assemblies are replaced, Calibration Procedures should be performed according to 2-2-2, Table 14.

- Annual Calibration/Verification

  Aeroflex recommends an annual Calibration/Verification on the ATC-601-2 to maintain proper testing standards.

(2) Controls, Connectors and Indicators

Refer to Appendix G for location of external Controls, Connectors and Indicators.

(3) Test Record

Calibration and Verification Data Sheets are provided for recording the results obtained while performing the Calibration or Verification Procedures.

NOTE: It is recommended the technician reproduce copies of the Calibration and Verification Data Sheets, rather than use copies in this manual.

		If this assembly is repaired or replaced, → / the following Calibration Procedures must be performed. ↓									
		Analog IF Assembly	Attenuator PC Board Assembly	Battery	Detector Assembly	Digital IF PC Board Assembly	Driver PC Board Assembly	Front Panel Pulse PC Board Assembly	LO Source PC Board Assembly	Mixer PC Board Assembly	Power Supply Assembly
Power Supply				●							●
RF Assembly	LO Source						●	●	●		●
	Attenuator		●				●	●			●
	Isolation Null	●	●						●	●	●
	Generator Output Power	●	●						●	●	●
	Generator Image	●	●						●	●	●
	LO Null	●	●						●	●	●
	Receive Image	●	●						●	●	●
	Receive Power	●	●						●	●	●
	Isolation Reset	●	●						●	●	●
	Detector Pulse Width	●			●						●
	Direct Connect Set	●					●				●
	RF Bit Detector Set	●	●				●	●	●	●	●
	Oscillator Compensation	●									●
System	Self Test	●	●	●	●	●	●	●	●	●	●
	Receive Power System Recheck	●	●			●			●	●	●
	Isolation System Recheck	●	●			●			●	●	●
	Generator Power System Recheck	●	●						●	●	●
	Mixer Nulls	●	●						●	●	●

Assembly Replacement Calibration Requirements
Table 14

If this Verification Procedure has failed, / the following Calibration Procedures must be performed.		Output Frequency	Output Level/UUT Receiver Sensitivity	Direct Connection	UUT Transmitter Frequency	UUT Transmitter Power
Power Supply						
RF Assembly	LO Source					
	Attenuator		●			●
	Isolation Null		●			●
	Generator Output Power		●			●
	Generator Image		●			●
	LO Null		●			●
	Receive Image		●			●
	Receive Power		●			●
	Isolation Reset					
	Detector Pulse Width					
	Direct Connect Set			●		
	RF Bit Detector Set		●			●
	Oscillator Compensation	●			●	
System	Self Test		●		●	
	Receive Power System Recheck		●		●	●
	Isolation System Recheck		●		●	●
	Generator Power System Recheck		●		●	●
	Mixer Nulls		●		●	●

Verification Failure Calibration Requirements
Table 15

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 A RUBBER MAT UNDERNEATH TECHNICIAN'S CHAIR.

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

(2) ESD

CAUTION: THE POWER SUPPLY ASSEMBLY, DIGITAL IF PC BOARD ASSEMBLY, FRONT PANEL PULSE PC BOARD ASSEMBLY, RF ASSEMBLY, AND FRONT PANEL ASSEMBLY 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.

(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) Performance

It is strongly recommended that personnel thoroughly read and understand all steps of the procedures to be performed and be familiar with the circuit under test. Knowledge of power, frequency and waveform to be expected at each test point is recommended.

NOTE: When one circuit provides the same pulse characteristic for different pulses, it is necessary to test the specifications for that characteristic only once.

(2) Test Equipment

Appendix B contains a list of test equipment suitable for performing any procedure contained in this manual. Other equipment meeting specifications listed in Appendix B may be substituted in place of recommended models.

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

(3) Disassembly

No disassembly is required to perform Verification Procedures. The Chassis Assembly must be removed from Case Assembly to perform Calibration Procedures. For better access, the RF Assembly is removed from Chassis Assembly in Calibration Procedures.

(4) Environment

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

D. Verification Procedures

NOTE: Pulse spacings are measured from rising edge to rising edge at the 50% amplitude points. Pulse widths are measured from rising edge to falling edge at the 50% amplitude points.

(1) Signal Generator

TEST EQUIPMENT:
1 3 dB Fixed Attenuator
1 Universal Timer/Counter
1 Measuring Receiver
1 Power Sensor

STEP	PROCEDURE

OUTPUT FREQUENCY

1. Connect Universal Timer/Counter through 3 dB Attenuator to ATC-601-2 ANTENNA Connector.
2. Set Universal Timer/Counter to measure 1030 MHz with 100 Hz resolution.
3. Press SELF TEST Key and either SELECT Key to enter Diagnostics screen.
4. Set ATC-601-2 Signal Type to ***CW,*** PRF to ***235*** and Attenuation to ***Ø***.
5. Press RUN/STOP Key to initiate test.
6. Verify frequency is 1030 MHz (±10.0 kHz). If not, perform Calibration Procedures according to 2-2-2, Table 15.
7. Press RUN/STOP Key to terminate test.
8. Disconnect Universal Timer/Counter from 3 dB Attenuator.

OUTPUT LEVEL

9. Connect Measuring Receiver through Power Sensor and 3 dB Attenuator to ATC-601-2 Antenna Connector.
10. Press RUN/STOP Key to initiate test.
11. Verify ATC-601-2 output is -7.6 dBm (±2.0 dB), considering 3 dB Attenuator. Record output for reference level. If not, perform Calibration Procedures according to 2-2-2, Table 15.

STEP PROCEDURE

12. Verify 2-2-2, Table 16; setting ATC-601-2 Attenuation accordingly. If ATC-601-2 output is incorrect, perform Calibration Procedures according to 2-2-2, Table 15.

SPECIFICATION	ATTENUATION	OUTPUT LEVEL
Output Level (-7 dBm) and Receiver Sensitivity (-69 dBm) (Antenna) MTL-A	***Ø***	-7.6 dBm (±2 dB)
Receiver Sensitivity (-77 dBm) (Antenna) MTL-A	***16***	-15.6 dBm (±2 dB)
Receiver Sensitivity (-67 dBm) (Direct) MTL-D	***23***	-19.15 dBm (±2 dB)
Receiver Sensitivity (-79 dBm) (Direct) MTL-D	***47***	-31.15 dBm (±2 dB)
Output Level (-57 dBm)	***1ØØ***	-57.6 dBm (±2 dB)
NOTE: UUT Receiver Sensitivity Specification Verification is based on the following three equations: Output Level = -7.6 - (ATTENUATION:)/2 MTL-A = Output Level - Cable Loss + Antenna Gain - Path Loss MTL-D = Output Level - 48.25		

Output Level/UUT Receiver Sensitivity
Table 16

13. Press RUN/STOP Key to terminate test.

DIRECT CONNECTION

14. Disconnect 3 dB Attenuator from ATC-601-2 ANTENNA Connector and reconnect to RF I/O Connector (BNC to TNC Adapter is required.)

15. Set ATC-601-2 Attenuation to ***Ø***.

16. Press RUN/STOP Key to initiate test.

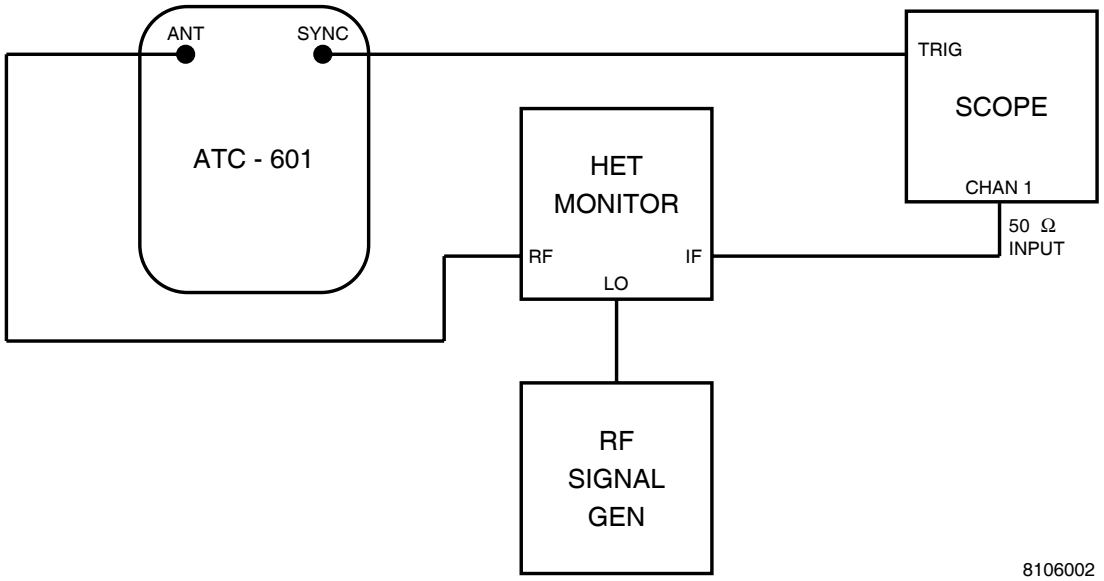
17. Verify output is reference from Step 11 minus 48.25 dB (±0.5 dB). If not, perform Calibration Procedures according to 2-2-2, Table 15.

18. Press RUN/STOP Key to terminate test.

19. Disconnect test equipment.

(2) Pulse Characteristics

TEST EQUIPMENT:
1 Heterodyne Monitor
1 Frequency Counter
2 Oscilloscopes
1 RF Signal Generator
1 Spectrum Analyzer



Pulse Characteristics Test Setup Diagram
Figure 18

STEP	PROCEDURE

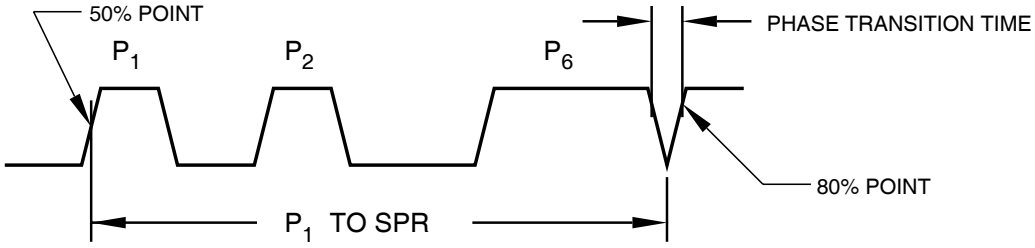
1. Connect test equipment according to 2-2-2, Figure 18.
2. Set Oscilloscope to view Channel 1 with a 20 MHz bandwidth limit.
3. Set RF Signal Generator for 1030 MHz at +5 dBm.

SPACING

4. Set ATC-601-2 Signal Type to ***ATC_A***, PRF to ***235*** and Attenuation to ***Ø***.
5. Press RUN/STOP Key to initiate test.
6. Verify P_1 to P_3 pulse spacing is 8.00 μs (±50 ns).
7. Press RUN/STOP Key to terminate test.
8. Set ATC-601-2 Signal Type to ***ATC_C***.
9. Press RUN/STOP Key to initiate test.
10. Verify P_1 to P_3 pulse spacing is 21.00 μs (±50 ns).
11. Press RUN/STOP Key to terminate test.
12. Set ATC-601-2 Signal Type to ***FMTØ*** and PRF to ***78***.
13. Press RUN/STOP Key to initiate test.
14. Verify P_1 to P_2 pulse spacing is 2.00 μs (±50 ns).

STEP PROCEDURE

15. Verify P_1 to P_6 pulse spacing is 3.50 µs (±50 ns).
16. Press RUN/STOP Key to terminate test.
17. Set ATC-601-2 Signal Type to ***FMT4_SPR_ON***.
18. Press RUN/STOP Key to initiate test.
19. Verify P_1 to Synchronous Phase Reversal (SPR) spacing is 4.75 µs (±50 ns). Refer to 2-2-2, Figure 19.



P_1 to SPR Spacing/Phase Transition Time
Figure 19

20. Press RUN/STOP Key to terminate test. Set ATC-601-2 Signal Type to ***ITM_ATC_A***.
21. Press RUN/STOP Key to initiate test.
22. Verify P_1 to P_4 pulse spacing is 10.00 µs (±50 ns).
23. Press RUN/STOP Key to terminate test.
24. Set ATC-601-2 Signal Type to ***ITM_MODES_C***.
25. Press RUN/STOP Key to initiate test.
26. Verify P_1 to P_4 pulse spacing is 23.00 µs (±50 ns).
27. Press RUN/STOP Key to terminate test.

WIDTHS

28. Set ATC-601-2 Signal Type to ***ATC_A***, PRF to ***235***.
29. Press RUN/STOP Key to initiate test.
30. Verify P_1 pulse width is 0.80 µs (±50 ns).
31. Press RUN/STOP Key to terminate test.
32. Set ATC-601-2 Signal Type to ***ATC_C***.
33. Press RUN/STOP Key to initiate test.
34. Verify P_3 pulse width is 0.80 µs (±50 ns).
35. Press RUN/STOP Key to terminate test.
36. Set ATC-601-2 Signal Type to ***FMTØ*** and PRF to ***78***.
37. Press RUN/STOP Key to initiate test.
38. Verify P_2 pulse width is 0.80 µs (±50 ns).

STEP	PROCEDURE

39. Press RUN/STOP Key to terminate test.
40. Set ATC-601-2 Signal Type to ***FMT4_SPR_ON***.
41. Press RUN/STOP Key to initiate test.
42. Verify P_6 (short) pulse width is 16.25 µs (±50 ns).
43. Press RUN/STOP Key to terminate test.
44. Set ATC-601-2 Signal Type to ***FMT16***.
45. Press RUN/STOP Key to initiate test.
46. Verify P_6 (long) pulse width is 30.25 µs (±50 ns).
47. Press RUN/STOP Key to terminate test.
48. Set ATC-601-2 Signal Type to ***ITM_ATC_A***.
49. Press RUN/STOP Key to initiate test.
50. Verify P_4 (short) pulse width is 0.80 µs (±50 ns).
51. Press RUN/STOP Key to terminate test.
52. Set ATC-601-2 Signal Type to ***ITM_MODES_C***.
53. Press RUN/STOP Key to initiate test.
54. Verify P_4 (long) pulse width is 1.60 µs (±50 ns).
55. Press RUN/STOP Key to terminate test.

RISE AND FALL TIMES

56. Set ATC-601-2 Signal Type to ***ATC_A***, PRF to ***235***.
57. Press RUN/STOP Key to initiate test.
58. Verify P_1 pulse rise time, from 10% amplitude point to 90% amplitude point on rising edge, is 50 to 100 ns.
59. Verify P_1 pulse fall time, from 90% amplitude point to 10% amplitude point on falling edge, is 50 to 200 ns.
60. Press RUN/STOP Key to terminate test.

PHASE MODULATION: TRANSITION TIME

61. Set ATC-601-2 Signal Type to ***FMT4_SPR_ON*** and PRF to ***78***.
62. Press RUN/STOP Key to initiate test.
63. Verify SPR transition time is between 80% points is ≤80 ns.
64. Set Oscilloscope to view P_6 and verify difference between highest and lowest transition amplitude peaks is <4 dB.
65. Press RUN/STOP Key to terminate test.

STEP PROCEDURE

AMPLITUDE LEVELS

66. Connect Spectrum Analyzer Input to ATC-601-2 ANTENNA Connector.

67. Set Spectrum Analyzer as follows:

CONTROL	SETTING
Frequency Band	0.01 to 1.8 GHz
Center Frequency	1030 MHz
Frequency Span/Div	Max
Resolution Bandwidth	Max
Frequency Span Mode	200 kHz/Div
Sweep Source	Internal
Sweep Trigger	Free Run
Sweep Time/Div	Auto
Reference Level	0 dBm
Input Attenuation	10 dB
Log Scale	2 dB/Div

68. Set ATC-601-2 Signal Type to ***CW_P4*** and PRF to ***235***.

69. Press RUN/STOP Key to initiate test.

70. Set and record reference point. Center signal on y axis with peak amplitude point resting on second major division above x axis.

71. Press RUN/STOP Key to terminate test.

72. Set ATC-601-2 Signal Type to ***CW_M5***.

73. Press RUN/STOP Key to initiate test.

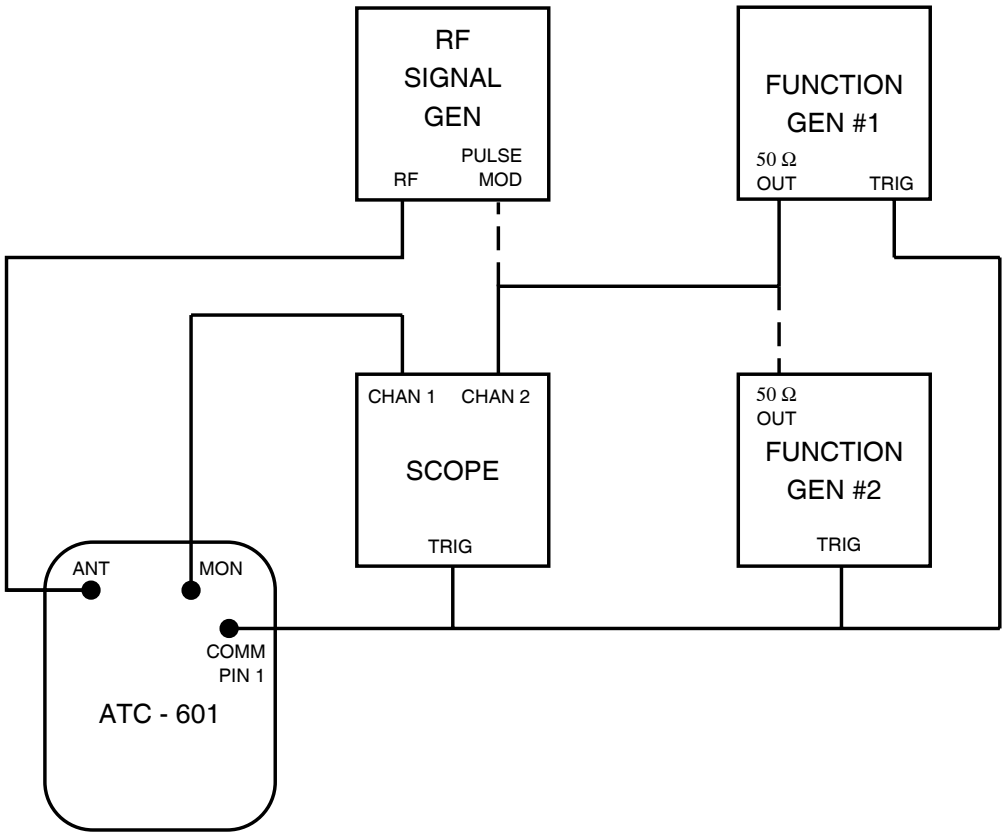
74. Verify difference in amplitude between reference point established in Step 70 and current signal position is -9 dB (±1 dB).

75. Press RUN/STOP Key to terminate test.

76. Disconnect test equipment.

(3) UUT Measurements

TEST EQUIPMENT:
1 3 dB Attenuator
2 Function Generators
1 Heterodyne Monitor
1 Measuring Receiver
1 Oscilloscope
1 Power Sensor
2 RF Signal Generators
1 Spectrum Analyzer
1 Waveform Generator



Frequency Measurement Test Setup Diagram
Figure 20

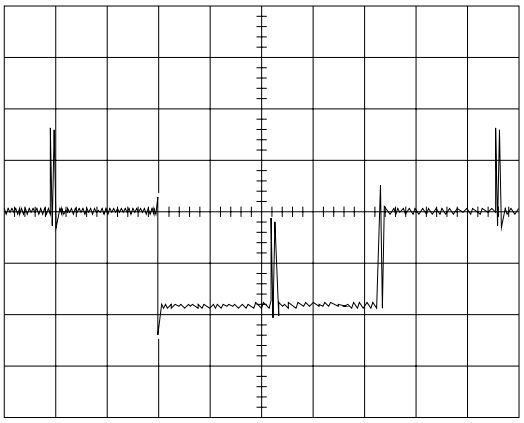
STEP	PROCEDURE

UUT TRANSMITTER FREQUENCY

1. Connect test equipment as shown in 2-2-2, Figure 20 with Function Generator #1 connected to Oscilloscope Channel 2.
2. Press AUTO TEST Key. Use SELECT Keys to enter Frequency Test screen.
3. Press RUN/STOP Key to initiate test.

STEP PROCEDURE

4. Set Function Generator #1 as follows:
   - Function to pulse and PRF to 10 kHz.
   - Output for two 0.45 μs (±0.1 μs) wide pulses, 20.3 μs (±0.1 μs) apart (simulated Mode A reply, F_1-F_2). Set level to ≈1.5 Vdc peak.
   - To be triggered off leading edge of sync pulse from ATC-601-2 COMM Connector, Pin 1.
   - For pulse pair to start 3 μs (±0.5 μs) after leading edge of P_3 (simulated Mode A reply delay).
   - Disconnect Function Generator #1 from Oscilloscope.
5. Connect Function Generator #2 to Oscilloscope Channel 2 and set Function Generator #2 as follows:
   - Output for 118 Hz (±10 Hz) square wave.
   - To be triggered off leading edge of sync pulse from ATC-601-2 COMM Connector, Pin 1.
   - Disconnect Function Generator #2 from Oscilloscope.
6. Connect Function Generator #1 and Function Generator #2 to Oscilloscope Channel 2 using BNC T-Connector. Adjust Function Generator #2 amplitude and dc offset so Function Generator #2 pulses on Function Generator #1 pulses are below zero volts (simulated 50% reply to keep attenuation at minimum level). Refer to 2-2-2, Figure 21.



UUT Transmitter Frequency Modulation Signal
Figure 21

7. Disconnect Function Generators from Oscilloscope Channel 2. Connect Function Generators to RF Signal Generator pulse modulation input. Set RF Signal Generator output for 1087 MHz at -4.6 dBm with external pulse modulation.
8. Disconnect RF Signal Generator from ATC-601-2 ANTENNA Connector.

   NOTE: Disconnecting RF Signal Generator when starting actual test, sets ATC-601-2 to maximum sensitivity.
9. Reconnect RF Signal Generator to ATC-601-2 ANTENNA Connector.
10. Verify frequency measurement (±50 kHz). If not, perform Calibration Procedures according to 2-2-2, Table 15.

STEP PROCEDURE

11. Set RF Signal Generator to 1090 MHz.

12. Verify frequency measurement (±50 kHz). If not, perform Calibration Procedures according to 2-2-2, Table 15.

13. Set RF Signal Generator to 1093 MHz.

14. Verify frequency measurement (±50 kHz). If not, perform Calibration Procedures according to 2-2-2, Table 15.

15. Press RUN/STOP Key to terminate test.

16. Disconnect test equipment.

UUT TRANSMITTER POWER

17. Connect RF Signal Generator through 3 dB Attenuator to ATC-601-2 ANTENNA Connector.

18. Press SELF TEST Key. Press one of SELECT Keys to enter Diagnostics screen.

19. Set ATC-601-2 Signal Type to ***DSP_MEASURE***, PRF to ***118*** and Attenuation ***Ø***.

20. Set RF Signal Generator for ATC-601-2 input of 1090 MHz at -4.6 dBm, considering 3 dB Attenuator.

21. Press RUN/STOP Key to initiate test.

22. Verify ***128*** (Counts) is displayed in Diagnostics screen DATA: field. If not, perform Calibration Procedures according to 2-2-2, Table 15.

23. Verify 2-2-2, Table 17; setting ATC-601-2 Test Set and RF Signal Generator accordingly. If ATC-601-2 fails to display correct count number, perform Calibration Procedures according to 2-2-2, Table 15.

24. Press RUN/STOP Key to terminate test.

25. Disconnect test equipment.

SPECIFICATION	RF INPUT LEVEL	ATTENU-ATION	DATA: COUNT (±1 dB)
+57 dBm (Antenna)	-4.6 dBm	***Ø***	***128*** (***114*** to ***143***)
+48.5 dBm (Antenna)	-12.9 dBm	***Ø***	***Ø49*** (***Ø44*** to ***Ø55***)
+46.5 dBm (Direct)	-1.75 dBm	***2Ø***	***Ø56*** (***Ø5Ø*** to ***Ø63***)
+59 dBm (Direct)	+10.75 dBm	***4Ø***	***Ø75*** (***Ø67*** to ***Ø84***)

NOTE: UUT Transmitter Power Specification Verification is based on the following three equations:

RF Input Level = 20 • log (count) + (ATTENUATION:)/2 - 46.74
ERP = Input Level + Cable Loss - Antenna Gain + Path Loss
Direct Connection Peak Pulse Power = RF Input Level + 48.25

Power Measurement Data
Table 17

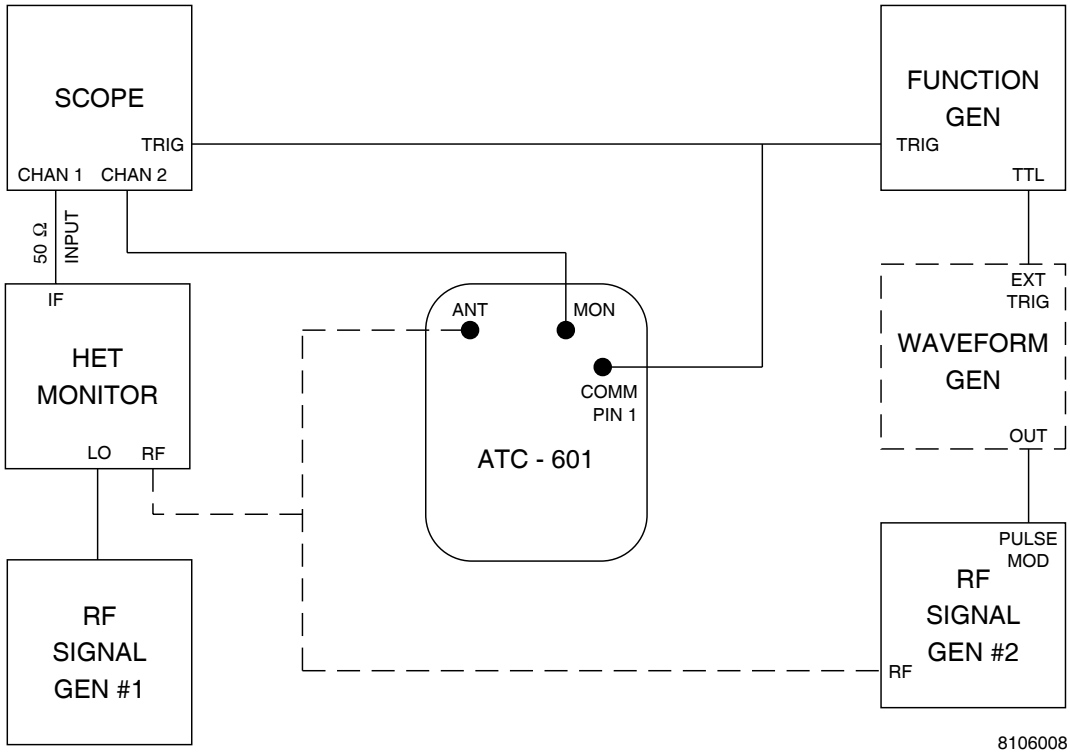
STEP PROCEDURE

UUT RECEIVER SENSITIVITY

NOTE: UUT receiver sensitivity level is directly related to output level. Both are verified in para 2-2-2F(1), Steps 9 through 13.

REPLY DELAY

26. Connect test equipment as shown in 2-2-2, Figure 22, initially connecting pulse modulated RF Signal Generator #2 to Function Generator and ATC-601-2 ANTENNA Connector. Connect LO source RF Signal Generator #1 to Heterodyne Monitor.
27. Press SETUP Key to enter Setup Menu.
28. Set RANGE and HEIGHT fields to ***Ø***.
29. Press SELF TEST Key. Press one of SELECT Keys to enter Diagnostics screen.
30. Set ATC-601-2 Signal Type to ***ATC_C***, PRF to ***235*** and Attenuation to ***Ø***.
31. Press the RUN/STOP Key to initiate test.
32. Set RF Signal Generator #2 to 1090 MHz at -4.6 dBm.
33. Using Oscilloscope Channel 2, set Function Generator for two 0.45 μs (±0.1 μs) wide pulses, spaced 20.3 μs (±0.1 μs) apart (simulated Mode C reply, F_1-F_2) and triggered off leading edge of sync pulse from ATC-601-2 COMM Connector, Pin 1. Delay start of F_1 until 3 μs (±0.5 μs) after leading edge of P_3 of the interrogation.
34. Disconnect RF Signal Generator #2 from ANTENNA Connector. Connect Heterodyne Monitor to ATC-601-2 ANTENNA Connector.



Reply Delay Test Setup Diagram
Figure 22

STEP	PROCEDURE

35. Set LO source RF Signal Generator #1 to 1030 MHz at +5 dBm.

36. Use ΔTime Start on Oscilloscope Channel 1 to reference rising edge of P_3 in interrogation.

37. Disconnect Heterodyne Monitor from ATC-601-2 ANTENNA Connector. Connect pulse modulated RF Signal Generator #2 to Heterodyne Monitor.

38. Set LO source RF Signal Generator #1 to 1090 MHz.

39. Use ΔTime Stop on Oscilloscope Channel 1 to reference rising edge of F_1 in simulated reply.

40. Record ΔTime measurement.

41. Disconnect pulse modulated RF Signal Generator #2 from Heterodyne Monitor. Connect pulse modulated RF Signal Generator #2 to ATC-601-2 ANTENNA Connector.

43. Press AUTO TEST Key and use SELECT Keys to enter Reply Delay Test screen.

44. Press the RUN/STOP Key to initiate test.

45. Verify Mode C Reply Delay shown on ATC-601-2 equals reference measurement recorded in Step 40 (±100 ns).

46. Press the RUN/STOP Key to terminate test.

47. Press SELF TEST Key. Press one of SELECT Keys to enter Diagnostics screen.

48. Set ATC-601-2 Signal Type to ***ITMATCS-C***, PRF to ***78*** and Attenuation to ***Ø***.

49. Press the RUN/STOP Key to initiate test.

50. Using Oscilloscope Channel 2, set Function Generator for 0.45 μs single pulse, triggered off leading edge of sync pulse from ATC-601-2 COMM Connector, Pin 1. Delay start of pulse 128 μs from leading edge of P4.

51. Using Mode S Reply Table, create required Mode S waveform on the Arbitrary Waveform Generator setup for 16,000 points and a frequency of 1 kHz (2-2-2, Table 18). Set the output amplitude on the Waveform Generator to the level needed to modulate RF Signal Generator #2. Connect TTL output from Function Generator to the Arbitrary Waveform Generator external trigger input. Connect Arbitrary Waveform Generator output to RF Signal Generator #2 pulse mod input.

52. Disconnect RF Signal Generator #2 from ATC-601-2 ANTENNA Connector. Connect Heterodyne Monitor to ATC-601-2 ANTENNA Connector.

53. Set LO source RF Signal Generator #1 to 1030 MHz.

54. Use ΔTime Start on Oscilloscope Channel 1 to reference P_4 in interrogation.

55. Disconnect ATC-601-2 ANTENNA Connector from Heterodyne Monitor. Connect pulse modulated RF Signal Generator #2 to Heterodyne Monitor.

56. Set LO source RF Signal Generator #1 to 1090 MHz.

57. Use ΔTime Stop on Oscilloscope Channel 1 to reference rising edge of F_1 in simulated reply.

58. Record ΔTime measurement.

59. Press the RUN/STOP Key to terminate test.

STEP	PROCEDURE

60. Disconnect pulse modulated RF Signal Generator from Heterodyne Monitor. Connect pulse modulated RF Signal Generator #2 to ATC-601-2 ANTENNA Connect.

61. Press AUTO TEST Key. Use SELECT Keys to enter Reply Delay Test screen.

62. Press the RUN/STOP Key to initiate test.

63. Verify ITM C Reply Delay shown on ATC-601-2 equals reference measurement recorded in Step 58 (±100 ns).

64. Press the RUN/STOP Key to terminate test.

PULSE POSITION	START POINT	END POINT	SPACING (from P1)
P_1 (PREAMBLE)	1	8	0.0
P_2 (PREAMBLE)	17	24	1.0
P_3 (PREAMBLE)	57	64	3.5
P_4 (PREAMBLE)	73	80	4.5
P_5 (ADDRESS BIT 16)	137	144	8.5
P_6 (ADDRESS BIT 8)	144	152	9.0
P_7 (ADDRESS BIT 4)	169	176	10.5
P_8 (ADDRESS BIT 2)	176	184	11.0
P_9 (ADDRESS BIT 1)	193	200	12.0
DOWN LINK FORMAT 11 (8, 2, 1 AT HIGH POSITION)			
P_{10} (DATA BIT 6)	217	224	13.5
P_{11} (DATA BIT 7)	233	240	14.5
P_{12} (DATA BIT 8)	249	256	15.5
P_{13} (DATA BIT 9)	265	272	16.5
P_{14} (DATA BIT 10)	281	288	17.5
P_{15} (DATA BIT 11)	297	304	18.5
P_{16} (DATA BIT 12)	313	320	19.5
P_{17} (DATA BIT 13)	329	336	20.5
P_{18} (DATA BIT 14)	345	352	21.5
P_{19} (DATA BIT 15)	361	368	22.5
P_{20} (DATA BIT 16)	377	384	23.5
P_{21} (DATA BIT 17)	393	400	24.5
P_{22} (DATA BIT 18)	409	416	25.5
P_{23} (DATA BIT 19)	425	432	26.5
P_{24} (DATA BIT 20)	441	448	27.5
P_{25} (DATA BIT 21)	457	464	28.5
P_{26} (DATA BIT 22)	473	480	29.5
P_{27} (DATA BIT 23)	489	496	30.5
P_{28} (DATA BIT 24)	505	512	31.5
P_{29} (DATA BIT 25)	521	528	32.5
P_{30} (DATA BIT 26)	537	544	33.5
P_{31} (DATA BIT 27)	553	560	34.5
P_{32} (DATA BIT 28)	569	576	35.5
P_{33} (DATA BIT 29)	585	592	36.5
P_{34} (DATA BIT 30)	601	608	37.5
P_{35} (DATA BIT 31)	617	624	38.5
P_{36} (DATA BIT 32)	633	640	39.5
P_{37} (DATA BIT 33)	640	648	40.0
P_{38} (DATA BIT 34)	657	664	41.0
P_{39} (DATA BIT 35)	673	680	42.0
P_{40} (DATA BIT 36)	689	696	43.0
P_{41} (DATA BIT 37)	705	712	44.0
P_{42} (DATA BIT 38)	721	728	45.0

Mode S Reply
Table 18

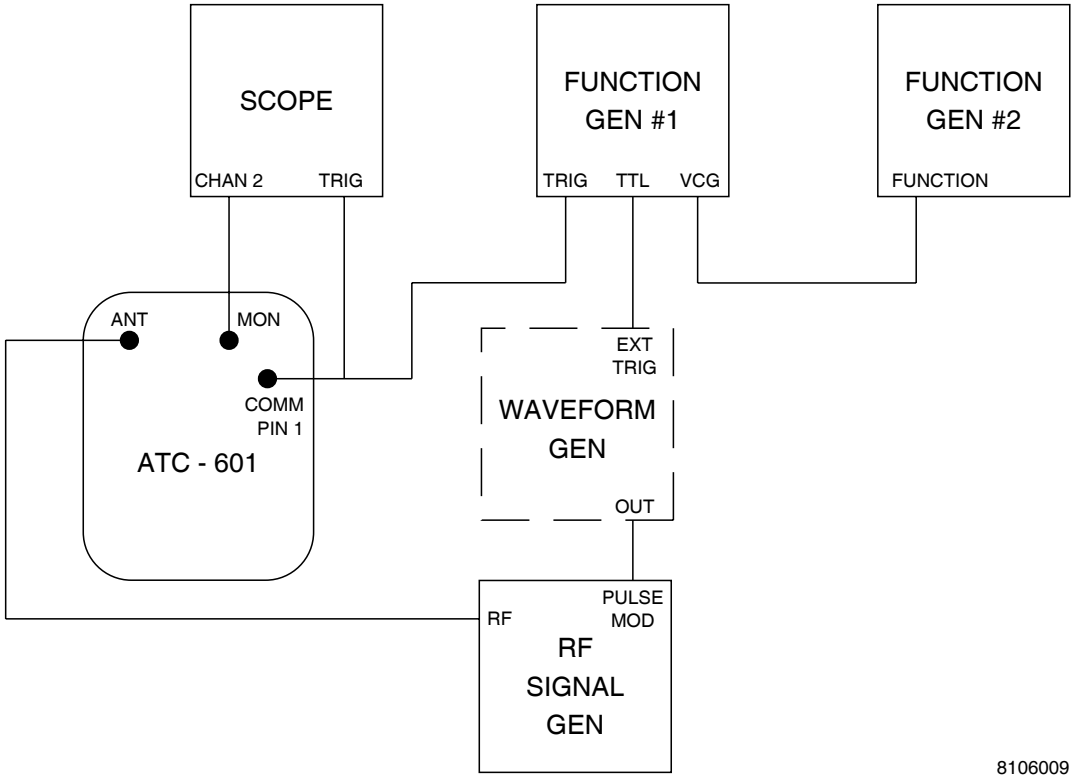
PULSE POSITION	START POINT	END POINT	SPACING (from P1)
P_{43} (DATA BIT 39)	737	744	46.0
P_{44} (DATA BIT 40)	761	768	47.5
P_{45} (DATA BIT 41)	768	776	48.0
P_{46} (DATA BIT 42)	785	792	49.0
P_{47} (DATA BIT 43	809	816	50.5
P_{48} (DATA BIT 44)	816	824	51.0
P_{49} (DATA BIT 45)	833	840	52.0
P_{50} (DATA BIT 46)	849	856	53.0
P_{51} (DATA BIT 47)	873	880	54.5
P_{52} (DATA BIT 48)	889	896	55.5
P_{53} (DATA BIT 49)	896	904	56.0
P_{54} (DATA BIT 50)	921	928	57.5
P_{55} (DATA BIT 51)	928	936	58.0
P_{56} (DATA BIT 52)	945	952	59.0
P_{57} (DATA BIT 53)	969	976	60.5
P_{58} (DATA BIT 54)	985	992	61.5
P_{59} (DATA BIT 55)	992	1000	62.0
P_{60} (DATA BIT 56)	1009	1016	63.0

Mode S Reply (cont)
Table 18

STEP PROCEDURE

REPLY JITTER

65. Connect test equipment as shown in 2-2-2, Figure 23.



Reply Jitter Test Setup Diagram
Figure 23

66. Set Function Generator #1 for two 0.45 μs (±0.1 μs) wide pulses, spaced 20.3 μs (±0.1 μs) apart (simulated Mode C reply, F_1-F_2) and triggered off leading edge of sync pulse from ATC-601-2 COMM Connector, Pin 1. Delay start of F_1 until 3 μs (±0.5 μs) after leading edge of P_3.

67. Set Function Generator #2 for square wave modulation to vary delay 0.05 μs at rate of 100 Hz.

68. Press SELF TEST Key. Press one of SELECT Keys to enter Diagnostics screen.

69. Set ATC-601-2 Signal Type to ***ATC_C***, PRF to ***235*** and Attenuation to ***Ø***.

70. Press the RUN/STOP Key to initiate test.

71. Use Oscilloscope Channel 2 to measure jitter on F_1 of simulated reply (time between minimum and maximum reply delays [P_3 to F_1].

72. Press the RUN/STOP Key to terminate test.

73. Press AUTO TEST Key. Press one of SELECT Keys to enter Reply Jitter Test screen.

74. Press the RUN/STOP Key to initiate test.

75. Verify Mode C Reply Jitter shown on ATC-601-2 equals measured value from Step 71 (±50 ns).

STEP	PROCEDURE

76. Press the RUN/STOP Key to terminate test.

77. Press SELF TEST Key. Press one of SELECT Keys to enter Diagnostics screen.

78. Set ATC-601-2 Signal Type to ***ITMATCS-C***, PRF to ***78*** and Attenuation to ***Ø***.

79. Press the RUN/STOP Key to initiate test.

80. Using Oscilloscope Channel 1, set Function Generator for 0.45 μs single pulse, triggered off leading edge of sync pulse from ATC-601-2 COMM Connector, Pin 1. Delay start of pulse 128 μs from leading edge of P_4.

81. Using Mode S Reply Table, create required Mode S waveform on the Arbitrary Waveform Generator setup for 16,000 points and a frequency of 1 kHz (2-2-2, Table 18). Set the output amplitude on the Waveform Generator to the level needed to modulate RF Signal Generator #2. Connect TTL output from Function Generator to the Arbitrary Waveform Generator external trigger input. Connect Arbitrary Waveform Generator output to RF Signal Generator #2 pulse mod input.

82. Set Function Generator #2 for square wave modulation to vary delay 0.05 μs at rate of 100 Hz.

83. Use Oscilloscope Channel 2 to measure jitter on P_1 of simulated reply (time between minimum and maximum reply delays [P_4 to F_1].

84. Press the RUN/STOP Key to terminate test.

85. Press AUTO TEST Key. Press one of SELECT Keys to enter Reply Jitter Test screen.

86. Press the RUN/STOP Key to initiate test.

87. Verify ITM C Reply Jitter shown on ATC-601-2 equals measured value from Step 83 (±50 ns).

88. Press the RUN/STOP Key to terminate test.

F_1 TO F_2 SPACING

89. Disconnect Function Generator #2 from Function Generator #1. Connect test equipment according to 2-2-2, Figure 22, with RF Signal Generator #2 connected to ATC-601-2 ANTENNA Connector.

90. Set Function Generator for two 0.45 μs (±0.1 μs) wide pulses, spaced 20.3 μs (±0.1 μs) apart (simulated Mode C reply, F_1-F_2) and triggered off leading edge of sync pulse from ATC-601-2 COMM Connector, Pin 1. Delay start of F_1, until 3 μs (±0.5 μs) after leading edge of P3.

91. Press SELF TEST Key. Press one of SELECT Keys to enter Diagnostics screen.

92. Set ATC-601-2 Signal Type to ***ATC_C***, PRF to ***235*** and Attenuation to ***Ø***.

93. Press the RUN/STOP Key to initiate test.

94. Measure F_1 to F_2 spacing on Oscilloscope.

95. Press the RUN/STOP Key to terminate test.

96. Press AUTO TEST Key. Use SELECT Keys to enter ATCRBS Reply Test screen.

97. Press the RUN/STOP Key to initiate test.

STEP PROCEDURE

98. Verify F_1 to F_2 spacing shown on ATC-601-2 equals measured value from Step 94 (±50 ns).

99. Press the RUN/STOP Key to terminate test.

100. Disconnect pulse modulated RF Signal Generator #2 from ATC-601-2 ANTENNA Connector. Reconnect RF Signal Generator #2 to Heterodyne Monitor. Refer to 2-2-2, Figure 22.

101. Set LO Source RF Signal Generator to 1090 MHz.

102. Press SELF TEST Key. Press one of SELECT Keys to enter Diagnostics screen.

103. Set ATC-601-2 Signal Type to ***ATC_C***, PRF to ***235*** and Attenuation to ***Ø***.

104. Press the RUN/STOP Key to initiate test.

105. Measure both F_1 and F_2 pulse widths on Oscilloscope.

106. Press the RUN/STOP Key to terminate test.

107. Disconnect pulse modulated RF Signal Generator #2 from Heterodyne Monitor. Connect RF Signal Generator #2 to ATC-601-2 ANTENNA Connector.

108. Press AUTO TEST Key. Use SELECT Keys to enter ATCRBS Reply Test screen.

109. Press the RUN/STOP Key to initiate test.

110. Verify F_1 and F_2 pulse widths shown on ATC-601-2 equal respective measured values from Step 105 (±50 ns).

111. Press the RUN/STOP Key to terminate test.

SQUITTER PERIOD

NOTE: Squitter Period uses same timer used for output of interrogations at maximum PRF. The ±10 ms Squitter Period Accuracy is verified when timing of interrogations, output at maximum PRF, is ±10 ms or less.

112. Disconnect test equipment except for Oscilloscope Channel 2 to ATC-601-2 MONITOR Connector.

113. Press SELF TEST Key. Press one of SELECT Keys to enter Diagnostics screen.

114. Set ATC-601-2 Signal Type to ***ATC_C***, PRF to ***235*** and Attenuation to ***Ø***.

115. Press the RUN/STOP Key to initiate test.

116. Verify time between interrogations is <5.0 ms.

117. Press the RUN/STOP Key to terminate test.

DIVERSITY ISOLATION

118. Connect RF Signal Generator, providing 1090 MHz at -4.6 dBm, to ATC-601-2 ANTENNA Connector.

119. Set ATC-601-2 Signal Type to ***DSP_MEASURE***, PRF to ***235*** and Attenuation to ***Ø***.

120. Press the RUN/STOP Key to initiate test.

121. Record reading from ATC-601-2 Diagnostics screen DATA: field.

122. Set RF Signal Generator for ATC-601-2 input of 1090 MHz at -24.6 dBm.

STEP	PROCEDURE

123. Record reading from ATC-601-2 Diagnostics screen DATA: field.

124. Press the RUN/STOP Key to terminate test.

125. Verify following equation:

20 • log(Step 121 reading ÷ Step 123 reading) dB = 20 dB (±3 dB)

(4) Overall

STEP	PROCEDURE
1.	Disconnect test equipment.
2.	Initiate Self Test according to para 2-2-2G(3).

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E. Verification Data Sheet

TECHNICIAN: _____ DATE: _____

ATC-601-2 S/N: _____

STEP	DATA	RESULT
(1)	Signal Generator	
	OUTPUT FREQUENCY	
6.	ATC-601-2 Transmit Frequency 1030 MHz (1029.090 to 1030.010 MHz)	_____
	OUTPUT LEVEL/RECEIVER SENSITIVITY	
11.	ATC-601-2 Transmit Power -7.6 dBm (-9.6 to -5.6 dBm)	_____
12.	ATC-601-2 Transmit Power/UUT Receiver Sensitivity	
	Ø Attenuation -7.6 dBm (-9.6 to -5.6 dBm)	_____
	16 Attenuation -15.6 dBm (-17.6 to -13.6 dBm)	_____
	23 Attenuation -19.15 dBm (-21.15 to -17.15 dBm)	
	47 Attenuation -31.15 dBm (-33.15 to -29.15 dBm)	
	DIRECT CONNECTION	
17.	Direct Connection Step 11 - 48.25 dB (±0.5 dB)	_____
(2)	Pulse Characteristics	
	SPACING	
6.	ATC (Mode A) P_1 to P_3 Pulse Spacing 8.00 µs (7.95 to 8.05 µs)	_____
10.	ATC (Mode C) P_1 to P_3 Pulse Spacing 21.00 µs (20.95 to 21.05 µs)	_____
14.	Mode S P_1 to P_2 Pulse Spacing 2.00 µs (1.95 to 2.05 µs)	_____
15.	Mode S P_1 to P_6 Pulse Spacing 3.50 µs (3.45 to 3.55 µs)	_____
19.	Mode S P_1 to SPR Pulse Spacing 4.75 µs (4.70 to 4.80 µs)	_____
22.	ATCRBS Only All-Call (ITM A/short P_4) P_1 to P_4 Pulse Spacing 10.00 µs (9.95 to 10.05 µs)	_____
26.	ATCRBS/Mode S All-Call (ITM C/long P_4) P_1 to P_4 Pulse Spacing 23.00 µs (22.95 to 23.05 µs)	_____

STEP	DATA	RESULT
	WIDTHS	
30.	P_1 Pulse Width 0.80 µs (0.75 to 0.85 µs)	_____
34.	P_3 Pulse Width 0.80 µs (0.75 to 0.85 µs)	_____
38.	P_2 Pulse Width 0.80 µs (0.75 to 0.85 µs)	_____
42.	P_6 (short) Pulse Width 16.25 µs (16.2 to 16.3 µs)	_____
46.	P_6 (long) Pulse Width 30.25 µs (30.2 to 30.3 µs)	_____
50.	P_4 (short) Pulse Width 0.80 µs (0.75 to 0.85 µs)	_____
54.	P_4 (long) Pulse Width 1.60 µs (1.55 to 1.65 µs)	_____
	RISE AND FALL TIMES	
58.	P_1 Rise Time (50 to 100 ns)	_____
59.	P_1 Fall Time (50 to 200 ns)	_____
	PHASE MODULATION: TRANSMISSION TIME	
63.	SPR Transition Times ≤80 ns	_____
64.	P_6 even Transition Amplitude (<4 dB difference)	_____(√)
	AMPLITUDE LEVELS	
70.	Reference Point (MTL+4 dB)	_____
74.	(MTL-5 dB) difference from Reference Point -9 dB (-10 to -8 dB)	_____
(3)	UUT Measurements	
	UUT TRANSMITTER FREQUENCY	
10.	Frequency 1087 MHz (1086.95 to 1087.05 MHz)	_____
12.	Frequency 1090 MHz (1089.95 to 1090.05 MHz)	_____
14.	Frequency 1092 MHz (1092.95 to 1093.05 MHz)	_____
	UUT TRANSMITTER POWER	
22.	-4.6 dBm (***128*** Counts)	_____(√)
23.	-4.6 dBm ***128*** Counts (***114*** to ***143*** Counts) -12.9 dBm ***Ø49*** Counts (***Ø44*** to ***Ø55*** Counts) -1.75 dBm ***Ø56*** Counts (***Ø5Ø*** to ***Ø63*** Counts) +10.75 dBm ***Ø75*** Counts (***Ø67*** to ***Ø84*** Counts)	_____ _____ _____ _____

STEP	DATA	RESULT
	REPLY DELAY	
40.	Mode C Reply Delay measured time reference (ΔTime)	_____
45.	Mode C Reply Delay ATC-601-2 reading = reference (±100 ns)	_____
58.	Mode S Reply Delay measured time reference (ΔTime)	_____
63.	Mode S Reply Delay ATC-601-2 reading = reference (±100 ns)	_____
	REPLY JITTER	
71.	Mode C Reply Jitter measured time reference	_____
75.	Mode C Reply Jitter ATC-601-2 reading = reference (±50 ns)	_____
83.	Mode S Reply Jitter measured time reference	_____
87.	Mode S Reply Jitter ATC-601-2 reading = reference (±50 ns)	_____
	F_1 TO F_2 SPACING	
94.	F_1 to F_2 Spacing measured time reference	_____
98.	F_1 to F_2 Spacing ATC-601-2 reading = reference (±50 ns)	_____
	F_1 TO F_2 PULSE WIDTH	
105.	F_1 Pulse Width measured time reference	_____
	F_2 Pulse Width measured time reference	_____
110.	F_1 Pulse Width ATC-601-2 reading = reference (±50 ns)	_____
	F_2 Pulse Width ATC-601-2 reading = reference (±50 ns)	_____
	SQUITTER PERIOD	
116.	Squitter Period (time between interrogations is <5.0 ms)	_____(√)
	DIVERSITY ISOLATION	
121.	Diversity Isolation -4.6 dBm DATA: field reading	_____
123.	Diversity Isolation -24.6 dBm DATA: field reading	_____
125.	Diversity Isolation 20 dB (17 to 23 dB)	_____
(4)	Overall	
2.	Self Test All Modules/Assemblies Passed.	_____(√)

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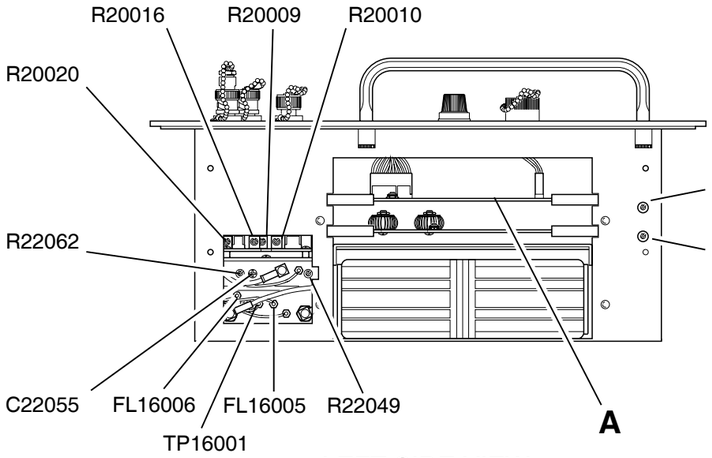
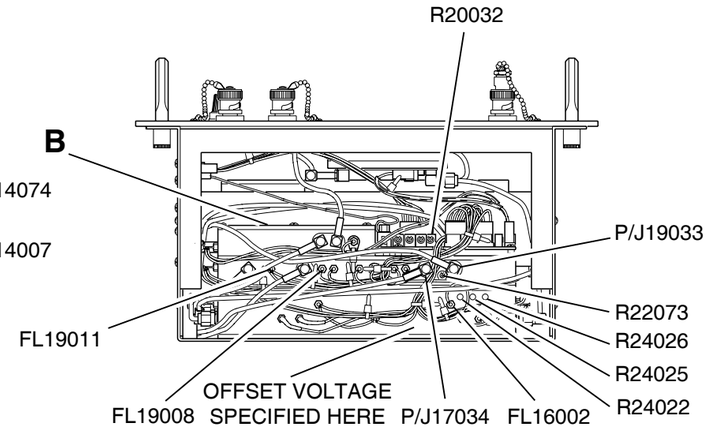
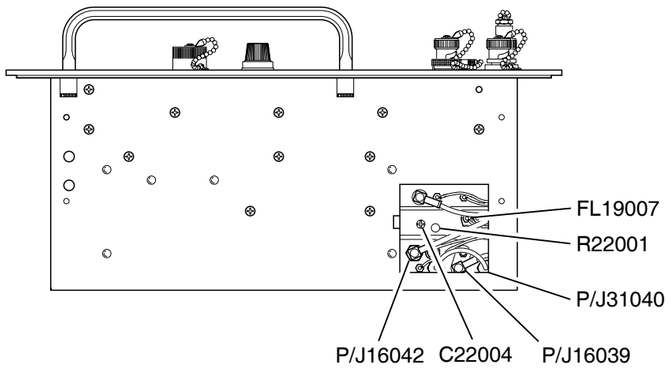


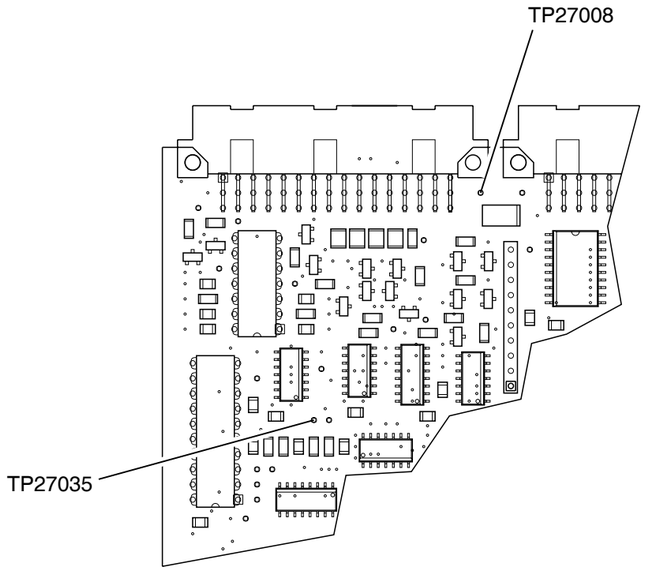
LEFT SIDE VIEW



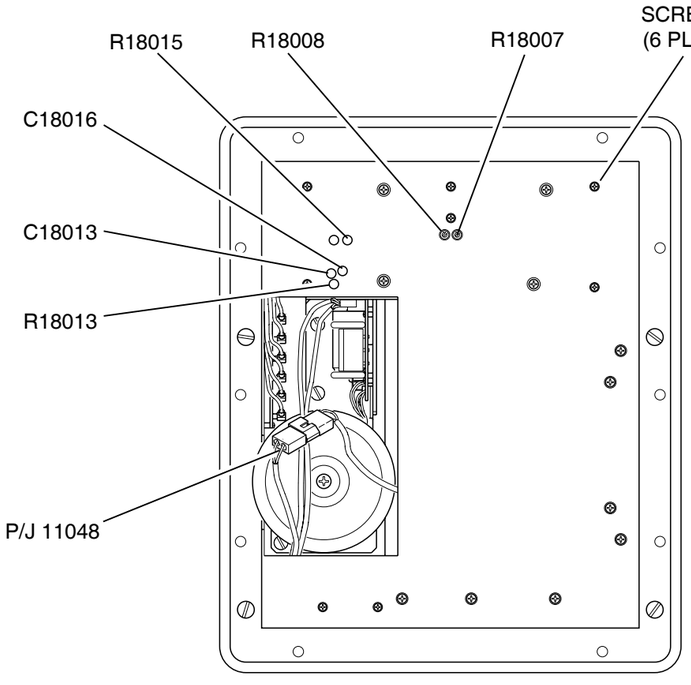
TOP VIEW



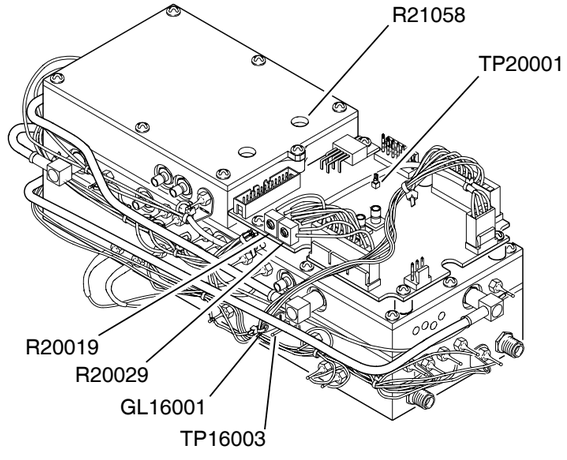
RIGHT SIDE VIEW



DETAIL **A**



REAR VIEW



DETAIL **B**

8107012

Test Points and Adjustments
Figure 24

F. Calibration

Refer to 2-2-2, Figure 24 for test points and adjustments.

(1) Power Supply

TEST EQUIPMENT: 1 Digital Multimeter

STEP	PROCEDURE

1. Verify ATC-601-2 is Off and not connected to external power source.
2. Remove 12 screws and lift Chassis Assembly from Case Assembly.
3. Connect ac power cable to AC PWR Connector and verify CHARGE Indicator is green.

   NOTE: The CHARGE Indicator illuminates green when battery contains full charge.

4. Connect Digital Multimeter to P/J11048 and verify 14.6 Vdc (±0.1 V). Adjust R14007 as needed.
5. Press POWER Key On.
6. Use Digital Multimeter to verify +5.1 Vdc (±0.05 V) between FL19008 and ground (GL16001). Adjust R14074 as needed.
7. Use Digital Multimeter to verify +12 Vdc (±0.3 V) between FL19011 and ground (GL16001).
8. Use Digital Multimeter to verify -12 Vdc (±0.3 V) between FL16002 and ground (GL16001).
9. Use Digital Multimeter to verify +11 Vdc (±0.25 V) between FL16005 and ground (GL16001). If not, remove RF Assembly according to Attenuator procedure, Steps 20 to 22 of para 2-2-2H(2). Refer to Driver PC Board Assembly (2-2-3, Figure 37) and adjust R16054.

(2) RF Assembly

PREREQUISITES: Power Supply (para 2-2-2F[1])

TEST EQUIPMENT:
1 3 dB Attenuator
1 ATC-1400A Transponder/DME Test Set
1 Digital Multimeter
1 Universal Timer Counter
1 Measuring Receiver
1 Oscilloscope
1 Power Meter
2 Power Sensors
1 RF Signal Generator
1 Spectrum Analyzer
1 Temperature Probe

STEP	PROCEDURE

LO SOURCE

1. Connect Digital Multimeter to TP16003.
2. Verify the DC Voltage is 0 mV (±50 mV) on Digital Multimeter.

   If reading is incorrect, Aeroflex recommends returning the unit to the factory for fault isolation and repair.
3. Connect Spectrum Analyzer to ATC-601-2 ANTENNA Connector.
4. Set Spectrum Analyzer controls as follows:

CONTROL	SETTING
Center Frequency	1030 MHz
Scan	1 MHz/Div
Bandwidth	300 kHz
Scale	10 dB

5. From the Self Test Menu, press ⇑ SEL or ⇓ SEL Key to display the Diagnostics Menu on the ATC-601-2.
6. Set IFF-701Ti as follows:

FIELD	SETTING
SIGNAL TYPE	***CW***
ATTENUATION	***0***

7. Press RUN/STOP Key on ATC-601-2 to start test.
8. Adjust R24022 cw then ccw and verify ±4.5 MHz sweep on Spectrum Analyzer. If needed, adjust R24026 (tuning) and R24025 (width) for 1030 MHz (±4.5 MHz) on Spectrum Analyzer.

   If adjustment cannot be accomplished, Aeroflex recommends returning the unit to the factory for fault isolation and repair.
9. Adjust R24022 fully cw until the offset voltage rails on Digital Multimeter. Record.

STEP	PROCEDURE

10. Adjust R24022 fully ccw until the offset voltage rails on Digital Multimeter. Record.

11. Add Step 9 and 10, and then divide the result by 2. Adjust R24022 until the Digital Multimeter displays this value.

12. Verify phase lock at 1030 MHz at the offset voltage in Step 12 on the Digital Multimeter.

    If adjustment cannot be accomplished, Aeroflex recommends returning the unit to the factory for fault isolation and repair.

13. Verify the offset voltage is 0 mV (±50 mV) on the Digital Multimeter.

    If adjustment cannot be accomplished, Aeroflex recommends returning the unit to the factory for fault isolation and repair.

14. Connect Digital Multimeter to TP16001.

15. Verify the tune voltage is 5.5 Vdc (±0.5 Vdc) on the Digital Multimeter.

    If adjustment cannot be accomplished, Aeroflex recommends returning the unit to the factory for fault isolation and repair.

16. Connect Digital Multimeter to FL16006.

17. Verify output voltage is 4.5 to 6 Vdc on the Digital Multimeter.

    If adjustment cannot be accomplished, Aeroflex recommends returning the unit to the factory for fault isolation and repair.

18. Press RUN/STOP Key on ATC-601-2 to stop test.

    ATTENUATOR

19. Press POWER Key. (ATC-601-2 power is Off.)

20. Refer to 2-2-2, Figure 24 and remove six screws from Chassis Assembly (Rear View).

21. Carefully lift out RF Assembly, applying only minimal stress on connecting cables.

22. Press POWER Key.

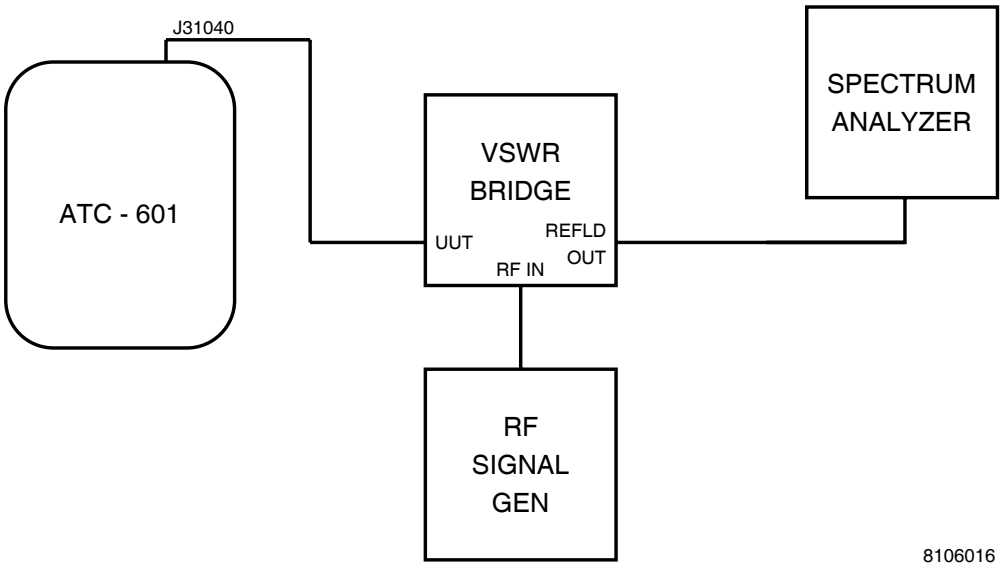
23. Set ATC-601-2 Signal Type to ***DSP MEASURE =*** and Attenuation to ***8Ø.Ø dB***.

24. Press RUN/STOP Key to initiate test.

25. Adjust R20009 (ZERO VOLT ADJ) for 0 V at TP20001, using Digital Multimeter.

STEP PROCEDURE

26. Remove P31040 from J31040 and connect test equipment as shown in 2-2-2, Figure 25.

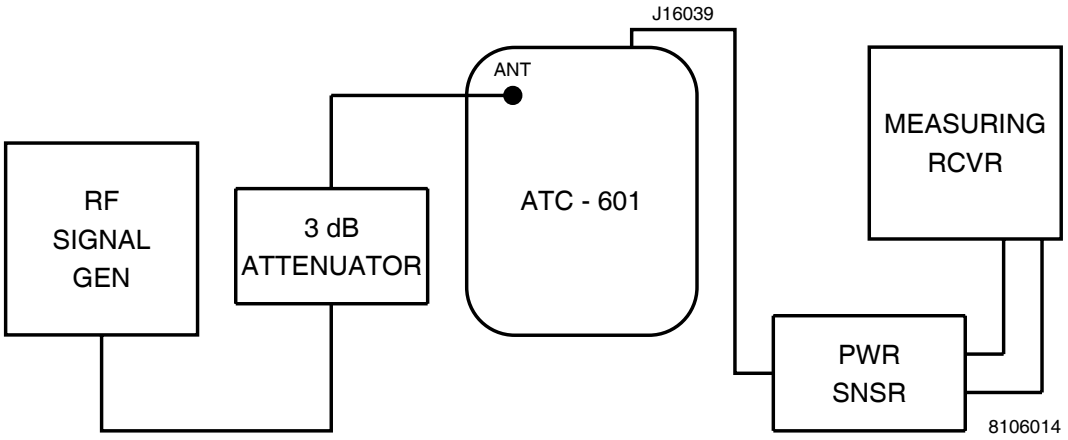


Attenuator VSWR Test Setup Diagram
Figure 25

27. Terminate ATC-601-2 ANTENNA Connector with Connector Cover providing 50 Ω load.
28. Set RF Signal Generator to 1060 MHz at 0 dBm.
29. Set Spectrum Analyzer to 1060 MHz center frequency and 10 MHz/Div scan width.
30. Adjust R20019 (VSWR 50 dB ADJ) for lowest signal level on Spectrum Analyzer.
31. Disconnect test equipment and reconnect P31040 to J31040.
32. Set ATC-601-2 Attenuation to **Ø**.

STEP PROCEDURE

33. Remove P16039 from J16039 and connect test equipment as shown in 2-2-2, Figure 26.



Attenuator Test Setup Diagram
Figure 26

34. Set RF Signal Generator for ATC-601-2 input of 1090 MHz at -4.6 dBm, considering 3 dB Attenuator.
35. Set Measuring Receiver to Tuned RF Level Mode and calibrate at 30 MHz. Record and set displayed level as zero reference on Measuring Receiver.
36. Set ATC-601-2 Attenuation to ***8Ø***.
37. Adjust R20010 (50 dB ADJ OFFSET) for -40 dBm on Measuring Receiver.
38. Set ATC-601-2 Attenuation to ***2Ø***.
39. Adjust R20016 (10 dB ADJ SLOPE) for -10 dBm on Measuring Receiver.
40. Set ATC-601-2 Attenuation to ***Ø***.
41. Verify Measuring Receiver is at level recorded in Step 35.
42. Press RUN/STOP Key to terminate test.
43. Disconnect test equipment and reconnect P16039 to J16039.

ISOLATION NULL

44. Disconnect the 30 MHz Receive IF input (P17034) from J17034.
45. Connect 50 Ω termination cover to ATC-601-2 ANTENNA Connector.
46. Connect Spectrum Analyzer (center frequency at 30 MHz) to J17034.
47. Set ATC-601-2 Signal Type to ***CW*** and Attenuation to ***Ø***.
48. Press RUN/STOP Key to initiate test.
49. Adjust R22062 (ISOLATION) and C22055 for maximum signal nullification at 30 MHz.
50. Adjust R22062 (ISOLATION) for -6 dBm signal level.
51. Press RUN/STOP Key to terminate test.

STEP PROCEDURE

52. Disconnect Spectrum Analyzer from J17034.

53. Reconnect P17034 to J17034.

GENERATOR OUTPUT POWER

54. Connect Measuring Receiver (set for 1030 MHz) through Power Sensor and 3 dB Attenuator to ATC-601-2 ANTENNA Connector.

55. Press RUN/STOP Key to initiate test.

56. Adjust R22049 (TX GAIN) for ATC-601-2 output of -7.6 dBm. Measuring Receiver displays -7.6 less attenuation provided by 3 dB Attenuator.

57. Press RUN/STOP Key to terminate test.

GENERATOR IMAGE

58. Disconnect Power Sensor from 3 dB Attenuator.

59. Connect Spectrum Analyzer through 3 dB Attenuator to ATC-601-2 ANTENNA Connector.

60. Set the Spectrum Analyzer as follows:

CONTROL	SETTING
Center Frequency	1060 MHz
Amp Scale	10 dB/Div
Scan Width	10 MHz/Div

61. Press RUN/STOP Key to initiate test.

62. Position peak amplitude point of 1030 MHz at top major graticule.

63. Verify 1090 MHz signal level is >30 dB below 1030 MHz signal level in Step 62. If not, adjust C18013 and C18016 (1090 MHz NULL PHASE ADJ) and either R18013 or R18015 (1090 MHz NULL AMPLITUDE ADJ).

NOTE: One resistor (R18013 or R18015) must remain fully cw for correct ATC-601-2 operation.

LO NULL

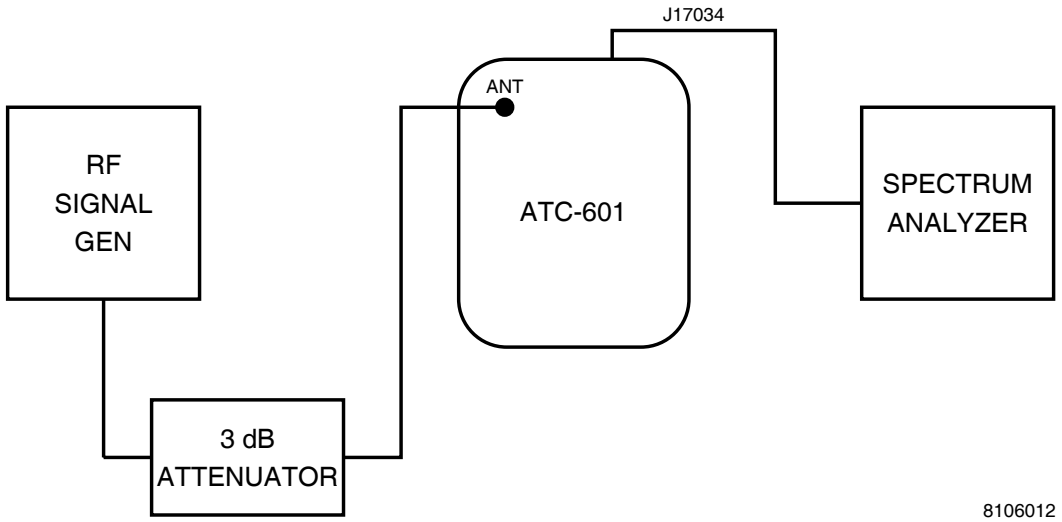
64. Adjust R18007 and R18008 (1060 MHz NULL ADJ) until 1060 MHz signal level is >40 dB below 1030 MHz signal level in Step 62.

65. Press RUN/STOP Key to terminate test.

STEP PROCEDURE

RECEIVE IMAGE

66. Disconnect 30 MHz (P17034) from J17034 and connect test equipment according to 2-2-2, Figure 27.



Receive Image Test Setup Diagram
Figure 27

67. Set ATC-601-2 Signal Type to ***DSP_MEASURE=*** and Attenuation to ***Ø***.

68. Press RUN/STOP Key to initiate test.

69. Set RF Signal Generator for ATC-601-2 input of 1090 MHz at 0.0 dBm, considering 3 dB Attenuator.

70. Set peak amplitude level of 30 MHz signal as top reference on Spectrum Analyzer.

71. Set RF Signal Generator for a ATC-601-2 input of 1030 MHz at 0.0 dBm, considering 3 dB Attenuator.

72. Verify 30 MHz signal level on Spectrum Analyzer is >15 dB below reference level in Step 70. If not, return to Step 64 and repeat the LO Null adjustment; otherwise, continue to next step.

73. Press RUN/STOP Key to terminate test.

RECEIVE POWER

74. Set RF Signal Generator for ATC-601-2 input of 1090.06 MHz at -9.05 dBm, considering 3 dB Attenuator.

75. Press RUN/STOP Key to initiate test.

76. Adjust R22073 (RX GAIN) for 0.0 dBm output at J17034.

77. Press RUN/STOP Key to terminate test.

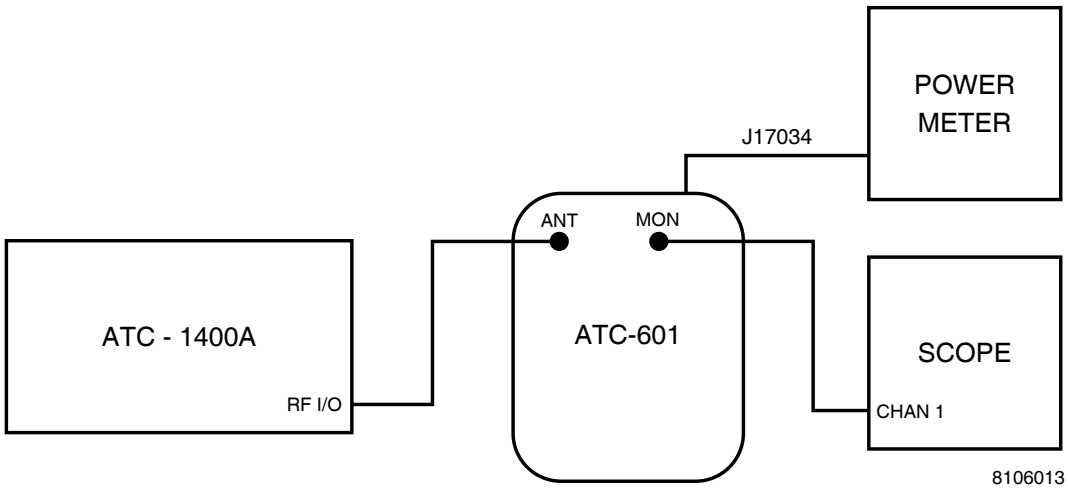
STEP PROCEDURE

ISOLATION RESET

78. Disconnect Spectrum Analyzer from J17034.
79. Connect Measuring Receiver through Power Sensor to J17034.
80. Disconnect RF Signal Generator from ATC-601-2 ANTENNA Connector.
81. Terminate ATC-601-2 ANTENNA Connector with Connector Cover providing 50 Ω load.
82. Set ATC-601-2 Signal Type to ***CW*** and Attenuation to ***Ø***.
83. Press RUN/STOP Key to initiate test.
84. Adjust R22062 (ISOLATION) for -6 dBm signal level on Measuring Receiver.
85. Press RUN/STOP Key to terminate test.
86. Disconnect test equipment.

DETECTOR PULSE WIDTH

87. Connect test equipment according to 2-2-2, Figure 28.



Detector Pulse Width Test Setup Diagram
Figure 28

88. Set ATC-1400A as follows:

CONTROL	SETTING
CW/NORM/OFF Switch	CW
T_O/TAC/T_D Switch	T_O
PRF/SQTR Thumbwheels	3000
FREQ/FUNCTION SELECT Thumbwheels	1090 MHz XPDR
XPDR PULSE WIDTH Thumbwheels	0.45 µs

89. Set ATC-601-2 Signal Type to ***DSP_MEASURE=*** and Attenuation to ***Ø***.
90. Adjust ATC-1400A RF LEVEL Control to obtain Power Meter levels of +3, -12 and -27 dBm. Record ATC-1400A RF LEVEL -dBm Display reading for each level.
91. Disconnect Power Sensor from J17034.

STEP PROCEDURE

92. Disconnect P19033 from J19033.

93. Connect P19033 to J17034.

94. Set ATC-1400A RF LEVEL Control to -12 dBm reference established in Step 90 and CW/NORM/OFF Switch to NORM setting.

95. Adjust R21058 (PULSE WIDTH) for 0.45 μs detector pulse width on Oscilloscope.

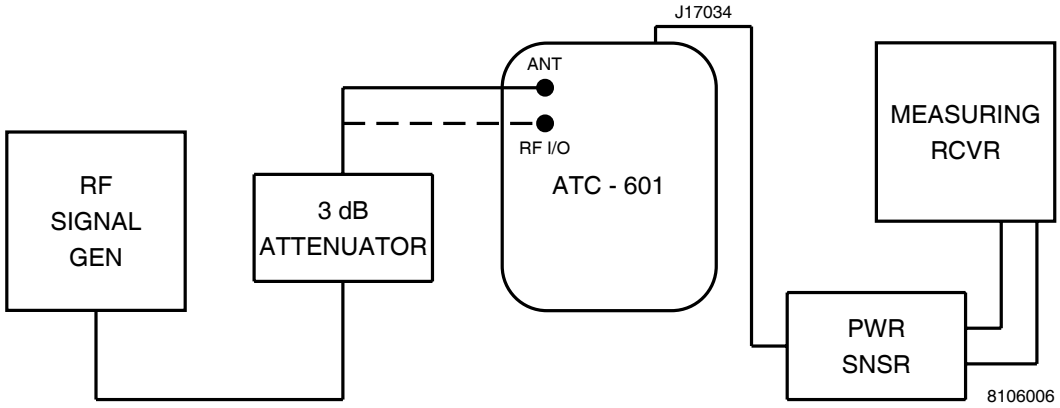
96. Vary ATC-1400A RF LEVEL Control to +3 and -27 dBm reference levels established in Step 90. Verify pulse width changes <40 ns from 0.45 μs.

97. Disconnect P19033 from J17034 and reconnect P19033 to J19033.

98. Disconnect test equipment.

DIRECT CONNECT SET

99. Connect test equipment according to 2-2-2, Figure 29 with 3 dB Attenuator initially connected to ATC-601-2 ANTENNA Connector.



Direct Connect Set Test Setup Diagram
Figure 29

100. Set ATC-601-2 Signal Type to ***DSP_MEASURE***, PRF to 235 and Attenuation to ***Ø***.

101. Press RUN/STOP Key to initiate test.

102. Set RF Signal Generator for ATC-601-2 input of 1090.06 MHz at -14.6 dBm, considering 3 dB Attenuator.

103. Record and set displayed level as zero reference on Measuring Receiver.

104. Disconnect 3 dB Attenuator from ATC-601-2 ANTENNA Connector and connect 3 dB Attenuator to ATC-601-2 RF I/O Connector.

105. Terminate ATC-601-2 ANTENNA Connector with Connector Cover providing 50 Ω load.

106. Adjust R20020 (DIRECT CONNECT POWER ADJ) until Measuring Receiver indicates 48.25 dB below reference level set in Step 103.

107. Press RUN/STOP Key to terminate test.

108. Disconnect test equipment. Reconnect P17034 to J17034.

STEP PROCEDURE

RF BIT DETECTOR SET

109. Press POWER Key. (ATC-601-2 power is Off.)

110. Remove Front Panel Pulse PC Board Assembly as needed to connect Digital Voltmeter (+) lead to TP27035 and (-) lead to TP27008 (ground).

111. Reinstall Front Panel Pulse PC Board Assembly.

112. Press POWER Key.

113. Set ATC-601-2 Signal Type to ***CW_P4*** and Attenuation to ***Ø***.

114. Verify Digital Multimeter reads 10 to 50 mV (45 to 50 mV is nominal) with no RF (no signal activated). Adjust R20029 (ZERO ADJUST) as needed.

115. Press RUN/STOP Key to initiate test.

116. Verify Digital Multimeter indicates 2.80 V. Adjust R20032 (RF DET ADJ) as needed.

117. Repeat Steps 114 through 116 until no adjustment is needed.

118. Press RUN/STOP Key to terminate test.

119. Disconnect Digital Multimeter from test points.

OSCILLATOR COMPENSATION

120. Connect ATC-601-2 ANTENNA Connector to Universal Timer/Counter.

121. Set Universal Timer/Counter for 10 Hz resolution.

122. Set ATC-601-2 Signal Type to ***CW*** and Attenuation to ***Ø***.

123. Press RUN/STOP Key to initiate test.

CAUTION: DO NOT SHORT TEMPERATURE PROBE TO ASSEMBLY WHILE MAKING CONTACT WITH COMPONENTS OR TRACES ON ANALOG IF PC BOARD.

124. Insert Temperature Probe (connected to Digital Multimeter) through R22001 adjustment hole and obtain CR22001 temperature reading.

125. Record FL19007 voltage required for temperature obtained in Step 124 as specified in 2-2-2, Table 19.

126. Connect Digital Voltmeter (+) lead to FL19007 and (-) lead to ground.

127. Verify FL19007 voltage equals voltage recorded in Step 125. Adjust R22001 as needed.

128. Verify frequency output is 1030 MHz (±200 Hz). Adjust C22004 as needed.

129. Press RUN/STOP Key to terminate test.

130. Disconnect test equipment.

CR22001 (°C)	FL19007 (Vdc)	CR22001 (°C)	FL19007 (Vdc)
20	2.93	35	3.08
21	2.94	36	3.09
22	2.95	37	3.10
23	2.96	38	3.11
24	2.97	39	3.12
25	2.98	40	3.13
26	2.99	41	3.14
27	3.00	42	3.15
28	3.01	43	3.16
29	3.02	44	3.17
30	3.03	45	3.18
31	3.04	46	3.19
32	3.05	47	3.20
33	3.06	48	3.21
34	3.07	49	3.22

Oscillator Compensation
Table 19

(3) System

TEST EQUIPMENT:
1 3 dB Fixed Attenuator
1 Digital Multimeter
1 Measuring Receiver
1 Oscilloscope
1 Power Sensor
1 RF Signal Generator
1 Spectrum Analyzer

STEP	PROCEDURE

SELF TEST

1. Reinstall RF Assembly into Chassis Assembly and secure by tightening six screws on Chassis Assembly (Rear View).
2. Press SELF TEST Key and RUN/STOP Key to initiate Self Test.
3. Verify all modules/assemblies passed test. If not, refer to 1-2-3 in ATC-601-2 Operation Manual (Revision 1 or later).

RECEIVE POWER SYSTEM RECHECK

4. Disconnect P17034 from J17034 and connect test equipment as shown in 2-2-2, Figure 31 with 3 dB Attenuator connected to ATC-601-2 ANTENNA Connector.
5. Set ATC-601-2 Signal Type to ***DSP_MEASURE***, PRF to ***235*** and Attenuation to ***Ø***.
6. Set RF Signal Generator for ATC-601-2 input of 1090.06 MHz at -14.6 dBm, considering 3 dB Attenuator.
7. Press RUN/STOP Key to initiate test.
8. Record and set displayed level as zero reference on Measuring Receiver.
9. Set RF Signal Generator for ATC-601-2 input of 1090.06 MHz at -4.6 dBm, considering 3 dB Attenuator.
10. Subtract 10 dB from Measuring Receiver reading to obtain compression error.
11. Calculate correct count number using following equation:

    $\text{Counts} = 128 \bullet 10^{(\text{compression error}/20)}$

12. Disconnect Power Sensor from J17034.
13. Reconnect P17034 to J17034.
14. Verify ATC-601-2 Diagnostics screen ***DATA:*** field displays count number calculated in Step 11. Adjust R22073 (RX GAIN) as needed.
15. Press RUN/STOP Key to terminate test.

ISOLATION SYSTEM RECHECK

16. Adjust RF Signal Generator output level (at 1090 MHz) until ATC-601-2 ***DATA:*** field displays ***64***.
17. Disconnect P17034 from J17034.
18. Connect Oscilloscope Channel 1 to J17034.
19. Adjust Oscilloscope for full screen view of signal. Record signal level as reference.

STEP PROCEDURE

20. Disconnect RF Signal Generator.

21. Terminate ATC-601-2 ANTENNA Connector with Connector Cover providing 50 Ω load.

22. Set ATC-601-2 Signal Type to ***CW***.

23. Press RUN/STOP Key to initiate test.

24. Verify signal level equals reference level in Step 19. Adjust R22062 (ISOLATION) as needed.

25. Press RUN/STOP Key to terminate test.

26. Disconnect Oscilloscope from J17034.

27. Reconnect P17034 to J17034.

GENERATOR POWER SYSTEM RECHECK

28. Connect Measuring Receiver through Power Sensor and 3 dB Attenuator to ATC-601-2 ANTENNA Connector.

29. Set ATC-601-2 Signal Type to ***CW*** and Attenuation to ***Ø***.

30. Press RUN/STOP Key to initiate test.

31. Verify ATC-601-2 output is -7.6 dBm, considering 3 dB Attenuator. Adjust R22049 (TX GAIN) as needed.

    NOTE: If output is >0.5 dB, resetting RF Bit Detector according to para 2-2-2H(2), Steps 110 to 120, is required.

32. Press RUN/STOP Key to terminate test.

MIXER NULLS

33. Disconnect Measuring Receiver and Power Sensor from 3 dB Attenuator.

34. Connect Spectrum Analyzer to 3 dB Attenuator.

35. Set ATC-601-2 Attenuation to ***Ø***.

36. Press RUN/STOP Key to initiate test.

37. Center 1030 MHz signal on Spectrum Analyzer with peak amplitude referenced at top major graticule.

38. Center 1060 MHz signal on Spectrum Analyzer. Verify 1060 MHz signal amplitude is >40 dB less than 1030 MHz signal level. If not, adjust R18007 and R18008 (1060 MHz NULL ADJ) for lowest amplitude.

39. Press RUN/STOP Key to terminate test.

40. Disconnect test equipment.

41. Reinstall Chassis Assembly into Case Assembly and tighten 12 screws with 23 in/lbs (2.56 newton•meters) of torque.

    NOTE: Replacing nylon washers is recommended to maintain water resistance capability.

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G. Calibration Data Sheet

TECHNICIAN: _____ DATE: _____

ATC-601-2 S/N: _____

STEP		DATA	RESULT
(1)	Power Supply		
	3.	CHARGE Indicator illuminates green	_____(√)
	4.	+14.6 Vdc (+14.5 to +14.7 Vdc)	_____
	5.	+5.1 Vdc (+5.05 to +5.15 Vdc)	_____
	6.	+12 Vdc (+11.7 to +12.3 Vdc)	_____
	7.	-12 Vdc (-12.3 to -11.7 Vdc)	_____
	9.	+11 Vdc (+10.75 to +11.25 Vdc)	_____
(2)	RF Assembly		
	LO SOURCE		
	2.	DC Voltage is 0 mV (±50 mV)	_____
	8.	±4.5 MHz sweep	_____(√)
		1030 MHz (±4.5 MHz)	_____
	9.	Fully cw - Record	_____
	10.	Fully ccw - Record	_____
	11.	Add Step 9 and 10, then divide by 2	_____
	12.	Phase lock at 1030 MHz at the offset voltage in Step 11	_____(√)
	13.	Offset voltage is 0 mV (±50 mV)	_____
	15.	Tune voltage is 5.5 Vdc (±0.5 Vdc)	_____
	17.	Output voltage is 4.5 to 6 Vdc	_____
	ATTENUATOR		
	25.	Attenuation Zero Volt adjustment	_____(√)
	30.	Attenuation VSWR adjustment	_____(√)
	35.	Receive Level at 0 dB Attenuation	_____
	37.	40 dB Attenuation adjustment	_____(√)
	39.	10 dB Attenuation adjustment	_____(√)
	41.	Receive Level at 0 dB Attenuation (Step 36 level)	_____

STEP	DATA	RESULT
	ISOLATION NULL	
49.	30 MHz Signal Nullification	_____(√)
50.	30 MHz Signal Level -6 dBm	_____
	GENERATOR OUTPUT POWER	
56.	Generator Output Power -7.6 dBm	_____
	GENERATOR IMAGE	
63.	1090 MHz Signal Level >30 dB below 1030 MHz Signal Level	_____(√)
	LO NULL	
64.	1060 MHz Signal Level >40 dB below 1030 MHz Signal Level	_____(√)
	RECEIVE IMAGE	
72.	1030 MHz Receive Signal Level >15 dB below 1030 MHz Signal Level	_____(√)
	RECEIVE POWER	
76.	Receive Power 0.0 dBm	_____(√)
	ISOLATION RESET	
84.	30 MHz Signal Level -6 dBm	_____(√)
	DETECTOR PULSE WIDTH	
90.	RF Level Indication +3 dBm -12 dBm -27 dBm	_____ _____ _____
95.	Detector Pulse Width 0.45 μs	_____(√)
96.	Detector Pulse Width varies <40 ns	_____(√)
	DIRECT CONNECT SET	
103.	RF Level (ANTENNA Connector -14.6 dBm	_____
106.	RF Level (RF I/O Connector) Step 104 - 48.25 dB	_____(√)
	RF BIT DETECTOR SET	
114.	Bit Detector Zero Voltage 10 to 50 mV	_____
116.	Bit Detector Active Voltage 2.80 V	_____
	OSCILLATOR COMPENSATION	
124.	Oscillator Compensation Diode Temperature	_____
125.	Oscillator Voltage required for Diode Temperature	_____
127.	Oscillator Voltage (Step 126 voltage)	_____
128.	Frequency Output 1030 MHz (1029.0008 to 1030.0002 MHz)	_____

STEP	DATA	RESULT
(3)	System	
	SELF TEST	
3.	Self Test All Modules/Assemblies Passed.	_____(√)
	RECEIVE POWER SYSTEM RECHECK	
8.	RF Signal Level -14.6 dBm	_____
10.	Receive Power Compression Error	_____
11.	Calculated Counts $128 \bullet 10^{(\text{compression error}/20)}$	_____
14.	Receive Power Counts (Step 11 counts)	_____
	ISOLATION SYSTEM RECHECK	
19.	30 MHz Signal Level (Receive)	_____
24.	30 MHz Signal Level (Transmit) Step 19 Level	_____
	GENERATOR SYSTEM RECHECK	
31.	Generator Power -7.6 dBm	_____
	MIXER NULLS	
38.	1060 MHz Signal Level >40 dB below 1030 MHz Signal Level	_____(√)

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3. Assemblies and Schematics

A. General

This section contains component layout drawings for all Assemblies and PC Board Assemblies, Interconnect Diagrams and Circuit Schematics within the ATC-601-2.

B. How To Use Schematics

To trace coaxial cable conductors from one schematic to another, follow the procedure outlined in para 2-2-3B(1). To trace conductors for multiple pin connectors, follow the procedure outlined in para 2-2-3B(2).

(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 reference designator and destination.
4. Locate schematic of desired assembly in para 2-2-3C.
5. Locate reference designator of coaxial cable and continue tracing circuit.

(2) Multiple Pin Connectors

STEP	PROCEDURE

1. Locate desired module on Interconnect Diagram.
2. Locate desired assembly multiple pin connector on Interconnect Diagram.

   NOTE: Connectors are identified by reference designators.

3. Note reference designator of mating connector. Note assembly or wire harness, connector is mounted on or grouped with.
4. Locate schematic of desired assembly in para 2-2-3C.
5. Locate reference designator of multiple pin connector and corresponding pin number. Continue tracing circuit.

C. Alphabetical Index of Assemblies and Schematics

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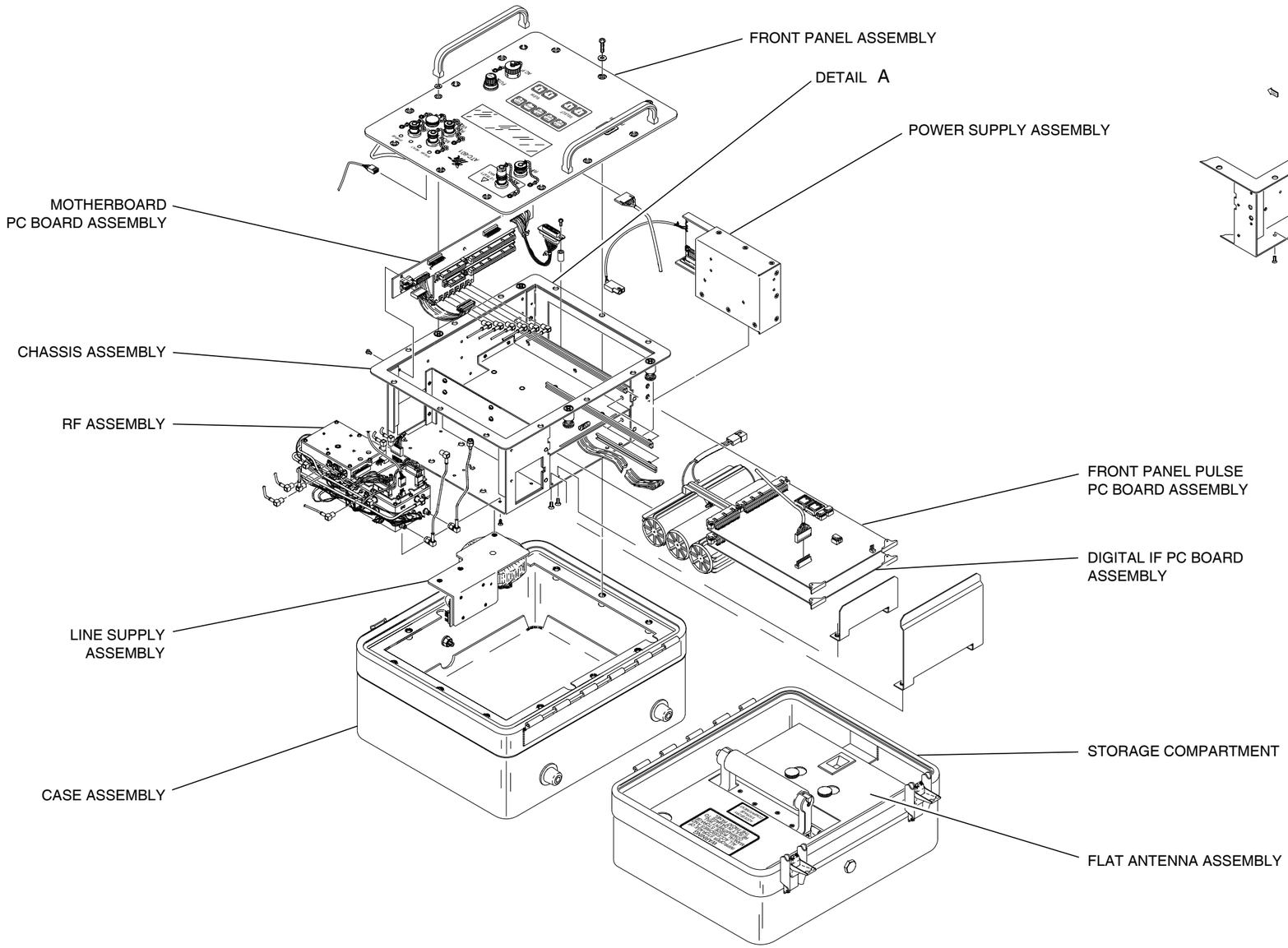
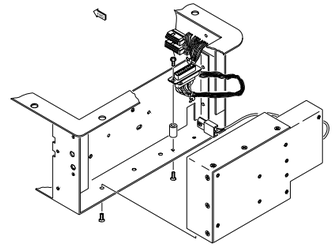


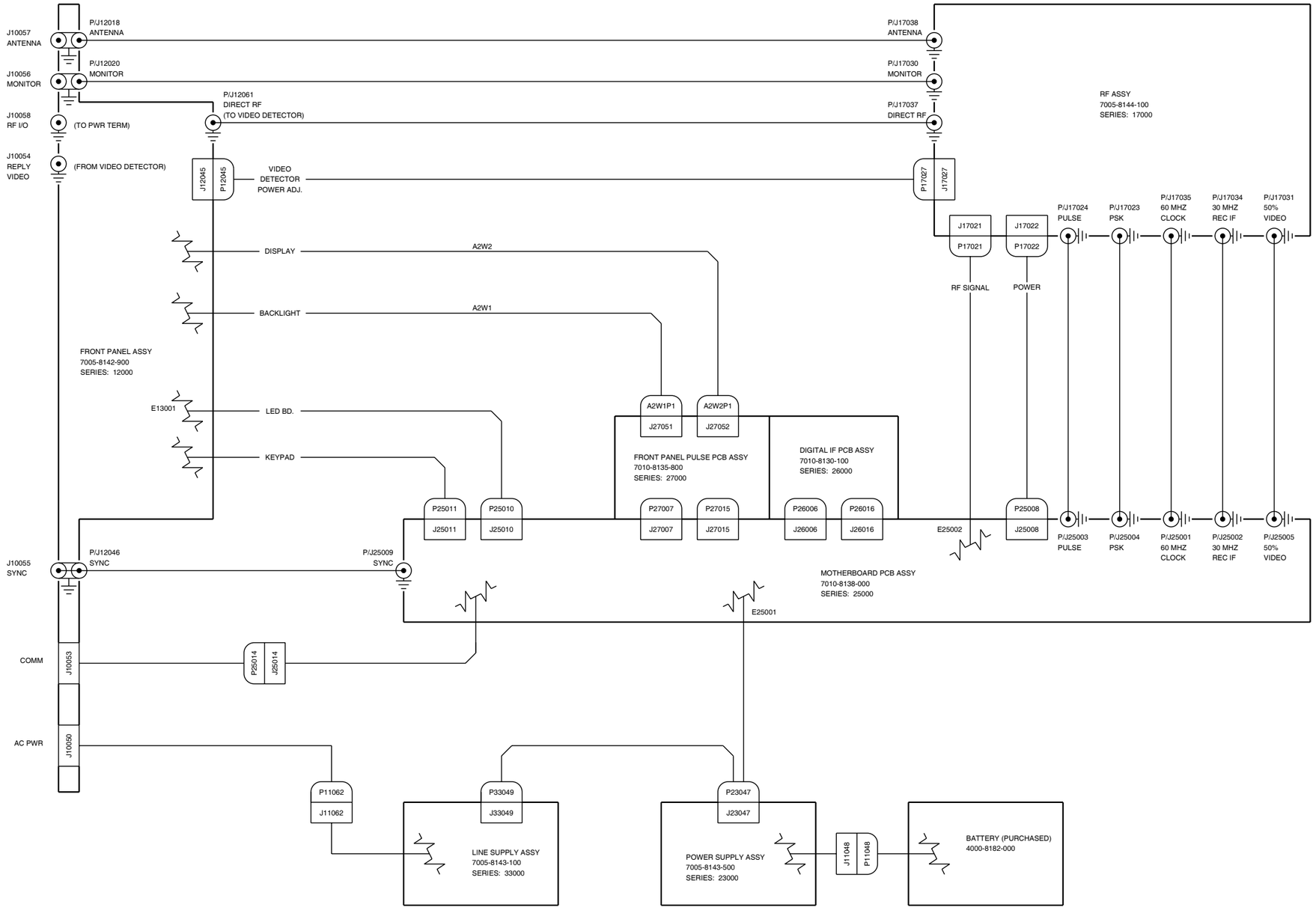


DETAIL A

8120001M

Composite Assembly
(7003-8145-300-E)

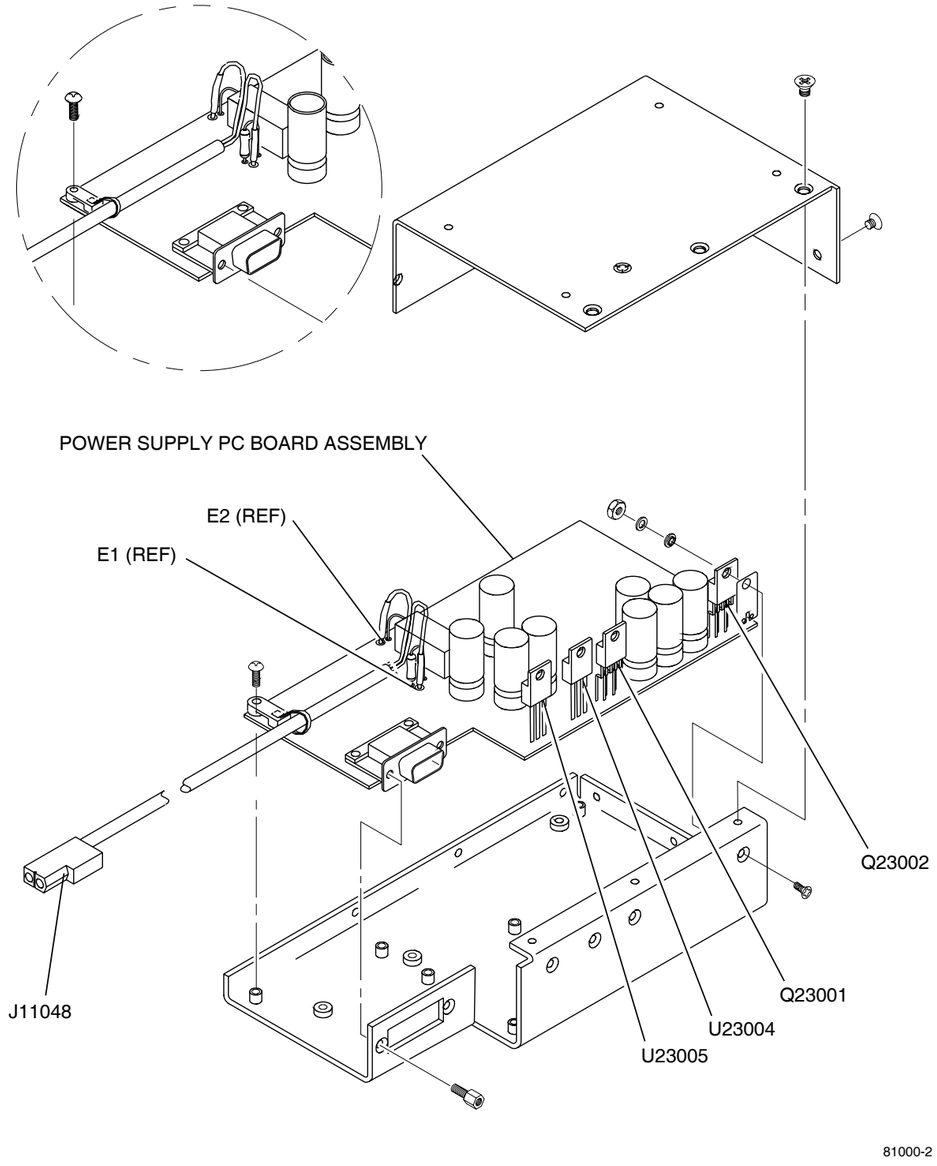
Composite Assembly (Sheet 1 of 2)
Figure 30



8145300E

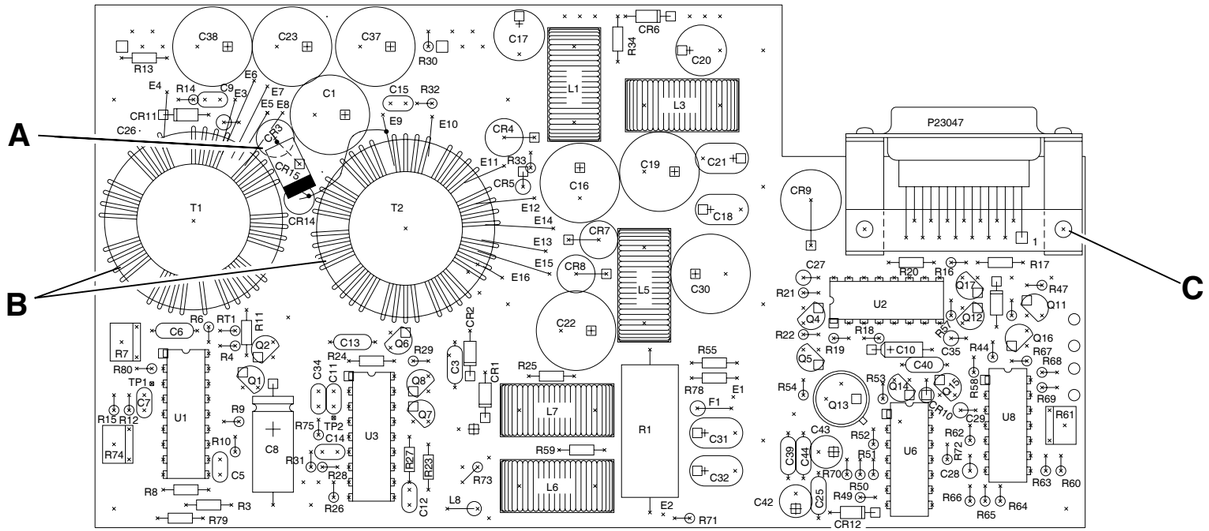
Composite Assembly Interconnect Diagram
(0000-8145-300-C)

Composite Assembly (Sheet 2 of 2)
Figure 30



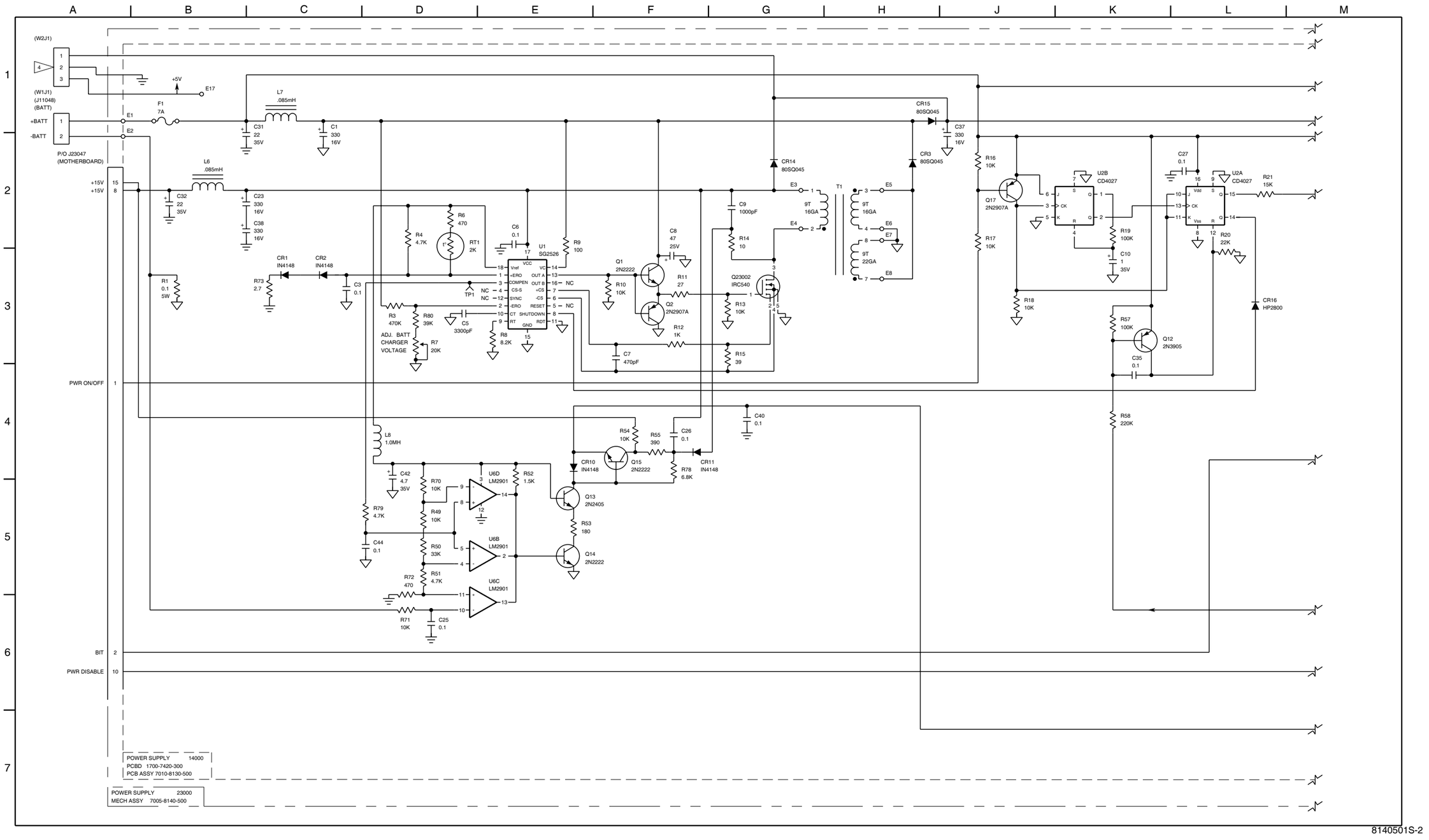
Power Supply Assembly
(7005-8143-500-E)

Power Supply Assembly (Sheet 1 of 4)
Figure 31



Power Supply PC Board Assembly
(7010-8130-500-E)

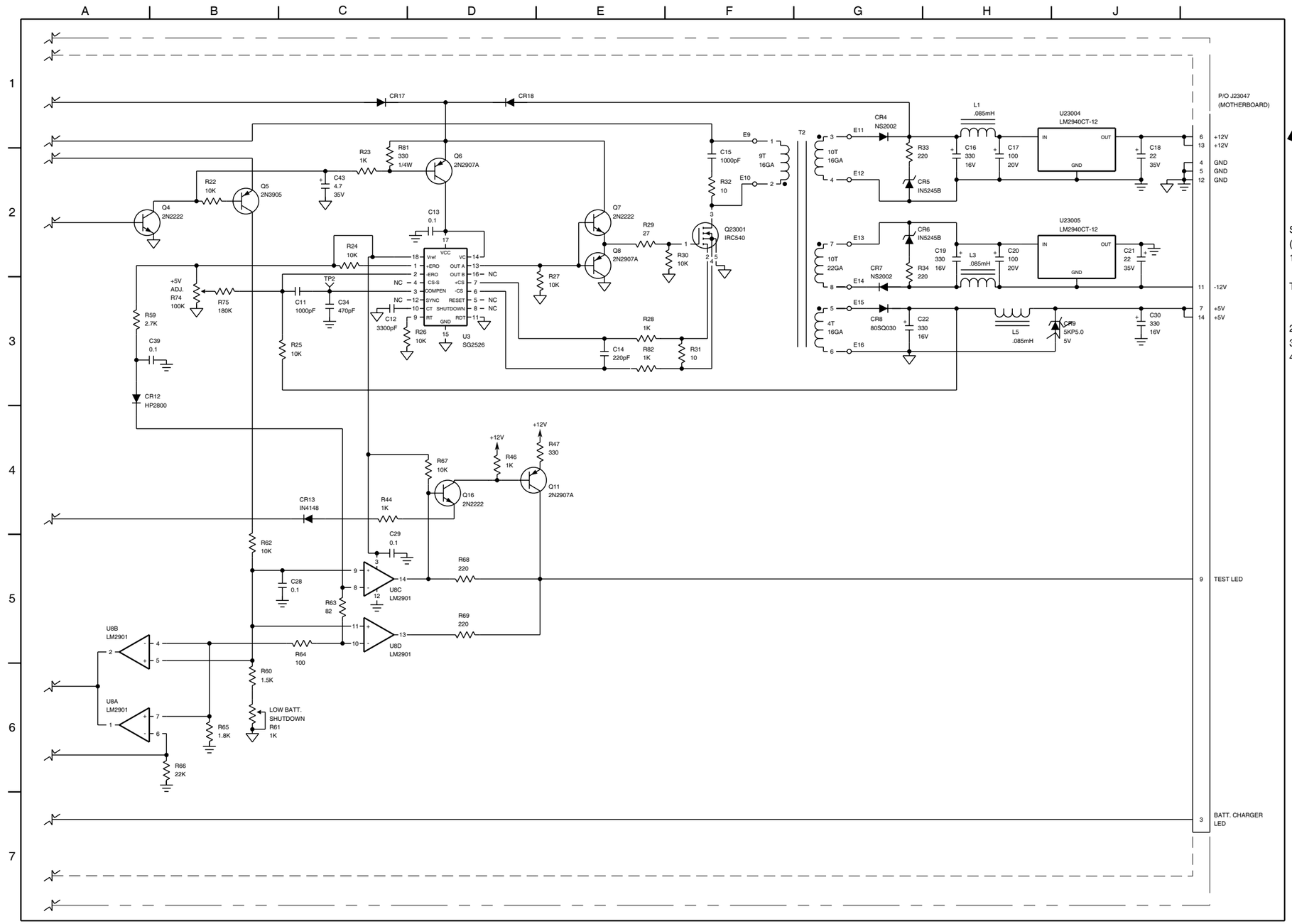
Power Supply Assembly (Sheet 2 of 4)
Figure 31



8140501S-2

Power Supply Assembly Circuit Schematic
(0000-8140-500-E)

Power Supply Assembly (Sheet 3 of 4)
Figure 31



81025-2

Power Supply Assembly Circuit Schematic
(0000-8140-500-E)

Power Supply Assembly (Sheet 4 of 4)
Figure 31

CAUTION:

CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

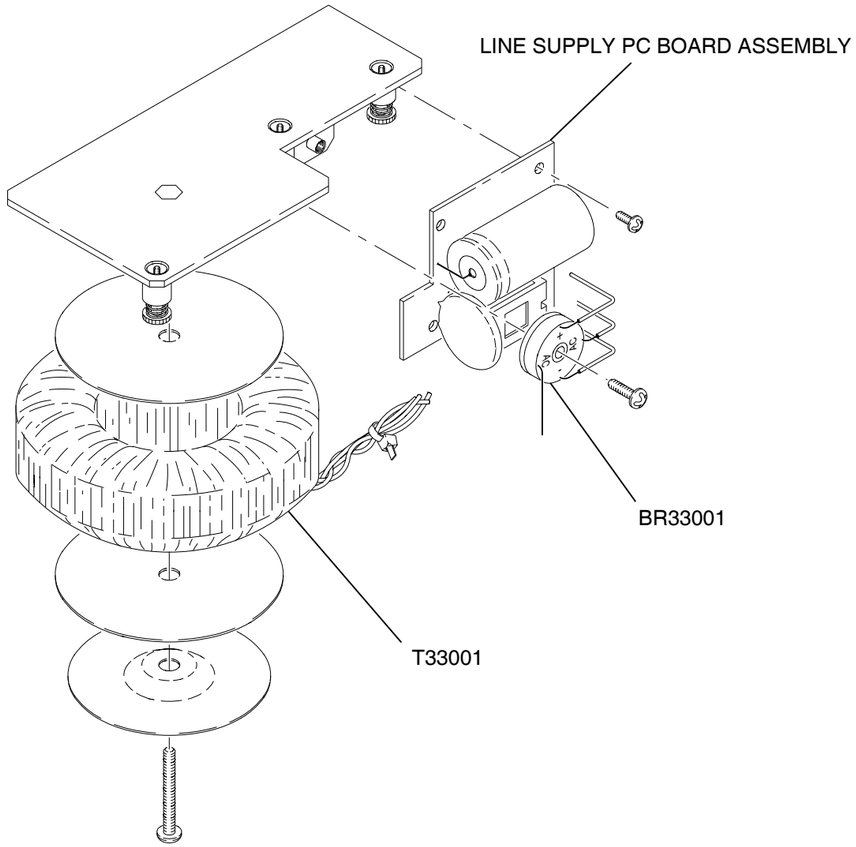
STANDARDS:
(UNLESS OTHERWISE NOTED)

1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES.

THIS SCHEMATIC CARRIES SERIES:

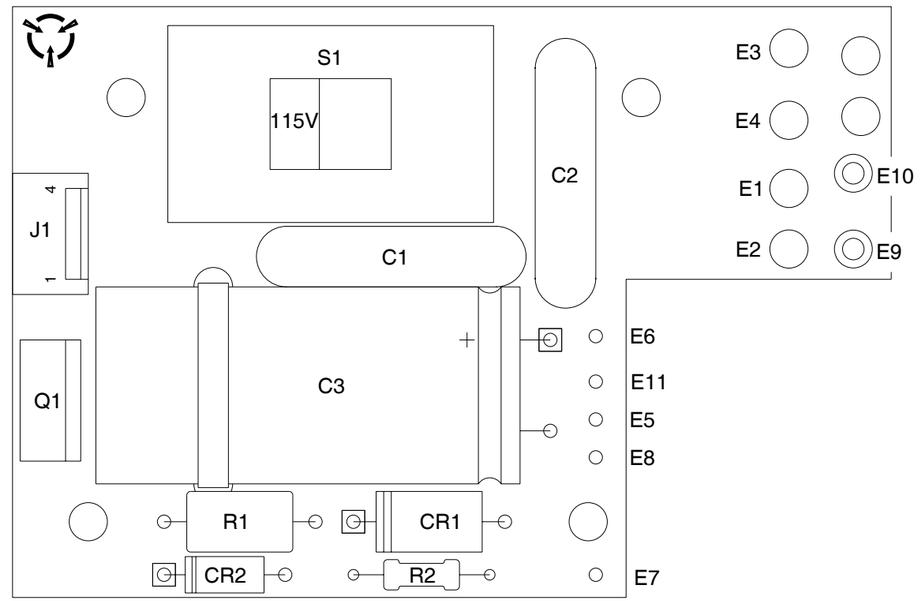
7010-8130-500	SERIES: 14000
7005-8140-500	SERIES: 23000

2. ALL RESISTORS ARE 1/8 W, 5 % TOLERANCE.
3. ALL RESISTANCE IS EXPRESSED IN OHMS.
4. ALL CAPACITANCE IS EXPRESSED IN MICROFARADS.



8143100M

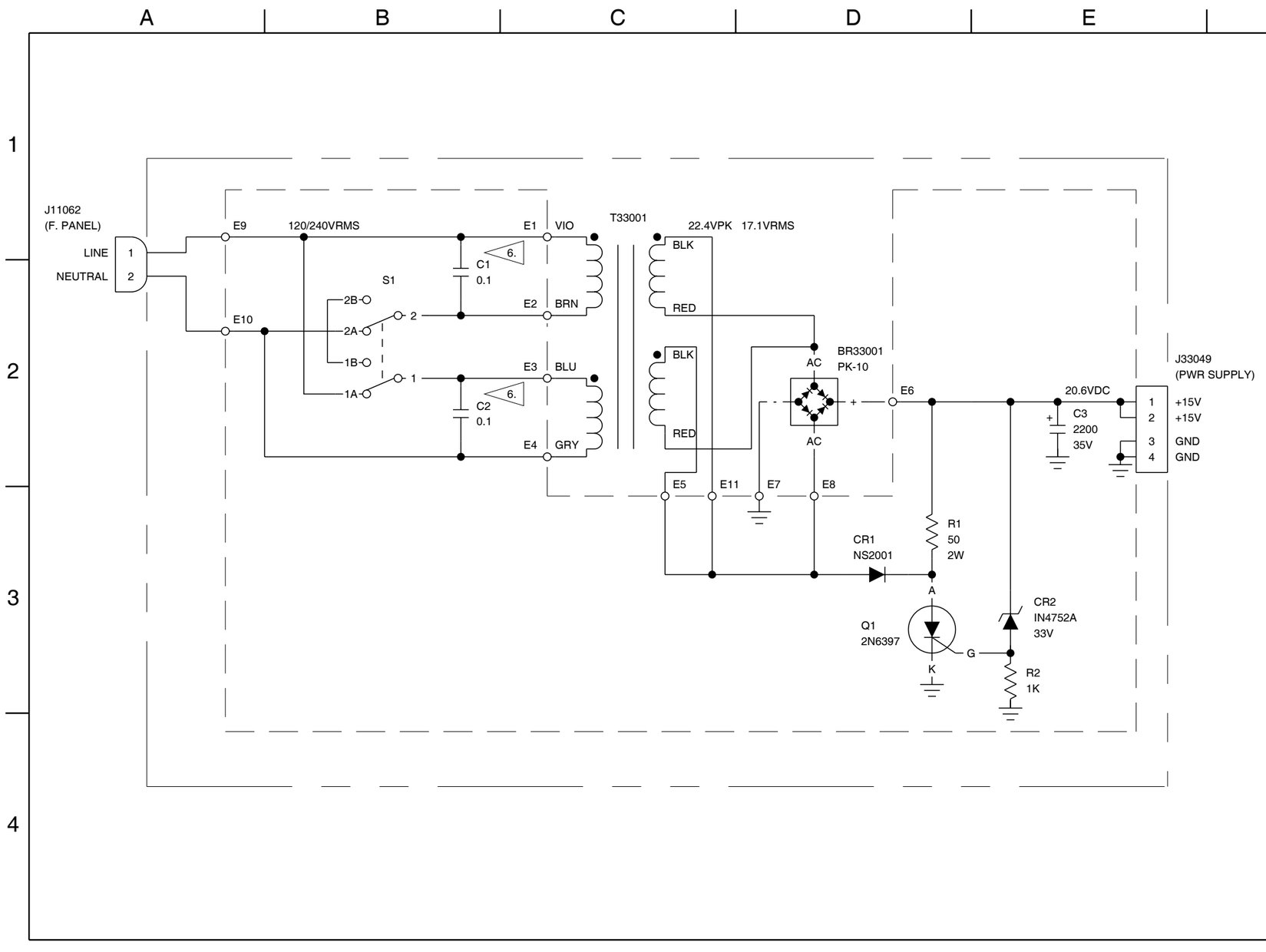
Line Supply Assembly
(7005-8143-100-E, E1, F)



8133100P

Line Supply PC Board Assembly
(7010-8133-100-A)

Line Supply Assembly (Sheet 1 of 2)
Figure 32



CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE SPECIFIED)

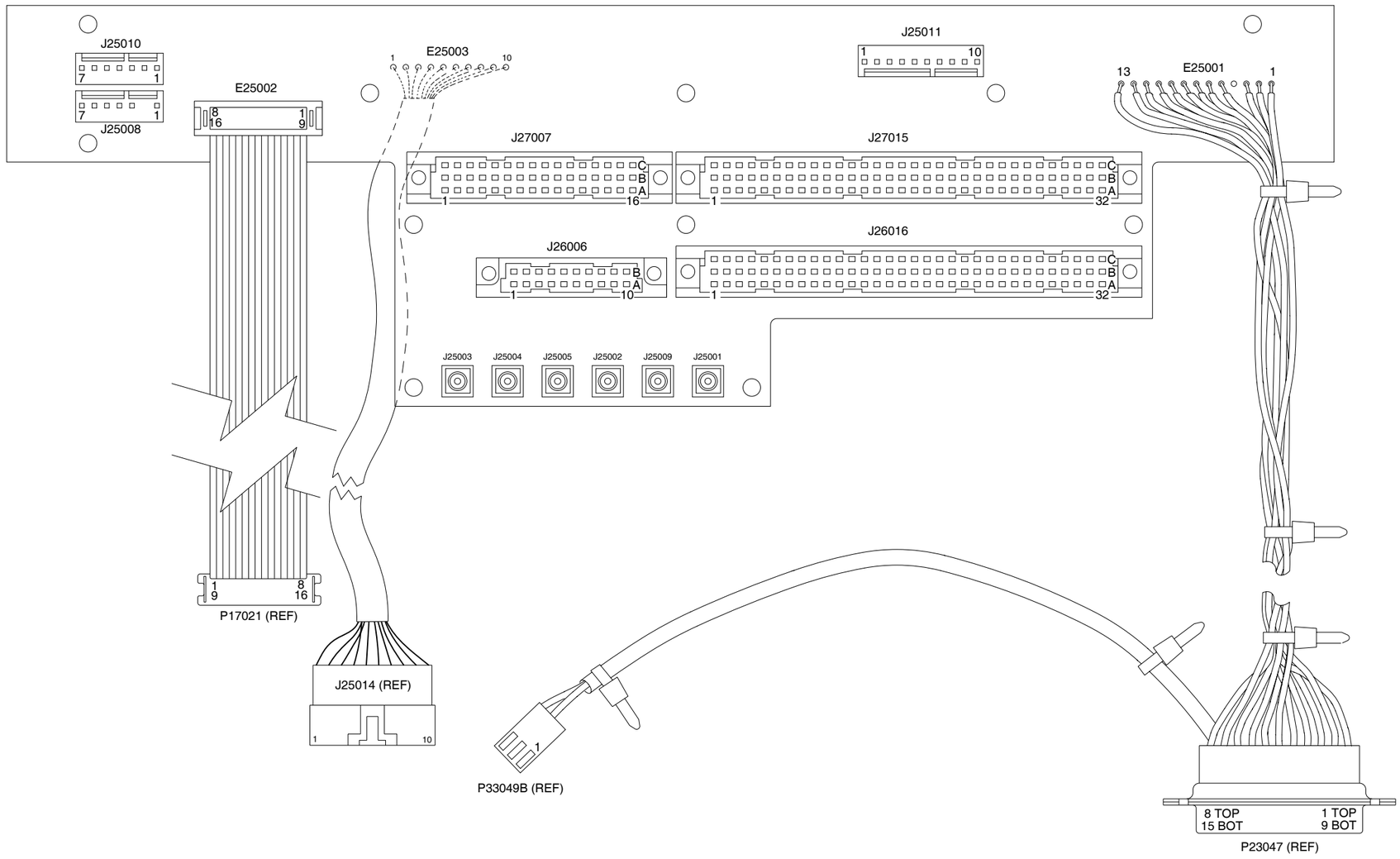
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS ASSEMBLY CARRIES SERIES
   A. 7010-8133-100 : 15000 (e.g. R1 IS R15001)
   B. 7005-8143-100 : 33000 (e.g. T1 IS T33001)
2. ALL RESISTORS ARE 5%, 1/4 W.
3. ALL RESISTANCE IS EXPRESSED IN OHMS.
   ALL CAPACITANCE IS EXPRESSED IN MICROFARADS.
   ALL INDUCTANCE IS EXPRESSED IN MICROHENRIES.
4. HIGHEST REFERENCE DESIGNATIONS.
   BR33001 C3, CR2, J33049, Q1, R2, S1, T33001
5. REFERENCE DESIGNATIONS NOT USED.

6. COMPONENTS NOT INSTALLED.

811001-2

Line Supply Assembly Circuit Schematic
(0000-8143-100-B2)

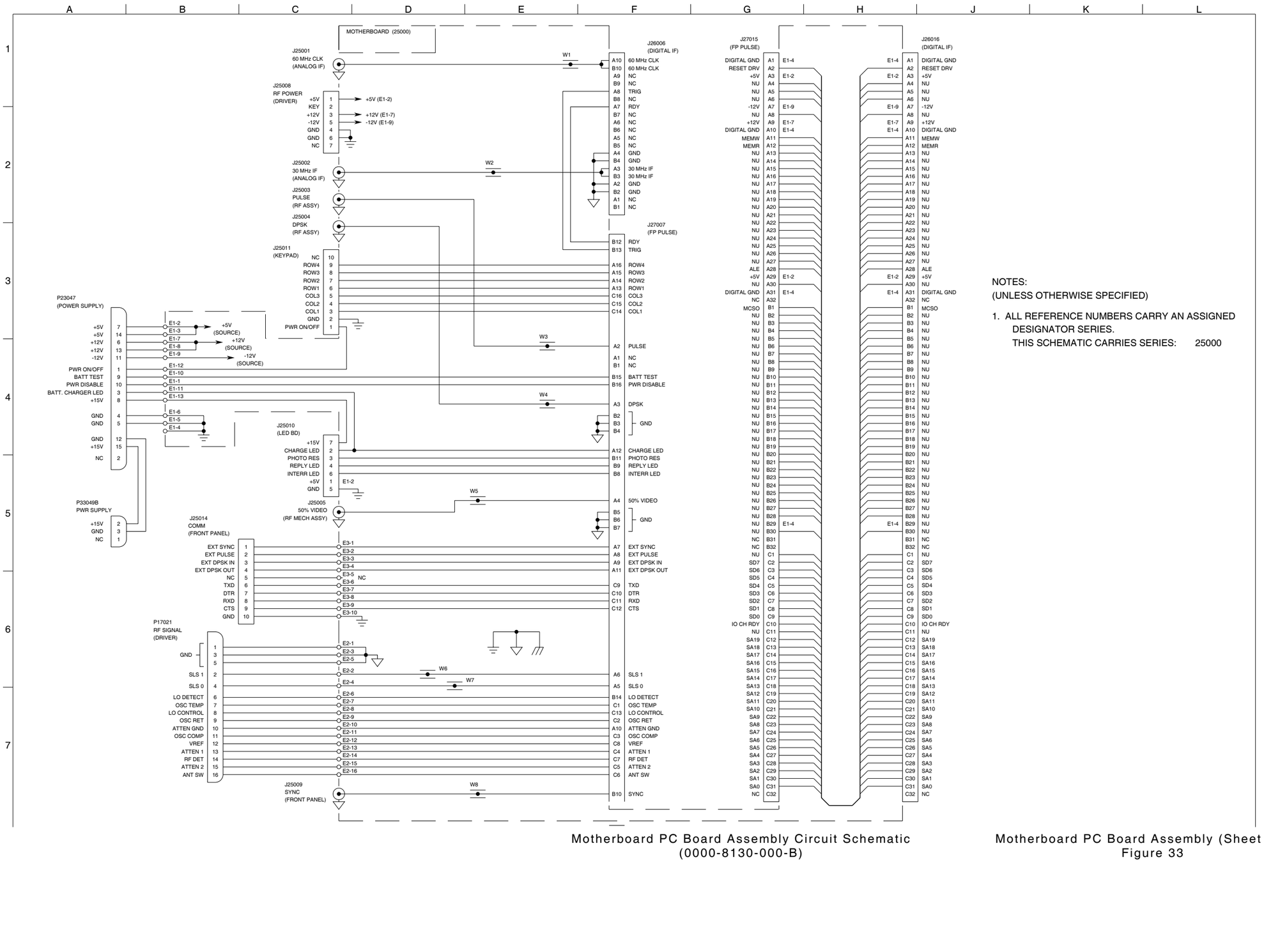
Line Supply Assembly (Sheet 2 of 2)
Figure 32



8134000P

Motherboard PC Board Assembly
(7010-8138-000-B)

Motherboard PC Board Assembly (Sheet 1 of 2)
Figure 33



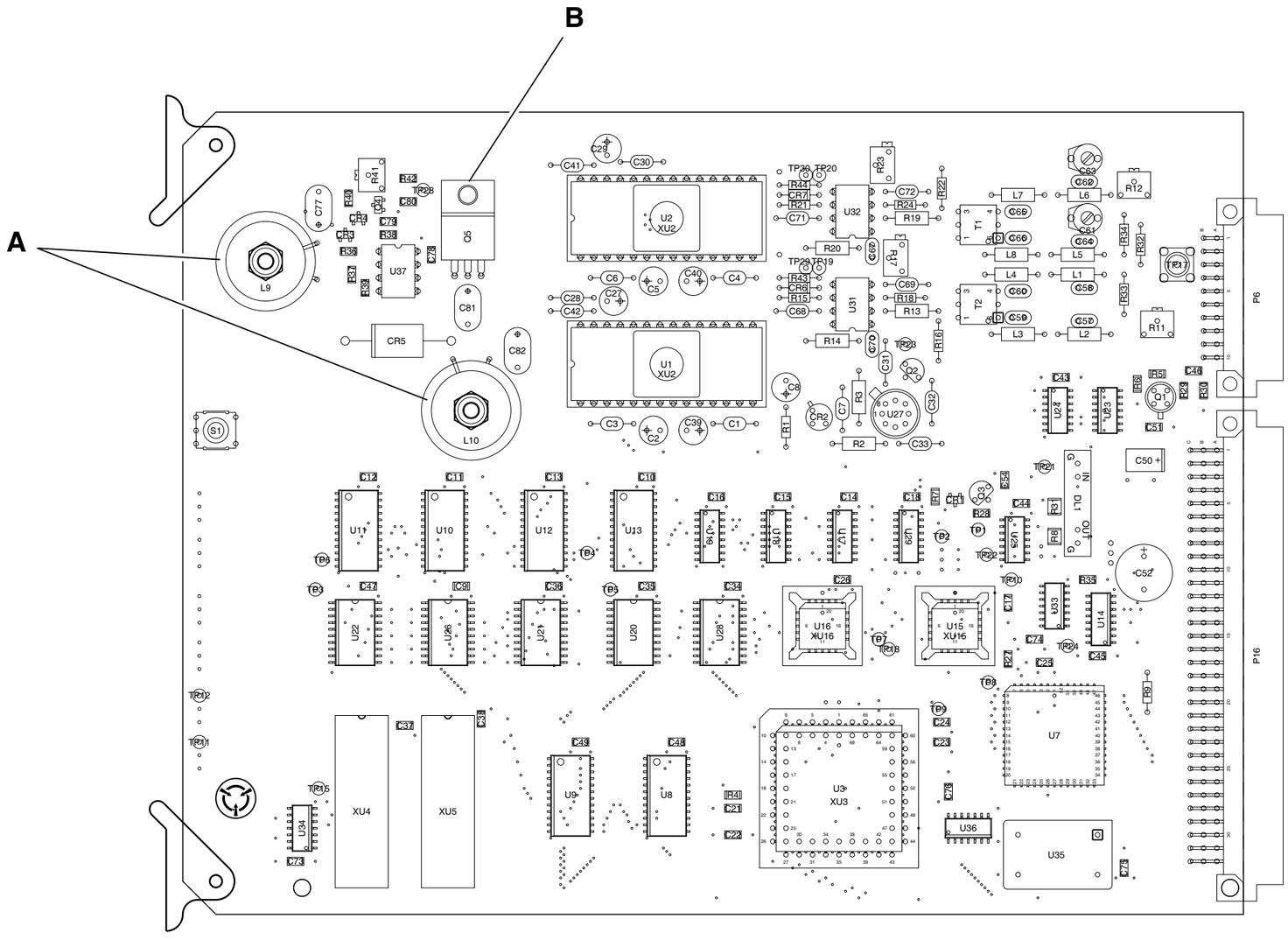
NOTES:
(UNLESS OTHERWISE SPECIFIED)

1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES.
   THIS SCHEMATIC CARRIES SERIES: 25000

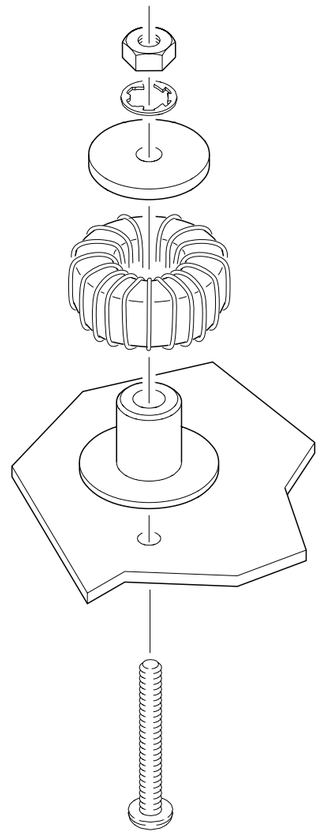
8130000S

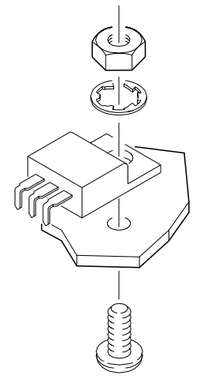
Motherboard PC Board Assembly Circuit Schematic
(0000-8130-000-B)

Motherboard PC Board Assembly (Sheet 2 of 2)
Figure 33



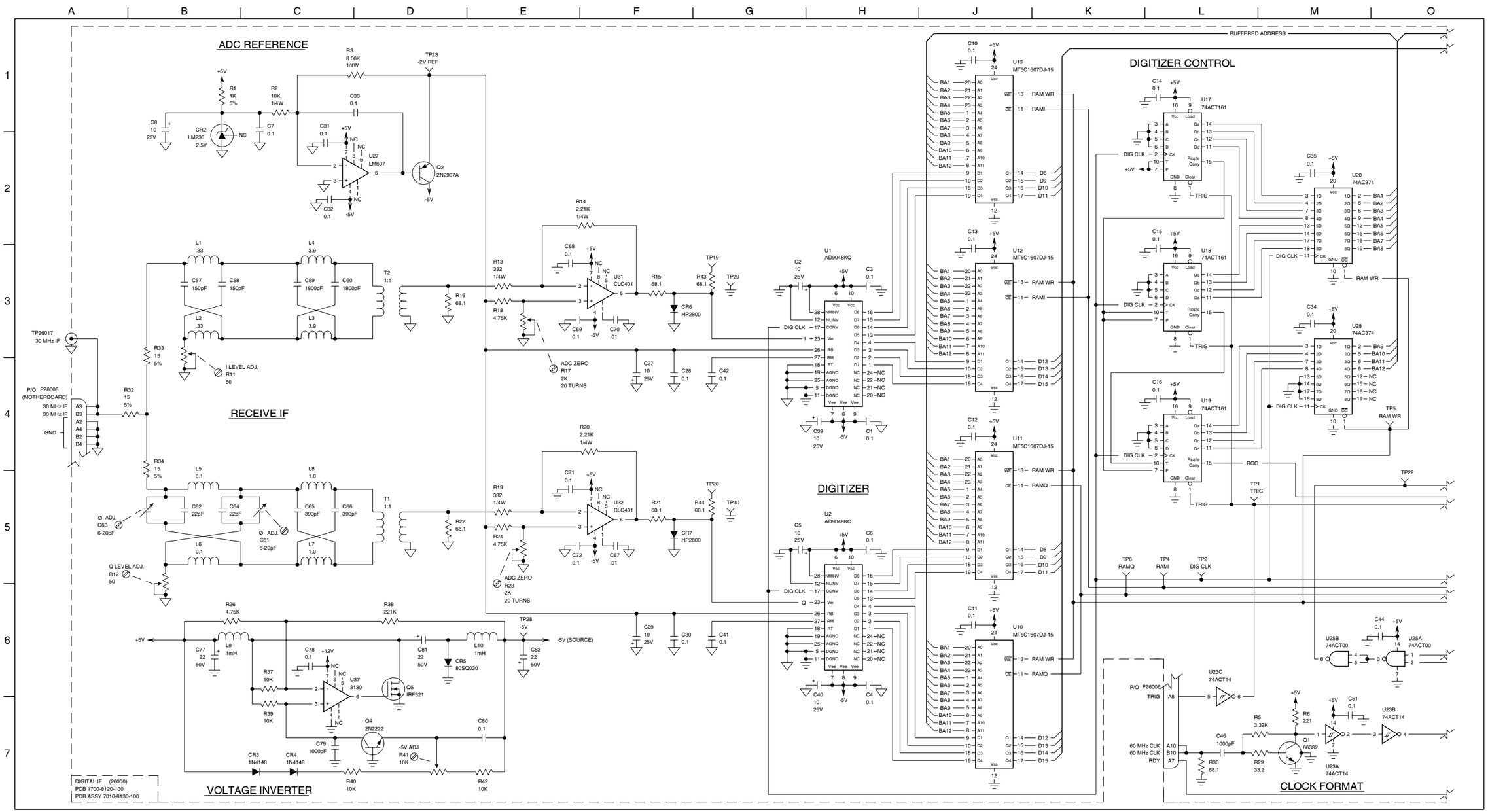
Digital IF PC Board Assembly
(7010-8130-100-F)





81004-2

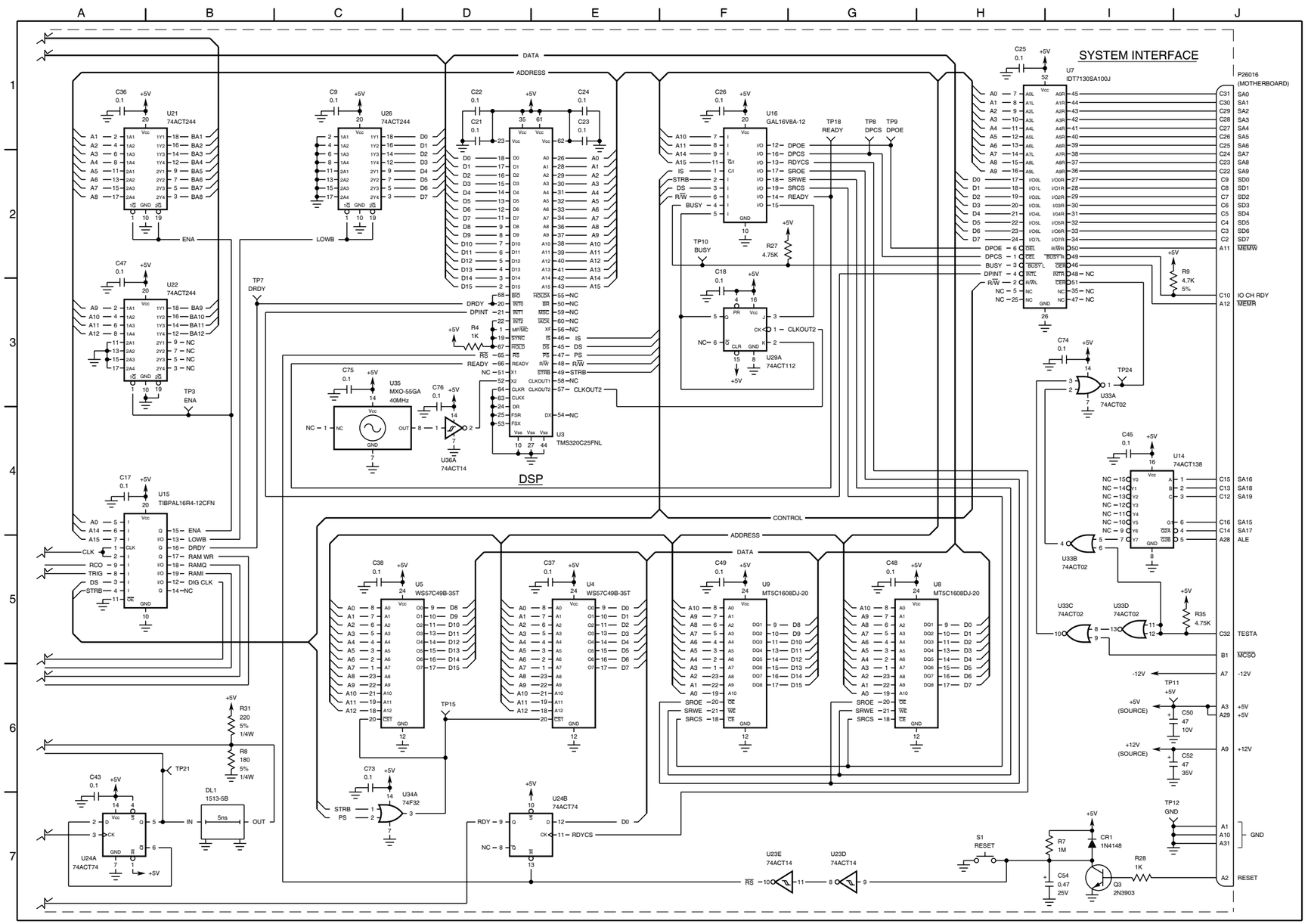
Digital IF PC Board Assembly (Sheet 1 of 3)
Figure 34



8530101S

Digital IF PC Board Assembly Circuit Schematic
(0000-8130-100-D1)

Digital IF PC Board Assembly (Sheet 2 of 3)
Figure 34



8530102S

Digital IF PC Board Assembly Circuit Schematic
(0000-8130-100-E)

Digital IF PC Board Assembly (Sheet 3 of 3)
Figure 34

CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

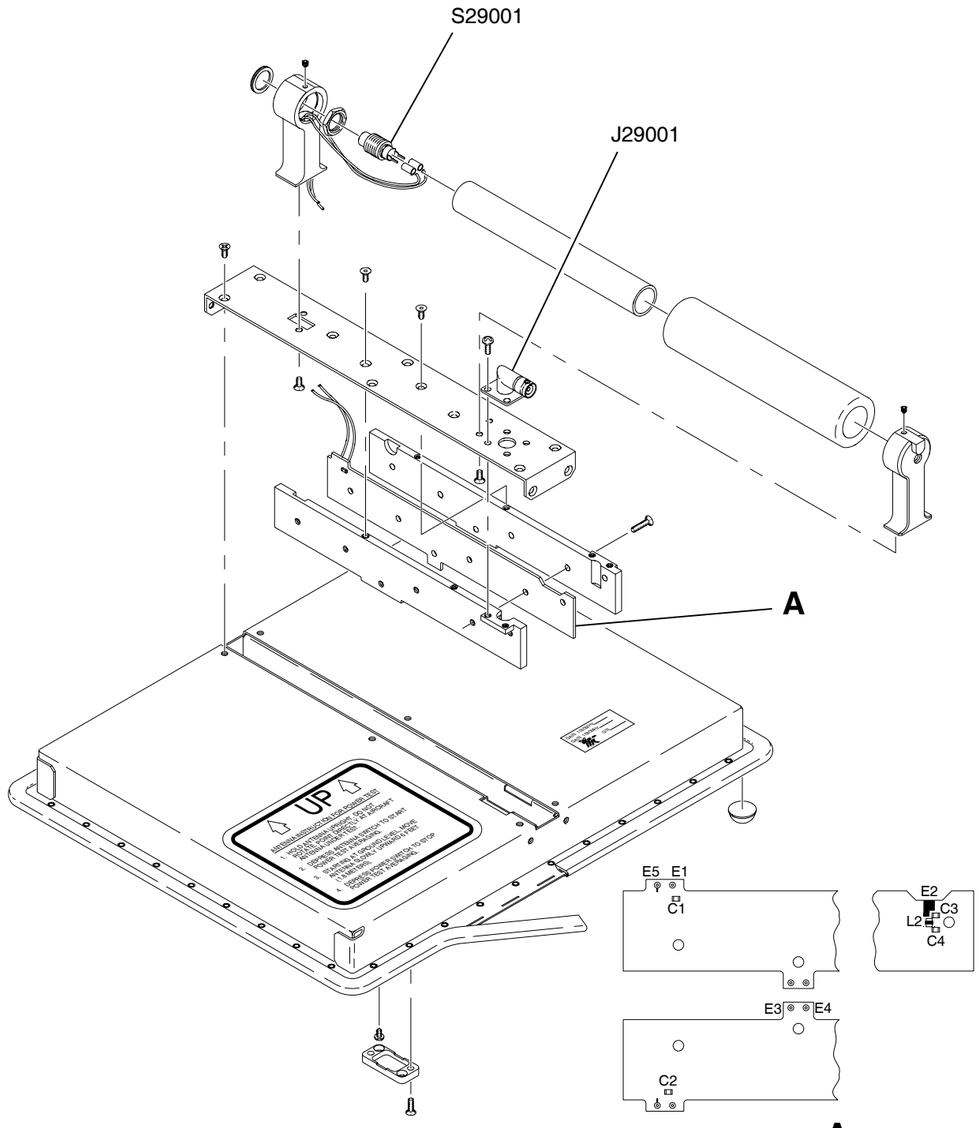
NOTES:
(UNLESS OTHERWISE SPECIFIED)

1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS ASSEMBLY CARRIES SERIES:

   7010-8130-100 26000 (e.g., R1 IS R26001)

2. ALL RESISTORS ARE 1/8W, 1% TOLERANCE.
3. ALL RESISTANCE IS EXPRESSED IN OHMS.
4. ALL CAPACITANCE IS EXPRESSED IN MICROFARADS.
5. ALL INDUCTANCE IS EXPRESSED IN MICROHENRIES.

6 REV E AND ON ONLY.

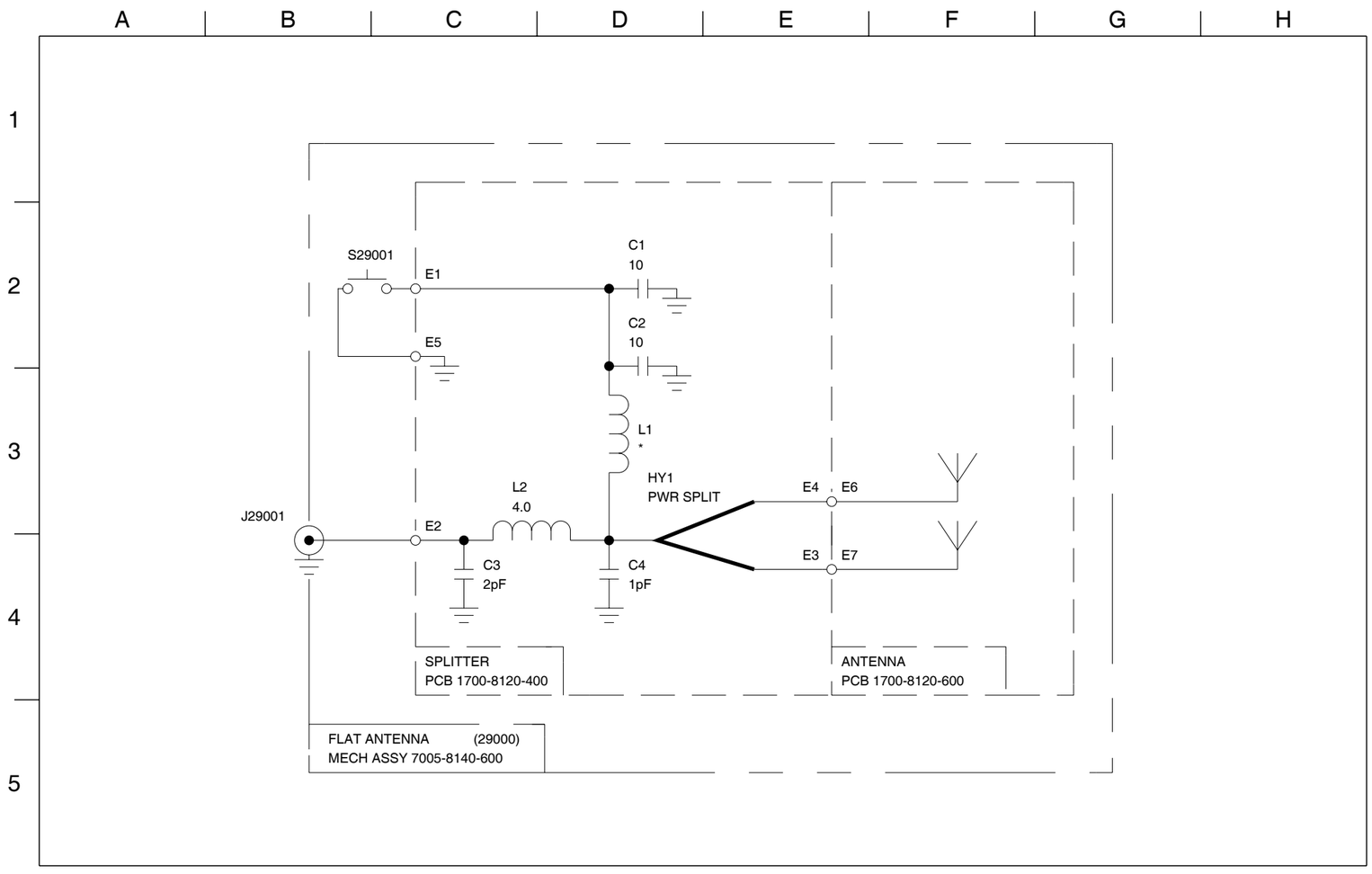


DETAIL **A**
SPLITTER PC BOARD

8140600M

Flat Antenna Assembly
(7005-8140-600-H)

Flat Antenna Assembly (Sheet 1 of 2)
Figure 35



CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE SPECIFIED)

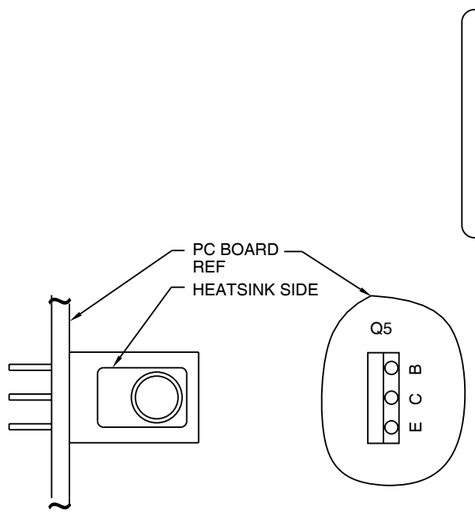
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS ASSEMBLY CARRIES SERIES:
   A. 7005-8140-600 : 29000 (e.g. C1 IS C29001)
2. ALL CAPACITANCE IS EXPRESSED IN PICOFARADS.
3. ALL INDUCTANCE IS EXPRESSED IN NANOHENRIES.

* – INDICATES TRANSMISSION LINES OF OTHER THAN 50 OHMS IMPEDANCE WHICH CONSTITUTE CIRCUIT ELEMENTS.

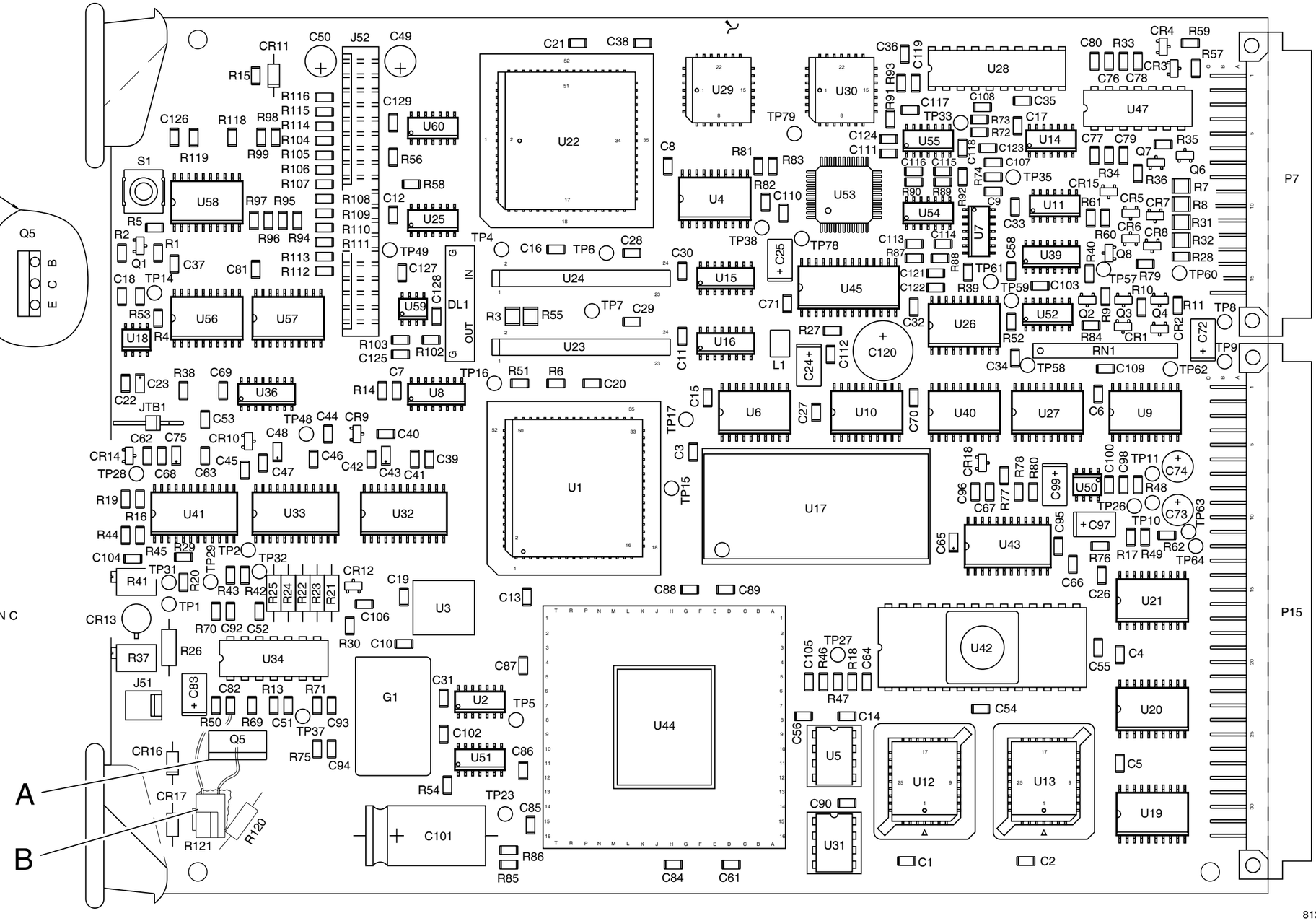
8140600S

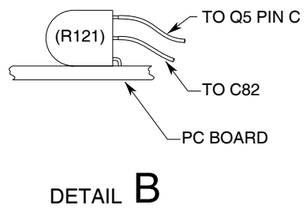
Flat Antenna Assembly Circuit Schematic
(0000-8140-600-D1)

Flat Antenna (Sheet 2 of 2)
Figure 35



DETAIL A



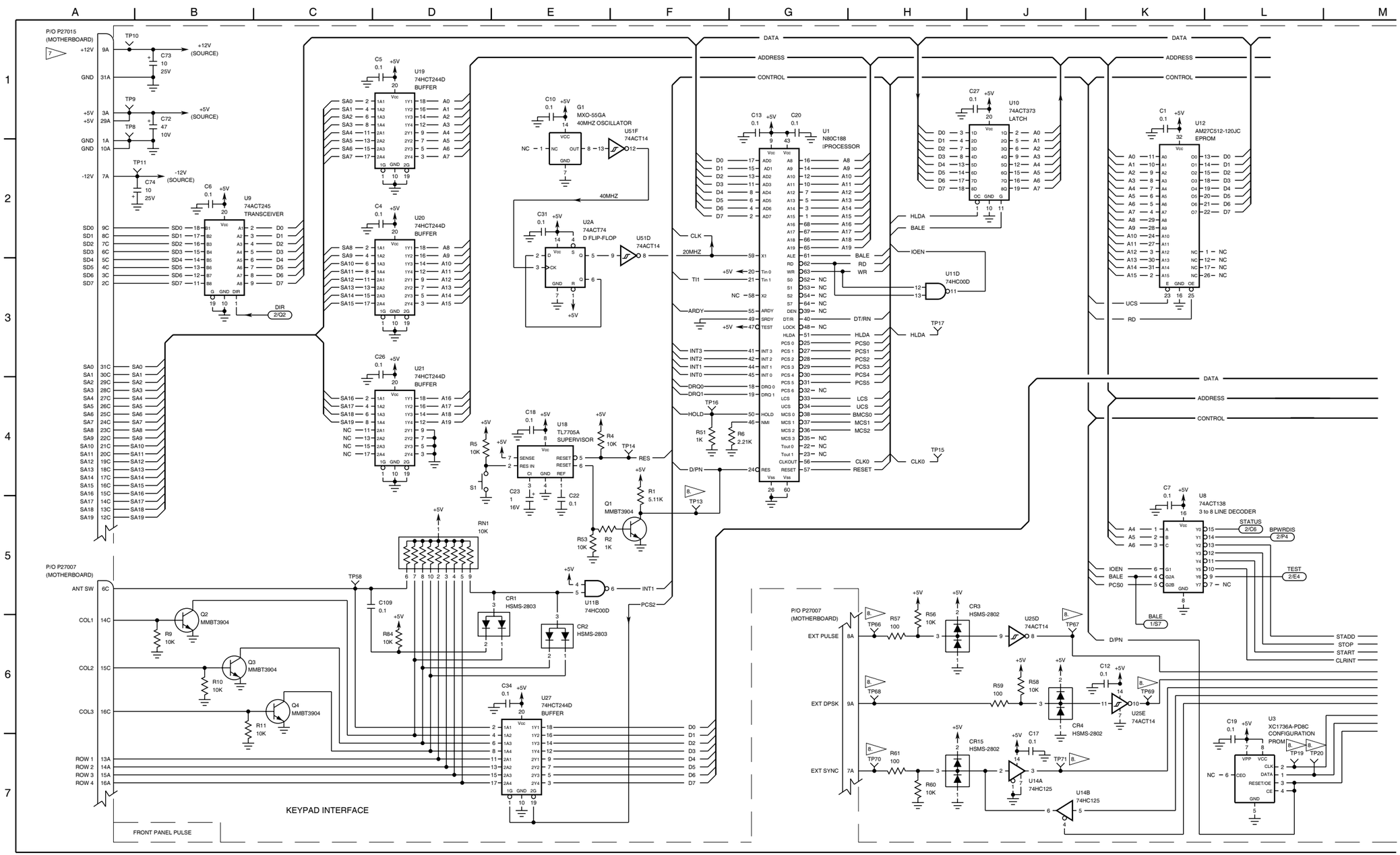


DETAIL B

Front Panel Pulse PC Board Assembly
(7010-8132-800-B)

8132800A

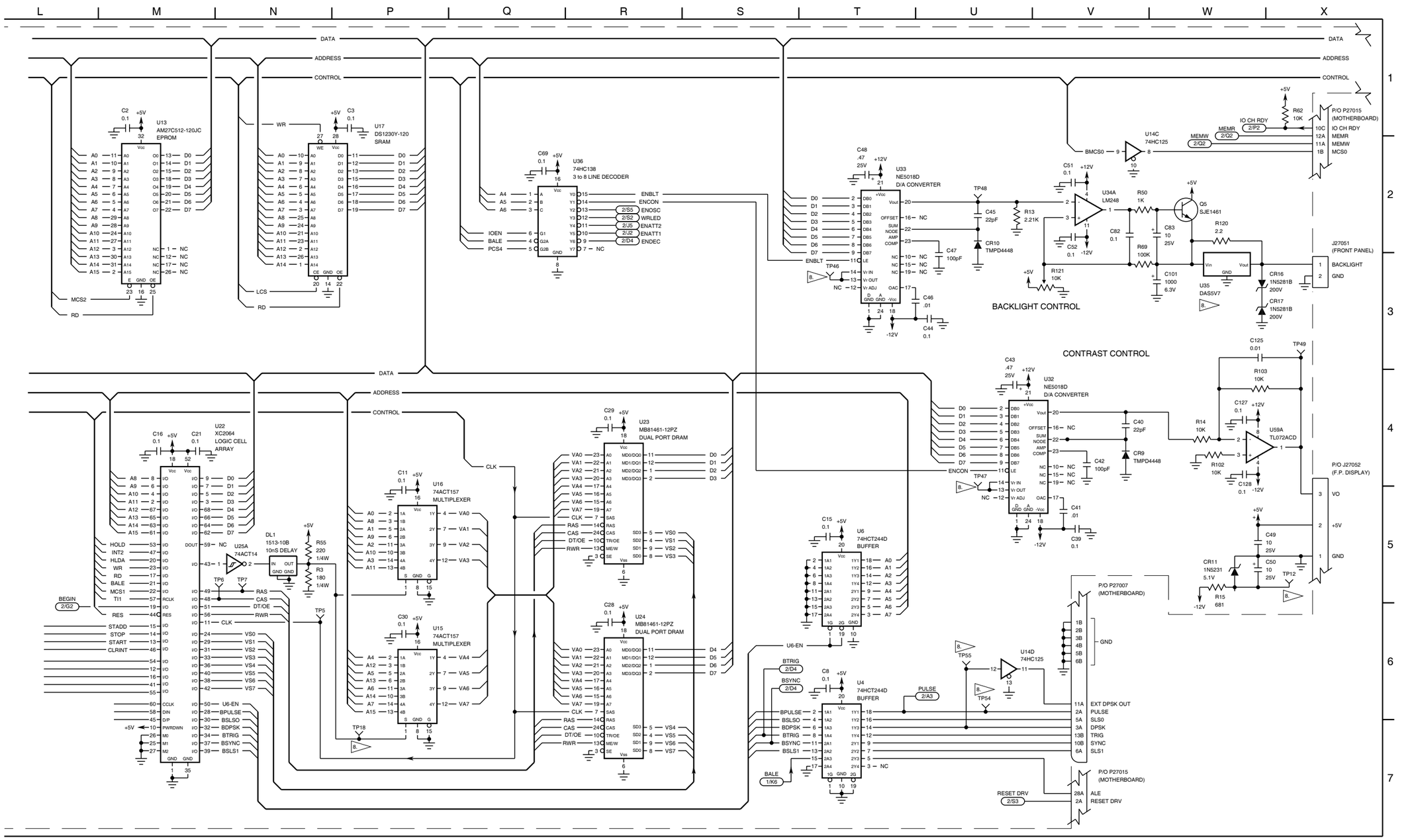
Front Panel Pulse PC Board Assembly (Sheet 1 of 12)
Figure 36



081M-001

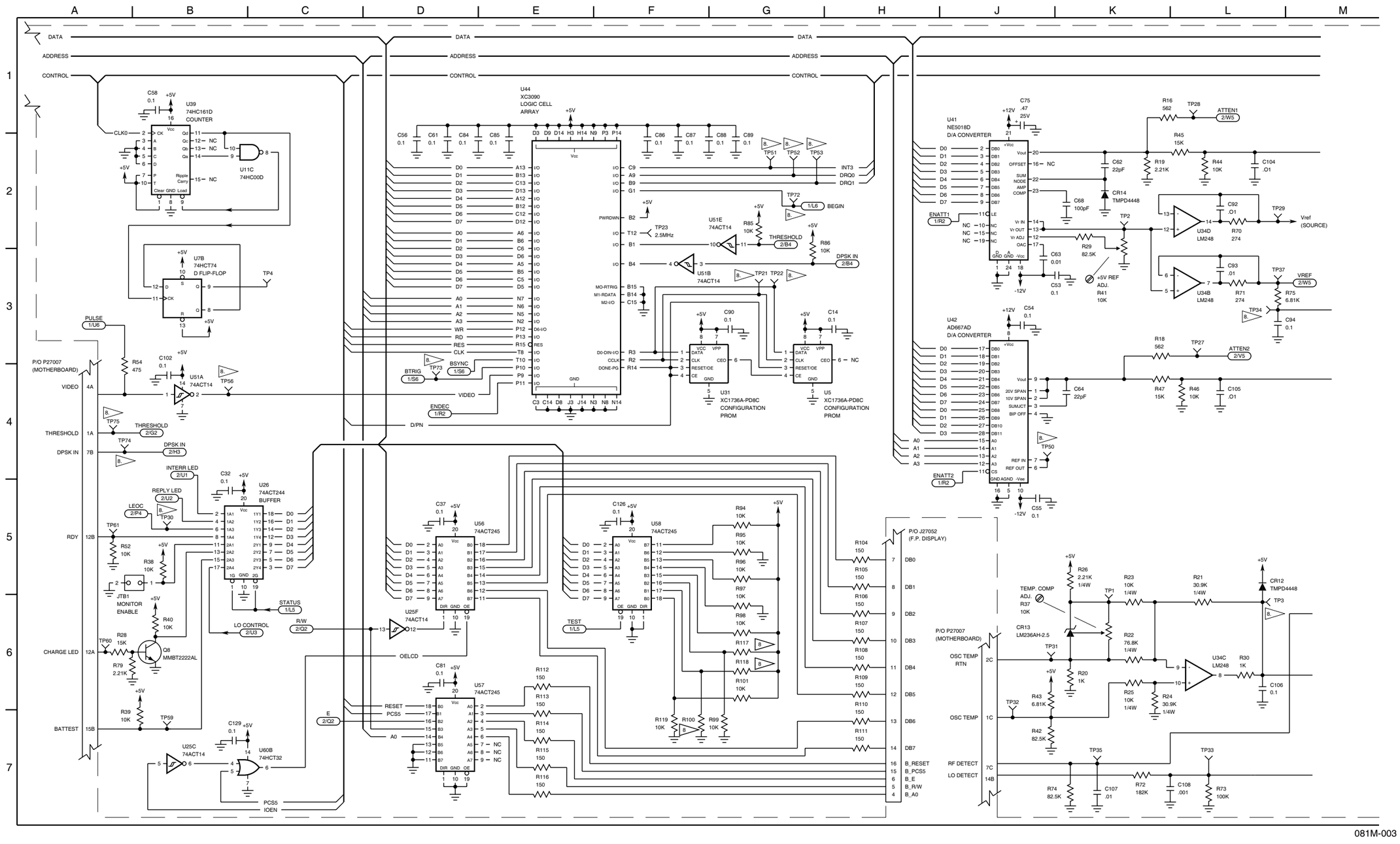
Front Panel Pulse PC Board Assembly Circuit Schematic
(0000-8132-800-A)

Front Panel Pulse PC Board Assembly
(Sheet 2 of 12)
Figure 36



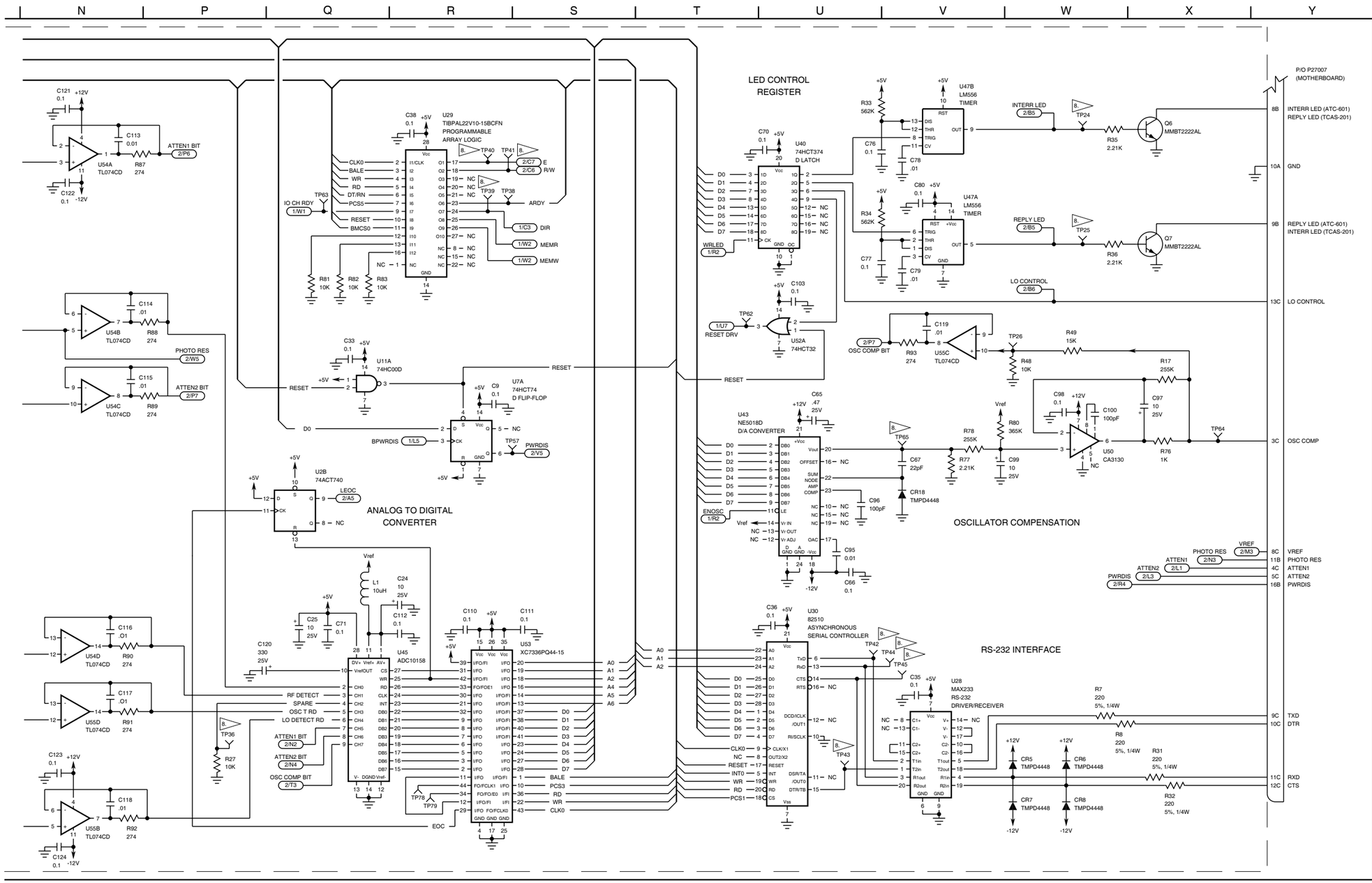
Front Panel Pulse PC Board Assembly Circuit Schematic
(0000-8132-800-A)

Front Panel Pulse PC Board Assembly (Sheet 3 of 12)
Figure 36



Front Panel Pulse PC Board Assembly Circuit Schematic
(0000-8132-800-B)

Front Panel Pulse PC Board Assembly
(Sheet 4 of 12)
Figure 36



CAUTION:

CONTAINS PARTS AND ASSYS SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

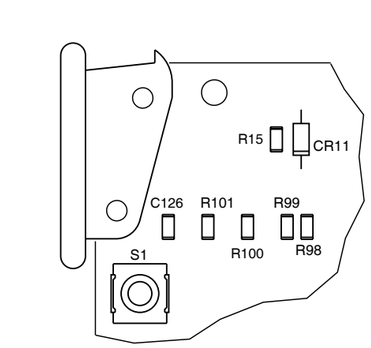
NOTES:
(UNLESS OTHERWISE STATED)

1. BASIC REFERENCE DESIGNATORS SHOWN, FOR COMPLETE DESIGNATOR PREFIXES, REFER TO PRODUCT STRUCTURE AND SYSTEM INTERCONNECT.
2. ALL RESISTORS ARE 1% TOLERANCE, 1/8 W.
3. ALL RESISTANCE IS EXPRESSED IN OHMS.
4. ALL CAPACITANCE IS EXPRESSED IN MICROFARADS.
5. ALL INDUCTANCE IS EXPRESSED IN MICROHENRYS.
6. NOT USED
7. PINS NOT USED ON P27015:
   4A - 6A, 8A, 13A - 27A, 29A, 30A, 2B - 31B, 1C, 11C
8. COMPONENTS NOT INSTALLED

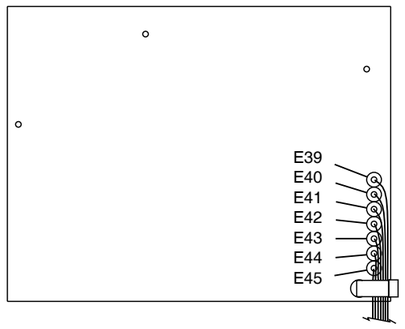
081M-004

Front Panel Pulse PC Board Assembly Circuit Schematic
(0000-8132-800-A)

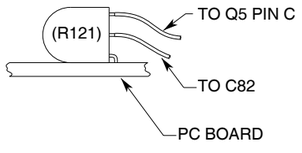
Front Panel Pulse PC Board Assembly (Sheet 5 of 12)
Figure 36



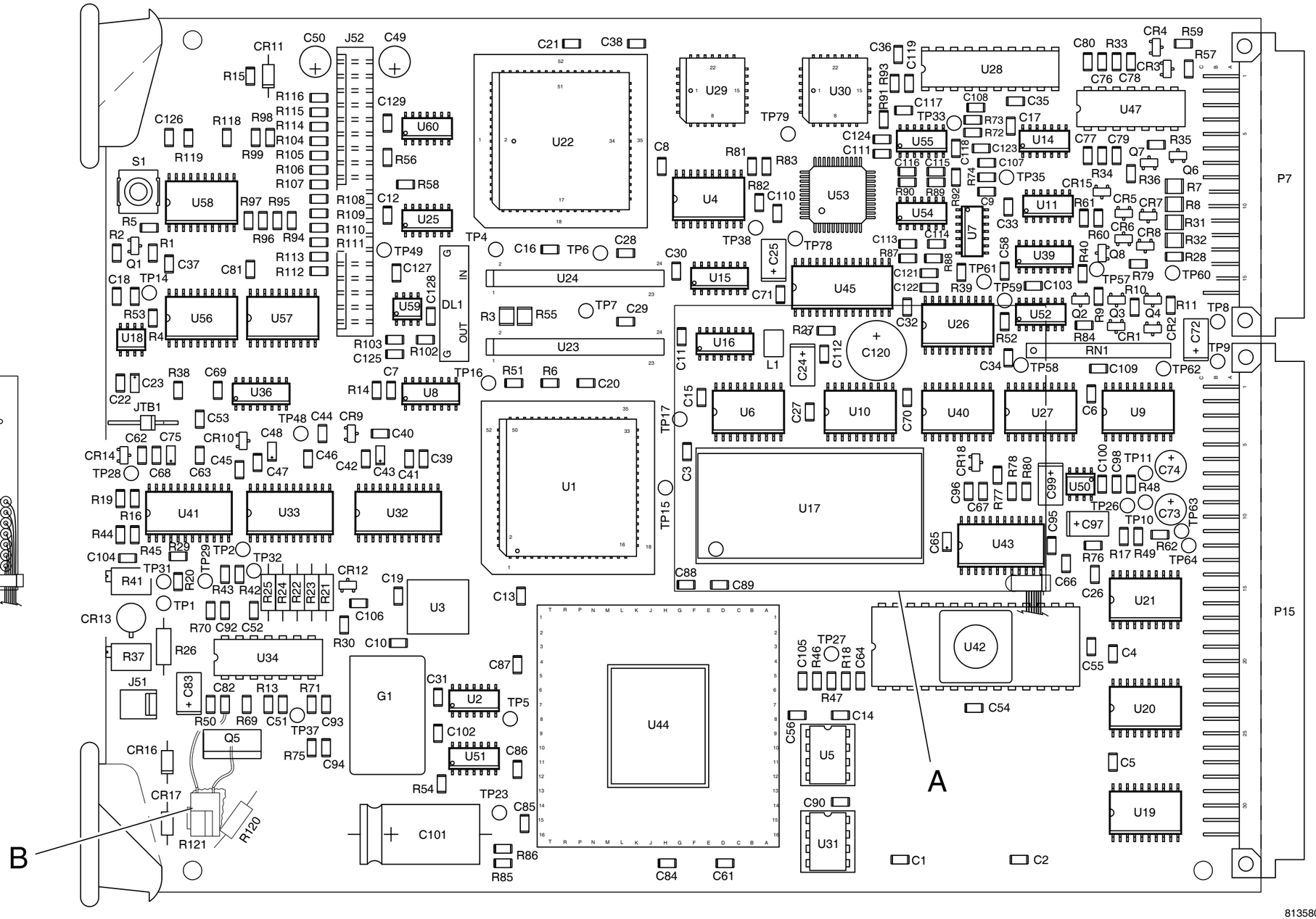
(REV A)



DETAIL A



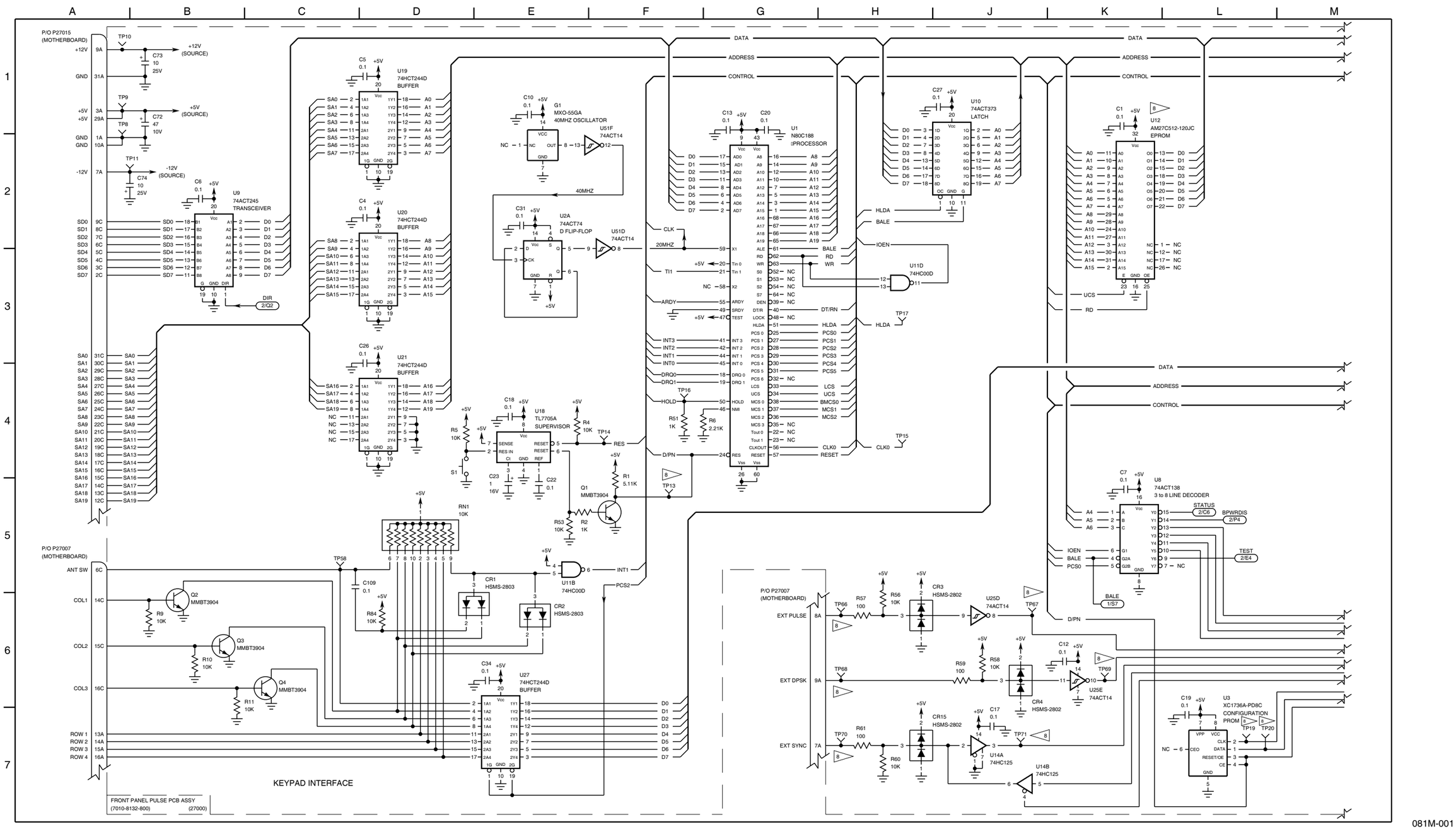
DETAIL B



8135800A

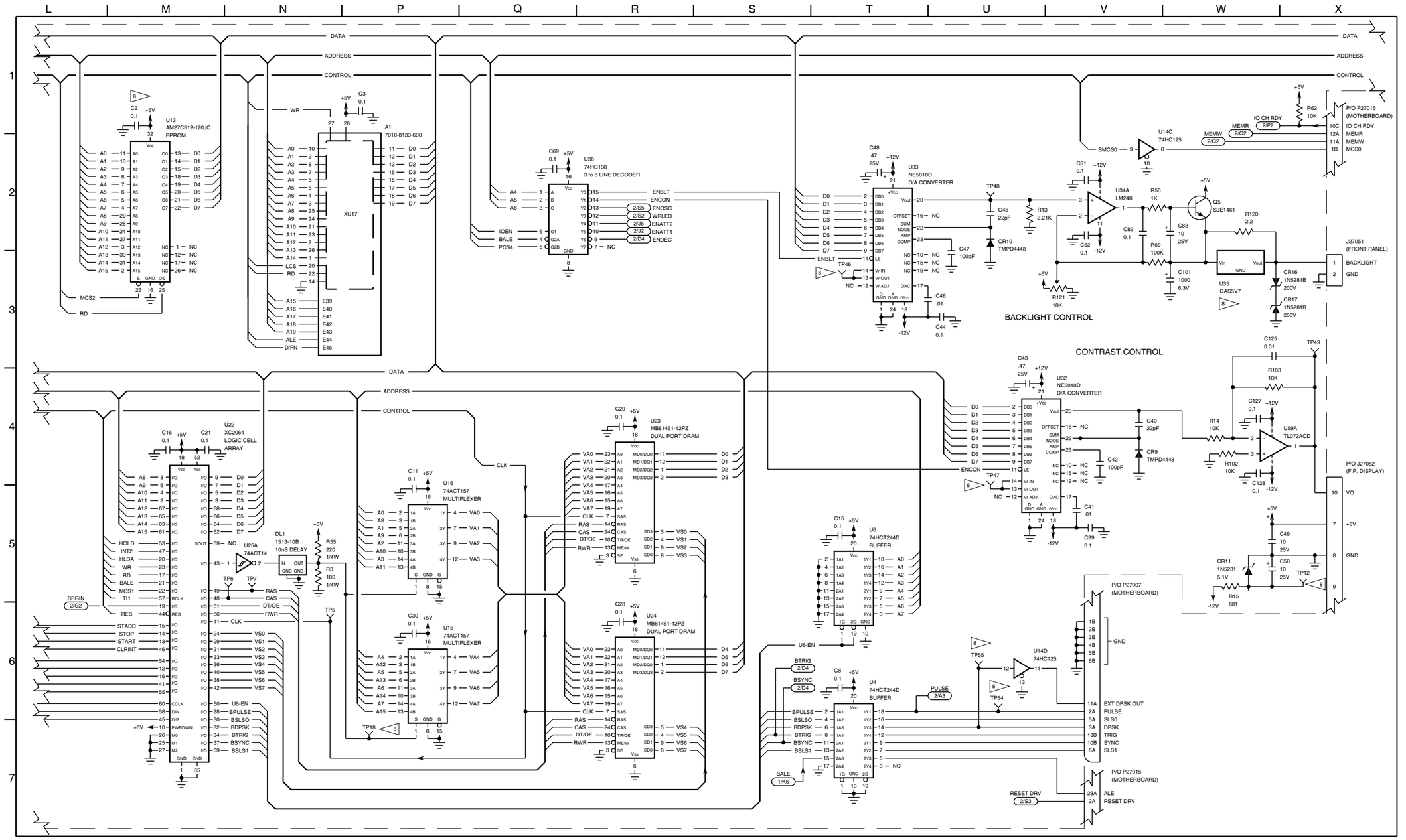
Front Panel Pulse PC Board Assembly
(7010-8135-800-B)

Front Panel Pulse PC Board Assembly
(Sheet 6 of 12)
Figure 36



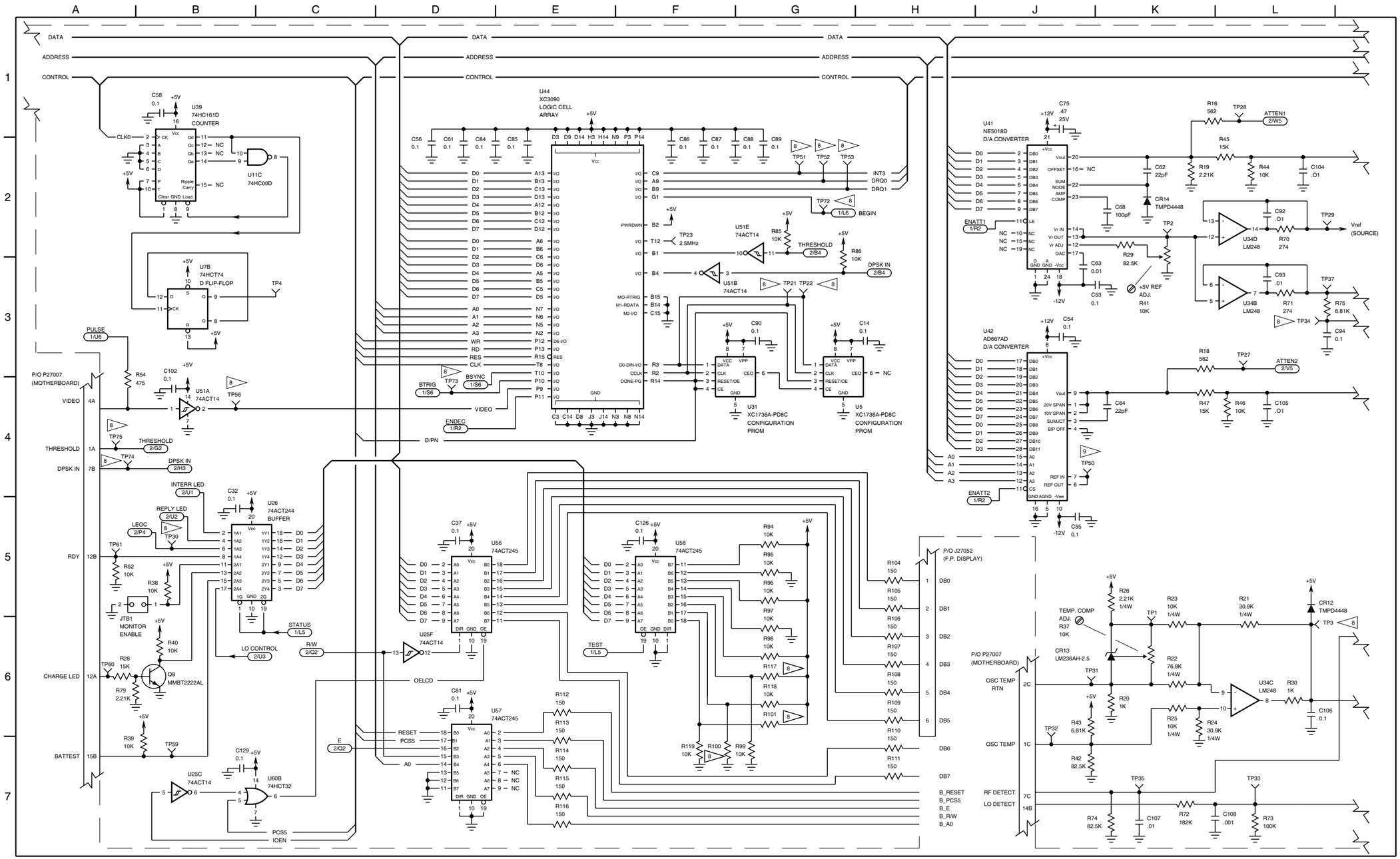
Front Panel Pulse PC Board Assembly Circuit Schematic
(0000-8135-800-B)

Front Panel Pulse PC Board Assembly (Sheet 7 of 12)
Figure 36



Front Panel Pulse PC Board Assembly Circuit Schematic
(0000-8135-800-B)

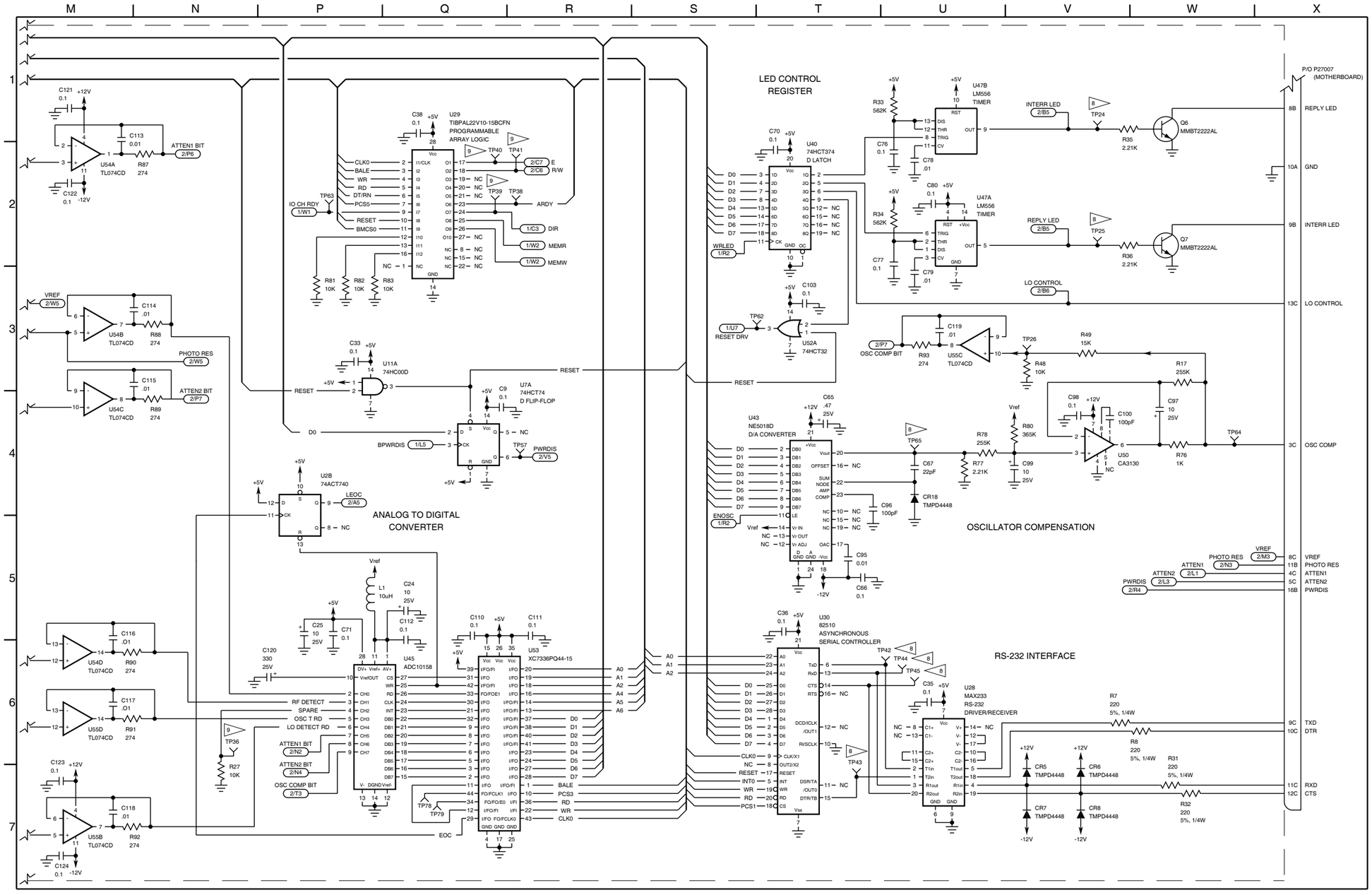
Front Panel Pulse PC Board Assembly
(Sheet 8 of 12)
Figure 36



081M-003

Front Panel Pulse PC Board Assembly Circuit Schematic
(0000-8135-800-B)

Front Panel Pulse PC Board Assembly (Sheet 9 of 12)
Figure 36



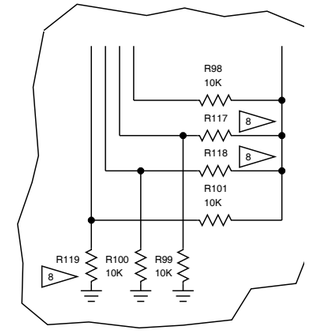
Front Panel Pulse PC Board Assembly Circuit Schematic
(0000-8135-800-B)

CAUTION:
CONTAINS PARTS AND ASSEMBLI
SUSCEPTIBLE TO DAMAGE BY
ELECTROSTATIC DISCHARGE (E

NOTES:
(UNLESS OTHERWISE SPECIFIED)

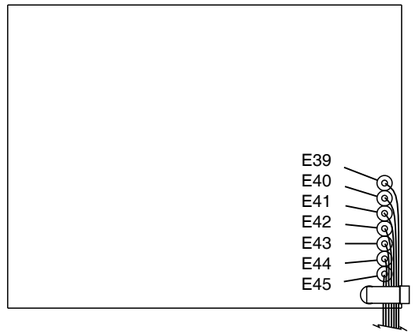
1. ALL REFERENCE NUMBERS CARRY AN AS DESIGNATOR SERIES. THIS SCHEMATIC (SERIES:
   7010-8132-800 27000 (e.g., R1 IS R27001
2. ALL RESISTORS ARE 1/8 W, 1% TOLERAN(
3. ALL RESISTANCE IS EXPRESSED IN OHMS
4. ALL CAPACITANCE IS EXPRESSED IN MIC
5. ALL INDUCTANCE IS EXPRESSED IN MICR
6. NOT USED
7. NOT USED

8 COMPONENTS NOT INSTALLED.

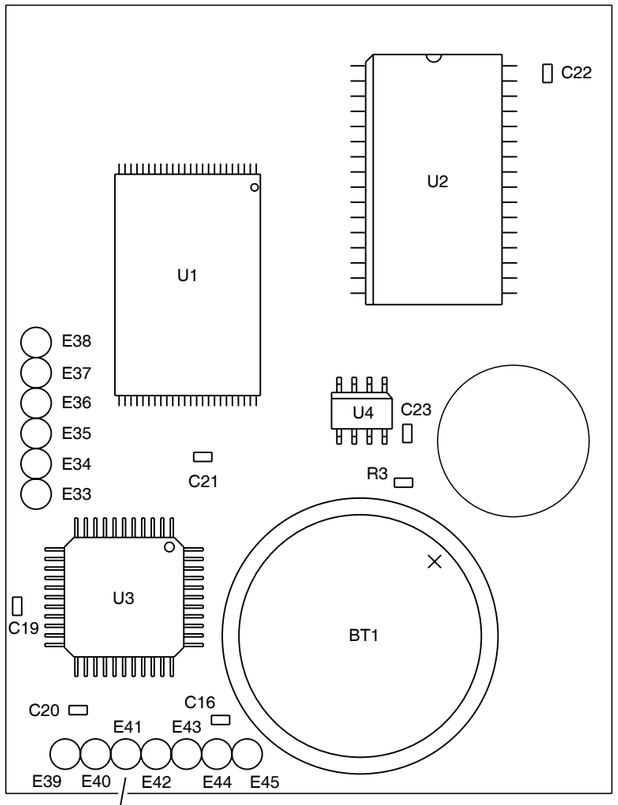


(REV A)

Front Panel Pulse PC Board Assembly
(Sheet 10 of 12)
Figure 36

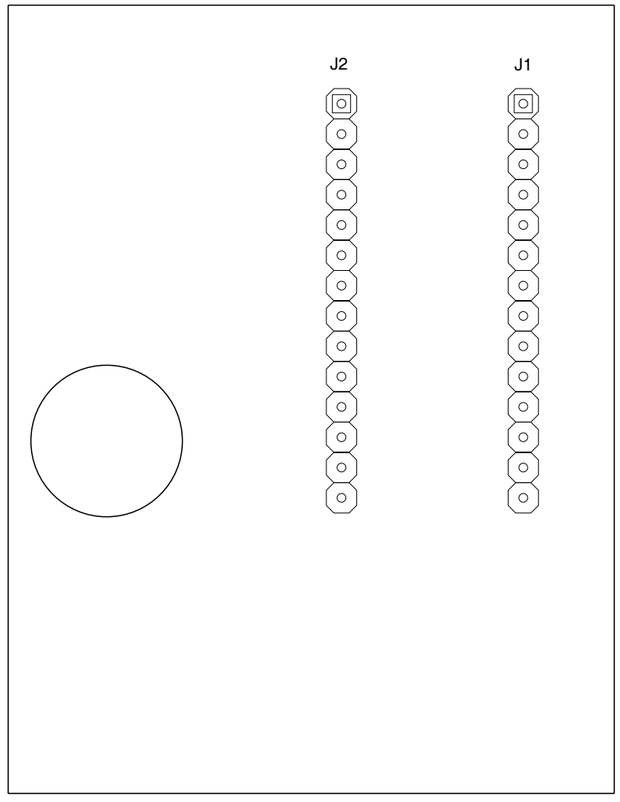


DETAIL A



TOP VIEW

A

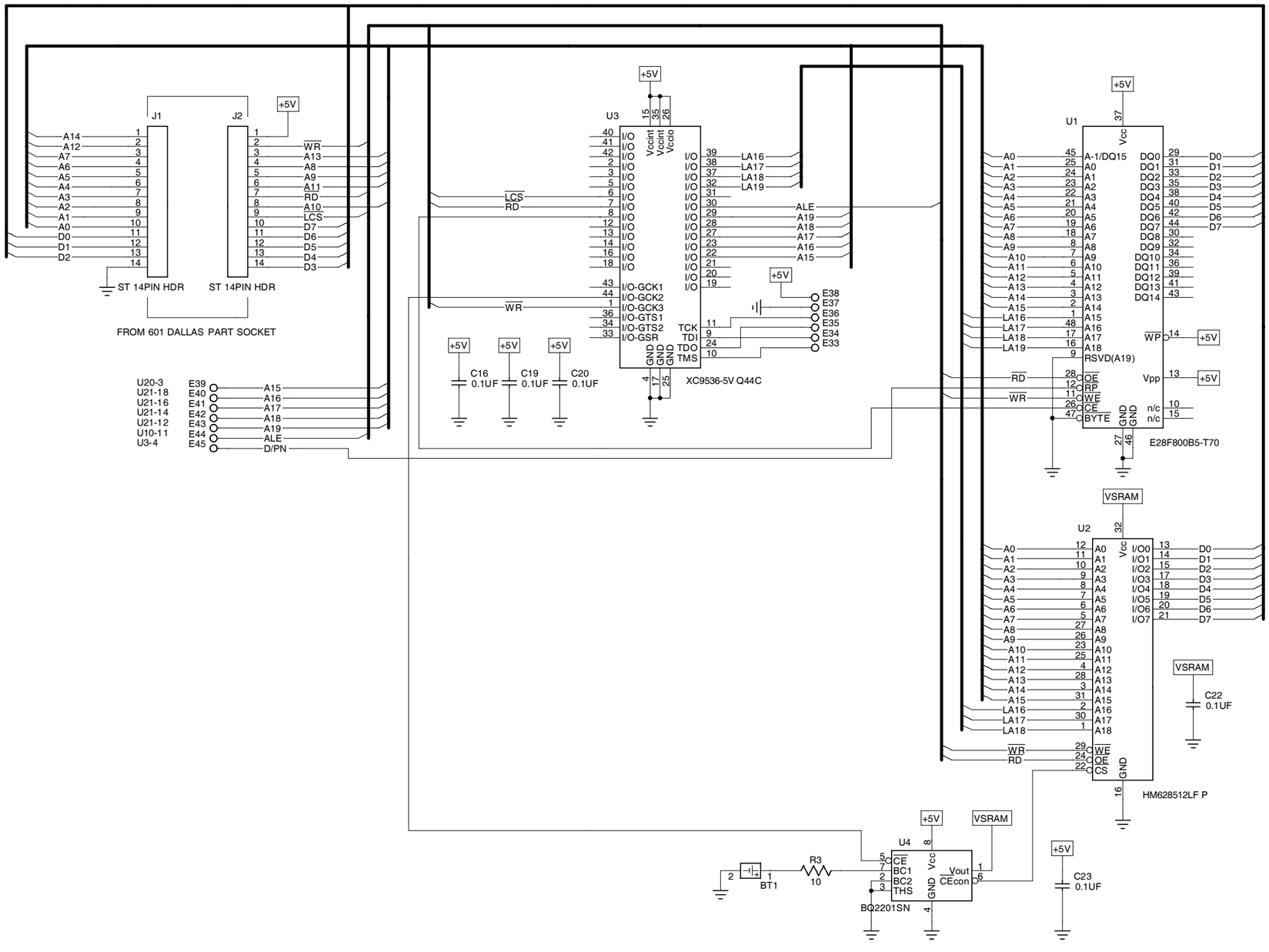


BOTTOM VIEW

8133600D

Pulse Memory PC Board Assembly
(7010-8133-600-D)

Front Panel Pulse PC Board Assembly (Sheet 11 of 12)
Figure 36



CAUTION:
CONTAINS PARTS AND ASSEMBL
SUSCEPTIBLE TO DAMAGE BY
ELECTROSTATIC DISCHARGE (ES

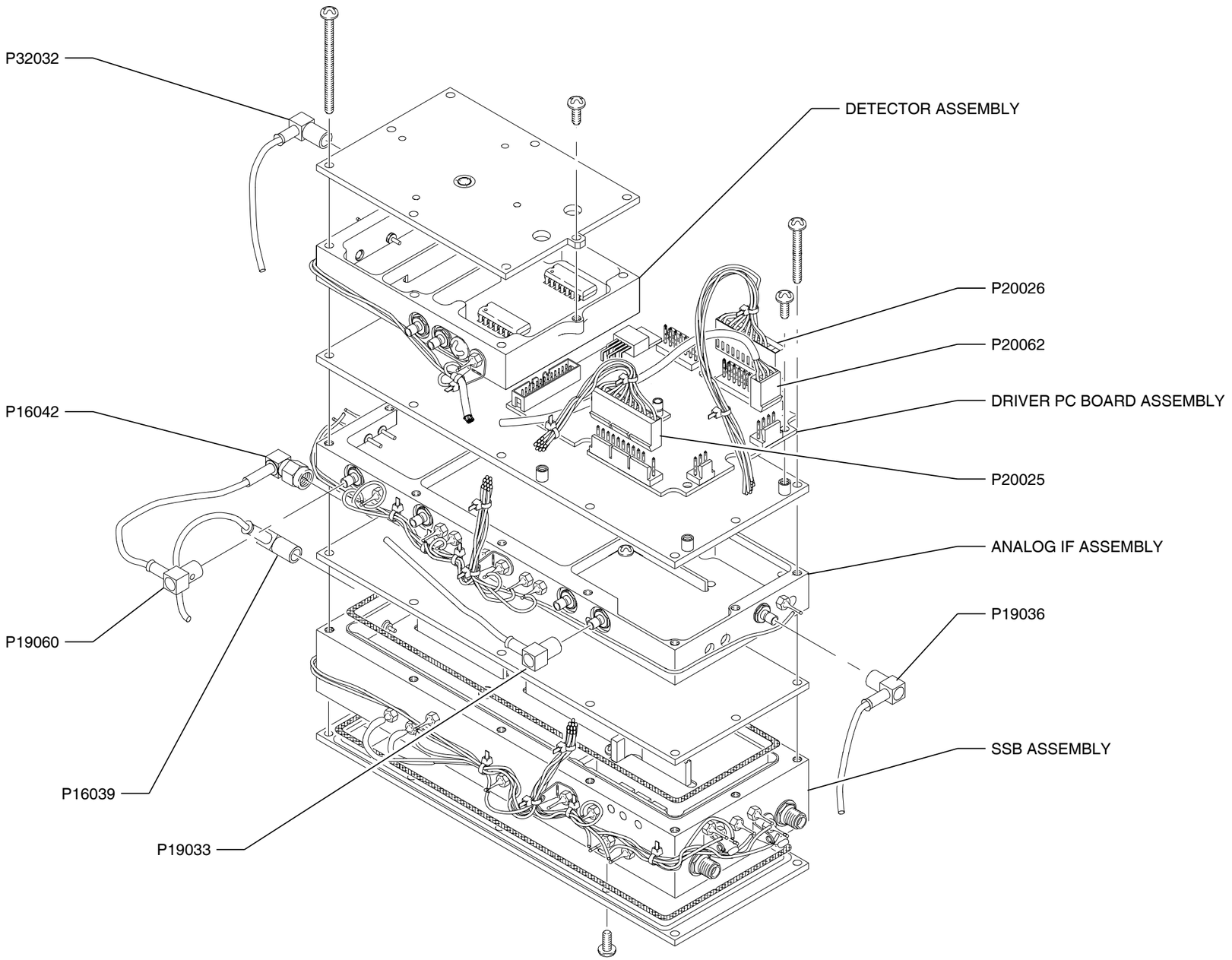
NOTES:
(UNLESS OTHERWISE SPECIFIED)

1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. REFER TO SYSTEM INTERCONNECT
2. ALL RESISTORS ARE 1/8 W, 1% TOLERANCE.
3. ALL RESISTANCE IS EXPRESSED IN OHMS.
4. ALL CAPACITANCE IS EXPRESSED IN MICROFARADS.
5. ALL INDUCTANCE IS EXPRESSED IN MICROHENRIES.
6. COMPONENTS NOT INSTALLED.

Pulse Memory PC Board Assembly Circuit Schematic
(0000-8133-600-D)

081336-D

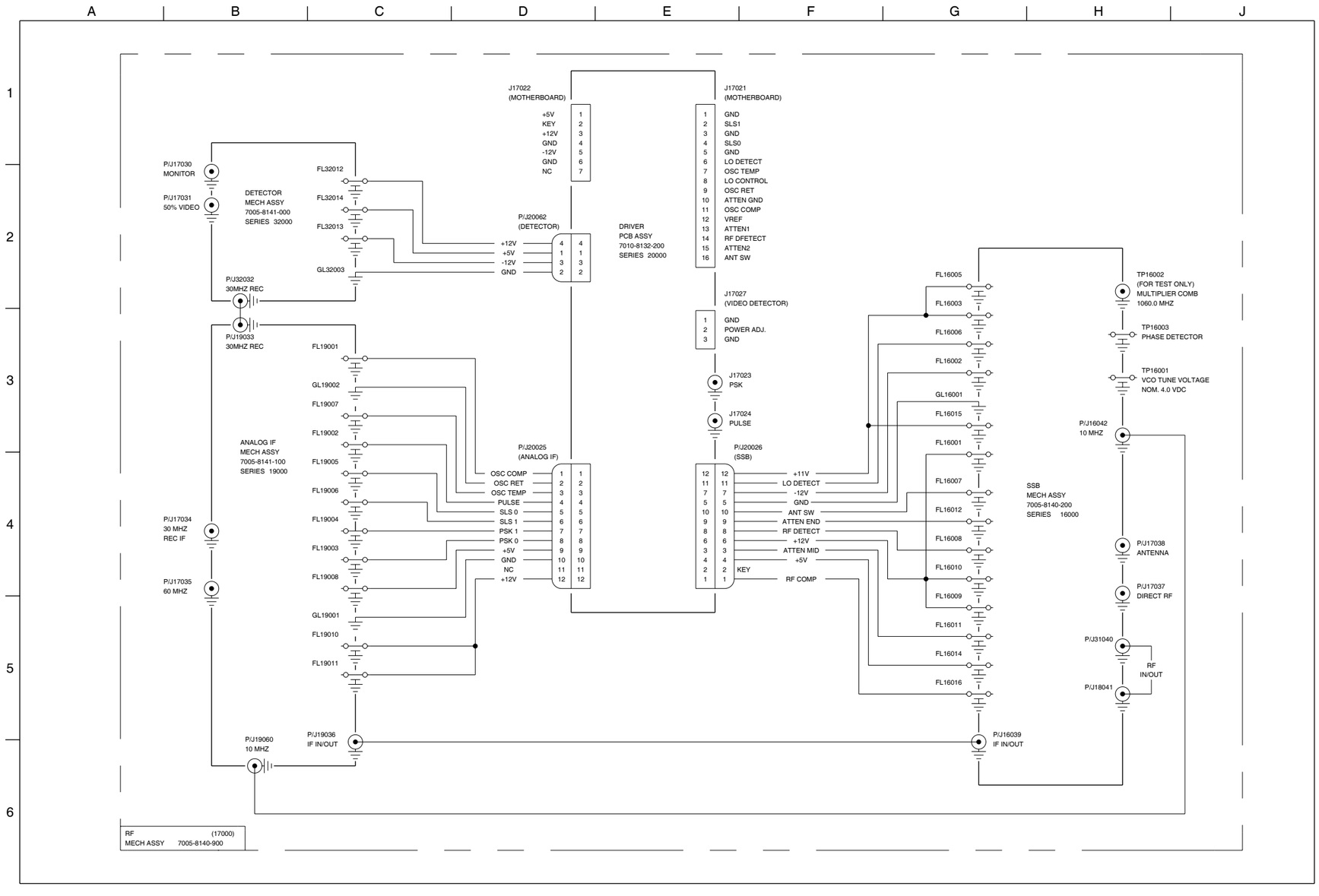
Front Panel Pulse PC Board Assembly
(Sheet 12 of 12)
Figure 36



8144100M

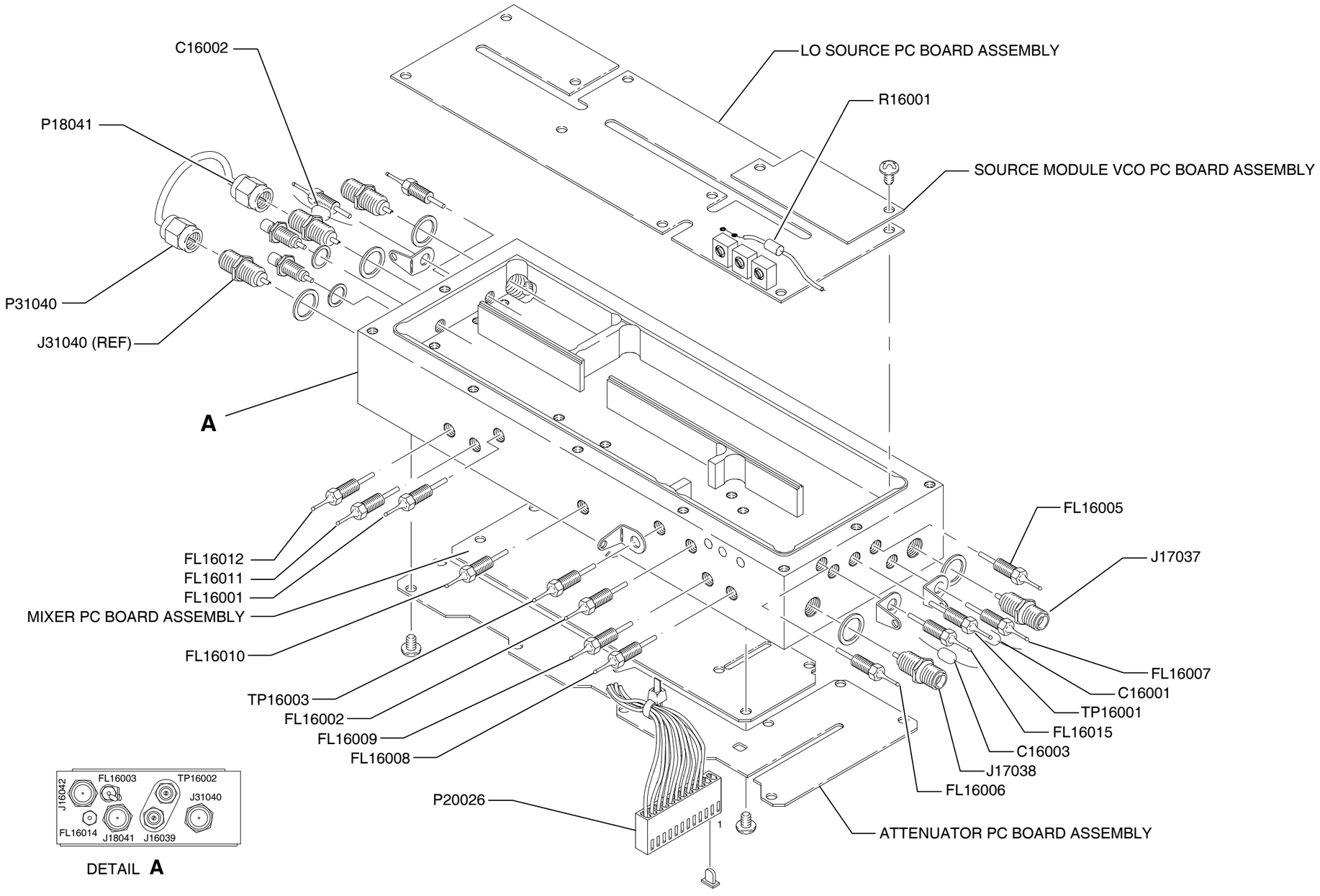
RF Assembly
(7005-8140-400-B)

RF Assembly (Sheet 1 of 19)
Figure 37



RF Assembly Interconnect Diagram
(0000-8140-900-A)

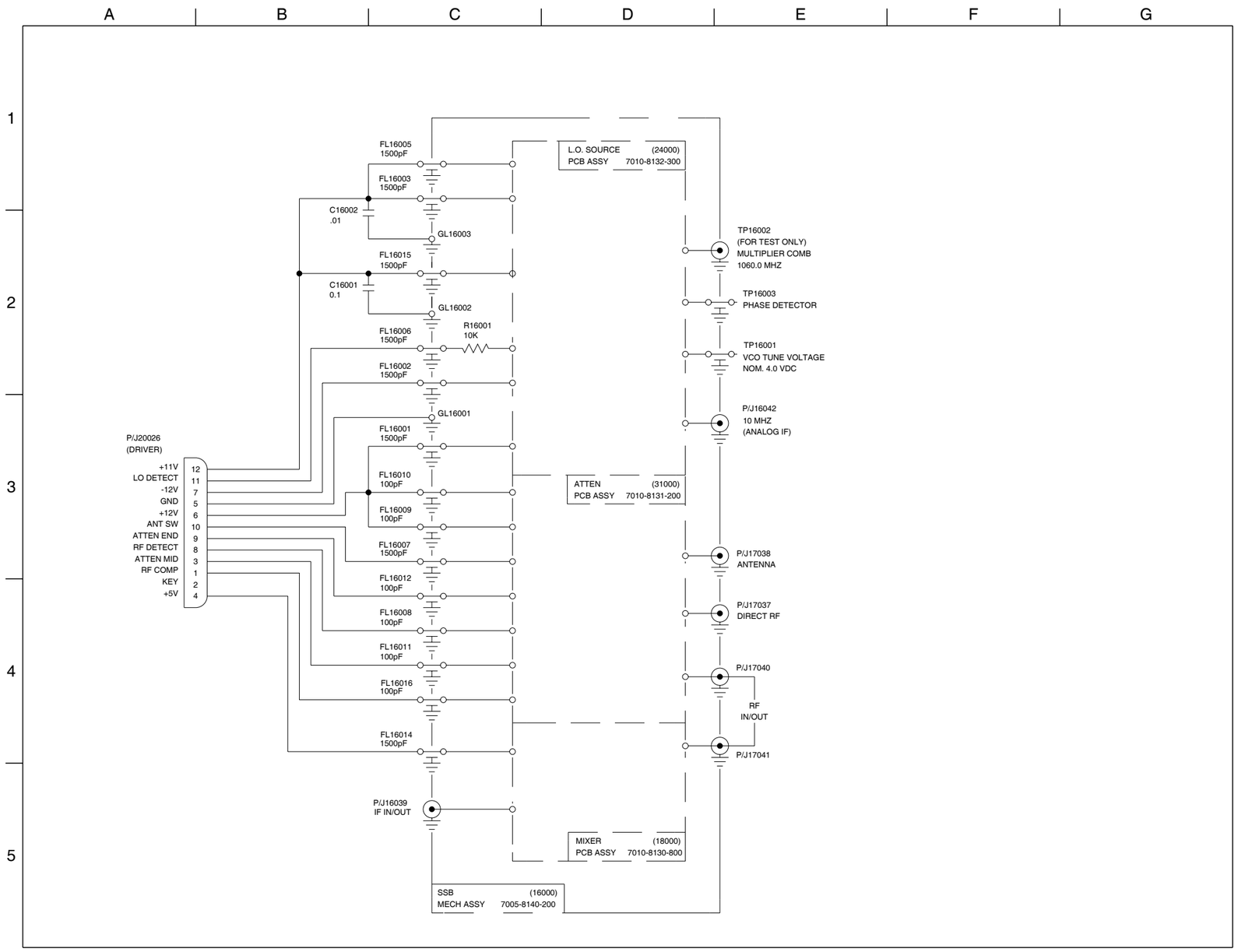
RF Assembly (Sheet 2 of 19)
Figure 37



SSB Assembly
7005-8140-700-F1, F2)

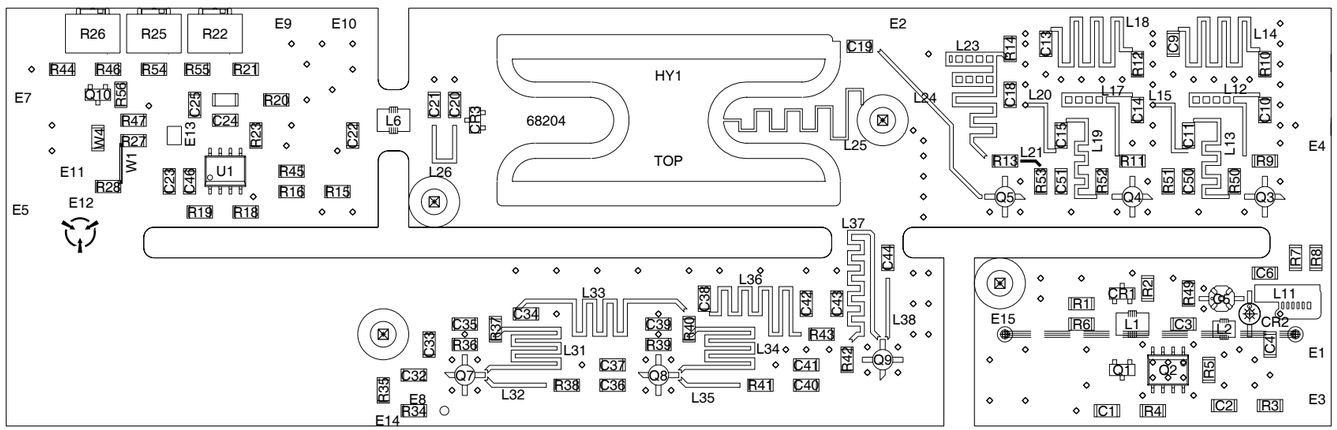
8140200M

RF Assembly (Sheet 3 of 19)
Figure 37



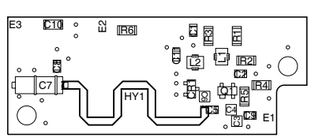
SSB Interconnect Diagram
(0000-8140-200-B1)

RF Assembly (Sheet 4 of 19)
Figure 37



81006-2

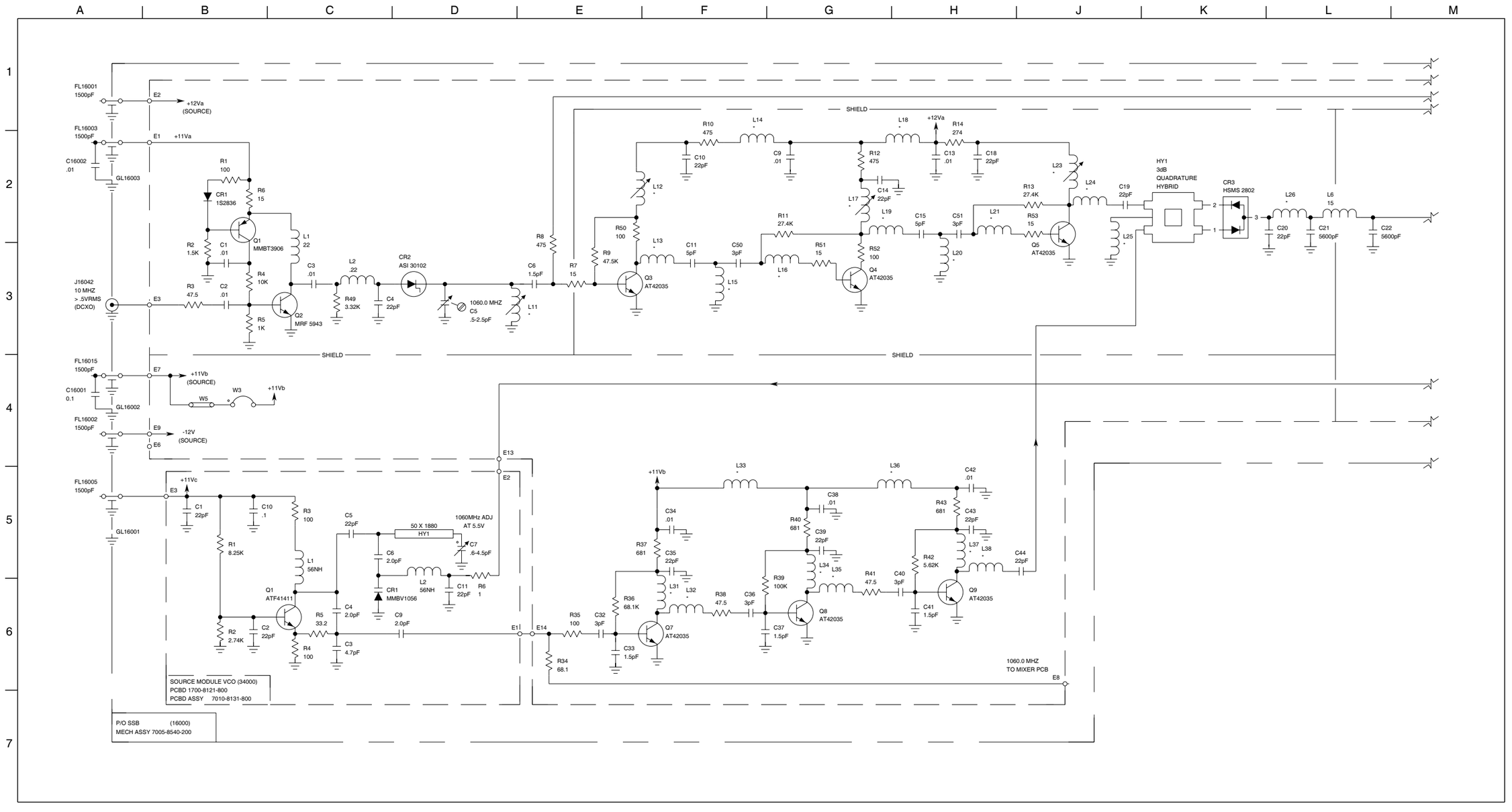
LO Source PC Board Assembly
(7010-8132-300-E)



81007-2

Source Module VCO PC Board Assembly
(7010-8131-800-E)

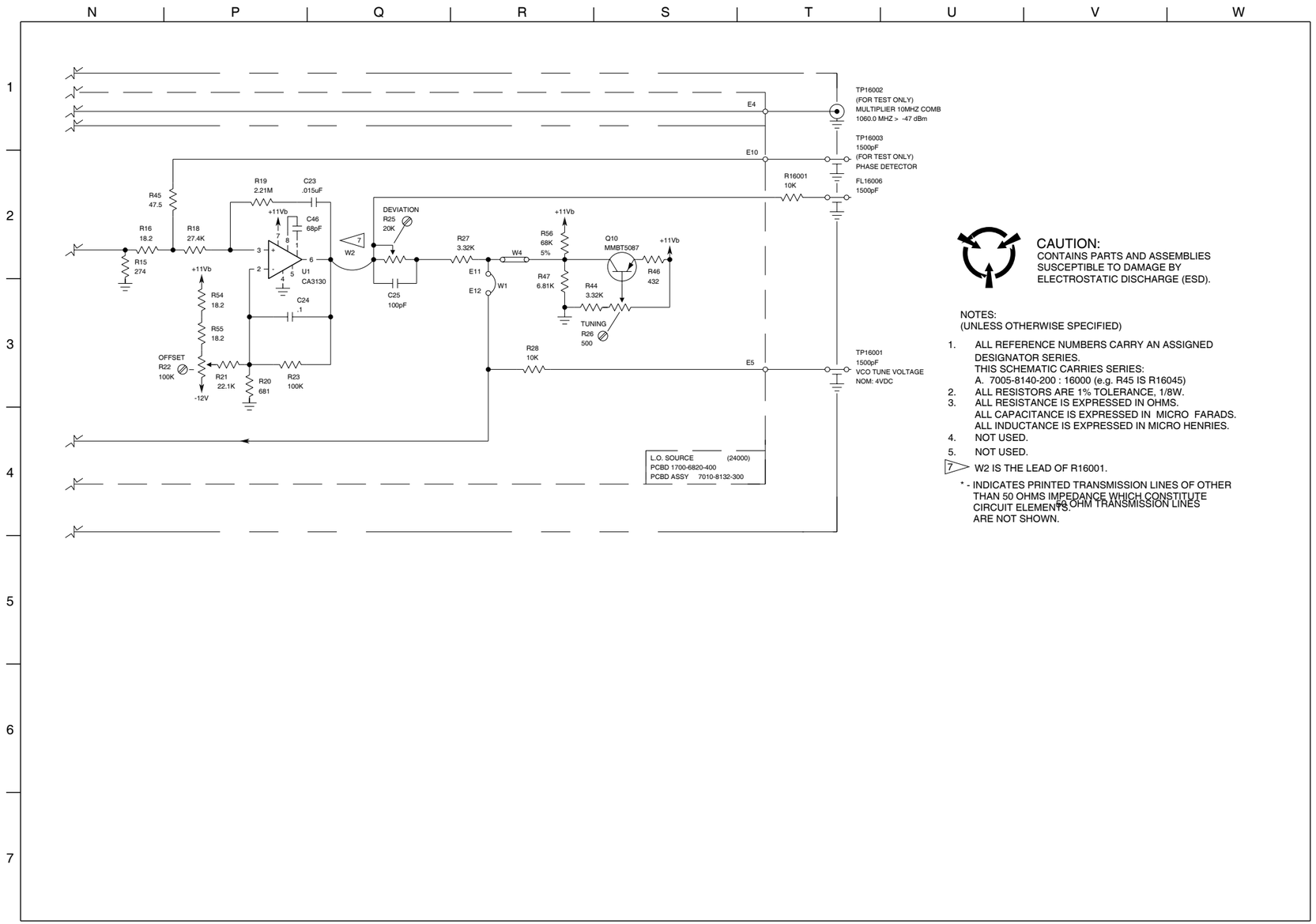
RF Assembly (Sheet 5 of 19)
Figure 37



8132301S

LO Source & Source Module VCO PC Board Assemblies Circuit Schematic
(0000-8132-300-C)

RF Assembly (Sheet 6 of 19)
Figure 37



CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

NOTES:
(UNLESS OTHERWISE SPECIFIED)

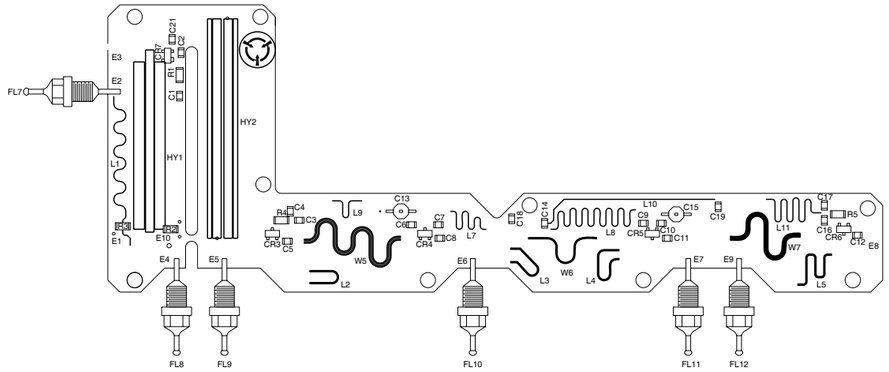
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES.
   THIS SCHEMATIC CARRIES SERIES:
   A. 7005-8140-200 : 16000 (e.g. R45 IS R16045)
2. ALL RESISTORS ARE 1% TOLERANCE, 1/8W.
3. ALL RESISTANCE IS EXPRESSED IN OHMS.
   ALL CAPACITANCE IS EXPRESSED IN MICRO FARADS.
   ALL INDUCTANCE IS EXPRESSED IN MICRO HENRIES.
4. NOT USED.
5. NOT USED.

7 W2 IS THE LEAD OF R16001.

* - INDICATES PRINTED TRANSMISSION LINES OF OTHER THAN 50 OHMS IMPEDANCE WHICH CONSTITUTE CIRCUIT ELEMENTS. 50 OHM TRANSMISSION LINES ARE NOT SHOWN.

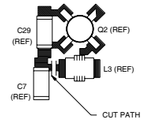
LO Source & Source Module VCO PC Board Assemblies Circuit Schematic
(0000-8132-300-C)

RF Assembly (Sheet 7 of 19)
Figure 37

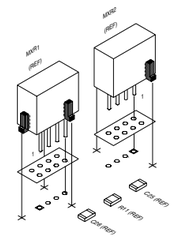


81008-2

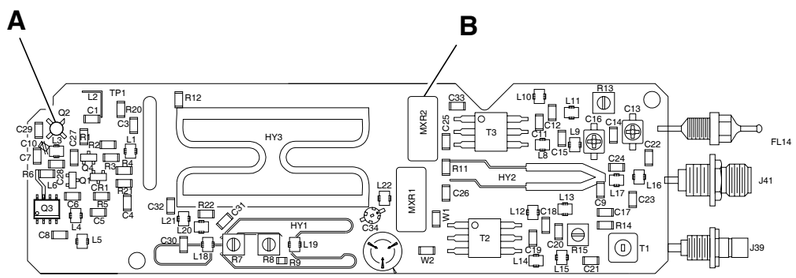
Attenuator PC Board Assembly
(7010-8131-200-C)



DETAIL A



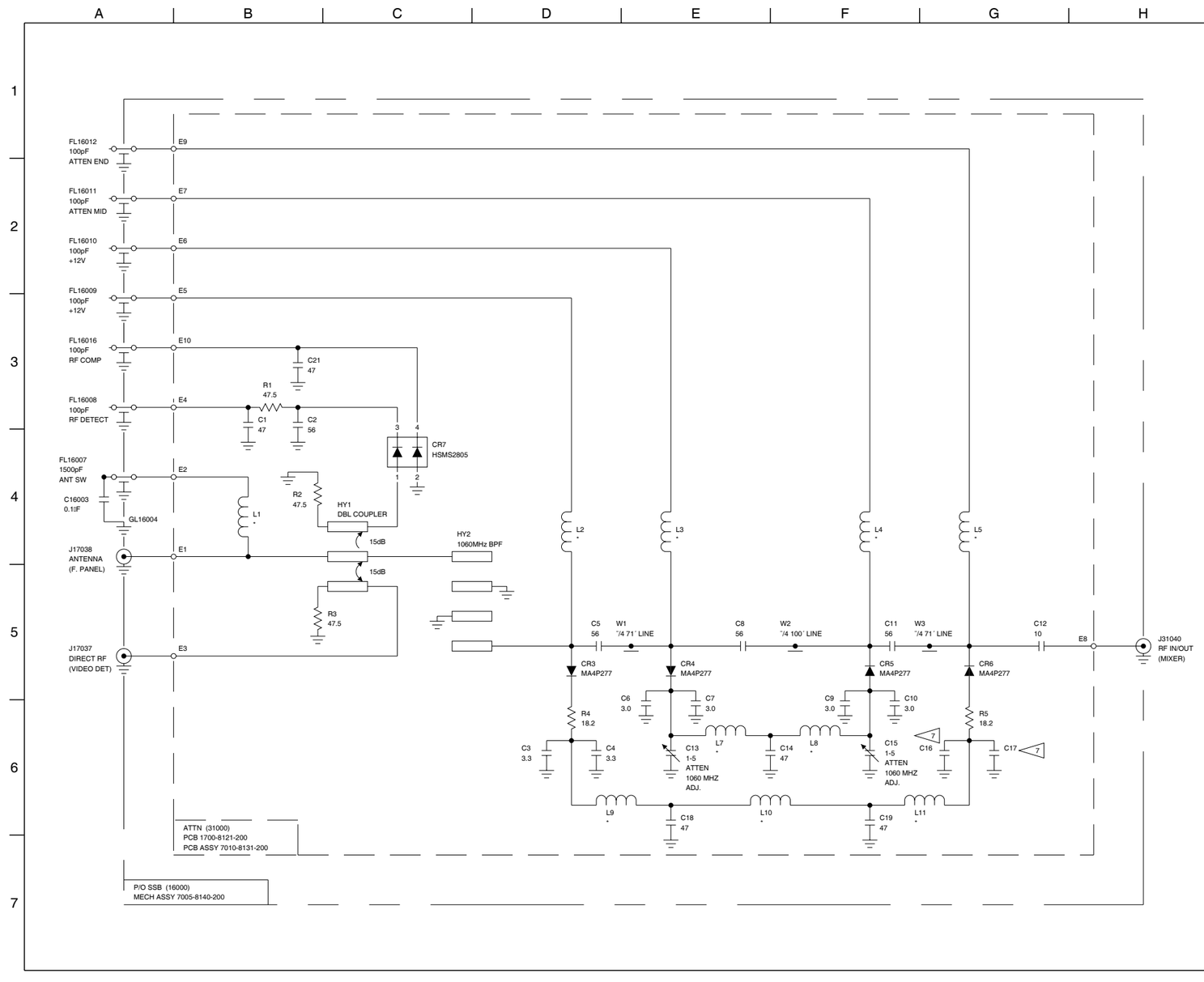
DETAIL **B**



8130800P

Mixer PC Board Assembly
(7010-8130-800-F1)

RF Assembly (Sheet 8 of 19)
Figure 37



CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

STANDARDS:
(UNLESS OTHERWISE NOTED)

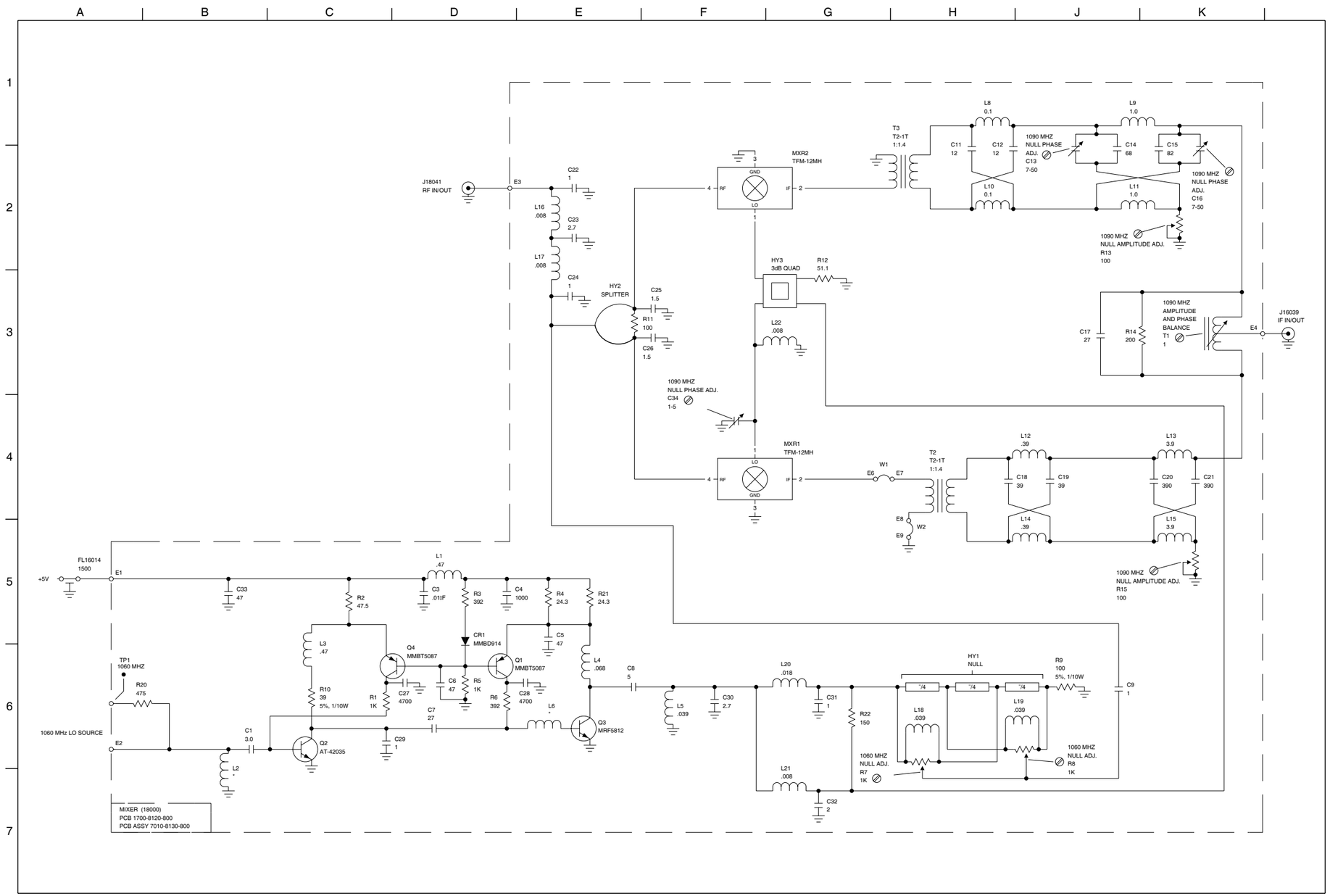
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES.
   THIS SCHEMATIC CARRIES SERIES:
   REF 7005-8140-200 (16000)
   REF 7005-8540-200 (16000)
   7010-8131-200 (31000)
2. ALL RESISTORS ARE W, 1/8% TOLERANCE.
3. ALL RESISTANCE IS EXPRESSED IN OHMS.
4. ALL CAPACITANCE IS EXPRESSED IN PICO FARADS.
5. LAST REFERENCE NUMBERS USED.
   C21, CR7, E10, HY2,
   L11, R5, W3.
6. REFERENCE NUMBERS NOT USED.
   C20, CR1, CR2, L6,
7. SAT CAPACITOR.
   3.0 - 3.9 PF, 3.3 PF NOMINAL

* - INDICATES PRINTED TRANSMISSION LINES OF OTHER THAN 50 OHMS IMPEDANCE WHICH CONSTITUTE CIRCUIT ELEMENTS. 50 OHM TRANSMISSION LINES ARE NOT SHOWN.

81009-2

Attenuator PC Board Assembly Circuit Schematic
(0000-8131-200-C)

RF Assembly (Sheet 9 of 19)
Figure 37



8130800S

CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

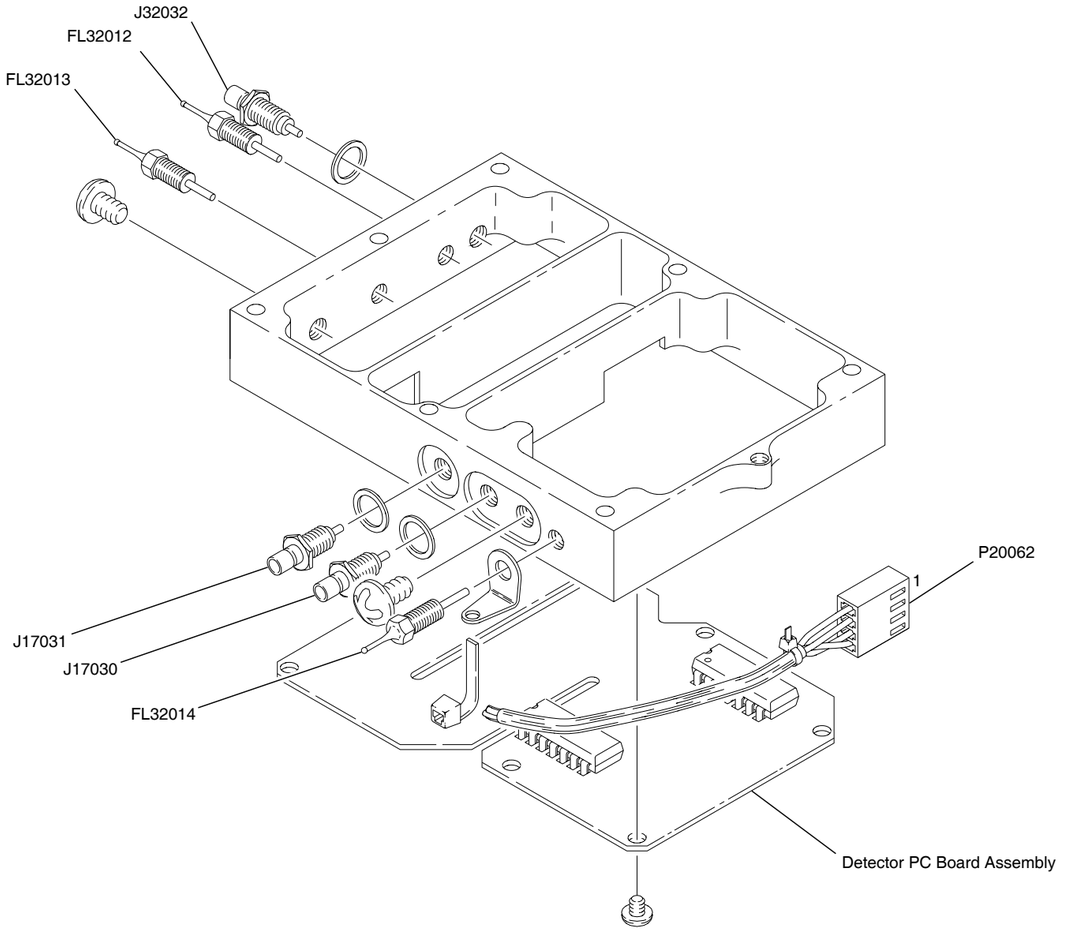
NOTES:
(UNLESS OTHERWISE SPECIFIED)

1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS ASSEMBLY CARRIES SERIES:
   A. 7010-8130-800 SERIES 18000 (e.g. C1 IS 1J8001)
2. ALL RESISTORS ARE 1/8W, 1% TOLERANCE.
3. ALL RESISTANCE IS EXPRESSED IN OHMS.
4. ALL CAPACITANCE IS EXPRESSED IN PICOFARADS.
5. ALL INDUCTANCE IS EXPRESSED IN MICROHENRIES.

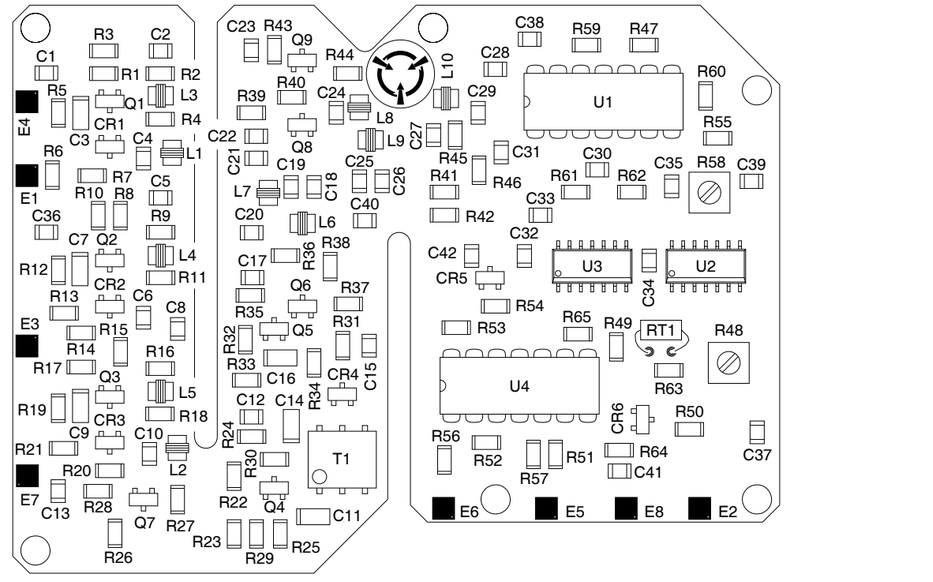
* - INDICATES TRANSMISSION LINES OF OTHER THAN 50 OHMS IMPEDANCE WHICH CONSTITUTE CIRCUIT ELEMENTS.

Mixer PC Board Assembly Circuit Schematic
(0000-8130-800-F1)

RF Assembly (Sheet 10 of 19)
Figure 37



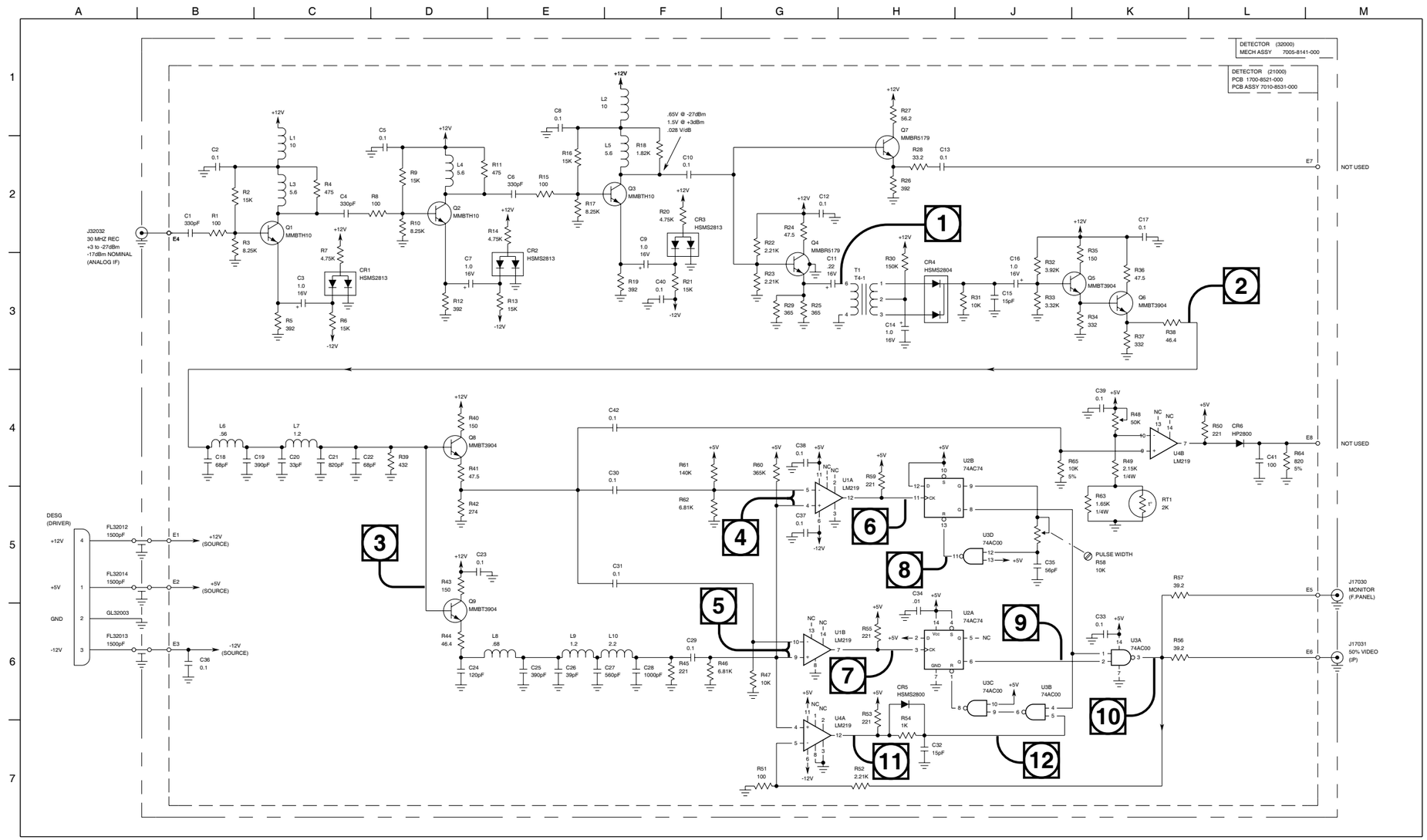
Detector Assembly
(7005-8141-000-C)



8531000P

Detector PC Board Assembly
(7010-8531-000-C3)

RF Assembly (Sheet 11 of 19)
Figure 37



CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

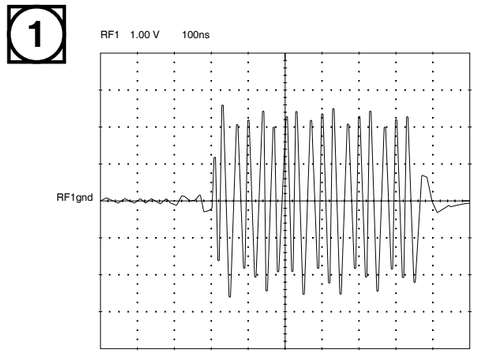
NOTES:
(UNLESS OTHERWISE SPECIFIED)

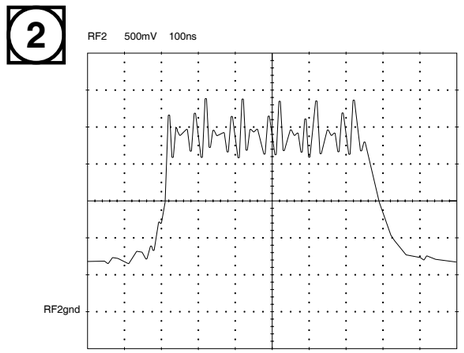
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES. THIS ASSEMBLY CARRIES SERIES:
   A. 7010-8531-000 21000 (e.g. R1 IS R21001)
   B. 7005-8141-000 32000 (e.g. FL12 IS FL32012)
2. ALL RESISTORS ARE 1/8W, 1% TOLERANCE.
3. ALL RESISTANCE IS EXPRESSED IN OHMS.
4. ALL CAPACITANCE IS EXPRESSED IN MICROFARADS.
5. ALL INDUCTANCE IS EXPRESSED IN MICROHENRYS.

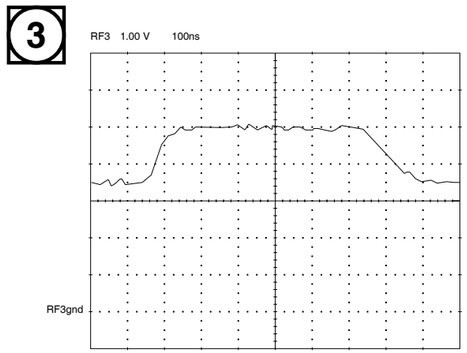
8141001S

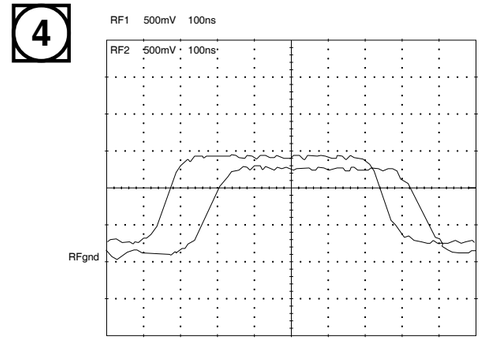
Detector Assembly Circuit Schematic
(0000-8531-000-C3)

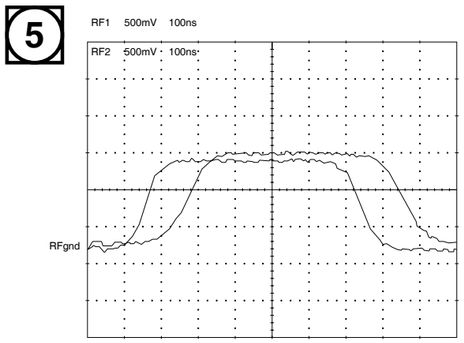
RF Assembly (Sheet 12 of 19)
Figure 37

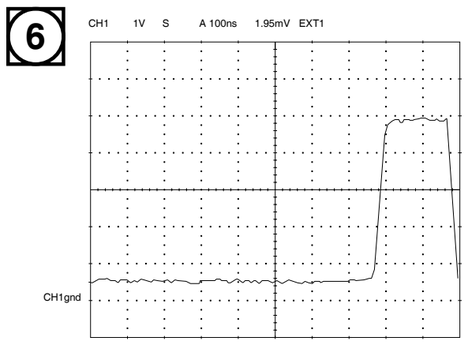


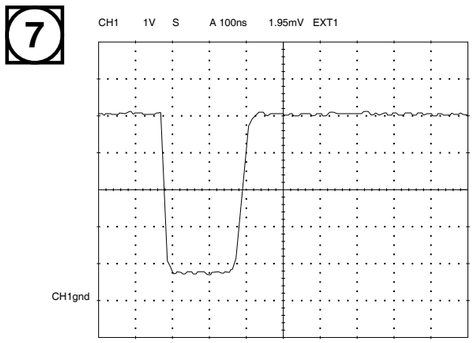


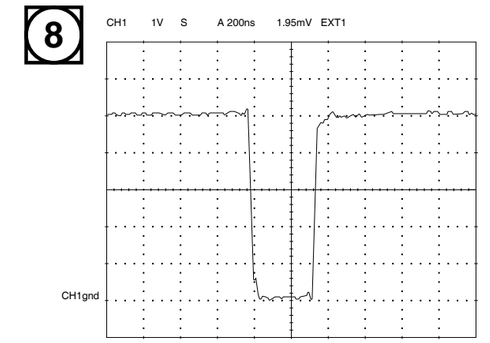


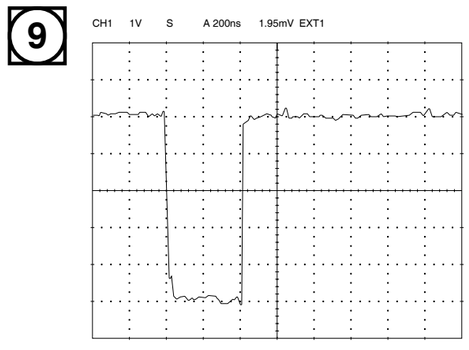


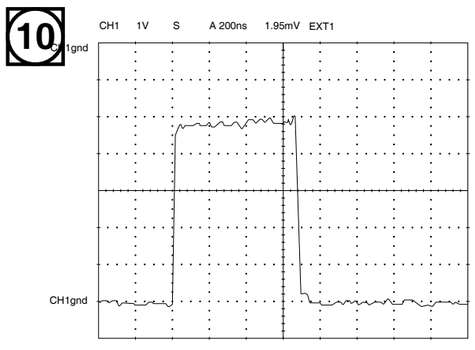


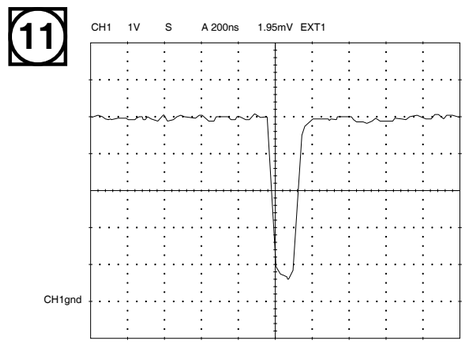


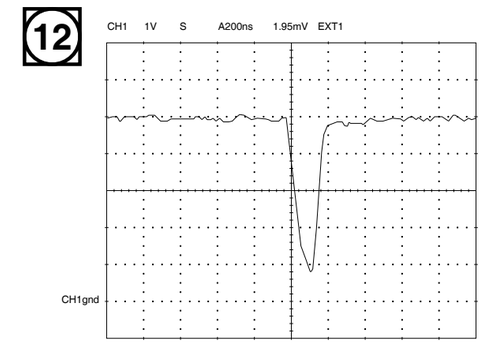








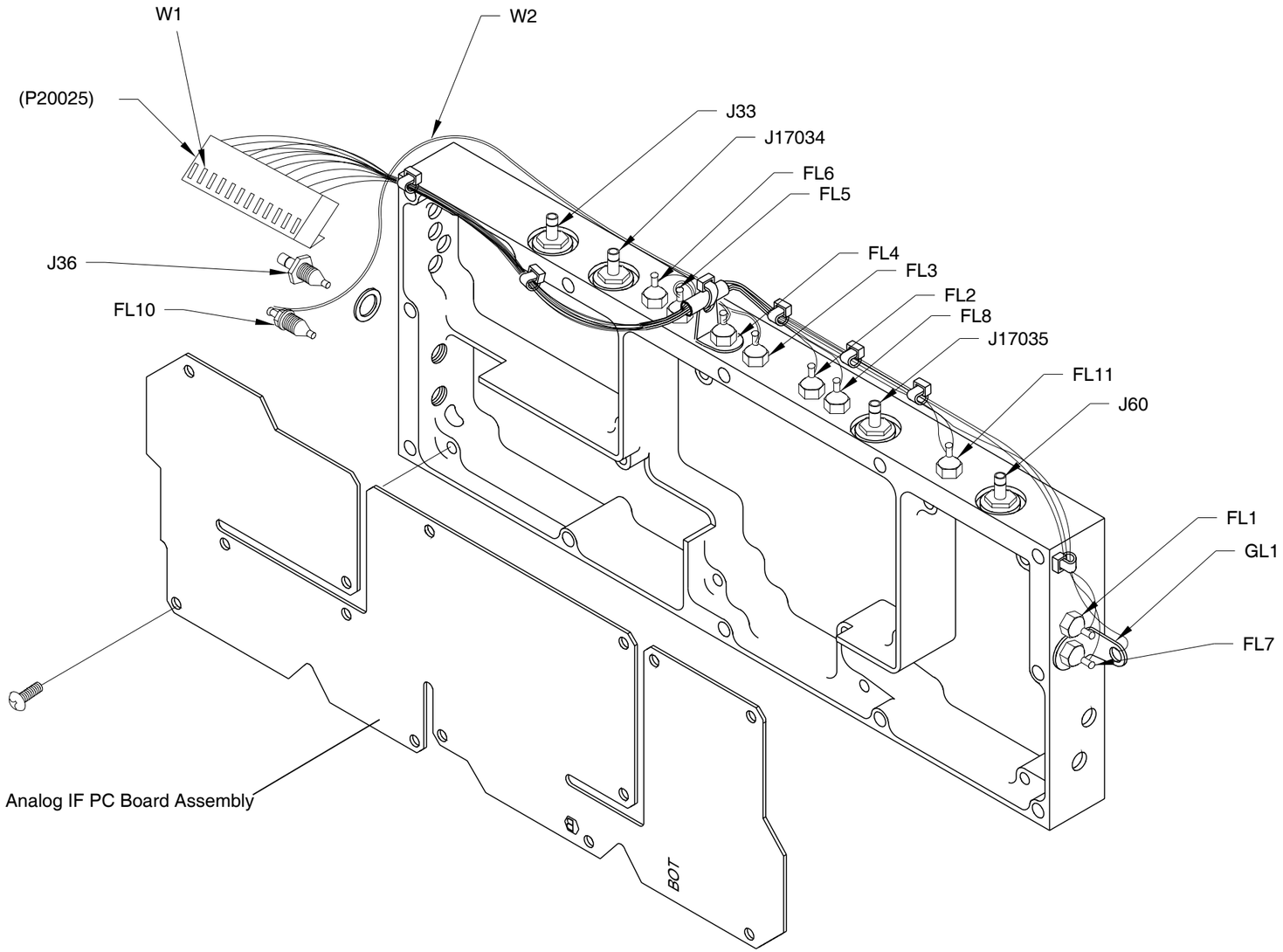




8141002S

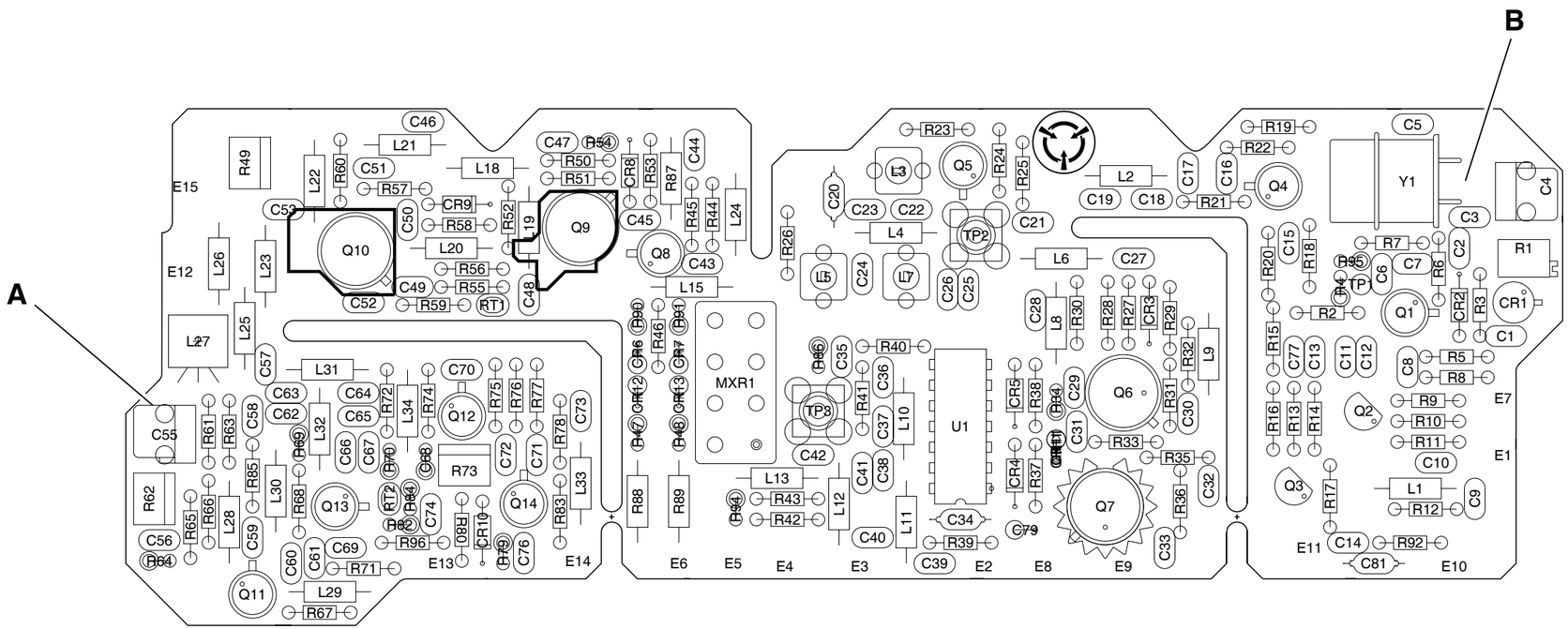
Detector Assembly Circuit Schematic
(0000-8531-000-C3)

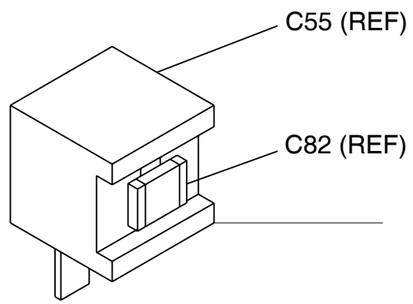
RF Assembly (Sheet 13 of 19)
Figure 37



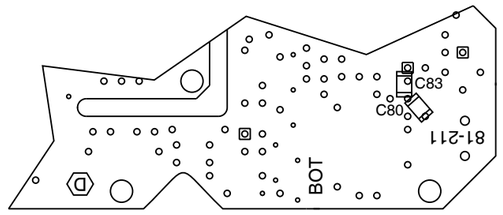
Analog IF Assembly
(7005-8141-100-F)

RF Assembly (Sheet 14 of 19)
Figure 37





DETAIL **A**



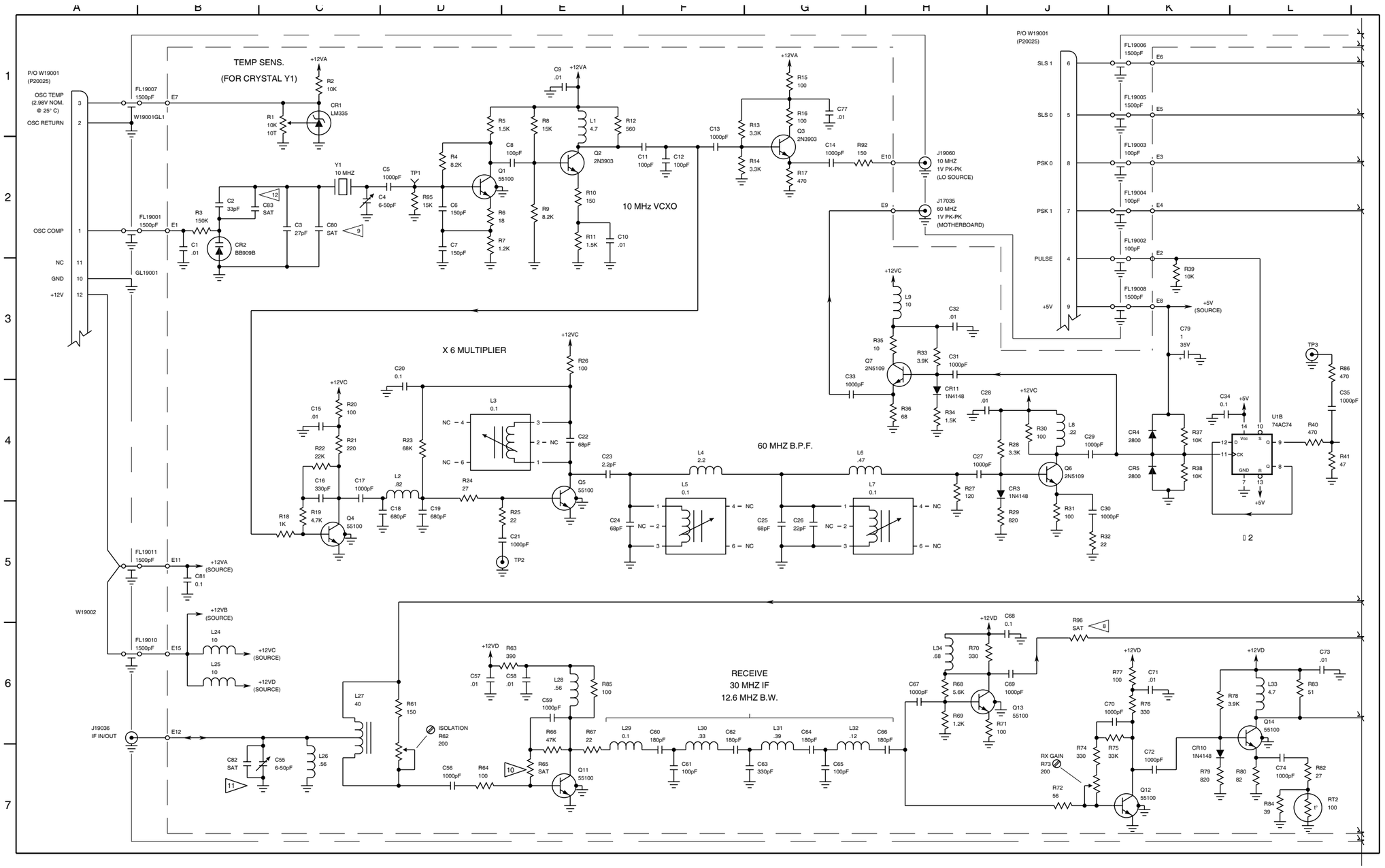
BOTTOM SIDE

DETAIL **B**

81011-2

Analog IF PC Board Assembly
(7010-8131-100-F1)

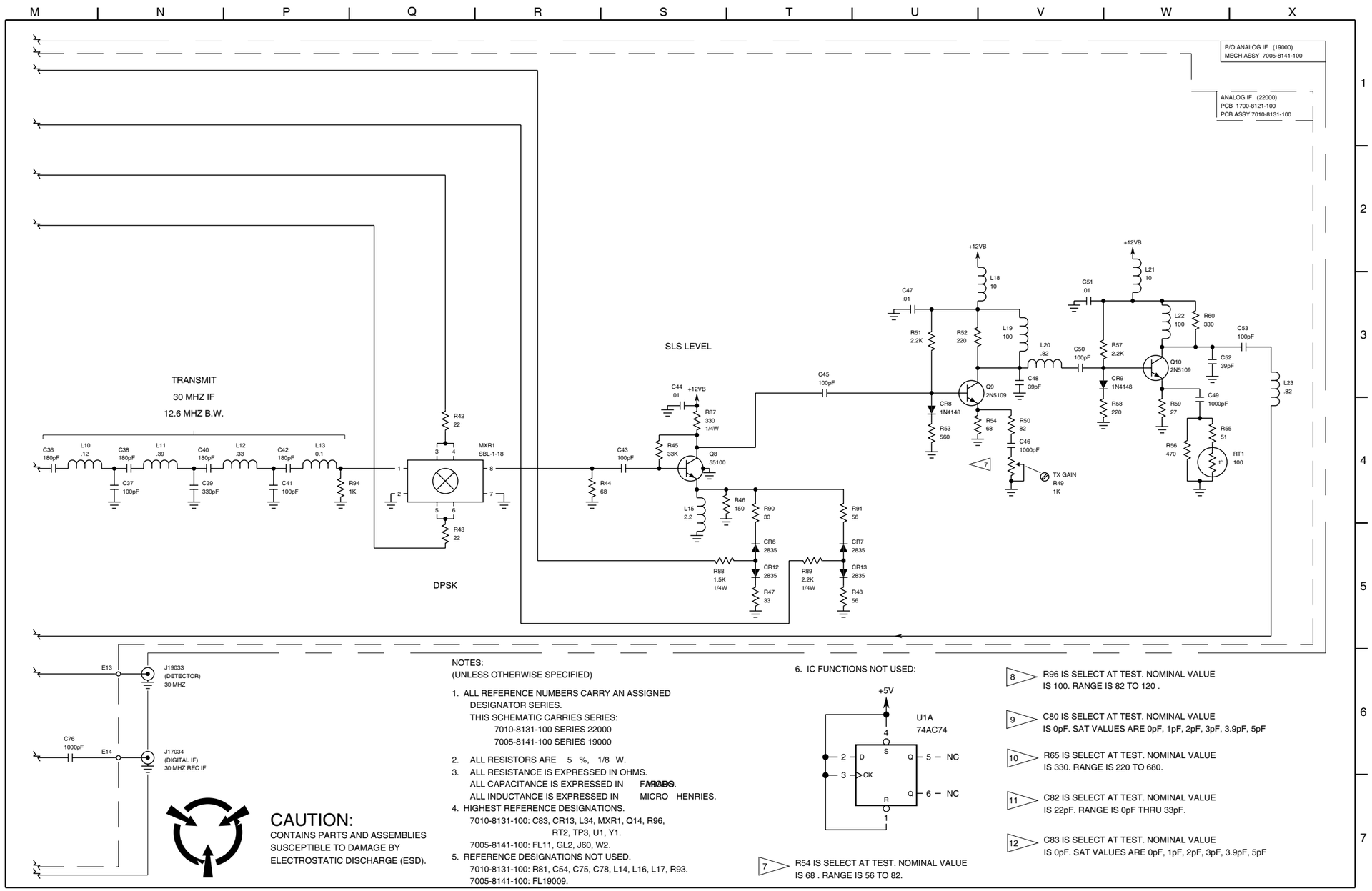
RF Assembly (Sheet 15 of 19)
Figure 37



81012-2

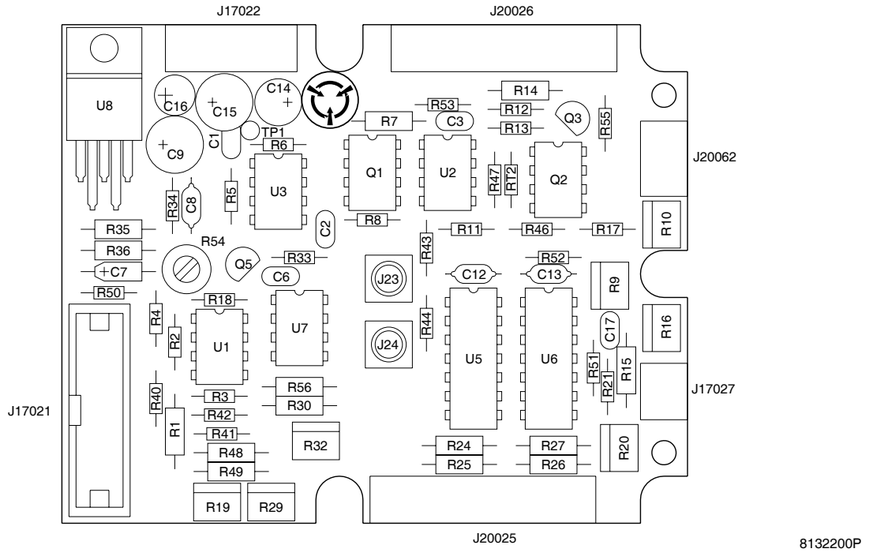
Analog IF Assembly Circuit Schematic
(0000-8141-100-F2)

RF Assembly (Sheet 16 of 19)
Figure 37



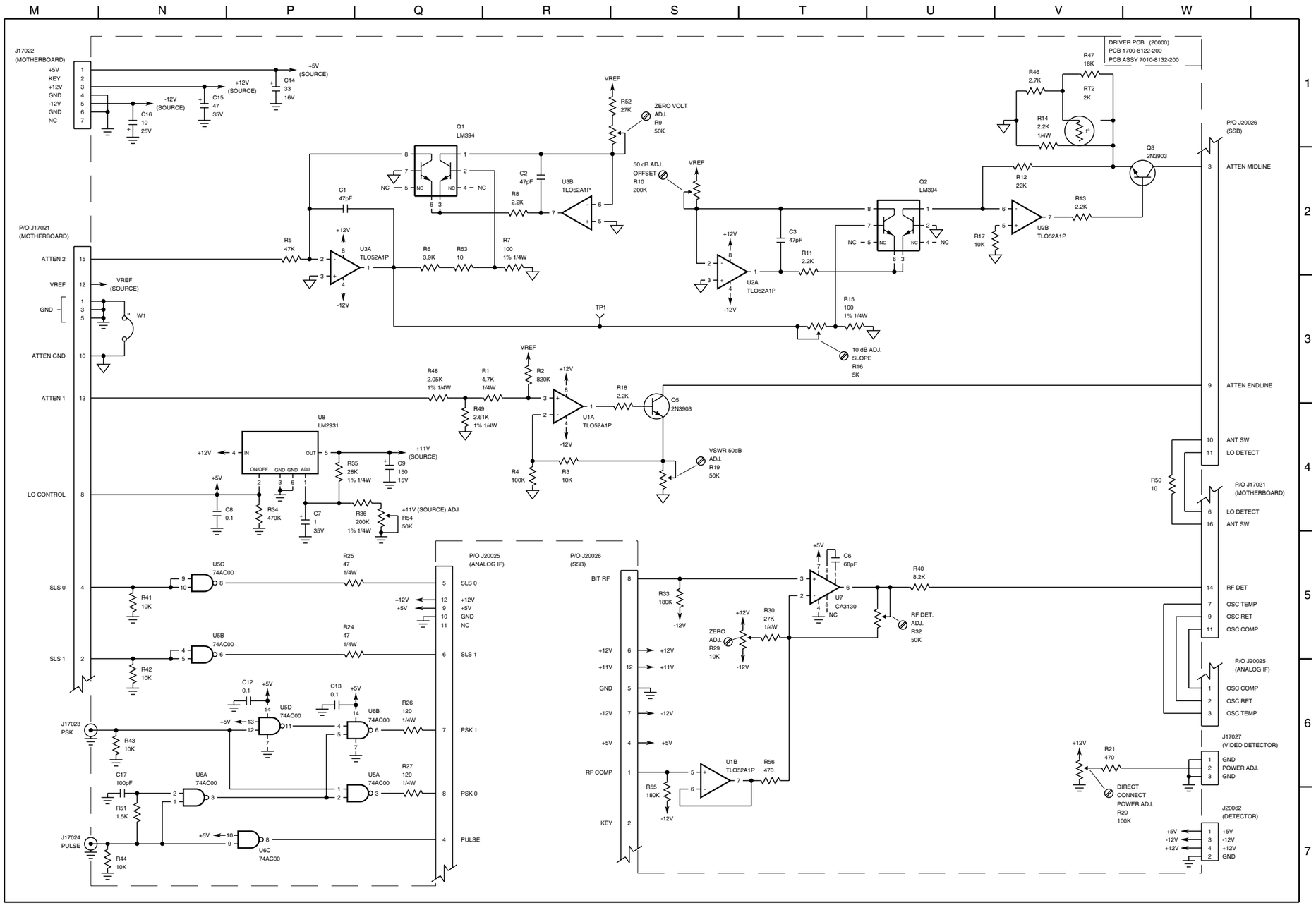
Analog IF Assembly Circuit Schematic
(0000-8141-100-D2)

RF Assembly (Sheet 17 of 19)
Figure 37



Driver PC Board Assembly
(7010-8132-200-C)

RF Assembly (Sheet 18 of 19)
Figure 37



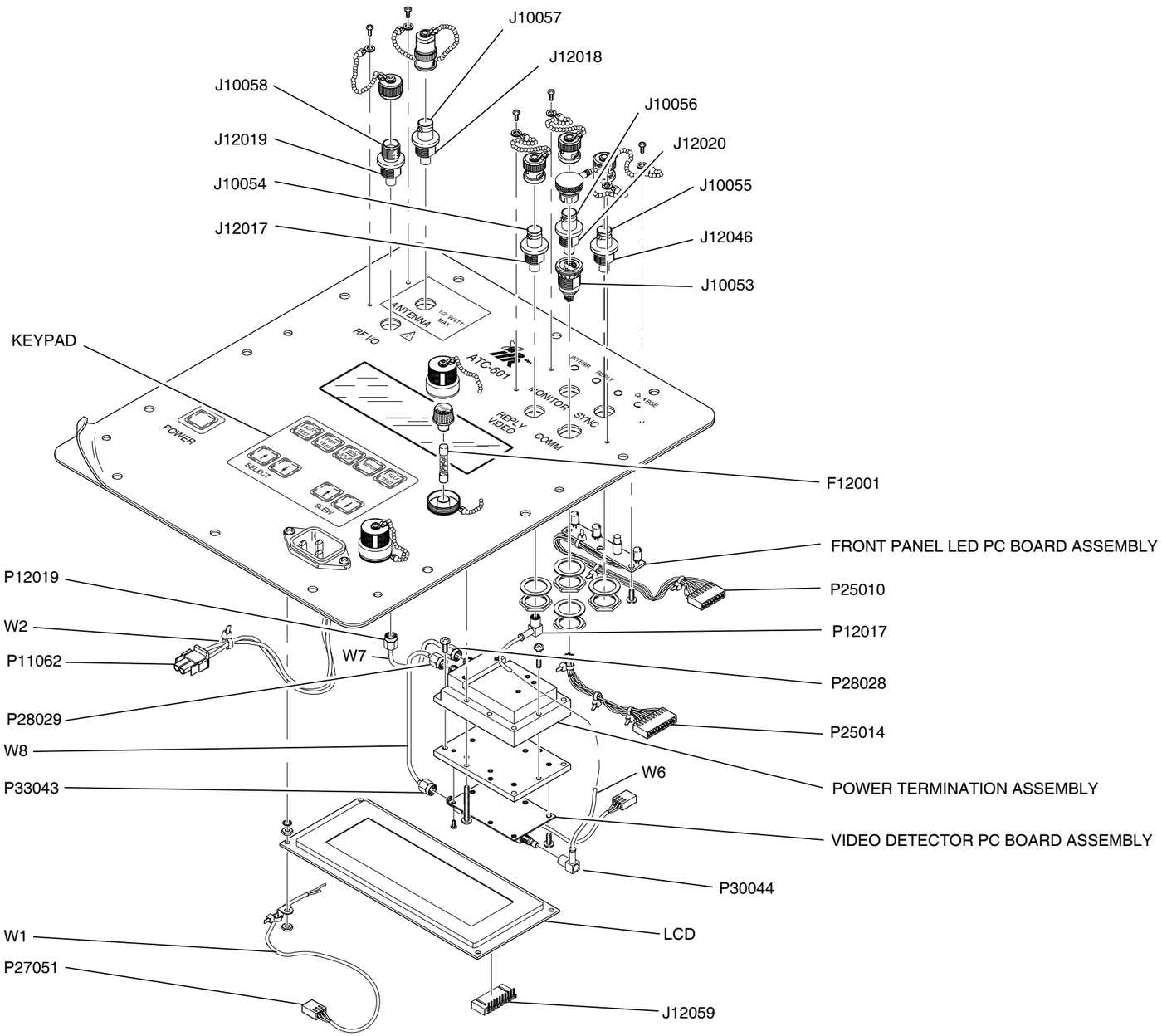
CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

STANDARDS:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES.
THIS SCHEMATIC CARRIES SERIES: 20000
2. ALL RESISTORS ARE W, 1/8% TOLERANCE.
3. ALL RESISTANCE IS EXPRESSED IN OHMS.
4. ALL CAPACITANCE IS EXPRESSED IN FARADS.
5. ALL INDUCTANCE IS EXPRESSED IN MICRO HENRIES.

81015-2

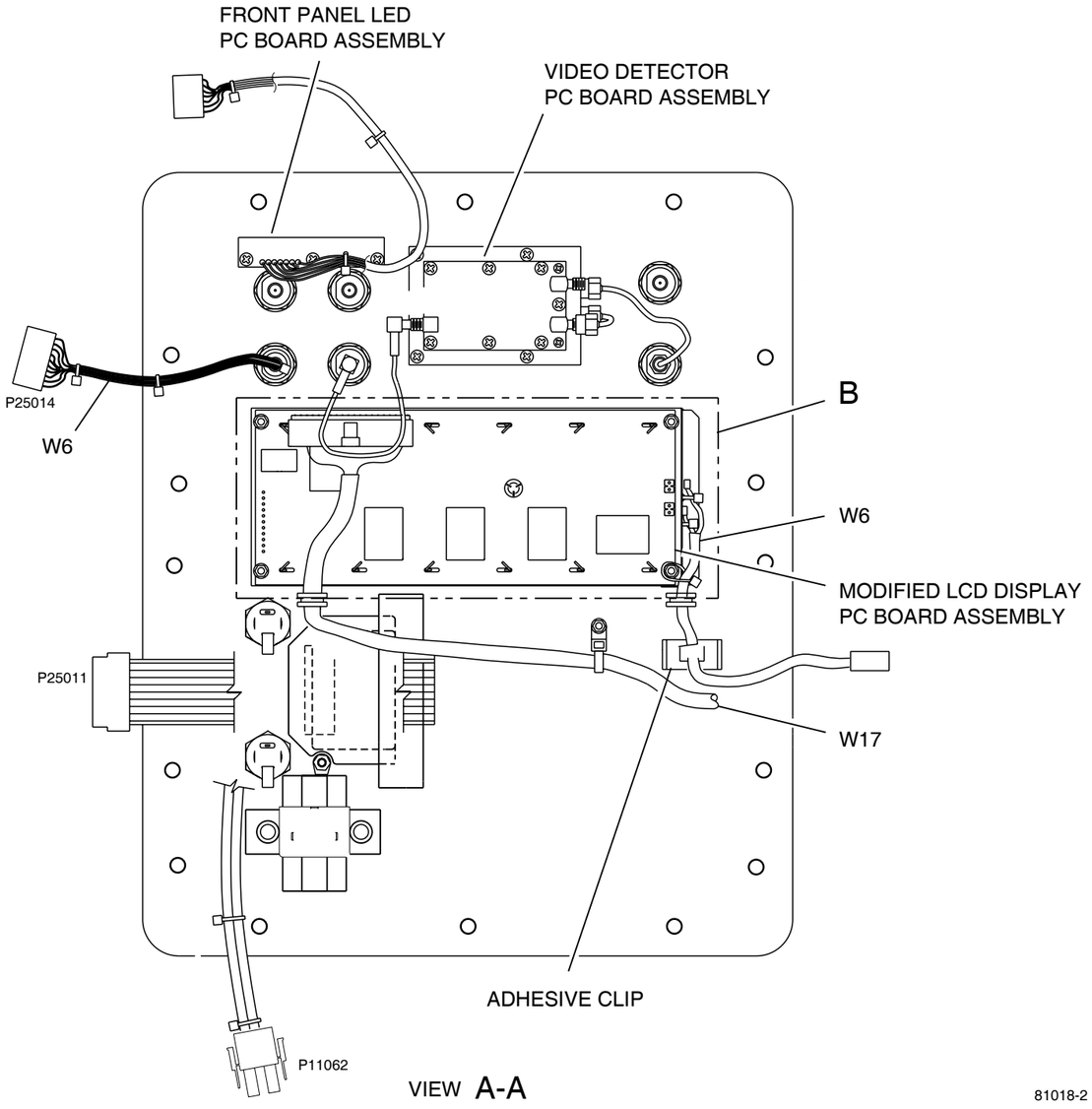
Driver PC Board Assembly Circuit Schematic
(0000-8132-200-C)

RF Assembly (Sheet 19 of 19)
Figure 37



Front Panel Assembly
(7005-8144-200-D) (7005-8142-900-A, B)

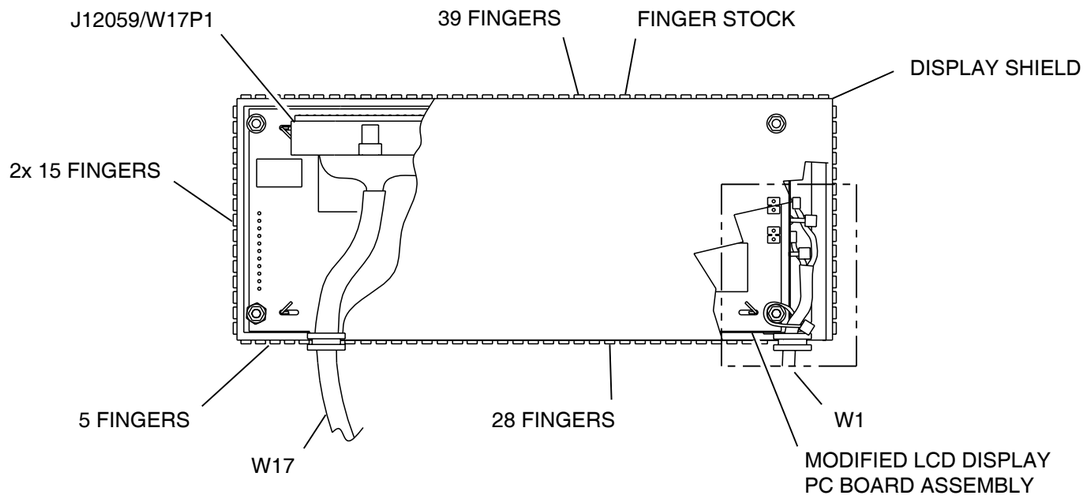
Front Panel Assembly (Sheet 1 of 7)
Figure 38



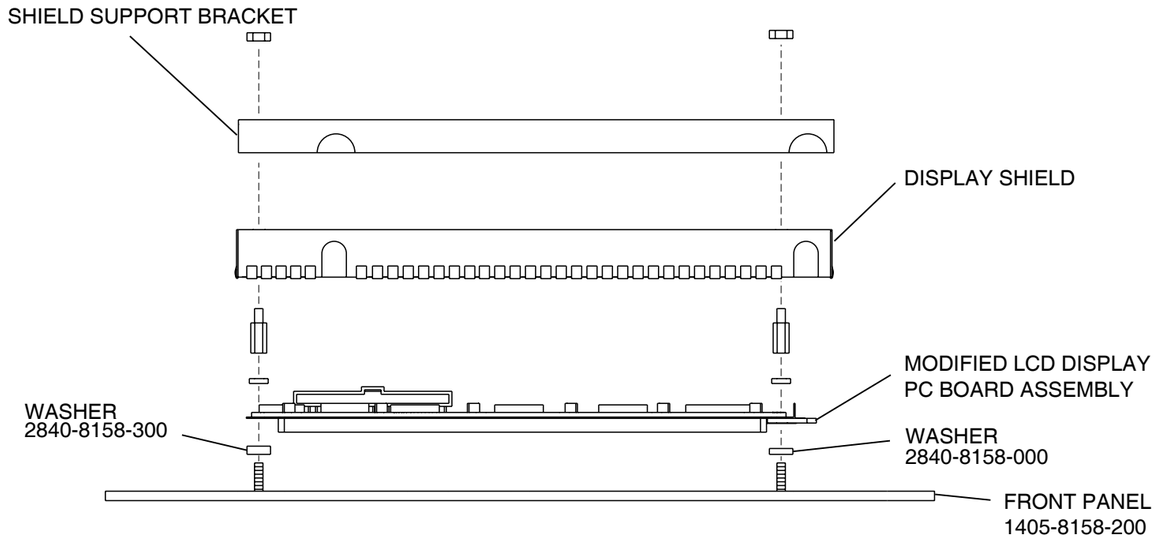
VIEW A-A

81018-2

Front Panel Assembly
(7005-8144-200-D

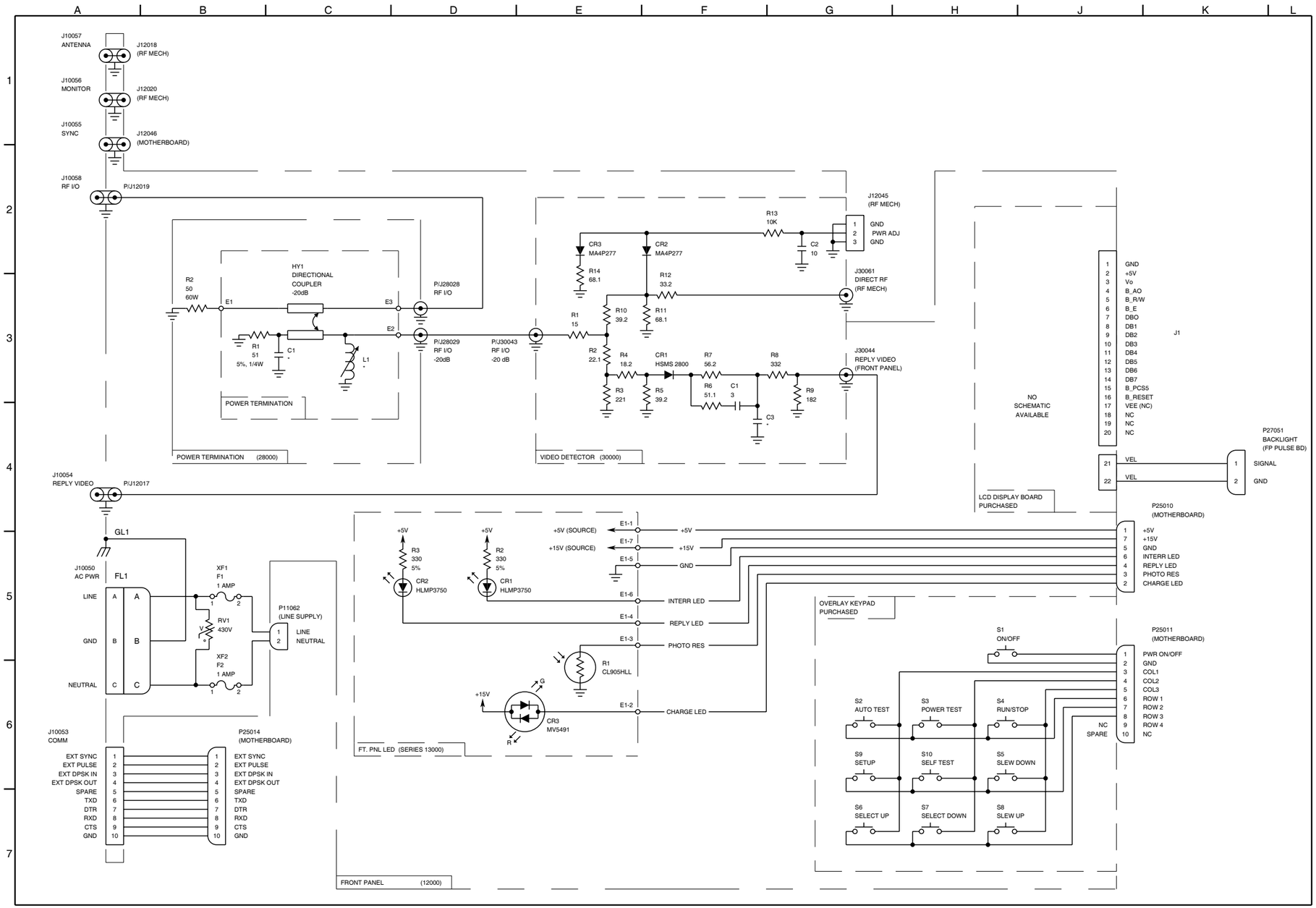


DETAIL B



81019-2

Front Panel Assembly (Sheet 2 of 7)
Figure 38



NOTES:
(UNLESS OTHERWISE NOTED)

1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES.
THIS SCHEMATIC CARRIES SERIES:

FRONT PANEL MECH	-	12000
FT. PANEL LED PCB	-	13000
POWER TERM MECH	-	28000
VIDEO DETECTOR PCB	-	30000

2. ALL RESISTORS ARE 1% TOLERANCE, 1/8W.
3. ALL RESISTANCE IS EXPRESSED IN OHMS.
ALL CAPACITANCE IS EXPRESSED IN PICOFARADS.
ALL INDUCTANCE IS EXPRESSED IN MICROHENRIES.

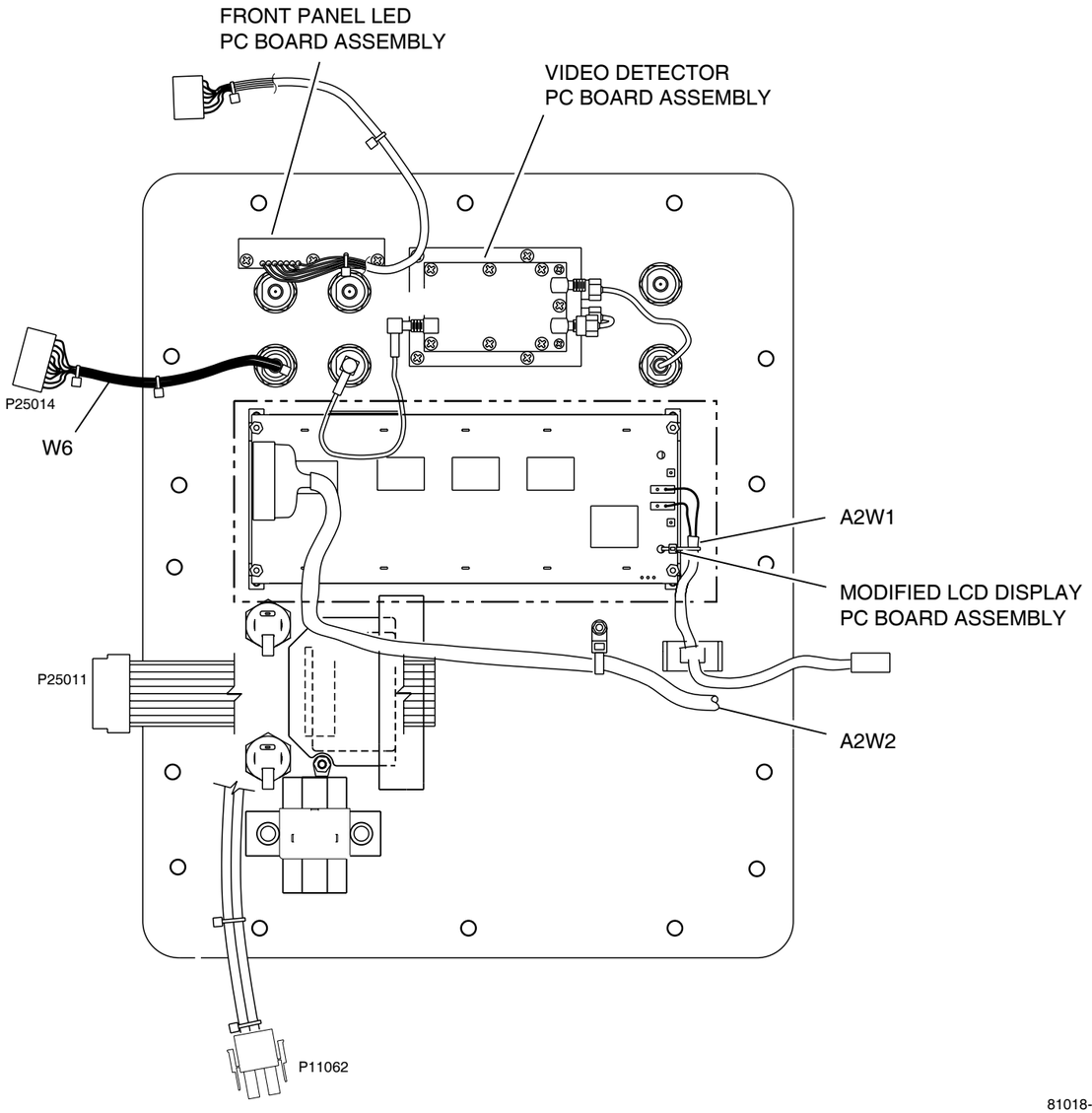
* - INDICATES PRINTED TRANSMISSION LINES OF OTHER THAN 50 OHMS IMPEDANCE WHICH CONSTITUTE CIRCUIT ELEMENTS. 50 OHM TRANSMISSION LINES ARE NOT SHOWN.

CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

81017-2

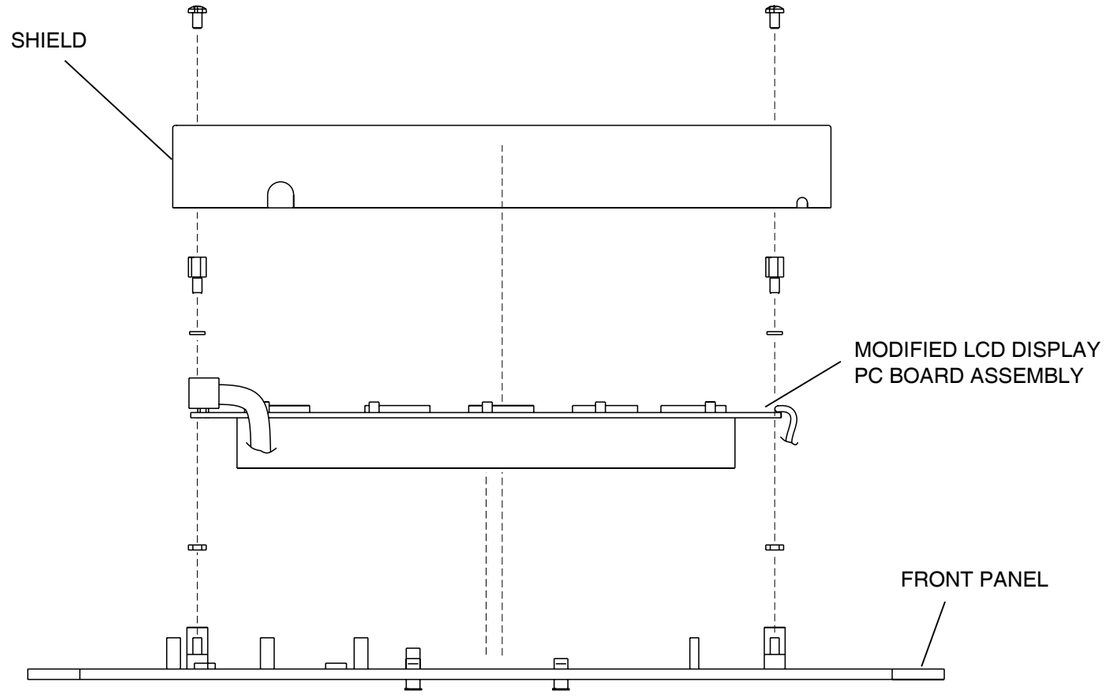
Front Panel Assembly Circuit Schematic
(0000-8144-200-A)

Front Panel Assembly (Sheet 3 of 7)
Figure 38



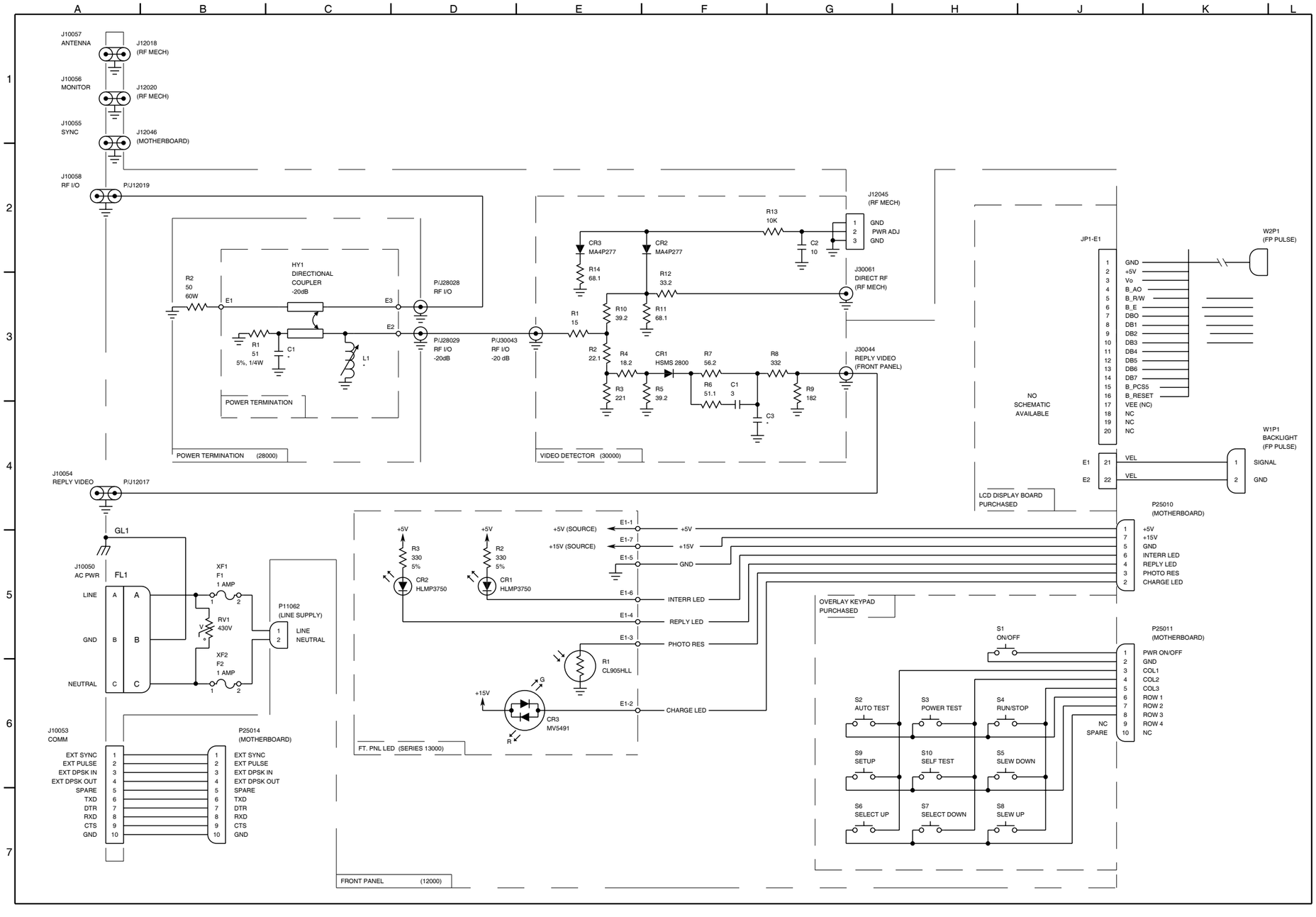
81018-2A

Front Panel Assembly
(7005-8142-900-A, B



81019-2A

Front Panel Assembly (Sheet 4 of 7)
Figure 38



NOTES:
(UNLESS OTHERWISE NOTED)
1. ALL REFERENCE NUMBERS CARRY AN ASSIGNED DESIGNATOR SERIES.
THIS SCHEMATIC CARRIES SERIES:

FRONT PANEL MECH	-	12000
FT. PANEL LED PCB	-	13000
POWER TERM MECH	-	28000
VIDEO DETECTOR PCB	-	30000

2. ALL RESISTORS ARE 1% TOLERANCE, 1/8W.
3. ALL RESISTANCE IS EXPRESSED IN OHMS.
ALL CAPACITANCE IS EXPRESSED IN PICOFARADS.
ALL INDUCTANCE IS EXPRESSED IN MICROHENRIES.

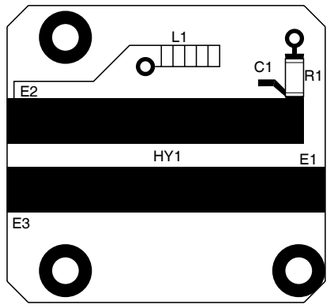
* - INDICATES PRINTED TRANSMISSION LINES OF OTHER THAN 50 OHMS IMPEDANCE WHICH CONSTITUTE CIRCUIT ELEMENTS. 50 OHM TRANSMISSION LINES ARE NOT SHOWN.

CAUTION:
CONTAINS PARTS AND ASSEMBLIES SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD).

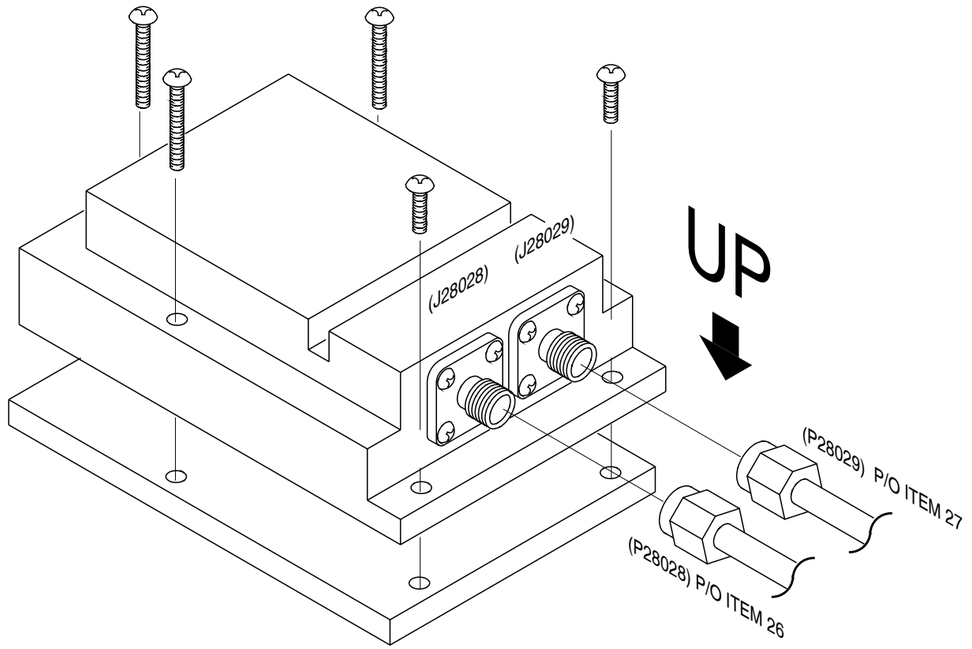
81017-2A

Front Panel Assembly Circuit Schematic
(0000-8142-900-A)

Front Panel Assembly (Sheet 5 of 7)
Figure 38



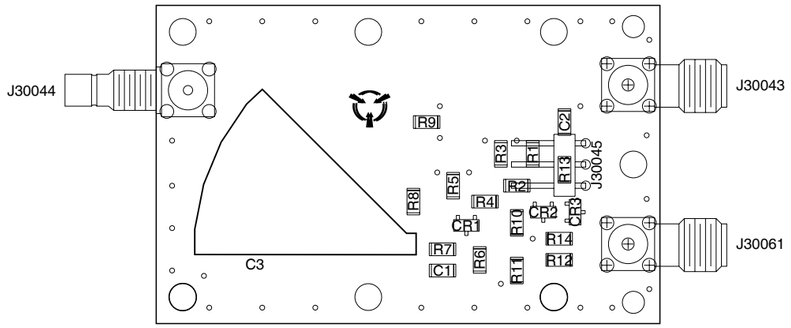
Power Termination PC Board



81020-2

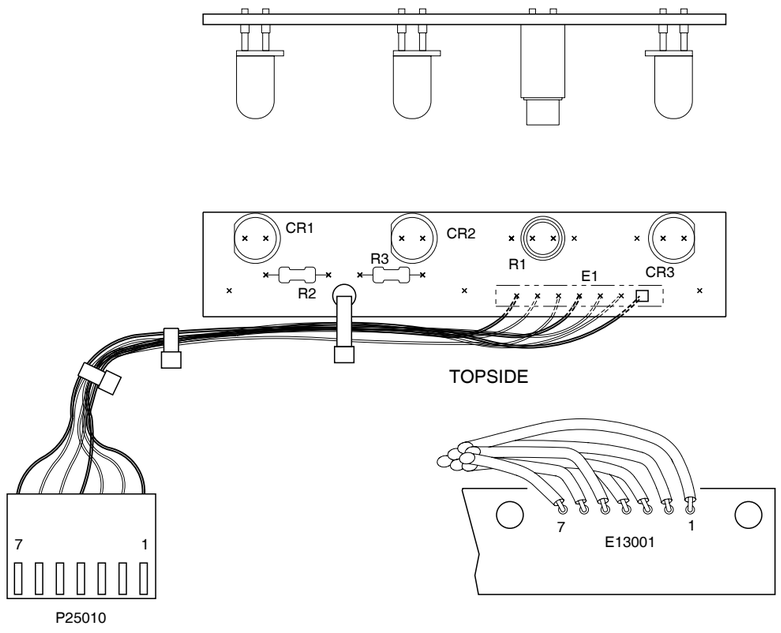
Power Termination Assembly
(7005-8142-100-B3)

Front Panel Assembly (Sheet 6 of 7)
Figure 38



81021-2

Video Detector PC Board Assembly
(7010-8131-700-E1)



81022-2

Front Panel LED PC Board Assembly
(7010-8130-300-C)

Front Panel Assembly (Sheet 7 of 7)
Figure 38

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SECTION 3 - DISASSEMBLY/REASSEMBLY

1. Disassembly

A. General

Contains instructions necessary to remove and disassemble assemblies within the ATC-601-2.

PROCEDURE PAGE

Storage Compartment and Chassis Assembly ---- 4
Battery ---- 7
Line Supply Assembly ---- 7
Power Supply Assembly ---- 9
Digital IF PC Board Assembly ---- 11
Front Panel Pulse PC Board Assembly ---- 11
RF Assembly ---- 13
Front Panel Assembly ---- 21
Flat Antenna Assembly ---- 28
Motherboard PC Board Assembly ---- 30

B. Preliminary Considerations

(1) Tools Required

TOOL	SIZE	DESCRIPTION
SCREWDRIVER	#2 #4 #6	PHILLIPS
SCREWDRIVER	#2	SLOTTED
WRENCH	1/4 in 3/16 in	SOCKET
WRENCH	3/32 in 0.05 in	HEX-HEAD
WRENCH	3/8 in 1/4 in 3/16 in 5/8 in	OPEN
SOLDERING IRON	N/A	PIN-TYPE

Disassembly Tools
Table 1

(2) Disassembly Precautions

CAUTION: TAG EACH WIRE AND CABLE PRIOR TO REMOVAL.

CAUTION: AVOID BENDING OR TWISTING SEMI-RIGID COAXIAL CABLES.

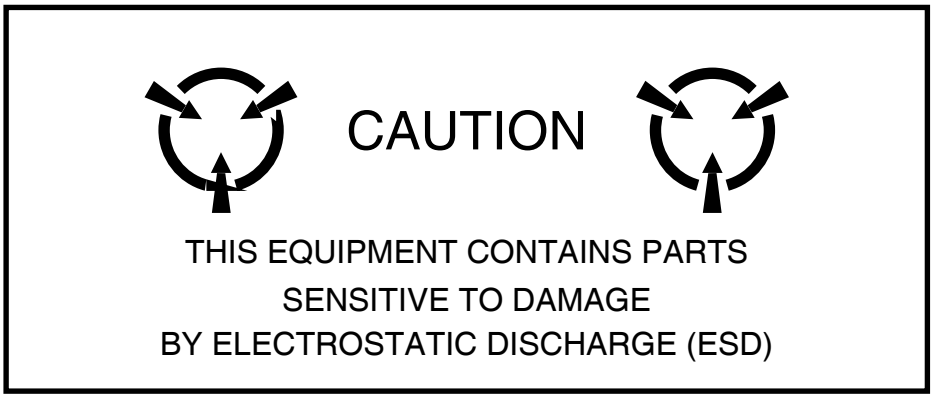
CAUTION: AVOID PLACING UNDUE STRAIN ON ANY WIRE OR CABLE.

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 PC BOARD ASSEMBLY, DIGITAL IF PC BOARD ASSEMBLY, FRONT PANEL PULSE PC BOARD ASSEMBLY, RF ASSEMBLY AND FRONT PANEL ASSEMBLY CONTAIN PARTS SENSITIVE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD). ALL PERSONNEL PERFORMING DISASSEMBLY SHOULD HAVE KNOWLEDGE OF ACCEPTED ESD PRACTICES.



(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.

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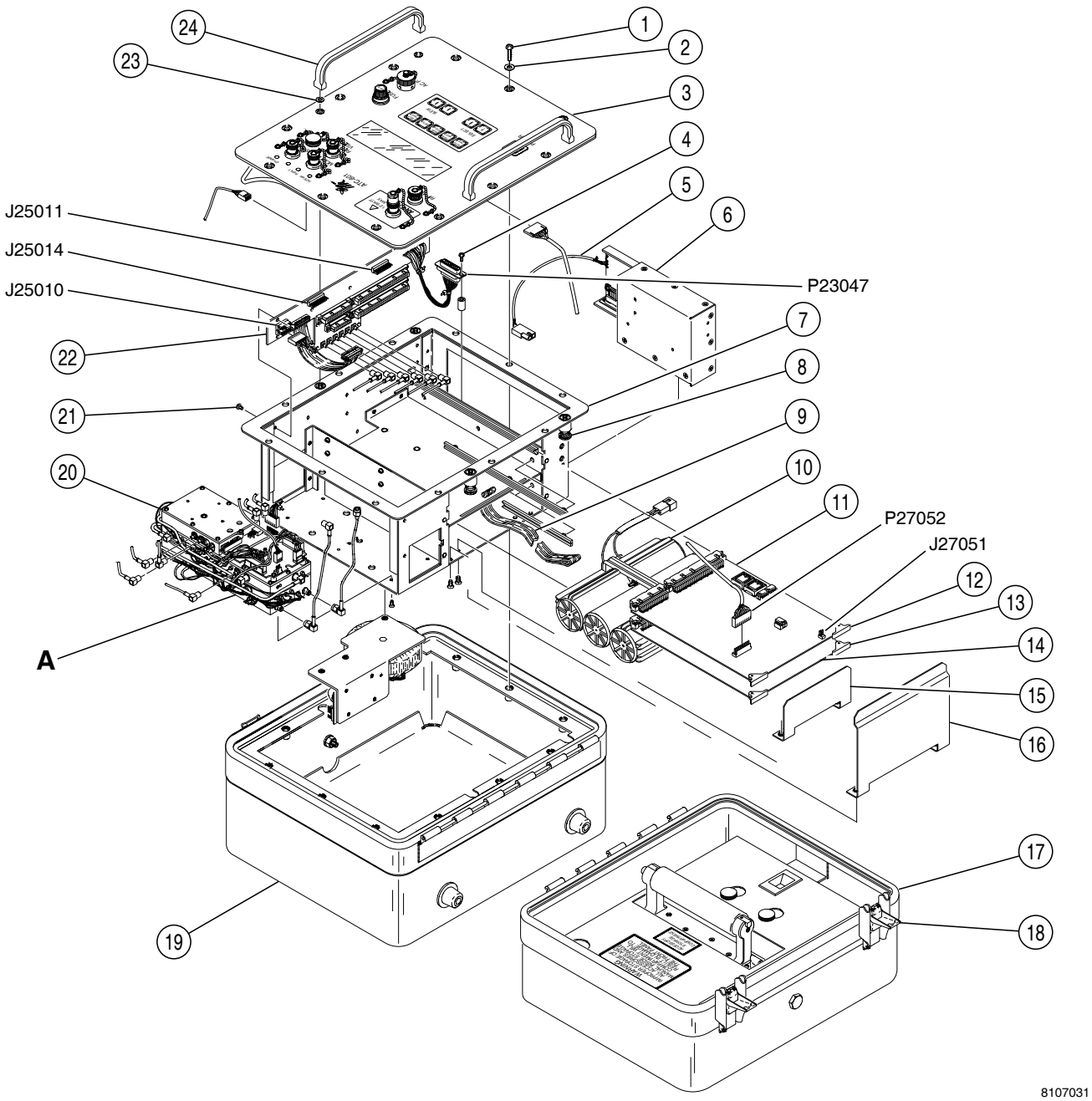
C. Procedures

(1) Storage Compartment and Chassis Assembly

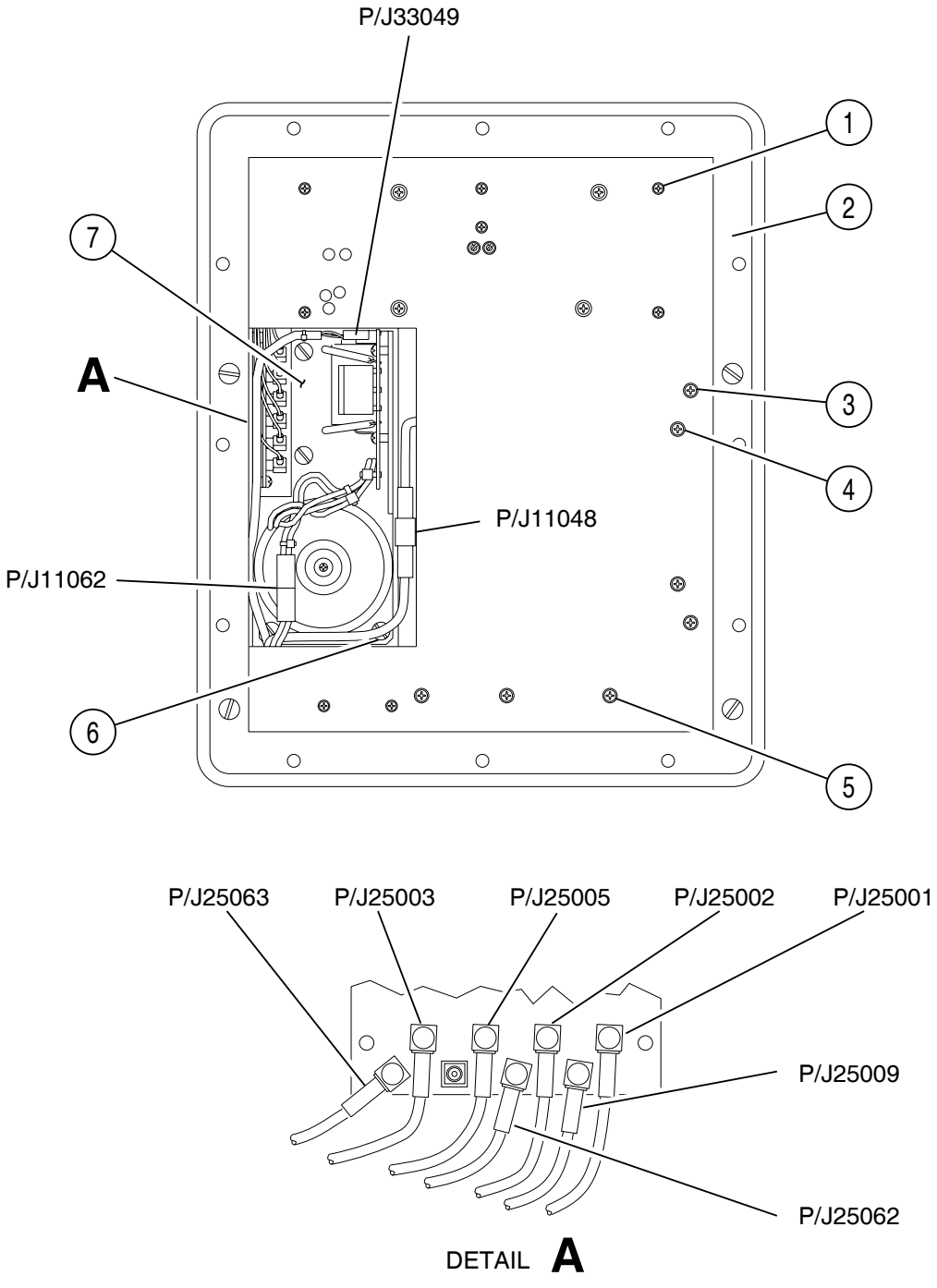
NOTE: Item numbers refer to 2-3-1, Figure 1.

STEP	PROCEDURE

1. Unlock fasteners (18) securing Storage Compartment (17) to Case Assembly (19).
2. Remove Storage Compartment (17) from Case Assembly (19).
3. Remove twelve screws (1) and nylon washers (2) from Front Panel Assembly (3).
4. Lift Chassis Assembly (7) from Case Assembly (19).



ATC-601-2 Chassis and Storage Compartment Disassembly
Figure 1



ATC-601-2 Test Set - Rear View
Figure 2

(2) Battery

NOTE: Item numbers refer to 2-3-1, Figure 2 unless otherwise noted.

STEP	PROCEDURE

1. Remove Storage Compartment and Chassis Assembly according to para 2-3-1C(1).
2. Disconnect battery connector (P/J11048).
3. Remove two screws (3) from bottom of Chassis Assembly (2) and remove PC board retainer (16) (2-3-1, Figure 1).
4. Remove two screws (4) from bottom of Chassis Assembly (2) and remove battery cover (15) (2-3-1, Figure 1).
5. Refer to 2-3-1, Figure 1, and pull ejector strap (9) to remove battery (10) from Chassis Assembly (7).

(3) Line Supply Assembly

STEP	PROCEDURE

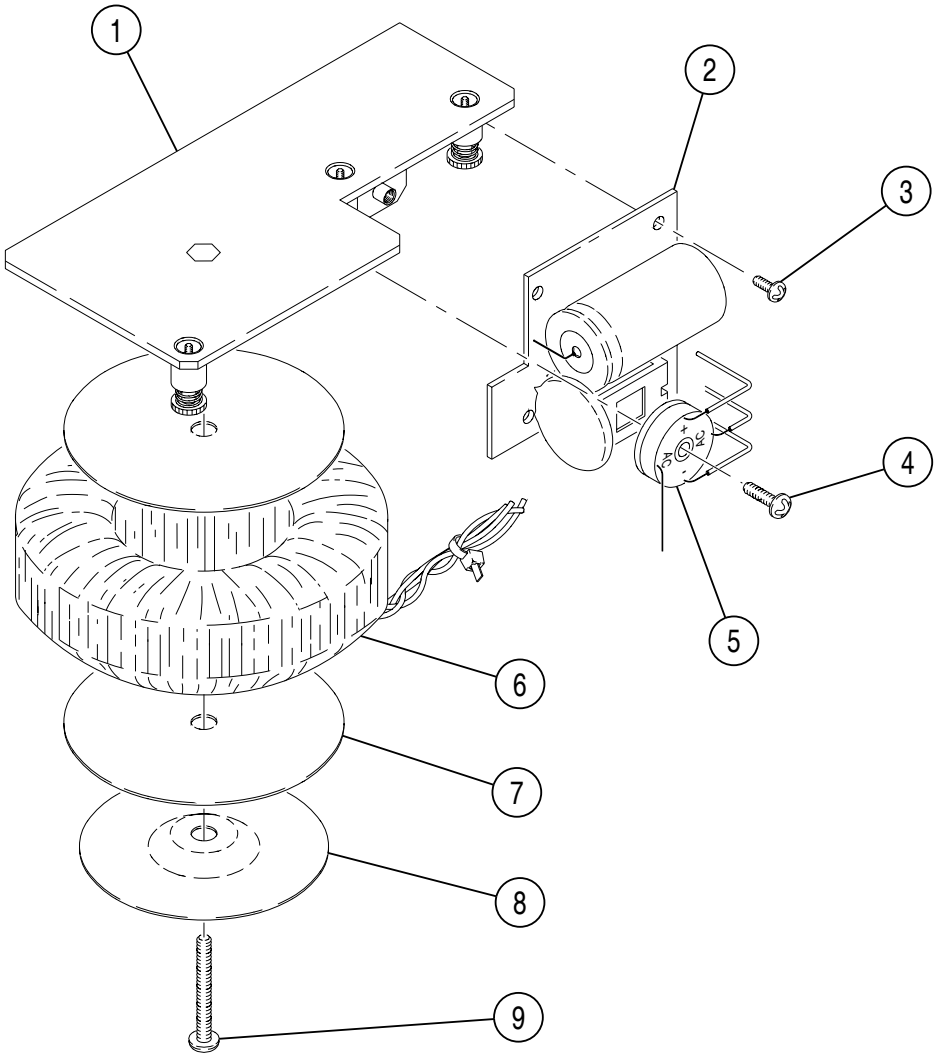
1. Remove Storage Compartment and Chassis Assembly according to para 2-3-1C(1).

   NOTE: For Steps 2 through 4, item numbers refer to 2-3-1, Figure 2.

2. Disconnect P/J33049.
3. Disconnect P/J11062.
4. Loosen three captive screws (6) securing Line Supply Assembly (7) to Chassis Assembly (2).
5. Remove Line Supply Assembly (7) from Chassis Assembly (2).

   NOTE: For Steps 6 through9, item numbers refer to 2-3-1, Figure 3.

6. Remove four screws (3) securing Line Supply PC Board Assembly (2) to bracket assembly (1).
7. Remove one screw (4) securing bridge rectifier (5) to bracket assembly (1).
8. Remove one screw (9) securing transformer (6) to bracket assembly (1).
9. Remove transformer (6), conical washer (8), two insulators (7), bridge rectifier (5) and Line Supply PC Board Assembly (2) from bracket assembly (1).



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Line Supply Disassembly
Figure 3

(4) Power Supply Assembly

STEP	PROCEDURE

1. Remove Storage Compartment and Chassis Assembly according to para 2-3-1C(1).

   NOTE: For Steps 2 and 3, item numbers refer to 2-3-1, Figure 2.

2. Disconnect battery connector (P/J11048).

3. Remove three screws (5) securing Power Supply Assembly to Chassis Assembly.

   NOTE: For Steps 4 and 5, item numbers refer to 2-3-1, Figure 1.

4. Lift Power Supply Assembly (6) and disconnect J23047 from P23047.

5. Remove Power Supply Assembly (6) from Chassis Assembly (7). Carefully guide battery cable (5) out from middle of Chassis Assembly cavity and through Power Supply Assembly cavity.

   POWER SUPPLY PC BOARD ASSEMBLY

   NOTE: For Steps 6 through 11, item numbers refer to 2-3-1, Figure 4.

6. Remove nine screws (1) from Power Supply Assembly.

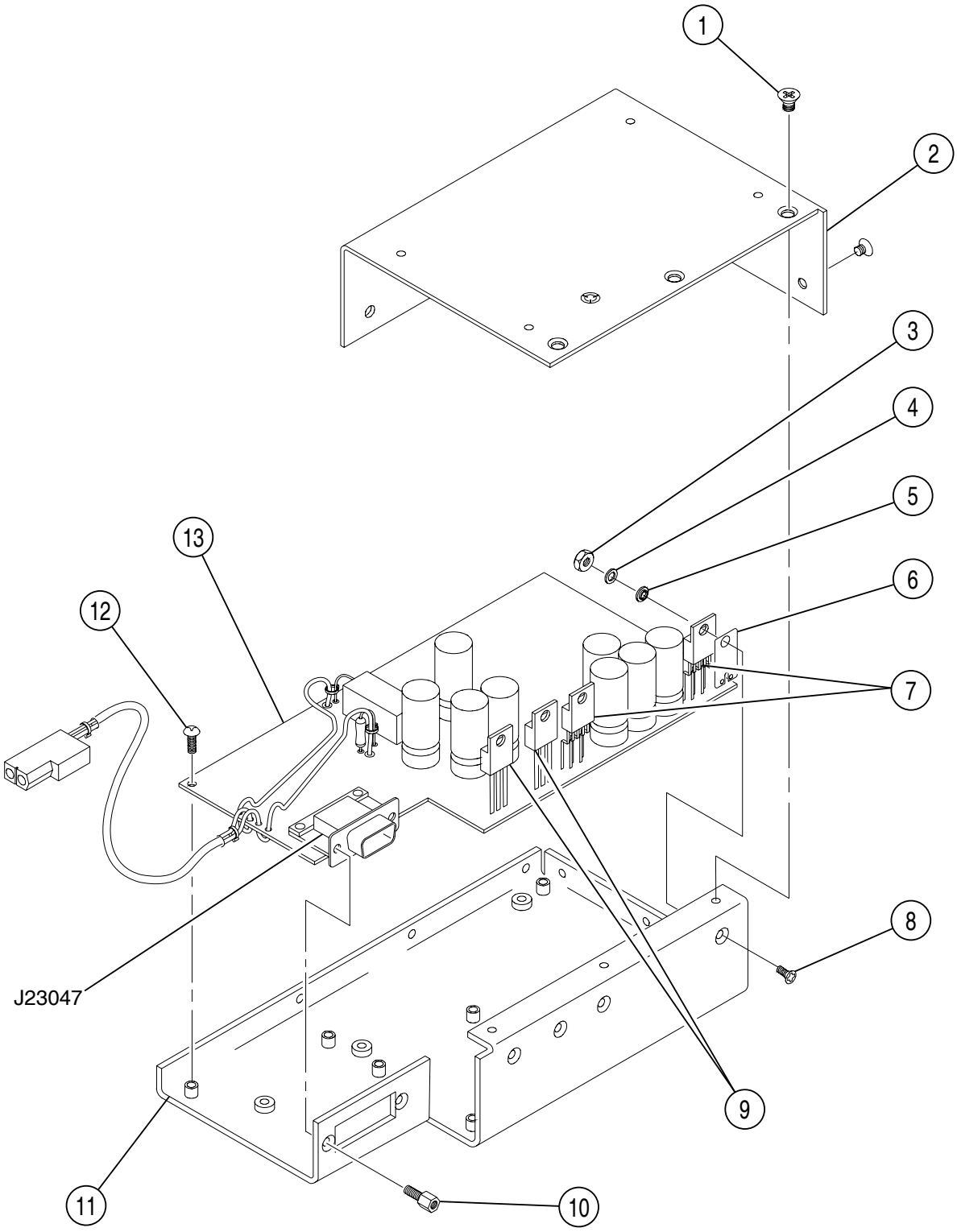
7. Remove cover (2) from Power Supply Assembly.

8. Remove four screws (8), four nuts (3), four flat washers (4) and four shoulder washers (5) securing regulators (9), FETs (7) and insulators (6) to enclosure (11).

9. Remove two hex nut screws (10) securing J23047 to enclosure (11).

10. Remove nine screws (12) securing Power Supply PC Board Assembly (13) to enclosure (11).

11. Remove Power Supply PC Board Assembly (13) from enclosure (11).



Power Supply Disassembly
Figure 4

(5) Digital IF PC Board Assembly

NOTE: Item numbers refer to 2-3-1, Figure 1 unless otherwise noted.

STEP	PROCEDURE

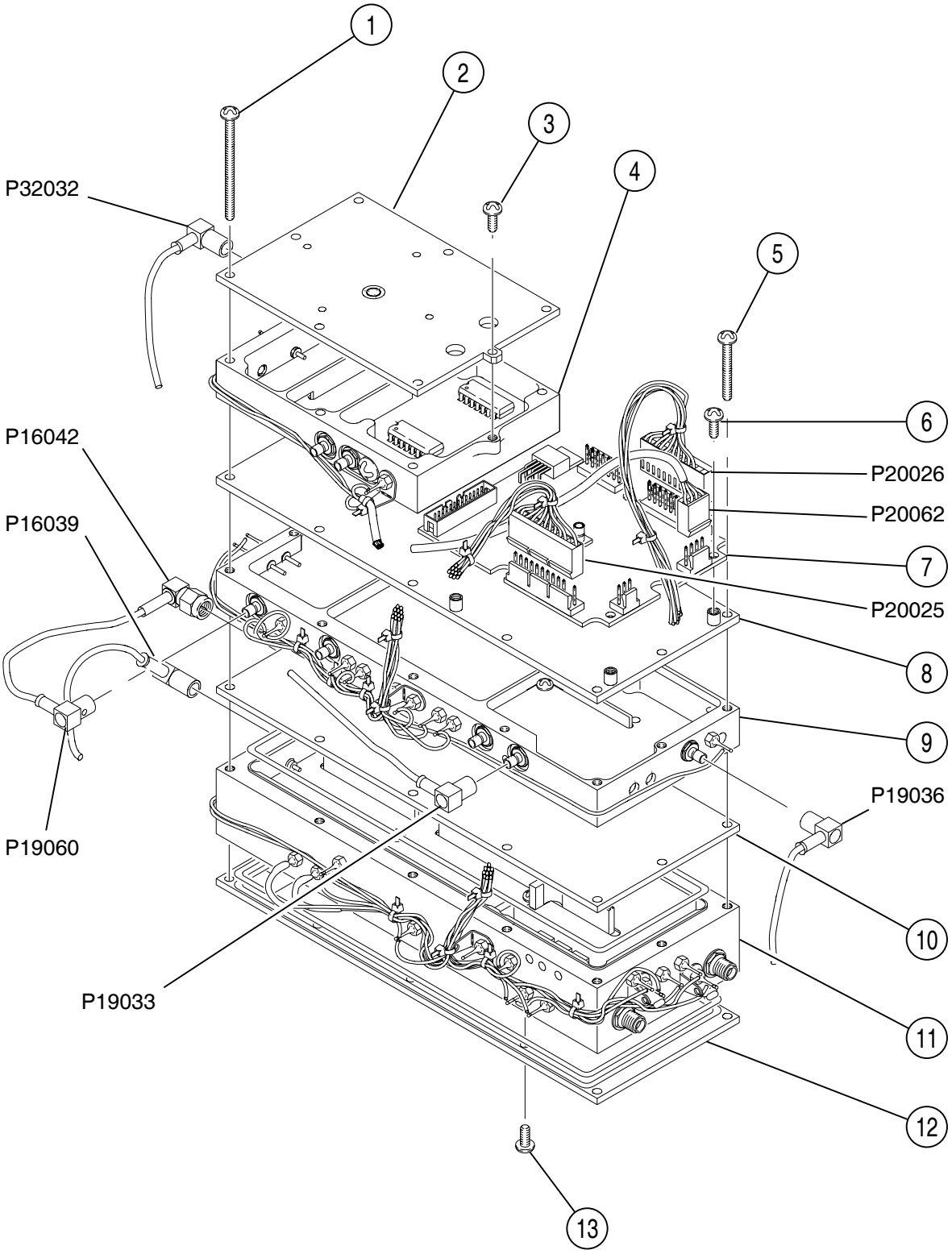
1. Remove Storage Compartment and Chassis Assembly according to para 2-3-1C(1).
2. Remove two screws (4) (2-3-1, Figure 2) securing PC board retainer (6) to Chassis Assembly (7).
3. Pull card ejector (13) and remove Digital IF PC Board Assembly (14) from Chassis Assembly (7).

(6) Front Panel Pulse PC Board Assembly

NOTE: Item numbers refer to 2-3-1, Figure 1 unless otherwise noted.

STEP	PROCEDURE

1. Remove Storage Compartment and Chassis Assembly according to para 2-3-1C(1).
2. Remove two screws (4) (2-3-1, Figure 2) securing PC board retainer (16) to Chassis Assembly (7).
3. Disconnect P27051 and P27052 from Front Panel Pulse PC Board Assembly (11).
4. Pull card ejector (12) and remove Front Panel Pulse PC Board Assembly (11) from Chassis Assembly (7).



RF Disassembly
Figure 5

(7) RF Assembly

NOTE: Item numbers refer to 2-3-1, Figure 1 unless otherwise noted.

STEP	PROCEDURE

1. Remove Storage Compartment and Chassis Assembly according to para 2-3-1C(1).
2. Refer to 2-3-1, Figure 2 and remove six screws (1) securing RF Assembly to Chassis Assembly (2).
3. Carefully lift RF Assembly (20) up and out of Chassis Assembly (7), applying minimal stress on connecting cables.
4. Disconnect cables:

   P17037 (Front Panel Assembly) from J17037 (RF Assembly)

   P17038 (Front Panel Assembly) from J17038 (RF Assembly)

   P17027 (Front Panel Assembly) from J17027 (RF Assembly)

   P17022 (Motherboard PC Board Assembly) from J17022 (RF Assembly)

   P17023 (Motherboard PC Board Assembly) from J17023 (RF Assembly)

   P17024 (Motherboard PC Board Assembly) from J17024 (RF Assembly)

   P17021 (Motherboard PC Board Assembly) from J17021 (RF Assembly)

   P17034 (Motherboard PC Board Assembly) from J17034 (RF Assembly)

   P17035 (Motherboard PC Board Assembly) from J17035 (RF Assembly)

   P17031 (Motherboard PC Board Assembly) from J17031 (RF Assembly)

   P17030 (Front Panel Assembly) from J17030 (RF Assembly)
5. Remove RF Assembly (20) from Chassis Assembly (7).

(a) Driver PC Board Assembly

NOTE: Item numbers refer to 2-3-1, Figure 5 unless otherwise noted.

STEP	PROCEDURE

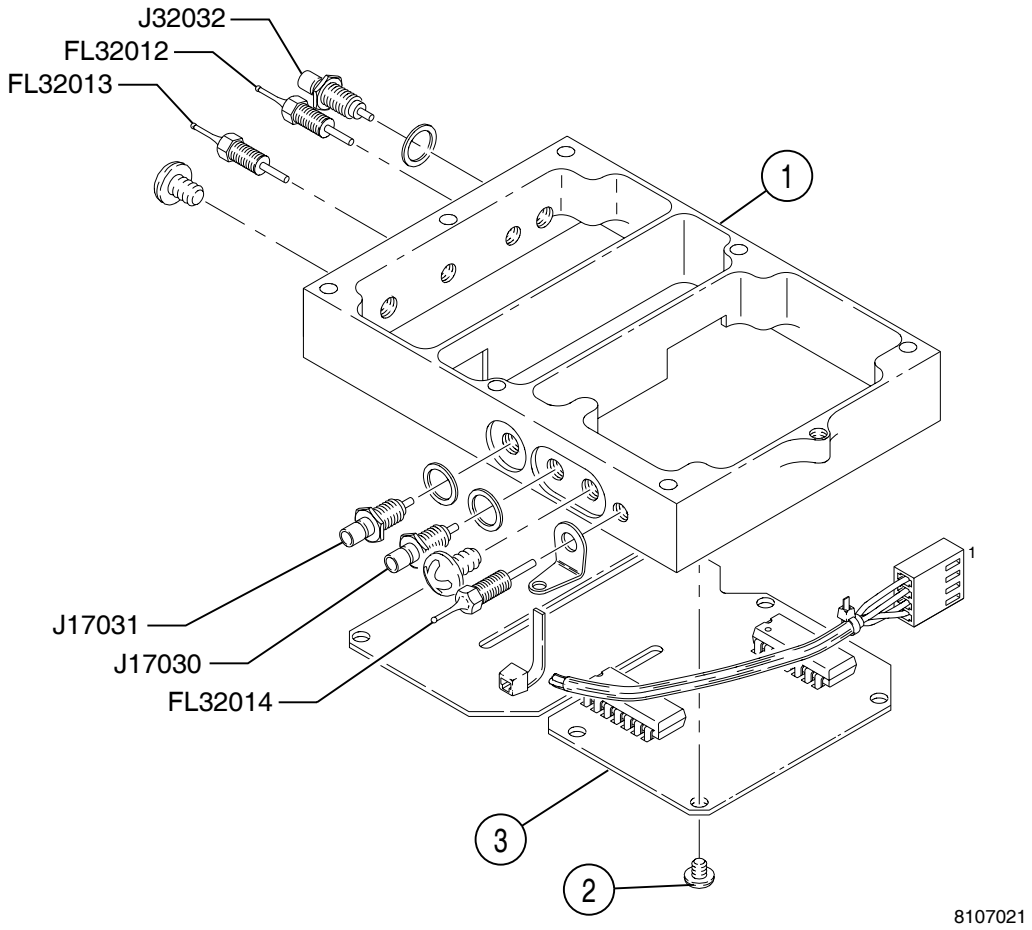
1. Remove RF Assembly according to para 2-3-1C(7).
2. Disconnect cables:

   P20062 (Detector Assembly) from J20062 (Driver PC Board Assembly)

   P20025 (Analog IF Assembly) from J20025 (Driver PC Board Assembly)

   P20026 (SSB Assembly) from J20026 (Driver PC Board Assembly)
3. Remove four screws (6) securing Driver PC Board Assembly (7) to Analog IF cover (8).
4. Remove Driver PC Board Assembly (7) from RF Assembly.

(b) Detector Assembly



Detector Disassembly
Figure 6

STEP	PROCEDURE

NOTE: For Steps 1 through 5, item numbers refer to 2-3-1, Figure 5.

1. Remove RF Assembly according to para 2-3-1C(7).
2. Disconnect cables:

   P20062 (Detector Assembly) from J20062 (Driver PC Board Assembly)

   P32032 (Analog IF Assembly) from J32032 (Detector Assembly)
3. Remove seven screws (1) securing Detector Assembly (4) to SSB Assembly (11).
4. Remove Detector Assembly (4) from RF Assembly.

DETECTOR PC BOARD ASSEMBLY

5. Loosen screw (3) and rotate Detector cover (2).

NOTE: For Steps 6 through 8, item numbers refer to 2-3-1, Figure 6.

STEP PROCEDURE

6. Remove solder from Detector PC Board Assembly (3) at filter and connector junctions as follows:

   FL32012

   FL32013

   FL32014

   J17030

   J17031

   J32032

7. Remove seven screws (2) securing Detector PC Board Assembly (3) to Detector Assembly (1).

8. Remove Detector PC Board Assembly (3) from Detector Assembly (1).

(c) Analog IF Assembly

STEP PROCEDURE

NOTE: For Steps 1 through 4, item numbers refer to 2-3-1, Figure 5.

1. Remove Detector Assembly according to para 2-3-1C(7)(b).

2. Disconnect cables as follows:

   P19036 (SSB Assembly) from J19036 (Analog IF Assembly)

   P20025 (Analog IF Assembly) from J20025 (Driver PC Board Assembly)

   P19033 (Detector Assembly) from J19033 (Analog IF Assembly)

   P19060 (SSB Assembly) from J19060 (Analog IF Assembly)

3. Remove five screws (5) securing Analog IF Assembly (9) to SSB Assembly (11).

4. Remove Analog IF cover (8) and Analog IF Assembly (9) from RF Assembly.

ANALOG IF PC BOARD ASSEMBLY

NOTE: For Steps 5 through 7, item numbers refer to 2-3-1, Figure 7.

5. Remove solder from Analog IF PC Board Assembly (1) at filter and connector junctions as follows:

FL19010	FL19002	J19036
FL19008	J19033	J17035
J17034	FL19011	FL19006
J19060	FL19005	FL19001
FL19004	FL19007	FL19003

6. Remove fourteen screws (2) securing Analog IF PC Board Assembly (1) to Analog IF Assembly (3).

7. Remove Analog IF PC Board Assembly (1) from Analog IF Assembly (3).

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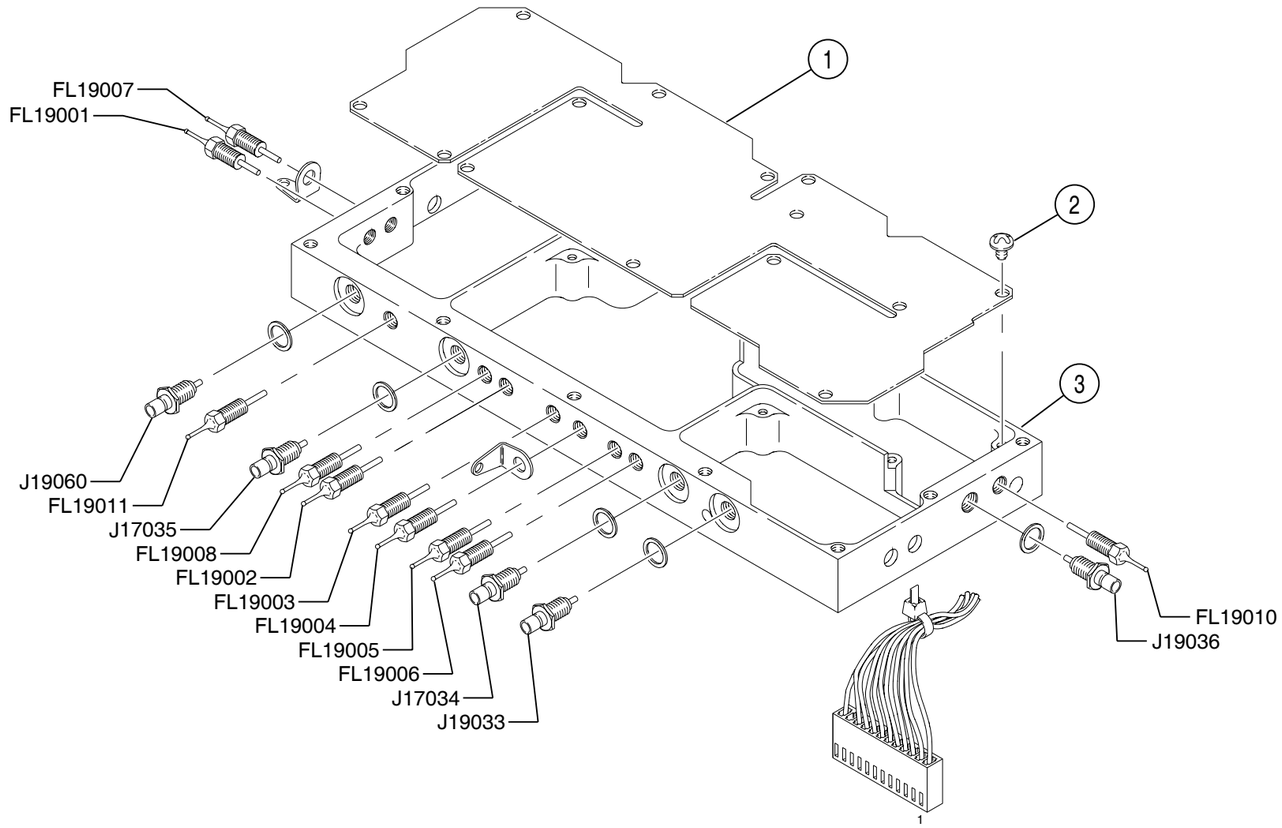

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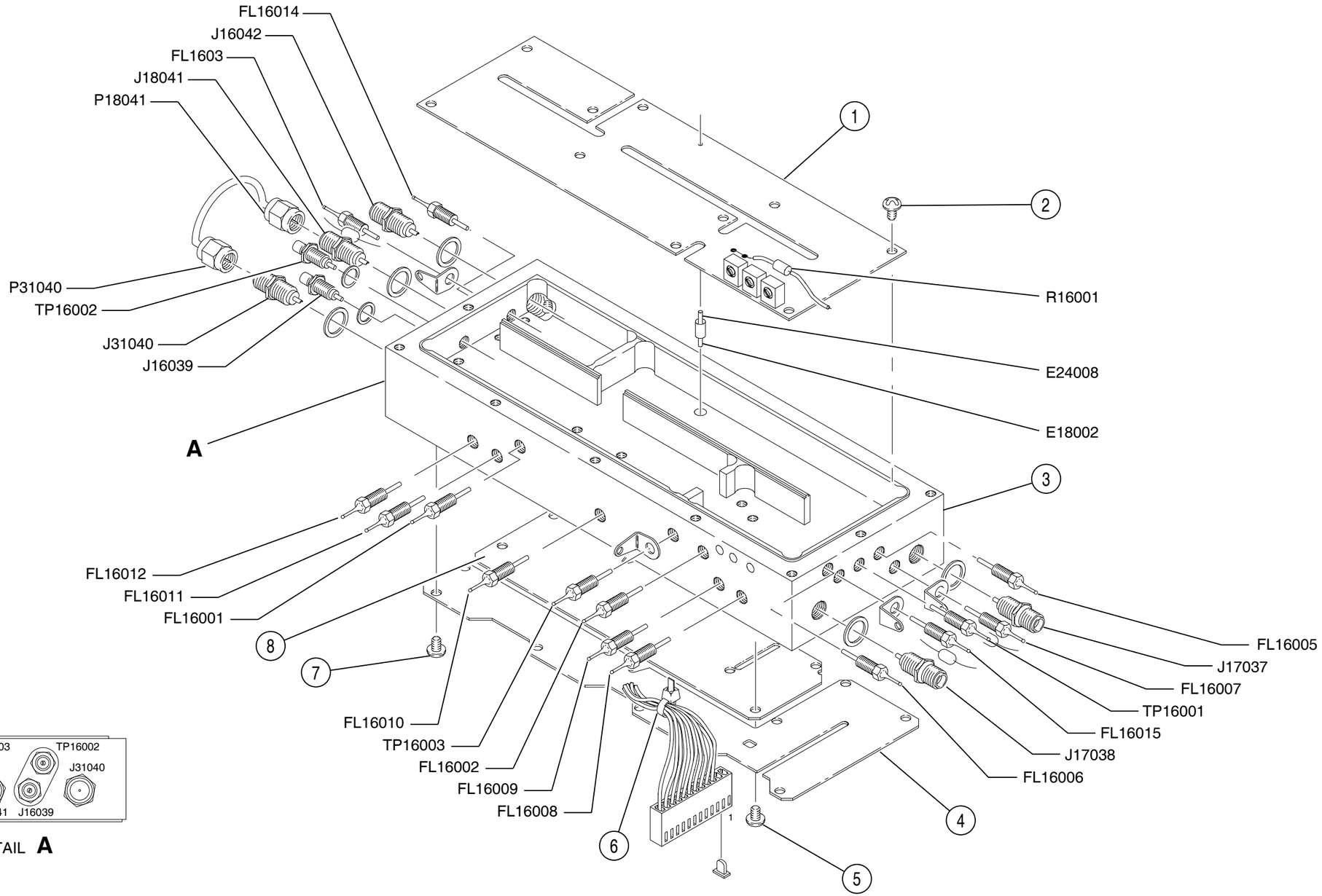
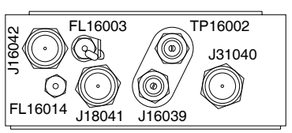
Analog IF Disassembly
Figure 7





DETAIL **A**

8107024

SSB Disassembly
Figure 8

(d) SSB Assembly

NOTE: Item numbers refer to 2-3-1, Figure 8 unless otherwise noted.

STEP PROCEDURE

1. Remove RF Assembly according to para 2-3-1C(7).

MIXER PC BOARD ASSEMBLY

2. Disconnect cables as follows:
   - P18041 from J18041 and P31040 from J31040 (Attenuator PC Board Assembly to Mixer PC Board Assembly).
   - P16039 (Analog IF Assembly) from J16039 (SSB Assembly). Refer to 2-3-1, Figure 5.
3. Refer to 2-3-1, Figure 5 and remove four screws (13) securing Mixer cover (12) to SSB Assembly (11).
4. Remove solder from Mixer PC Board Assembly (8) at filter and connector junctions as follows:

J16039	J18041
FL16014	E18002

5. Remove J16039, FL16014 and J18041 from SSB Assembly (3).
6. Remove five screws (5) securing Mixer PC Board Assembly (8) to SSB Assembly (3).
7. Remove Mixer PC Board Assembly (8) from SSB Assembly (3).

ATTENUATOR PC BOARD ASSEMBLY

8. Remove solder from Attenuator PC Board Assembly (4) at filter and connector junctions as follows:

J31040	FL16008
FL16012	J17038
FL16011	FL16007
FL16010	J17037
FL16009	

9. Remove J31040, FL16012, FL16011, FL16010, FL16009, FL16008, J17038, FL16007 and J17037 from SSB Assembly (3).
10. Remove nine screws (7) securing Attenuator PC Board Assembly (4) to SSB Assembly (3).
11. Remove Attenuator PC Board Assembly (4) from SSB Assembly (3).

LO SOURCE PC BOARD ASSEMBLY

12. Remove Analog Assembly according to 2-3-1C(7)(c).
13. Refer to 2-3-1, Figure 5 and remove LO Source cover (10) from SSB Assembly (11).
14. Remove P16042 (Analog IF Assembly) from J16042 (SSB Assembly).

STEP	PROCEDURE

15. Remove solder from LO Source PC Board Assembly (1) at filter, test point and connector junctions as follows:

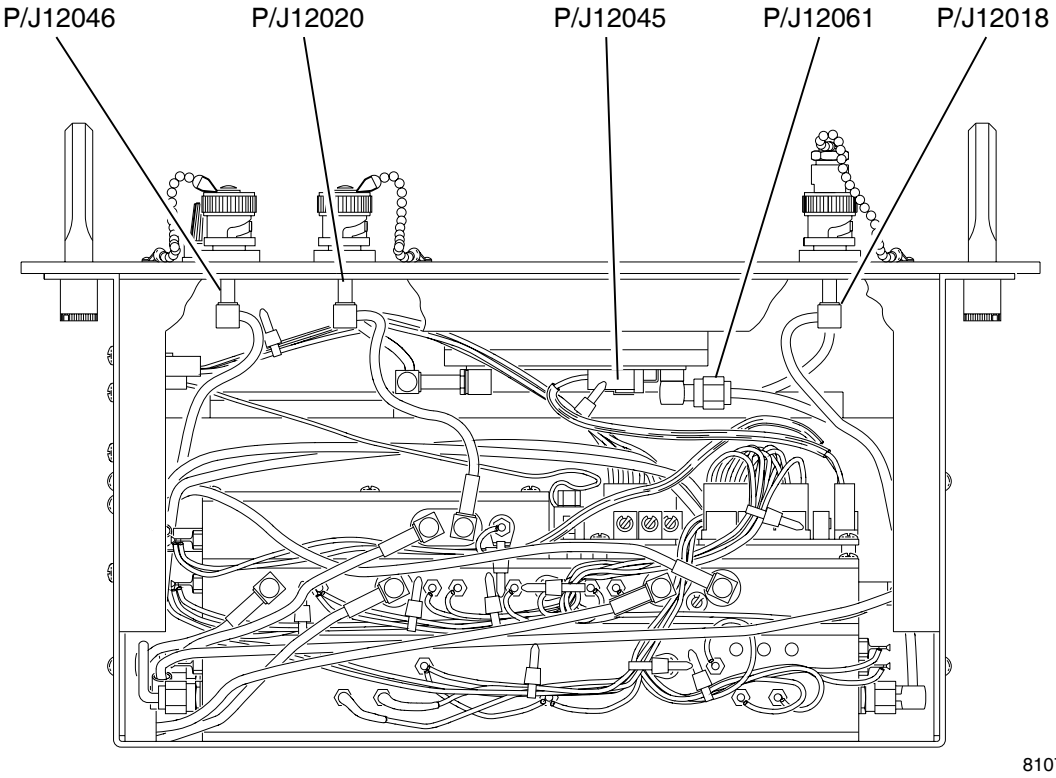
FL16005	FL16001
TP16001	TP16002
FL16015	FL16003
FL16006 from R16001	J16042
FL16002	E24008
TP16003	

16. Remove FL16005, TP16001, FL16015, FL16006, FL16002, TP16003, FL16001, TP16002, FL16003 and J16042 from SSB Assembly (3).

17. Remove ten screws (2) securing LO Source PC Board Assembly (1) to SSB Assembly (3).

18. Remove LO Source PC Board Assembly (1) from SSB Assembly (3).

(8) Front Panel Assembly



ATC-601-2 Test Set Top View
Figure 9

STEP	PROCEDURE

1. Remove Storage Compartment and Chassis Assembly according to para 2-3-1C(1).
2. Refer to 2-3-1, Figure 2 and disconnect P11062 (Front Panel Assembly) from J11062 (Line Supply Assembly).
3. Refer to 2-3-1, Figure 9 and disconnect cables:

   P12018 (RF Assembly) from J12018 (Front Panel Assembly).

   P12061 (RF Assembly) from J12061 (Front Panel Assembly).

   P12045 (RF Assembly) from J12045 (Front Panel Assembly).

   P12020 (RF Assembly) from J12020 (Front Panel Assembly).

   P12046 (Motherboard PC Board Assembly) from J12020 (Front Panel Assembly).

   NOTE: For Steps 4 through 9, item numbers refer to 2-3-1, Figure 1.

4. Loosen four captive screws (8).
5. Remove two handles (24) and four washers (23) from Front Panel Assembly (3).

STEP	PROCEDURE

6. Tilt left side of Front Panel Assembly (3) up approximately 30° and disconnect cables as follows:
   - P27052 (Front Panel Assembly) from J27052 (Front Panel Pulse PC Board Assembly).
   - P27051 (Front Panel Assembly) from J27051 (Front Panel Pulse PC Board Assembly).

   NOTE: Left side of Chassis Assembly (7) has access to PC boards and battery.
7. Set left side of Front Panel Assembly (3) on Chassis Assembly (7) and tilt right side of Front Panel Assembly (3) up approximately 30°.

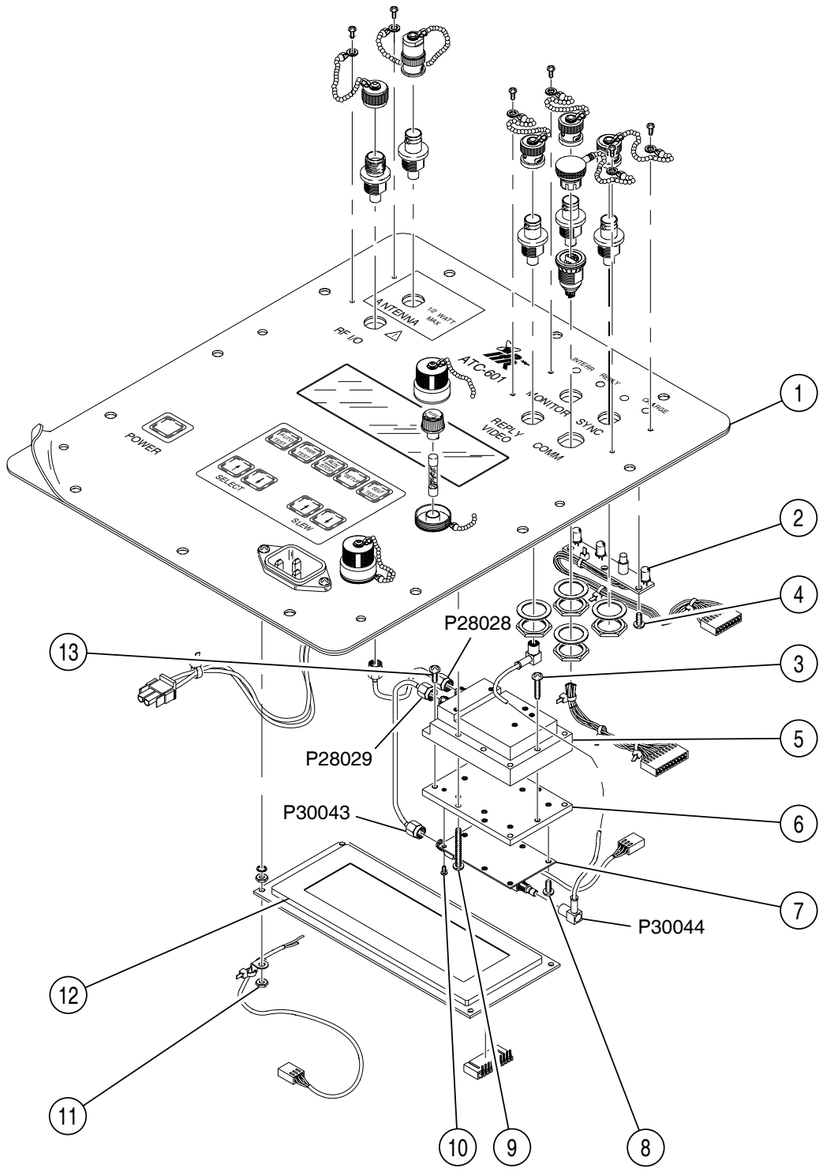
   NOTE: The Keypad ribbon cable is taped to the Front Panel Assembly (3) and should be carefully untaped to achieve better access to connecting cables.
8. Disconnect cables as follows:
   - P25011 (Front Panel Assembly) from J25011 (Motherboard PC Board Assembly).
   - P25010 (Front Panel Assembly) from J25010 (Motherboard PC Board Assembly).
   - P25014 (Front Panel Assembly) from J25014 (Motherboard PC Board Assembly).
9. Carefully guide connecting cables and remove Front Panel Assembly (3) from Chassis Assembly (7).

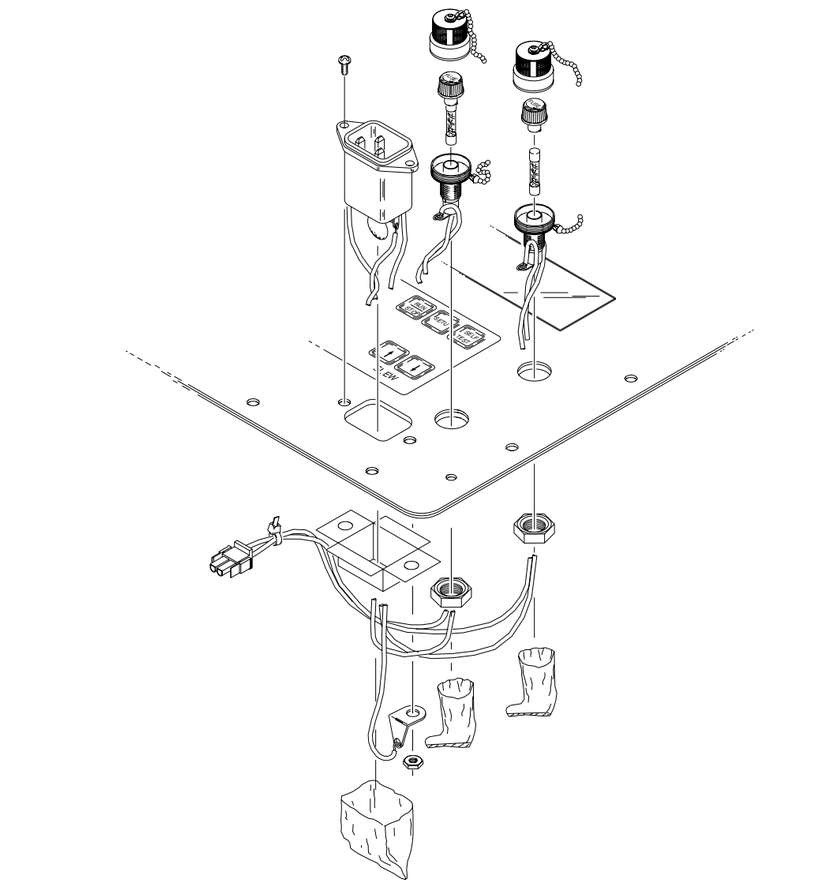
(a) Video Detector PC Board Assembly

NOTE: Item numbers refer to 2-3-1, Figure 10 unless otherwise noted.

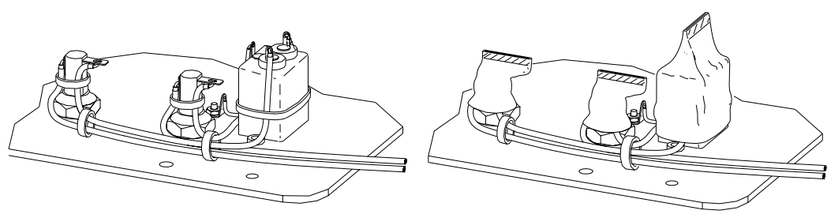
STEP	PROCEDURE

1. Remove Front Panel Assembly according to para 2-3-1C(7).
2. Disconnect cables as follows:
   - P30043 (Power Termination Assembly) from J30043 (Video Detector PC Board Assembly).
   - P30044 (REPLY VIDEO Connector) from J30043 (Video Detector PC Board Assembly).
3. Remove seven screws (8) and two screws (10) securing Video Detector PC Board Assembly (7) to Power Termination cover (6).
4. Remove Video Detector PC Board Assembly (7) from Front Panel Assembly (1).





DETAIL **A**



VIEW **A-A**

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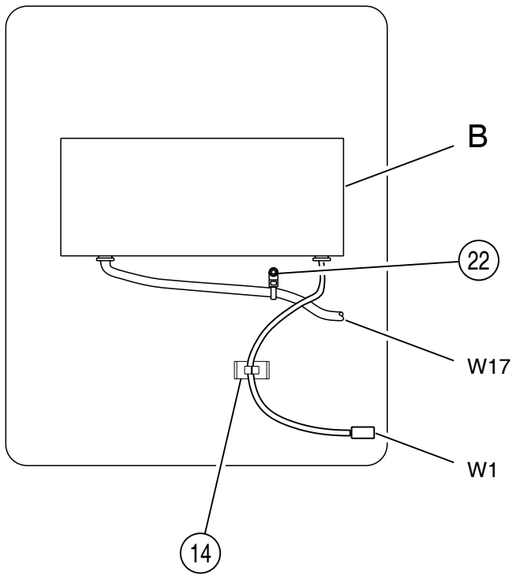
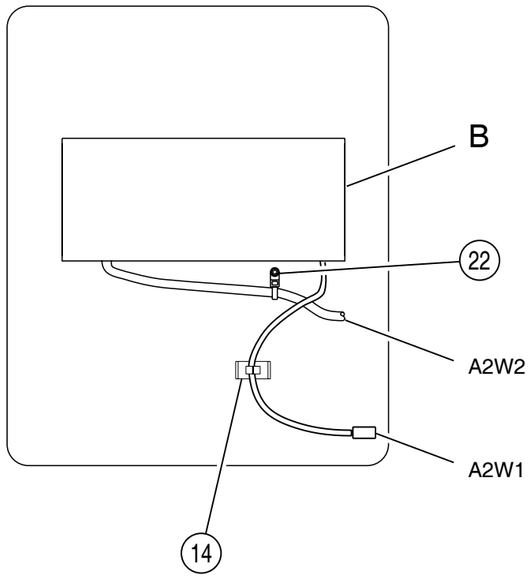
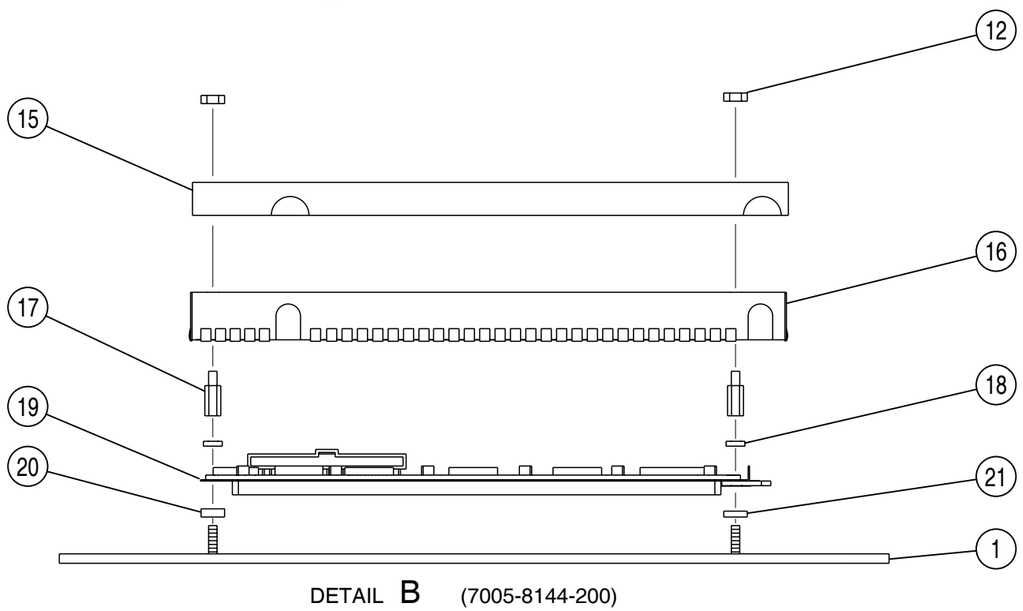
Front Panel Disassembly (Sheet 1 of 2)
Figure 10

(7005-8144-200)

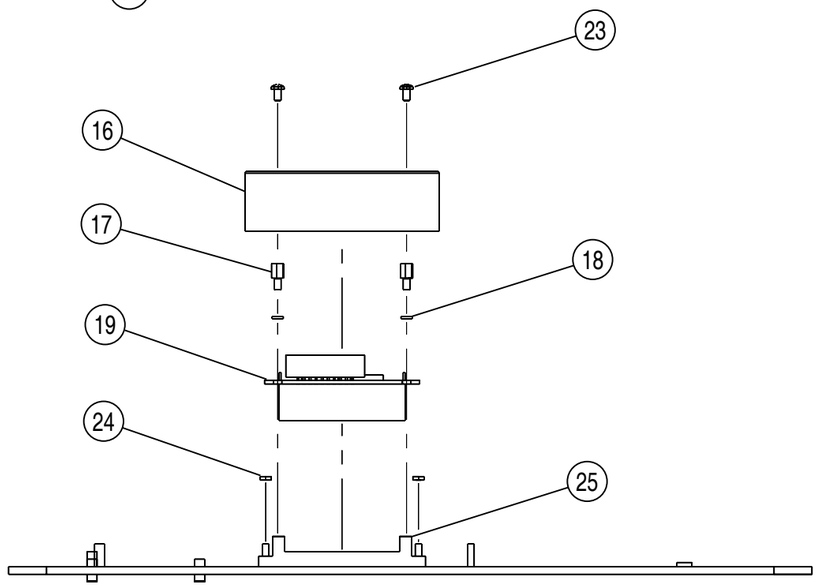


(7005-8142-900)





DETAIL B (7005-8144-200)



DETAIL B (7005-8142-900)

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Front Panel Disassembly (Sheet 2 of 2)
Figure 11

(b) Power Termination Assembly

STEP	PROCEDURE

1. Remove Front Panel Assembly according to para 2-3-1C(7).

   NOTE: For Steps 2 through 5, item numbers refer to 2-3-1, Figure 10.

2. Disconnect cables as follows:

   - P28028 (RF I/O Connector) from J28028 (Power Termination Assembly).
   - P28029 (Video Detector PC Board Assembly) from J28029 (Power Termination Assembly).
   - P30044 (REPLY VIDEO Connector) from J30044 (Video Detector PC Board Assembly).

3. Remove four screws (9) securing Power Termination Assembly (5) to Front Panel Assembly (1).

4. Remove three screws (4) and two screws (13) securing Power Termination cover (6).

5. Remove Power Termination cover (6) from Power Termination Assembly (5).

   NOTE: For Steps 6 through 13, item numbers refer to 2-3-1, Figure 11.

   RESISTOR R28002

6. Remove two socket head screws (1) securing R28002 (3) to Power Termination Assembly (4).

7. Remove solder from connection between R28002 (3) and Power Termination PC Board (2).

8. Remove R28002 (3) from Power Termination Assembly (4).

   CONNECTORS J28028 AND J28029

9. Remove four screws (5) securing J28028 or J28029 to Power Termination Assembly (4).

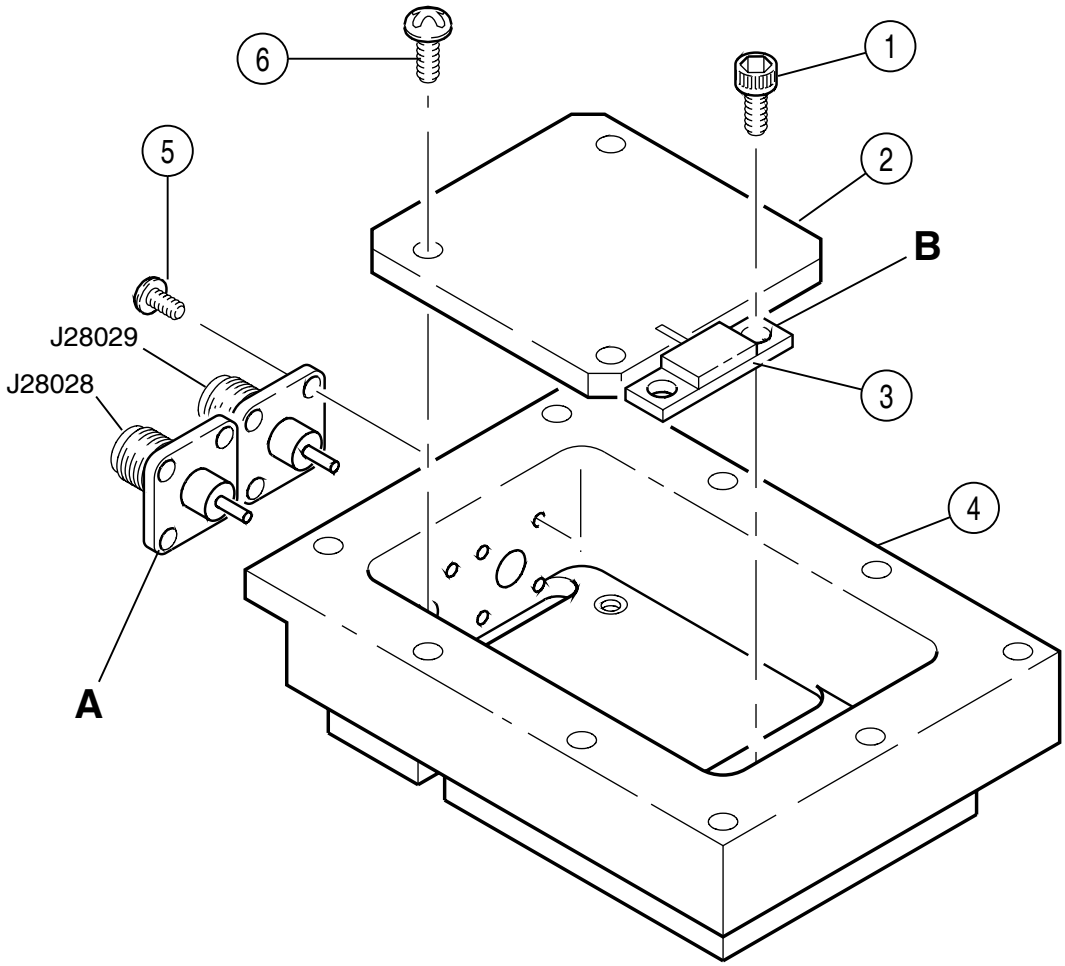
10. Remove solder between connector and Power Termination PC Board (2).

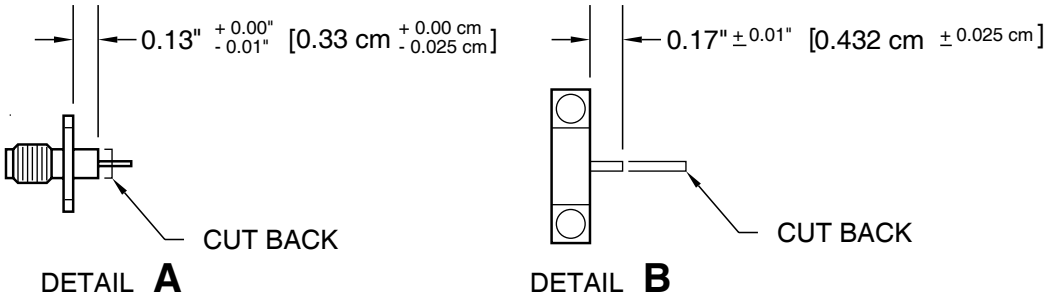
11. Remove connector from Power Termination Assembly (4).

    POWER TERMINATION PC BOARD

12. Remove three screws (6) securing Power Termination PC Board (2) to Power Termination Assembly (4).

13. Remove Power Termination PC Board (2) and Power Termination Assembly (4).





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Power Termination Disassembly
Figure 11

(c) Front Panel LED PC Board Assembly

NOTE: Item numbers refer to 2-3-1, Figure 10.

STEP	PROCEDURE

1. Remove Front Panel Assembly according to para 2-3-1C(7).
2. Remove three screws (3) securing Front Panel LED PC Board Assembly (2) to Front Panel Assembly (1).
3. Remove Front Panel LED PC Board Assembly (2) from Front Panel Assembly (1).

(d) Modified LCD Display PC Board Assembly

NOTE: Item numbers refer to 2-3-1, Figure 10.

STEP	PROCEDURE

1. Remove Front Panel Assembly according to para 2-3-1C(7).
2. (7005-8144-200) Remove four nuts (11) securing LCD (12) to Front Panel Assy (1).

   (7005-8142-900) Remove four screws (23) (7005-8540-100) securing LCD (12) to Front Panel Assy (1).
3. (7005-8144-200) Remove wire harness restraining nut (22) and remove wire harness (W1) from adhesive clip (14).

   (7005-8142-900) Remove wire harness restraining nut (22) and remove wire harness (A2W1) from adhesive clip (14).
4. Remove shield support bracket (15) and slide back grommets from display shield (16). (7005-8144-200 only)
5. Carefully remove display shield (16).
6. Remove four standoffs (17) and four spacers (18).
7. Remove LCD Display PCB Assy (Modified) (19) from Front Panel Assy (1).
8. (7005-8144-200) Note locations of different size washers (20) and (21). Remove four washers (20) and (21).

   (7005-8142-900) Remove four nuts (24) and display support bracket (25) from Front Panel Assy (1).
9. (7005-8144-200) Disconnect W17P1 from J12059 on LCD Display PCB Assy (Modified) (19).

   (7005-8142-900) Disconnect A2W2P1 from J27052 on Front Panel Pulse PCB Assy (11) (2-3-1, Figure 1).

(9) Flat Antenna Assembly

NOTE: Item numbers refer to 2-3-1, Figure 12 unless otherwise noted.

STEP	PROCEDURE

1. Remove two screws (13) and cover plate (12) from Flat Antenna Assembly (14).
2. Refer to Detail A in 2-3-1, Figure 12. Remove solder from connections between Antenna PC Board (21) and Splitter PC Board (16).
3. Refer to Detail A in 2-3-1, Figure 12 and remove two screws (20).
4. Remove ten screws (19) securing handle assembly to Flat Antenna Assembly (14).
5. Remove handle assembly from Flat Antenna Assembly (14).

FLAT ANTENNA CONNECTOR (J29001)

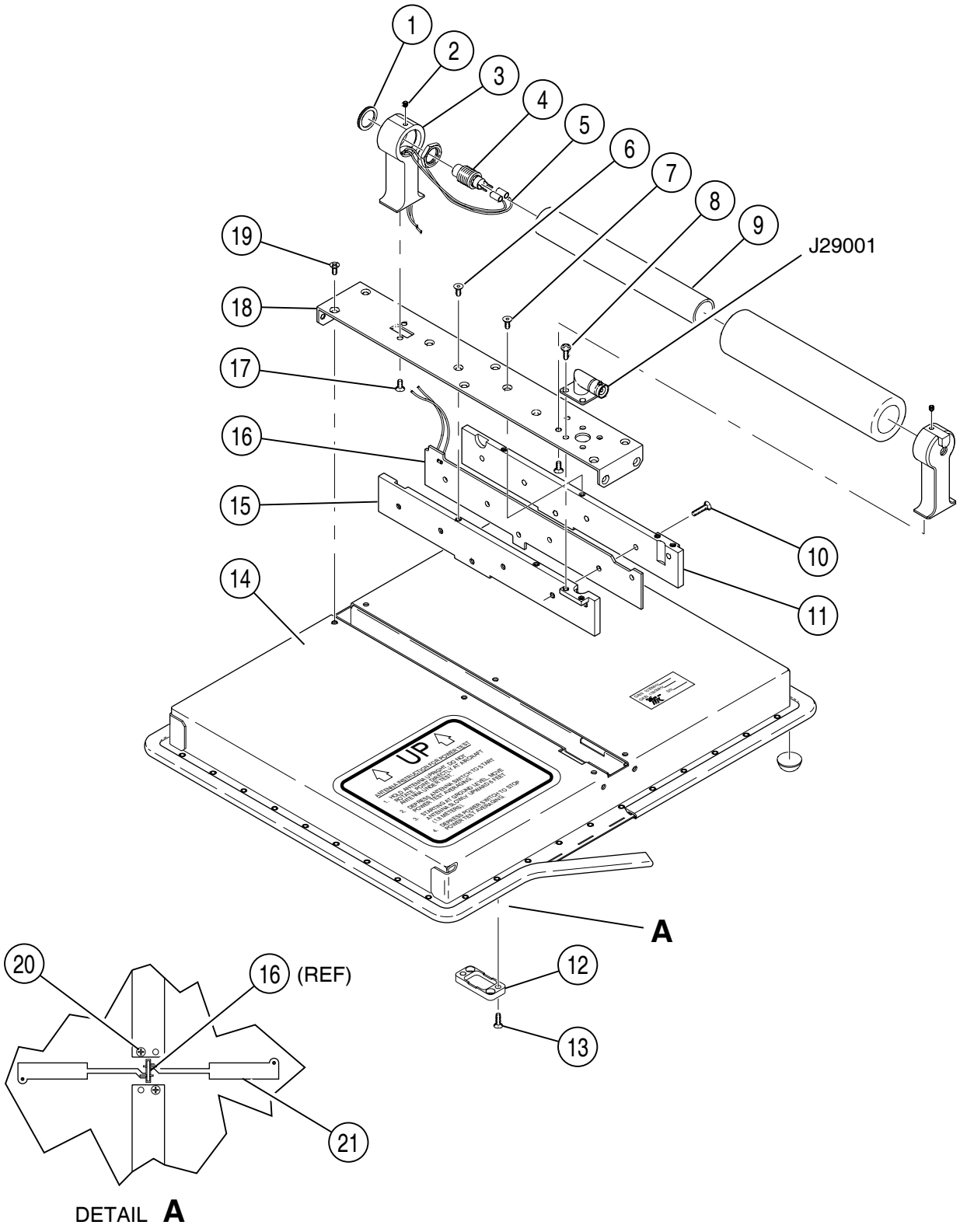
6. Remove six screws (10) securing right plate (11) to left plate (15).
7. Remove two screws (8) securing J29001 to left plate (15).
8. Remove two screws (6) and left plate (15) from back plate (18).
9. Remove solder from connection between J29001 and Antenna Splitter PC Board (16).
10. Remove two screws (8) securing J29001 to right plate (11).
11. Remove J29001 from back plate (18).

ANTENNA SPLITTER PC BOARD

12. Remove two screws (7) and right plate (11) from back plate (18).
13. Remove solder from switch wire (5) connections on Antenna Splitter PC Board (16).
14. Remove Antenna Splitter PC Board (16) from handle assembly.

ANTENNA PUSH BUTTON SWITCH (S29001)

15. Remove ring nut (1) from push button switch (4).
16. Remove two screws (19) securing top handle bracket (3).
17. Loosen socket head screw (2) in top handle bracket (3).
18. Remove top handle bracket (3) from handle (9) and back plate (18).
19. Remove push button switch (4) from top handle bracket (3).



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Flat Antenna Disassembly
Figure 12

(10) Motherboard PC Board Assembly

NOTE: Item numbers refer to 2-3-1, Figure 1 unless otherwise noted.

STEP	PROCEDURE

1. Remove Power Supply Assembly according to para 2-3-1C(4).
2. Remove Digital IF PC Board Assembly according to para 2-3-1C(5).
3. Remove Front Panel Pulse PC Board Assembly according to para 2-3-1C(6).
4. Remove Front Panel Assembly according to para 2-3-1C(8).
5. Remove two screws (4) securing P23047 to the Chassis Assembly (7).
6. Refer to 2-3-1, Figure 2 and disconnect cables as follows:
   - P33049B (Power Supply Assembly) from J33049A/B (Line Supply Assembly)
   - P25001 (RF Assembly) from J25001 (Motherboard PC Board Assembly).
   - P25009 (Front Panel Assembly) from J25009 (Motherboard PC Board Assembly).
   - P25002 (RF Assembly) from J25002 (Motherboard PC Board Assembly).
   - P25005 (RF Assembly) from J25005 (Motherboard PC Board Assembly).
   - P25004 (RF Assembly) from J25004 (Motherboard PC Board Assembly).
   - P25003 (RF Assembly) from J25003 (Motherboard PC Board Assembly).
7. Remove twelve screws (21) securing Motherboard PC Board (22) to Chassis Assembly (7).
8. Remove Motherboard PC Board Assembly (22) from Chassis Assembly (7).

2. Reassembly

A. General

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 Special Reassembly Procedures in para 2-3-2C as required.

PROCEDURE	PAGE
Storage Compartment and Chassis Assembly	2
Battery	2
Line Supply Assembly	3
Power Supply Assembly	3
Digital IF PC Board Assembly	3
Front Panel Pulse PC Board Assembly	3
RF Assembly	3
Front Panel Assembly	4
Flat Antenna Assembly	6
Motherboard PC Board Assembly	6

B. Preliminary Considerations

(1) Tools Required

Reassembly and disassembly require the same tools. Refer to 2-3-1, Table 1.

(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 LAY FLAT AND NEATLY FOLDED.

CAUTION: AVOID PLACING UNDUE STRAIN ON ANY WIRE OR CABLE.

CAUTION: AVOID OVERTIGHTENING SCREWS AND NUTS INCLUDING COAXIAL CONNECTORS.

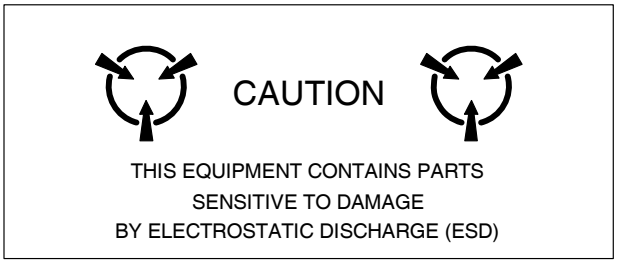
CAUTION: REPLACE EACH REMOVED PLASTIC FASTENER IN SAME LOCATION AS MARKED AND CONFIGURED PRIOR TO REMOVAL.

CAUTION: AVOID EXPOSING COMPONENTS TO EXCESSIVE HEAT WHEN SOLDERING.

CAUTION: REPLACE WORN SHOULDER WASHERS AND INSULATORS. CAREFULLY REINSTALL SHOULDER WASHERS AND INSULATORS IN CORRECT POSITIONS. FAILURE TO INSTALL SHOULDER WASHERS AND INSULATORS CORRECTLY COULD RESULT IN A SHORT CIRCUIT.

(3) ESD

CAUTION: THE POWER SUPPLY PC BOARD ASSEMBLY, DIGITAL IF PC BOARD ASSEMBLY, FRONT PANEL PULSE PC BOARD ASSEMBLY, RF ASSEMBLY AND FRONT PANEL ASSEMBLY CONTAIN PARTS SENSITIVE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD). ALL PERSONNEL PERFORMING REASSEMBLY SHOULD HAVE KNOWLEDGE OF ACCEPTED ESD PRACTICES.



(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. Special Reassembly Procedures

Most procedures only apply if the particular item(s) mentioned was/were removed.

(1) Storage Compartment and Chassis Assembly

NOTE: Instrument Case Top (2503-8153-600) and Bottom (1412-8153-500) are a matched set and should not be separated.

- Replace the twelve nylon washers (2840-8110-000) to maintain water resistance capability.
- Tighten twelve screws securing Chassis Assembly to Case Assembly with 23 inch•pounds (2.56 newton•meters) of torque.

(2) Battery

Ensure Battery Ejector Strap (1410-7452-300) is installed with doubled-over side facing out.

(3) Line Supply Assembly

NOTE: Mounting hardware (1 metal washer [on top] and 2 rubber washers [1 washer on bottom, 1 washer on top] is supplied with transformer, when installed new.

- Hand clean with solvent only. Do not submerse in solvent.
- Apply Loctite 222 (1050-0000-047) to first 1/4 in of threads of screw (2809-1000-006) securing transformer, T33001, to PC Board Assembly. Torque screw to 24 inch•pounds (2.71 newton•meters).
- Wires W00001 and W00002, E1 through E4 are to be soldered from top side only.

LINE SUPPLY PC BOARD ASSEMBLY

- Add switch, S15001, last. Do not submerse switch in solvent, brush clean only.
- Trim leads to 0.070 in maximum.

(4) Power Supply Assembly

Use thermal compound (1050-0000-019) on both sides of mica insulators (4835-0000-103) (4 places).

POWER SUPPLY PC BOARD ASSEMBLY

- Add transformers, T14001 and T14002, last. Do not submerse transformers in solvent, brush clean only.
- Remove thick gold wire with identification labels 5 and 6 from transformers, T14001 and T14002, when installed new.

(5) Digital IF PC Board Assembly

Apply Loctite 222 (1050-0000-047) to nuts on L26009, L26010 and Q26005.

(6) Front Panel Pulse PC Board Assembly

NOTE: Metallic top of U27044 is connected to +5 Vdc.

Add switch S27001 and IC U27044 last. Do not submerse switch and IC in solvent.

(7) RF Assembly

No special reassembly procedures required at the assembly level.

(a) Driver PC Board Assembly

No special reassembly procedures required.

(b) Detector Assembly

No special reassembly procedures required.

DETECTOR PC BOARD ASSEMBLY

No special reassembly procedures required.

(c) Analog IF Assembly

No special reassembly procedures required.

ANALOG IF PC BOARD ASSEMBLY

- Add crystal, Y22001, last. Do not submerse crystal in solvent.
- TAK PAK end of L22027, Inductor Assembly, to PC Board.
- See Analog IF PC Board Assembly Circuit Schematic (2-4-1, Figure 41, Sheet 16) for Select At Test (SAT) values for C22080, C22082 and R22065.

(d) SSB Assembly

No special reassembly procedures required.

MIXER PC BOARD ASSEMBLY

See 2-3-2, Figure 14 for special reassembly procedures.

ATTENUATOR PC BOARD ASSEMBLY

No special reassembly procedures required.

LO SOURCE PC BOARD ASSEMBLY

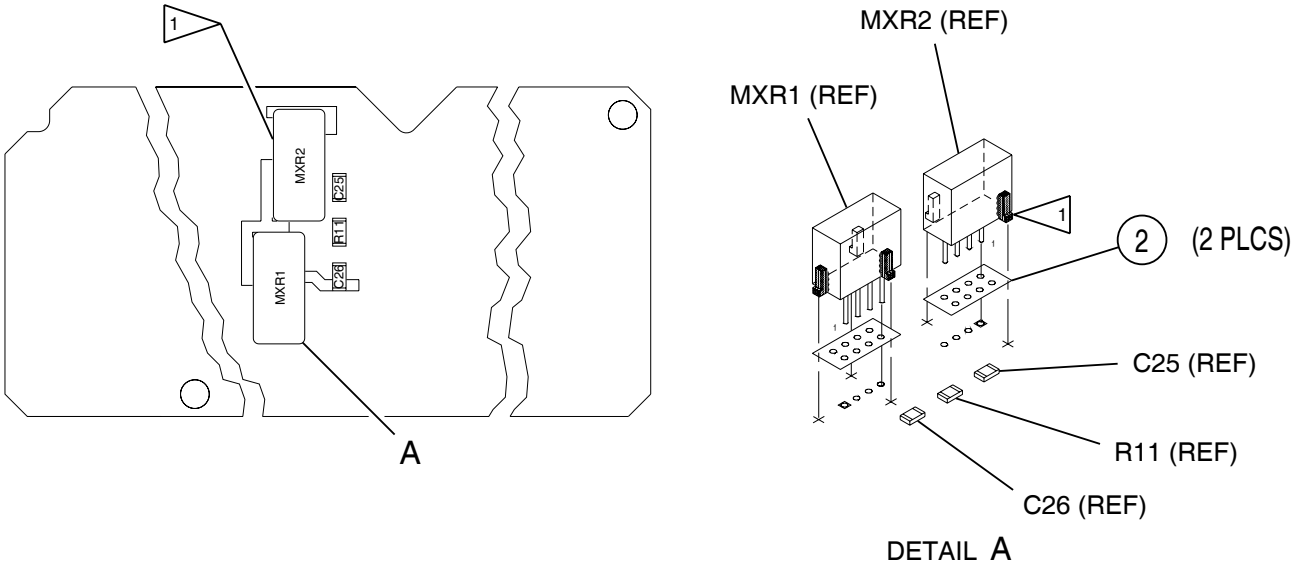
No special reassembly procedures required.

SOURCE MODULE VCO PC BOARD ASSEMBLY

No special reassembly procedures required.

(8) Front Panel Assembly

- Discard nut and washer supplied with XF0001 and XF0002, when installing new.
- Apply adhesive (1050-0000-288) to threads and seating face of both fuse holders nuts (2850-7894-800). Apply adhesive (1050-0000-289) to Fuse Holders and nut sealing areas of enclosure. Torque Fuse Holder nuts (2850-7894-800) to 7 inch•pounds (0.79 newton•meters).
- Apply adhesive (1050-0000-140) to backside of six screws (2803-0188-006) securing the chains attached to the connector caps to the Front Panel after screws are installed.
- Before applying Overlay (2403-8553-500) to Front Panel (1405-8158-200), center Lens (3900-8157-100) with conductive side down over opening of Front Panel (1405-8158-200).
- After installing W00001, Backlight Wire Harness Assembly, spot coat E1-1 and E1-2 on top side of the Modified LCD Display PC Board Assembly (7010-8138-400) with conformal coat. Refer to 2-3-2, Figure 14 for location of E1-1 and E1-2.



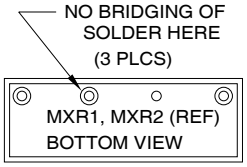
SPECIAL REASSEMBLY PROCEDURES

1 MXR1 & MXR2 MUST BE INSTALLED IN STEPS. WHEN PLACING SOLDER WICK (DPN 1050-0000-207) USE ONLY ESD CERTIFIED, QUICK-RECOVERY SOLDERING STATION WITH 3/32" 30 DEG. CHISEL TIP (TEMPERATURE: ≤ 775°F [405°C]).

CAUTION: EXCESSIVE HEAT DESTROYS MIXERS.

STEP 1: SOLDER SOLDER WICK TO SIDES OF MXR1 & MXR2, IN LOCATIONS SHOWN (5 PLCS). SEE DETAIL A.

STEP 2: AFTER SOLDERING SOLDER WICK TO BOTH MIXERS, VERIFY THAT SOLDER HAS NOT BRIDGED TO ANY LEADS.



STEP 3: SOLDER MXR1 & MXR2 IN PLACE, THEN TACK SOLDER SOLDER WICK TO GROUND.

CAUTION: DO NOT USE EXCESSIVE HEAT OR SOLDER WHEN SOLDERING TO GROUND.

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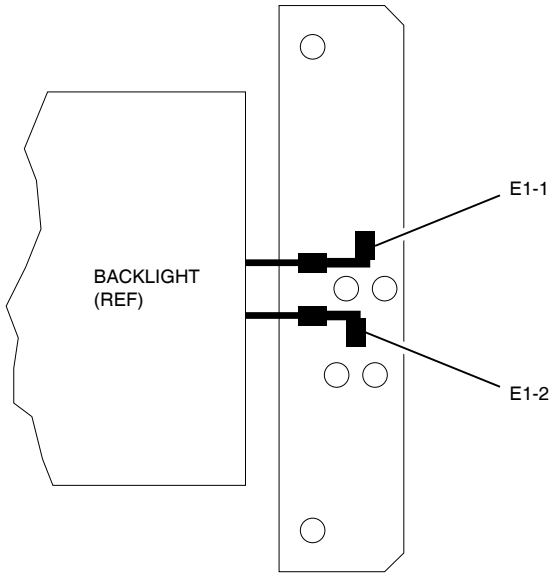
Mixer PC Board Assembly
Figure 14



Solder Points for Backlight Wire Harness
Figure 15

(a) Video Detector PC Board Assembly

No special reassembly procedures required.

(b) Power Termination Assembly

- Trim Termination Resistor (R28002) lead to 0.17 in (±0.01 in) before reinstalling.
- Position PC Board and Termination Resistor (R28002) to maintain equal gap at both ends of PC Board (approximately 0.05 in).
- Spot coat E1 and E2 after reassembly. Avoid over-spray of conformal coat on block flange.

(c) Front Panel LED PC Board Assembly

No special reassembly procedures required.

(d) Modified LCD Display PC Board Assembly

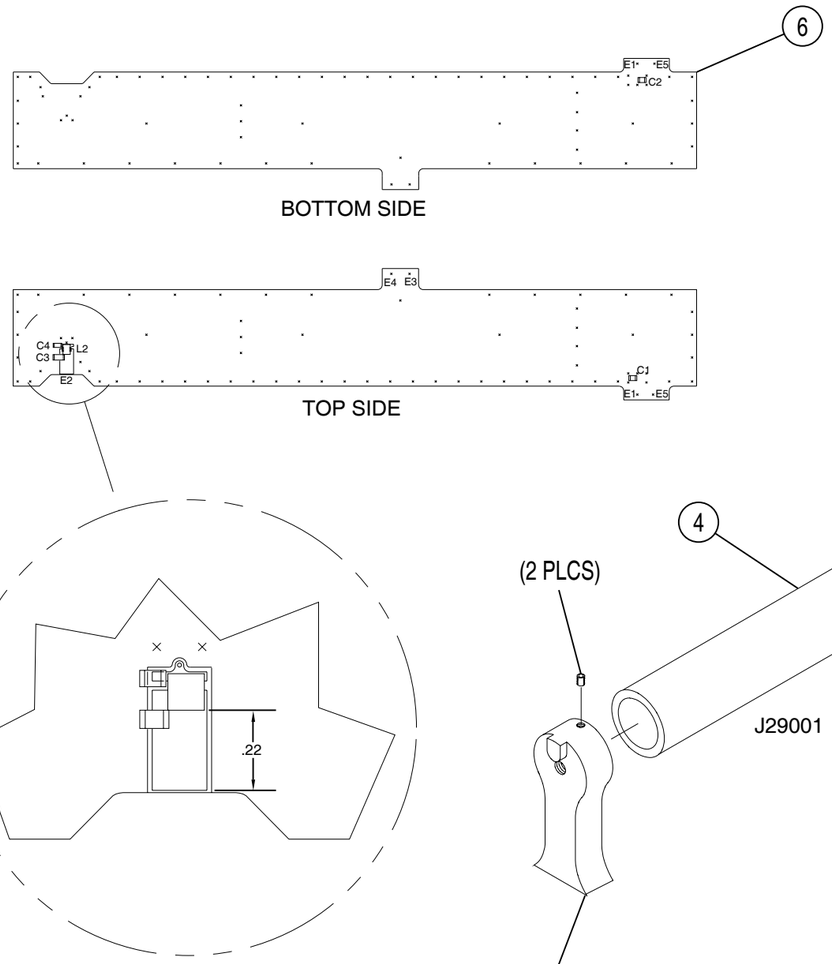
No special reassembly procedures required.

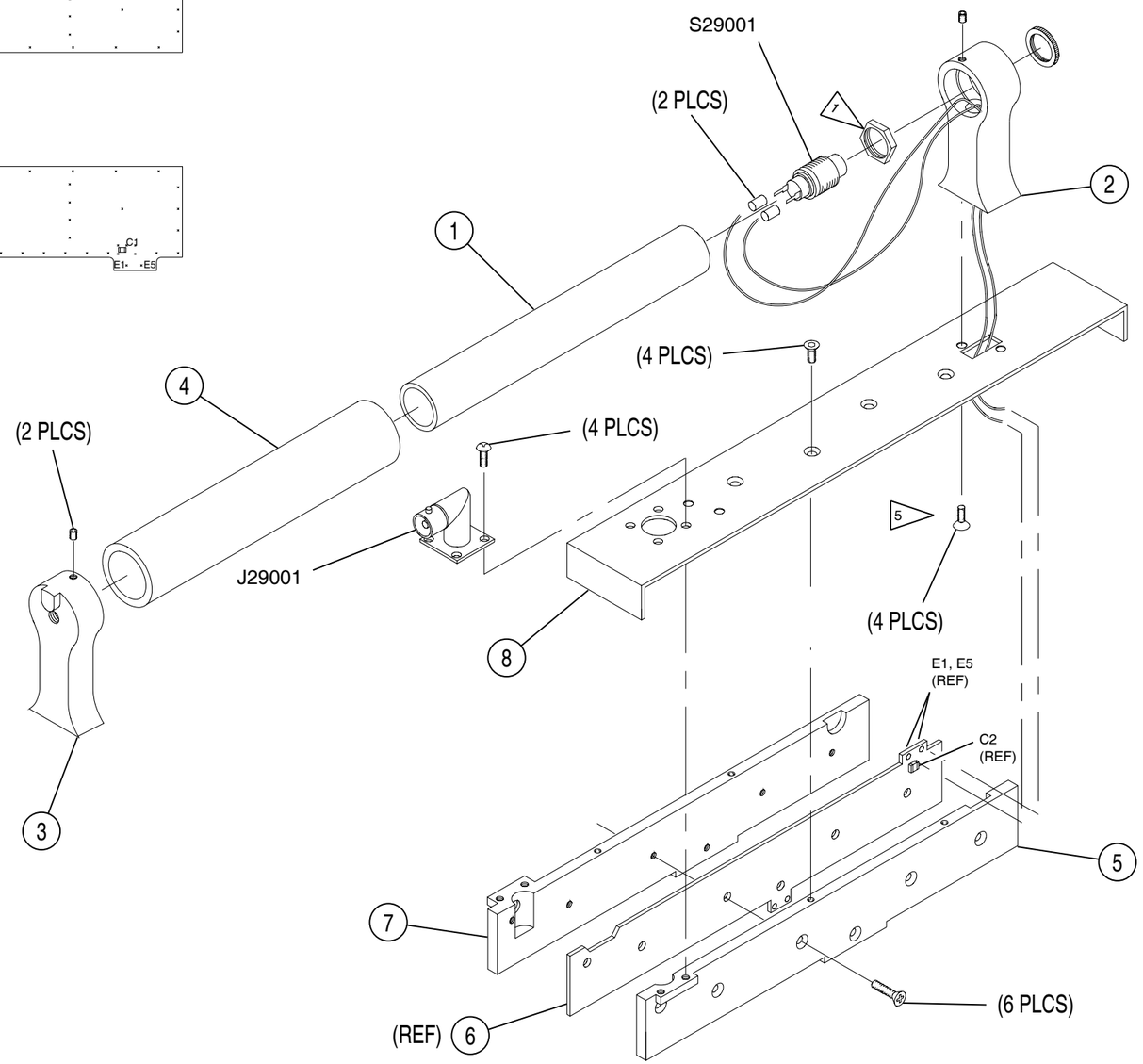
(9) Flat Antenna Assembly

See 2-3-2, Figure 15 for special reassembly procedures.

(10) Motherboard PC Board Assembly

No special reassembly procedures required.





WIRE RUNNING LIST				
FROM	TO	WIRE		
TERMINAL	TERMINAL	COLOR	AWG	LG
E1	S29001	BLK	26	3.0
E5	S29001	BLK	26	3.0
E4	E6	BUS	26	.25
E3	E7	BUS	26	.25

TOLERANCE: ±0.1

SPECIAL REASSEMBLY PROCEDURES:

1. SCREW NUT ONTO S29001 (FINGER TIGHT).
2. ALL PARTS ON SHT 1 MUST BE ASSEMBLED IN SEQUENCE. SEE STEPS BELOW:
   a. MOUNT ITEMS 1, 2, 3 & 4 PRIOR TO INSTALLING SPLITTER BD ASSEMBLY.
   b. ASSEMBLE ITEMS 5, 6, & 7. DO NOT TIGHTEN SCREWS AT THIS TIME.
   c. SOLDER WIRES TO ITEM 6 AS SHOWN.
   d. MOUNT ITEMS 5, 6, & 7 TO ITEM 8. MAKE SURE THAT ITEM 6 IS CENTERED BETWEEN ITEMS 5 & 7, THEN TIGHTEN ALL SCREWS.
   e. INSTALL J29001 TIGHT AGAINST ITEM 6. TIGHTEN SCREWS.
3. USE ACCESS HOLE TO SOLDER J29001 TO E2.
4. INSTALL ITEM 9 PRIOR TO INSTALLING ITEM 10 AND ITEM 11.
5. TORQUE SCREWS TO 8 in. lb. APPLY LOCTITE 290-21 TO THREADS PRIOR TO ASSEMBLY.

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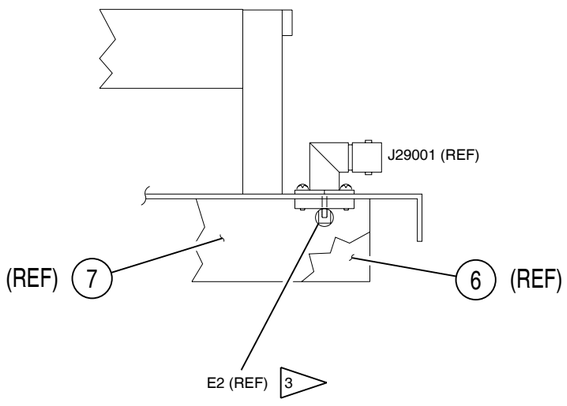
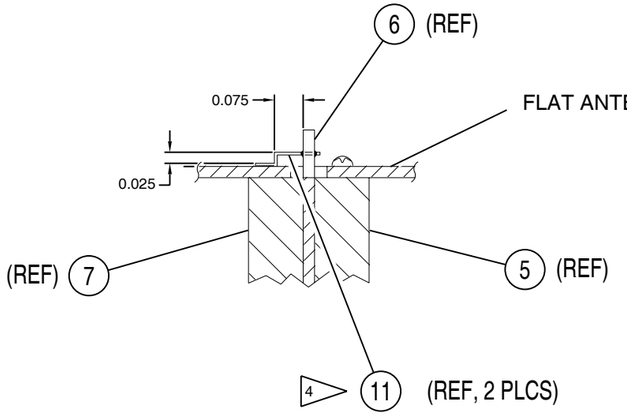
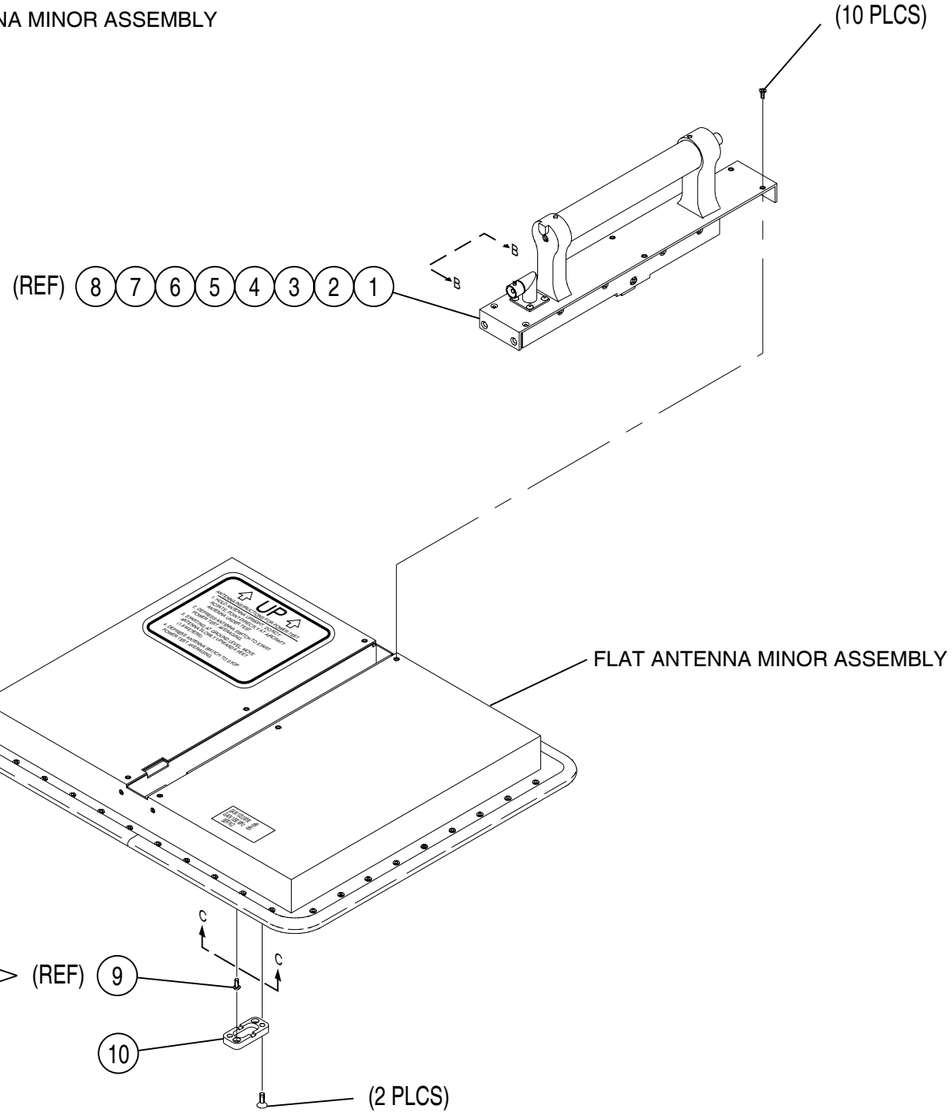
Flat Antenna Assembly (Sheet 1 of 2)
Figure 16

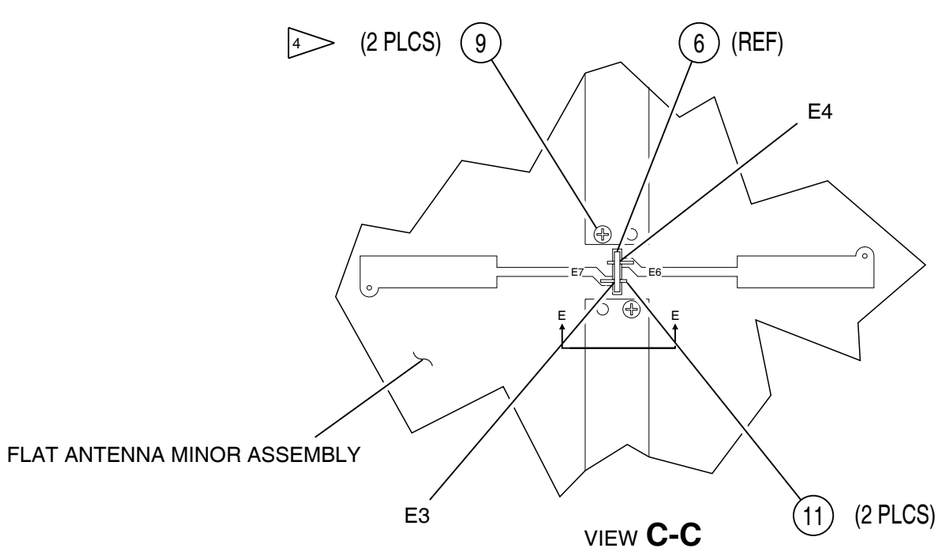


VIEW **B-B**



SECTION **E-E**





VIEW **C-C**

8545602M

Flat Antenna Assembly (Sheet 2 of 2)
Figure 17

SECTION 4 - ATC-601-2 PARTS LIST

ASSEMBLY	PAGE
Analog IF Assembly	57
Analog IF PC Board Assembly	58
Antenna Clamp Assembly	8
Antenna Shield Assembly	7
Antenna Shield Plate Assembly	9
Attenuator PC Board Assembly	65
Case Assembly	5
Chassis Assembly	10
Composite Assembly, ATC-601-2	4
Detector Assembly	53
Detector PC Board Assembly	54
Digital IF PC Board Assembly	13
Driver PC Board Assembly	51
Flat Antenna Assembly	6
Front Panel Assembly	41
Front Panel LED PC Board Assembly	46
LCD Display Backlight PC Board Assembly	49
LCD Display PC Board Assembly, Modified	48
Line Supply Assembly	34
Line Supply PC Board Assembly	35
LO Source PC Board Assembly	66
Mixer PC Board Assembly	70
Motherboard PC Board Assembly	12
Power Supply Assembly	36
Power Supply PC Board Assembly	37
Power Termination Assembly	47
Pulse (LED Backlight) PC Board Assembly	18
Pulse Memory PC Board Assembly	33
RF Assembly	50
Ship Unit, ATC-601-2 110 VAC	2
Ship Unit, ATC-601-2 220 VAC	3
Source Module VCO PC Board Assembly	69
SSB Assembly	63
Video Detector PC Board Assembly	45

9001-8102-300 SHIP UNIT, ATC-601-2 110 VAC G

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	1000-1000-601	CART,SHIP 601 22 1/4X18X16 1/4
	1000-1001-500	BOX, TRIPOD 411/16"X43/8"X23
	1007-0001-000	WARRANTY PACKET,2 YEAR
	1100-1002-900	ENVELOPE, BUSINESS REPLY
	2400-7501-700	LABEL,CAUTION,WIRED FOR 110VAC
	2400-8501-000	LABEL,RECEIVING/UNPACKING
	5106-4501-000	FUSE,1.0AMP,250V,FAST,1.25GL
	7003-8145-300	COMPOSITE ASSY, ATC-601-2
	8180-0002-010	URETHANE CTLST
	8180-0002-020	URETHANE RESIN
	8181-0001-000	POLY FILM,36" CENTERFOLD WHITE

9001-8102-300 SHIP UNIT, ATC-601-2 110 VAC H

Contains all parts shown in Revision G.

9001-8102-500 SHIP UNIT, ATC-601-2 220 VAC E

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	1000-1000-601	CART,SHIP 601 22 1/4X18X16 1/4
	1000-1001-500	BOX, TRIPOD 411/16"X43/8"X23
	1007-0001-000	WARRANTY PACKET,2 YEAR
	1100-1002-900	ENVELOPE, BUSINESS REPLY
	2400-7501-900	LABEL,CAUTION,WIRED FOR 230VAC
	2400-8501-000	LABEL,RECEIVING/UNPACKING
	5106-0000-016	FUSE,.5AMP,250V,FAST,1.25GL
F1	5106-0000-016	FUSE,.5AMP,250V,FAST,1.25GL
F1	5106-4501-000	FUSE,1.0AMP,250V,FAST,1.25GL
F2	5106-0000-016	FUSE,.5AMP,250V,FAST,1.25GL
F2	5106-4501-000	FUSE,1.0AMP,250V,FAST,1.25GL
	7003-8145-300	COMPOSITE ASSY, ATC-601-2
	8180-0002-010	URETHANE CTLST
	8180-0002-020	URETHANE RESIN
	8181-0001-000	POLY FILM,36" CENTERFOLD WHITE

9001-8102-500 SHIP UNIT, ATC-601-2 220 VAC F

Contains all parts shown in Revision E.

7003-8145-300 COMPOSITE ASSY, ATC-601-2 D

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	1050-0000-170	TAPE, VINYL FOAM 3/4" 2-SIDED
	1050-5003-100	TAPE, VINYL FOAM 3/4" 1-SIDED
	1201-8180-900	ANTENNA MODIFIED,MINOR ASSY
	1404-8156-500	SUPPORT, CHASSIS
	1404-8156-600	SUPPORT, BOTTOM, CHASSIS
	1414-8152-900	COVER, ACCESSORY
	1421-0003-781	FOOT,RBR,.75 OD*.17 ID*.78 LG
	2111-0000-002	CLIP,COMPONENT,ADHESIVE,.25DIA
	2111-0002-500	CLIP"C"HOOK RET,PVC,.500 DIA
	2400-3551-400	LABEL,COAX LOSS ANTENNA
	2400-8156-300	LABEL, WARNING, ACC. STORAGE
	2400-9900-900	LABEL, CE
	2400-9915-300	LABEL,S/N,V/W,COM,ATC-601-2
	2400-9930-000	LABEL, MET
	2517-8155-100	PAD,FOAM,ATC-601 LID
	2517-8155-200	PAD,FOAM,ATC-601 CASE
	2525-0000-000	GASKET, TWIN SEAL EMI & ENVIRO
	2803-0375-006	SCREW, 4-40 X 3/8 PPHM
	2804-0250-006	SCREW,6-32 X 1/4 PPHM
	2809-0625-006	SCREW,10-32 X 5/8 PPHM
	2840-0000-024	WASHER,FLAT,ID.160OD.375TK.032
	2840-8110-000	WASHER,FLT,NYLN,7/160D,.031TK
	2850-0000-109	LATCH, SLIDE-LATCH
	2850-7882-600	SPCR,FOAM,.25"X.75"X 1.25"
	6004-6006-550	TY-RAP,RELEASABLE CABLE TIES
	6004-8100-100	MOUNT,TY-RAP 4-WAY
	7005-8140-600	MECH ASSY, FLAT ANTENNA
	7005-8141-500	CASE ASSY, INSTRUMENT
	7005-8142-200	MECH ASSY, ANTENNA SHIELD
	7005-8143-300	MECH ASSY, CHASSIS

7003-8145-300 COMPOSITE ASSY, ATC-601-2 E

Contains all parts shown in Revision D with the following exceptions:

(Parts Removed)

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	2400-8156-300	LABEL, WARNING, ACC. STORAGE
	2400-9930-000	LABEL, MET

(Parts Added)

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	2400-0012-000	LABEL,MODIFICATION STATUS
	2400-8156-000	LABEL,COAX LOSS ANTENNA
	2400-9933-100	LABEL,MET

7005-8141-500 CASE ASSY J

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	1404-8153-700	SUPPORT ANGLE,FRONT PANEL
	1407-7450-300	HANDLE,CARRYING W/BRKT MTG
	1412-8153-500	CASE,SIDE
	1421-8100-000	FOOT,DRAWN
	1421-8750-625	FOOT RBR.875OD.1875ID.625LG
	2503-8153-600	LID,SIDE
	2504-8153-300	COLLAR,SEAL STRIKER RIM
	2506-8153-400	PLATE,TOP & BOTTOM
	2525-0003-000	GSKT,BLK. NEOPRENE
	2804-0438-006	SCREW,6-32 X 7/16 PPHM
	2818-0000-001	STANDOFF,PRESS 6-32X.375
	2820-0000-013	RIVET,3/32 X 1/4 FLATHEAD
	2832-0001-001	LATCH,GUARDED SPR LOADED DRAW
	2832-0001-002	LATCH STRIKE PLATE,G SPR LD DR
	2832-0001-003	LATCH PIN
	2832-0001-004	LATCH GUARD
	2832-8152-800	HINGE,ACCESSORY COVER
	2840-8153-800	WASHER,1.2500 .213ID .0875T
	2850-0000-109	LATCH,SLIDE-LATCH
	2850-0000-117	NUT,FLOATING SELF-LOCKING
	2850-0003-062	NUT,PRESS 6-32.054 SHANK
	4503-8153-200	RETAINER,GASKET
	6200-0000-001	VALVE,MANUAL RELIEF

7005-8140-600 ASSY, FLAT ANTENNA G

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	1050-0000-075	WIRE,BUS,TINNED COPPER,26GA
	1400-8152-000	BRACKET,HANDLE TOP
	1400-8152-100	BRACKET,HANDLE BOTTOM
	1400-8152-400	BRACKET, FRONT TRIM
	1407-0200-100	HANDLE GRIP,3/4*5"*1/4 FOAM
	1407-8152-200	HANDLE, ANTENNA
	1421-0001-022	FOOT,HEMISPHERE,.63DIA,GRAY
C29001	1620-1000-511	CAP,10PF,100V,CHIP,NPO
C29002	1620-1000-511	CAP,10PF,100V,CHIP,NPO
C29004	1620-1090-511	CAP,1PF,50V,CHIP
C29003	1622-0020-001	CAP,2PF,50V,CHIP
	1700-8120-400	PC BD, ANTENNA SPLITTER
L29002	1811-8040-001	IND,SM .004UH 20% C 1008
J29001	2113-0000-015	CONN,BNC,ANG PANEL,SOLDER CUP
	2400-0000-002	TRIM,GASKET,5/16 X 3/32 BLK FS
	2400-8154-300	LABEL, ANTENNA
	2400-8155-900	LABEL,ANTENNA GAIN
	2506-8151-700	PLATE, LEFT SPLITTER
	2506-8151-800	PLATE,RIGHT SPLITTER
	2506-8151-900	PLATE,BACK SPLITTER
	2803-0125-001	SCREW,4-40 X 1/8 SHS
	2803-0188-003	SCREW,4-40 X 3/16 PFHM
	2803-0188-004	SCREW,4-40 X 3/16 HFHCS,SS,PA
	2803-0188-006	SCREW,4-40 X 3/16 PPHM
	2803-0250-003	SCREW,4-40 X 1/4 PFHM
	2803-0250-006	SCREW,4-40 X 1/4 PPHM
	2803-0313-003	SCREW 4-40 X 5/16 PFHMS
	2803-0438-003	SCREW 4-40 X 7/16 PFHMS
	2850-0700-100	NUT,RING,15/32-32,ALCO N12
S29001	5115-0501-572	SWITCH,C&K 8531TCQ W/BLK PB
	6008-1000-001	WIRE,UL1213,26GA,7X34,BLK
	6010-0063-200	TUBING,HS, 1/16 ID,BLACK
	6057-1309-600	COAX ASSY,223,M BNC/M BNC
	6500-8180-700	MINOR ASSY, FLAT ANTENNA

7005-8140-600 ASSY, FLAT ANTENNA H

Contains all parts shown in Revision G with the following exceptions:

(Parts Removed)

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	1400-8152-000	BRACKET,HANDLE TOP
	1400-8152-100	BRACKET,HANDLE BOTTOM

(Parts Added)

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	1400-8158-800	BRACKET,HANDLE BOTTOM
	1400-8158-900	BRACKET,HANDLE TOP

7005-8142-200 ASSY, ANTENNA SHIELD C

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	7005-8142-300	MECH ASSY,ANTENNA SHLD PLATE
	7005-8142-400	MECH ASSY,ANT. CLAMP

7005-8142-400 **ASSY, ANTENNA CLAMP** **D**

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	1415-8154-600	ENCL, ANTENNA SHIELD
	2106-8100-100	SPRING,CMPRSN .36OD 1.0LG.
	2400-8156-700	LABEL, ANTENNA SHIELD
	2501-8155-500	BUSHING, THUMBWHEEL
	2501-8155-600	BUSHING, RETAINER
	2506-8154-800	PLATE, TILE RIGHT
	2506-8155-400	PLATE, TILE LEFT
	2517-0001-100	PAD,RUBBER ADHV BK .5 X .23H
	2517-8155-300	FOAM, TILE PLATE 2.5 X 2.5
	2751-1000-051	ABSORBER FERRITE,2.3X2.3X.2
	2801-0188-012	SCREW,2-56 X 3/16 PBHMS,BLACK
	2807-8155-700	SCREW, THUMB 10-32 X 1.9
	2840-0000-056	WASHER,WAVE SPRING,.165 ID
	2840-8156-100	WASHER,.375OD X .094ID .025THK

7005-8142-300 ASSY, ANTENNA SHIELD PLATE D

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	2400-8156-700	LABEL, ANTENNA SHIELD
	2506-8154-700	PLATE, ANTENNA SHIELD
	2525-8154-900	GASKET, PLATE OUTER
	2525-8155-000	GASKET, PLATE INNER
	2525-8158-600	GASKET, ANT. SHIELD

7005-8143-300 ASSY, CHASSIS A

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	1407-7450-200	HANDLE,MLS-801
	1410-7452-300	EJECTOR STRAP, BATTERY
	1414-8150-900	COVER, BATTERY
	2400-9908-300	LABEL,SYMBOL 14,HAZARD WARN
	2800-7600-144	SPACER,AL,.25 OD,4-40ID,.700LG
	2803-0250-003	SCREW,4-40 X 1/4 PFHM
	2803-0250-006	SCREW,4-40 X 1/4 PPHM
	2803-0375-003	SCREW,4-40 X 3/8 PFHM
	2804-0188-006	SCREW 6-32X3/16 PHIL BIND HD
	2831-0002-005	EDGING, GROMMET, .085 SIZE
	2840-7600-229	WASHER,ALUM,.305D,.196ID,.038T
	2850-7882-600	SPCR,FOAM,.25"X.75"X 1.25"
U26005	3271-8102-100	IC,8KX8 ATC-601 DIG.IF V1.00
U26004	3271-8103-100	IC,8KX8 ATC-601 DIG.IF V1.00
U27003	3274-8104-100	IC,1736 ATC-601 FP PULSE V1.00
U27005	3274-8105-200	IC,1736 ATC-601 FP PULSE V2.00
U27031	3274-8107-200	IC,1736 ATC-601 FP PULSE V2.00
	4000-8182-000	ASSY, BATTERY PACK
	4104-0005-000	GUIDE,CARD,NYLON,8.OLG,NATURAL
	4503-8152-600	RETAINER, DIGITAL PC BD
	6004-6005-400	TY-RAP,4.0 LG
	6046-8181-000	CABLE ASSY,VIDEO DETECTOR-DRVR
	6046-8181-100	CABLE ASSY, DRIVER-MTHRBD
	6500-8181-400	MINOR ASSY, CHASSIS
	7005-8143-100	MECH ASSY, LINE SUPPLY
	7005-8143-500	MECH ASSY, PWR SUPPLY,601-2
	7005-8144-100	MECH ASSY, RF
	7005-8144-200	MECH ASSY, FRONT PANEL
	7010-8130-100	PCB ASSY, DIGITAL
	7010-8132-800	PCB ASSY, PULSE (LED BACKLIGHT)
	7010-8138-000	PCB ASSY, MOTHERBOARD
U27013	F270-8102-230	IC,27C512 PLCC REMOTE #1 V2.30
U27012	F270-8103-230	IC,27C512 PLCC REMOTE #2 V2.30

7005-8143-300 ASSY, CHASSIS B

Contains all parts shown in Revision A with the following exceptions:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
U27013	F270-8102-250	IC,27C512 PLCC REMOTE #1 V2.50
U27012	F270-8103-250	IC,27C512 PLCC REMOTE #2 V2.50

7005-8143-300 ASSY, CHASSIS C

Contains all parts shown in Revision B.

7005-8143-300 ASSY, CHASSIS D

Contains all parts shown in Revision C with the following exceptions:

(Parts Removed)

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	1414-8150-900	COVER, BATTERY
	7005-8144-200	MECH ASSY, FRONT PANEL

(Parts Added)

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	1400-8159-000	BRACKET, BATTERY
	7005-8142-900	MECH ASSY, FRONT PANEL

7010-8138-000 PCB ASSY, MOTHERBOARD B

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	1700-8120-000	PC BD, MOTHERBD
J25008	2115-0002-003	CONN,HEADER,LCK GOLD 7-P
J25010	2115-0002-003	CONN,HEADER,LCK GOLD 7-P
J25011	2115-0005-010	CONN,LKING HEADER 10P GOLD
J25001	2200-2010-400	CONN,M SMB,PC MTG,STR,.453LG
J25002	2200-2010-400	CONN,M SMB,PC MTG,STR,.453LG
J25003	2200-2010-400	CONN,M SMB,PC MTG,STR,.453LG
J25004	2200-2010-400	CONN,M SMB,PC MTG,STR,.453LG
J25005	2200-2010-400	CONN,M SMB,PC MTG,STR,.453LG
J25009	2200-2010-400	CONN,M SMB,PC MTG,STR,.453LG
J26006	2129-1003-120	CONN STR DBL ROW DIN FE 20-P
J27007	2129-1003-148	CONN,STR TPL ROW DIN FE 48-P
J26016	2129-1003-196	CONN,EURCON-C SKT.1X.1 96P ST
J27015	2129-1003-196	CONN,EURCON-C SKT.1X.1 96P ST
	2800-7801-100	STANDOFF 4-40 .165 THK 3/16
	6045-8180-800	RBN CA ASSY,MOTHERBD, ATC-601
	7007-8181-800	WIRE HARN ASSY, MTHRBD COMM
	7007-8182-100	WIRE HARN ASSY, PS - MOTHERBD

7010-8130-100 PCB ASSY, DIGITAL IF E

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	1700-8120-100	PC BD, DIGITAL IF
	4104-0000-002	CARD GUIDE & EJECTOR S-203
	2108-0000-008	PIN FOR S-203 EJECTOR N/C
	2400-7856-800	LABEL,ESD
	2510-5090-700	HEB,IND MTG,.22DIA,.39LG
	2840-0000-058	WASHER,PHEN,.630D,.140ID,.031T
	2803-0750-006	SCREW,4-40 X 3/4 PPHM
	2840-0000-003	WASHER,LOCK,INT TOOTH,4
	2850-0000-008	NUT,HEX,REG PAT,4-40
	2803-0250-006	SCREW,4-40 X 1/4 PPHM
C26001	1521-0000-008	CAP,0.1UF,50V,DIP,Z5U
C26002	1580-1000-200	CAP,10UF,25V,ELE,RDL
C26003	1521-0000-008	CAP,0.1UF,50V,DIP,Z5U
C26004	1521-0000-008	CAP,0.1UF,50V,DIP,Z5U
C26005	1580-1000-200	CAP,10UF,25V,ELE,RDL
C26006	1521-0000-008	CAP,0.1UF,50V,DIP,Z5U
C26007	1521-0000-008	CAP,0.1UF,50V,DIP,Z5U
C26008	1580-1000-200	CAP,10UF,25V,ELE,RDL
C26009	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C26010	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C26011	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C26012	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C26013	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C26014	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C26015	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C26016	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C26017	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C26018	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C26021	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C26022	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C26023	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C26024	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C26025	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C26026	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C26027	1580-1000-200	CAP,10UF,25V,ELE,RDL
C26028	1521-0000-008	CAP,0.1UF,50V,DIP,Z5U
C26029	1580-1000-200	CAP,10UF,25V,ELE,RDL
C26030	1521-0000-008	CAP,0.1UF,50V,DIP,Z5U
C26031	1521-0000-008	CAP,0.1UF,50V,DIP,Z5U
C26032	1521-0000-008	CAP,0.1UF,50V,DIP,Z5U
C26033	1521-0000-008	CAP,0.1UF,50V,DIP,Z5U
C26034	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C26035	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C26036	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C26037	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C26038	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C26039	1580-1000-200	CAP,10UF,25V,ELE,RDL
C26040	1580-1000-200	CAP,10UF,25V,ELE,RDL
C26041	1521-0000-008	CAP,0.1UF,50V,DIP,Z5U
C26042	1521-0000-008	CAP,0.1UF,50V,DIP,Z5U
C26043	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C26044	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C26045	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C26046	1622-0102-001T	CAP,1000PF,50V,CHIP,NPO
C26047	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R

7010-8130-100 PCB ASSY, DIGITAL IF (cont) E

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
C26048	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C26049	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C26050	1619-0476-010T	CAP,47UF,10V,TANT,SMD
C26051	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C26052	1508-0476-018	CAP,47UF,35V,TANT,RDL
C26054	1618-0474-025T	CAP,0.47UF,25V,TANT,SMD
C26057	1506-0151-017	CAP,150PF,100V,5%,NPO
C26058	1506-0151-017	CAP,150PF,100V,5%,NPO
C26059	1506-0182-017	CAP,1800PF,100V,5%,NPO
C26060	1506-0182-017	CAP,1800PF,100V,5%,NPO
C26061	1517-3295-303	CAP VAR,6-20PF
C26062	1506-0220-017	CAP,22PF,100V,5%,NPO
C26063	1517-3295-303	CAP VAR,6-20PF
C26064	1506-0220-017	CAP,22PF,100V,5%,NPO
C26065	1506-0391-017	CAP,390PF,100V,5%,NPO
C26066	1506-0391-017	CAP,390PF,100V,5%,NPO
C26067	1506-0103-017	CAP,0.01UF,100V,NPO
C26068	1521-0000-008	CAP,0.1UF,50V,DIP,Z5U
C26069	1521-0000-008	CAP,0.1UF,50V,DIP,Z5U
C26070	1506-0103-017	CAP,0.01UF,100V,NPO
C26071	1521-0000-008	CAP,0.1UF,50V,DIP,Z5U
C26072	1521-0000-008	CAP,0.1UF,50V,DIP,Z5U
C26073	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C26074	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C26075	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C26076	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C26077	1508-0225-050	CAP,22UF,50V,20%,TANT,RDL
C26078	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C26079	1622-0102-001T	CAP,1000PF,50V,CHIP,NPO
C26080	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C26081	1508-0225-050	CAP,22UF,50V,20%,TANT,RDL
C26082	1508-0225-050	CAP,22UF,50V,20%,TANT,RDL
CR26001	4815-0000-005T	DIODE,4148,SIGNAL 75PRV SMD
CR26002	4818-0000-029	DIODE,LM236AH-2.5 REF TO-46
CR26003	4815-0000-005T	DIODE,4148,SIGNAL 75PRV SMD
CR26004	4815-0000-005T	DIODE,4148,SIGNAL 75PRV SMD
CR26005	4920-5158-300	DIODE,80SQ035 ,RECT,PS,30V,8A
CR26006	4816-0000-001	DIODE,5082-2800,S BAR, 70VBR
CR26007	4816-0000-001	DIODE,5082-2800,S BAR, 70VBR
DL26001	4730-0000-002	DELAY LINE,INDL.PASSIVE 5NS
L26001	1801-0338-001	IND,.33UH,.2 OHM,1025-08
L26002	1801-0338-001	IND,.33UH,.2 OHM,1025-08
L26003	1801-0399-001	IND,3.9UH 1OHM
L26004	1801-0399-001	IND,3.9UH 1OHM
L26005	1801-0108-001	IND,.10UH,.08OHM,1025-94
L26006	1801-0108-001	IND,.10UH,.08OHM,1025-94
L26007	1801-0109-001	IND,1.0 UH, 1 OHM,1025-20
L26008	1801-0109-001	IND,1.0 UH, 1 OHM,1025-20
L26009	1800-5355-200	IND,TOROID,100T #24AWG
L26010	1800-5355-200	IND,TOROID,100T #24AWG
P26006	2129-1002-120	CONN,RA DBL ROW DIN MALE 20-P
P26016	2129-1002-196	CONN,RA
Q26001	4809-0000-005	TRANS,66382 ,NPN HF AMP
Q26002	4805-0000-001	TRANS,2N2907A,PNP HS SW (3251)
Q26003	4807-0000-001	TRANS, 2N3903 ,NPN HS SW

7010-8130-100 PCB ASSY, DIGITAL IF (cont) E

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
Q26004	4801-0000-006T	TRANS,2N2222,NPN HS SW, SOT
Q26005	5050-2452-100	TRANS,N-CH MOSFET
R26001	4701-0102-003	RES,1.0K,1/8W,5%
R26002	4706-1002-001	RES,10.0K,1/4W,1%
R26003	4706-8061-001	RES,8.06K,1/4W,1%
R26004	4722-1001-001T	RES,1.0K,1/8W,1%
R26005	4722-3321-001T	RES,3.32K,1/8W,1%
R26006	4722-2210-001T	RES,221,1/8W,1%
R26007	4722-1004-001T	RES,1.0M,1/8W,1%
R26008	4721-0181-002T	RES,180,1/4W,5%,CHIP
R26009	4701-0472-003	RES,4.7K,1/8W,5%
R26011	4753-0500-002	POT 50 OHM
R26012	4753-0500-002	POT 50 OHM
R26013	4706-3320-001	RES,332,1/4W,1%
R26014	4706-2211-001	RES,2.21K,1/4W,1%
R26015	4718-6819-001	RES,68.1,1/8W,1%
R26016	4718-6819-001	RES,68.1,1/8W,1%
R26017	4756-0202-500	POT,2K OHM SIDE ADJ
R26018	4718-4751-001	RES,4.75K,1/8W,1%
R26019	4706-3320-001	RES,332,1/4W,1%
R26020	4706-2211-001	RES,2.21K,1/4W,1%
R26021	4718-6819-001	RES,68.1,1/8W,1%
R26022	4718-6819-001	RES,68.1,1/8W,1%
R26023	4756-0202-500	POT,2K OHM SIDE ADJ
R26024	4718-4751-001	RES,4.75K,1/8W,1%
R26027	4722-4751-001T	RES,4.75K,1/8W,1%
R26028	4722-1001-001T	RES,1.0K,1/8W,1%
R26029	4722-3329-001T	RES,33.2,1/8W,1%
R26030	4722-6819-001T	RES,68.1,1/8W,1%
R26031	4721-0221-003T	RES,220,1/4W,5%,CHIP
R26032	4701-0150-003	RES,15,1/8W,5%
R26033	4701-0150-003	RES,15,1/8W,5%
R26034	4701-0150-003	RES,15,1/8W,5%
R26035	4722-4751-001T	RES,4.75K,1/8W,1%
R26036	4722-4751-001T	RES,4.75K,1/8W,1%
R26037	4722-1002-001T	RES,10.0K,1/8W,1%
R26038	4722-2213-001T	RES,221K,1/8W,1%
R26039	4722-1002-001T	RES,10.0K,1/8W,1%
R26040	4722-1002-001T	RES,10.0K,1/8W,1%
R26041	4753-0103-002	POT, 10K OHM
R26042	4722-1002-001T	RES,10.0K,1/8W,1%
R26043	4718-6819-001	RES,68.1,1/8W,1%
R26044	4718-6819-001	RES,68.1,1/8W,1%
S26001	5136-0002-000	SWITCH KSAOM421 BLUE
T26001	5604-0000-003	XFMR,MINI RF,PCM,1.0IR,50 OHM
T26002	5604-0000-003	XFMR,MINI RF,PCM,1.0IR,50 OHM
TP26001	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP26002	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP26003	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP26004	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP26005	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP26006	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP26007	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP26008	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP26009	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE

7010-8130-100 PCB ASSY, DIGITAL IF (cont) E

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
TP26010	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP26011	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP26012	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP26015	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP26017	2200-2010-400	CONN,M SMB,PC MTG,STR,.453LG
TP26018	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP26019	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP26020	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP26021	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP26022	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP26023	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP26024	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP26028	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP26029	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP26030	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
U26001	3229-9048-000	IC,9048,8-BIT VIDEO A/D CONV.
U26002	3229-9048-000	IC,9048,8-BIT VIDEO A/D CONV.
U26003	3260-0000-006	IC,320 DGTL.SIG. 100NS CMOS
U26007	3271-0713-000	IC,7130 8K DUAL RAM PLCC CMOS
U26008	3252-1608-000T	IC,2K X 8 SRAM SOJ 20NS CMOS
U26009	3252-1608-000T	IC,2K X 8 SRAM SOJ 20NS CMOS
U26010	3252-1607-000T	IC,4K X 4 SRAM SOJ 15NS CMOS
U26011	3252-1607-000T	IC,4K X 4 SRAM SOJ 15NS CMOS
U26012	3252-1607-000T	IC,4K X 4 SRAM SOJ 15NS CMOS
U26013	3252-1607-000T	IC,4K X 4 SRAM SOJ 15NS CMOS
U26014	3210-3000-005T	IC,3-TO-8 LINE DCDR/DEMUX SOL
U26015	3271-8100-101	IC,PLD16R4 ATC601 DIG.IF V1.01
U26016	3271-8101-100	IC,GAL16V8A ATC601 DIG.IFV1.00
U26017	3210-3000-002T	IC,DIN.CNTR.ASYN RESET INDL
U26018	3210-3000-002T	IC,DIN.CNTR.ASYN RESET INDL
U26019	3210-3000-002T	IC,DIN.CNTR.ASYN RESET INDL
U26020	3214-9407-000T	IC,INDL.OCT.D-TYPE FLIPFLOPSO
U26021	3210-3000-007T	IC,OCT.BFR/LINE DRVR.SOL INDL
U26022	3210-3000-007T	IC,OCT.BFR/LINE DRVR.SOL INDL
U26023	3210-3000-004T	IC,HEX INPUT, ST SO-14 INDL
U26024	3210-3074-000T	IC,DUAL D,FF/SET/RESET INDL
U26025	3210-3000-000T	IC,QUAD NAND GATE 2-LINE INDL
U26026	3210-3000-007T	IC,OCT.BFR/LINE DRVR.SOL INDL
U26027	3221-8100-427	IC,OP AMP INSTM. INDL
U26028	3214-9407-000T	IC,INDL.OCT.D-TYPE FLIPFLOPSO
U26029	3210-3000-008T	IC,INDL.DUAL J-K FLIPFLOP SOL
U26031	3223-0401-000	IC,401,WIDEBAND OP-AMP INDL
U26032	3223-0401-000	IC,401,WIDEBAND OP-AMP INDL
U26033	3210-3000-006T	IC,QUAD 2-IN NOR GATE SOLINDL
U26034	3214-9404-006T	IC,QUAD 2-INP/OR GATE SO-14
U26035	5850-0000-031	OSC,40.0000MHZ 14-P INDL
U26036	3210-3000-004T	IC,HEX INPUT, ST SO-14 INDL
U26037	3133-0000-024	IC,3130,BIMOS OP AMP,PLAST DIP
W26001	6008-0000-009	WIRE,HOOK,TFE,30GA,SOLID,WHT
XU26001	3101-0000-029	SOCKET,28-P DIP,GOLD,LO PROFIL
XU26002	3101-0000-029	SOCKET,28-P DIP,GOLD,LO PROFIL
XU26003	3101-0000-031	SOCKET,68-P LCC JEDEC H/P TIN
XU26004	3101-0000-032	SOCKET,24-P DIP,GOLD,DUAL-WIPE
XU26005	3101-0000-032	SOCKET,24-P DIP,GOLD,DUAL-WIPE
XU26015	3101-0000-056T	SOCKET,20P PLCC W\O PINS SMD

7010-8130-100 PCB ASSY, DIGITAL IF (cont) E

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
XU26016	3101-0000-056T	SOCKET,20P PLCC W\O PINS S

7010-8130-100 PCB ASSY, DIGITAL IF F

Contains all parts shown in Revision E with the following exceptions:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
C26083	1626-0101-016	CAP,100UF,16V,TANT,LOW ESR

7010-8132-800 PCB ASSY, PULSE (LED BACKLIGHT) A

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	1050-0000-013	ADHESIVE, SILICONE RTV, WHITE
	1051-0100-100	ADEHESIVE,TAK PAK 444
	1700-8124-100	PC BD, FP PULSE
	2108-0000-008	PIN FOR S-203 EJECTOR N/C
	4104-0000-002	CARD GUIDE & EJECTOR S-203
	6003-0001-009	WIRE,HOOK,TFE,30GA,SOLID,WHT
C27001	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27002	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27003	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27004	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27005	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27006	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27007	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27008	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27009	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27010	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27011	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27012	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27013	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27014	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27015	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27016	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27017	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27018	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27019	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27020	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27021	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27022	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27023	1618-0105-016T	CAP,1UF,16V,TANT,SMD
C27024	1619-0106-025T	CAP,10UF,25V,TANT,SMD
C27025	1619-0106-025T	CAP,10UF,25V,TANT,SMD
C27026	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27027	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27028	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27029	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27030	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27031	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27032	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27033	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27034	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27035	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27036	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27037	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27038	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27039	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27040	1622-0220-001T	CAP,22PF,100V,5%,1206,NPO
C27041	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C27042	1622-0101-001T	CAP,100PF,50V,CHIP
C27043	1618-0474-025T	CAP,0.47UF,25V,TANT,SMD
C27044	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27045	1622-0220-001T	CAP,22PF,100V,5%,1206,NPO
C27046	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C27047	1622-0101-001T	CAP,100PF,50V,CHIP
C27048	1618-0474-025T	CAP,0.47UF,25V,TANT,SMD
C27049	1580-1000-200	CAP,10UF,25V,ELE,RDL

7010-8132-800 PCB ASSY, PULSE (LED BACKLIGHT) (cont) A

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
C27050	1580-1000-200	CAP,10UF,25V,ELE,RDL
C27051	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27052	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27053	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27054	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27055	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27056	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27058	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27061	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27062	1622-0220-001T	CAP,22PF,100V,5%,1206,NPO
C27063	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C27064	1622-0220-001T	CAP,22PF,100V,5%,1206,NPO
C27065	1618-0474-025T	CAP,0.47UF,25V,TANT,SMD
C27066	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27067	1622-0220-001T	CAP,22PF,100V,5%,1206,NPO
C27068	1622-0101-001T	CAP,100PF,50V,CHIP
C27069	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27070	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27071	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27072	1619-0476-010T	CAP,47UF,10V,TANT,SMD
C27073	1580-1000-200	CAP,10UF,25V,ELE,RDL
C27074	1580-1000-200	CAP,10UF,25V,ELE,RDL
C27075	1618-0474-025T	CAP,0.47UF,25V,TANT,SMD
C27076	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27077	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27078	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C27079	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C27080	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27081	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27082	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27083	1619-0106-025T	CAP,10UF,25V,TANT,SMD
C27084	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27085	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27086	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27087	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27088	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27089	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27090	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27092	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C27093	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C27094	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27095	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C27096	1622-0101-001T	CAP,100PF,50V,CHIP
C27097	1619-0106-025T	CAP,10UF,25V,TANT,SMD
C27098	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27099	1619-0106-025T	CAP,10UF,25V,TANT,SMD
C27100	1622-0101-001T	CAP,100PF,50V,CHIP
C27101	1580-1020-049	CAP,1000UF,6.3V,ELE,30
C27102	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27103	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27104	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C27105	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C27106	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27107	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C27108	1622-0102-001T	CAP,1000PF,50V,CHIP,NPO

7010-8132-800 PCB ASSY, PULSE (LED BACKLIGHT) (cont) A

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
C27109	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27110	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27111	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27112	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27113	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C27114	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C27115	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C27116	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C27117	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C27118	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C27119	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C27120	1580-3310-025	CAP,330UF,25V,ELE,RDL
C27121	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27122	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27123	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27124	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27125	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C27126	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27127	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27128	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27129	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
CR27001	4816-0000-004T	DIODE,HSMS-2803,S-BAR SOT-23
CR27002	4816-0000-004T	DIODE,HSMS-2803,S-BAR SOT-23
CR27003	4816-0000-006T	DIODE, HSMS 2802, SOT-23
CR27004	4816-0000-006T	DIODE, HSMS 2802, SOT-23
CR27005	4815-0000-005T	DIODE, 4148,SIGNAL 75PRV SMD
CR27006	4815-0000-005T	DIODE, 4148,SIGNAL 75PRV SMD
CR27007	4815-0000-005T	DIODE, 4148,SIGNAL 75PRV SMD
CR27008	4815-0000-005T	DIODE, 4148,SIGNAL 75PRV SMD
CR27009	4815-0000-005T	DIODE, 4148,SIGNAL 75PRV SMD
CR27010	4815-0000-005T	DIODE, 4148,SIGNAL 75PRV SMD
CR27011	4818-0000-003	DIODE ZENER, 5.1V .5W
CR27012	4815-0000-005T	DIODE, 4148,SIGNAL 75PRV SMD
CR27013	4818-0000-029	DIODE, LM236AH-2.5 REF TO-46
CR27014	4815-0000-005T	DIODE, 4148,SIGNAL 75PRV SMD
CR27015	4816-0000-006T	DIODE, HSMS 2802, SOT-23
CR27016	4818-0000-033	DIODE,IN5281B ZENER 200V INDL*
CR27017	4818-0000-033	DIODE,IN5281B ZENER 200V INDL*
CR27018	4815-0000-005T	DIODE, 4148,SIGNAL 75PRV SMD
DL27001	4730-0000-001	DELAY LINE,INDL.PASSIVE 10NS
G27001	5850-0000-031	OSC,40.0000MHZ 14-P
J27051	2115-0005-002	CONN,LKING HEADER 2-P GOLD
J27052	2115-0005-020	CONN,LKING HEADER 20P GOLD
JTB27001	2129-1087-002	CONN, HDR. D.R. RTANG. 2-P
L27001	1811-6103-003T	IND,SM 10UH 10% C 1812
P27007	2129-1002-148	CONN,RA TPL ROW DIN MALE 48P
P27015	2129-1002-196	CONN,RA DIN MALE .104LD 96P
Q27001	4809-0000-021T	TRANS, 3904, NPN SMD
Q27002	4809-0000-021T	TRANS, 3904, NPN SMD
Q27003	4809-0000-021T	TRANS, 3904, NPN SMD
Q27004	4809-0000-021T	TRANS, 3904, NPN SMD
Q27005	4811-0000-001	TRANS,SJE1461 ,NPN PWR AMP
Q27006	4801-0000-006T	TRANS,2N2222,NPN HS SW,*SOT*
Q27007	4801-0000-006T	TRANS,2N2222,NPN HS SW,*SOT*
Q27008	4801-0000-006T	TRANS,2N2222,NPN HS SW,*SOT*

7010-8132-800 PCB ASSY, PULSE (LED BACKLIGHT) (cont) A

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R27001	4722-5111-001T	RES,5.11K,1/8W,1%
R27002	4722-1001-001T	RES,1.0K,1/8W,1%
R27003	4721-0181-002T	RES,180,1/4W,5%,CHIP
R27004	4722-1002-001T	RES,10.0K,1/8W,1%
R27005	4722-1002-001T	RES,10.0K,1/8W,1%
R27006	4722-2211-001T	RES,2.21K,1/8W,1%
R27007	4721-0221-003T	RES,220,1/4W,5%,CHIP
R27008	4721-0221-003T	RES,220,1/4W,5%,CHIP
R27009	4722-1002-001T	RES,10.0K,1/8W,1%
R27010	4722-1002-001T	RES,10.0K,1/8W,1%
R27011	4722-1002-001T	RES,10.0K,1/8W,1%
R27013	4722-2211-001T	RES,2.21K,1/8W,1%
R27014	4722-1002-001T	RES,10.0K,1/8W,1%
R27015	4722-6810-001T	RES,681,1/8W,1%
R27016	4722-5620-001T	RES,562,1/8W,1%
R27017	4722-2553-001T	RES,255K,1/8W,1%
R27018	4722-5620-001T	RES,562,1/8W,1%
R27019	4722-2211-001T	RES,2.21K,1/8W,1%
R27020	4722-1001-001T	RES,1.0K,1/8W,1%
R27021	4706-3092-001	RES,30.9K,1/4W,1%
R27022	4706-7682-001	RES,76.8K,1/4W,1%
R27023	4706-1002-001	RES,10.0K,1/4W,1%
R27024	4706-3092-001	RES,30.9K,1/4W,1%
R27025	4706-1002-001	RES,10.0K,1/4W,1%
R27026	4706-2211-001	RES,2.21K,1/4W,1%
R27027	4722-1002-001T	RES,10.0K,1/8W,1%
R27028	4722-1502-001T	RES,15.0K,1/8W,1%
R27029	4722-8252-001T	RES,82.5K,1/8W,1%
R27030	4722-1001-001T	RES,1.0K,1/8W,1%
R27031	4721-0221-003T	RES,220,1/4W,5%,CHIP
R27032	4721-0221-003T	RES,220,1/4W,5%,CHIP
R27033	4722-5623-001T	RES,562K,1/8W,1%
R27034	4722-5623-001T	RES,562K,1/8W,1%
R27035	4722-2211-001T	RES,2.21K,1/8W,1%
R27036	4722-2211-001T	RES,2.21K,1/8W,1%
R27037	4752-2103-002	POT,10K OHM S.ADJ MULTI-TURN
R27038	4722-1002-001T	RES,10.0K,1/8W,1%
R27039	4722-1002-001T	RES,10.0K,1/8W,1%
R27040	4722-1002-001T	RES,10.0K,1/8W,1%
R27041	4752-2103-002	POT,10K OHM S.ADJ MULTI-TURN
R27042	4722-8252-001T	RES,82.5K,1/8W,1%
R27043	4722-6811-001T	RES,6.81K,1/8W,1%
R27044	4722-1002-001T	RES,10.0K,1/8W,1%
R27045	4722-1502-001T	RES,15.0K,1/8W,1%
R27046	4722-1002-001T	RES,10.0K,1/8W,1%
R27047	4722-1502-001T	RES,15.0K,1/8W,1%
R27048	4722-1002-001T	RES,10.0K,1/8W,1%
R27049	4722-1502-001T	RES,15.0K,1/8W,1%
R27050	4722-1001-001T	RES,1.0K,1/8W,1%
R27051	4722-1001-001T	RES,1.0K,1/8W,1%
R27052	4722-1002-001T	RES,10.0K,1/8W,1%
R27053	4722-1002-001T	RES,10.0K,1/8W,1%
R27054	4722-4750-001T	RES,475,1/8W,1%
R27055	4721-0221-003T	RES,220,1/4W,5%,CHIP
R27056	4722-1002-001T	RES,10.0K,1/8W,1%

7010-8132-800 PCB ASSY, PULSE (LED BACKLIGHT) (cont) A

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R27057	4722-1000-001T	RES,100,1/8W,1%
R27058	4722-1002-001T	RES,10.0K,1/8W,1%
R27059	4722-1000-001T	RES,100,1/8W,1%
R27060	4722-1002-001T	RES,10.0K,1/8W,1%
R27061	4722-1000-001T	RES,100,1/8W,1%
R27062	4722-1002-001T	RES,10.0K,1/8W,1%
R27069	4722-1003-001T	RES,100K,1/8W,1%
R27070	4722-2740-001T	RES,274,1/8W,1%
R27071	4722-2740-001T	RES,274,1/8W,1%
R27072	4722-1823-001T	RES,182K,1/8W,1%
R27073	4722-1003-001T	RES,100K,1/8W,1%
R27074	4722-8252-001T	RES,82.5K,1/8W,1%
R27075	4722-6811-001T	RES,6.81K,1/8W,1%
R27076	4722-1001-001T	RES,1.0K,1/8W,1%
R27077	4722-2211-001T	RES,2.21K,1/8W,1%
R27078	4722-2553-001T	RES,255K,1/8W,1%
R27079	4722-2211-001T	RES,2.21K,1/8W,1%
R27080	4722-3653-001T	RES,365K,1/8W,1%
R27081	4722-1002-001T	RES,10.0K,1/8W,1%
R27082	4722-1002-001T	RES,10.0K,1/8W,1%
R27083	4722-1002-001T	RES,10.0K,1/8W,1%
R27084	4722-1002-001T	RES,10.0K,1/8W,1%
R27085	4722-1002-001T	RES,10.0K,1/8W,1%
R27086	4722-1002-001T	RES,10.0K,1/8W,1%
R27087	4722-2740-001T	RES,274,1/8W,1%
R27088	4722-2740-001T	RES,274,1/8W,1%
R27089	4722-2740-001T	RES,274,1/8W,1%
R27090	4722-2740-001T	RES,274,1/8W,1%
R27091	4722-2740-001T	RES,274,1/8W,1%
R27092	4722-2740-001T	RES,274,1/8W,1%
R27093	4722-2740-001T	RES,274,1/8W,1%
R27094	4722-1002-001T	RES,10.0K,1/8W,1%
R27095	4722-1002-001T	RES,10.0K,1/8W,1%
R27096	4722-1002-001T	RES,10.0K,1/8W,1%
R27097	4722-1002-001T	RES,10.0K,1/8W,1%
R27098	4722-1002-001T	RES,10.0K,1/8W,1%
R27099	4722-1002-001T	RES,10.0K,1/8W,1%
R27100	4722-1002-001T	RES,10.0K,1/8W,1%
R27101	4722-1002-001T	RES,10.0K,1/8W,1%
R27102	4722-1002-001T	RES,10.0K,1/8W,1%
R27103	4722-1002-001T	RES,10.0K,1/8W,1%
R27104	4722-1500-001T	RES,150,1/8W,1%
R27105	4722-1500-001T	RES,150,1/8W,1%
R27106	4722-1500-001T	RES,150,1/8W,1%
R27107	4722-1500-001T	RES,150,1/8W,1%
R27108	4722-1500-001T	RES,150,1/8W,1%
R27109	4722-1500-001T	RES,150,1/8W,1%
R27110	4722-1500-001T	RES,150,1/8W,1%
R27111	4722-1500-001T	RES,150,1/8W,1%
R27112	4722-1500-001T	RES,150,1/8W,1%
R27113	4722-1500-001T	RES,150,1/8W,1%
R27114	4722-1500-001T	RES,150,1/8W,1%
R27115	4722-1500-001T	RES,150,1/8W,1%
R27116	4722-1500-001T	RES,150,1/8W,1%
R27120	4702-0229-003	RES,2.2,1/4W,5%

7010-8132-800 PCB ASSY, PULSE (LED BACKLIGHT) (cont) A

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R27121	4753-0103-002	POT, 10K OHM
RN27001	4690-0910-300	RES NETWORK,10K,BUSS,10-P,SIP
S27001	5136-0002-000	SWITCH KSAOM421 BLUE
TP27001	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27002	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27004	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27005	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27006	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27007	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27008	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27009	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27010	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27011	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27014	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27015	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27016	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27017	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27023	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27026	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27027	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27028	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27029	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27031	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27032	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27033	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27035	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27037	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27038	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27048	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27049	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27057	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27058	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27059	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27060	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27061	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27062	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27063	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27064	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27078	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27079	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
U27001	3135-0000-066	IC,80C188,8/16-B CPU, PLCC
U27002	3210-3074-000T	IC,DUAL D,FF/SET/RESET INDL
U27004	3214-9403-003T	IC,OCTAL,3,STATE,DRIVER SOL
U27006	3214-9403-003T	IC,OCTAL,3,STATE,DRIVER SOL
U27007	3214-9403-006T	IC,DUAL,D,FLIP,FLOP,SMD SOL
U27008	3210-3000-005T	IC,3-TO-8 LINE DCDR/DEMUX SOL
U27009	3210-3000-009T	IC,OCT-BUS XCVR,3-STATE INDL
U27010	3210-3000-001T	IC,OCT.TRANS.LCH,3-STATE INDL
U27011	3214-9100-016T	IC,QUAD 2IN NAND CMOS
U27014	3214-9100-014T	IC,QUAD BFR/LINEDRVR SO14INDL
U27015	3210-3000-003T	IC,QUAD 2-IN MUX.SOL-16 INDL
U27016	3210-3000-003T	IC,QUAD 2-IN MUX.SOL-16 INDL
U27017	3260-0100-802	IC,SRAM 1230 28-PIN
U27018	3135-0001-059T	IC,INDL,TEMP.VOLT.SUPV.SO-8
U27019	3214-9403-003T	IC,OCTAL,3,STATE,DRIVER SOL

7010-8132-800 PCB ASSY, PULSE (LED BACKLIGHT) (cont) A

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
U27020	3214-9403-003T	IC,OCTAL,3,STATE,DRIVER SOL
U27021	3214-9403-003T	IC,OCTAL,3,STATE,DRIVER SOL
U27022	3271-2064-701	IC,XC2064-70PC68I LGC.CMSINDL
U27023	3228-0017-000	IC,262,144 BIT DUAL DRAM INDL
U27024	3228-0017-000	IC,262,144 BIT DUAL DRAM INDL
U27025	3210-3000-004T	IC,HEX INPUT, ST SO-14 INDL
U27026	3210-3000-007T	IC,OCT.BFR/LINE DRVR.SOL INDL
U27027	3214-9403-003T	IC,OCTAL,3,STATE,DRIVER SOL
U27028	3223-0005-006	IC,INDL.RS-232 DRVR. CMOS
U27029	3272-8106-100	IC,22V10 ATC601 FP PULSE V1.00
U27030	3135-0000-078	IC,CMOS,82510 UART PLCC INDL
U27032	3228-0006-001T	IC,5018 D/A CONVERTER SOL
U27033	3228-0006-001T	IC,5018 D/A CONVERTER SOL
U27034	3224-0016-000	IC,QUAD OP-AMP 248 INDL
U27036	3214-9100-018T	IC,3-8 DEMUX CMOS SO-16 INDL
U27039	3214-9100-015T	IC,4-BIT BIN CNTR CMOS INDL
U27040	3214-9403-011T	IC, F/F NONINVRT 3-STAT SOIC
U27041	3228-0006-001T	IC,5018 D/A CONVERTER SOL
U27042	3228-0016-000	IC,12-BIT D/A CONVERTER INDL
U27043	3228-0006-001T	IC,5018 D/A CONVERTER SOL
U27044	3271-3090-070	IC,LOGIC CELL ARRAY 175P INDL
U27045	3229-1015-800T	IC, 10-BIT CMOSD A/D 10158
U27047	3224-0015-000	IC,556 DUAL TIMER INDL
U27050	3133-0000-124T	IC BIMOS CA3130 OP AMP SO
U27051	3210-3000-004T	IC,HEX INPUT, ST SO-14 INDL
U27052	3214-9403-002T	IC,QUAD 2 INPUT OR GATE SOL
U27053	F260-8120-100	A-D INTERFACE XC7336-15 V1.00
U27054	3135-0001-022T	IC,QUAD LOW NOISE OP AMP,SO14
U27055	3135-0001-022T	IC,QUAD LOW NOISE OP AMP,SO14
U27056	3210-3000-009T	IC,OCT-BUS XCVR,3-STATE INDL
U27057	3210-3000-009T	IC,OCT-BUS XCVR,3-STATE INDL
U27058	3210-3000-009T	IC,OCT-BUS XCVR,3-STATE INDL
U27059	3135-0001-021T	IC, TL072 OP AMP
U27060	3214-9403-002T	IC,QUAD 2 INPUT OR GATE SOL
XU27001	3101-0000-031	SOCKET,68-P LCC JEDEC H/P TIN
XU27003	3101-0000-013	SOCKET,8P DIP, DUAL WIPE
XU27005	3101-0000-013	SOCKET,8P DIP, DUAL WIPE
XU27012	3101-0000-055T	SOCKET,32-P PLCC W/O PINS SMD
XU27013	3101-0000-055T	SOCKET,32-P PLCC W/O PINS SMD
XU27017	3101-0000-029	SOCKET,28-P DIP,GOLD,LO PROFIL
XU27022	3101-0000-031	SOCKET,68-P LCC JEDEC H/P TIN
XU27031	3101-0000-013	SOCKET,8P DIP, DUAL WIPE
XU27044	3101-0000-048	SOCKET, 175 P

7010-8132-800 PCB ASSY, PULSE (LED BACKLIGHT) B

Contains all parts shown in Revision A with the following exceptions:

(Remove Parts)

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R27100	4722-1002-001T	RES,10.0K,1/8W,1%
R27101	4722-1002-001T	RES,10.0K,1/8W,1%

(Add Parts)

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R27118	4722-1002-001T	RES,10.0K,1/8W,1%
R27119	4722-1002-001T	RES,10.0K,1/8W,1%

7010-8135-800 PCB ASSY, PULSE (LED BACKLIGHT) A

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	1050-0000-013	ADHESIVE, SILICONE RTV, WHITE
	1051-0100-100	ADEHESIVE,TAK PAK 444
	1700-8124-100	PC BD, FP PULSE
	2108-0000-008	PIN FOR S-203 EJECTOR N/C
	2129-1000-001	CONN,HEADER,1-P,ST,.335 STACK
	4104-0000-002	CARD GUIDE & EJECTOR S-203
	6003-0001-009	WIRE,HOOK,TFE,30GA,SOLID,WHT
	6004-6005-400	TY-RAP,4.0 LG
A1	7010-8133-600	PCB ASSY,PULSE MEMORY
C27001	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27002	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27003	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27004	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27005	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27006	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27007	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27008	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27009	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27010	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27011	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27012	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27013	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27014	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27015	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27016	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27017	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27018	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27019	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27020	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27021	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27022	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27023	1618-0105-016T	CAP,1UF,16V,TANT,SMD
C27024	1619-0106-025T	CAP,10UF,25V,TANT,SMD
C27025	1619-0106-025T	CAP,10UF,25V,TANT,SMD
C27026	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27027	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27028	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27029	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27030	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27031	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27032	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27033	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27034	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27035	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27036	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27037	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27038	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27039	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27040	1622-0220-001T	CAP,22PF,100V,5%,1206,NPO
C27041	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C27042	1622-0101-001T	CAP,100PF,50V,CHIP
C27043	1618-0474-025T	CAP,0.47UF,25V,TANT,SMD
C27044	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27045	1622-0220-001T	CAP,22PF,100V,5%,1206,NPO
C27046	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R

7010-8135-800 PCB ASSY, PULSE (LED BACKLIGHT) (cont) A

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
C27047	1622-0101-001T	CAP,100PF,50V,CHIP
C27048	1618-0474-025T	CAP,0.47UF,25V,TANT,SMD
C27049	1580-1000-200	CAP,10UF,25V,ELE,RDL
C27050	1580-1000-200	CAP,10UF,25V,ELE,RDL
C27051	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27052	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27053	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27054	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27055	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27056	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27058	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27061	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27062	1622-0220-001T	CAP,22PF,100V,5%,1206,NPO
C27063	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C27064	1622-0220-001T	CAP,22PF,100V,5%,1206,NPO
C27065	1618-0474-025T	CAP,0.47UF,25V,TANT,SMD
C27066	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27067	1622-0220-001T	CAP,22PF,100V,5%,1206,NPO
C27068	1622-0101-001T	CAP,100PF,50V,CHIP
C27069	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27070	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27071	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27072	1619-0476-010T	CAP,47UF,10V,TANT,SMD
C27073	1580-1000-200	CAP,10UF,25V,ELE,RDL
C27074	1580-1000-200	CAP,10UF,25V,ELE,RDL
C27075	1618-0474-025T	CAP,0.47UF,25V,TANT,SMD
C27076	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27077	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27078	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C27079	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C27080	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27081	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27082	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27083	1619-0106-025T	CAP,10UF,25V,TANT,SMD
C27084	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27085	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27086	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27087	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27088	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27089	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27090	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27092	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C27093	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C27094	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27095	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C27096	1622-0101-001T	CAP,100PF,50V,CHIP
C27097	1619-0106-025T	CAP,10UF,25V,TANT,SMD
C27098	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27099	1619-0106-025T	CAP,10UF,25V,TANT,SMD
C27100	1622-0101-001T	CAP,100PF,50V,CHIP
C27101	1580-1020-049	CAP,1000UF,6.3V,ELE,30
C27102	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27103	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27104	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C27105	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R

7010-8135-800 PCB ASSY, PULSE (LED BACKLIGHT) (cont) A

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
C27106	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27107	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C27108	1622-0102-001T	CAP,1000PF,50V,CHIP,NPO
C27109	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27110	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27111	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27112	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27113	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C27114	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C27115	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C27116	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C27117	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C27118	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C27119	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C27120	1580-3310-025	CAP,330UF,25V,ELE,RDL
C27121	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27122	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27123	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27124	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27125	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C27126	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27127	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27128	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C27129	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
CR27001	4816-0000-004T	DIODE,HSMS-2803,S-BAR SOT-23
CR27002	4816-0000-004T	DIODE,HSMS-2803,S-BAR SOT-23
CR27003	4816-0000-006T	DIODE, HSMS 2802, SOT-23
CR27004	4816-0000-006T	DIODE, HSMS 2802, SOT-23
CR27005	4815-0000-005T	DIODE, 4148,SIGNAL 75PRV SMD
CR27006	4815-0000-005T	DIODE, 4148,SIGNAL 75PRV SMD
CR27007	4815-0000-005T	DIODE, 4148,SIGNAL 75PRV SMD
CR27009	4815-0000-005T	DIODE, 4148,SIGNAL 75PRV SMD
CR27010	4815-0000-005T	DIODE, 4148,SIGNAL 75PRV SMD
CR27011	4818-0000-003	DIODE ZENER, 5.1V .5W
CR27012	4815-0000-005T	DIODE, 4148,SIGNAL 75PRV SMD
CR27013	4818-0000-029	DIODE, LM236AH-2.5 REF TO-46
CR27014	4815-0000-005T	DIODE, 4148,SIGNAL 75PRV SMD
CR27015	4816-0000-006T	DIODE, HSMS 2802, SOT-23
CR27016	4818-0000-033	DIODE,IN5281B ZENER 200V INDL
CR27017	4818-0000-033	DIODE,IN5281B ZENER 200V INDL
CR27018	4815-0000-005T	DIODE, 4148,SIGNAL 75PRV SMD
DL27001	4730-0000-001	DELAY LINE,INDL.PASSIVE 10NS
G27001	5850-0000-031	OSC,40.0000MHZ 14-P INDL
J27051	2115-0005-002	CONN,LKING HEADER 2-P GOLD
J27052	2115-0005-020	CONN,LKING HEADER 20P GOLD
JTB2701	2129-1087-002	CONN, HDR. D.R. RTANG. 2-P
L27001	1811-6103-003T	IND,SM 10UH 10% C 1812
P27007	2129-1002-148	CONN,RA TPL ROW DIN MALE 48P
P27015	2129-1002-196	CONN,RA
Q27001	4809-0000-021T	TRANS, 3904, NPN SMD
Q27002	4809-0000-021T	TRANS, 3904, NPN SMD
Q27003	4809-0000-021T	TRANS, 3904, NPN SMD
Q27004	4809-0000-021T	TRANS, 3904, NPN SMD
Q27005	4811-0000-001	TRANS,SJE1461 ,NPN PWR AMP
Q27006	4801-0000-006T	TRANS,2N2222,NPN HS SW,*SOT*

7010-8135-800 PCB ASSY, PULSE (LED BACKLIGHT) (cont) A

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
Q27007	4801-0000-006T	TRANS,2N2222,NPN HS SW,*SOT*
Q27008	4801-0000-006T	TRANS,2N2222,NPN HS SW,*SOT*
R27001	4722-5111-001T	RES,5.11K,1/8W,1%
R27002	4722-1001-001T	RES,1.0K,1/8W,1%
R27003	4721-0181-002T	RES,180,1/4W,5%,CHIP
R27004	4722-1002-001T	RES,10.0K,1/8W,1%
R27005	4722-1002-001T	RES,10.0K,1/8W,1%
R27006	4722-2211-001T	RES,2.21K,1/8W,1%
R27007	4721-0221-003T	RES,220,1/4W,5%,CHIP
R27008	4721-0221-003T	RES,220,1/4W,5%,CHIP
R27009	4722-1002-001T	RES,10.0K,1/8W,1%
R27010	4722-1002-001T	RES,10.0K,1/8W,1%
R27011	4722-1002-001T	RES,10.0K,1/8W,1%
R27013	4722-2211-001T	RES,2.21K,1/8W,1%
R27014	4722-1002-001T	RES,10.0K,1/8W,1%
R27015	4722-6810-001T	RES,681,1/8W,1%
R27016	4722-5620-001T	RES,562,1/8W,1%
R27017	4722-2553-001T	RES,255K,1/8W,1%
R27018	4722-5620-001T	RES,562,1/8W,1%
R27019	4722-2211-001T	RES,2.21K,1/8W,1%
R27020	4722-1001-001T	RES,1.0K,1/8W,1%
R27021	4706-3092-001	RES,30.9K,1/4W,1%
R27022	4706-7682-001	RES,76.8K,1/4W,1%
R27023	4706-1002-001	RES,10.0K,1/4W,1%
R27024	4706-3092-001	RES,30.9K,1/4W,1%
R27025	4706-1002-001	RES,10.0K,1/4W,1%
R27026	4706-2211-001	RES,2.21K,1/4W,1%
R27027	4722-1002-001T	RES,10.0K,1/8W,1%
R27028	4722-1502-001T	RES,15.0K,1/8W,1%
R27029	4722-8252-001T	RES,82.5K,1/8W,1%
R27030	4722-1001-001T	RES,1.0K,1/8W,1%
R27031	4721-0221-003T	RES,220,1/4W,5%,CHIP
R27032	4721-0221-003T	RES,220,1/4W,5%,CHIP
R27033	4722-5623-001T	RES,562K,1/8W,1%
R27034	4722-5623-001T	RES,562K,1/8W,1%
R27035	4722-2211-001T	RES,2.21K,1/8W,1%
R27036	4722-2211-001T	RES,2.21K,1/8W,1%
R27037	4752-2103-002	POT,10K OHM S.ADJ MULTI-TURN
R27038	4722-1002-001T	RES,10.0K,1/8W,1%
R27039	4722-1002-001T	RES,10.0K,1/8W,1%
R27040	4722-1002-001T	RES,10.0K,1/8W,1%
R27041	4752-2103-002	POT,10K OHM S.ADJ MULTI-TURN
R27042	4722-8252-001T	RES,82.5K,1/8W,1%
R27043	4722-6811-001T	RES,6.81K,1/8W,1%
R27044	4722-1002-001T	RES,10.0K,1/8W,1%
R27045	4722-1502-001T	RES,15.0K,1/8W,1%
R27046	4722-1002-001T	RES,10.0K,1/8W,1%
R27047	4722-1502-001T	RES,15.0K,1/8W,1%
R27048	4722-1002-001T	RES,10.0K,1/8W,1%
R27049	4722-1502-001T	RES,15.0K,1/8W,1%
R27050	4722-1001-001T	RES,1.0K,1/8W,1%
R27051	4722-1001-001T	RES,1.0K,1/8W,1%
R27052	4722-1002-001T	RES,10.0K,1/8W,1%
R27053	4722-1002-001T	RES,10.0K,1/8W,1%
R27054	4722-4750-001T	RES,475,1/8W,1%

7010-8135-800 PCB ASSY, PULSE (LED BACKLIGHT) (cont) A

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R27055	4721-0221-003T	RES,220,1/4W,5%,CHIP
R27056	4722-1002-001T	RES,10.0K,1/8W,1%
R27057	4722-1000-001T	RES,100,1/8W,1%
R27058	4722-1002-001T	RES,10.0K,1/8W,1%
R27059	4722-1000-001T	RES,100,1/8W,1%
R27060	4722-1002-001T	RES,10.0K,1/8W,1%
R27061	4722-1000-001T	RES,100,1/8W,1%
R27062	4722-1002-001T	RES,10.0K,1/8W,1%
R27069	4722-1003-001T	RES,100K,1/8W,1%
R27070	4722-2740-001T	RES,274,1/8W,1%
R27071	4722-2740-001T	RES,274,1/8W,1%
R27072	4722-1823-001T	RES,182K,1/8W,1%
R27073	4722-1003-001T	RES,100K,1/8W,1%
R27074	4722-8252-001T	RES,82.5K,1/8W,1%
R27075	4722-6811-001T	RES,6.81K,1/8W,1%
R27076	4722-1001-001T	RES,1.0K,1/8W,1%
R27077	4722-2211-001T	RES,2.21K,1/8W,1%
R27078	4722-2553-001T	RES,255K,1/8W,1%
R27079	4722-2211-001T	RES,2.21K,1/8W,1%
R27080	4722-3653-001T	RES,365K,1/8W,1%
R27081	4722-1002-001T	RES,10.0K,1/8W,1%
R27082	4722-1002-001T	RES,10.0K,1/8W,1%
R27083	4722-1002-001T	RES,10.0K,1/8W,1%
R27084	4722-1002-001T	RES,10.0K,1/8W,1%
R27085	4722-1002-001T	RES,10.0K,1/8W,1%
R27086	4722-1002-001T	RES,10.0K,1/8W,1%
R27087	4722-2740-001T	RES,274,1/8W,1%
R27088	4722-2740-001T	RES,274,1/8W,1%
R27089	4722-2740-001T	RES,274,1/8W,1%
R27090	4722-2740-001T	RES,274,1/8W,1%
R27091	4722-2740-001T	RES,274,1/8W,1%
R27092	4722-2740-001T	RES,274,1/8W,1%
R27093	4722-2740-001T	RES,274,1/8W,1%
R27094	4722-1002-001T	RES,10.0K,1/8W,1%
R27095	4722-1002-001T	RES,10.0K,1/8W,1%
R27096	4722-1002-001T	RES,10.0K,1/8W,1%
R27097	4722-1002-001T	RES,10.0K,1/8W,1%
R27098	4722-1002-001T	RES,10.0K,1/8W,1%
R27099	4722-1002-001T	RES,10.0K,1/8W,1%
R27102	4722-1002-001T	RES,10.0K,1/8W,1%
R27103	4722-1002-001T	RES,10.0K,1/8W,1%
R27104	4722-1500-001T	RES,150,1/8W,1%
R27105	4722-1500-001T	RES,150,1/8W,1%
R27106	4722-1500-001T	RES,150,1/8W,1%
R27107	4722-1500-001T	RES,150,1/8W,1%
R27108	4722-1500-001T	RES,150,1/8W,1%
R27109	4722-1500-001T	RES,150,1/8W,1%
R27110	4722-1500-001T	RES,150,1/8W,1%
R27111	4722-1500-001T	RES,150,1/8W,1%
R27112	4722-1500-001T	RES,150,1/8W,1%
R27113	4722-1500-001T	RES,150,1/8W,1%
R27114	4722-1500-001T	RES,150,1/8W,1%
R27115	4722-1500-001T	RES,150,1/8W,1%
R27116	4722-1500-001T	RES,150,1/8W,1%
R27118	4722-1002-001T	RES,10.0K,1/8W,1%

7010-8135-800 PCB ASSY, PULSE (LED BACKLIGHT) (cont) A

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R27119	4722-1002-001T	RES,10.0K,1/8W,1%
R27120	4702-0229-003	RES,2.2,1/4W,5%
R27121	4753-0103-002	POT, 10K OHM
RN27001	4690-0910-300	RES NETWORK,10K,BUSS,10-P,SIP
S27001	5136-0002-000	SWITCH KSAOM421 BLUE
TP27001	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27002	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27004	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27005	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27006	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27007	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27008	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27009	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27010	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27011	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27014	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27015	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27016	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27023	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27026	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27027	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27028	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27029	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27031	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27032	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27033	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27035	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27037	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27038	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27048	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27049	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27057	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27059	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27060	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27061	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27062	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27063	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27064	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27078	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP27079	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
U27001	3135-0000-066	IC,80C188,8/16-B CPU, PLCC
U27002	3210-3074-000T	IC,DUAL D,FF/SET/RESET INDL
U27004	3214-9403-003T	IC,OCTAL,3,STATE,DRIVER SOL
U27006	3214-9403-003T	IC,OCTAL,3,STATE,DRIVER SOL
U27007	3214-9403-006T	IC,DUAL,D,FLIP,FLOP,SMD SOL
U27008	3210-3000-005T	IC,3-TO-8 LINE DCDR/DEMUX SOL
U27009	3210-3000-009T	IC,OCT-BUS XCVR,3-STATE INDL
U27010	3210-3000-001T	IC,OCT.TRANS.LCH,3-STATE INDL
U27011	3214-9100-016T	IC,QUAD 2IN NAND CMOS INDL
U27014	3214-9100-014T	IC,QUAD BFR/LINEDRVR SO14INDL
U27015	3210-3000-003T	IC,QUAD 2-IN MUX.SOL-16 INDL
U27016	3210-3000-003T	IC,QUAD 2-IN MUX.SOL-16 INDL
U27018	3135-0001-059T	IC,INDL,TEMP.VOLT.SUPV.SO-8
U27019	3214-9403-003T	IC,OCTAL,3,STATE,DRIVER SOL
U27020	3214-9403-003T	IC,OCTAL,3,STATE,DRIVER SOL

7010-8135-800 PCB ASSY, PULSE (LED BACKLIGHT) (cont) A

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
U27021	3214-9403-003T	IC,OCTAL,3,STATE,DRIVER SOL
U27022	3271-2064-701	IC,XC2064-70PC68I LGC.CMSINDL
U27023	3228-0017-000	IC,262,144 BIT DUAL DRAM INDL
U27024	3228-0017-000	IC,262,144 BIT DUAL DRAM INDL
U27025	3210-3000-004T	IC,HEX INPUT, ST SO-14 INDL
U27026	3210-3000-007T	IC,OCT.BFR/LINE DRVR.SOL INDL
U27027	3214-9403-003T	IC,OCTAL,3,STATE,DRIVER SOL
U27028	3223-0005-006	IC,INDL.RS-232 DRVR. CMOS
U27029	3272-8106-100	IC,22V10 ATC601 FP PULSE V1.00
U27030	3135-0000-078	IC,CMOS,82510 UART PLCC INDL
U27032	3228-0006-001T	IC,5018 D/A CONVERTER SOL
U27033	3228-0006-001T	IC,5018 D/A CONVERTER SOL
U27034	3224-0016-000	IC,QUAD OP-AMP 248 INDL
U27036	3214-9100-018T	IC,3-8 DEMUX CMOS SO-16 INDL
U27039	3214-9100-015T	IC,4-BIT BIN CNTR CMOS INDL
U27040	3214-9403-011T	IC, F/F NONINVRT 3-STAT SOIC
U27041	3228-0006-001T	IC,5018 D/A CONVERTER SOL
U27042	3228-0016-000	IC,12-BIT D/A CONVERTER INDL
U27043	3228-0006-001T	IC,5018 D/A CONVERTER SOL
U27044	3271-3090-070	IC,LOGIC CELL ARRAY 175P INDL
U27045	3229-1015-800T	IC, 10-BIT CMOSD A/D 10158
U27047	3224-0015-000	IC,556 DUAL TIMER INDL
U27050	3133-0000-124T	IC BIMOS CA3130 OP AMP SO
U27051	3210-3000-004T	IC,HEX INPUT, ST SO-14 INDL
U27052	3214-9403-002T	IC,QUAD 2 INPUT OR GATE SOL
U27053	F260-8120-100	A-D INTERFACE XC7336-15 V1.00
U27054	3135-0001-022T	IC,QUAD LOW NOISE OP AMP,SO14
U27055	3135-0001-022T	IC,QUAD LOW NOISE OP AMP,SO14
U27056	3210-3000-009T	IC,OCT-BUS XCVR,3-STATE INDL
U27057	3210-3000-009T	IC,OCT-BUS XCVR,3-STATE INDL
U27058	3210-3000-009T	IC,OCT-BUS XCVR,3-STATE INDL
U27059	3135-0001-021T	IC, TL072 OP AMP SO-8
U27060	3214-9403-002T	IC,QUAD 2 INPUT OR GATE SOL
XU27001	3101-0000-031	SOCKET,68-P LCC JEDEC H/P TIN
XU27003	3101-0000-013	SOCKET,8P DIP, DUAL WIPE
XU27005	3101-0000-013	SOCKET,8P DIP, DUAL WIPE
XU27017	3101-0000-029	SOCKET,28-P DIP,GOLD,LO PROFIL
XU27022	3101-0000-031	SOCKET,68-P LCC JEDEC H/P TIN
XU27031	3101-0000-013	SOCKET,8P DIP, DUAL WIPE
XU27044	3101-0000-048	SOCKET, 175 P

7010-8133-600 PCB ASSY, PULSE MEMORY D

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	1700-8123-600	PC BD,ATC601 PULSE MEMORY
BT1	4000-9232-501	BATT,160MAH,BR2325P2 SLDRTB+3V
C16	1635-0104-001T	CAP,0.1UF,16V,0603,X7R
C19	1635-0104-001T	CAP,0.1UF,16V,0603,X7R
C20	1635-0104-001T	CAP,0.1UF,16V,0603,X7R
C21	1635-0104-001T	CAP,0.1UF,16V,0603,X7R
C22	1635-0104-001T	CAP,0.1UF,16V,0603,X7R
C23	1635-0104-001T	CAP,0.1UF,16V,0603,X7R
J1	2115-0000-600	CONN,HDR,14P,STRIP LINE
J2	2115-0000-600	CONN,HDR,14P,STRIP LINE
R3	4734-0109-002T	RES,10,1/16W,5%,0603,MF
U1	F360-8120-304	IC,ATC-601-2 SYS SW,V3.04
U2	3260-0300-002T	IC,628512,512KX8 SRAM SOP-32
U3	F361-8102-110	IC,601-2,ADDRESS DECODER,V1.1
U4	3261-0000-002T	IC, 2201 SRAM SOIO 8-P

7005-8143-100 ASSY, LINE SUPPLY E

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	1400-8152-500	BRKT LINE SUPPLY
J11062-1	2114-0000-064	CONTACT,MATE-N-LOK,PIN,18GA
J11062-2	2114-0000-064	CONTACT,MATE-N-LOK,PIN,18GA
J11062	2115-0001-034	CONNECTOR,2-P,MATE-N-LOK,CAP
	2803-0250-006	SCREW,4-40 X 1/4 PPHM
	2804-0375-006	SCREW,6-32 X 3/8 PPHM
	2809-1000-102	SC,10-32X1,ASH,SS,PA
BR33001	4823-0000-001	RECT,PK10, BRIDGE, 100V,10A
T33001	5604-8100-003	TRANSFORMER,TOROIDAL POWER
	6004-6005-400	TY-RAP,4.0 LG
W1	6008-5000-002	WIRE, CSA, 600V,18GA,BROWN
W2	6008-5009-007	WIRE, UL 600V 18GA, 75,BLUE
	6011-0042-000	TUBING,TF,18 AWG,NATURAL,SW
	6012-0166-100	TUBING,PVC-105, 6 AWG,CLEAR
A1	7010-8133-100	PCB ASSY, LINE SUPPLY

7005-8143-100 ASSY, LINE SUPPLY E1

Contains all parts shown in Revision E with the following exceptions:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	1050-0000-019	THERMAL COMPOUND
	1050-0000-047	LOC-TITE 222

7005-8143-100 ASSY, LINE SUPPLY F

Contains all parts shown in Revision E1.

7010-8133-100 PCB ASSY, LINE SUPPLY A

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	6004-6005-400	TY-RAP,4.0 LG
C15003	1579-0222-035	CAP,UF 2200 35V 20% RDL ELE
CR15001	4832-0000-001	DIODE,NS2001,RECT,100V,2A
CR15002	4901-4752-100	DIODE,1N4752A,ZENER,33V,1W
J26001	2115-0005-004	CONN,LKING HEADER 4-P GOLD
Q15001	4822-0000-002	RECT,2N6397,THYR,TO-220
R15001	4705-0500-002	RES,50,2W,5%,WW
R15002	4702-0102-003	RES,1.0K,1/4W,5%
S15001	5135-2026-100	SWITCH,SLIDE,DPDT,115/230,PCM

7005-8143-500 ASSY, POWER SUPPLY E

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	1414-3554-600	COVER,POWER SUPPLY
	1415-8151-400	ENCLOSURE, PWR SUPPLY
	2400-7856-800	LABEL,ESD
	2803-0250-003	SCREW,4-40 X 1/4 PFHM
	2803-0250-006	SCREW,4-40 X 1/4 PPHM
	2803-0313-003	SCREW 4-40 X 5/16 PFHMS
	2803-0375-006	SCREW, 4-40 X 3/8 PPHM
	2804-0188-003	SCREW 6-32X3/16 PHIL FLAT HD
	2840-0000-009	WASHER,FLAT,4,MS15795-803
	2840-6153-500	WASHER PPS SHOULDER
	2850-0000-020	NUT,HEX,SMALL PAT,4-40
	4835-0000-103	INSUL,MICA,TO-220 TRANS,DF103B
U23004	5050-2402-100	IC, 1A LOW DROPOUT REG
U23005	5050-2402-100	IC, 1A LOW DROPOUT REG
Q23001	5050-2445-500	TRANS,SENSEFET 100V,28A,.077 R
Q23002	5050-2445-500	TRANS,SENSEFET 100V,28A,.077 R
	6004-7800-200	TY-RAP,#4 SCREW MOUNT,5.5L *
W1	7007-8580-300	WIRE HARN ASSY, POWER SUPPLY
	7010-8130-500	PCB ASSY, PWR SUPPLY

7010-8130-500 PCB ASSY, POWER SUPPLY E

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	1700-7420-300	PC BD,MLS-801
	2510-5064-301	HUB, TRANSFORMER MOUNTING
	2803-0313-006	SCREW,4-40 X 5/16 PPHM
	2804-1000-006	SCREW 6-32 X 1 PBHMS
	2840-0000-001	WASHER,LOCK,INT TOOTH,6
	2840-0000-003	WASHER,LOCK,INT TOOTH,4
	2840-7600-216	WASHER,PHEN,.63OD,.140ID,.060T
	2850-0000-002	NUT,HEX,SMALL PAT,6-32
	2850-0000-008	NUT,HEX,REG PAT,4-40
	6008-0000-009	WIRE,HOOK,TFE,30GA,SOLID,WHT
	6010-0125-100	TUBING,HS, 1/8 ID,CLEAR
	6011-0027-001	TUBING,TF,22 AWG,NATURAL,TW
C14001	1580-3312-215	CAP,330UF,16V,ELE,RDL
C14003	1521-0000-008	CAP,0.1UF,50V,DIP,Z5U
C14005	1506-0332-017	CAP,3000PF,100V,5%,NPO
C14006	1521-0000-008	CAP,0.1UF,50V,DIP,Z5U
C14007	1506-0471-017	CAP,470PF,100V,5%,NPO
C14008	1580-4700-215	CAP,47UF,25V,ELE,30
C14009	1506-0102-017	CAP,1000PF,100V,5%,NPO
C14010	1507-0105-018	CAP,1UF,35V,20%,TANT
C14011	1506-0102-017	CAP,1000PF,100V,5%,NPO
C14012	1506-0332-017	CAP,3000PF,100V,5%,NPO
C14013	1521-0000-008	CAP,0.1UF,50V,DIP,Z5U
C14014	1506-0221-017	CAP,220PF,100V,5%,NPO
C14015	1506-0102-017	CAP,1000PF,100V,5%,NPO
C14016	1580-3312-215	CAP,330UF,16V,ELE,RDL
C14017	1508-0107-020	CAP,100UF,20V,TANT,RDL
C14018	1508-0226-018	CAP,22UF,35V,20%,TANT,RDL
C14019	1580-3312-215	CAP,330UF,16V,ELE,RDL
C14020	1508-0107-020	CAP,100UF,20V,TANT,RDL
C14021	1508-0226-018	CAP,22UF,35V,20%,TANT,RDL
C14022	1580-3312-215	CAP,330UF,16V,ELE,RDL
C14023	1580-3312-215	CAP,330UF,16V,ELE,RDL
C14025	1521-0000-008	CAP,0.1UF,50V,DIP,Z5U
C14026	1521-0000-008	CAP,0.1UF,50V,DIP,Z5U
C14027	1521-0000-008	CAP,0.1UF,50V,DIP,Z5U
C14028	1521-0000-008	CAP,0.1UF,50V,DIP,Z5U
C14029	1521-0000-008	CAP,0.1UF,50V,DIP,Z5U
C14030	1580-3312-215	CAP,330UF,16V,ELE,RDL
C14031	1508-0226-018	CAP,22UF,35V,20%,TANT,RDL
C14032	1508-0226-018	CAP,22UF,35V,20%,TANT,RDL
C14034	1506-0471-017	CAP,470PF,100V,5%,NPO
C14035	1521-0000-008	CAP,0.1UF,50V,DIP,Z5U
C14037	1580-3312-215	CAP,330UF,16V,ELE,RDL
C14038	1580-3312-215	CAP,330UF,16V,ELE,RDL
C14039	1521-0000-008	CAP,0.1UF,50V,DIP,Z5U
C14040	1521-0000-008	CAP,0.1UF,50V,DIP,Z5U
C14042	1580-4792-305	CAP,4.7UF,35V
C14043	1580-4792-305	CAP,4.7UF,35V
C14044	1521-0000-008	CAP,0.1UF,50V,DIP,Z5U
CR14001	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR14002	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR14003	4920-5158-450	DIODE,80SQ045 ,RECT,PS,45V,8A
CR14004	4818-0000-017	DIODE,NS2002 ,RECT, 200V, 2A
CR14005	4901-5245-200	DIODE, 1N5245B ,ZENER, 15V,.5W

7010-8130-500 PCB ASSY, POWER SUPPLY (cont) E

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
CR14006	4901-5245-200	DIODE, 1N5245B ,ZENER, 15V,.5W
CR14007	4818-0000-017	DIODE,NS2002 ,RECT, 200V, 2A
CR14008	4920-5158-300	DIODE,80SQ035 ,RECT,PS,30V,8A
CR14009	4945-0150-050	DIODE,5KP5.0 ,TZORB, 5V,5KW
CR14010	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR14011	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR14012	4816-0000-001	DIODE,5082-2800,S BAR, 70VBR
CR14013	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR14014	4920-5158-450	DIODE,80SQ045 ,RECT,PS,45V,8A
CR14015	4920-5158-450	DIODE,80SQ045 ,RECT,PS,45V,8A
CR14016	4816-0000-001	DIODE,5082-2800,S BAR, 70VBR
CR14017	4822-0000-012	RECT, ULTRAFAST 100V 1AMP
CR14018	4822-0000-012	RECT, ULTRAFAST 100V 1AMP
F14001	5106-0000-040	FUSE 7AMP PICO II
L14001	1800-5354-900	IND,TOROID,30-T #20 MAGNET
L14003	1800-5354-900	IND,TOROID,30-T #20 MAGNET
L14005	1800-5354-900	IND,TOROID,30-T #20 MAGNET
L14006	1800-5354-900	IND,TOROID,30-T #20 MAGNET
L14007	1800-5354-900	IND,TOROID,30-T #20 MAGNET
L14008	1801-0102-001	IND, 1.0MH, I=28MA, 3.4 OHMS
P23047	2205-3510-103	CONN,D-SUB,M,15-P,PCM,R.A
Q14001	4801-0000-001	TRANSISTOR NPN HS SW
Q14002	4805-0000-001	TRANS,2N2907A,PNP HS SW (3251)
Q14004	4801-0000-001	TRANSISTOR NPN HS SW
Q14005	4807-0000-002	TRANS, 2N3905 ,PNP HS SW
Q14006	4805-0000-001	TRANS,2N2907A,PNP HS SW (3251)
Q14007	4801-0000-001	TRANSISTOR NPN HS SW
Q14008	4805-0000-001	TRANS,2N2907A,PNP HS SW (3251)
Q14011	4805-0000-001	TRANS,2N2907A,PNP HS SW (3251)
Q14012	4807-0000-002	TRANS, 2N3905 ,PNP HS SW
Q14013	4801-0000-002	TRANS, 2N2405 ,NPN AMP
Q14014	4801-0000-001	TRANSISTOR NPN HS SW
Q14015	4801-0000-001	TRANSISTOR NPN HS SW
Q14016	4801-0000-001	TRANSISTOR NPN HS SW
Q14017	4805-0000-001	TRANS,2N2907A,PNP HS SW (3251)
R14001	4709-0108-004	RES,0.1,5W,5%,WW
R14003	4701-0474-003	RES,470K,1/8W,5%
R14004	4701-0472-003	RES,4.7K,1/8W,5%
R14006	4701-0471-003	RES,470,1/8W,5%
R14007	4753-0203-002	POT 20K OHM
R14008	4701-0822-003	RES,8.2K,1/8W,5%
R14009	4701-0101-003	RES,100,1/8W,5%
R14010	4701-0103-003	RES,10K,1/8W,5%
R14011	4701-0270-003	RES,27,1/8W,5%
R14012	4701-0102-003	RES,1.0K,1/8W,5%
R14013	4701-0103-003	RES,10K,1/8W,5%
R14014	4701-0100-003	RES,10,1/8W,5%
R14015	4701-0390-003	RES,39,1/8W,5%
R14016	4701-0103-003	RES,10K,1/8W,5%
R14017	4701-0103-003	RES,10K,1/8W,5%
R14018	4701-0103-003	RES,10K,1/8W,5%
R14019	4701-0104-003	RES,100K,1/8W,5%
R14020	4701-0223-003	RES,22K,1/8W,5%
R14021	4701-0153-003	RES,15K,1/8W,5%
R14022	4701-0103-003	RES,10K,1/8W,5%

7010-8130-500 PCB ASSY, POWER SUPPLY (cont) E

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R14023	4701-0102-003	RES,1.0K,1/8W,5%
R14024	4701-0103-003	RES,10K,1/8W,5%
R14025	4701-0103-003	RES,10K,1/8W,5%
R14026	4701-0103-003	RES,10K,1/8W,5%
R14027	4701-0103-003	RES,10K,1/8W,5%
R14028	4701-0102-003	RES,1.0K,1/8W,5%
R14029	4701-0270-003	RES,27,1/8W,5%
R14030	4701-0103-003	RES,10K,1/8W,5%
R14031	4701-0100-003	RES,10,1/8W,5%
R14032	4701-0100-003	RES,10,1/8W,5%
R14033	4701-0221-003	RES,220,1/8W,5%
R14034	4701-0221-003	RES,220,1/8W,5%
R14044	4701-0102-003	RES,1.0K,1/8W,5%
R14046	4701-0102-003	RES,1.0K,1/8W,5%
R14047	4701-0331-003	RES,330,1/8W,5%
R14049	4701-0103-003	RES,10K,1/8W,5%
R14050	4701-0333-003	RES,33K,1/8W,5%
R14051	4701-0472-003	RES,4.7K,1/8W,5%
R14052	4701-0152-003	RES,1.5K,1/8W,5%
R14053	4701-0181-003	RES,180,1/8W,5%
R14054	4701-0103-003	RES,10K,1/8W,5%
R14055	4701-0391-003	RES,390,1/8W,5%
R14057	4701-0104-003	RES,100K,1/8W,5%
R14058	4701-0224-003	RES,220K,1/8W,5%
R14059	4701-0272-003	RES,2.7K,1/8W,5%
R14060	4701-0152-003	RES,1.5K,1/8W,5%
R14061	4753-0102-002	POT 1K OHM
R14062	4701-0103-003	RES,10K,1/8W,5%
R14063	4701-0820-003	RES,82,1/8W,5%
R14064	4701-0101-003	RES,100,1/8W,5%
R14065	4701-0182-003	RES,1.8K,1/8W,5%
R14066	4701-0223-003	RES,22K,1/8W,5%
R14067	4701-0103-003	RES,10K,1/8W,5%
R14068	4701-0221-003	RES,220,1/8W,5%
R14069	4701-0221-003	RES,220,1/8W,5%
R14070	4701-0103-003	RES,10K,1/8W,5%
R14071	4701-0103-003	RES,10K,1/8W,5%
R14072	4701-0471-003	RES,470,1/8W,5%
R14073	4702-0279-003	RES,2.7,1/4W,5%
R14074	4756-2510-400	POT 100K OHM
R14075	4701-0184-003	RES,180K,1/8W,5%
R14078	4701-0682-003	RES,6.8K,1/8W,5%
R14079	4701-0472-003	RES,4.7K,1/8W,5%
R14080	4701-0393-003	RES,39K,1/8W,5%
R14081	4702-0331-003	RES,330,1/4W,5%
R14082	4701-0102-003	RES,1.0K,1/8W,5%
RT14001	4800-0000-003	THERM,2KOHM,25/125=19.8,2H-202
T14001	5604-7401-100	TRANSFORMER MLS-801
T14002	5604-7401-100	TRANSFORMER MLS-801
TP14001	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP14002	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
U14001	3135-0000-002	IC, LIN PWM CONTROL CIRCUIT
U14002	3133-0000-004	IC,4027B,DUAL JK MS FLIP-FLOP
U14003	3135-0000-002	IC, LIN PWM CONTROL CIRCUIT
U14006	3224-0010-100	IC,LOW PWR LOW OFS V QUAD COMP

7010-8130-500 **PCB ASSY, POWER SUPPLY (cont)** **E**

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
U14008	3224-0010-100	IC,LOW PWR LOW OFS V QUAD COMP

7005-8144-200 ASSY, FRONT PANEL D

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	1050-0000-140	ADHESIVE,QUICK SET 404
	1050-0000-170	TAPE, VINYL FOAM 3/4" 2-SIDED
	1050-0000-288	PRIMER,ADHESIVE,LOCTITE N
	1050-0000-289	ADHESIVE,THREADLOC,LOCTITE271
	1050-0000-302	TAPE, SCOTCH VHB 1/4" WIDE
	1400-8156-900	BRACKET, SHIELD SUPPORT
	1405-8158-200	PANEL, FRONT
	1414-0000-200	COVER,METAL LEMO BRC.2S.200NDS
	1414-8150-200	COVER,POWER TERM
	2111-0001-001	CLIP, ADHESIVE, .25 BUNDLE
J10058	2123-0000-073	CONN,BLKHD JACK TNC FT MTG
J10054	2123-0000-074	CONN,BLKHD JACK BNC FT MTG
J10055	2123-0000-074	CONN,BLKHD JACK BNC FT MTG
J10056	2123-0000-074	CONN,BLKHD JACK BNC FT MTG
J10057	2123-0000-074	CONN,BLKHD JACK BNC FT MTG
J10053	2217-9011-700	CONN,LEMO RA2.310NYL
FL1	2220-1021-100	CONN, PWR, FLTR AC, MALE RCPT
	2288-0000-006	CHAIN,#6 MOUNTING EYELET
	2289-0001-005	CAP, TNC MALE W/CHAIN
	2289-0001-006	CAP, BNC, MALE W/CHAIN
	2289-0001-007	CAP,BNC M W/CHAIN 50 OHM TERM
	2400-7856-800	LABEL,ESD
	2403-8157-900	OVERLAY, ATC-601-2
	2508-8157-700	SHIELD, FOIL
	2508-8158-500	SHIELD, DISPLAY
	2800-0453-500	SPACER,.250 O.D,.125 I.D,.065L
	2800-8451-400	STANDOFF,HEX M-F.188*.40,4-40
	2801-0188-006	SCREW 2-56 X 3/16 PPHMS
	2803-0188-006	SCREW,4-40 X 3/16 PPHM
	2803-0313-006	SCREW,4-40 X 5/16 PPHM
	2803-0375-006	SCREW, 4-40 X 3/8 PPHM
	2803-0625-006	SCREW,4-40 X 5/8 PPHM
	2803-1125-006	SCREW 4-40 X 1 1/8 PBHMS
	2840-8158-000	WASHER,.312OD, .151ID, .078THK
	2840-8158-300	WASHER,.312OD, .151ID, .109THK
	2845-0000-018	FINGERSTOCK,BECU,WALL CLIP-ON
	2850-0000-002	NUT,HEX,SMALL PAT,6-32
	2850-0000-008	NUT,HEX,REG PAT,4-40
GL1	2850-0000-026	LUG,GND,6
	2850-7894-800	NUT, FUSE HOLDER
	3900-8157-100	LENS, 10OHM ITO, 7.375 X 3.375
RV12001	4800-0000-011	VARISTOR,SURGE PROTECTOR
XF1	5105-0000-100	FUSE HOLDER RF SHIELD 3AG
XF2	5105-0000-100	FUSE HOLDER RF SHIELD 3AG
F1	5106-4501-000	FUSE,1.0AMP,250V,FAST,1.25GL
F2	5106-4501-000	FUSE,1.0AMP,250V,FAST,1.25GL
	6004-6005-400	TY-RAP,4.0 LG
	6004-6005-550	TY-RAP,5.5 LG
	6004-7800-200	TY-RAP,#4 SCREW MOUNT,5.5L
W4	6008-5000-002	WIRE, CSA, 600V,18GA,BROWN
W3	6008-5009-007	WIRE, UL 600V 18GA, 75,BLUE
W5	6008-9009-056	WIRE,UL,600V,16GA,GRN/YEL
	6011-0042-000	TUBING,TF,18 AWG,NATURAL,SW
	6012-0166-100	TUBING,PVC-105, 6 AWG,CLEAR
	6020-0063-200	TUBING, HS 1/16ID BLACK UL

7005-8144-200 ASSY, FRONT PANEL (cont) D

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	6020-1000-200	TUBING,HS, 1 ID, BLK
	6020-1500-200	TUBING,HS,1 1/2ID,BLK
	6043-1150-250	COAX ASSY,CONF,S M SMA/S M SMA
	6043-1150-350	COAX ASSY CONFRML MSMA/MSMA
	6050-0040-350	COAX ASSY,FLEXIBLE,RG 316/U
	7005-8142-100	MECH ASSY, PWR TERMINATION
W17	7007-8181-500	WIRE HARN ASSY, DISP-FP PULSE
W6	7007-8181-700	WIRE HARN ASSY, FT PNL COMM
W2	7007-8580-100	WIRE HARN ASSY, LINE SUPPLY
	7010-8130-300	PCB ASSY,FT.PNL LED
	7010-8131-700	PCB ASSY, VIDEO DETECTOR
	7010-8138-400	PCB ASSY, LCD DISPLAY, MOD

7005-8142-900 ASSY, FRONT PANEL A

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	1050-0000-140	ADHESIVE,QUICK SET 404
	1050-0000-170	TAPE, VINYL FOAM 3/4" 2-SIDED
	1050-0000-288	PRIMER,ADHESIVE,LOCTITE N
	1050-0000-289	ADHESIVE,THREADLOC,LOCTITE271
	1050-0000-302	TAPE, SCOTCH VHB 1/4" WIDE
	1051-5000-500	TAPE, ALUMINUM 1/2"
	1400-3556-800	BRACKET,DISPLAY SUPPORT
	1405-8158-200	PANEL, FRONT
	1414-0000-200	COVER,METAL LEMO BRC.2S.200NDS
	1414-8150-200	COVER,POWER TERM
	2111-0001-001	CLIP, ADHESIVE, .25 BUNDLE
J10058	2123-0000-073	CONN,BLKHD JACK TNC FT MTG
J10054	2123-0000-074	CONN,BLKHD JACK BNC FT MTG
J10055	2123-0000-074	CONN,BLKHD JACK BNC FT MTG
J10056	2123-0000-074	CONN,BLKHD JACK BNC FT MTG
J10057	2123-0000-074	CONN,BLKHD JACK BNC FT MTG
J10053	2217-9011-700	CONN,LEMO RA2.310NYL
FL1	2220-1021-100	CONN, PWR, FLTR AC, MALE RCPT
	2288-0000-006	CHAIN,#6 MOUNTING EYELET
	2289-0001-005	CAP,TNC MALE W/CABLE
	2289-0001-006	CAP,BNC MALE W/CABLE
	2289-0001-007	CAP,BNC M W/CABLE 50 OHM TERM
	2403-8157-900	OVERLAY, ATC-601-2
	2508-3556-900	SHIELD,DISPLAY
	2508-8157-700	SHIELD, FOIL
	2801-0188-006	SCREW 2-56 X 3/16 PPHMS
	2803-0188-006	SCREW,4-40 X 3/16 PPHM
	2803-0313-006	SCREW,4-40 X 5/16 PPHM
	2803-0375-006	SCREW, 4-40 X 3/8 PPHM
	2803-0625-006	SCREW,4-40 X 5/8 PPHM
	2803-1125-006	SCREW 4-40 X 1 1/8 PBHMS
	2818-3356-900	STANDOFF,.188HEX,M/S,.25LG
	2840-0000-009	WASHER,FLAT,4,MS15795-803
	2850-0000-002	NUT,HEX,SMALL PAT,6-32
	2850-0000-008	NUT,HEX,REG PAT,4-40
	2850-0000-020	NUT,HEX,SMALL PAT,4-40
GL1	2850-0000-026	LUG,GND,6
	2850-7894-800	NUT, FUSE HOLDER
	3900-8157-100	LENS, 10OHM ITO, 7.375 X 3.375
RV12001	4800-0000-011	VARISTOR,SURGE PROTECTOR
XF1	5105-0000-100	FUSE HOLDER RF SHIELD 3AG
XF2	5105-0000-100	FUSE HOLDER RF SHIELD 3AG
F1	5106-4501-000	FUSE,1.0AMP,250V,FAST,1.25GL
F2	5106-4501-000	FUSE,1.0AMP,250V,FAST,1.25GL
	6004-6005-400	TY-RAP,4.0 LG
	6004-6005-550	TY-RAP,5.5 LG
	6004-7800-200	TY-RAP,#4 SCREW MOUNT,5.5L
W4	6008-5000-002	WIRE, CSA, 600V,18GA,BROWN
W3	6008-5009-007	WIRE, UL 600V 18GA, 75,BLUE
W5	6008-9009-056	WIRE,UL,600V,16GA,GRN/YEL
	6011-0042-000	TUBING,TF,18 AWG,NATURAL,SW
	6012-0166-100	TUBING,PVC-105, 6 AWG,CLEAR
	6020-0063-200	TUBING, HS 1/16ID BLACK UL
	6020-1000-200	TUBING,HS, 1 ID, BLK
	6020-1500-200	TUBING,HS,1 1/2ID,BLK

7005-8142-900 ASSY, FRONT PANEL (cont) A

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	6043-1150-250	COAX ASSY,CONF,S M SMA/S M SMA
	6043-1150-350	COAX ASSY CONFRML MSMA/MSMA
	6050-0040-350	COAX ASSY,FLEXIBLE,RG 316/U
	7005-8142-100	MECH ASSY, PWR TERMINATION
W6	7007-8181-700	WIRE HARN ASSY, FT PNL COMM
W2	7007-8580-100	WIRE HARN ASSY, LINE SUPPLY
A2	7010-3533-900	PCB ASSY,LCD DISPLAY,BACKLIGHT
	7010-8130-300	PCB ASSY,FT.PNL LED
	7010-8131-700	PCB ASSY, VIDEO DETECTOR

7005-8142-900 ASSY, FRONT PANEL B

Contains all parts shown in Revision A with the following exceptions:

(Remove Parts)

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	2289-0001-005	CAP,TNC MALE W/CABLE
	2289-0001-006	CAP,BNC MALE W/CABLE
	2289-0001-007	CAP,BNC M W/CABLE 50 OHM TERM
	2840-0000-009	WASHER,FLAT,4,MS15795-803

7010-8131-700 PCB ASSY, VIDEO DETECTOR E1

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	1700-8121-700	PC BD, VIDEO DETECTOR ATC-601
C30001	1622-0030-001T	CAP,3PF,50V,CHIP
C30002	1622-0100-001T	CAP,10PF,100V,CHIP
CR30001	4816-0000-005T	DIODE, HSMS-2800, SOT-23
CR30002	4816-0000-018T	DIODE, SOT -23 PIN
CR30003	4816-0000-018T	DIODE, SOT -23 PIN
J30043	2123-0000-054	CONN,RF SUB,SMA,PCB RTANG JACK
J30044	2200-2094-200	CONN,M SMB,PC MTG,RIGHT ANGLE
J30045	2115-0000-122	CONN,HDR SROW R.A.GOLD 3P .1"
J30061	2123-0000-054	CONN,RF SUB,SMA,PCB RTANG JACK
R30001	4722-1509-001T	RES,15,1/8W,1%
R30002	4722-2219-001T	RES,22.1,1/8W,1%
R30003	4722-2210-001T	RES,221,1/8W,1%
R30004	4722-1829-001T	RES,18.2,1/8W,1%
R30005	4722-3929-001T	RES,39.2,1/8W,1%
R30006	4722-5119-001T	RES,51.1,1/8W,1%
R30007	4722-5629-001T	RES,56.2,1/8W,1%
R30008	4722-3320-001T	RES,332,1/8W,1%
R30009	4722-1820-001T	RES,182,1/8W,1%
R30010	4722-3929-001T	RES,39.2,1/8W,1%
R30011	4722-6819-001T	RES,68.1,1/8W,1%
R30012	4722-5629-001T	RES,56.2,1/8W,1%
R30012SAT	4722-3329-001	RES,33.2,1/8W,1%
R30012SAT	4722-3659-001	RES,36.5,1/8W,1%
R30012SAT	4722-4649-001	RES,46.4,1/8W,1%
R30012SAT	4722-6499-001	RES,64.9,1/8W,1%
R30012SAT	4722-7509-001	RES,75,1/8W,1%
R30013	4722-1002-001T	RES,10.0K,1/8W,1%
R30014	4722-6819-001T	RES,68.1,1/8W,1%

7010-8130-300 PCB ASSY, FRONT PANEL LED C

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	1700-8120-300	PC BD, FT.PNL LED
	2800-8153-900	SPACER,LT.SENSOR 1/4" DELRIN
	6004-6005-400	TY-RAP,4.0 LG
CR13001	4950-0500-000	LED,RED,HLMP 3750
CR13002	4950-0500-000	LED,RED,HLMP 3750
CR13003	4818-0000-024	LED BICOLOR,T-1 3/4
R13001	4723-0000-100	PHOTO RES,NSL-5150,TO-18
R13002	4701-0331-003	RES,330,1/8W,5%
R13003	4701-0331-003	RES,330,1/8W,5%
W13001	7007-8182-400	WIRE HARNESS ASSY,F.P.LED

7005-8142-100 ASSY, POWER TERMINATION B3

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	1415-8151-300	ENCL,BLK,POWER TERMINATION
	1700-8122-100	PC BD, PWR TERMINATION
J28	2105-7610-100	CONN 2502-1201 AMERICON MOD
J29	2105-7610-100	CONN 2502-1201 AMERICON MOD
	2801-0156-006	SCREW,2-56 X 5/32 PPHM
	2803-0250-002	SCREW,4-40X1/4,SHCSSS
	2803-0250-006	SCREW,4-40 X 1/4 PPHM
R1	4721-0510-003	RES,51,1/4W,5%,CHIP
R2	5650-8100-100	TERMINATION, FLG MNT

7010-8138-400 PCB ASSY, MODIFIED LCD DISPLAY C

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	1050-0000-093	TAPE, KAPTON, 3/8
	2800-0000-039	SPCR,NYL.125OD,.047ID,.040LG
	2831-0003-000	GROMMET,RBR BIK,.25 ID .56 OD
	3107-8157-800	INSULATOR, DISPLAY
	3107-8158-400	INSULATOR, DISPLAY #2
	6004-6005-400	TY-RAP,4.0 LG
A1	7110-8138-400	LCD DISPLAY, PURCHASED
A2	1700-8128-400	PC BD, LCD ADAPTOR
J1	2115-0200-020	CONN,S.ROW,.120" RA HDR 20-P
W1	7007-8181-600	WIRE HARN ASSY, BACKLIGHT

7010-3533-900 PCB ASSY, LCD DISPLAY BACKLIGHT A

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	2400-7856-800	LABEL,ESD
	6004-6005-400	TY-RAP,4.0 LG
W2	7007-3582-200	RBN CABLE ASSY,DISP-FP PULSE
W1	7007-8181-600	WIRE HARN ASSY, BACKLIGHT
A1	7110-3500-300	PURCHASED ASSY,LCD DISPLAY

7005-8144-100 ASSY, RF B

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	1414-8153-100	COVER, ANALOG IF
	1414-8550-700	COVER, DETECTOR
	2400-7856-800	LABEL,ESD
	2803-0250-006	SCREW,4-40 X 1/4 PPHM
	2803-1000-006	SCREW 4-40 X 1 PBHMS
	2803-1750-006	SCREW, 4-40 X 1.75 PPHM
	6004-6005-400	TY-RAP,4.0 LG
	6050-0040-870	COAX ASSY,316,R F SMB/R F SMB
	6050-0041-130	COAX ASSY,316,R F SMB/R F SMB
	6050-0560-400	COAX ASSY,316,RM SMA/RF SMB
	7005-8140-200	MECH ASSY, SSB, ATC-601
	7005-8141-000	MECH ASSY, DETECTOR
	7005-8141-100	MECH ASSY, ANALOG IF
	7010-8132-200	PCB ASSY, DRIVER

7010-8132-200 PCB ASSY, DRIVER C

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	1700-8122-200	PC BD, DRIVER
	2400-7856-800	LABEL,ESD
	6011-0027-001	TUBING,TF,22 AWG,NATURAL,TW
C20001	1506-0470-017	CAP,47PF,100V,NPO
C20002	1506-0470-017	CAP,47PF,100V,NPO
C20003	1506-0470-017	CAP,47PF,100V,NPO
C20006	1506-0680-017	CAP,68PF,100V,5%,NPO
C20007	1507-0105-018	CAP,1UF,35V,20%,TANT
C20008	1521-0000-008	CAP,0.1UF,50V,DIP,Z5U
C20009	1508-0157-020	CAP,150UF,15V,TANT,RDL
C20012	1521-0000-008	CAP,0.1UF,50V,DIP,Z5U
C20013	1521-0000-008	CAP,0.1UF,50V,DIP,Z5U
C20014	1605-3360-475	CAP,30UF,16V,TANT,RDL
C20015	1508-0476-018	CAP,47UF,35V,TANT,RDL
C20016	1580-1000-200	CAP,10UF,25V,ELE,RDL
C20017	1506-0101-017	CAP,100PF,100V,5%,NPO
J17021	2129-1001-016	CONN,RBN CA 16-P .1X.1GRD HDR
J17022	2115-0002-003	CONN,HEADER,LCK GOLD
J17023	2200-2010-400	CONN,M SMB,PC MTG,STR,.453LG
J17024	2200-2010-400	CONN,M SMB,PC MTG,STR,.453LG
J17027	2115-2000-003	CONN,HDR LKING AG 3-P
J20025	2115-0005-012	CONN,LKING HEADER 12-P GOLD
J20026	2115-0005-012	CONN,LKING HEADER 12-P GOLD
J20062	2115-0005-004	CONN,LKING HEADER 4-P GOLD
Q20001	4809-0000-030	TRANS, LM394 NPN
Q20002	4809-0000-030	TRANS, LM394 NPN
Q20003	4807-0000-001	TRANS, 2N3903 ,NPN HS SW
Q20005	4807-0000-001	TRANS, 2N3903 ,NPN HS SW
R20001	4702-0472-003	RES,4.7K,1/4W,5%
R20002	4701-0824-003	RES,820K,1/8W,5%
R20003	4701-0103-003	RES,10K,1/8W,5%
R20004	4701-0104-003	RES,100K,1/8W,5%
R20005	4701-0473-003	RES,47K,1/8W,5%
R20006	4701-0392-003	RES,3.9K,1/8W,5%
R20007	4706-1000-001	RES,100,1/4W,1%
R20008	4701-0222-003	RES,2.2K,1/8W,5%
R20009	4753-0503-002	POT 50K OHM
R20010	4753-0204-002	POT 200K OHM
R20011	4701-0222-003	RES,2.2K,1/8W,5%
R20012	4701-0223-003	RES,22K,1/8W,5%
R20013	4701-0222-003	RES,2.2K,1/8W,5%
R20014	4702-0222-003	RES,2.2K,1/4W,5%
R20015	4706-1000-001	RES,100,1/4W,1%
R20016	4753-0502-002	POT 5K OHM
R20017	4701-0103-003	RES,10K,1/8W,5%
R20018	4701-0222-003	RES,2.2K,1/8W,5%
R20019	4753-0503-002	POT 50K OHM
R20020	4756-2510-400	POT 100K OHM
R20021	4701-0471-003	RES,470,1/8W,5%
R20024	4702-0470-003	RES,47,1/4W,5%
R20025	4702-0470-003	RES,47,1/4W,5%
R20026	4702-0121-003	RES,120,1/4W,5%
R20027	4702-0121-003	RES,120,1/4W,5%
R20029	4756-3110-300	POT, 10K OHM, 3339W-1-103
R20030	4702-0273-003	RES,27K,1/4W,5%

7010-8132-200 PCB ASSY, DRIVER (cont) C

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R20032	4753-0503-002	POT 50K OHM
R20033	4701-0184-003	RES,180K,1/8W,5%
R20034	4701-0474-003	RES,470K,1/8W,5%
R20035	4706-2802-001	RES,28.0K,1/4W,1%
R20036	4706-2003-001	RES,200K,1/4W,1%
R20040	4701-0822-003	RES,8.2K,1/8W,5%
R20041	4701-0103-003	RES,10K,1/8W,5%
R20042	4701-0103-003	RES,10K,1/8W,5%
R20043	4701-0103-003	RES,10K,1/8W,5%
R20044	4701-0103-003	RES,10K,1/8W,5%
R20046	4701-0272-003	RES,2.7K,1/8W,5%
R20047	4701-0183-003	RES,18K,1/8W,5%
R20048	4706-2051-001	RES,2.05K,1/4W,1%
R20049	4706-2611-001	RES,2.61K,1/4W,1%
R20050	4701-0100-003	RES,10,1/8W,5%
R20051	4701-0152-003	RES,1.5K,1/8W,5%
R20052	4701-0273-003	RES,27K,1/8W,5%
R20053	4701-0100-003	RES,10,1/8W,5%
R20054	4752-0503-002	POT 50K OHM
R20055	4701-0184-003	RES,180K,1/8W,5%
R20056	4702-0471-003	RES,470,1/4W,5%
RT20002	4800-0000-003	THERM,2KOHM,25/125=19.8,2H-202
TP20001	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
U20001	3135-0000-080	IC,JFET-INPUT OP AMP
U20002	3135-0000-080	IC,JFET-INPUT OP AMP
U20003	3135-0000-080	IC,JFET-INPUT OP AMP
U20005	3132-0300-001	IC,QUAD 2-INPUT NAND GATE
U20006	3132-0300-001	IC,QUAD 2-INPUT NAND GATE
U20007	3133-0000-024	IC,3130,BIMOS OP AMP,PLAST DIP
U20008	3224-0009-000	IC,2931,ADJ 3V-24V REGULATOR
W20001	1050-0000-073	WIRE,BUS,TINNED COPPER,22GA

7005-8141-000 ASSY, DETECTOR C

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	1415-8553-000	ENCLOSURE, DETECTOR
J17030	2123-0000-038	CONN,M SMB,W/TERM,STR BULKHD
J17031	2123-0000-038	CONN,M SMB,W/TERM,STR BULKHD
J32032	2123-0000-038	CONN,M SMB,W/TERM,STR BULKHD
	2803-0188-006	SCREW,4-40 X 3/16 PPHM
	2809-0188-006	SCREW,10-32X3/16 PPHMS
	2840-7600-229	WASHER,ALUM,.305D,.196ID,.038T
GL32003	2850-0000-100	LUG,GND,#8 RT.ANG NON-LOCKING
FL32012	5801-0000-006	PI FILTER,EMI/RFI 1500PF 8-32
FL32013	5801-0000-006	PI FILTER,EMI/RFI 1500PF 8-32
FL32014	5801-0000-006	PI FILTER,EMI/RFI 1500PF 8-32
	6004-6005-400	TY-RAP,4.0 LG
W1	7007-8182-200	WH ASSY, DETECTOR-DRIVER
	7010-8531-000	PCB ASSY, DETECTOR

7010-8531-000 PCB ASSY, DETECTOR C3

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	2400-7856-800	LABEL,ESD
	6011-0022-001	TUBING,TF,24 AWG,NATURAL,TW
C21001	1622-0331-001	CAP,330PF,50V,CHIP
C21002	1622-0104-001	CAP,0.1UF,50V,CHIP,X7R
C21003	1618-0105-016	CAP,1UF,16V,TANT,SMD
C21004	1622-0331-001	CAP,330PF,50V,CHIP
C21005	1622-0104-001	CAP,0.1UF,50V,CHIP,X7R
C21006	1622-0331-001	CAP,330PF,50V,CHIP
C21007	1618-0105-016	CAP,1UF,16V,TANT,SMD
C21008	1622-0104-001	CAP,0.1UF,50V,CHIP,X7R
C21009	1618-0105-016	CAP,1UF,16V,TANT,SMD
C21010	1622-0104-001	CAP,0.1UF,50V,CHIP,X7R
C21011	1618-0224-016	CAP,0.22UF,16V,TANT,SMD
C21012	1622-0104-001	CAP,0.1UF,50V,CHIP,X7R
C21013	1622-0104-001	CAP,0.1UF,50V,CHIP,X7R
C21014	1618-0105-016	CAP,1UF,16V,TANT,SMD
C21015	1622-0150-001	CAP,15PF,100V
C21016	1618-0105-016	CAP,1UF,16V,TANT,SMD
C21017	1622-0104-001	CAP,0.1UF,50V,CHIP,X7R
C21018	1622-0680-001	CAP,68PF,100V,CHIP
C21019	1622-0391-001	CAP,390PF,100V,CHIP
C21020	1622-0330-001	CAP,33PF,100V,CHIP
C21021	1622-0821-001	CAP,820PF,50V,CHIP
C21022	1622-0680-001	CAP,68PF,100V,CHIP
C21023	1622-0104-001	CAP,0.1UF,50V,CHIP,X7R
C21024	1622-0121-001	CAP,120PF,100V,CHIP,NPO
C21025	1622-0391-001	CAP,390PF,100V,CHIP
C21026	1622-0390-001	CAP,39PF,100V,CHIP
C21027	1622-0561-001	CAP,560PF,100V,CHIP
C21028	1622-0102-001	CAP,1000PF,50V,CHIP,NPO
C21029	1622-0104-001	CAP,0.1UF,50V,CHIP,X7R
C21030	1622-0104-001	CAP,0.1UF,50V,CHIP,X7R
C21031	1622-0104-001	CAP,0.1UF,50V,CHIP,X7R
C21032	1622-0150-001	CAP,15PF,100V
C21033	1622-0104-001	CAP,0.1UF,50V,CHIP,X7R
C21034	1622-0103-001	CAP,0.01UF,50V,CHIP,X7R
C21035	1622-0560-001	CAP,56PF,50V,CHIP
C21036	1622-0104-001	CAP,0.1UF,50V,CHIP,X7R
C21037	1622-0104-001	CAP,0.1UF,50V,CHIP,X7R
C21038	1622-0104-001	CAP,0.1UF,50V,CHIP,X7R
C21039	1622-0104-001	CAP,0.1UF,50V,CHIP,X7R
C21040	1622-0104-001	CAP,0.1UF,50V,CHIP,X7R
C21041	1622-0101-001	CAP,100PF,50V,CHIP
C21042	1622-0104-001	CAP,0.1UF,50V,CHIP,X7R
CR21001	4816-0000-008	DIODE,SCHOTTKY GEN PURPOSE
CR21002	4816-0000-008	DIODE,SCHOTTKY GEN PURPOSE
CR21003	4816-0000-008	DIODE,SCHOTTKY GEN PURPOSE
CR21004	4816-0000-019	DIODE,SCHOTTKY BARRIER
CR21005	4816-0000-005	DIODE,HSMS-2800,SOT-23
CR21006	4816-0000-005	DIODE,HSMS-2800,SOT-23
L21001	1811-6103-101	IND,SM,10UH 10% F 1008
L21002	1811-6103-101	IND,SM,10UH 10% F 1008
L21003	1811-6562-101	IND,SM,5.6UH 10% F 1008
L21004	1811-6562-101	IND,SM,5.6UH 10% F 1008
L21005	1811-6562-101	IND,SM,5.6UH 10% F 1008

7010-8531-000 PCB ASSY, DETECTOR (cont) C3

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
L21006	1811-6561-001	IND,SM,.56UH 10% C 1008
L21007	1811-6122-001	IND,SM,1.2UH 10% C 1008
L21008	1811-6681-001	IND,SM,.68UH 10% C 1008
L21009	1811-6122-001	IND,SM,1.2UH 10% C 1008
L21010	1811-6222-001	IND,SM,2.2UH 10% C 1008
Q21001	4809-0000-014	TRANS,MMBTH10,VHF/UHF NPN
Q21002	4809-0000-014	TRANS,MMBTH10,VHF/UHF NPN
Q21003	4809-0000-014	TRANS,MMBTH10,VHF/UHF NPN
Q21004	4809-0000-023	TRANS NPN RF AMPLR SOT-23
Q21005	4809-0000-021	TRANS,3904,NPN,SMD
Q21006	4809-0000-021	TRANS,3904,NPN,SMD
Q21007	4809-0000-023	TRANS NPN RF AMPLR SOT-23
Q21008	4809-0000-021	TRANS,3904,NPN SMD
Q21009	4809-0000-021	TRANS,3904,NPN SMD
R21001	4722-1000-001	RES,100,1/8W,1%
R21002	4722-1502-001	RES,15.0K,1/8W,1%
R21003	4722-8251-001	RES,8.25K,1/8W,1%
R21004	4722-4750-001	RES,475,1/8W,1%
R21005	4722-3920-001	RES,392,1/8W,1%
R21006	4722-1502-001	RES,15.0K,1/8W,1%
R21007	4722-4751-001	RES,4.75K,1/8W,1%
R21008	4722-1000-001	RES,100,1/8W,1%
R21009	4722-1502-001	RES,15.0K,1/8W,1%
R21010	4722-8251-001	RES,8.25K,1/8W,1%
R21011	4722-4750-001	RES,475,1/8W,1%
R21012	4722-3920-001	RES,392,1/8W,1%
R21013	4722-1502-001	RES,15.0K,1/8W,1%
R21014	4722-4751-001	RES,4.75K,1/8W,1%
R21015	4722-1000-001	RES,100,1/8W,1%
R21016	4722-1502-001	RES,15.0K,1/8W,1%
R21017	4722-8251-001	RES,8.25K,1/8W,1%
R21018	4722-1821-001	RES,1.82K,1/8W,1%
R21019	4722-3920-001	RES,392,1/8W,1%
R21020	4722-4751-001	RES,4.75K,1/8W,1%
R21021	4722-1502-001	RES,15.0K,1/8W,1%
R21022	4722-2211-001	RES,2.21K,1/8W,1%
R21023	4722-2211-001	RES,2.21K,1/8W,1%
R21024	4722-4759-001	RES,47.5,1/8W,1%
R21025	4722-3650-001	RES,365,1/8W,1%
R21026	4722-3920-001	RES,392,1/8W,1%
R21027	4722-5629-001	RES,56.2,1/8W,1%
R21028	4722-3329-001	RES,33.2,1/8W,1%
R21029	4722-3650-001	RES,365,1/8W,1%
R21030	4722-1503-001	RES,150K,1/8W,1%
R21031	4722-1002-001	RES,10.0K,1/8W,1%
R21032	4722-3921-001	RES,3.92K,1/8W,1%
R21033	4722-3321-001	RES,3.32K,1/8W,1%
R21034	4722-3320-001	RES,332,1/8W,1%
R21035	4722-1500-001	RES,150,1/8W,1%
R21036	4722-4759-001	RES,47.5,1/8W,1%
R21037	4722-3320-001	RES,332,1/8W,1%
R21038	4722-4649-001	RES,46.4,1/8W,1%
R21039	4722-4320-001	RES,432,1/8W,1%
R21040	4722-1500-001	RES,150,1/8W,1%
R21041	4722-4759-001	RES,47.5,1/8W,1%

7010-8531-000 PCB ASSY, DETECTOR (cont) C3

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R21042	4722-2740-001	RES,274,1/8W,1%
R21043	4722-1500-001	RES,150,1/8W,1%
R21044	4722-4649-001	RES,46.4,1/8W,1%
R21045	4722-2210-001	RES,221,1/8W,1%
R21046	4722-6811-001	RES,6.81K,1/8W,1%
R21047	4722-1002-001	RES,10.0K,1/8W,1%
R21048	4749-0503-005	POT,SMD,50K OHM
R21049	4722-2211-001	RES,2.21K,1/8W,1%
R21050	4722-2210-001	RES,221,1/8W,1%
R21051	4722-1000-001	RES,100,1/8W,1%
R21052	4722-2211-001	RES,2.21K,1/8W,1%
R21053	4722-2210-001	RES,221,1/8W,1%
R21054	4722-1001-001	RES,1.0K,1/8W,1%
R21055	4722-2210-001	RES,221,1/8W,1%
R21056	4722-3929-001	RES,39.2,1/8W,1%
R21057	4722-3929-001	RES,39.2,1/8W,1%
R21058	4749-0103-005	POT,SMD,10K OHM
R21059	4722-2210-001	RES,221,1/8W,1%
R21060	4722-3653-001	RES,365K,1/8W,1%
R21061	4722-1403-001	RES,140K,1/8W,1%
R21062	4722-6811-001	RES,6.81K,1/8W,1%
R21063	4722-1651-001	RES,1.65K,1/8W,1%
R21064	4722-8250-001	RES,825,1/8W,1%
R21065	4722-1002-001	RES,10.0K,1/8W,1%
RT21001	4800-0000-003	THERM,2KOHM,25/125=19.8,2H-202
T21001	5604-8100-001	TRANSFORMER,4:1RF .2-350MHZ
U21001	3223-0219-000	IC,HI SPEED DUAL CONP.,INDL
U21002	3210-7474-000	IC,DUAL D-TYPE FLIP-FLOP
U21003	3210-7400-000	IC,QUAD 2-INPUT NAND GATE
U21004	3223-0219-000	IC,HI SPEED DUAL CONP.,INDL

7005-8141-100 ASSY, ANALOG IF F

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	1415-8150-600	ENCLOSURE, ANALOG IF
FL19002	1526-0000-006	CAP,100PF,200V,FEEDTHRU
FL19003	1526-0000-006	CAP,100PF,200V,FEEDTHRU
FL19004	1526-0000-006	CAP,100PF,200V,FEEDTHRU
J17034	2123-0000-038	CONN,M SMB,W/TERM,STR BULKHD
J17035	2123-0000-038	CONN,M SMB,W/TERM,STR BULKHD
J19033	2123-0000-038	CONN,M SMB,W/TERM,STR BULKHD
J19036	2123-0000-038	CONN,M SMB,W/TERM,STR BULKHD
J19060	2123-0000-038	CONN,M SMB,W/TERM,STR BULKHD
	2803-0188-006	SCREW,4-40 X 3/16 PPHM
	2840-7600-229	WASHER,ALUM,.305D,.196ID,.038T
	2850-0000-100	LUG,GND,#8 RT.ANG NON-LOCKING
GL19001	2850-0000-100	LUG,GND,#8 RT.ANG NON-LOCKING
FL19001	5801-0000-006	PI FILTER,EMI/RFI 1500PF 8-32
FL19005	5801-0000-006	PI FILTER,EMI/RFI 1500PF 8-32
FL19006	5801-0000-006	PI FILTER,EMI/RFI 1500PF 8-32
FL19007	5801-0000-006	PI FILTER,EMI/RFI 1500PF 8-32
FL19008	5801-0000-006	PI FILTER,EMI/RFI 1500PF 8-32
FL19010	5801-0000-006	PI FILTER,EMI/RFI 1500PF 8-32
FL19011	5801-0000-006	PI FILTER,EMI/RFI 1500PF 8-32
	6004-6005-400	TY-RAP,4.0 LG
W19002	6008-3000-003	WIRE,UL1213,22GA,7X30,RED
	6010-0188-100	TUBING,HS, 3/16 ID,CLEAR
W19001	7007-8182-300	WIRE HARN ASSY,ANALOG IF
	7010-8131-100	PCB ASSY, ANALOG IF

7010-8131-100 PCB ASSY, ANALOG IF F

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	1050-0000-075	WIRE,BUS,TINNED COPPER,26GA
	1700-8121-100	PC BD ANALOG IF
	2400-7856-800	LABEL,ESD
	4835-0000-012	PAD,MTG,TO-5 TRANS, 511-038
C22001	1506-0103-017	CAP,0.01UF,100V,NPO
C22002	1506-0330-017	CAP,33PF,100V,5%,NPO
C22003	1506-0270-017	CAP,27PF,100V,5%,NPO
C22004	1550-0006-500	CAP VAR,18415,NPO,S.ADJ
C22005	1506-0102-017	CAP,1000PF,100V,5%,NPO
C22006	1506-0151-017	CAP,150PF,100V,5%,NPO
C22007	1506-0151-017	CAP,150PF,100V,5%,NPO
C22008	1506-0101-017	CAP,100PF,100V,5%,NPO
C22009	1506-0103-017	CAP,0.01UF,100V,NPO
C22010	1506-0103-017	CAP,0.01UF,100V,NPO
C22011	1506-0101-017	CAP,100PF,100V,5%,NPO
C22012	1506-0101-017	CAP,100PF,100V,5%,NPO
C22013	1506-0102-017	CAP,1000PF,100V,5%,NPO
C22014	1506-0102-017	CAP,1000PF,100V,5%,NPO
C22015	1506-0103-017	CAP,0.01UF,100V,NPO
C22016	1506-0331-017	CAP,330PF,100V,5%,NPO
C22017	1506-0102-017	CAP,1000PF,100V,5%,NPO
C22018	1506-0681-017	CAP,680PF,100V,5%,NPO
C22019	1506-0681-017	CAP,680PF,100V,5%,NPO
C22020	1521-0000-008	CAP,0.1UF,50V,DIP,Z5U
C22021	1506-0102-017	CAP,1000PF,100V,5%,NPO
C22022	1506-0680-017	CAP,68PF,100V,5%,NPO
C22023	1506-0020-017	CAP,2.2PF,100V,NPO,25
C22024	1506-0680-017	CAP,68PF,100V,5%,NPO
C22025	1506-0680-017	CAP,68PF,100V,5%,NPO
C22026	1506-0220-017	CAP,22PF,100V,5%,NPO
C22027	1506-0102-017	CAP,1000PF,100V,5%,NPO
C22028	1506-0103-017	CAP,0.01UF,100V,NPO
C22029	1506-0102-017	CAP,1000PF,100V,5%,NPO
C22030	1506-0102-017	CAP,1000PF,100V,5%,NPO
C22031	1506-0102-017	CAP,1000PF,100V,5%,NPO
C22032	1506-0103-017	CAP,0.01UF,100V,NPO
C22033	1506-0102-017	CAP,1000PF,100V,5%,NPO
C22034	1521-0000-008	CAP,0.1UF,50V,DIP,Z5U
C22035	1506-0102-017	CAP,1000PF,100V,5%,NPO
C22036	1506-0181-017	CAP,180PF,100V,5%,NPO
C22037	1506-0101-017	CAP,100PF,100V,5%,NPO
C22038	1506-0181-017	CAP,180PF,100V,5%,NPO
C22039	1506-0331-017	CAP,330PF,100V,5%,NPO
C22040	1506-0181-017	CAP,180PF,100V,5%,NPO
C22041	1506-0101-017	CAP,100PF,100V,5%,NPO
C22042	1506-0181-017	CAP,180PF,100V,5%,NPO
C22043	1506-0101-017	CAP,100PF,100V,5%,NPO
C22044	1506-0103-017	CAP,0.01UF,100V,NPO
C22045	1506-0101-017	CAP,100PF,100V,5%,NPO
C22046	1506-0102-017	CAP,1000PF,100V,5%,NPO
C22047	1506-0103-017	CAP,0.01UF,100V,NPO
C22048	1506-0390-017	CAP,39PF,100V,5%,NPO
C22049	1506-0102-017	CAP,1000PF,100V,5%,NPO
C22050	1506-0101-017	CAP,100PF,100V,5%,NPO
C22051	1506-0103-017	CAP,0.01UF,100V,NPO

7010-8131-100 PCB ASSY, ANALOG IF (cont) F

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
C22052	1506-0390-017	CAP,39PF,100V,5%,NPO
C22053	1506-0101-017	CAP,100PF,100V,5%,NPO
C22055	1550-0006-500	CAP VAR,18415,NPO,S.ADJ
C22056	1506-0102-017	CAP,1000PF,100V,5%,NPO
C22057	1506-0103-017	CAP,0.01UF,100V,NPO
C22058	1506-0103-017	CAP,0.01UF,100V,NPO
C22059	1506-0102-017	CAP,1000PF,100V,5%,NPO
C22060	1506-0181-017	CAP,180PF,100V,5%,NPO
C22061	1506-0101-017	CAP,100PF,100V,5%,NPO
C22062	1506-0181-017	CAP,180PF,100V,5%,NPO
C22063	1506-0331-017	CAP,330PF,100V,5%,NPO
C22064	1506-0181-017	CAP,180PF,100V,5%,NPO
C22065	1506-0101-017	CAP,100PF,100V,5%,NPO
C22066	1506-0181-017	CAP,180PF,100V,5%,NPO
C22067	1506-0102-017	CAP,1000PF,100V,5%,NPO
C22068	1521-0000-008	CAP,0.1UF,50V,DIP,Z5U
C22069	1506-0102-017	CAP,1000PF,100V,5%,NPO
C22070	1506-0102-017	CAP,1000PF,100V,5%,NPO
C22071	1506-0103-017	CAP,0.01UF,100V,NPO
C22072	1506-0102-017	CAP,1000PF,100V,5%,NPO
C22073	1506-0103-017	CAP,0.01UF,100V,NPO
C22074	1506-0102-017	CAP,1000PF,100V,5%,NPO
C22076	1506-0102-017	CAP,1000PF,100V,5%,NPO
C22077	1506-0103-017	CAP,0.01UF,100V,NPO
C22079	1507-0105-018	CAP,1UF,35V,20%,TANT
C22080SAT	1523-0000-014	CAP,3PF,50V,NPO,CHIP
C22080SAT	1620-1090-511	CAP,1PF,50V,CHIP
C22080SAT	1620-2090-510	CAP,2PF,200V,CHIP,NPO
C22080SAT	1620-4090-510	CAP,3.9PF,50V,CHIP,NPO
C22080SAT	1620-5090-511	CAP,5PF,50V,CHIP
C22081	1521-0000-008	CAP,0.1UF,50V,DIP,Z5U
C22082SAT	1622-0220-001	CAP,22PF,100V,5%,1206,NPO
C22083SAT	1523-0000-014	CAP,3PF,50V,NPO,CHIP
C22083SAT	1620-1090-511	CAP,1PF,50V,CHIP
C22083SAT	1620-2090-510	CAP,2PF,200V,CHIP,NPO
C22083SAT	1620-4090-510	CAP,3.9PF,50V,CHIP,NPO
C22083SAT	1620-5090-511	CAP,5PF,50V,CHIP
CR22001	3223-0006-000	IC,PRECISION TEMP SENSOR
CR22002	4826-0000-015	DIODE,VARAC 25PF/-3V AXIAL
CR22003	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR22004	4816-0000-001	DIODE,5082-2800,S BAR, 70VBR
CR22005	4816-0000-001	DIODE,5082-2800,S BAR, 70VBR
CR22006	4816-0000-003	DIODE,5082-2835,S-BAR 8 VBR
CR22007	4816-0000-003	DIODE,5082-2835,S-BAR 8 VBR
CR22008	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR22009	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR22010	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR22011	4815-0000-003	DIODE, 1N4148 ,SIGNAL, 75PRV
CR22012	4816-0000-003	DIODE,5082-2835,S-BAR 8 VBR
CR22013	4816-0000-003	DIODE,5082-2835,S-BAR 8 VBR
L22001	1801-0479-001	IND, 4.7 UH,1.2OHM
L22002	1801-0828-001	IND,.82UH.85OHM,1025-18
L22003	1808-8100-001	IND, .10UH VAR, TOKO INDL
L22004	1801-0229-001	IND,2.2 UH,.4 OHM,1025-28
L22005	1808-8100-001	IND, .10UH VAR, TOKO INDL

7010-8131-100 PCB ASSY, ANALOG IF (cont) F

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
L22006	1801-0478-001	IND,.47UH,.35OHM,1025-12
L22007	1808-8100-001	IND, .10UH VAR, TOKO INDL
L22008	1801-0228-001	IND,.22UH,.14OHM,1025-04
L22009	1801-0010-001	IND, 10 UH,3.7OHM,1025-44
L22010	1801-0128-003	IND,.12UH,.09OHM,1025-96
L22011	1801-0398-001	IND, .39 UH .30 OHM,1025-10
L22012	1801-0338-001	IND,.33UH,.2 OHM,1025-08
L22013	1801-0108-001	IND,.10UH,.08OHM,1025-94
L22015	1801-0229-001	IND,2.2 UH,.4 OHM,1025-28
L22018	1801-0010-001	IND, 10 UH,3.7OHM,1025-44
L22019	1801-0101-001	IND, 100 UH, 8 OHM,1025-68
L22020	1801-0828-001	IND,.82UH.85OHM,1025-18
L22021	1801-0010-001	IND, 10 UH,3.7OHM,1025-44
L22022	1801-0101-001	IND, 100 UH, 8 OHM,1025-68
L22023	1801-0828-001	IND,.82UH.85OHM,1025-18
L22024	1801-0010-001	IND, 10 UH,3.7OHM,1025-44
L22025	1801-0010-001	IND, 10 UH,3.7OHM,1025-44
L22026	1801-0568-100	IND,.56UH,.5 OHM,1025-14
L22028	1801-0568-100	IND,.56UH,.5 OHM,1025-14
L22029	1801-0108-001	IND,.10UH,.08OHM,1025-94
L22030	1801-0338-001	IND,.33UH,.2 OHM,1025-08
L22031	1801-0398-001	IND, .39 UH .30 OHM,1025-10
L22032	1801-0128-003	IND,.12UH,.09OHM,1025-96
L22033	1801-0479-001	IND, 4.7 UH,1.2OHM
L22034	1801-0688-001	IND,.68UH,.6 OHM,1025-16
MXR22001	5250-0100-100	MIXER,RF,DBL BAL, 1-500MHZ
Q22001	4809-0100-100	TRANS,55100
Q22002	4807-0000-001	TRANS, 2N3903 ,NPN HS SW
Q22003	4807-0000-001	TRANS, 2N3903 ,NPN HS SW
Q22004	4809-0100-100	TRANS,55100
Q22005	4809-0100-100	TRANS,55100
Q22006	4803-0000-003	TRANS, 2N5109 ,NPN PWR HF AMP
Q22007	4803-0000-003	TRANS, 2N5109 ,NPN PWR HF AMP
Q22008	4809-0100-100	TRANS,55100
Q22009	4803-0000-003	TRANS, 2N5109 ,NPN PWR HF AMP
Q22010	4803-0000-003	TRANS, 2N5109 ,NPN PWR HF AMP
Q22011	4809-0100-100	TRANS,55100
Q22012	4809-0100-100	TRANS,55100
Q22013	4809-0100-100	TRANS,55100
Q22014	4809-0100-100	TRANS,55100
R22001	4752-2103-002	POT,10K OHM S.ADJ MULTI-TURN
R22002	4701-0103-003	RES,10K,1/8W,5%
R22003	4701-0154-003	RES,150K,1/8W,5%
R22004	4701-0822-003	RES,8.2K,1/8W,5%
R22005	4701-0152-003	RES,1.5K,1/8W,5%
R22006	4701-0180-003	RES,18,1/8W,5%
R22007	4701-0122-003	RES,1.2K,1/8W,5%
R22008	4701-0153-003	RES,15K,1/8W,5%
R22009	4701-0822-003	RES,8.2K,1/8W,5%
R22010	4701-0151-003	RES,150,1/8W,5%
R22011	4701-0152-003	RES,1.5K,1/8W,5%
R22012	4701-0561-003	RES,560,1/8W,5%
R22013	4701-0332-003	RES,3.3K,1/8W,5%
R22014	4701-0332-003	RES,3.3K,1/8W,5%

7010-8131-100 PCB ASSY, ANALOG IF (cont) F

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R22015	4701-0101-003	RES,100,1/8W,5%
R22016	4701-0101-003	RES,100,1/8W,5%
R22017	4701-0471-003	RES,470,1/8W,5%
R22018	4701-0102-003	RES,1.0K,1/8W,5%
R22019	4701-0472-003	RES,4.7K,1/8W,5%
R22020	4701-0101-003	RES,100,1/8W,5%
R22021	4701-0221-003	RES,220,1/8W,5%
R22022	4701-0223-003	RES,22K,1/8W,5%
R22023	4701-0683-003	RES,68K,1/8W,5%
R22024	4701-0270-003	RES,27,1/8W,5%
R22025	4701-0220-003	RES,22,1/8W,5%
R22026	4701-0101-003	RES,100,1/8W,5%
R22027	4701-0121-003	RES,120,1/8W,5%
R22028	4701-0332-003	RES,3.3K,1/8W,5%
R22029	4701-0821-003	RES,820,1/8W,5%
R22030	4701-0101-003	RES,100,1/8W,5%
R22031	4701-0101-003	RES,100,1/8W,5%
R22032	4701-0220-003	RES,22,1/8W,5%
R22033	4701-0392-003	RES,3.9K,1/8W,5%
R22034	4701-0152-003	RES,1.5K,1/8W,5%
R22035	4701-0100-003	RES,10,1/8W,5%
R22036	4701-0680-003	RES,68,1/8W,5%
R22037	4701-0103-003	RES,10K,1/8W,5%
R22038	4701-0103-003	RES,10K,1/8W,5%
R22039	4701-0103-003	RES,10K,1/8W,5%
R22040	4701-0471-003	RES,470,1/8W,5%
R22041	4701-0470-003	RES,47,1/8W,5%
R22042	4701-0220-003	RES,22,1/8W,5%
R22043	4701-0220-003	RES,22,1/8W,5%
R22044	4701-0680-003	RES,68,1/8W,5%
R22045	4701-0333-003	RES,33K,1/8W,5%
R22046	4701-0151-003	RES,150,1/8W,5%
R22047	4701-0330-003	RES,33,1/8W,5%
R22048	4701-0560-003	RES,56,1/8W,5%
R22049	4753-0102-002	POT 1K OHM
R22050	4701-0820-003	RES,82,1/8W,5%
R22051	4701-0222-003	RES,2.2K,1/8W,5%
R22052	4701-0221-003	RES,220,1/8W,5%
R22053	4701-0561-003	RES,560,1/8W,5%
R22054	4701-0680-003	RES,68,1/8W,5%
R22055	4701-0510-003	RES,51,1/8W,5%
R22056	4701-0471-003	RES,470,1/8W,5%
R22057	4701-0222-003	RES,2.2K,1/8W,5%
R22058	4701-0221-003	RES,220,1/8W,5%
R22059	4701-0270-003	RES,27,1/8W,5%
R22060	4701-0331-003	RES,330,1/8W,5%
R22061	4701-0151-003	RES,150,1/8W,5%
R22062	4753-0201-002	POT 200 OHM
R22063	4701-0391-003	RES,390,1/8W,5%
R22064	4701-0101-003	RES,100,1/8W,5%
R22065	4701-0331-003	RES,330,1/8W,5%
R22066	4701-0473-003	RES,47K,1/8W,5%
R22067	4701-0220-003	RES,22,1/8W,5%
R22068	4701-0562-003	RES,5.6K,1/8W,5%
R22069	4701-0122-003	RES,1.2K,1/8W,5%

7010-8131-100 PCB ASSY, ANALOG IF (cont) F

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R22070	4701-0331-003	RES,330,1/8W,5%
R22071	4701-0101-003	RES,100,1/8W,5%
R22072	4701-0560-003	RES,56,1/8W,5%
R22073	4753-0201-002	POT 200 OHM
R22074	4701-0331-003	RES,330,1/8W,5%
R22075	4701-0333-003	RES,33K,1/8W,5%
R22076	4701-0331-003	RES,330,1/8W,5%
R22077	4701-0101-003	RES,100,1/8W,5%
R22078	4701-0392-003	RES,3.9K,1/8W,5%
R22079	4701-0821-003	RES,820,1/8W,5%
R22080	4701-0820-003	RES,82,1/8W,5%
R22082	4701-0270-003	RES,27,1/8W,5%
R22083	4701-0510-003	RES,51,1/8W,5%
R22084	4701-0390-003	RES,39,1/8W,5%
R22085	4701-0101-003	RES,100,1/8W,5%
R22086	4701-0471-003	RES,470,1/8W,5%
R22087	4702-0331-003	RES,330,1/4W,5%
R22088	4702-0152-003	RES,1.5K,1/4W,5%
R22089	4702-0222-003	RES,2.2K,1/4W,5%
R22090	4701-0330-003	RES,33,1/8W,5%
R22091	4701-0560-003	RES,56,1/8W,5%
R22092	4701-0151-003	RES,150,1/8W,5%
R22094	4701-0102-003	RES,1.0K,1/8W,5%
R22095	4701-0153-003	RES,15K,1/8W,5%
R22096	4701-0101-003	RES,100,1/8W,5%
RT22001	4800-0101-003	THERM,100 OHM,25/125 19.38
RT22002	4800-0101-003	THERM,100 OHM,25/125 19.38
TP22001	2114-0000-007	TEST POINT,LOOP PROFILE,WHITE
TP22002	2200-2010-400	CONN,M SMB,PC MTG,STR,.453LG
TP22003	2200-2010-400	CONN,M SMB,PC MTG,STR,.453LG
U22001	3132-0300-002	IC,DUAL FLIP-FLOP SET,RESET
Y22001	2363-0134-000	XTAL,10.000000MHZ HC-43/U INDL

7010-8131-100 PCB ASSY, ANALOG IF F1

Contains all parts shown in Revision F with the following exceptions:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R22050	4701-0390-003	RES,39,1/8W,5%
R22050SAT	4701-0560-003	RES,56,1/8W,5%
R22050SAT	4701-0820-003	RES,82,1/8W,5%
R22054SAT	4701-0560-003	RES,56,1/8W,5%
R22054SAT	4701-0820-003	RES,82,1/8W,5%
R22065	4701-0391-003	RES,390,1/8W,5%
R22065SAT	4701-0331-003	RES,330,1/8W,5%

7005-8140-200 ASSY, SSB F1

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	1050-0000-072	WIRE,BUS,TINNED COPPER,20GA
W16	1050-0000-075	WIRE,BUS,TINNED COPPER,26GA
	1414-8150-400	COVER, SSB SOURCE
	1414-8150-500	COVER, SSB MIXER
	1415-8152-300	ENCLOSURE, SSB
C16002	1501-0103-005	CAP,0.01UF,50V,20%,DISC
C16001	1521-0000-008	CAP,0.1UF,50V,DIP,Z5U
C16003	1521-0000-008	CAP,0.1UF,50V,DIP,Z5U
FL16008	1526-0000-006	CAP,100PF,200V,FEEDTHRU
FL16009	1526-0000-006	CAP,100PF,200V,FEEDTHRU
FL16010	1526-0000-006	CAP,100PF,200V,FEEDTHRU
FL16011	1526-0000-006	CAP,100PF,200V,FEEDTHRU
FL16012	1526-0000-006	CAP,100PF,200V,FEEDTHRU
FL16016	1526-0000-006	CAP,100PF,200V,FEEDTHRU
J16042	2123-0000-030	CONN,FSMA,W/TERM,STR BULKHEAD
J17037	2123-0000-030	CONN,FSMA,W/TERM,STR BULKHEAD
J17038	2123-0000-030	CONN,FSMA,W/TERM,STR BULKHEAD
J18041	2123-0000-030	CONN,FSMA,W/TERM,STR BULKHEAD
J31040	2123-0000-030	CONN,FSMA,W/TERM,STR BULKHEAD
J16039	2123-0000-038	CONN,M SMB,W/TERM,STR BULKHD
TP16002	2123-0000-038	CONN,M SMB,W/TERM,STR BULKHD
	2803-0125-006	SCREW,4-40 X 1/8 PPHM
	2803-0188-006	SCREW,4-40 X 3/16 PPHM
	2803-0313-006	SCREW,4-40 X 5/16 PPHM
	2840-7600-208	WASHER,ALUM,.38OD,.250ID,.020T
	2840-7600-229	WASHER,ALUM,.305D,.196ID,.038T
GL16001	2850-0000-100	LUG,GND,#8 RT.ANG NON-LOCKING
GL16002	2850-0000-100	LUG,GND,#8 RT.ANG NON-LOCKING
GL16003	2850-0000-100	LUG,GND,#8 RT.ANG NON-LOCKING
GL16004	2850-0000-100	LUG,GND,#8 RT.ANG NON-LOCKING
R16001	4701-0103-003	RES,10K,1/8W,5%
FL16001	5801-0000-006	PI FILTER,EMI/RFI 1500PF 8-32
FL16002	5801-0000-006	PI FILTER,EMI/RFI 1500PF 8-32
FL16003	5801-0000-006	PI FILTER,EMI/RFI 1500PF 8-32
FL16005	5801-0000-006	PI FILTER,EMI/RFI 1500PF 8-32
FL16006	5801-0000-006	PI FILTER,EMI/RFI 1500PF 8-32
FL16007	5801-0000-006	PI FILTER,EMI/RFI 1500PF 8-32
FL16014	5801-0000-006	PI FILTER,EMI/RFI 1500PF 8-32
FL16015	5801-0000-006	PI FILTER,EMI/RFI 1500PF 8-32
TP16001	5801-0000-006	PI FILTER,EMI/RFI 1500PF 8-32
TP16003	5801-0000-006	PI FILTER,EMI/RFI 1500PF 8-32
W17	6003-0001-009	WIRE,HOOK,TFE,30GA,SOLID,WHT
W18	6003-0001-009	WIRE,HOOK,TFE,30GA,SOLID,WHT
	6004-6005-400	TY-RAP,4.0 LG
W14	6008-1000-002	WIRE,UL1213,26GA,7X34,BRN
W15	6008-1000-002	WIRE,UL1213,26GA,7X34,BRN
W12	6008-1000-003	WIRE,UL1213,26GA,7X34,RED
W13	6008-1000-003	WIRE,UL1213,26GA,7X34,RED
	6010-0125-100	TUBING,HS, 1/8 ID,CLEAR
	6011-0022-001	TUBING,TF,24 AWG,NATURAL,TW
	6011-0034-000	TUBING,TF,20 AWG,NATURAL,SW
	6040-0010-014	CORD,SHLD,AL MESH,.080 DIA
	6042-8180-300	COAX ASSY M SMA/M SMA S/R
W19	7007-8580-400	WH, SSB 601/201
	7010-8130-800	PCB ASSY, MIXER

7005-8140-200 ASSY, SSB (cont) F1

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	7010-8131-200	PCB ASSY, ATTENUATOR
	7010-8131-800	PCB ASSY, SOURCE MODULE VCO
	7010-8132-300	PCB ASSY, LO SOURCE

7005-8140-200 ASSY, SSB F2

Contains all parts shown in Revision F1.

7010-8131-200 PCB ASSY, ATTENUATOR C

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	1700-8121-200	PC BD, ATTENUATOR
	2400-7856-800	LABEL,ESD
C31001	1523-0000-004T	CAP,47PF,50V,NPO,CHIP
C31002	1620-5600-511T	CAP,56PF,100V,CHIP,NPO
C31003	1620-0335-001T	CAP,3.3PF,50V,CHIP
C31004	1620-0335-001T	CAP,3.3PF,50V,CHIP
C31005	1620-5600-511T	CAP,56PF,100V,CHIP,NPO
C31006	1523-0000-014T	CAP,3PF,50V,NPO,CHIP
C31007	1523-0000-014T	CAP,3PF,50V,NPO,CHIP
C31008	1620-5600-511T	CAP,56PF,100V,CHIP,NPO
C31009	1523-0000-014T	CAP,3PF,50V,NPO,CHIP
C31010	1523-0000-014T	CAP,3PF,50V,NPO,CHIP
C31011	1620-5600-511T	CAP,56PF,100V,CHIP,NPO
C31012	1620-1000-511T	CAP,10PF,100V,CHIP,NPO
C31013	1550-0101-500	CAP VAR,35435
C31014	1523-0000-004T	CAP,47PF,50V,NPO,CHIP
C31015	1550-0101-500	CAP VAR,35435
C31016	1523-0000-014T	CAP,3PF,50V,NPO,CHIP
C31016SAT	1523-0000-014	CAP,3PF,50V,NPO,CHIP
C31016SAT	1620-0335-001	CAP,3.3PF,50V,CHIP
C31016SAT	1620-4090-510	CAP,3.9PF,50V,CHIP,NPO
C31017	1523-0000-014T	CAP,3PF,50V,NPO,CHIP
C31017SAT	1523-0000-014	CAP,3PF,50V,NPO,CHIP
C31017SAT	1620-0335-001	CAP,3.3PF,50V,CHIP
C31017SAT	1620-4090-510	CAP,3.9PF,50V,CHIP,NPO
C31018	1523-0000-004T	CAP,47PF,50V,NPO,CHIP
C31019	1523-0000-004T	CAP,47PF,50V,NPO,CHIP
C31021	1523-0000-004T	CAP,47PF,50V,NPO,CHIP
CR31003	4816-0000-018T	DIODE, SOT -23 PIN
CR31004	4816-0000-018T	DIODE, SOT -23 PIN
CR31005	4816-0000-018T	DIODE, SOT -23 PIN
CR31006	4816-0000-018T	DIODE, SOT -23 PIN
CR31007	4816-0000-027T	DIODE, SCHOTTKY 2805 SOT-143
R31001	4722-4759-001T	RES,47.5,1/8W,1%
R31002	4722-4759-001T	RES,47.5,1/8W,1%
R31003	4722-4759-001T	RES,47.5,1/8W,1%
R31004	4722-1829-001T	RES,18.2,1/8W,1%
R31005	4722-1829-001T	RES,18.2,1/8W,1%

7010-8132-300 PCB ASSY, LO SOURCE D

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	1700-6820-400	PC BD, 1006.2MHZ SOURCE
C24005	1550-0101-510	CAP VAR,9402-0
C24001	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C24002	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C24003	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C24004	1622-0220-001T	CAP,22PF,100V,5%,1206,NPO
C24006	1622-0159-001T	CAP,1.5PF,50V,NPO,CHIP
C24009	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C24010	1622-0220-001T	CAP,22PF,100V,5%,1206,NPO
C24011	1622-0050-001T	CAP,5PF,50V,CHIP
C24013	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C24014	1622-0220-001T	CAP,22PF,100V,5%,1206,NPO
C24015	1622-0050-001T	CAP,5PF,50V,CHIP
C24018	1622-0220-001T	CAP,22PF,100V,5%,1206,NPO
C24019	1622-0220-001T	CAP,22PF,100V,5%,1206,NPO
C24020	1622-0220-001T	CAP,22PF,100V,5%,1206,NPO
C24021	1622-0562-001T	CAP,5600PF,50V,CHIP
C24022	1622-0562-001T	CAP,5600PF,50V,CHIP
C24023	1622-0153-001T	CAP,0.015UF,50V,CHIP
C24024	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C24025	1622-0101-001T	CAP,100PF,50V,CHIP
C24032	1622-0030-001T	CAP,3PF,50V,CHIP
C24033	1622-0159-001T	CAP,1.5PF,50V,NPO,CHIP
C24034	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C24035	1622-0220-001T	CAP,22PF,100V,5%,1206,NPO
C24036	1622-0030-001T	CAP,3PF,50V,CHIP
C24037	1622-0159-001T	CAP,1.5PF,50V,NPO,CHIP
C24038	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C24039	1622-0220-001T	CAP,22PF,100V,5%,1206,NPO
C24040	1622-0030-001T	CAP,3PF,50V,CHIP
C24041	1622-0159-001T	CAP,1.5PF,50V,NPO,CHIP
C24042	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C24043	1622-0220-001T	CAP,22PF,100V,5%,1206,NPO
C24044	1622-0220-001T	CAP,22PF,100V,5%,1206,NPO
C24046	1622-0680-001T	CAP,68PF,100V,CHIP
C24050	1622-0030-001T	CAP,3PF,50V,CHIP
C24051	1622-0030-001T	CAP,3PF,50V,CHIP
CR24001	4818-0000-025T	DIODE,1S2836,H/S SWITCHING
CR24002	4935-0101-200	DIODE,STEP RECOVERY,100NS MIN
CR24003	4816-0000-006T	DIODE, HSMS 2802, SOT-23
L24001	1811-6223-003T	IND,SM 22UH 10% C 1812
L24002	1811-6221-001T	IND,SM .22UH 10% C 1008
L24006	1811-6153-003T	IND,SM 15UH 10% C 1812
Q24001	4809-0000-020T	TRANS, 3906, PNP SMD
Q24002	4809-0000-017T	TRANS,DRIVER 1GHZ FT,NPN,SO-8
Q24003	5050-2502-005	TRANS, SI NPN,MED PWR L6GHZ
Q24004	5050-2502-005	TRANS, SI NPN,MED PWR L6GHZ
Q24005	5050-2502-005	TRANS, SI NPN,MED PWR L6GHZ
Q24007	5050-2502-005	TRANS, SI NPN,MED PWR L6GHZ
Q24008	5050-2502-005	TRANS, SI NPN,MED PWR L6GHZ
Q24009	5050-2502-005	TRANS, SI NPN,MED PWR L6GHZ
Q24010	4809-0000-032T	TRANS, 5087 PNP SOT-23 SMD
R24001	4722-1000-001T	RES,100,1/8W,1%
R24002	4722-1501-001T	RES,1.50K,1/8W,1%
R24003	4722-4759-001T	RES,47.5,1/8W,1%

7010-8132-300 PCB ASSY, LO SOURCE (cont) D

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R24004	4722-1002-001T	RES,10.0K,1/8W,1%
R24005	4722-1001-001T	RES,1.0K,1/8W,1%
R24006	4722-1509-001T	RES,15,1/8W,1%
R24007	4722-1509-001T	RES,15,1/8W,1%
R24008	4722-4750-001T	RES,475,1/8W,1%
R24009	4722-4752-001T	RES,47.5K,1/8W,1%
R24010	4722-4750-001T	RES,475,1/8W,1%
R24011	4722-2742-001T	RES,27.4K,1/8W,1%
R24012	4722-4750-001T	RES,475,1/8W,1%
R24013	4722-2742-001T	RES,27.4K,1/8W,1%
R24014	4722-2740-001T	RES,274,1/8W,1%
R24015	4722-2740-001T	RES,274,1/8W,1%
R24016	4722-1829-001T	RES,18.2,1/8W,1%
R24018	4722-2742-001T	RES,27.4K,1/8W,1%
R24019	4722-2214-001T	RES,2.21M,1/8W,1%
R24020	4722-6810-001T	RES,681,1/8W,1%
R24021	4722-2212-001T	RES,22.1K,1/8W,1%
R24022	4749-0104-001	POT, 100K OHM, SIDE ADJ SMD
R24023	4722-1003-001T	RES,100K,1/8W,1%
R24025	4749-0203-001	POT, 20K OHM, SIDE ADJ
R24026	4749-0501-001	POT,SIDE ADJ. 500 OHM SMD
R24027	4722-3321-001T	RES,3.32K,1/8W,1%
R24028	4722-1002-001T	RES,10.0K,1/8W,1%
R24034	4722-6819-001T	RES,68.1,1/8W,1%
R24035	4722-1000-001T	RES,100,1/8W,1%
R24036	4722-6812-001T	RES,68.1K,1/8W,1%
R24037	4722-6810-001T	RES,681,1/8W,1%
R24038	4722-4759-001T	RES,47.5,1/8W,1%
R24039	4722-1003-001T	RES,100K,1/8W,1%
R24040	4722-6810-001T	RES,681,1/8W,1%
R24041	4722-4759-001T	RES,47.5,1/8W,1%
R24042	4722-5621-001T	RES,5.62K,1/8W,1%
R24043	4722-6810-001T	RES,681,1/8W,1%
R24044	4722-3321-001T	RES,3.32K,1/8W,1%
R24045	4722-4759-001T	RES,47.5,1/8W,1%
R24046	4722-4320-001T	RES,432,1/8W,1%
R24047	4722-6811-001T	RES,6.81K,1/8W,1%
R24049	4722-3321-001T	RES,3.32K,1/8W,1%
R24050	4722-1000-001T	RES,100,1/8W,1%
R24051	4722-1509-001T	RES,15,1/8W,1%
R24052	4722-1000-001T	RES,100,1/8W,1%
R24053	4722-1509-001T	RES,15,1/8W,1%
R24054	4722-1829-001T	RES,18.2,1/8W,1%
R24055	4722-1829-001T	RES,18.2,1/8W,1%
R24056	4722-6819-001T	RES,68.1,1/8W,1%
U24001	3133-0000-124T	IC BIMOS CA3130 OP AMP SO
W24001	1050-0000-075	WIRE,BUS,TINNED COPPER,26GA
W24003	6008-1000-002	WIRE,UL1213,26GA,7X34,BRN
W24004	4722-0000-001T	RES,0,1/8W,1%
W24005	4732-0000-001	RES,0,1/10W,1%
W24006	6008-1000-002	WIRE,UL1213,26GA,7X34,BRN

7010-8132-300 PCB ASSY, LO SOURCE E

Contains all parts shown in Revision D with the following exceptions:

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
R24056	4722-6812-001T	RES,68.1K,1/8W,1%

(Remove Parts)

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
W24003	6008-1000-002	WIRE,UL1213,26GA,7X34,BRN
W24005	4732-0000-001	RES,0,1/10W,1%

7010-8131-800 PCB ASSY, SOURCE MODULE VCO E

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	1700-8121-800	PC BD, SOURCE MODULE VCO
C3407	1521-0000-020	CAP VAR
C3401	1620-2200-500T	CAP,22PF,100V,CHIP,NPO
C3402	1620-2200-500T	CAP,22PF,100V,CHIP,NPO
C3403	1624-0479-150T	CAP,4.7PF,150V,ATC,TOL
C3404	1624-0020-150T	CAP,2PF 150WVDC,ATC
C3405	1620-2200-500T	CAP,22PF,100V,CHIP,NPO
C3406	1624-0020-150T	CAP,2PF 150WVDC,ATC
C3409	1620-2090-510T	CAP,2PF,200V,CHIP,NPO
C3410	1622-0104-001T	CAP,0.1UF,50V,CHIP,X7R
C3411	1620-2200-500T	CAP,22PF,100V,CHIP,NPO
CR3401	4826-0000-011T	DIODE,MMBV105G,VARC,2.3PF/-3V
L3401	1811-6560-001T	IND,SM .056UH 10% C 1008
L3402	1811-6560-001T	IND,SM .056UH 10% C 1008
Q3401	5050-2502-002T	TRANS, NPN 41411 SOT-143
R3401	4722-8251-001T	RES,8.25K,1/8W,1%
R3402	4722-2741-001T	RES,2.74K,1/8W,1%
R3403	4722-1000-001T	RES,100,1/8W,1%
R3404	4722-1000-001T	RES,100,1/8W,1%
R3405	4722-3329-001T	RES,33.2,1/8W,1%
R3406	4722-1008-001T	RES,1,1/8W,1%

7010-8130-800 PCB ASSY, MIXER F1

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
	1700-8120-800	PC BD, MIXER
	2400-7856-800	LABEL,ESD
	2800-0000-033	SPACER,INSUL.
C18001	1622-0030-001T	CAP,3PF,50V,CHIP
C18003	1622-0103-001T	CAP,0.01UF,50V,CHIP,X7R
C18004	1622-0102-001T	CAP,1000PF,50V,CHIP,NPO
C18005	1622-0470-001T	CAP,47PF,50V,CHIP
C18006	1622-0470-001T	CAP,47PF,50V,CHIP
C18007	1622-0270-050	CAP,27PF,50V,5%,CHIP,TOL
C18008	1622-0050-001T	CAP,5PF,50V,CHIP
C18009	1622-0010-001T	CAP,1PF,50V,CHIP
C18011	1622-0120-001T	CAP,12PF,100V
C18012	1622-0120-001T	CAP,12PF,100V
C18013	1550-0100-550T	CAP,7-50PF,TRIMMER,SMD
C18014	1622-0680-001T	CAP,68PF,100V,CHIP
C18015	1622-0820-001T	CAP,82PF,50V,CHIP
C18016	1550-0100-550T	CAP,7-50PF,TRIMMER,SMD
C18017	1622-0270-050T	CAP,27PF,50V,5%,CHIP,TOL
C18018	1622-0390-050T	CAP,39PF,50V,1%%
C18019	1622-0390-050T	CAP,39PF,50V,1%%
C18020	1622-0391-001T	CAP,390PF,100V,CHIP
C18021	1622-0391-001T	CAP,390PF,100V,CHIP
C18022	1622-0010-001T	CAP,1PF,50V,CHIP
C18023	1622-0279-001T	CAP,2.7PF,50V,CHIP
C18024	1622-0010-001T	CAP,1PF,50V,CHIP
C18025	1622-0159-001T	CAP,1.5PF,50V,NPO,CHIP
C18026	1622-0159-001T	CAP,1.5PF,50V,NPO,CHIP
C18027	1622-0472-001T	CAP,4700PF,50V,CHIP
C18028	1622-0472-001T	CAP,4700PF,50V,CHIP
C18029	1622-0010-001T	CAP,1PF,50V,CHIP
C18030	1622-0279-001T	CAP,2.7PF,50V,CHIP
C18031	1622-0010-001T	CAP,1PF,50V,CHIP
C18032	1622-0020-001T	CAP,2PF,50V,CHIP
C18033	1622-0470-001T	CAP,47PF,50V,CHIP
C18034	1550-0101-500	CAP VAR,35435
CR18001	4815-0000-009T	DIODE,SWITCH, 914 SOT-23 SMD
L18001	1811-6471-001T	IND,SM .47UH 10% C 1008
L18003	1811-6471-001T	IND,SM .47UH 10% C 1008
L18004	1811-6680-001T	IND,SM .068UH 10% C 1008
L18005	1811-6390-001T	IND,SM .039UH 10% C 1008
L18008	1811-6101-001T	IND,SM .1UH 10% C 1008
L18009	1811-6102-001T	IND,SM 1.0UH 10% C 1008
L18010	1811-6101-001T	IND,SM .1UH 10% C 1008
L18011	1811-6102-001T	IND,SM 1.0UH 10% C 1008
L18012	1811-6391-001T	IND,SM .39UH 10% C 1008
L18013	1811-6392-001T	IND,SM 3.9UH 10% C 1008
L18014	1811-6391-001T	IND,SM .39UH 10% C 1008
L18015	1811-6392-001T	IND,SM 3.9UH 10% C 1008
L18016	1811-6080-001T	IND,SM .008UH 10% C 1008
L18017	1811-6080-001T	IND,SM .008UH 10% C 1008
L18018	1811-6390-001T	IND,SM .039UH 10% C 1008
L18019	1811-6390-001T	IND,SM .039UH 10% C 1008
L18020	1811-6180-001T	IND,SM .018UH 10% C 1008
L18021	1811-6080-001T	IND,SM .008UH 10% C 1008
L18022	1811-6080-001T	IND,SM .008UH 10% C 1008

7010-8130-800 PCB ASSY, MIXER (cont) F1

REFERENCE DESIGNATOR	PART NUMBER	DESCRIPTION
MXR18001	5250-0000-014	MIXER,DBL BAL, .5-2000MHZ
MXR18002	5250-0000-014	MIXER,DBL BAL, .5-2000MHZ
Q18001	4809-0000-032T	TRANS, 5087 PNP SOT-23 SMD
Q18002	5050-2502-005	TRANS, SI NPN,MED PWR L6GHZ
Q18003	4809-0000-031T	TRANS,5812 NPN SO-8 SMD
Q18004	4809-0000-032T	TRANS, 5087 PNP SOT-23 SMD
R18001	4722-1001-001T	RES,1.0K,1/8W,1%
R18002	4722-4759-001T	RES,47.5,1/8W,1%
R18003	4722-3920-001T	RES,392,1/8W,1%
R18004	4722-2439-001T	RES,24.3,1/8W,1%
R18005	4722-1001-001T	RES,1.0K,1/8W,1%
R18006	4722-3920-001T	RES,392,1/8W,1%
R18007	4749-0102-005T	POT,SMD,TOP ADJ 1K OHM
R18008	4749-0102-005T	POT,SMD,TOP ADJ 1K OHM
R18009	4723-0101-002T	RES,100,1/10W,5%
R18010	4723-0390-002	RES,39,1/10W,5%
R18011	4722-1000-001T	RES,100,1/8W,1%
R18012	4722-5119-001T	RES,51.1,1/8W,1%
R18013	4749-0101-005T	POT,SMD TOP ADJ 100 OHM
R18014	4722-2000-001T	RES,200,1/8W,1%
R18015	4749-0101-005T	POT,SMD TOP ADJ 100 OHM
R18020	4722-4750-001T	RES,475,1/8W,1%
R18021	4722-2439-001T	RES,24.3,1/8W,1%
R18022	4722-1500-001T	RES,150,1/8W,1%
T18001	1808-8100-003	IND,1UH VAR CNTR TAPPED INDL
T18002	5604-8100-002	TRANSFORMER,2:1RF .07-200MHZ
T18003	5604-8100-002	TRANSFORMER,2:1RF .07-200MHZ
W18001	4722-0000-001T	RES,0,1/8W,1%
W18002	4722-0000-001T	RES,0,1/8W,1%

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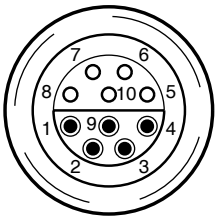
APPENDIX A - CONNECTOR PIN-OUT TABLES

CONNECTOR	TYPE	SIGNAL NAME	SIGNAL TYPE	INPUT/OUTPUT
J10050	IEC-320	AC PWR	ac Line Power	INPUT
J10053	LEMO	COMM	RS-232C	INPUT/OUTPUT
	Refer to Appendix A, Table 2 for COMM Connector Pin-Out Table			
J10054	BNC	REPLY VIDEO	VIDEO (Direct Connection Only)	OUTPUT
J10055	BNC	SYNC	TTL	OUTPUT
J10056	BNC	MONITOR	TTL VIDEO	OUTPUT
J10057	BNC	ANTENNA	RF	INPUT/OUTPUT
J10058	TNC	RF I/O	RF	INPUT/OUTPUT

I/O Connectors
Table 1

PIN NO.	SIGNAL NAME	SIGNAL TYPE	INPUT/OUTPUT	POLARITY
1	EXT SYNC	TTL	OUTPUT	RISING EDGE
2	EXT PULSE	TTL	INPUT	ACTIVE LOW
3	EXT DPSK IN	TTL	INPUT	
4	EXT DPSK OUT	CMOS	OUTPUT	
5	SPARE			
6	TXD	BIPOLAR	OUTPUT	
7	DTR	BIPOLAR	OUTPUT	ACTIVE LOW
8	RXD	BIPOLAR	INPUT	
9	CTS	BIPOLAR	INPUT	ACTIVE LOW
10	GND		OUTPUT	GROUND

Pin-Out for COMM Connector
Table 2



8518021

● = Female ○ = Male

COMM Connector (J10053)
Figure 1

APPENDIX B - TEST EQUIPMENT REQUIREMENTS

This Appendix contains a list of test equipment suitable for performing all testing procedures contained in this manual. Other equipment meeting specifications listed in this Appendix 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.

TYPE	MODEL	SPECIFICATIONS
3 dB Fixed Attenuator	HP8491A or Equivalent	Frequency Range: dc to 12.4 GHz SWR: <1.3 to 1 Attenuation Accuracy: 0.3 dB
10 dB Coupler	NARDA 4242-10 or Equivalent	Frequency Range: 0.5 to 2.0 GHz Nominal Coupling: ±10 dB
Digital Multimeter	FLUKE 8010A or Equivalent	±20.00 V Range 3.5 Digit ±0.1% Basic dc Accuracy
Heterodyne Monitor	ANZAC MD-141 or Equivalent	Frequency Range: RF/LO: 900 to 1100 MHz IF: dc to 1000 MHz
Measuring Receiver	HP8902A or Equivalent	Tuned RF Level Power Range: -127 to 0 dBm Frequency Range: 2.5 to 1300 MHz Accuracy: ±0.1 dB Relative Level
Mode S Ramp Test Set	Aeroflex ATC-601-2 or Equivalent	
Mode S Test System	Aeroflex ATC-1400A mated with Aeroflex S-1403, Aeroflex S-1403C or Aeroflex S-1403DL or Equivalent	
Oscilloscope	TEK 2465B with Counter/Timer/Trigger Option or Equivalent	Bandwidth: dc to 200 MHz Vertical Accuracy: ±10% Time Accuracy: ±0.7% of Time Interval +0.6% of Full Scale Δ Time Accuracy: ±0.5% of Time Interval +0.3% of Full Scale

TYPE	MODEL	SPECIFICATIONS
Power Meter	Boonton 4200 or Equivalent	Frequency Range: 0.1 to 2 GHz Power Range: -30 to +10 dBm Accuracy: ±0.3 dB
Power Sensor	HP11722A or Equivalent Boonton 51011 or Equivalent	Measuring Receiver Compatibility Power Meter Compatibility
RF Signal Generator	Aeroflex NAV-750C or Equivalent	Frequency Range: 1 to 1100 MHz Resolution: 0.1 to 100 Hz Accuracy: 1×10^{-6} RF Output: 13 to -130 dBm
Spectrum Analyzer	Aeroflex AN1830 or Equivalent	Frequency Range: 10 MHz to 22 GHz Resolution Bandwidth: 100 Hz to 3.0 MHz Display Accuracy Log: ±0.1 dB/dB ±1.5 dB/70 dB Display Accuracy Linear: ±3% of reference level
Temperature Probe	FLUKE 80TK or Equivalent	Measurement Range: 0° to 50°C Accuracy: ±2%
Transponder Test Set	Aeroflex ATC-1400A or Equivalent	
Universal Timer/Counter	HP 53131A with Option 015 or Equivalent	Frequency Range: 10 Hz to 1300 MHz Accuracy: $\pm 1 \times 10^{-6}$ + 1 Count Time Period Measurement: 0 to 2000 ms (±1 ms)

APPENDIX C - PAL EQUATIONS

1. Equation Definitions

   $\overline{XXX}$ =Active Low Signal

   * =AND

   → =Go To

   / =Invert

   : =On Clock Rising Edge

   + =OR

2. Digital IF PC Board Assembly

   A. Digitizer Control PAL (U26015)

      (1) Pin Assignments

PIN NO.	SIGNAL	PIN NO.	SIGNAL	PIN NO.	SIGNAL	PIN NO.	SIGNAL
1	CLK1	6	A14	11	OE	16	DRDY
2	CLK2	7	A15	12	DIG CLK	17	RAM WR
3	DS	8	TRIG	13	LOWB	18	RAMQ
4	STRB	9	RCO	14	NC	19	RAMI
5	A0	10	GND	15	ENA	20	V_{CC}

      (2) Equations

      DIG CLK =/NC*/RAM WR*CLK2 + NC + RAM WR

      LOWB =/(/A14*A15*/STRB*/DS)

      NC :=RCO + NC*TRIG

      ENA :=/(RAM WR*NC + /ENA*NC)

      DRDY :=/[RAM WR*ENA + /DRDY*/(/A14*A15*/STRB*/DS)*TRIG]

      RAM WR :=NC

      RAMQ =CLK2*/NC*/RAM WR + (NC+RAM WR)*/(A0*/A14*A15*/STRB*/DS)

      RAMI =CLK2*/NC*/RAM WR + (NC+RAM WR)*/(/A0*/A14*A15*/STRB*/DS)

B. DSP External RAM Access/System Interface PAL (U26016)

(1) Pin Assignments

PIN NO.	SIGNAL	PIN NO.	SIGNAL	PIN NO.	SIGNAL	PIN NO.	SIGNAL
1	IS	6	R/$\overline{W}$	11	A15	16	DPCS
2	STRB	7	A10	12	DPOE	17	SROE
3	DS	8	A11	13	RDYCS	18	SRWE
4	BUSY	9	A14	14	READY	19	SRCS
5	Q	10	GND	15	J	20	V_{CC}

(2) Equations

DPOE =/(A15*A14*/DS*/STRB*(R/$\overline{W}$)]

RDYCS =/[/IS*/STRB*/(R/$\overline{W}$)]

READY =(/IS + DS*IS + /DS*/A15 + /DS*A15*/A14 + Q)*BUSY

J =A15*A14*/DS

DPCS =/(A15*A14*/DS)

SROE =/[/A15*/A11*A10*/DS*/STRB*(R/$\overline{W}$) + /A15*A11*A10*/DS*STRB*(R/$\overline{W}$)]

SRWE =/[/A15*/A11*A10*/DS*/STRB*/(R/$\overline{W}$) + /A15*A11*A10*/DS*STRB*/(R/$\overline{W}$)]

SRCS =/(/A15*A11*A10*/DS + /A15*A11*/A10*/DS)

3. Front Panel Pulse PC Board Assembly

A. LCD Control PAL (U27029) Pin Assignments

PIN NO.	SIGNAL	PIN NO.	SIGNAL	PIN NO.	SIGNAL	PIN NO.	SIGNAL
1	NC	8	NC	15	NC	22	NC
2	CLK0	9	IO CH RDY	16	R83	23	ARDY
3	BALE	10	RESET	17	E	24	DIR
4	$\overline{WR}$	11	$\overline{BMCS0}$	18	R/W	25	$\overline{MEMR}$
5	$\overline{RD}$	12	R81	19	NC (Q2)	26	$\overline{MEMW}$
6	DT/RN	13	R82	20	NC (Q1)	27	NC (WAIT)
7	$\overline{PCS5}$	14	GND	21	NC (Q0)	28	V_{CC}

B. LCD Control PAL (U27029) Equations

E :=/Q2*Q1 + Q2*/Q1 + Q2*/Q0

R/W =/(DT/RN)

Q2 =Refer to Appendix C, 3C.

Q1 =Refer to Appendix C, 3C.

Q0 =Refer to Appendix C, 3C.

ARDY=/(/WAIT + /IO CH RDY)

DIR =/(/$\overline{\text{BMCS0}}$ */$\overline{\text{RD}}$)

$\overline{\text{MEMR}}$ =/(/$\overline{\text{BMCS0}}$ */$\overline{\text{RD}}$)

$\overline{\text{MEMW}}$ =/(/$\overline{\text{BMCS0}}$ */$\overline{\text{WR}}$)

WAIT :=/Q2*/Q1*/Q0 + Q2*Q1*Q0

C. LCD Control PAL (U27029) Wait State Assignments

S0 =/Q2*/Q1*/Q0 (000) S0 :=COND1 →S1 + →S0

S1 =/Q2*/Q1*Q0 (001) S1 :=COND0 →S0 + →S2

S2 =/Q2*Q1*/Q0 (010) S2 :=COND0 →S0 + →S3

S3 =/Q2*Q1*Q0 (011) S3 :=COND0 →S0 + →S4

S4 =Q2*/Q1*/Q0 (100) S4 :=COND0 →S0 + →S5

S5 =Q2*/Q1*Q0 (101) S5 :=COND0 →S0 + →S6

S6 =Q2*Q1*/Q0 (110) S6 :=COND0 →S0 + →S7

S7 =Q2*Q1*Q0 (111) S7 :=COND0 →S0 + →S7

Conditions:

COND0 =RESET + PCS5

COND1 =/PCS5*(/WR+/RD)

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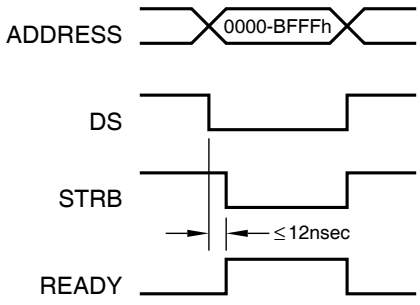
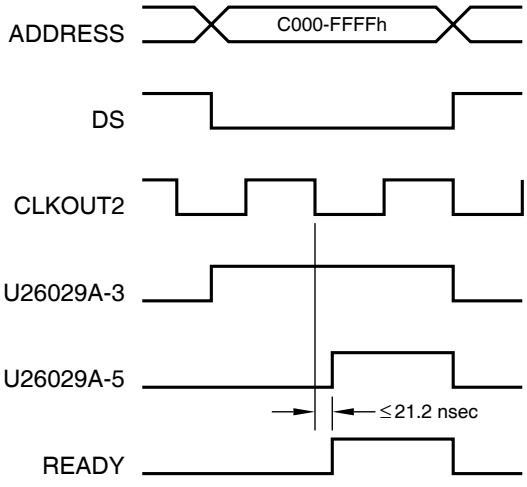
APPENDIX D - TIMING DIAGRAMS



0 WAIT STATES



1 WAIT STATE

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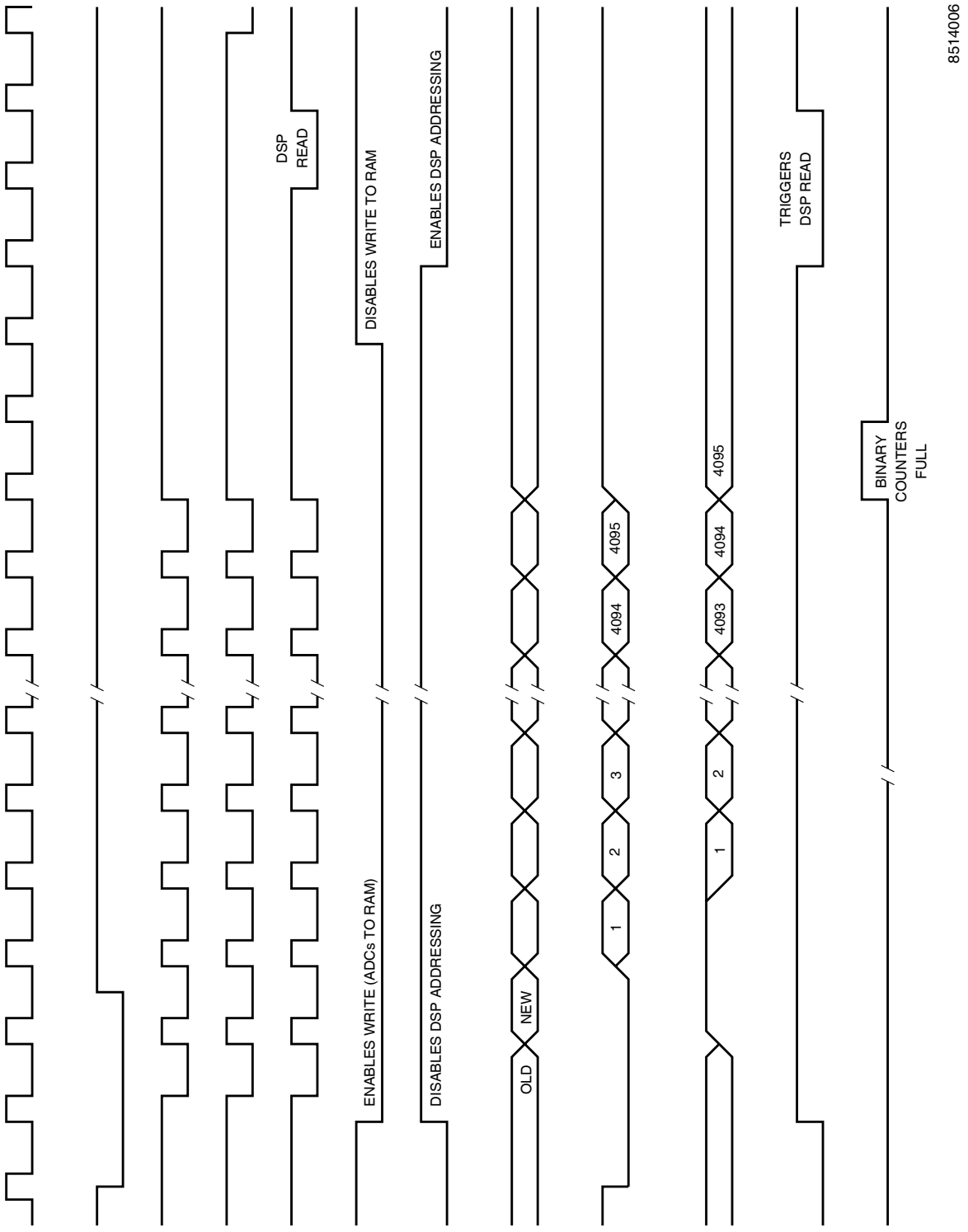
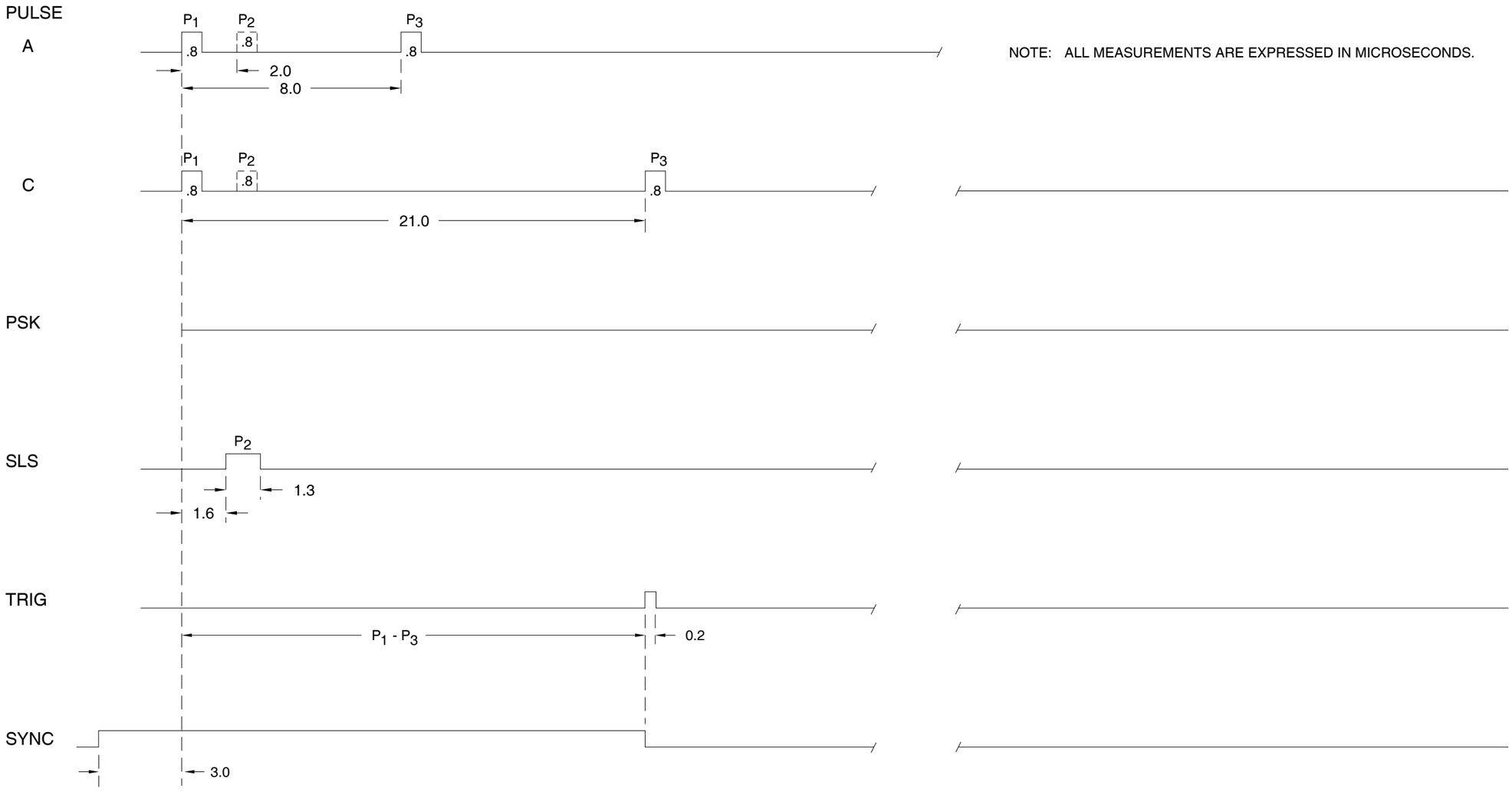
System Interface PAL Wait States
Figure 1



Digitizer
Figure 2

ATCRBS



NOTE: ALL MEASUREMENTS ARE EXPRESSED IN MICROSECONDS.

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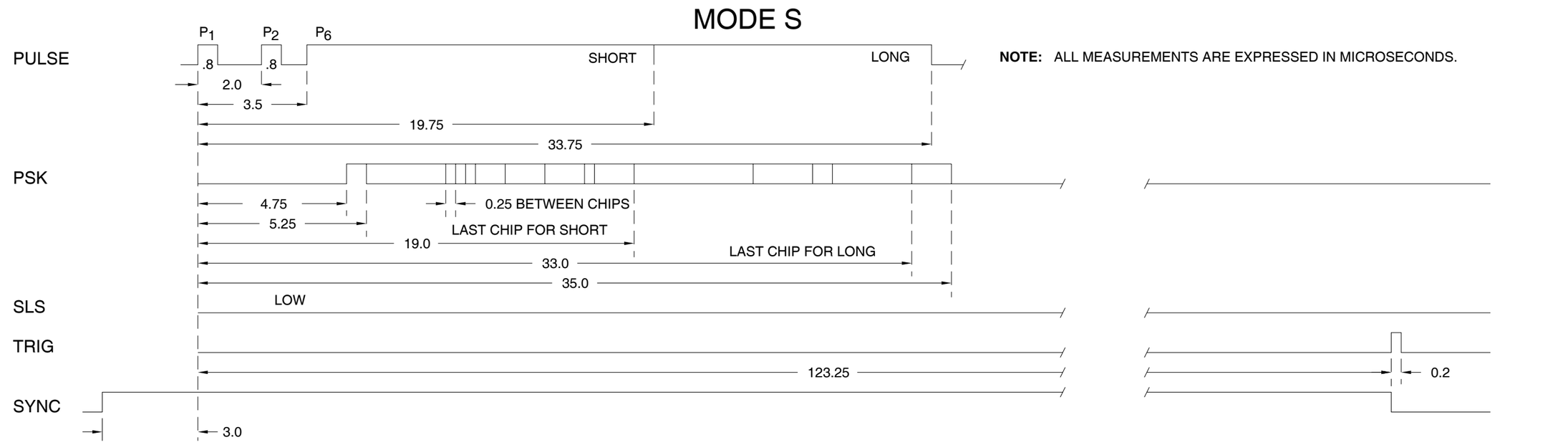
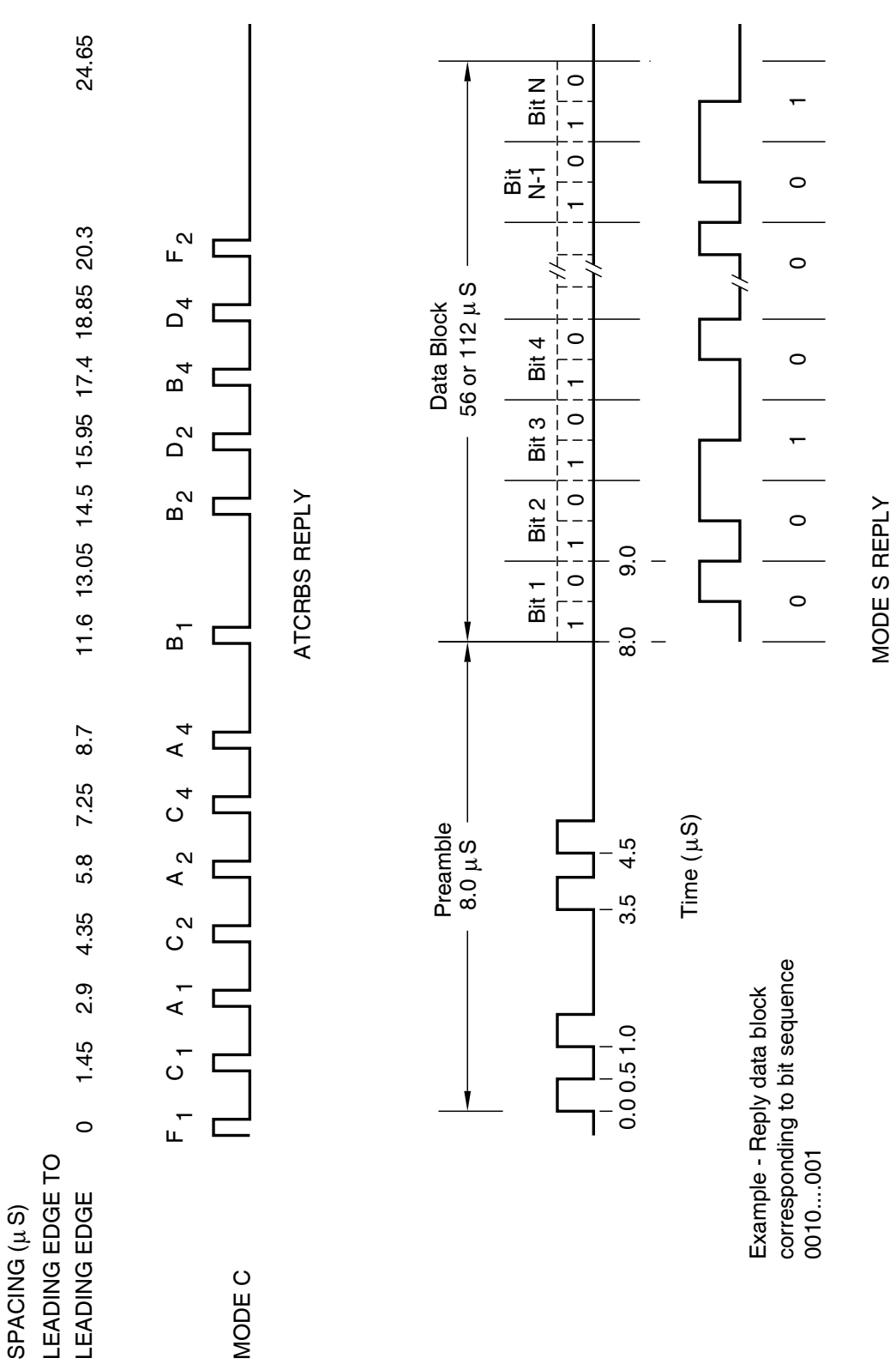
ATCRBS Interrogation Sequence
Figure 3

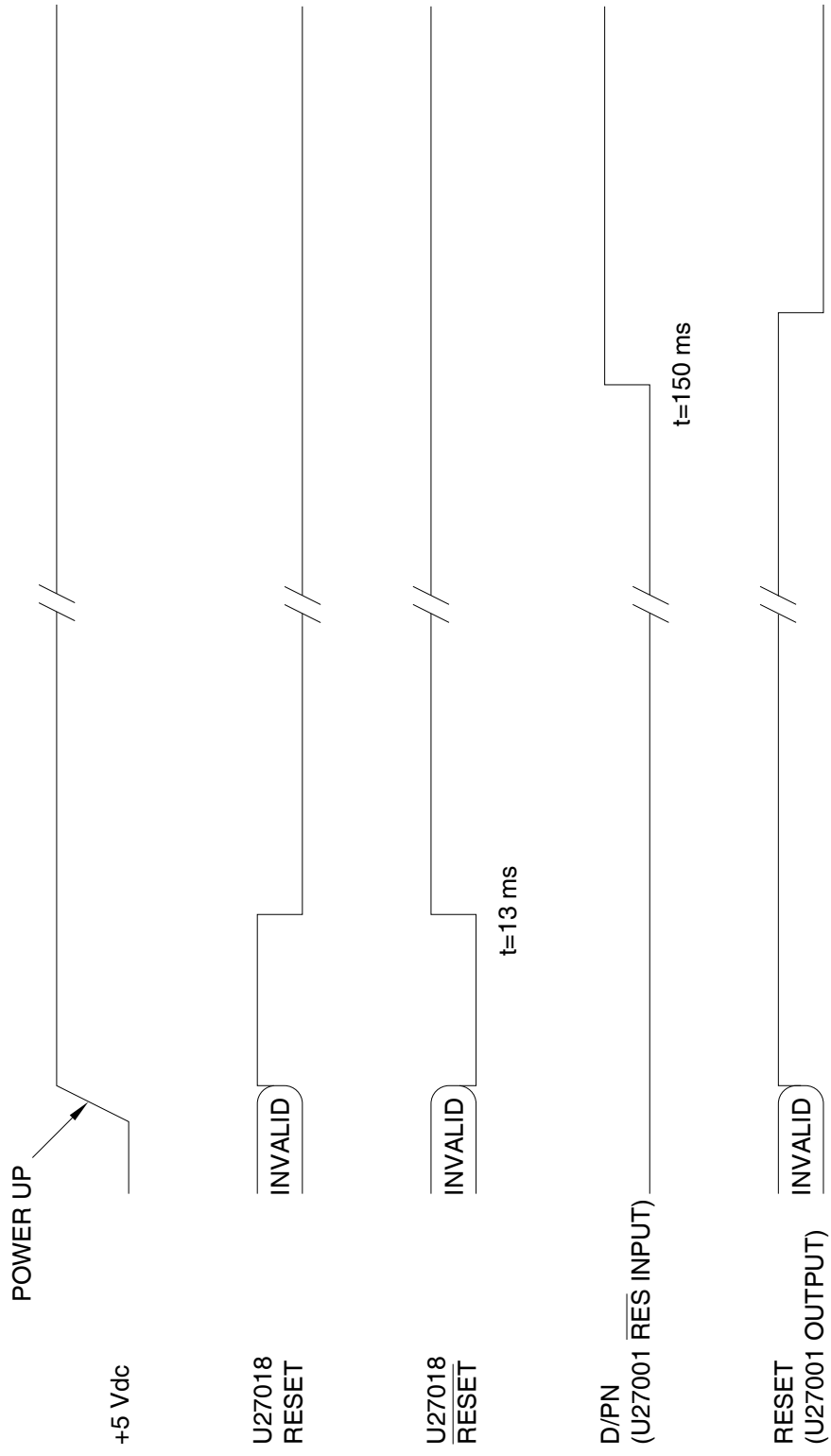


NOTE: ALL MEASUREMENTS ARE EXPRESSED IN MICROSECONDS.

Mode S/Intermode Interrogation Sequences
Figure 4

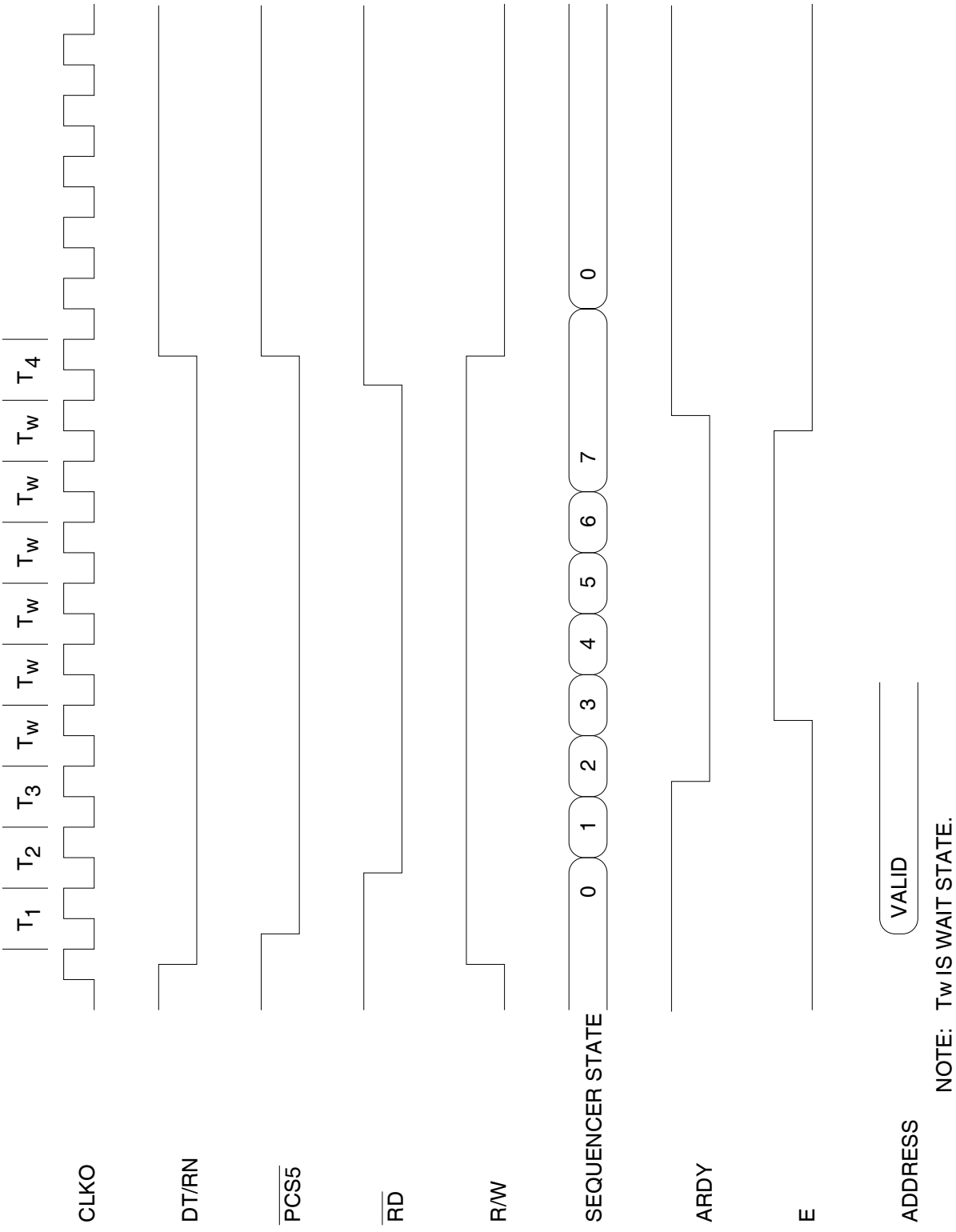


ATCRBS/Mode S Replies
Figure 5

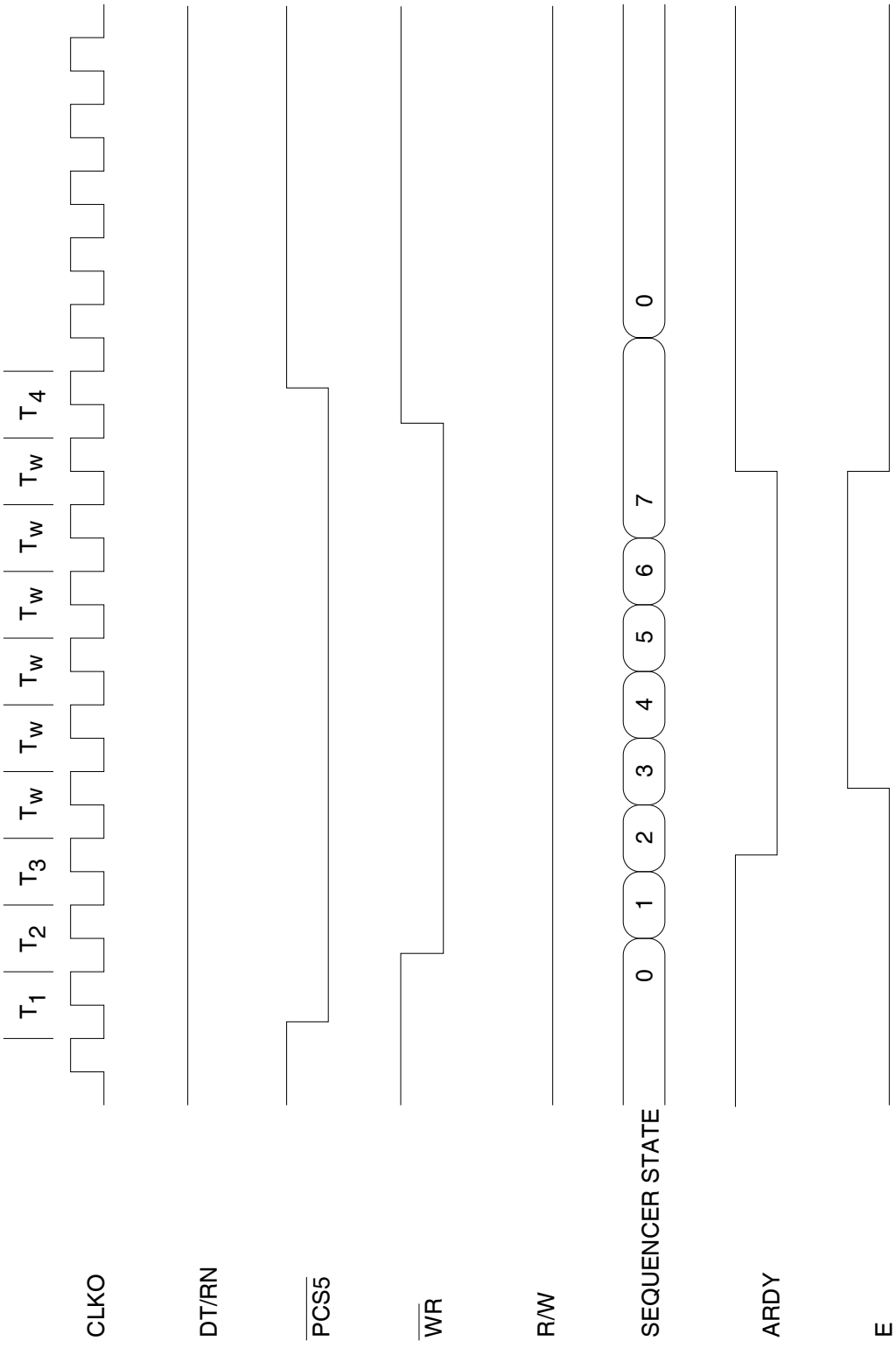


NOTE: LCA COMPONENTS ARE DONE PROGRAMMING AT t=150 ms. EITHER COMPONENT HOLDS D/PN LOW. BOTH MUST BE FINISHED PROGRAMMING FOR D/PN TO GO HIGH.

LCA Components Reset
Figure 6



LCD Read Cycle
Figure 7



LCD Write Cycle
Figure 8

APPENDIX E - METRIC/BRITISH IMPERIAL CONVERSION TABLE WITH NAUTICAL DISTANCE CONVERSIONS

TO CONVERT:	INTO:	MULTIPLY BY:	TO CONVERT:	INTO:	MULTIPLY BY:
cm	feet	0.03281	meters	feet	3.281
cm	inches	0.3937	meters	inches	39.37
feet	cm	30.48	m/sec	ft/sec	3.281
feet	meters	0.3048	m/sec	km/hr	3.6
ft/sec	km/hr	1.097	m/sec	miles/hr	2.237
ft/sec	knots	0.5921	miles	feet	5280
ft/sec	miles/hr	0.6818	miles	km	1.609
ft/sec^2	cm/sec^2	30.48	miles	meters	1609
ft/sec^2	m/sec^2	0.3048	miles	nmi	0.8684
grams	ounces	0.03527	miles/hr	ft/sec	1.467
inches	cm	2.54	miles/hr	km/hr	1.609
kg	pounds	2.205	miles/hr	knots	0.8684
kg/cm^2	psi	0.0703	nmi	feet	6080.27
km	feet	3281	nmi	km	1.8532
km	miles	0.6214	nmi	meters	1853.2
km	nmi	0.5396	nmi	miles	1.1516
km/hr	ft/sec	0.9113	ounces	grams	28.34953
km/hr	knots	0.5396	pounds	kg	0.4536
km/hr	miles/hr	0.6214	psi	kg/cm^2	0.0703
knots	ft/sec	1.689	100 ft	km	3.048
knots	km/hr	1.8532	100 ft	miles	1.894
knots	miles/hr	1.1516	100 ft	nmi	1.645

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APPENDIX F - SPECIFICATIONS

SIGNAL GENERATOR

Output Frequency:	1030 MHz (±10 kHz), DCXO controlled
Level:	-57 to -7 dBm typically, into 50 Ω (Automatically controlled to determine receiver sensitivity [MTL] for the selected range and 4 dB typically, higher than MTL for test interrogations)
Test Antenna:	Remote antenna VSWR <1.5:1
Gain:	10 dB typically, specified on the antenna
Range:	6 feet (1.83 meters) to 300 feet (91.44 meters)

TEST SIGNALS (INTERROGATIONS)

Rate:	235 Hz PRF (±5 Hz)
Interlace Ratio (MTL Interrogations to Test Interrogations):	
ATCRBS:	2:1
Mode S:	8:1
Modes:	A, C, S, Intermode

NOTE: The ATC-601-2 interrogates with the mode(s) necessary to run the selected test.

PULSE CHARACTERISTICS (MEASURED AT 50% AMPLITUDE POINTS)

Spacing:	
Mode A:	
P_1 to P_2:	2.00 µs (±50 ns)
P_1 to P_3:	8.00 µs (±50 ns)
Mode C:	
P_1 to P_2:	2.00 µs (±50 ns)
P_1 to P_3:	21.00 µs (±50 ns)
Mode S:	
P_1 to P_2:	2.00 µs (±50 ns)
P_1 to P_6:	3.50 µs (±50 ns)
P_1 to SPR:	4.75 µs (±50 ns)
Intermode:	
Mode A:	
P_1 to P_3:	8.00 µs (±50 ns)
P_1 to P_4:	10.00 µs (±50 ns)
Mode C:	
P_1 to P_3:	21.00 µs (±50 ns)
P_1 to P_4:	23.00 µs (±50 ns)

Widths:

Mode A:	
P_1, P_2, P_3:	0.80 µs (±50 ns)
Mode C:	
P_1, P_2, P_3:	0.80 µs (±50 ns)
Mode S:	
P1, P2:	0.80 µs (±50 ns)
P_6 (Short):	16.25 µs (±50 ns)
P_6 (Long):	30.25 µs (±50 ns)
Intermode:	
P1, P2, P3:	0.80 µs (±50 ns)
P_4 (Short):	0.80 µs (±50 ns)
P_4 (Long):	1.60 µs (±50 ns)
Rise and Fall Times:	
Rise Time (all modes):	50 to 100 ns
Fall Time (all modes):	50 to 200 ns
Phase Modulation:	
Transition Time:	≤80 ns
Phase Shift:	180° (±10°)
Amplitude Levels:	
SLS Level (P_2):	-9 dB (±1 dB) and 0 dB relative to P_1 level

NOTE: SLS Level is automatically controlled in the SLS LEVEL Test.

UUT MEASUREMENTS (REPLIES)

XMTR Frequency:

Range:	1087 to 1093 MHz
Accuracy:	±50 kHz
Resolution:	10 kHz

XMTR Power (at 1090 MHz):

Direct Connection-Peak Pulse Power:

Range:	+46.5 to +59 dBm (45 to 800 W)
Accuracy:	±1 dB
Resolution:	0.1 dB

Effective Radiated Power (ERP):

Range:	+48.5 to +57 dBm (71 to 500 W)

Receiver Sensitivity:

Direct Connection - Minimum Triggering Level (MTL):

Range:	-67 to -79 dBm
Accuracy:	±2 dB

Radiated Field Strength (MTL):

Range:	-69 to -77 dBm into 0 dBi antenna (-77 dB W/m^2 to -85 dB W/m^2)

Reply Delay:

ATCRBS:

Range:	1.80 to 7.00 µs
Accuracy:	±100 ns

Mode S and ATCRBS/Mode S All-Call:

Range:	125.00 to 131.00 µs
Accuracy:	±100 ns

Reply Jitter:

ATCRBS:

Range:	0.00 to 2.30 µs
Accuracy:	±50 ns

Mode S and ATCRBS/Mode S All-Call:

Range:	0.00 to 6.00
Accuracy:	±50 ns

F_1 to F_2 Spacing:

Range:	19.70 to 21.60 μs
Accuracy:	±50 ns

F_1 and F_2 Pulse Width:

Range:	0.25 to 1.00 μs
Accuracy:	±50 ns

Squitter Period:

Range:	0.10 to 4.88 seconds
Accuracy:	±10 ms

Diversity Isolation:

Range:	0 to >20 dB (depending on Antenna Range)
Antenna Range:	6 feet (1.83 meters) to 50 feet (15.24 meters)
Accuracy:	±3 dB

SLS Test (at MTL + 10 dB):

Antenna Range:	6 feet (1.83 meters) to 95 feet (28.96 meters)

BATTERY OPERATION

Duration:	≥2 hours before recharge at 25°C
Automatic shutoff:	After 15 minutes of non-use

AC POWER

Source Voltage and Frequency:	100 to 120 VAC, 60 Hz 220 to 240 VAC, 50 Hz
Power Consumption:	37 W Maximum 30 W Nominal at 115 VAC 22 W Nominal at 230 VAC
Nominal Input Current:	0.36 A at 115 VAC 0.18 A at 230 VAC
Main Supply Voltage Fluctuations:	≤±10% of the nominal voltage
Tansient Overvoltages:	According to Installation Category II

FUSE REQUIREMENTS

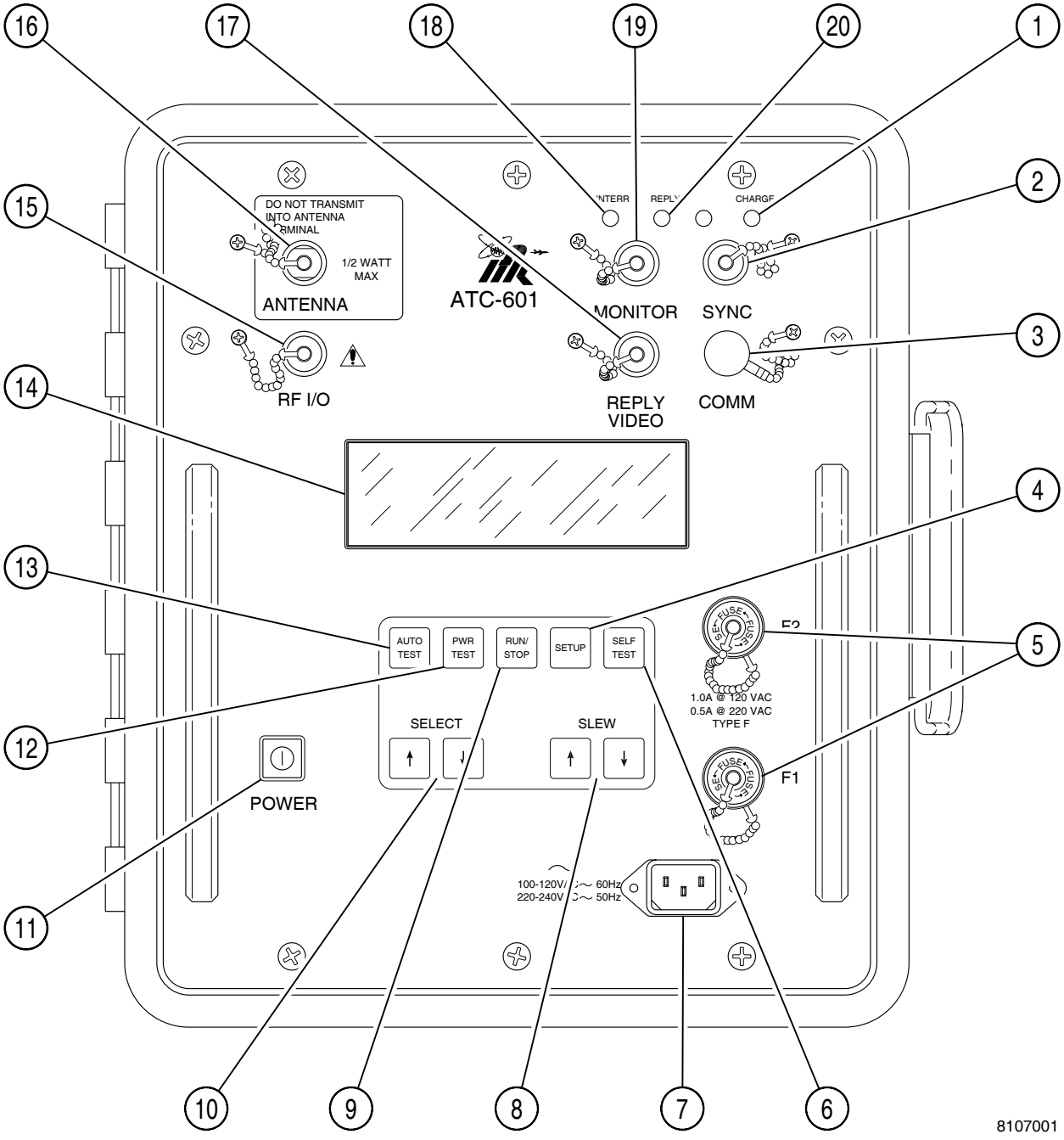
F1 and F2:

100 to 120 VAC:	1.0 A, 250 V, Type F
220 to 240 VAC:	0.5 A, 250 V, Type F

ENVIRONMENTAL

Use:	Pollution Degree 2
Altitude:	≤13,124 feet (4000 meters)
Temperature:	5°C to 40°C (41°F to 104°F)
Relative Humidity:	≤80% for temperatures up to 31°C, decreasing linearly to 50% at 40

APPENDIX G - CONTROLS, CONNECTORS AND INDICATORS



ATC-601-2 Front Panel
Figure 1

1. Front Panel

Refer to Appendix G, Figure 1.

ITEM	DESCRIPTION

1. CHARGE Indicator

   LED indicates the charger is active (ac applied with Test Set Off). Red indicates when battery is charging and green indicates battery is more than 80% charged.

2. SYNC Connector (J10055)

   BNC type connector provides Oscilloscope Sync. Long pulse goes from low to high before an interrogation and from high to low before an expected reply.

3. COMM Connector (J10053)

   LEMO type connector provides for remote 4-line serial communication (with Option 1 installed) and includes the signals TRANSMIT, RECEIVE, DTR and CTS. The COMM Connector provides data dump output capability with or without Option 1 installed. Refer to COMM Connector Pin-Out Table in Appendix A.

4. SETUP Key

   Enters Setup Menus onto the DISPLAY.

5. FUSES

   Provide safe operation with ac input power applied to the ATC-601. Refer to Appendix F for correct fuse size and type.

6. SELF TEST Key

   Enters Self Test screen onto the DISPLAY.

7. AC PWR Connector (J10050) ∿

   Provides the input for an external ac power source (100 to 120 VAC at 60 Hz or 220 to 240 VAC at 50 Hz) for recharging the battery or operating the Test Set. The operating voltage range depends on the Line Supply Switch Setting, only serviceable by a qualified technician. Refer to Battery/Voltage Instructions in the ATC-601-2 Operation Manual.

8. SLEW Keys

   Used to:

   - Adjust values and parameters in Setup Menus.
   - Select Signal Type in Diagnostics screen.
   - Adjust values in Diagnostics screen.
   - Select antenna to be tested in Power Test.

   Variable slew rates are available, depending on item being edited. Keeping SLEW Key pressed provides greater rate of change, in most instances, than pressing and releasing.

9. RUN/STOP Key

   Starts or stops testing.

ITEM DESCRIPTION

10. SELECT Keys

    Used to select:

    - Test to perform in Single Test.
    - Items to edit in Setup Menus.
    - Antenna to be tested in Power Test.
    - Diagnostics screen menu from Self Test screen.

11. POWER Key ⏻

    Applies power to the Test Set; push On (***I***) or push Off (***O***).

    NOTE: When operating on battery power, an internal automatic time-out removes power from the Test Set following 15 minutes of no key activity.

12. PWR TEST Key

    Enters Power Test screen onto the DISPLAY.

13. AUTO TEST Key

    Enters Auto Test screen onto the DISPLAY.

14. DISPLAY

    LCD readout displays various test screens.

15. RF I/O Connector (J10058) ⚠

    CAUTION: MAXIMUM INPUT POWER MUST NOT EXCEED +59 dBm (800 W).

    TNC type connector provides for RF input and output when directly connected with the UUT (Direct Connect).

16. ANTENNA Connector (J10057)

    CAUTION: DO NOT TRANSMIT DIRECTLY INTO ANTENNA TERMINAL. MAXIMUM OVER-THE-AIR INPUT POWER MUST NOT EXCEED 1/2 W.

    BNC type connector is used with the Test Set Antenna (Flat Antenna or Flexible Antenna). Over-the-air testing of the UUT is accomplished through the ANTENNA connector. The connector cover, when attached, provides the 50 Ω load required when connecting the RF I/O Connector to the UUT (Direct Connect) or running the Self Test.

17. REPLY VIDEO Connector (J10054)

    BNC type connector provides demodulated (detected) reply (only when direct connection with UUT is used) for use with an Oscilloscope.

18. INTERR Indicator

    Illuminates when Test Set is generating an interrogation signal.

19. MONITOR Connector (J10056)

    BNC type connector provides interrogation and reply pulses clipped at 50% amplitude point to preserve pulse shape.

20. REPLY Indicator

    Illuminates when the Test Set receives a valid reply signal.

2. Flat Antenna

Refer to Appendix G, Figure 2.

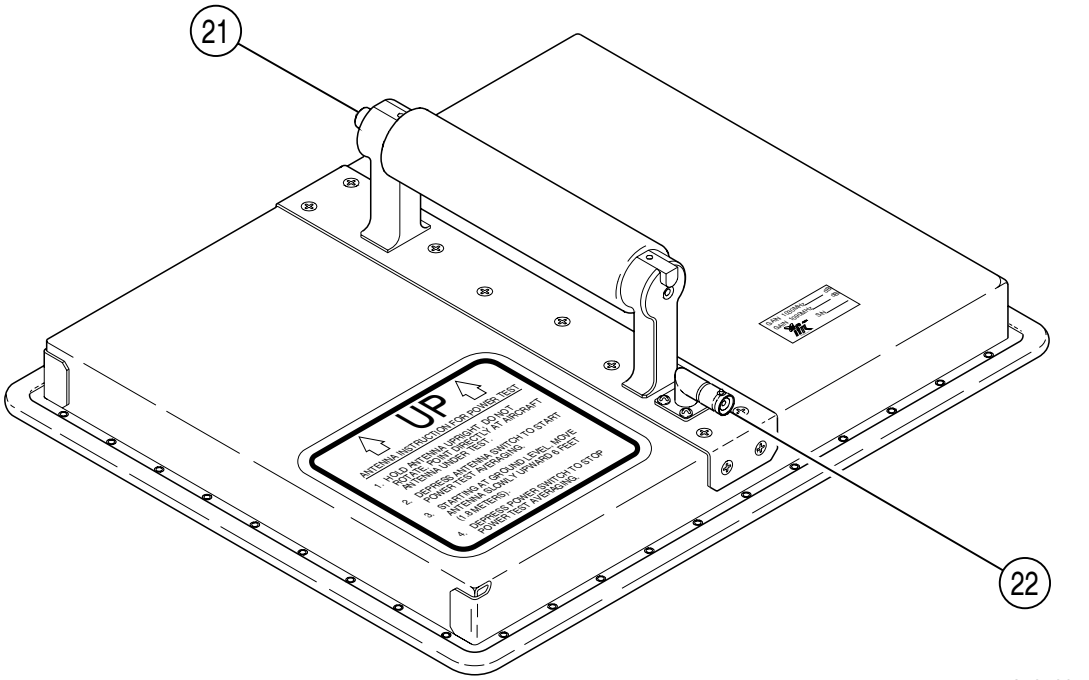
ITEM	DESCRIPTION

21. ANTENNA PUSH BUTTON Switch

Starts or stops testing, same as the RUN/STOP Key.

22. FLAT ANTENNA Connector (J29001)

BNC type connector is used to connect Flat Antenna to ATC-601 Test Set.



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Flat Antenna
Figure 2

APPENDIX H - ABBREVIATIONS

A

AA	Announced Address
AC	Altitude Code
AC/ac	Alternating Current
ACAS	Airborne Collision Avoidance System
ACS	Comm-A Capability Subfield
A/D	Analog to Digital
ADC	Analog to Digital Converter
AIS	Comm-A Capability Subfield
ALT	Altitude
AMPL	Amplifier
ANT	Antenna
AP	Address Parity
AQ	Special Acquisition
ATC	Air Traffic Control
ATC	ATCRBS (on screen)
ATCRBS	Air Traffic Control Radar Beacon System
ATE	Automatic Test Equipment
ATTEN	Attenuation
AUTO	Automatic
AVG	Average

B

BATT	Battery
BCS	Comm-B Capability Subfield
BDS	B-Definition Subfield
BIT	Built In Test
BOT	Bottom
BPF	Bandpass Filter
BR	Bridge Rectifier
BT	Battery

C

C	Centigrade
CA	Transponder Capability
CAS	Column Address Strobe
CFS	Continuation Subfield
CHAN	Channel
CHC	Cancel Horizontal Resolution Advisory Complement
CLI	Coordination Lock Indicator
CMOS	Complementary Metal-Oxide Semiconductor
COMM	Communication
COMP	Compensator
CONT	Control
Cont	Continued
COMPTR	Comparator
CR	Diode
CTS	Clear to Send
CVC	Cancel Vertical Resolution Advisory Complement
CW	Continuous Wave

D

D/A	Digital to Analog
DAC	Digital to Analog Converter
dB	Decibel
dBi	Decibels above isotropic
dBm	Decibels above one milliwatt
dB W/m^2	Decibels above one watt per square meter
DCXO	Digitally Compensated Crystal Oscillator
DET	Detector
DF	Downlink Format
DI	Designator Identification
Div	Division
DMA	Direct Memory Access
DMM	Digital Multimeter
DPCS	Dual Port RAM Chip Select
DPOE	Dual Port RAM Output Enable
DPR	Dual Port RAM
DPSK	Differential Phase Shift Key
DR	Downlink Request
DRAM	Dynamic RAM
DRVR	Driver
DSP	Digital Signal Processor
DTR	Data Terminal Ready

E

ECS	Extended Capability Subfield
ELM	Extended Length Message
EOC	End of Cycle
EPROM	Erasable Programmable Read-Only Memory
ERP	Effective Radiated Power
ESB	Encoded Sense Bits
Ext	External

F

FCC	Federal Communications Commission
FET	Field Effect Transistor
FIFO	First In First Out
FPM	Feet Per Minute
FREQ	Frequency
FS	Flight Status
Ft	Feet

G

GEN	Generator
GND	Ground
GPIB	General Purpose Interface Bus

H

h	Hexadecimal
HET	Heterodyne
hr	Hour
HRC	Horizontal Resolution Advisory Complement
Hz	Hertz

I

ID	Identification (4906 Code)
IDS	Identifier Designators Subfield
IF	Intermediate Frequency
II	Interrogator Identification
IIS	Interrogator Identification Subfield
INTERR	Interrogation
I/O	Input/Output
ITM	Intermode

K

KE	ELM Control
kHz	Kilohertz (10^3)
km	Kilometer (10^3)
kts	Knots (Velocity)

L

LC	Inductor-Capacitor
LCA	Logic Cell Array
LCD	Liquid Crystal Display
LCK	Coordination Lock Subfield
LCS	Lower Chip Select
LED	Light Emitting Diode
LO	Local Oscillation
LOAMP	Logarithmic Amplifier
LOG	Logarithmic
LOS	Lockout Subfield
LPF	Low-Pass Filter
LSD	Least Significant Digit

M

m	Meters
MA	Comm-A Message
Max	Maximum
MB	Comm-B Message
MBS	Multisite Comm-B Subfield
m	Meters
MA	Comm-A Message
Max	Maximum
MB	Comm-B Message
MBS	Multisite Comm-B Subfield
MC	Comm-C Message
MCS	Mid-Range Chip Select
MD	Comm-D Message
MEAS	Measure
MES	Multisite ELM Subfield
MHz	Megahertz (10^6)
MID	Mode S Address
MOD	Modulator
MON	Monitor
MPU	Microprocessing Unit
ms	Millisecond (10^{-3})
MSD	Most Significant Digit
MTB	Multiple Threat Bit
MTL	Minimum Triggering Level
MU	Comm-U Message
MUX	Multiplexer
MV	Comm-V Message

N

N/A	Not Applicable
NC	C-Segment Number
ND	D-Segment Number
nmi	Nautical Miles
NO	Number
ns	Nanosecond (10^{-9})

P

PAL	Programmable Array Logic
PC	Protocol
PC	Printed Circuit
PCB or PCBD	Printed Circuit Board
PCS	Peripheral Chip Select
PI	Parity/Interrogator Identity
PLCS	Places
PPG	Pulse Power Gate
PPM	Pulse Position Modulation
PR	Reply Probability
PRF	Pulse Repetition Frequency
PROM	Programmable Read-Only Memory
PSK	Phase Shift Keying
PWM	Pulse Width Modulation
PWR	Power

R

RAM	Random Access Memory
RAC	Resolution Advisory Complement
RAS	Row Address Strobe
RC	Reply Control
RC	Resistor-Capacitor
RCV	Receive
RCVR	Receiver
Ref	Reference
REFLD	Reflected
RF	Radio Frequency
RGLTR	Regulator
RI	Reply Information, Air-to-Air
RL	Reply Length
RMS	Root Mean Square
ROM	Read Only Memory
RR	Reply Request
RRS	Reply Request Subfield
RSS	Reservation Status Sub-field
RTCA	Radio Technical Commission for Aeronautics
RX	Receive

S

SAM	Serial Access Memory
SAT	Select At Test
SCOPE	Oscilloscope
SD	Special Designator
sec	Second(s)
SL	Sensitivity Level
SLS	Side Lobe Suppression
SMENU	Sequence Menu
SNSR	Sensor
SPI	Special Identifier Pulse
SPR	Synchronous Phase Reversal
SRCS	Static RAM Chip Select
SROE	Static RAM Output Enable
SRWE	Static RAM Write Enable
SRQ	Service Request
SRS	Segment Request Subfield
SSR	Secondary Surveillance Radar
SW	Switch
SYNC	Synchronization

T

TAS	Transmission Acknowledgement Subfield
TCAS	Traffic Alert and Collision Avoidance System
TEMP	Temperature
TMS	Tactical Message Sub-field
Trig	Trigger
TTL	Transistor- Transistor Logic
TX	Transmit

U

UART	Universal Asynchronous Receiver-Transmitter
UCS	Upper Chip Select
UDS	U-Definition Subfield
UF	Uplink Format
UM	Utility Message
UUT	Unit Under Test

V

V	Volts
V_P	Volts, Peak
V_{P-P}	Volts, Peak-to-Peak
VAC	Volts Alternating Current
VCO	Voltage Controlled Oscillator
Vdc	Volts Direct Current
VDS	V-Definition Subfield
VERS	Version
VRAM	Video Random Access Memory
VRC	Vertical Resolution Advisory Complement
Vrms	Volts Root Mean Square
VS	Vertical Status
VSWR	Voltage Standing Wave Ratio

W

W	Watts

X

XCVR	Transceiver
XMTR	Transmitter
XOR	Exclusive OR
XPDR	Transponder

µF	Microfarad
µH	Microhenry
µs	Microsecond

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