



Digital Radio Test System 8800 / 8800S Maintenance Manual

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MAINTENANCE MANUAL

DIGITAL RADIO TEST SYSTEM

8800 / 8800S

PUBLISHED BY
Aeroflex

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Subject to Export Control, see Cover Page for details.

Electromagnetic Compatibility:

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

Nomenclature Statement:

In this manual, 8800 / 8800S, Test Set or Unit refers to the 8800 / 8800S Digital Radio Test System.

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SAFETY FIRST: TO ALL 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

Opening the Case Assembly exposes the operator to electrical hazards that can result in electrical shock or equipment damage. Do not operate this Test Set with the Case Assembly open.

SAFETY IDENTIFICATION IN TECHNICAL MANUAL

This manual uses the following terms to draw attention to possible safety hazards that may exist when operating 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.

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.

INTENDED USE

The 8800 / 8800S is intended for indoor use only and should not be subjected to conditions which cause water or other liquids to collect on the Touch Screen Display.

SAFETY FIRST: TO ALL SERVICE PERSONNEL (cont)

INTERNAL BATTERY

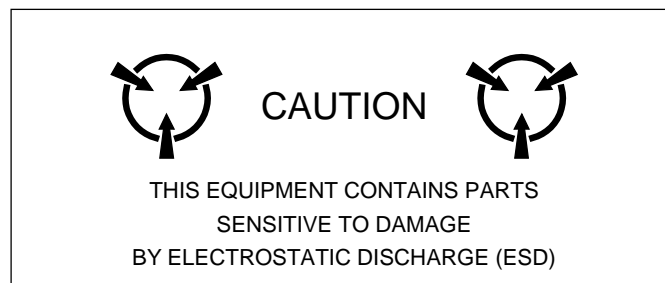
The 8800 / 8800S contains a Lithium Ion Battery, serviceable only by a qualified technician.

WARNING: THE 8800 / 8800S USES A LITHIUM ION BATTERY PACK. THE FOLLOWING WARNINGS CONCERNING LITHIUM ION BATTERIES MUST BE HEEDED:

- **ONLY RECHARGE THE BATTERY OUTSIDE THE UNIT WITH THE EXTERNAL BATTERY CHARGER.**
- **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.

PREFACE

SCOPE

This Manual contains instructions for maintaining the 8800 / 8800S. It is strongly recommended that the technician be thoroughly familiar with this manual before attempting to perform maintenance on the equipment.

ORGANIZATION

The Manual is composed of the following Chapters:

CHAPTER 1 - INTRODUCTION

Provides an Introduction and Functional Descriptions for each assembly in the 8800.

CHAPTER 2 - MAINTENANCE INSTRUCTIONS

Identifies and explains Routine Service, Troubleshooting, Calibration/Verification, Remove/Replace and Shipping/Storage Procedures.

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CHAPTER 1 - INTRODUCTION

1-1. GENERAL INFORMATION

A. Scope

Type of Manual: Maintenance Manual
Equipment Name and Model Number: 8800 / 8800S Digital Radio Test System
Purpose of Equipment: The 8800 / 8800S Digital Radio Test System is used for testing radios and related equipment.

B. Nomenclature Cross-Reference List

<u>COMMON NAME</u>	<u>OFFICIAL NOMENCLATURE</u>
8800 / 8800S	8800 / 8800S Digital Radio Test System
Test Set or Unit	8800 / 8800S Digital Radio Test System

1-2. EQUIPMENT DESCRIPTION

A. Equipment Characteristics, Capabilities and Features

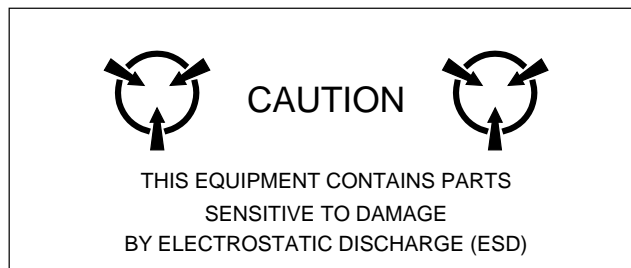
Refer to the 8800 / 8800S Operation Manual for this information.

B. Equipment Data

Refer to the 8800 / 8800S Operation Manual for this information.

C. Safety, Care and Handling

Observe all WARNINGS, CAUTIONS and NOTES in this manual. This equipment can be extremely dangerous if these instructions are not followed.



1-3. PRINCIPLES OF OPERATION

1-3-1 GENERAL DESCRIPTION

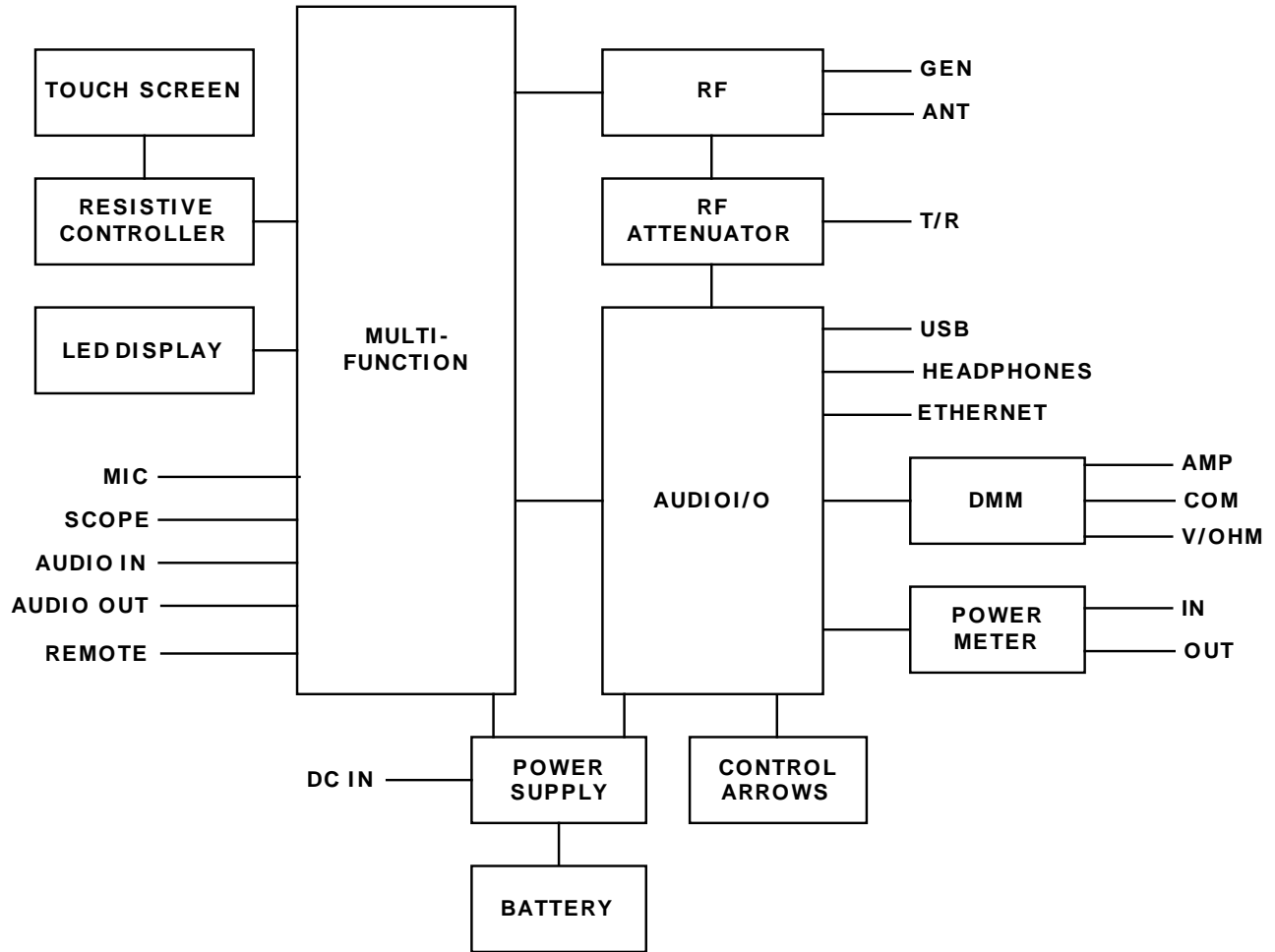


Figure 1-1. System Block Diagram

1-3-2 DETAILED DESCRIPTION

The System Block Diagram (Figure 1-1) and the System Interconnect Diagram (Figure E-1) shows the relationship of all assemblies. The following paragraphs are detailed descriptions of the 8800 / 8800S assemblies.

A. RF Attenuator Assy (1A1)

The RF Attenuator Assy consists of 20 dB Attenuator and temperature alarm circuitry. The 20 dB Attenuator supplies 50 Ω impedance for the T/R Connector to insure VSWR is <1.2:1. The temperature alarm circuit triggers a warning when the temperature of the pad is >90°C.

The RF Attenuator Assy allows the 8800 / 8800S to receive 50 W of continuous RF CW signals.

B. RF Assy (1A2) (Figure 1-2)

The RF Assy consists of the RF Converter PCB Assy and the RF Controller PCB Assy. The RF Assy receives power and control via the Multi-Function PCB Assy.

The RF Converter PCB Assy contains the RF termination for the T/R Connector, ANT Connector and GEN Connector, as well as the frequency translation circuitry and step attenuator for both the receive and generate paths. The RF Controller PCB Assy interfaces directly with the Multi-Function PCB Assy to control the RF Assy. The RF Controller PCB Assy contains the 80 MHz TCXO system clock and the RF synthesizers that generate the required Local Oscillator (LO) signals.

An 80 MHz TCXO with a stability of 1 ppm provides the reference signal for the RF Assy as well as the Multi-Function PCB Assy. The 80 MHz TCXO provides the reference signal to the five Phase Lock Loops (PLL) used to generate the required Local Oscillator (LO) signals.

The Generate path of the RF Assy receives a 10.5 MHz IF signal from the Multi-Function PCB Assy. This signal is mixed with the 80 MHz Gen. 3rd LO to create a 69.5 MHz IF that is filtered to remove unwanted mixing products and amplified before being input to the Generate leveler circuit. The Generate leveler circuit is used to set the desired output signal level by compensating for variations in flatness over the 2 to 1000 MHz output band. The 69.5 MHz IF is then mixed with the 1330 MHz Generate 2nd LO to produce a 1399.5 MHz IF. The output of the mixer is filtered to remove unwanted mixing products and amplified before being input to the last mixer. The Generate 1st LO, which covers 1401.5 to 2399.5 MHz, is mixed with the 1399.5 MHz IF to produce an output frequency of 2 to 1000 MHz. Following the mixer the signal passes through a low-pass filter and into an amplifier. The output of the amplifier is tapped off to the Generate Level detector. The output of the detector is feed back to the Generate Leveler to level the generate system. The RF signal out of the amplifier then passes through the step attenuators. The step attenuators provide 60 dB of attenuation in 1 dB steps to set the signal level out of the Unit. The signal is then input to a RF switch. One port of the switch goes to the T/R Connector via a 3 dB pad, 3 way resistive splitter. This allows the T/R Connector to accept signal levels up to 125 W directly into the Test Set.

The other port of the RF switch is input to a second RF switch which steers the signal to either the ANT Connector or the SWR circuit. When the ANT Connector is selected, the signal passes through another RF switch to insure sufficient isolation and is coupled to the ANT Connector through the ANT Connector protection relay.

Connected to the ANT and GEN Connectors are the connector protection circuits. These circuits are designed to protect the rest of the circuitry from damage if a high power signal is inadvertently input to either of these connectors. If the signal level input to either connector is too high, the signal level is detected by diode detector and the mechanical relay at the connector is opened. Additionally a signal is sent to the software via the Multi-Function PCB Assy that alerts the operator that an overload condition exists.

B. RF Assy (1A2) (Figure 1-2) (cont)

The GEN Connector can be used to measure SWR and Distance to Fault (DTF) or as a generate connector providing up to -5 dBm output. When SWR or DTF testing is selected, the signal is amplified and passes through a 6 dB pad to insure a good match at the GEN Connector. The signal then goes through two directional couplers and the GEN connector protection relay. The coupler couples off the forward and reverse power at the GEN Connector. The coupled signals are input to a dual Log Amp that outputs video signal proportional to the amplitude and phase difference of the forward and reverse power. From these measurements the software can calculate the SWR of the UUT. It is necessary to calibrate the SWR circuitry by connecting a short, an open and a 50 Ω termination to the end of the cable connected to the UUT.

When the 8800 / 8800S is in a Receive Mode, either Transmitter Test or Duplex Test, the signal may be input to the T/R or ANT Connector.

The resistive splitter feeds part of the received signal to the power detect circuit. The power detect circuit is a diode detector used to measure the input power for the Power Meter function. The resistive splitter also feeds the signal through a 10 dB pad to the receive connector selection switch.

When the ANT Connector is selected, a signal input to the ANT Connector passes through the protection circuitry to the receive connector selection switch. From this point on both the ANT and T/R Connectors share a common path. The signal is input to the step attenuator that provides 0 to 30 dB of attenuation in 10 dB steps. Following the attenuator part of the signal is tapped off to feed the log amp detector. The detected level out of the log amp is used to insure that the receiver does not go into compression.

The received signal passes through a low-pass filter to remove out-of-band signal to the switchable pre-amp. The pre-amp is selected by software to increase sensitivity for low-level signals. The signal is then input to a mixer where the signal is mixed with the Receive 1st LO. The LO is tunable from 1405 to 2403 MHz to produce an IF signal at 1403 MHz. The IF signal is filtered to remove unwanted mixing products and amplified before being input to a second mixer. The signal is then mixed with the Receive 2nd LO of 1310 MHz to down-convert the signal to a 93 MHz IF. The 93 MHz IF is amplified and filtered then input to the 3rd mixer. The signal is mixed with the Receive 3rd LO of 80 MHz to down-convert the signal to the final IF of 13 MHz. The IF then passes through a low-pass filter and an amplifier before being input to a switchable filter network. At this point the signal either passes through a 1 MHz wide bandpass filter or a 3 dB pad that compensates for the insertion loss of the filter. Following the switchable filter, the signal then passes through several selectable gain amplifiers before being output to the Multi-Function PCB Assy for digital processing. The amplifiers are selectable in gain increments of 10 dB and controlled by the AGC software.

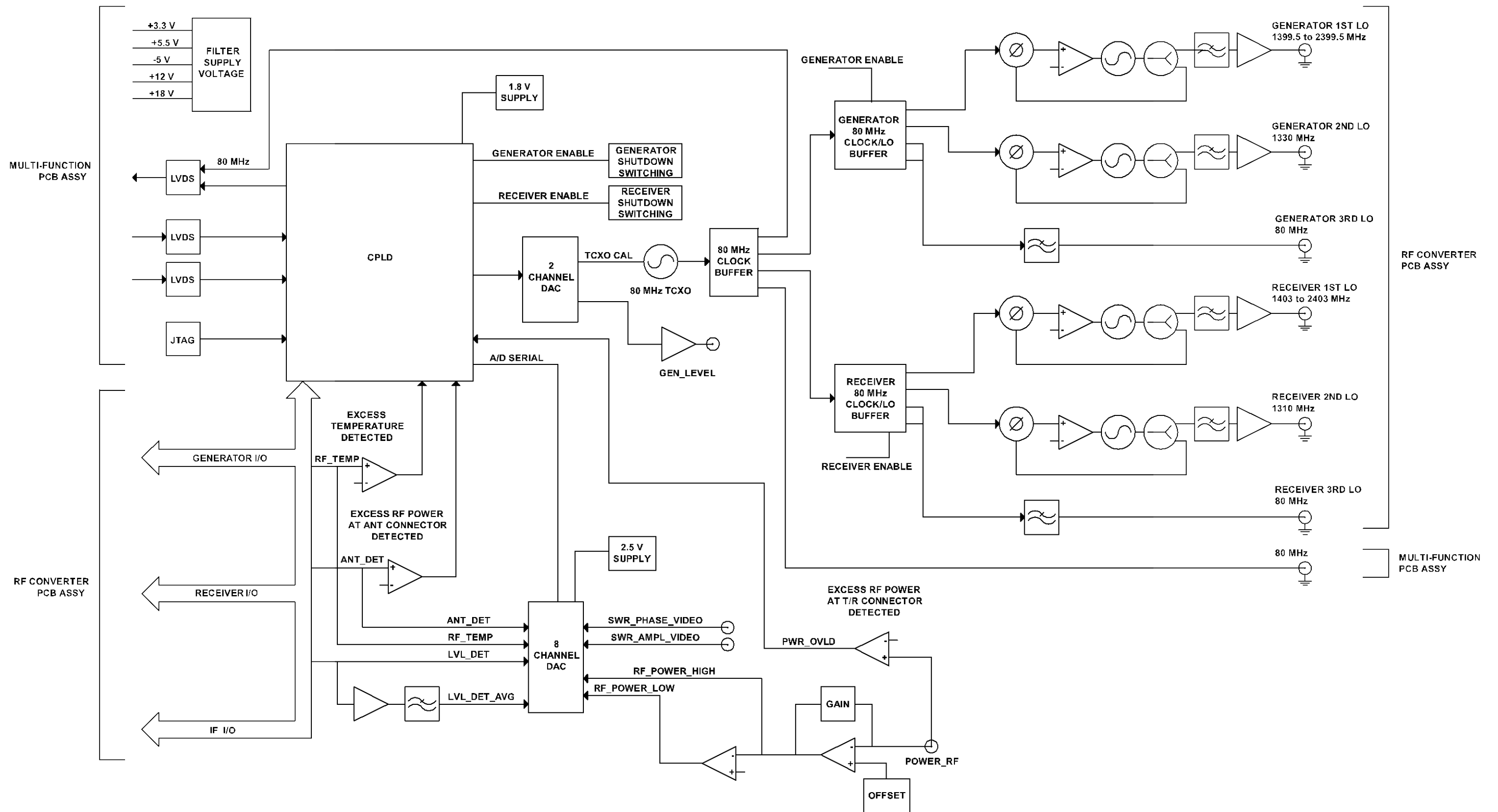


Figure 1-2. RF Assy Block Diagram (Sheet 1 of 2)
(RF Controller PCB Assy)

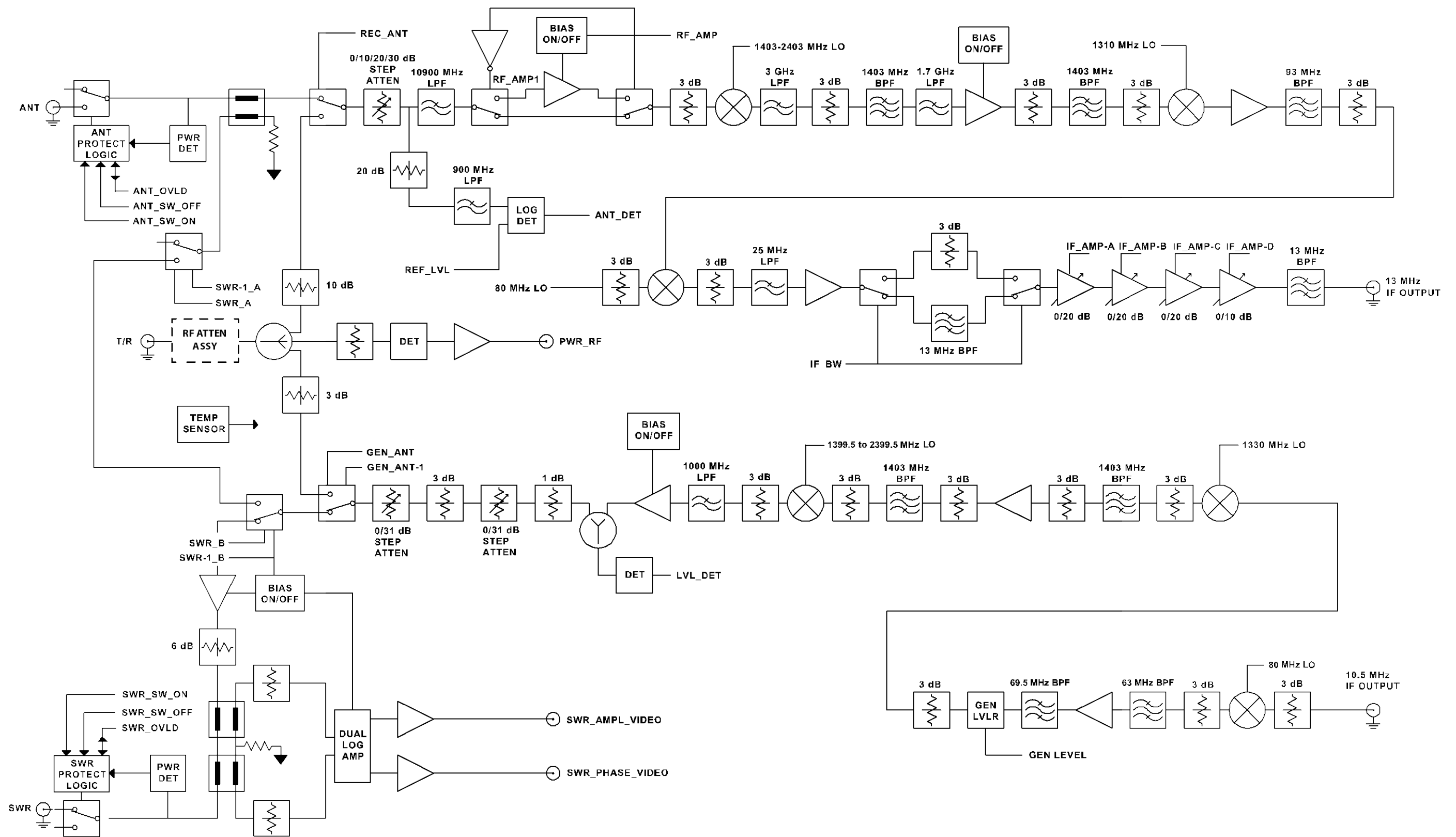


Figure 1-2. RF Assy Block Diagram (Sheet 2 of 2)
(RF Converter PCB Assy)

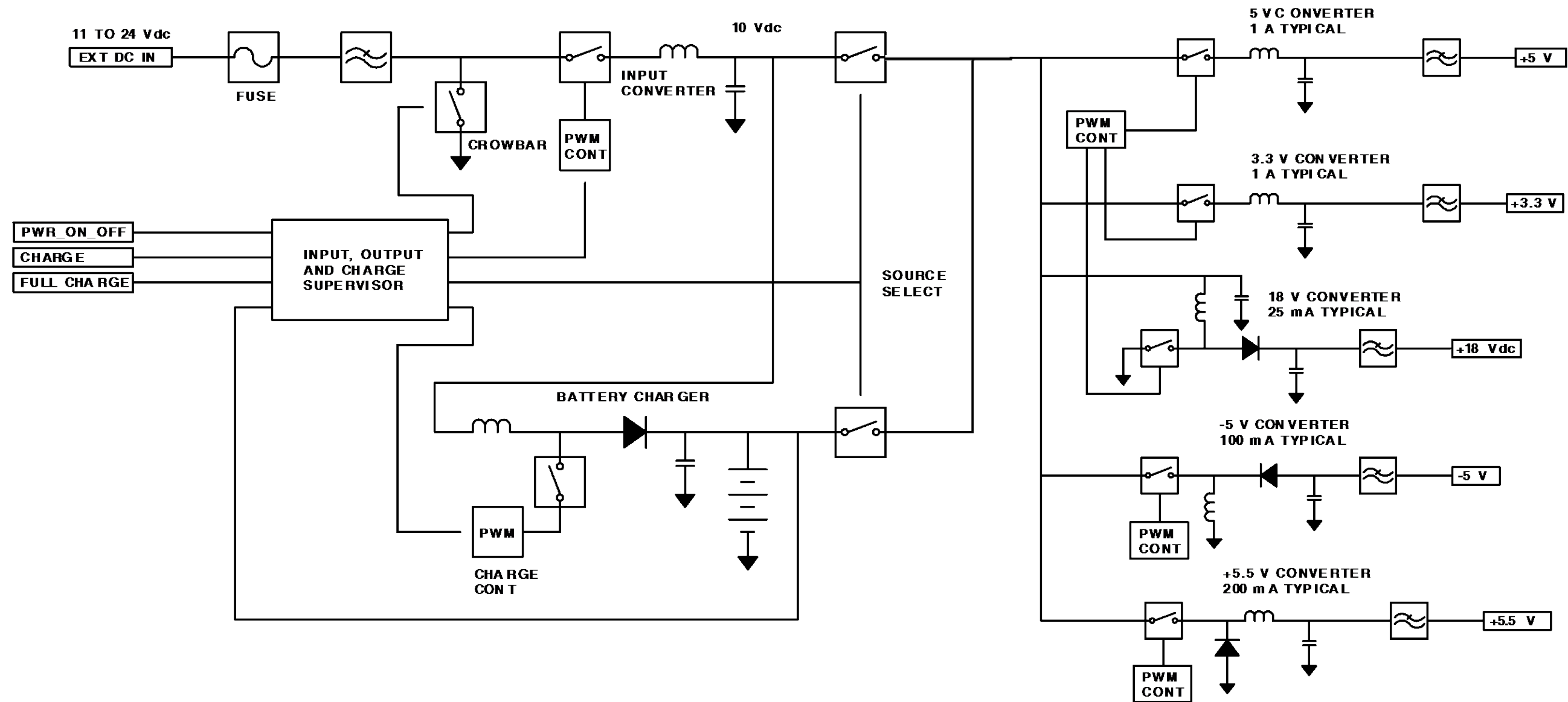


Figure 1-3. Power Supply PCB Assy Block Diagram

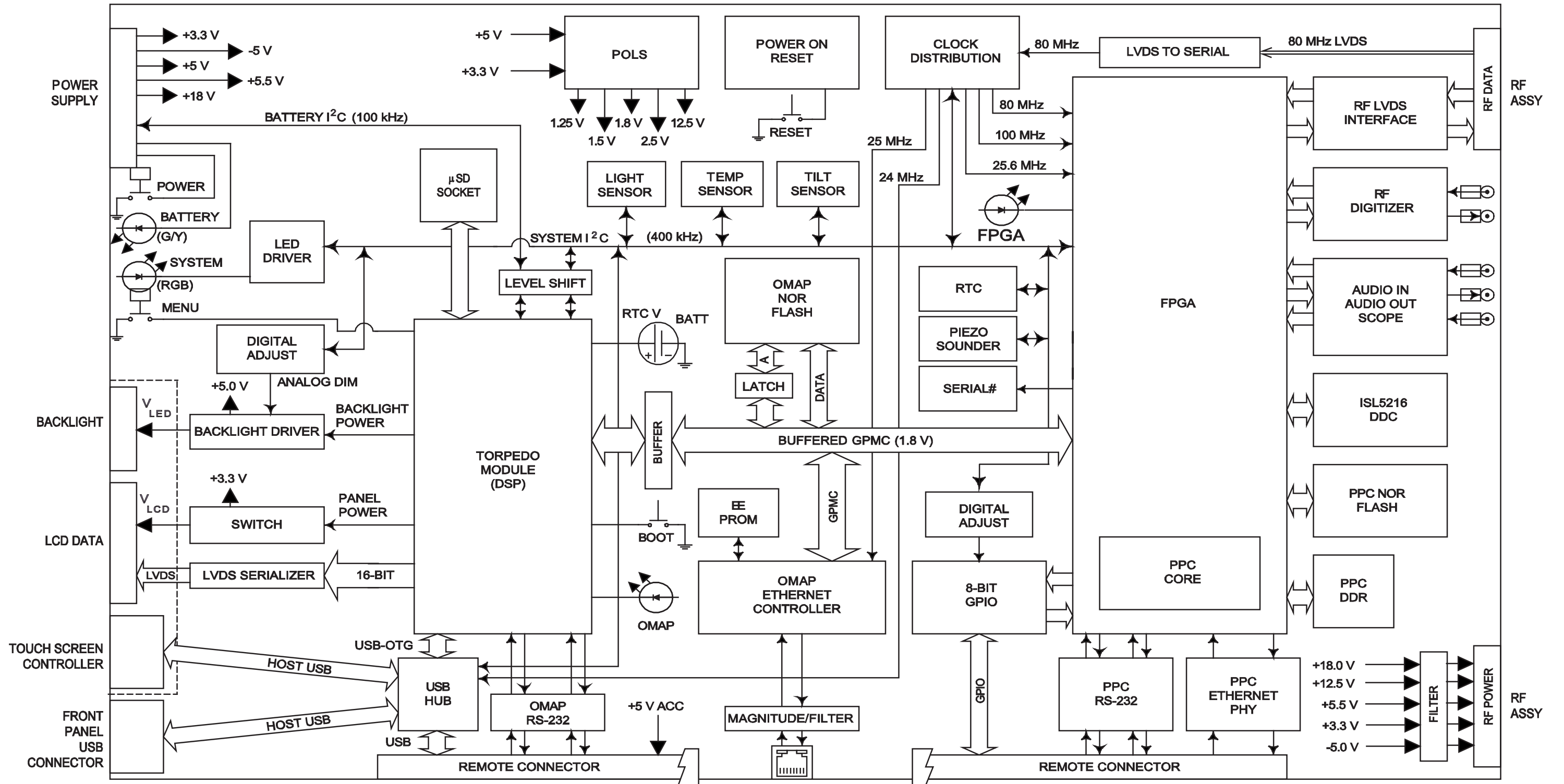


Figure 1-4. Multi-Function PCB Assy Block Diagram

C. Power Supply PCB Assy (1A3) (Figure 1-3)

The Power Supply PCB Assy is responsible for supplying power to the internal modules for operation and for charging the internal batteries. The Power Supply PCB Assy operates from externally supplied DC power and provides simultaneous run and battery charge, or battery charge only. The battery charge time increases when in the run and charge mode. The Power Supply PCB Assy consists of a DC-DC Converter, ON/OFF Control circuitry and the Battery Charger circuitry. The external DC input is supplied from an External DC Power Supply (supplied).

The internal batteries are removable/replaceable Li Ion battery packs with an internal "gas-gauge" feature that allows accurate determination of remaining battery life. Maximum operating and storage temperature for Li Ion batteries is -20°C to +60°C and the maximum charging temperature is 0°C to +45°C.

The Power Supply PCB Assy contains a synchronous buck converter to convert the input voltage to a fixed output voltage (+10 Vdc). The Power Supply PCB Assy also contains a low-pass filter to reduce the amount of internal emissions. The Input Converter Assembly is capable of providing enough output current to charge the battery and run the Test Set at the same time, as long as the input voltage is within range.

D. Multi-Function PCB Assy (1A4A1) (Figure 1-4)

The Multi-Function PCB Assy provides processor control of various digital, analog and RF sub-circuits used to generate or receive RF signaling normally used in mobile radio communication. The Multi-Function PCB Assy also contains the application specific circuits to control the other assemblies.

The user interface consists of the LCD Panel and Touch Screen, along with the Power, Menu and Arrow Buttons. The ETHERNET, USB and REMOTE Connectors provide digital connectivity to the external devices.

E. Display

The Display feature of the 8800 / 8800S consists of a LED Backlight Assy, Touch Screen Assy and Touch Screen Controller Assy. The Touch Screen is the User Interface. The Multi-Function PCB Assy receives and sends signals and data from the external connectors to the LCD. The Touch Screen Controller Assy interacts with the user interface portion of the Multi-Function PCB Assy to control menu interaction and backlight capability.

On the Touch Screen Assy, the touchpad sensor is composed of two resistive layers separated by an air gap. One plate is used for the X axis and the other plate is used for the Y axis. When pressure is applied the two resistive plates make contact. A microcontroller measures position and pressure then uses advanced algorithms to yield smooth mouse functionality. When not touched, the touchpad appears to the microcontroller as an open switch.

F. Arrow Control PCB Assy (1A4A5)

The Arrow Control PCB Assy consists of five pushbutton switches to navigate up, down, left and right or to enter a value in a displayed field.

G. DMM Assy (1A4A7) (Figure 1-5)

The Digital Multimeter is a self-contained, electrically isolated, digital module capable of operating at temperatures of -20°C to +70°C. The Digital Multimeter measures AC and DC voltage, current and resistance within $\pm 5\%$ full scale of the selected range. The Digital Multimeter measures up to 400 VAC or Vdc, 3 A of current and 40 MW of resistance.

The Digital Multimeter is designed around a self-contained, Integrated Circuit (IC) that is controlled by an on-board host microprocessor (uP). The Digital Multimeter's uP is responsible for transferring digitized measurement data from the Digital Multimeter IC to the 8800 / 8800S, for processing all commands sent to the Digital Multimeter module from the 8800 / 8800S and for retaining calibration values for each function and range on the Digital Multimeter's flash memory.

The host processor performs the auto-ranging function using a resistive voltage divider network with various branches that are switched in or out by the Digital Multimeter IC according to the overflow data.

The Digital Multimeter contains AC compensation capacitors that flatten out the AC voltage response of the meter over the range of 0 to ~ 20 kHz. The precision values of the AC compensation capacitors are critical to the proper operation of the AC voltage function over the entire frequency bandwidth.

The internal voltages for the Digital Multimeter module are received from a +5 V input from the Test Set via an isolated 5 V DC to DC Converter whose output is also 5 Vdc and post regulated via a linear regulator IC. The output from the DC to DC Converter is split into separate +2.5 and -2.5 V supplies for the associated analog circuitry.

The Digital Multimeter +5 V input supply and the 2-wire serial data port circuits that run between the Test Set and Digital Multimeter module are both electrically isolated within the Digital Multimeter module to prevent damage and personal injury which may occur when inappropriately high voltages are applied to the input terminals.

The AC Voltage function of the Digital Multimeter module is a true RMS reading achieved by using an RMS voltage converter IC. When AC Voltage measurements are being performed, the voltage is automatically routed through the RMS converter IC, then back into the Digital Multimeter IC for conversion. Streaming results and measurement data are then passed to the Test Set via the internal uP over a 2-wire serial link.

The AC and DC Current metering capability of the Digital Multimeter module is protected from overload by a fuse located on the front of the module. The fuse is rated at 3 A maximum for a period of 10 seconds. The voltage and resistance input terminals are internally protected from the application of excessive voltages by a gas discharge tube across the inputs.

G. DMM Assy (1A4A7) (Figure 1-5) (cont)

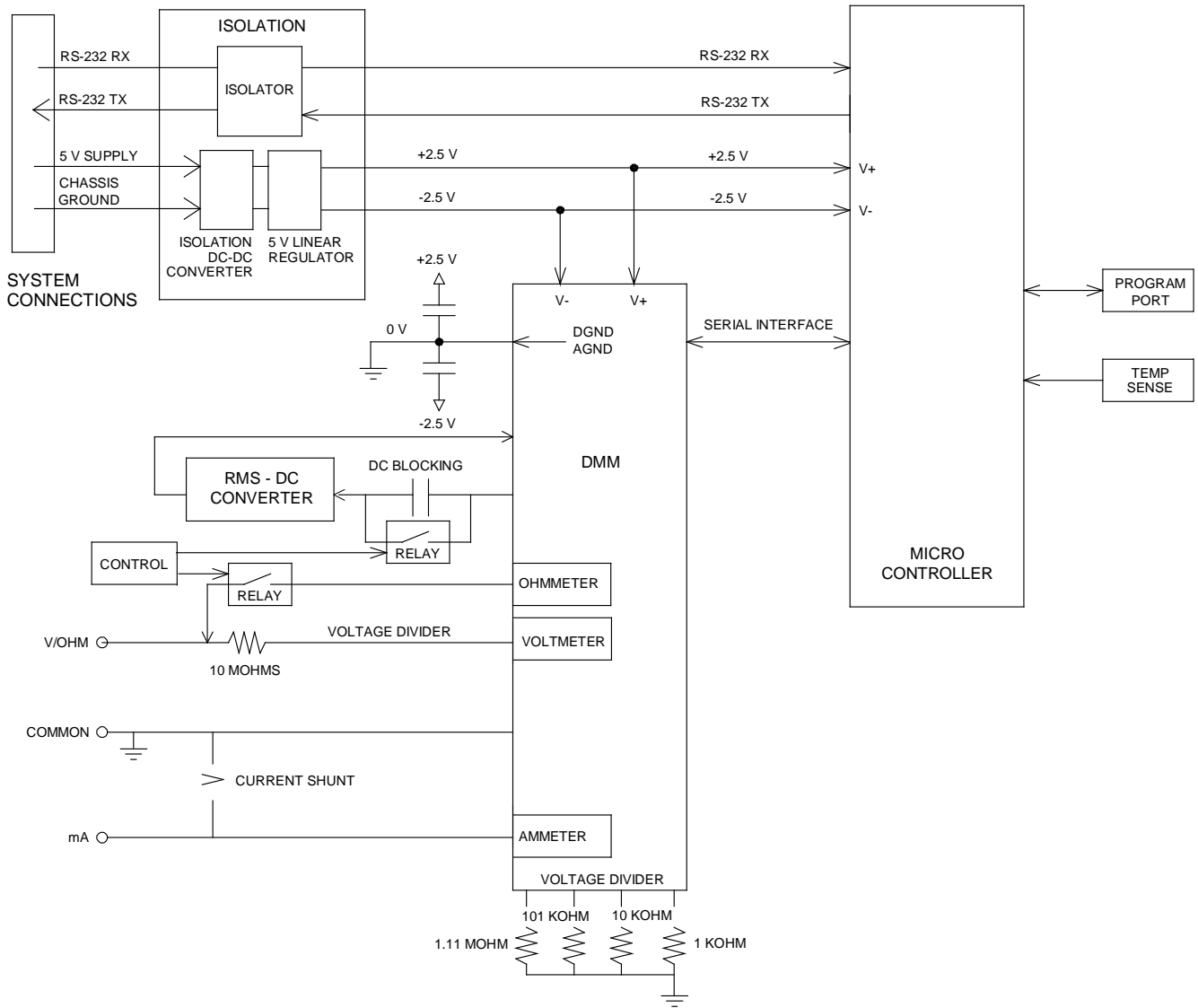


Figure 1-5. DMM Assy Block Diagram

H. Audio I/O PCB Assy (1A4A6) (Figure 1-6)

The Audio IO module serves as a signal interface PCB for the 8800 / 8800S. In order to bring the signal requirements to the front and rear panels of the 8800 / 8800S, the Audio IO PCB Assy gives access of critical signals from the Multi-Function PCB Assy to the internal chassis of the 8800 / 8800S.

The Audio IO PCB Assy consists of three DC sub regulators, three external USB ports, two dedicated USB ports for the system DMM Assy and the Arrow Control PCB Assy.

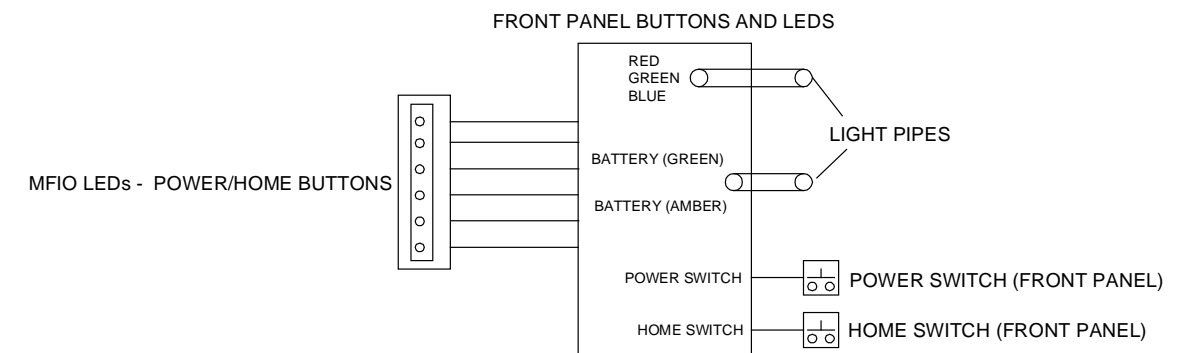
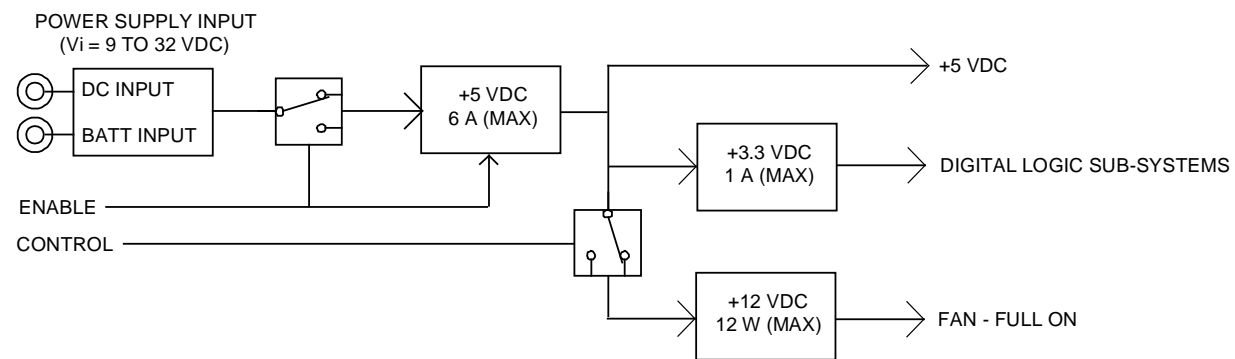
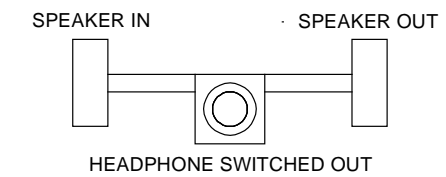
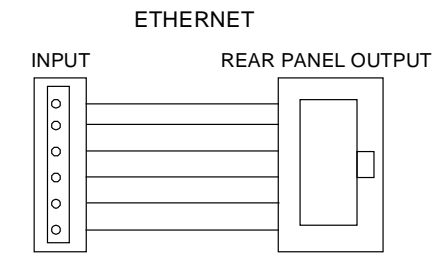
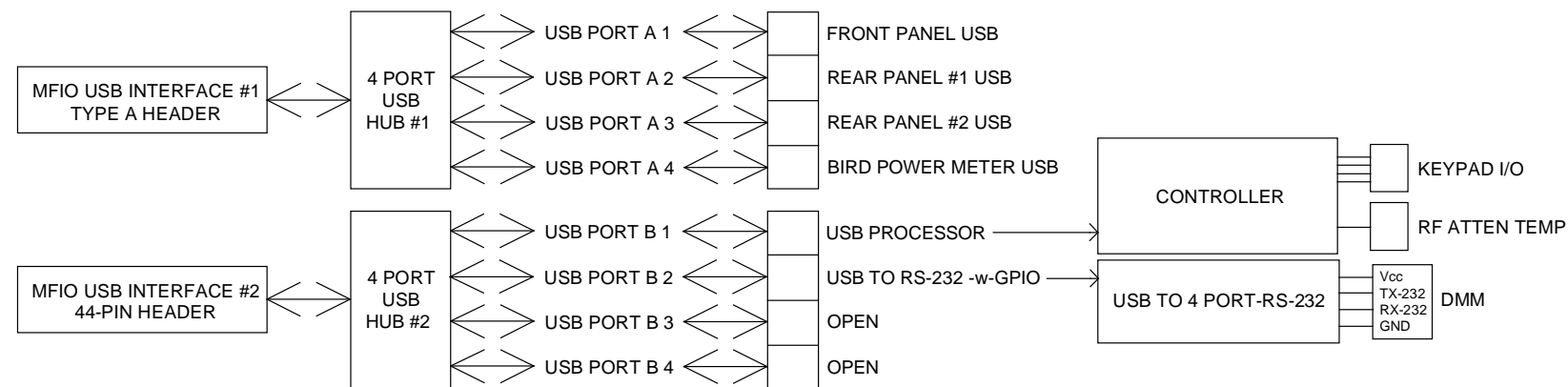


Figure 1-6. Audio I/O PCB Assy Block Diagram

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MAINTENANCE INSTRUCTIONS

2-1. SERVICE UPON RECEIPT

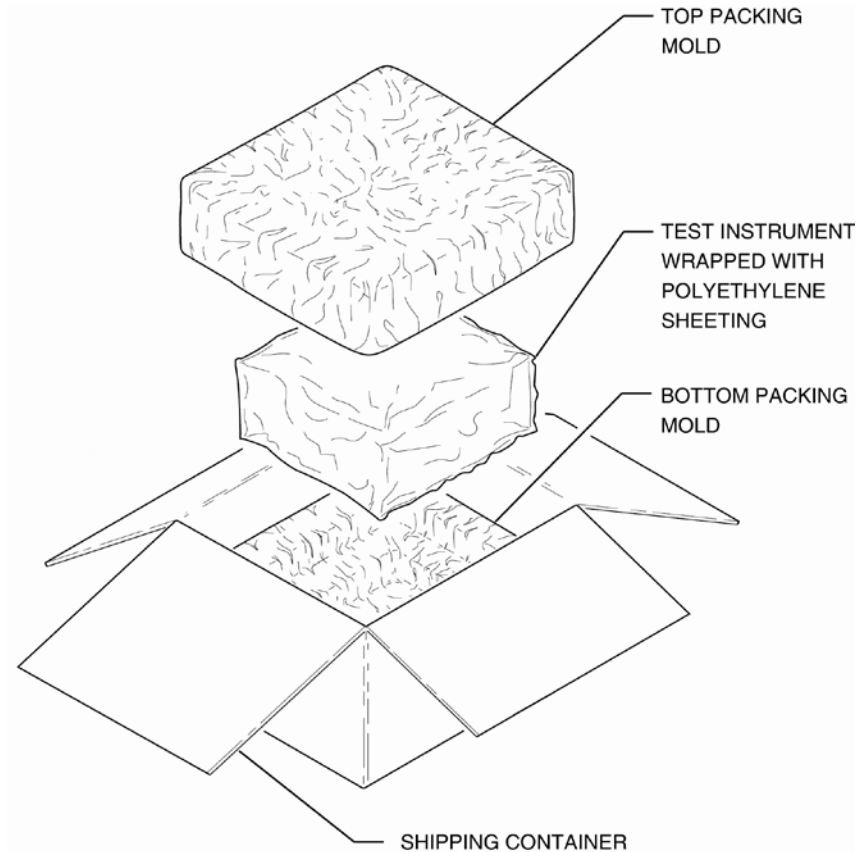
2-1-1. SERVICE UPON RECEIPT OF MATERIEL

A. Unpacking

Special-design packing material inside the shipping container provides maximum protection for the 8800 / 8800S. Avoid damaging the shipping container and packing material during equipment unpacking.

Use the following steps for unpacking the 8800 / 8800S.

- I Cut and remove the sealing tape on top of the shipping container and open the shipping container.
- I Remove the top packing mold.
- I Remove 8800 / 8800S and packing material from the bottom packing mold.
- I Remove the protective plastic bag from the 8800 / 8800S and inspect the contents.
- I Place the protective plastic bag and packing material inside the shipping container.
- I Store the shipping container for future use should the 8800 / 8800S need to be returned/shipped.



B. Checking Unpacked Equipment

Check the equipment for damage incurred during shipment. If the equipment has been damaged or if items seem to be absent from the shipment, report the damage and/or discrepancies to Aeroflex Customer Service.

CONTACT: Aeroflex

Telephone: (800) 835-2350 (U.S. only)
(316) 522-4981

FAX: (316) 524-2623

E-Mail: *americas.service@aeroflex.com*

2-1-2. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT

Refer to the 8800 Operation Manual for this information.

2-2. TROUBLESHOOTING

Troubleshooting is divided into a Symptom Index and a Troubleshooting Table.

The Troubleshooting Table lists common malfunctions which may occur during operation of 8800 / 8800S. This manual cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. Perform tests/inspections and corrective actions in order listed.

If a malfunction is not listed or is not corrected by listed corrective actions, the troubleshooting technique (the formulation of a logical approach in locating the source of trouble) is left to the technician's discretion.

After the faulty assembly has been located, refer to para 2-4 for remove/replace instructions.

2-2-1. TROUBLESHOOTING GUIDELINES

The 8800 / 8800S has a built-in Self Test to assist the technician in troubleshooting.

Many problems on the 8800 / 8800S in service are caused by corrosion. Sometimes removing and reseating an affected cable or circuit card corrects the malfunction. Cleaning connector and/or switch contacts with alcohol repairs corrects many types of digital and analog circuit malfunctions.

2-2-2. EQUIPMENT INSPECTION

The following inspection procedures are used to locate obvious malfunctions with the Test Set:

- Inspect all external surfaces of the Test Set for physical damage, breakage, loose or dirty contacts and missing components.

WARNING

DANGEROUS VOLTAGES ARE PRESENT WITH COVERS REMOVED.

CAUTION

DO NOT DISCONNECT OR REMOVE ANY BOARD ASSEMBLIES IN THE TEST SET UNLESS INSTRUMENT IS UNPLUGGED. SOME ASSEMBLIES CONTAIN DEVICES THAT CAN BE DAMAGED IF BOARD IS REMOVED WHEN POWER IS ON. SEVERAL COMPONENTS, INCLUDING MOS DEVICES, CAN BE DAMAGED BY ELECTROSTATIC DISCHARGE. USE CONDUCTIVE FOAM AND GROUNDING STRAPS WHEN SERVICING IS REQUIRED AROUND SENSITIVE COMPONENTS. USE CAUTION WHEN UNPLUGGING ICS FROM HIGH-GRIP SOCKETS.

- Inspect printed circuit board surfaces for discoloration, cracks, breaks and warping and printed circuit board conductors for breaks, cracks, cuts, erosion or looseness.
- Inspect all assemblies for burnt or loose components.
- Inspect all chassis-mounted components for looseness, breakage, loose contacts or conductors.
- Inspect 8800 / 8800S for disconnected, broken, cut, loose or frayed cables or wires.

2-2-3. TROUBLESHOOTING PRECAUTIONS

WARNING

- REMOVE ALL JEWELRY OR OTHER COSMETIC APPAREL BEFORE PERFORMING ANY TROUBLESHOOTING INVOLVING LIVE CIRCUITS.
- WHEN WORKING WITH LIVE CIRCUITS OF HIGH POTENTIAL, KEEP ONE HAND IN POCKET OR BEHIND BACK TO AVOID SERIOUS SHOCK HAZARD.
- USE ONLY INSULATED TROUBLESHOOTING TOOLS WHEN WORKING WITH LIVE CIRCUITS.
- FOR ADDED INSULATION, PLACE RUBBER BENCH MAT UNDERNEATH ALL POWERED BENCH EQUIPMENT, AS WELL AS A RUBBER MAT UNDERNEATH TECHNICIAN'S CHAIR.
- HEED ALL WARNINGS AND CAUTIONS CONCERNING MAXIMUM VOLTAGES AND POWER INPUTS.



CAUTION

ALL ASSEMBLIES CONTAIN PARTS SENSITIVE TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD). ALL PERSONNEL PERFORMING TROUBLESHOOTING PROCEDURES SHOULD HAVE KNOWLEDGE OF ACCEPTED ESD PRACTICES AND/OR BE ESD CERTIFIED.

2-2-4. EMC / SAFETY COMPLIANCE

All assemblies, cables, connectors, plastic fasteners, gaskets, fingerstock and miscellaneous hardware within the 8800 / 8800S 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.

2-2-5. BATTERY PRECAUTIONS

The 8800 / 8800S is powered by an internal Lithium Ion battery pack. The 8800 / 8800S is supplied with an External DC Power Supply which allows the operator to recharge the battery using AC power. The 8800 / 8800S can operate continuously on AC power via the External DC Power Supply, for servicing and/or bench tests.

The internal battery is equipped to power the 8800 / 8800S for 2.5 hours of continuous use, after which time, the 8800 / 8800S battery needs recharging. When the BAT Indicator is GREEN, the battery is at 100% full charge. When the BAT Indicator is AMBER, the battery is charging.

If the battery level, shown in the BAT Icon, is $\leq 5\%$, a "Low Battery" warning message is displayed.

The battery charger operates whenever the supplied External DC Power Supply or a suitable (11 to 24 Vdc) DC Power source is applied to the 8800 / 8800S. When charging, the battery reaches a 100% charge in approximately four hours. The internal battery charger allows the battery to charge between a temperature range of 0° to 45°C. Allow 20 minutes for the battery to charge when turning the 8800 / 8800S ON from a dead battery condition.

The battery should be charged every three months (minimum) or disconnected for long term inactive storage periods of more than six months. The Battery must be removed when conditions surrounding the 8800 / 8800S are $< -20^{\circ}\text{C}$ and $> 60^{\circ}\text{C}$.

2-2-6. SUPPORT EQUIPMENT

TYPE	MODEL
Digital Multimeter	HP 34401A or Equivalent
Oscilloscope	Tektronix TDS 2024 or Equivalent
Spectrum Analyzer	Aeroflex AN940 or Equivalent
RF Signal Generator	HP 8648C or Equivalent

SYMPTOM INDEX

SYMPTOM	DESCRIPTION	PAGE
1	Unit Power Up Failure	2-7 / 2-8
2	Arrow Control Inoperable	2-7 / 2-12
3	Audio I/O and Oscilloscope Inoperable	2-7 / 2-14
4	No Display	2-7 / 2-15
5	USB Connector Failure	2-7 / 2-16
6	Touch Screen Failure	2-7 / 2-17
7	DMM Failure	2-7 / 2-18
8	Speaker Failure	2-7 / 2-20
9	RF Power Failure / Generator and Receiver OK	2-7 / 2-21
10	RF Receiver Failure	2-7 / 2-22
11	RF Generator Failure	2-7 / 2-24
12	Self Test Failure	2-7

TROUBLESHOOTING TABLE

NOTE

The Troubleshooting Table lists common malfunctions found during normal operation of the 8800 / 8800S. The tests or inspections and corrective actions should be performed in the order listed. Failure to do so may result in troubleshooting recommendations that replace working items.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
1 Unit Power Up Failure		Perform the Unit Power Up Failure Troubleshooting Test (para 2-2-7A).
2 Arrow Control Inoperable		Perform the Arrow Control Inoperable (para 2-2-7B).
3 Audio I/O and Oscilloscope Inoperable		Perform the Audio I/O and Oscilloscope Inoperable (para 2-2-7C).
4 No Display		Perform the No Display (para 2-2-7D).
5 USB Connector Failure		Perform the USB Connector Failure (para 2-2-7E).
6 Touch Screen Failure		Perform the Touch Screen Failure (para 2-2-7F).
7 DMM Failure		Perform the DMM Failure (para 2-2-7G).
8 Speaker Failure		Perform the Speaker Failure (para 2-2-7H).
9 RF Power Failure / Generator and Receiver OK		Perform the RF Power Failure / Generator and Receiver OK (para 2-2-7I).
10 RF Receiver Failure		Perform the RF Receiver Failure (para 2-2-7J).
11 RF Generator Failure		Perform the RF Generator Failure (para 2-2-7K).
12 Self Test Failure		Contact Aeroflex Customer Service for further assistance.

2-2-7. TROUBLESHOOTING TESTS

A. Unit Power-Up Failure

TEST EQUIPMENT: Digital Multimeter

REFERENCE FIGURES: Figure E-1
Figure E-4
Figure E-5
Figure E-6

NOTE

Perform this test only when instructed from the Troubleshooting Table or another troubleshooting test. Do not perform this troubleshooting test as a separate procedure unless otherwise instructed. Certain conditions have been established and/or tested prior to performing this test.

NOTE

This procedure assumes the AC Power Source has been checked and verified to be working correctly at the level to properly power the Test Set.

PART 1 - External DC Power Supply

1. Verify the power cable(s) are in useable condition with no physical damage.
 - ◆ **INCORRECT** Replace damaged power cable(s).
2. Disconnect the External DC Power Supply from the DC IN Connector.
3. Using a Digital Multimeter, verify 24 Vdc (± 1.2 V) on the External DC Power Supply output.
 - ◆ **INCORRECT** Replace the External DC Power Supply.
4. Go to Part 2 - Internal Power Supply.

A. Unit Power-Up Failure (cont)

PART 2 - Internal Power Supply

1. Remove the Battery Cover (para 2-4A).
2. Verify the Fuse (F1) is not blown.
 - ◆ **INCORRECT** Replace the Fuse (para 2-4B).
3. Remove the Battery (para 2-4A).
4. Connect the External DC Power Supply to the DC IN Connector.
5. Press the POWER Key and verify the 8800 / 8800S turns ON.
 - ◆ **CORRECT** Replace the Battery (para 2-4A).
 - ◆ **INCORRECT** Go to Step 6.
6. Disconnect the External DC Power Supply from the DC IN Connector.
7. Open the Case Assembly (para 2-4D).
8. Connect the External DC Power Supply to the DC IN Connector.
9. Using a Digital Multimeter, verify >9 Vdc on A3J2 Pin 10 (Power Supply PCB Assy).
 - ◆ **INCORRECT** Using a Digital Multimeter, verify 24 Vdc (± 1.2 V) on A3J3 Pin 1 (Power Supply PCB Assy).
 - ◆ **CORRECT** Replace the Power Supply PCB Assy (para 2-4E).
 - ◆ **INCORRECT** Replace W5 and restart at Step 8.
10. Using a Digital Multimeter, verify 0 V while pressing and holding the POWER Key on A3J2 Pin 10 (Power Supply PCB Assy).
 - ◆ **INCORRECT** Contact Aeroflex Customer Service for further assistance.
11. Using a Digital Multimeter, verify the following voltages on A3J2 (Power Supply PCB Assy):

PIN NUMBER	VOLTAGE
Pins 3, 5, 7 and 11	5 Vdc
Pins 13, 15, 17, 19, 20 and 21	3.3 Vdc
Pins 23 and 25	18 Vdc
Pins 26 and 28	5.5 Vdc
Pin 10	9.5 Vdc
Pins 27, 29 and 31	-5 Vdc

- ◆ **INCORRECT** Replace the Power Supply PCB Assy (para 2-4E).
12. Go to Part 3 - Multi-Function PCB Assy.

A. Unit Power-Up Failure (cont)

PART 3 - Multi-Function PCB Assy

1. Using a Digital Multimeter, verify the following voltages on A4A1-J5 (Audio I/O PCB Assy):

PIN NUMBER	VOLTAGE
Pins 3, 5, 7 and 11	5 Vdc
Pins 13, 15, 17, 19, 20 and 21	3.3 Vdc
Pins 23 and 25	18 Vdc
Pins 26 and 28	5.5 Vdc
Pin 10	9.5 Vdc
Pins 27, 29 and 31	-5 Vdc

- ◆ **INCORRECT** Replace W8.
2. Verify DS6 on the Multi-Function PCB Assy is blinking Green after 15 seconds.
 - ◆ **INCORRECT** Replace the Multi-Function PCB Assy (para 2-4H).
 3. Verify DS7 on the Multi-Function PCB Assy is lit (Green) after 15 seconds.
 - ◆ **INCORRECT** Replace the Multi-Function PCB Assy (para 2-4H).
 4. Verify DS2 on the Multi-Function PCB Assy is OFF after 15 seconds.
 - ◆ **INCORRECT** Replace the Multi-Function PCB Assy (para 2-4H).
 5. Verify DS12 on the Multi-Function PCB Assy is lit (Green) after 45 seconds.
 - ◆ **INCORRECT** Replace the Multi-Function PCB Assy (para 2-4H).
 6. Verify DS8 and DS10 on the Multi-Function PCB Assy are blinking Green and/or Red.
 - ◆ **INCORRECT** Contact Aeroflex Customer Service - Possible Key Encryption Error.
 7. Using a Digital Multimeter, verify the following voltages on A4A1-J27 (Multi-Function PCB Assy):

PIN NUMBER	VOLTAGE
Pins 1, 3, 5 and 7	22 Vdc
Pins 2, 4, 6 and 8	0.8 Vdc

- ◆ **INCORRECT** Replace the Multi-Function PCB Assy (para 2-4H).
8. Go to Part 4 - Display.

A. Unit Power-Up Failure (cont)

PART 4 - Display

1. Remove the Multi-Function PCB Assy (para 2-4H).
2. Visually verify all connections and wire harnesses are in good condition.
 - ◆ **INCORRECT** Replace suspect wire harnesses.
3. Replace the LED Display Assy (para 2-4I).

Contact Aeroflex Customer Service if further assistance is required.

B. Arrow Control Inoperable

TEST EQUIPMENT: Digital Multimeter

REFERENCE FIGURES: Figure E-1
Figure E-5
Figure E-6
Figure E-10
Figure E-11

NOTE

Perform this test only when instructed from the Troubleshooting Table or another troubleshooting test. Do not perform this troubleshooting test as a separate procedure unless otherwise instructed. Certain conditions have been established and/or tested prior to performing this test.

NOTE

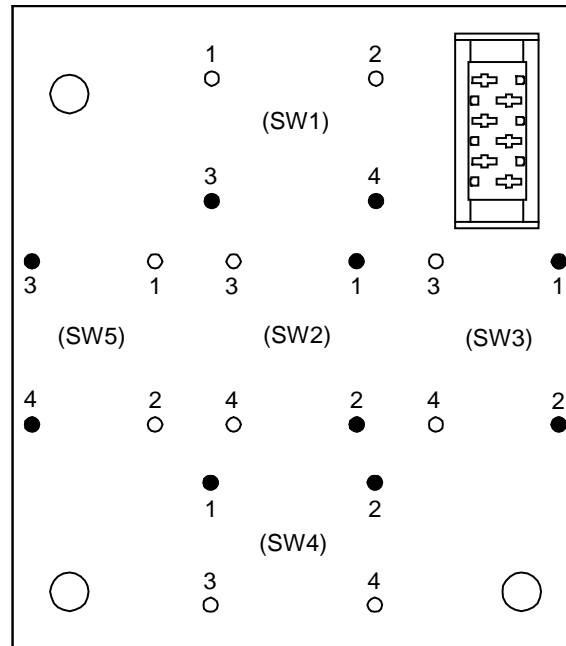
This procedure assumes the AC Power Source has been checked and verified to be working correctly at the level to properly power the Test Set.

1. Verify all buttons detent and no buttons are stuck.
◆ INCORRECT Replace the Arrow Control PCB Assy (para 2-4N).
2. Press the POWER Key to turn the Test Set OFF.
3. Disconnect the External DC Power Supply from the DC IN Connector.
4. Open the Case Assy (para 2-4D).
5. Verify all cable connections are secure:

CABLE	CONNECTOR(S)	ASSY
A4W9-P1 A4W9-P2	A4A6-J15 A4A5-J1	Audio I/O PCB Assy Arrow Control PCB Assy
A4W12-P1 A4W12-P2	A4A1-J15 A4A6-J11	Multi-Function PCB Assy Audio I/O PCB Assy
A4W13-P1	A4A1-J14	Multi-Function PCB Assy

- ◆ INCORRECT** Secure all cable connections.
6. Reconnect the External DC Power Supply to the DC IN Connector.
7. Press the POWER Key to turn the Test Set ON.

B. Arrow Control Inoperable (cont)



8. Using a Digital Multimeter, verify 3.3 V on the trace side of all five buttons of the Arrow Control PCB Assy. (Shaded circles in diagram indicate test points.)
 - ◆ **INCORRECT** Using a Digital Multimeter, verify 3.3 V on A4A6-J15 Pins 1 to 5 (Audio I/O PCB Assy).
 - ◆ **CORRECT** Replace the Audio I/O PCB Assy (para 2-4L)
 - ◆ **INCORRECT** Disconnect A3W1-P1 from A4A6-J20 (Audio I/O PCB Assy).
Using a Digital Multimeter, verify 24 V on A3W1-P1 Pin 1 and 3.3 V on A3W1-P1 Pin 3.
 - ◆ **INCORRECT** Replace the Power Supply PCB Assy (para 2-4E).
9. Press the Arrow Keys one at a time and, using a Digital Multimeter, verify all switches short 3.3 to 0 V.
 - ◆ **INCORRECT** Replace the Arrow Control PCB Assy (para 2-4N).
10. Verify DS4 on the Audio I/O PCB Assy is lit (Green).
 - ◆ **INCORRECT** Verify DS7 on the Multi-Function PCB Assy is lit (Green).
 - ◆ **CORRECT** Replace the Audio I/O PCB Assy (para 2-4L).
 - ◆ **INCORRECT** Replace the Multi-Function PCB Assy (para 2-4H).

Contact Aeroflex Customer Service if further assistance is required.

C. Audio I/O and Oscilloscope Inoperable

TEST EQUIPMENT: Digital Multimeter

REFERENCE FIGURES: Figure E-1

NOTE

Perform this test only when instructed from the Troubleshooting Table or another troubleshooting test. Do not perform this troubleshooting test as a separate procedure unless otherwise instructed. Certain conditions have been established and/or tested prior to performing this test.

NOTE

This procedure assumes the AC Power Source has been checked and verified to be working correctly at the level to properly power the Test Set.

1. Press the POWER Key to turn the Test Set OFF.
2. Disconnect the External DC Power Supply from the DC IN Connector.
3. Open the Case Assy (para 2-4D).
4. Reconnect the External DC Power Supply to the DC IN Connector.
5. Press the POWER Key to turn the Test Set ON (allow the Test Set to boot up completely before continuing).
6. Verify A4-J1, A4-J2 and A4-J3 are not damaged
 - ◆ **INCORRECT** Replace A4-J1, A4-J2 and/or A4-J3.
7. Using a Digital Multimeter, verify connectivity of A4W1, A4W2 and A4W3 with no shorts to ground.
 - ◆ **INCORRECT** Replace A4W1, A4W2 and/or A4W3.
8. Replace the Multi-Function PCB Assy (para 2-4H).

Contact Aeroflex Customer Service if further assistance is required.

D. No Display

TEST EQUIPMENT: Digital Multimeter

REFERENCE FIGURES: Figure E-1
Figure E-5
Figure E-6

NOTE

Perform this test only when instructed from the Troubleshooting Table or another troubleshooting test. Do not perform this troubleshooting test as a separate procedure unless otherwise instructed. Certain conditions have been established and/or tested prior to performing this test.

NOTE

This procedure assumes the AC Power Source has been checked and verified to be working correctly at the level to properly power the Test Set.

1. Press the POWER Key to turn the Test Set OFF.
2. Disconnect the External DC Power Supply from the DC IN Connector.
3. Open the Case Assy (para 2-4D).
4. Reconnect the External DC Power Supply to the DC IN Connector.
5. Press the POWER Key to turn the Test Set ON (allow the Test Set to boot up completely before continuing).
6. Using a Digital Multimeter, verify 3.3 V on E69 (Figure E-6, Multi-Function PCB Assy).
◆ **INCORRECT** Replace the Multi-Function PCB Assy (para 2-4H).
7. Using a Digital Multimeter, verify the Backlight Voltage on A4A1-J27 (Multi-Function PCB Assy):

PIN NUMBER	BACKLIGHT VOLTAGE
Pins 3 and 7	22 Vdc
Pins 4 and 8	0.8 Vdc

- ◆ **INCORRECT** Replace the Multi-Function PCB Assy (para 2-4H).
8. Replace the LED Display Assy (para 2-4I).

Contact Aeroflex Customer Service if further assistance is required.

E. USB Connector Failure

TEST EQUIPMENT: Digital Multimeter

REFERENCE FIGURES: Figure E-1
Figure E-5
Figure E-6
Figure E-11

NOTE

Perform this test only when instructed from the Troubleshooting Table or another troubleshooting test. Do not perform this troubleshooting test as a separate procedure unless otherwise instructed. Certain conditions have been established and/or tested prior to performing this test.

NOTE

This procedure assumes the AC Power Source has been checked and verified to be working correctly at the level to properly power the Test Set.

1. Press the POWER Key to turn the Test Set OFF.
2. Disconnect the External DC Power Supply from the DC IN Connector.
3. Open the Case Assy (para 2-4D).
4. Verify all cable connections are secure:

CABLE	CONNECTOR(S)	ASSY
A4W12-P1 A4W12-P2	A4A1-J15 A4A6-J11	Multi-Function PCB Assy Audio I/O PCB Assy
A4W13-P1	A4A1-J14	Multi-Function PCB Assy

- ◆ **INCORRECT** Secure all cable connections.
5. Reconnect the External DC Power Supply to the DC IN Connector.
 6. Press the POWER Key to turn the Test Set ON.
 7. Verify DS7 on the Multi-Function PCB Assy is lit (Green).
- ◆ **INCORRECT** Replace the Multi-Function PCB Assy (para 2-4H).
8. Verify DS3 on the Audio I/O PCB Assy is lit (Green).
- ◆ **INCORRECT** Disconnect A3W1-P1 from A4A6-J20 (Audio I/O PCB Assy).
Using a Digital Multimeter, verify 24 V on A3W1-P1 Pin 1 and 3.3 V on A3W1-P1 Pin 3.
 - ◆ **CORRECT** Replace the Audio I/O PCB Assy (para 2-4L).
 - ◆ **INCORRECT** Replace the Power Supply PCB Assy (para 2-4E).

Contact Aeroflex Customer Service if further assistance is required.

F. Touch Screen Failure

TEST EQUIPMENT: Digital Multimeter

REFERENCE FIGURES: Figure E-1
Figure E-5
Figure E-6

NOTE

Perform this test only when instructed from the Troubleshooting Table or another troubleshooting test. Do not perform this troubleshooting test as a separate procedure unless otherwise instructed. Certain conditions have been established and/or tested prior to performing this test.

NOTE

This procedure assumes the AC Power Source has been checked and verified to be working correctly at the level to properly power the Test Set.

1. Verify the Touch Screen is not damaged (scratches, pits or indentions).
 - ◆ **INCORRECT** Replace the Replace the Touch Screen Assy (para 2-4M).
2. Press the POWER Key to turn the Test Set OFF.
3. Disconnect the External DC Power Supply from the DC IN Connector.
4. Open the Case Assy (para 2-4D).
5. Reconnect the External DC Power Supply to the DC IN Connector.
6. Press the POWER Key to turn the Test Set ON (allow the Test Set to boot up completely before continuing).
7. Verify DS7 on the Multi-Function PCB Assy is lit (Green).
 - ◆ **INCORRECT** Replace the Multi-Function PCB Assy (para 2-4H).
8. Using a Digital Multimeter, verify 5 V on A4W4-P2 Pin 2.
 - ◆ **INCORRECT** Replace A4W4.
9. Using a Digital Multimeter, verify 3.3 Vp-p on A4A4-J2 Pin 1 (Touch Screen Controller PCB Assy) when the Touch Screen is pressed.
 - ◆ **INCORRECT** 0 V reading: Replace the Touch Screen Controller Assy (para 2-4J).
3 Vp-p continues: Replace the Touch Screen Assy (para 2-4M).

Contact Aeroflex Customer Service if further assistance is required.

G. DMM Failure

TEST EQUIPMENT: Digital Multimeter
Oscilloscope

REFERENCE FIGURES: Figure E-1
Figure E-5
Figure E-6
Figure E-11
Figure E-12

NOTE

Perform this test only when instructed from the Troubleshooting Table or another troubleshooting test. Do not perform this troubleshooting test as a separate procedure unless otherwise instructed. Certain conditions have been established and/or tested prior to performing this test.

NOTE

This procedure assumes the AC Power Source has been checked and verified to be working correctly at the level to properly power the Test Set.

1. Verify the DMM Fuse is not blown.
◆ INCORRECT Replace DMM Fuse.
2. Press the POWER Key to turn the Test Set OFF.
3. Disconnect the External DC Power Supply from the DC IN Connector.
4. Open the Case Assy (para 2-4D).
5. Verify all cable connections are secure:

CABLE	CONNECTOR(S)	ASSY
A3W1-P1	A4A6-J20	Audio I/O PCB Assy
A4W7-P1 A4W7-P2	A4A6-J13 A4A7-J4	Audio I/O PCB Assy DMM Assy
A4W12-P1 A4W12-P2	A4A1-J15 A4A6-J11	Multi-Function PCB Assy Audio I/O PCB Assy
A4W13-P1	A4A1-J14	Multi-Function PCB Assy

- ◆ INCORRECT** Secure all cable connections.
6. Reconnect the External DC Power Supply to the DC IN Connector.
7. Press the POWER Key to turn the Test Set ON.
8. Select the Meters Function Icon to display the Meters Dropdown selections. Select the DMM icon to display the DMM Tile Window.
9. Disconnect A4W7-P2 from A4A7-J4 (DMM Assy).

G. DMM Failure (cont)

10. Using a Digital Multimeter, verify 5 V on A4W7-P2 Pin 4.
- ◆ **INCORRECT** Using a Digital Multimeter, verify 5 V on A4A6-J13 Pin 3 (Audio I/O PCB Assy).
 - ◆ **CORRECT** Replace A4W7.
 - ◆ **INCORRECT** Disconnect A3W1-P1 from A4A6-J20 (Audio I/O PCB Assy).
Using a Digital Multimeter, verify 24 V on A3W1-P1 Pin 1 and 3.3 V on A3W1-P1 Pin 3.
 - ◆ **CORRECT** Replace the Audio I/O PCB Assy (para 2-4L)
 - ◆ **INCORRECT** Replace the Power Supply PCB Assy (para 2-4E).
11. Using an Oscilloscope, verify RX data is present on A4W7-J2 Pin 1.
- ◆ **INCORRECT** Using an Oscilloscope, verify RX data on A4A6-J13 Pin 1 (Audio I/O PCB Assy).
 - ◆ **CORRECT** Replace A4W7.
 - ◆ **INCORRECT** Verify DS7 on the Multi-Function PCB Assy is lit (Green).
 - ◆ **CORRECT** Replace the Audio I/O PCB Assy (para 2-4L)
 - ◆ **INCORRECT** Replace the Multi-Function PCB Assy (para 2-4H)
12. Reconnect A4W7-P2 to A4A7-J4 (DMM Assy).
13. Using an Oscilloscope, verify TX data is present on A4A7-J4 Pin 3 (Audio I/O PCB Assy).
- ◆ **INCORRECT** Replace the DMM Assy (para 2-4K).
14. Replace the Audio I/O PCB Assy (para 2-4L).

Contact Aeroflex Customer Service if further assistance is required.

H. Speaker Failure

TEST EQUIPMENT: Digital Multimeter

REFERENCE FIGURES: Figure E-1
Figure E-5

NOTE

Perform this test only when instructed from the Troubleshooting Table or another troubleshooting test. Do not perform this troubleshooting test as a separate procedure unless otherwise instructed. Certain conditions have been established and/or tested prior to performing this test.

NOTE

This procedure assumes the AC Power Source has been checked and verified to be working correctly at the level to properly power the Test Set.

1. Press the POWER Key to turn the Test Set OFF.
2. Disconnect the External DC Power Supply from the DC IN Connector.
3. Open the Case Assy (para 2-4D).
4. Using a Digital Multimeter, verify 8 Ω on the Speaker (W8).
◆ **INCORRECT** Replace the Speaker.
5. Replace the Multi-Function PCB Assy (para 2-4H).

Contact Aeroflex Customer Service if further assistance is required.

I. RF Power Failure / Generator and Receiver OK

TEST EQUIPMENT: Digital Multimeter

REFERENCE FIGURES: Figure E-1
Figure E-5

NOTE

Perform this test only when instructed from the Troubleshooting Table or another troubleshooting test. Do not perform this troubleshooting test as a separate procedure unless otherwise instructed. Certain conditions have been established and/or tested prior to performing this test.

NOTE

This procedure assumes the AC Power Source has been checked and verified to be working correctly at the level to properly power the Test Set.

1. Press the POWER Key to turn the Test Set OFF.
2. Disconnect the External DC Power Supply from the DC IN Connector.
3. Open the Case Assy (para 2-4D).
4. Verify the T/R connector is not damaged.
 - ◆ **INCORRECT** Replace the T/R Connector.
5. Using a Digital Multimeter, verify 50 Ω resistance from T/R Connector center pin to chassis ground.
 - ◆ **INCORRECT** Using a Digital Multimeter, verify connectivity of W3 with no shorts to ground.
 - ◆ **CORRECT** Replace the RF Attenuator Assy (para 2-4F).
 - ◆ **INCORRECT** Replace W3.
6. Using a Digital Multimeter, verify connectivity of W4 with no shorts to ground.
 - ◆ **INCORRECT** Replace W4.
7. Replace the RF Assy (para 2-4G).

Contact Aeroflex Customer Service if further assistance is required.

J. RF Receiver Failure

TEST EQUIPMENT: Digital Multimeter
Spectrum Analyzer
RF Signal Generator

REFERENCE FIGURES: Figure E-1
Figure E-2
Figure E-3
Figure E-5

NOTE

Perform this test only when instructed from the Troubleshooting Table or another troubleshooting test. Do not perform this troubleshooting test as a separate procedure unless otherwise instructed. Certain conditions have been established and/or tested prior to performing this test.

NOTE

This procedure assumes the AC Power Source has been checked and verified to be working correctly at the level to properly power the Test Set.

1. Press the POWER Key to turn the Test Set OFF.
2. Disconnect the External DC Power Supply from the DC IN Connector.
3. Open the Case Assy (para 2-4D).
4. Press the POWER Key to turn the Test Set ON.
5. Select the Receivers Function Icon to display the Receivers Dropdown selections. Select the Receiver icon to display the Receiver Tile Window.
6. On the Receiver Tile Window, set the AGC and PreAmp Fields to AUTO and set the Frequency to match the RF signal input from the external RF Signal Generator.
7. Disconnect A4W15-P2 from A2-J4 (RF Assy).
8. Connect the RF Signal Generator to the ANT Connector.
9. On the Receiver Tile Window, set the Port Field to ANT.
10. Using a Spectrum Analyzer, verify 13 MHz on A2-J4 (RF Assy). (Level is dependent on gain and attenuation setting. Input levels >-30 dBm at ANT Connector should have 13 MHz IF >0 dBm at A2-J4.)
 - ◆ **INCORRECT** Using a Digital Multimeter, verify connectivity of W1 with no shorts to ground.
 - ◆ **CORRECT** Replace the RF Assy (para 2-4G).
 - ◆ **INCORRECT** Replace W1.
11. Disconnect the RF Signal Generator from the ANT Connector. Connect the RF Signal Generator to the T/R Connector.
12. On the Receiver Tile Window, set the Port Field to T/R.

J. RF Receiver Failure (cont)

13. Using a Spectrum Analyzer, verify 13 MHz on A2-J4 (RF Assy). (Level is dependent on gain and attenuation setting. Input levels >-30 dBm at T/R Connector should have 13 MHz IF >0 dBm at A2-J4.)
 - ◆ **INCORRECT** Using a Digital Multimeter, verify connectivity of W3 and W4 with no shorts to ground.
 - ◆ **CORRECT** Using a Digital Multimeter, verify 50 Ω from center pin to chassis ground on A1-J1 (RF Attenuator Assy).
 - ◆ **CORRECT** Replace the RF Assy (para 2-4G)
 - ◆ **INCORRECT** Replace the RF Attenuator Assy (para 2-4F).
 - ◆ **INCORRECT** Replace W3 and/or W4.
14. Using a Digital Multimeter, verify connectivity of A4W15 with no shorts to ground.
 - ◆ **INCORRECT** Replace A4W15.
15. Replace the Multi-Function PCB Assy (para 2-4H).

Contact Aeroflex Customer Service if further assistance is required.

K. RF Generator Failure

TEST EQUIPMENT: Digital Multimeter
Spectrum Analyzer

REFERENCE FIGURES: Figure E-1
Figure E-2
Figure E-3
Figure E-5

NOTE

Perform this test only when instructed from the Troubleshooting Table or another troubleshooting test. Do not perform this troubleshooting test as a separate procedure unless otherwise instructed. Certain conditions have been established and/or tested prior to performing this test.

NOTE

This procedure assumes the AC Power Source has been checked and verified to be working correctly at the level to properly power the Test Set.

1. Press the POWER Key to turn the Test Set OFF.
2. Disconnect the External DC Power Supply from the DC IN Connector.
3. Open the Case Assy (para 2-4D).
4. Reconnect the External DC Power Supply to the DC IN Connector.
5. Press the POWER Key to turn the Test Set ON.
6. Select the Generators Function Icon to display the Generators Dropdown selections. Select the Generator icon to display the Generator Tile Window.
7. On the Generator Tile Window, set the Enable Field to ON.
8. Disconnect A4W14-P2 from A2-J5 (RF Assy).
9. Using a Spectrum Analyzer, verify 10.5 MHz at approximately -10 dBm on A4W15-P2.
 - ◆ **INCORRECT** Using a Digital Multimeter, verify connectivity of A4W14 with no shorts to ground.
 - ◆ **CORRECT** Replace the Multi-Function PCB Assy (para 2-4H).
 - ◆ **INCORRECT** Replace A4W14.
10. Reconnect A4W14-P2 to A2-J5 (RF Assy).
11. Disconnect W1-P1 from A2-J1 (RF Assy).
12. On the Generator Tile Window, set the Port Field to ANT.
13. Using a Spectrum Analyzer, verify frequency and level are ± 3 dB of Generator Tile Window settings.
 - ◆ **INCORRECT** Replace the RF Assy (para 2-4G).

K. RF Generator Failure (cont)

14. Disconnect W2-P1 from A2-J3 (RF Assy).
15. On the Generator Tile Window, set the Port Field to GEN.
16. Using a Spectrum Analyzer, verify frequency and level are ± 3 dB of Generator Tile Window settings.
 - ◆ **INCORRECT** Replace the RF Assy (para 2-4G).
17. Disconnect W4-P1 from A2-J2 (RF Assy).
18. On the Generator Tile Window, set the Port Field to T/R.
19. Using a Spectrum Analyzer, verify frequency and level are between +17 to +23 dB of Generator Tile Window settings.
 - ◆ **INCORRECT** Replace the RF Assy (para 2-4G).
20. Verify connectivity of W1, W2, W3 and W4 with no shorts to ground.
 - ◆ **INCORRECT** Replace W1, W2, W3 and/or W4.
21. Using a Digital Multimeter, verify 50Ω from center pin to chassis ground on A1-J1 and A1-J2 (RF Attenuator Assy).
 - ◆ **INCORRECT** Replace the RF Attenuator Assy (para 2-4F).

Contact Aeroflex Customer Service if further assistance is required.

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2-3. CALIBRATION/VERIFICATION PROCEDURES

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2-3-1. CALIBRATION/VERIFICATION SCHEDULE

The Calibration/Verification Procedures should be performed when:

Failure to Meet Specifications	If, during the course of normal operation, the 8800 / 8800S or any major function thereof fails to meet the performance specifications.
Module/Assembly Replacement	If one or more of the 8800 / 8800S assemblies are replaced.
Annual Calibration/Verification	Aeroflex recommends an annual Calibration/Verification on the 8800 / 8800S to maintain proper testing standards.

2-3-2. TESTING CONDITIONS

The Calibration/Verification Procedures should be performed at room ambient temperature (+20°C to +30°C).

2-3-3. SUPPORT EQUIPMENT

TEST EQUIPMENT

TYPE	MODEL
Digital Multimeter	HP 34401A or Equivalent
Universal Frequency Counter	Agilent 53131A or Equivalent
Calibrator	Fluke 5520 or Equivalent
Power Meter	Agilent N1911A or Equivalent
Power Meter Sensor	Agilent E4412A or Equivalent
Signal Generator	HP 8648C or Equivalent
RF Power Amplifier (200 W)	
Oscilloscope	Tektronix TDS 2024 or Equivalent
Spectrum Analyzer	Aeroflex AN940 or Equivalent

ADAPTERS, CABLES AND ACCESSORIES

TYPE	MODEL
Short-Open-Load VSWR Calibrator	Aeroflex (38245)
Directional Coupler	Narda 3020A or Equivalent
Power Splitter (2-Way, Resistive)	(See Appendix C)
Broadband Resistive Power Splitter (N-M)	Weinschel 1870A or Equivalent
Coaxial Cable (N-M to TNC-M)	Pasternak PE9007 or Equivalent
Adapter (N-M to N-M)	
Stub Tuner	Murray Microwave 1778E or 1778EQ
SWR Stack	(See Appendix C)
Adapter (N-M to TNC-M)	Pasternak PE9446 or Equivalent
Adapter (N-M to N-M) (2)	Pasternak PE9007 or Equivalent
Barrel Adapter (N-F to N-F) (2)	Amphenol 082-101 or Equivalent
N (F) to N (F) Adapter	Amphenol 082-101
100 MHz Low-Pass Filter	
300 MHz Low-Pass Filter	
700 MHz Low-Pass Filter	
1200 MHz Low-Pass Filter	
50 Ω Termination (2)	
10 dB Attenuator (50 W)	
20 dB Attenuator (5 W)	
BNC T-Connector	
Ethernet Crossover Cable (5 ft.)	L-COM TRD815CRBLK-5 or Equivalent
TNC (F) Short - Open - Load (DC - 2 GHz)	Weinschel 6850

2-3-4. VERIFICATION PROCEDURES

A. Generator Verification

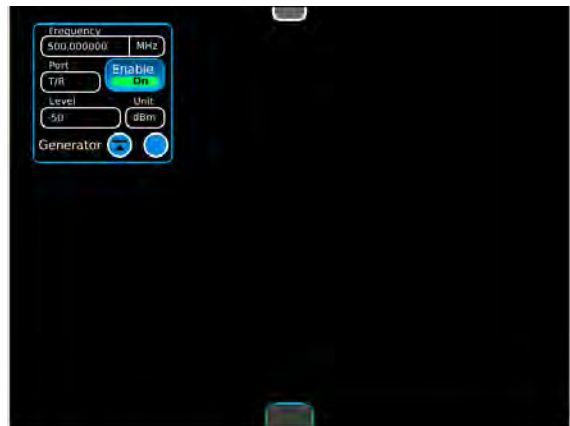
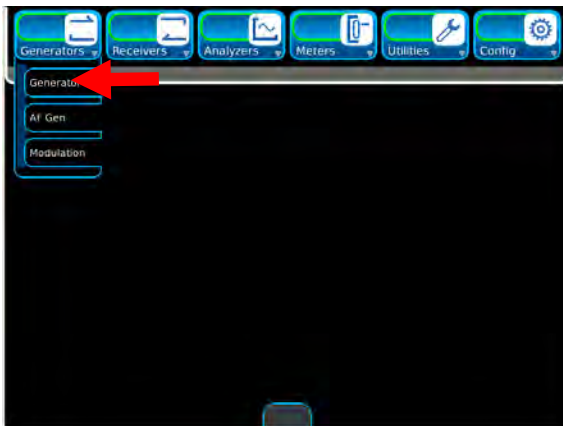
TEST EQUIPMENT: Power Meter
Power Meter Sensor

TEST ACCESSORIES: TNC (M) to N (M) Adapter

NOTE

Results of the Generator Verification Procedure can be recorded on the Verification Data Sheets.

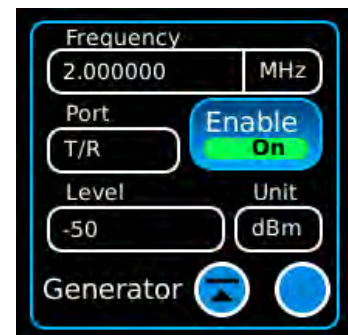
1. Press POWER Key to turn ON the 8800 / 8800S. Allow 8800 / 8800S to warm up before continuing with Verification Procedure.
2. Select the Generators Function Tab to display the Generators Dropdown selections. Select "Generator" to display the Generator Tile Window.



T/R CONNECTOR

3. Select the following field settings:

Frequency	2.000000 MHz
Port	T/R
Level	-50 dBm
Enable	On



A. Generator Verification (cont)

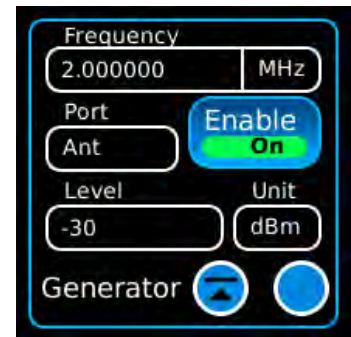
4. **Insure Power Meter Sensor range covers -50 dBm.** Zero and calibrate the Power Meter.
5. Connect the Power Meter Sensor to the T/R Connector.
6. Record Power Meter reading.
7. Set the Frequency Field to 20 MHz.
8. Record Power Meter reading.
9. Repeat Steps 7 and 8 for the following frequencies:

100.000000 MHz	600.000000 MHz
200.000000 MHz	700.000000 MHz
300.000000 MHz	800.000000 MHz
400.000000 MHz	900.000000 MHz
500.000000 MHz	1000.000000 MHz

ANT CONNECTOR

10. Select the following field settings:

Frequency	2.000000 MHz
Port	Ant
Level	-30 dBm
Enable	On



11. **Insure Power Meter Sensor range covers -30 dBm.** Zero and calibrate the Power Meter.
12. Disconnect the Power Meter Sensor from the T/R Connector and connect the Power Meter Sensor to the ANT Connector.
13. Record Power Meter reading.
14. Set the Frequency Field to 20 MHz.
15. Record Power Meter reading.
16. Repeat Steps 14 and 15 for the following frequencies:

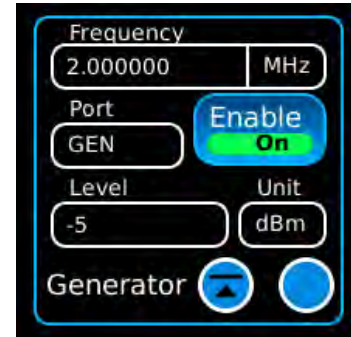
100.000000 MHz	600.000000 MHz
200.000000 MHz	700.000000 MHz
300.000000 MHz	800.000000 MHz
400.000000 MHz	900.000000 MHz
500.000000 MHz	1000.000000 MHz

A. Generator Verification (cont)

GEN CONNECTOR

17. Select the following field settings:

Frequency	2.000000 MHz
Port	GEN
Level	-5 dBm
Enable	On



18. **Insure Power Meter Sensor range covers -5 dBm.** Zero and calibrate the Power Meter.
19. Disconnect the Power Meter Sensor from the ANT Connector and connect the Power Meter Sensor to the T/R Connector.
20. Record Power Meter reading.
21. Set the Frequency Field to 20 MHz.
22. Record Power Meter reading.
23. Repeat Steps 21 and 22 for the following frequencies:

100.000000 MHz	600.000000 MHz
200.000000 MHz	700.000000 MHz
300.000000 MHz	800.000000 MHz
400.000000 MHz	900.000000 MHz
500.000000 MHz	1000.000000 MHz

RF GENERATOR ERROR

24. Calculate the RF Generator Error by subtracting the Expected reading from the Power Meter reading at each frequency tested on each connector.
- If error is $>\pm 2$ dB, the 8800 / 8800S is out of specified limits and must be calibrated.
 - If error is $>\pm 1.5$ dB, the 8800 / 8800S should be calibrated to insure correct operation over temperature.

B. Receiver RSSI Verification

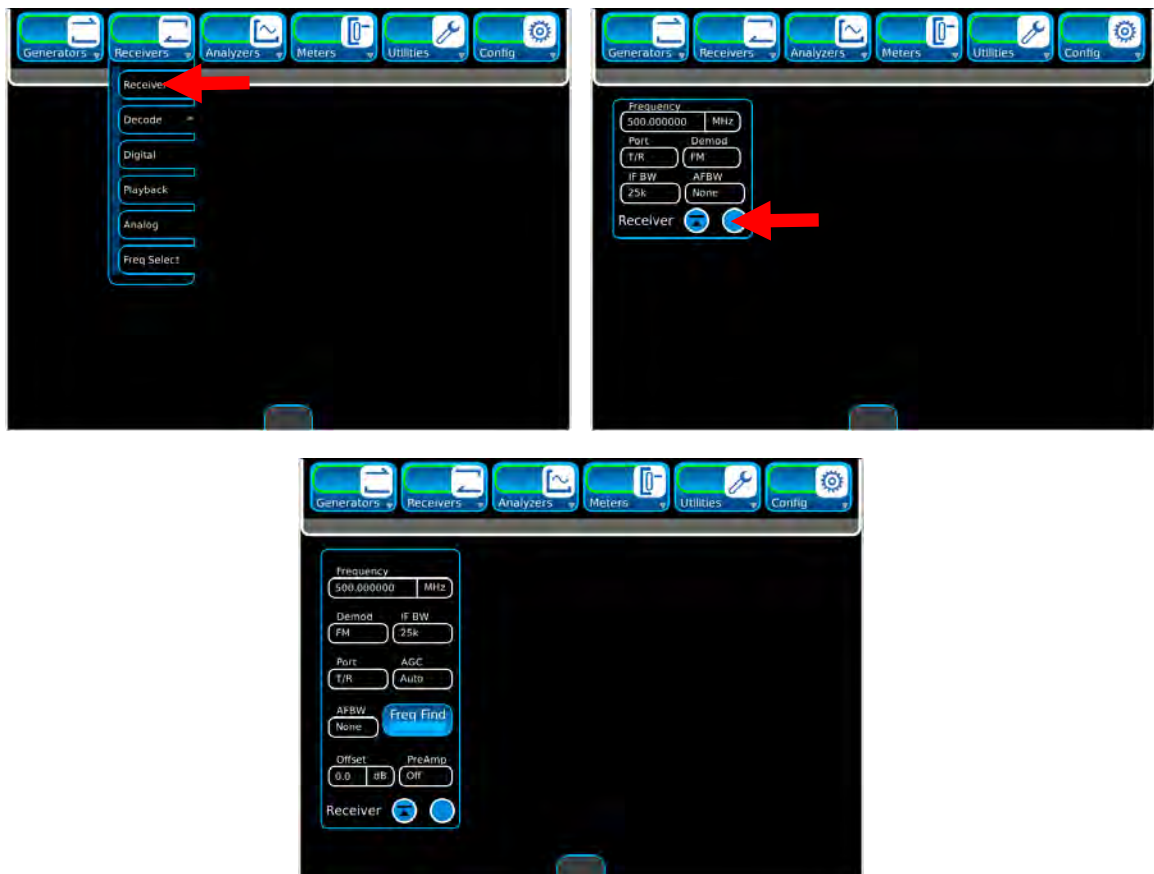
TEST EQUIPMENT: Power Meter
Power Meter Sensor
Signal Generator

TEST ACCESSORIES: Power Splitter (2-Way, Resistive)

NOTE

Results of the Receiver RSSI Verification Procedure can be recorded on the Verification Data Sheets.

1. Press POWER Key to turn ON the 8800 / 8800S. Allow 8800 / 8800S to warm up before continuing with Verification Procedure.
2. Select the Receivers Function Tab to display the Receivers Dropdown selections. Select "Receiver" to display the Receiver Tile Window. Press the View Icon to access the Receiver Field settings.

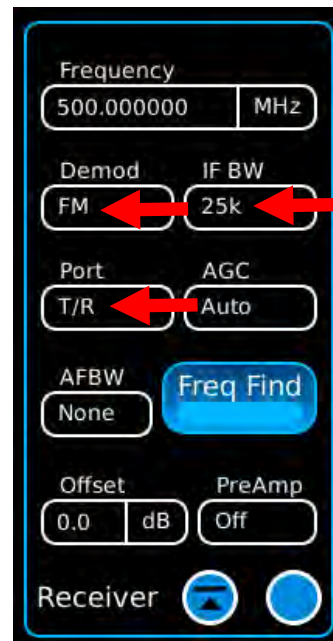


B. Receiver RSSI Verification (cont)

T/R CONNECTOR

3. Select the following field settings:

Port	T/R
Demod	FM
IF BW	25k



B. Receiver RSSI Verification (cont)

4. Select the Meters Function Tab to display the Meters Dropdown selections. Select "RSSI" to display the RSSI (Meter) Tile Window. Press the View Icon twice to access the RSSI (Meter) Field settings.

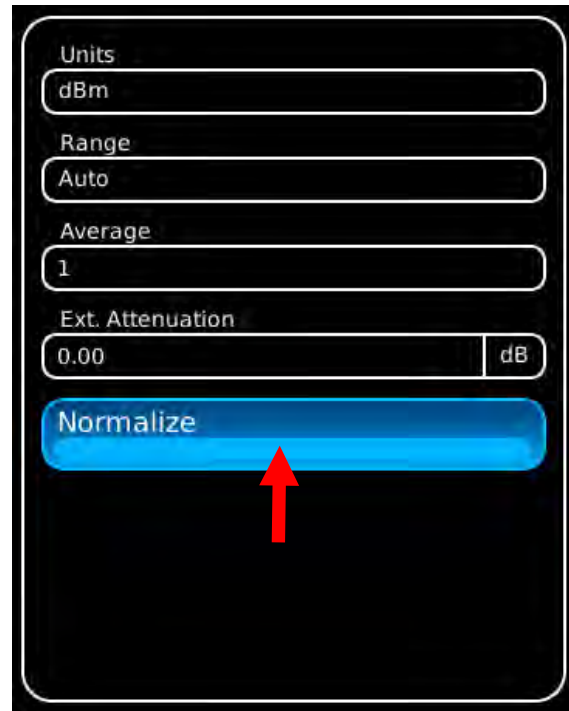


B. Receiver RSSI Verification (cont)

5. Select "Normalize" on the Config Configuration Screen.

Follow the instructions on the screen.

When the process is completed ("Normalization Completed Successfully" displayed on the screen), press "Ok" to return to the RSSI (Meter) Screen.

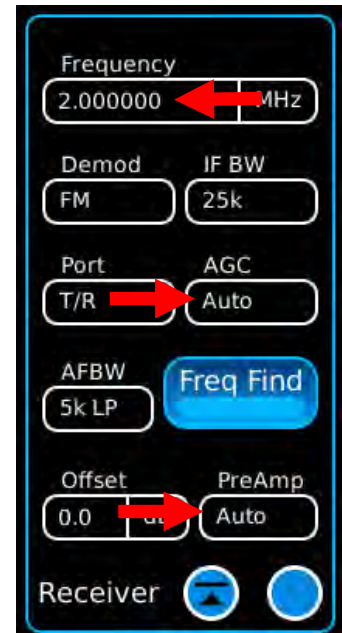


6. Zero and calibrate the Power Meter.
7. Connect the Power Splitter Output to the T/R Connector.
8. Connect the Power Meter Sensor to the other Power Splitter Output.
9. Connect the Signal Generator Output to the Power Splitter Input.
10. Set Signal Generator to -5 dBm (Output Power) and 2 MHz (Frequency).

B. Receiver RSSI Verification (cont)

11. Select the following field setting:

Frequency	2.000000 MHz
AGC	Auto
Pre Amp	Auto



12. Record Power Meter reading and RSSI Meter reading.
13. Repeat Steps 10 to 12 for the following frequencies:

20.000000 MHz	600.000000 MHz
100.000000 MHz	700.000000 MHz
200.000000 MHz	800.000000 MHz
300.000000 MHz	900.000000 MHz
400.000000 MHz	1000.000000 MHz
500.000000 MHz	

B. Receiver RSSI Verification (cont)

ANT CONNECTOR

14. Disconnect the Power Splitter Output from the T/R Connector and connect the Power Splitter Output to the ANT Connector.
15. Select the following field settings:

Port	Ant
Frequency	2.000000 MHz



16. Set Signal Generator to -20 dBm (Output Power) and 2 MHz (Frequency).
17. Record Power Meter reading and RSSI Meter reading.
18. Repeat Steps 15 to 17 for the following frequencies:

20.000000 MHz	600.000000 MHz
100.000000 MHz	700.000000 MHz
200.000000 MHz	800.000000 MHz
300.000000 MHz	900.000000 MHz
400.000000 MHz	1000.000000 MHz
500.000000 MHz	

RSSI METER ERROR

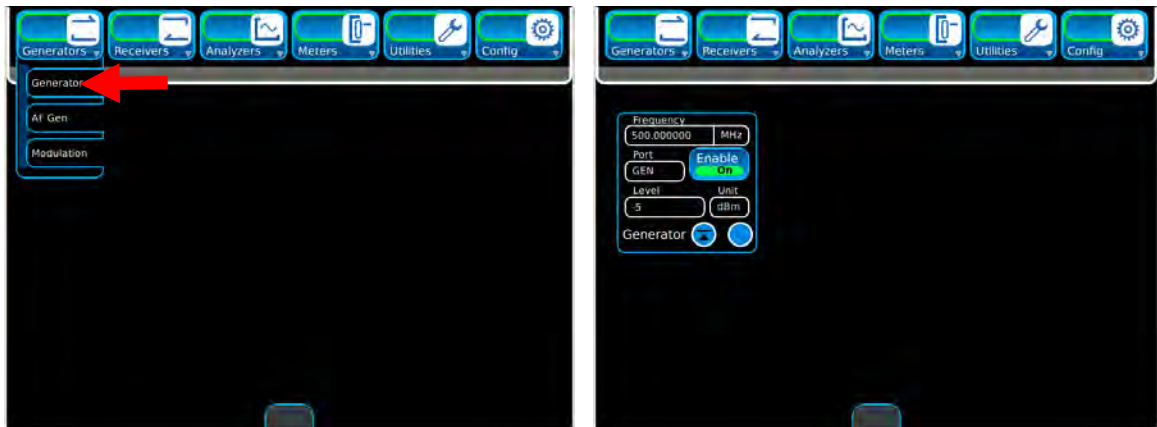
19. Calculate the RSSI Meter Error by subtracting the Power Meter reading from the RSSI Meter reading at each frequency tested on each connector.
 - If error is $>\pm 2$ dB, the 8800 / 8800S is out of specified limits and must be calibrated.
 - If error is $>\pm 1.5$ dB, the 8800 / 8800S should be calibrated to insure correct operation over temperature.

C. TCXO Verification

TEST EQUIPMENT: Universal Frequency Counter

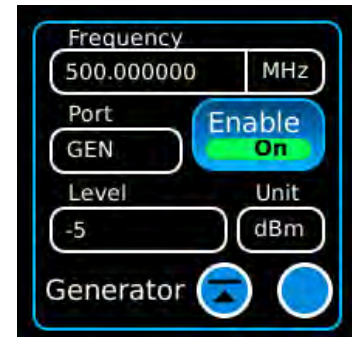
TEST ACCESSORIES: None

1. Press POWER Key to turn ON the 8800 / 8800S. Allow 8800 / 8800S to warm up before continuing with Verification Procedure.
2. Select the Generators Function Tab to display the Generators Dropdown selections. Select "Generator" to display the Generator Tile Window.



3. Select the following field settings:

Frequency	500.000000 MHz
Port	GEN
Level	-5 dBm
Enable	On



4. Connect the Universal Frequency Counter to the GEN Connector.
5. Record the Universal Frequency Counter reading.
6. Calculate the TCXO Error by subtracting 500 MHz from the Universal Frequency Counter reading.
 - If error is $>\pm 250$ Hz, the 8800 / 8800S is out of specified limits and must be calibrated.
 - If error is $>\pm 50$ Hz, the 8800 / 8800S should be calibrated to insure correct operation over temperature.

D. RF Power Meter Verification

TEST EQUIPMENT: Coupler
Power Meter
RF Power Amplifier (200 W)
Signal Generator

TEST ACCESSORIES: 10 dB Attenuator (50 W)
20 dB Attenuator (5 W)
50 Ω Termination (2)
100 MHz Low-Pass Filter
300 MHz Low-Pass Filter
700 MHz Low-Pass Filter
1200 MHz Low-Pass Filter
Stub Tuner

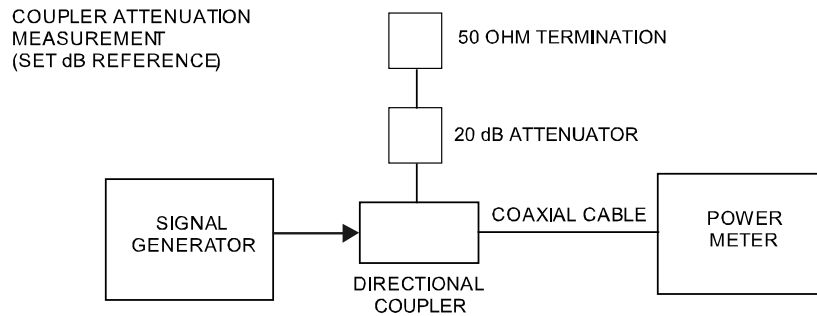
The following steps must be performed in the order shown.

NOTE

Results of the RF Power Meter Verification Procedure can be recorded on the Verification Data Sheets.

RF COUPLED PORT ATTENUATION

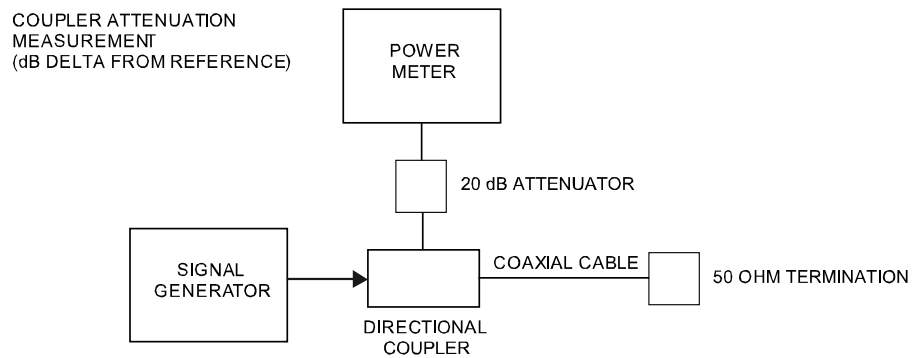
1. Zero and calibrate the RF Power Meter.
2. Connect test equipment:



3. Set the Signal Generator to 100 MHz, CW and 0 dBm.
4. Set the RF Power Meter to 100 MHz.
5. Press Relative on the RF Power Meter to reference the output power level at the end of the coaxial cable.

D. RF Power Meter Verification (cont)

6. Move the Power Sensor to the Coupler's forward-coupled port and move the 50 Ω Termination to the end of the coaxial cable:



7. Record the RF Power Meter relative dB value for 100 MHz:

Coupled Port Attenuation (dB)	
100 MHz	
300 MHz	
500 MHz	
700 MHz	
900 MHz	

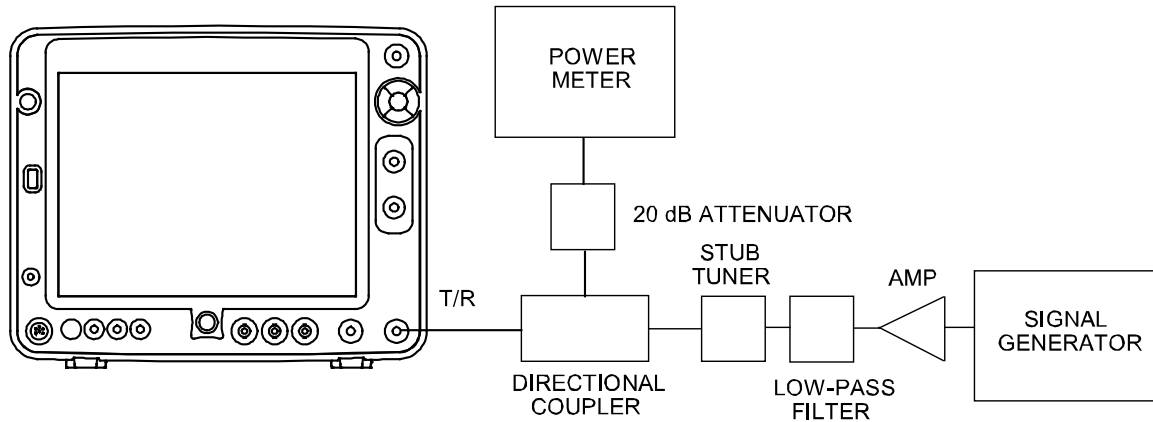
8. Repeat Steps 2 to 7 for 300 MHz.
9. Repeat Steps 2 to 7 for 500 MHz.
10. Repeat Steps 2 to 7 for 700 MHz.
11. Repeat Steps 2 to 7 for 900 MHz.

D. RF Power Meter Verification (cont)

12. Connect test equipment (using 100 MHz Low-Pass Filter):

CAUTION

DO NOT EXCEED POWER METER SENSOR MAXIMUM LEVEL (20 dB ATTENUATOR).

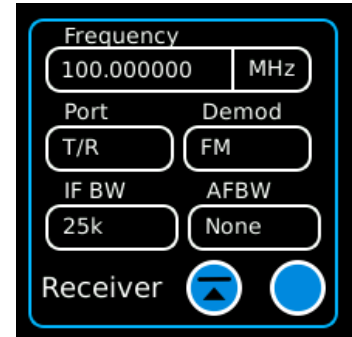


13. Set the Signal Generator to 100 MHz, CW, -50 dBm and RF OFF.
14. Set the RF Power Meter to 100 MHz, Relative OFF and Offset value to 100 MHz coupled port attenuation recorded in Step 7.
15. Set RF Power Amplifier Gain to Maximum and ALC to OFF.
16. Set the RF Power Amplifier to OFF.
17. Select the Receivers Function Tab to display the Receivers Dropdown selections. Select "Receiver" to display the Receiver Tile Window.

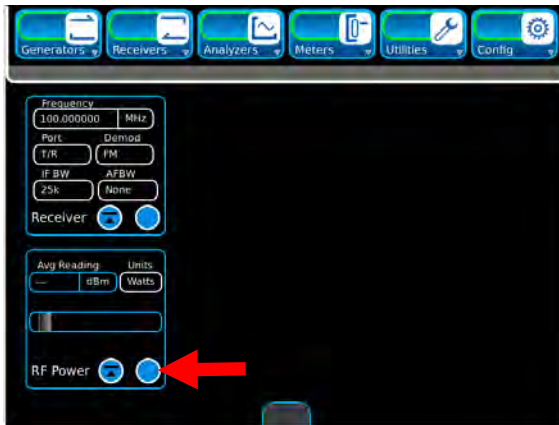
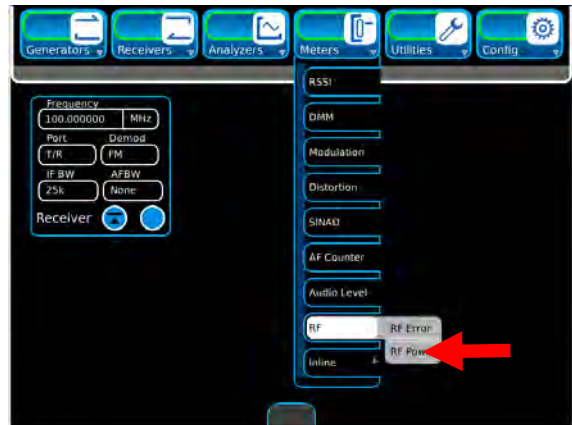


D. RF Power Meter Verification (cont)

18. Select the following field settings:
- | | |
|-----------|----------------|
| Frequency | 100.000000 MHz |
| Port | T/R |



19. Select the Meters Function Tab to display the Meters Dropdown selections. Select the RF icon to display the RF extended icons. Select "RF Power" to display the RF Power (Meter) Tile Window. Press the View Icon twice to access the RF Power (Meter) Field settings.



D. RF Power Meter Verification (cont)

20. Select the following field settings:

Units dBm



21. Select "Zero" on the Config Configuration Screen.
Follow the instructions on the screen.
When the process is completed ("Zero Complete" displayed on the screen), press "Ok" to return to the RF Power (Meter) Screen.
22. Set the RF Power Amplifier to ON.
23. Set the Signal Generator to RF ON.
24. Adjust the Signal Generator level until the power into the T/R Connector, displayed on the RF Power Meter, is equal to +27 dBm value (± 0.3 dB).
25. Record RF Power Meter reading and 8800 / 8800S Power Meter reading.
26. Adjust the Signal Generator level until the power into the T/R Connector, displayed on the RF Power Meter, is equal to +43 dBm value.
27. Record RF Power Meter reading and 8800 / 8800S Power Meter reading.
28. Set the Signal Generator to RF OFF.
29. Set the RF Power Amplifier to OFF.
30. Replace the 100 MHz Low-Pass Filter with the 300 MHz Low-Pass Filter in the Test Setup.
31. Set the Signal Generator to 300 MHz.
32. Set the RF Power Meter to 300 MHz, Relative OFF and Offset value to 300 MHz coupled port attenuation recorded in Step 7.
33. Set the RF Power Amplifier to ON.

D. RF Power Meter Verification (cont)

34. Set the Signal Generator to RF ON.
35. Adjust the Signal Generator level until the power into the T/R Connector, displayed on the RF Power Meter, is equal to +27 dBm value (± 0.3 dB).
36. Record the RF Power Meter reading and 8800 / 8800S Power Meter reading.
37. Adjust the Signal Generator level until the power into the T/R Connector, displayed on the RF Power Meter, is equal to +43 dBm value.
38. Record the RF Power Meter reading and 8800 / 8800S Power Meter reading.
39. Set the Signal Generator to RF OFF.
40. Set the RF Power Amplifier to OFF.
41. Replace the 300 MHz Low-Pass Filter with the 700 MHz Low-Pass Filter in the Test Setup.
42. Set the Signal Generator to 500 MHz.
43. Set the RF Power Meter to 500 MHz, Relative OFF and Offset value to 500 MHz coupled port attenuation recorded in Step 7.
44. Set the RF Power Amplifier to ON.
45. Set the Signal Generator to RF ON.
46. Adjust the Signal Generator level until the power into the T/R Connector, displayed on the RF Power Meter, is equal to +27 dBm value (± 0.3 dB).
47. Record the RF Power Meter reading and 8800 / 8800S Power Meter reading.
48. Adjust the Signal Generator level until the power into the T/R Connector, displayed on the RF Power Meter, is equal to +43 dBm value.
49. Record the RF Power Meter reading and 8800 / 8800S Power Meter reading.
50. Set the Signal Generator to RF OFF.
51. Set the RF Power Amplifier to OFF.
52. Set the Signal Generator to 700 MHz.
53. Set the RF Power Meter to 700 MHz, Relative OFF and Offset value to 700 MHz coupled port attenuation recorded in Step 7.
54. Set RF Power Amplifier to ON.
55. Set Signal Generator to RF ON.
56. Adjust the Signal Generator level until the power into the T/R Connector, displayed on the RF Power Meter, is equal to +27 dBm value (± 0.3 dB).
57. Record the RF Power Meter reading and 8800 / 8800S Power Meter reading.
58. Adjust the Signal Generator level until the power into the T/R Connector, displayed on the RF Power Meter, is equal to +43 dBm value.
59. Record the RF Power Meter reading and 8800 / 8800S Power Meter reading.
60. Set the Signal Generator to RF OFF.
61. Set the RF Power Amplifier to OFF.

D. RF Power Meter Verification (cont)

62. Replace the 700 MHz Low-Pass Filter with the 1200 MHz Low-Pass Filter in the Test Setup.
63. Set the Signal Generator to 900 MHz.
64. Set the RF Power Meter to 900 MHz, Relative OFF and Offset value to 900 MHz coupled port attenuation recorded in Step 7.
65. Set the Signal Generator to RF ON.
66. Set the RF Power Amplifier to ON.
67. Adjust the Signal Generator level until the power into the T/R Connector, displayed on the RF Power Meter, is equal to +27 dBm value (± 0.3 dB).
68. Record the RF Power Meter reading and 8800 / 8800S Power Meter reading.
69. Adjust the Signal Generator level until the power into the T/R Connector, displayed on the RF Power Meter, is equal to +43 dBm value.
70. Record the RF Power Meter reading and 8800 / 8800S Power Meter reading.
71. Set the Signal Generator to RF OFF.
72. Set the RF Power Amplifier to OFF.
73. Calculate the 8800 / 8800S Power Meter Error by subtracting the Actual Power Meter reading from the 8800 / 8800S reading.
 - If error is $>+0.6$ dB or <-0.7 dB, the 8800 / 8800S is out of specified limits and must be recalibrated.
 - If error is $>\pm 0.3$ dB, the 8800 / 8800S should be calibrated to insure correct operation over temperature.

E. SWR Meter Verification

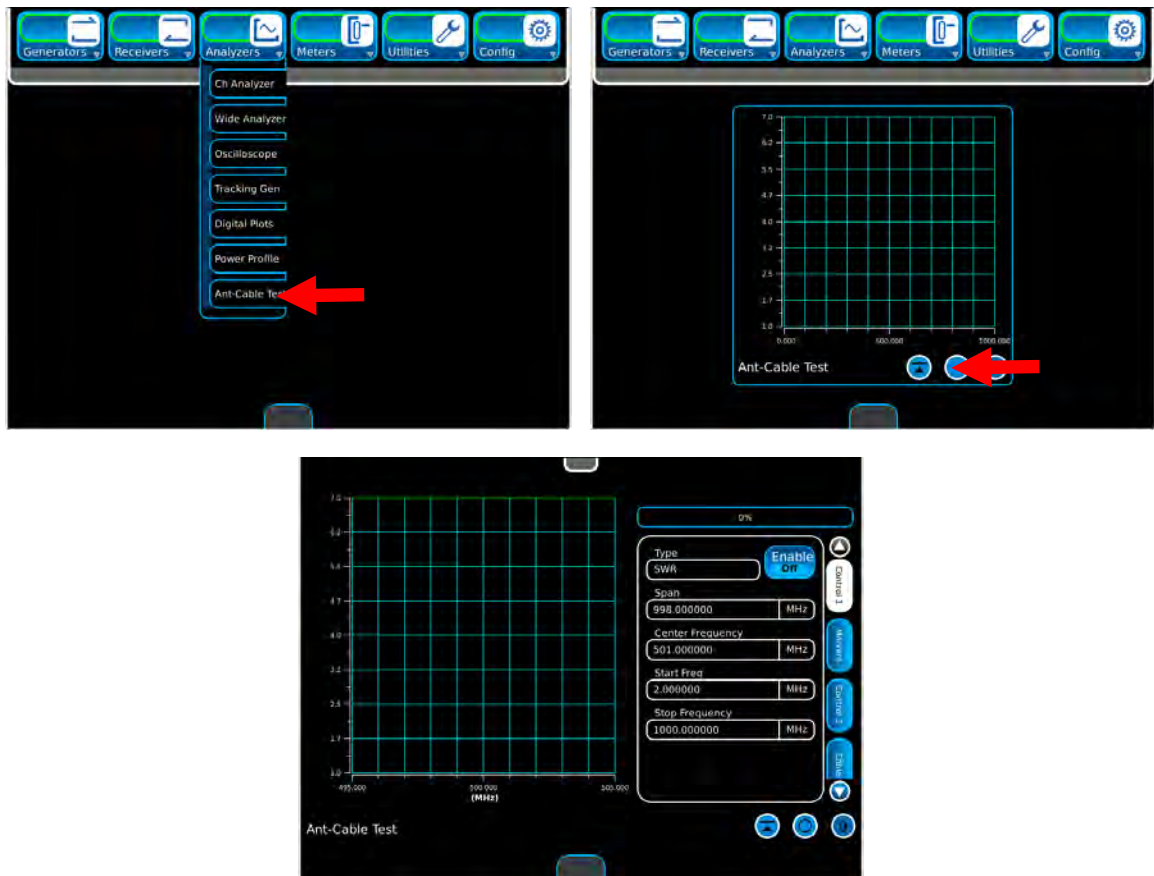
TEST EQUIPMENT: None

TEST ACCESSORIES: 20 dB Pad (2)
BNC T-Connector

NOTE

The SWR Meter Verification can only be performed with the ANT-Cable Test Option installed in the Test Set.

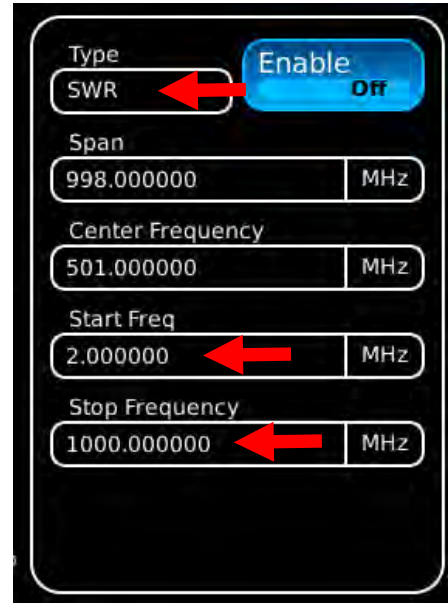
1. Press POWER Key to turn ON the 8800 / 8800S. Allow 8800 / 8800S to warm up before continuing with Verification Procedure.
2. Select the Analyzers Function Tab to display the Analyzers Dropdown selections. Select "Ant-Cable Test" to display the Ant-Cable Test Tile Window. Press the View Icon to access the Ant-Cable Field settings.



E. SWR Meter Verification (cont)

3. Select the following field setting on the Control 1 Configuration Screen:

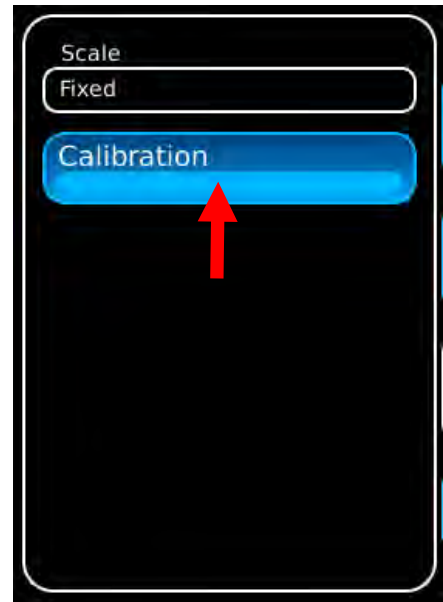
Type	SWR
Start Freq	2.000000 MHz
Stop Freq	1000.000000 MHz



4. Select "Calibration" on the Control 2 Configuration Screen.

Follow the instructions on the screen to complete the SWR Calibration.

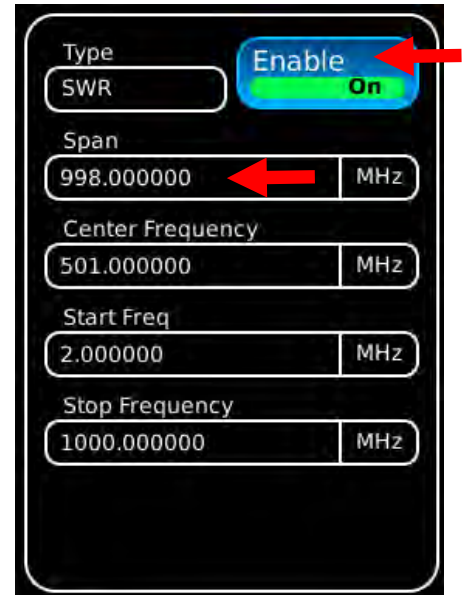
When SWR Calibration is completed ("Calibration Complete" displayed on screen), press "Ok" to return to the ANT-Cable Test Screen.



E. SWR Meter Verification (cont)

5. Select the following field settings on the Control 1 Configuration Screen:

Span 998.000000 MHz
Enable On



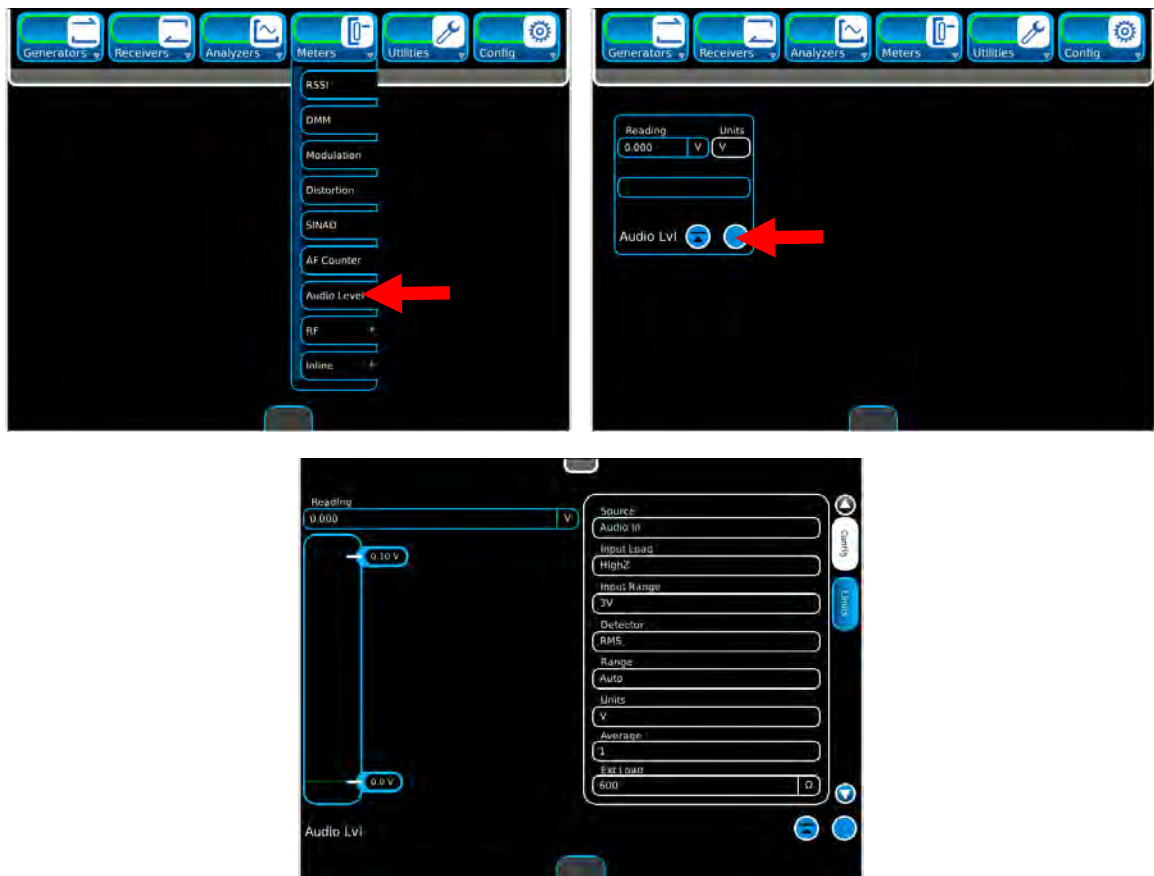
6. Connect the BNC T-Connector to the GEN Connector.
7. Connect a 20 dB Pad to each open connector of the BNC T-Connector.
8. Allowing a minimum of 2 sweeps (updates) of the display, verify the SWR Reading is:
2:1 ($\pm 10\%$ - 2 to 300 MHz) ($\pm 20\%$ - 300 to 1000 MHz)

F. Audio Level Meter Verification

TEST EQUIPMENT: Calibrator
 Digital Multimeter

TEST ACCESSORIES: BNC T-Connector

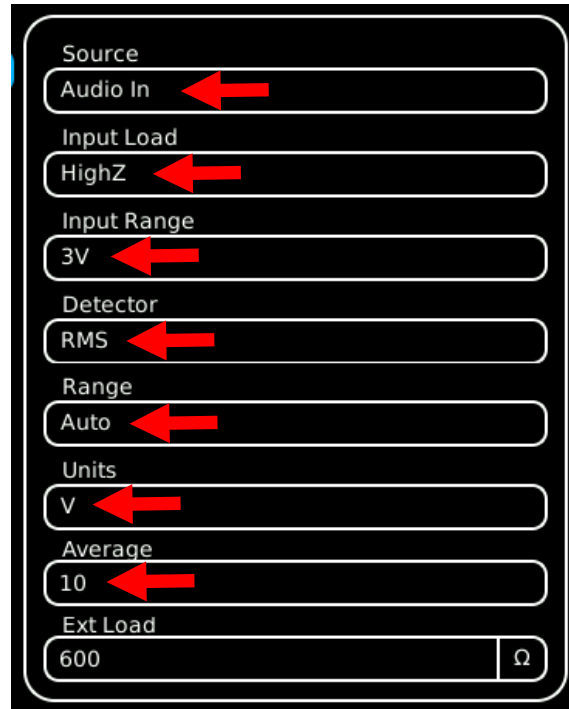
1. Press POWER Key to turn ON the 8800 / 8800S. Allow 8800 / 8800S to warm up before continuing with Verification Procedure.
2. Select the Meters Function Tab to display the Meters Dropdown selections. Select “Audio Level” to display the Audio Level (Meter) Tile Window. Press the View Icon twice to access the Audio Level (Meter) Field settings.



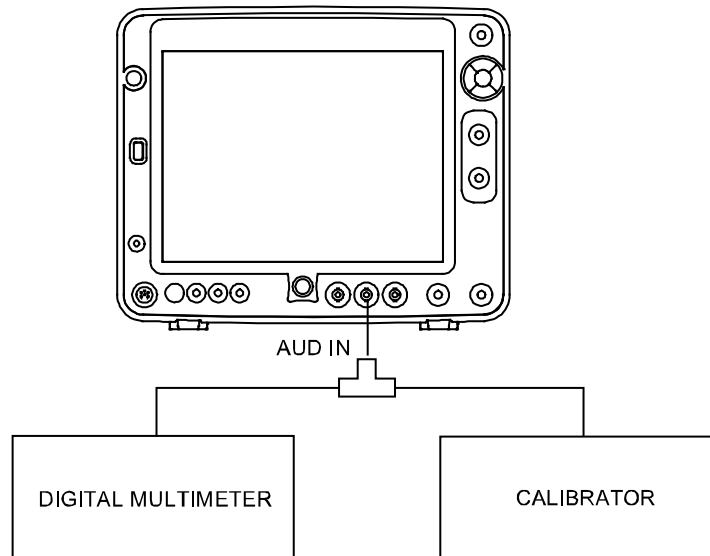
F. Audio Level Meter Verification (cont)

3. Select the following field settings on the Config Configuration Screen:

Source	Audio In
Input Load	High-Z
Input Range	3V
Detector	RMS
Range	Auto
Units	V
Average	10



4. Connect test equipment:



5. Set the Calibrator as follows (use the Digital Multimeter to set level ± 10 mV):

Level	1 Vrms
Frequency	1 kHz

F. Audio Level Meter Verification (cont)

6. Record the Digital Multimeter reading and the level displayed on the 8800 / 8800S.
7. Verify the level displayed on the 8800 / 8800S is within $\pm 5\%$ of the reading on the Digital Multimeter.
8. Select the following field setting on the Config Configuration Screen:

Input Load 150



9. Record the Digital Multimeter reading and the level displayed on the 8800 / 8800S.
10. Verify the level displayed on the 8800 / 8800S is within $\pm 5\%$ of the reading on the Digital Multimeter.
11. Select the following field setting on the Config Configuration Screen:

Ext Load 600 Ω



12. Record the Digital Multimeter reading and the level displayed on the 8800 / 8800S.
13. Verify the level displayed on the 8800 / 8800S is within $\pm 5\%$ of the reading on the Digital Multimeter.
14. Select the following field setting on the Config Configuration Screen:

Ext Load 1 k Ω



15. Record the Digital Multimeter reading and the level displayed on the 8800 / 8800S.
16. Verify the level displayed on the 8800 / 8800S is within $\pm 5\%$ of the reading on the Digital Multimeter.
17. Select the following field setting on the Config Configuration Screen:

Input Range 30V



18. Set the Calibrator Level to 3 Vrms.
19. Record the Digital Multimeter reading and the level displayed on the 8800 / 8800S.
20. Verify the level displayed on the 8800 / 8800S is within $\pm 5\%$ of the reading on the Digital Multimeter.

G. Verification Data Sheets

GENERATOR VERIFICATION

T/R Connector

FREQUENCY (MHz)	POWER METER (dBm)	EXPECTED (dBm)	ERROR (Power Meter - Expected)
2		-50	
20		-50	
100		-50	
200		-50	
300		-50	
400		-50	
500		-50	
600		-50	
700		-50	
800		-50	
900		-50	
1000		-50	

ANT Connector

FREQUENCY (MHz)	POWER METER (dBm)	EXPECTED (dBm)	ERROR (Power Meter - Expected)
2		-30	
20		-30	
100		-30	
200		-30	
300		-30	
400		-30	
500		-30	
600		-30	
700		-30	
800		-30	
900		-30	
1000		-30	

G. Verification Data Sheets (cont)

GENERATOR VERIFICATION (cont)

GEN Connector

FREQUENCY (MHz)	POWER METER (dBm)	EXPECTED (dBm)	ERROR (Power Meter - Expected)
2		-5	
20		-5	
100		-5	
200		-5	
300		-5	
400		-5	
500		-5	
600		-5	
700		-5	
800		-5	
900		-5	
1000		-5	

G. Verification Data Sheets (cont)

RECEIVER RSSI VERIFICATION

T/R Connector

FREQUENCY (MHz)	POWER METER (dBm)	RSSI METER (dBm)	ERROR (RSSI Meter - Power Meter)
2			
20			
100			
200			
300			
400			
500			
600			
700			
800			
900			
1000			

ANT Connector

FREQUENCY (MHz)	POWER METER (dBm)	RSSI METER (dBm)	ERROR (RSSI Meter - Power Meter)
2			
20			
100			
200			
300			
400			
500			
600			
700			
800			
900			
1000			

G. Verification Data Sheets (cont)

RF POWER METER VERIFICATION

FREQUENCY (MHz)	SET POWER (dBm)	POWER METER ACTUAL (dBm)	8800 / 8800S MEASURED (dBm)	ERROR 8800 / 8800S - ACTUAL (dB)
100	+27			
100	+43			
300	+27			
300	+43			
500	+27			
500	+43			
700	+27			
700	+43			
900	+27			
900	+43			

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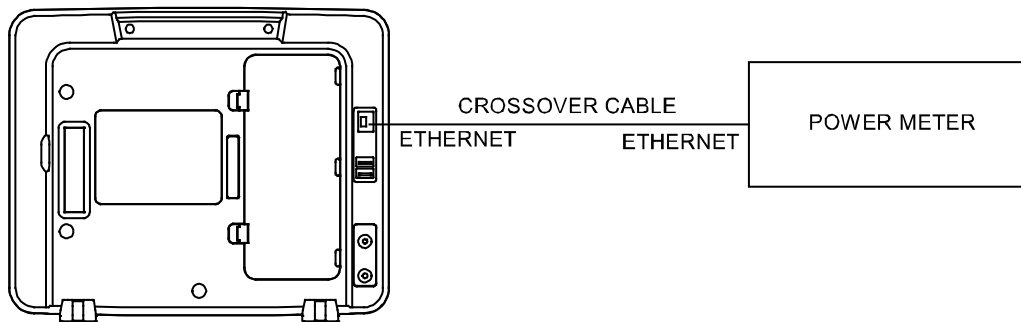
2-3-5. CALIBRATION PROCEDURES

A. Calibration Setup (using the Agilent N1911A Power Meter)

TEST EQUIPMENT: Power Meter
Power Meter Sensor

TEST ACCESSORIES: Ethernet Crossover Cable

1. Turn on both the 8800 / 8800S and the Agilent N1911A Power Meter, and then connect a Crossover Cable between the 8800 / 8800S ETHERNET Connector and the Agilent N1911A Power Meter Ethernet Connector:



2. Perform the following steps to set the IP Address of the Agilent N1911A Power Meter:
Press the “System” → “Remote Interface” → “Network Manual” Buttons.
Use the Arrow and Select Keys to set information for the Power Meter:
IP Address: **10.10.10.10**
Subnet Mask: **255.255.255.0**
Default Gateway: **10.10.10.1**
3. Allow the Agilent N1911A Power Meter to warm up for 30 minutes before proceeding.
4. Zero and calibrate the Agilent N1911A Power Meter.

A. Calibration Setup (using the Agilent N1911A Power Meter) (cont)

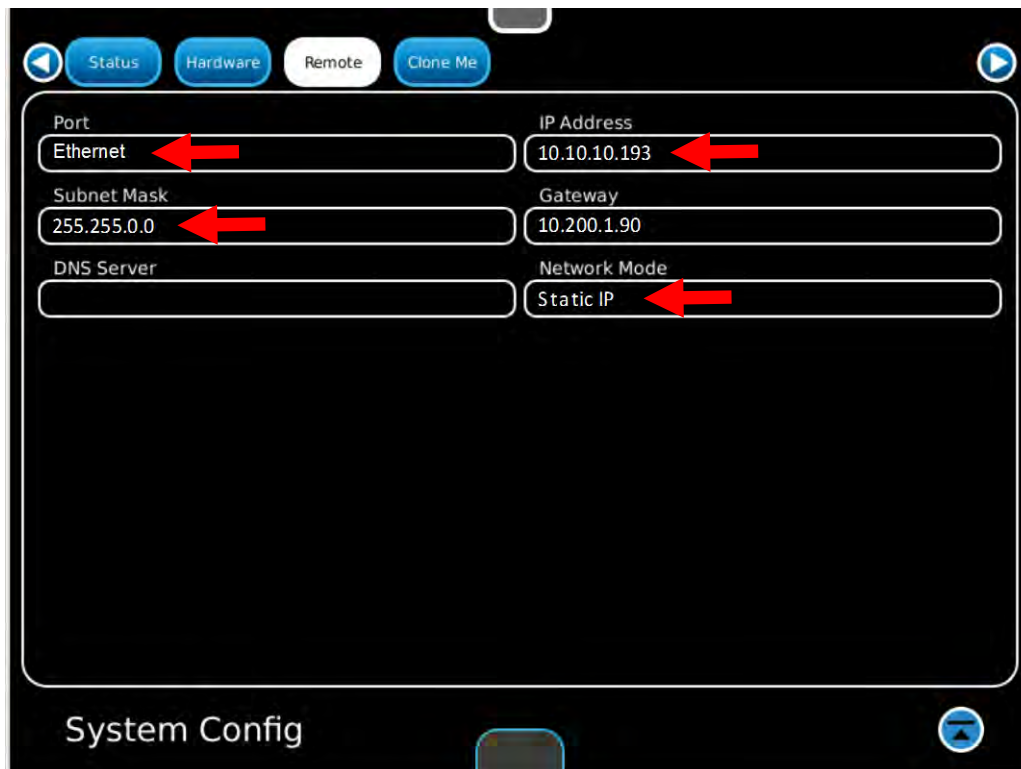
5. Select the Utilities Function Icon to display the Utilities Dropdown Menu. Select the Software icon to display the Software extended icons. Select "System" to display the System Tile Window. Press the "Remote" Button to display the Remote Configuration Screen.



A. Calibration Setup (using the Agilent N1911A Power Meter) (cont)

6. Select the following field settings:

Port	Ethernet
IP Address	10.10.10.193
Subnet Mask	255.255.0.0
Network Mode	Static IP

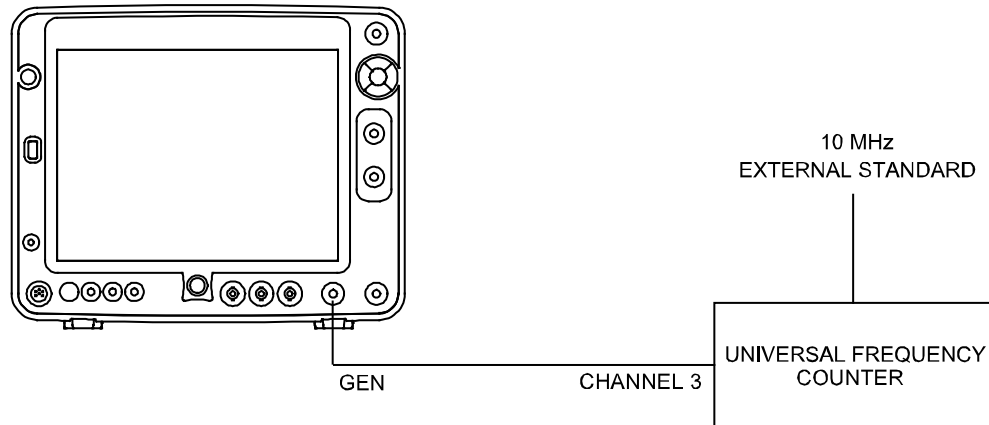


B. TCXO Calibration

TEST EQUIPMENT: Universal Frequency Counter

TEST ACCESSORIES: 10 MHz External Standard

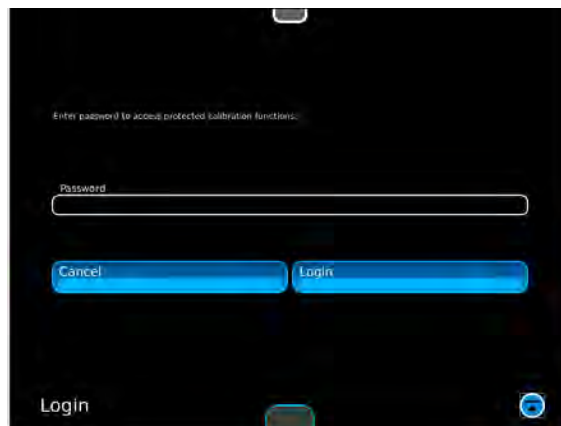
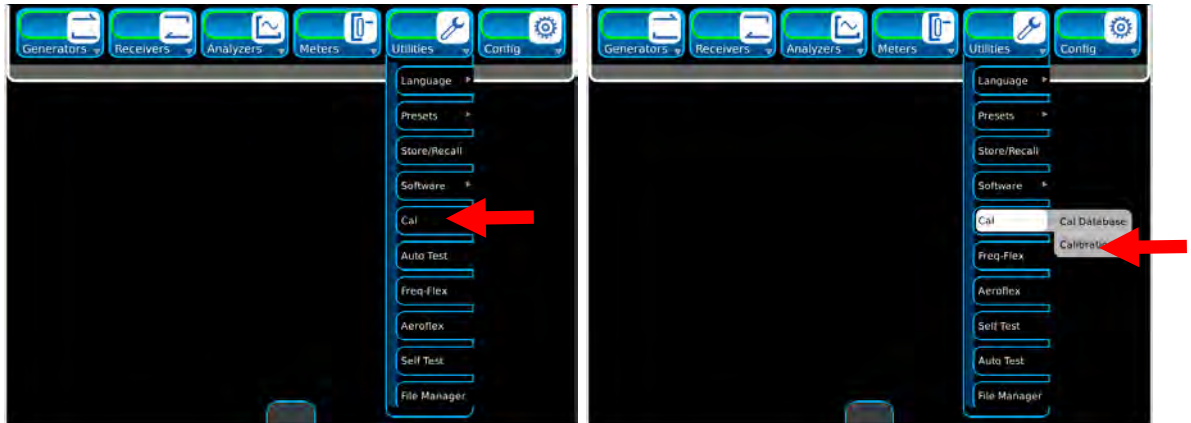
1. Establish the following test setup:



2. On the Universal Frequency Counter, press the "Freq & Ratio" Button until "Frequency 3" is displayed.

B. TCXO Calibration (cont)

3. Select the Utilities Function Icon to display the Utilities Dropdown Menu. Select the Cal icon to display the Cal extended icons. Select "Calibrations" to select the Calibration Login Screen.



4. Type in the Calibration Password (9992) and press Enter.

B. TCXO Calibration (cont)

5. With the Calibration Screen displayed, select “TCXO Calibration” and select “Run Selected.”

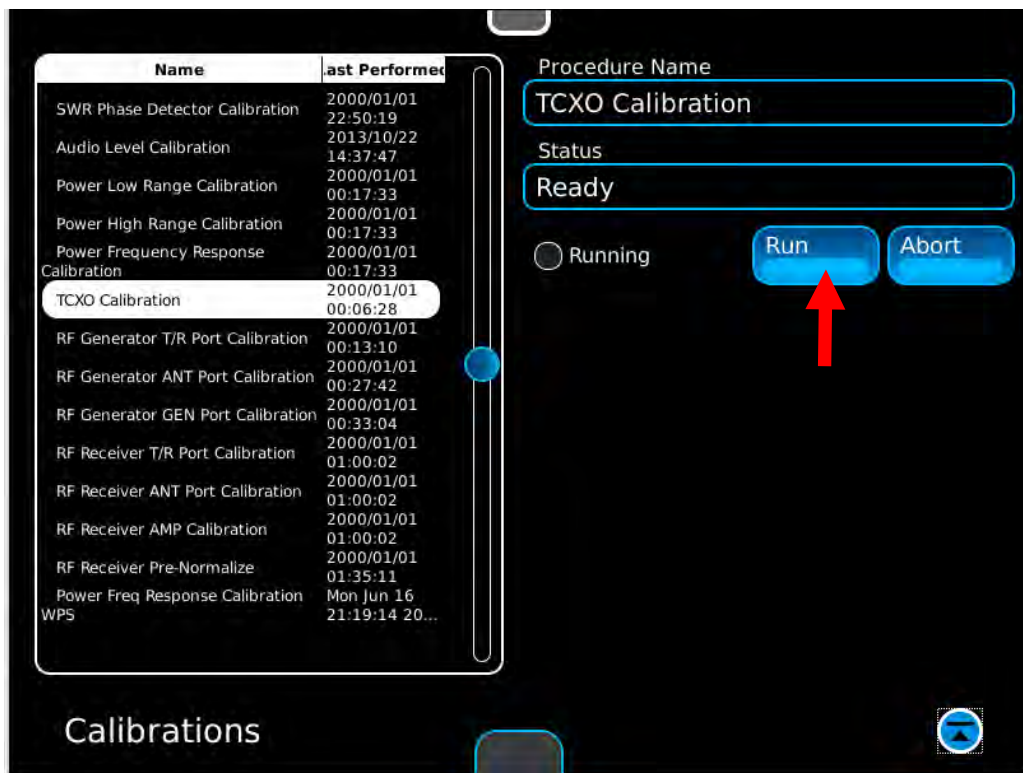
Move the cursor to the TXCO: field. Enter the TXCO Value (**2100**) as the initial value.

Adjust the TCXO Value as needed so the reading on the Universal Counter is as close to 500 MHz as possible.

Select “Ok” to store the value.

Select “Save.”

Select “Ok” to complete the TCXO Calibration.



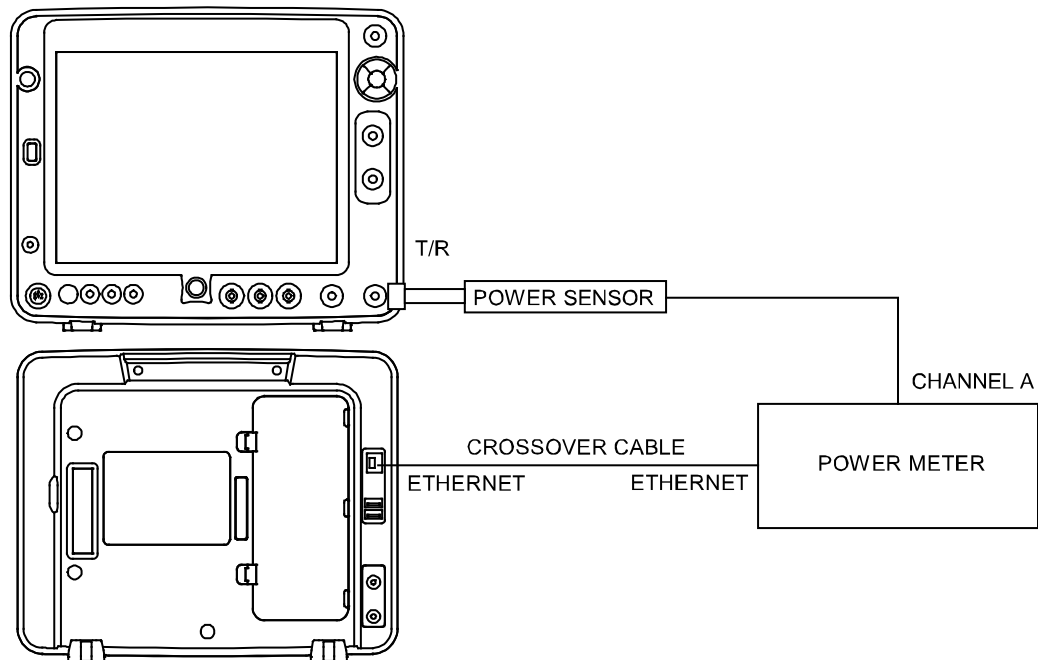
6. Cycle power on the 8800 / 8800S.

C. Generator Calibration

TEST EQUIPMENT: Power Meter
Power Meter Sensor

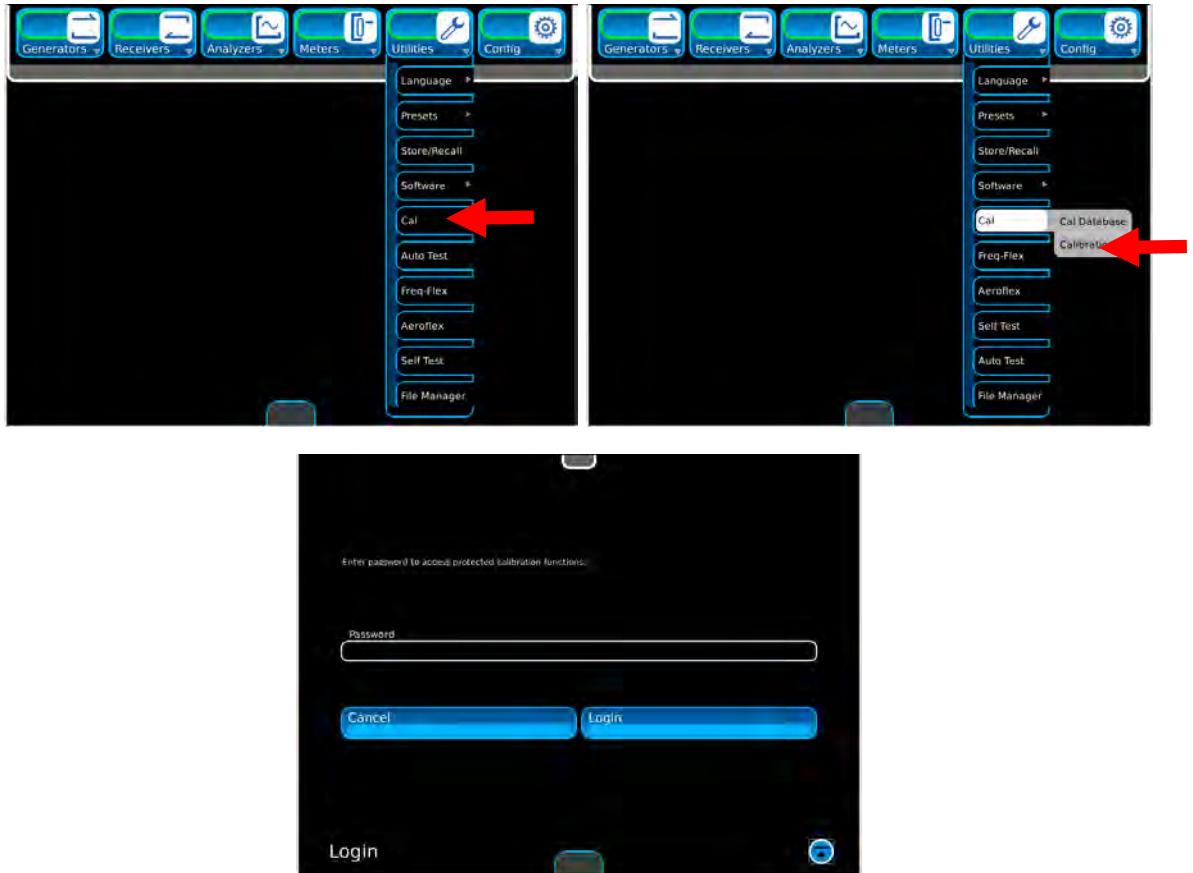
TEST ACCESSORIES: Ethernet Crossover Cable

1. Zero and calibrate the RF Power Meter.
2. Establish the following test setup:



C. Generator Calibration (cont)

3. Select the Utilities Function Icon to display the Utilities Dropdown Menu. Select the Cal icon to display the Cal extended icons. Select "Calibrations" to select the Calibration Login Screen.



4. Type in the Calibration Password (9992) and press Enter.

C. Generator Calibration (cont)

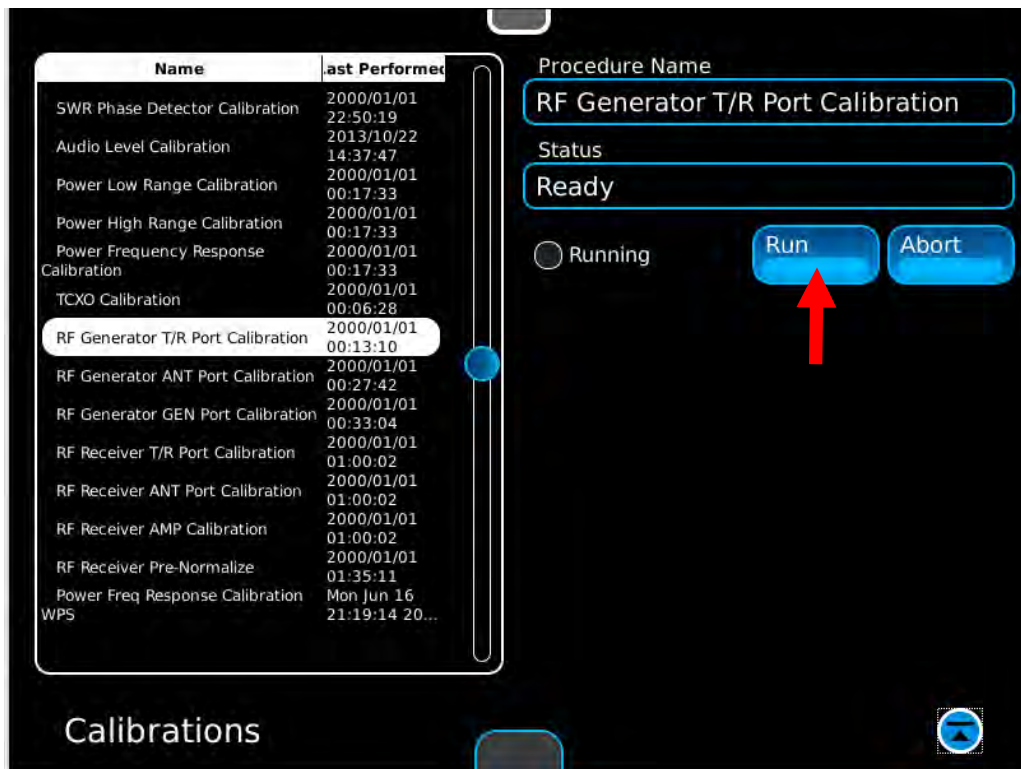
T/R CONNECTOR

5. With the Calibration Screen displayed, select "RF Generator T/R Port Calibration."

Select "Run."

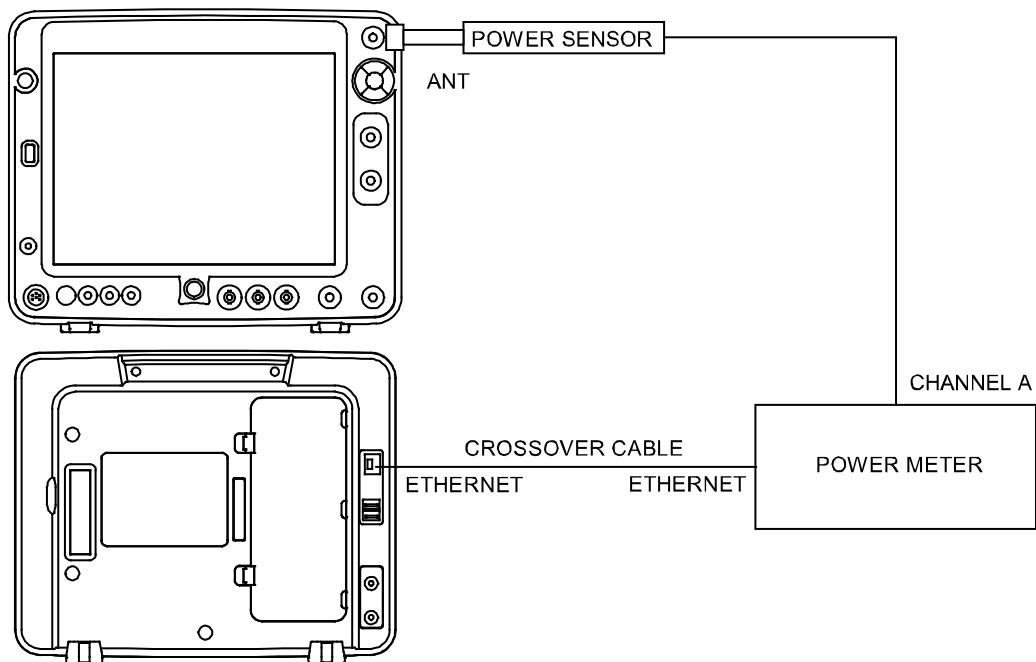
Select "Auto" and follow instructions.

When the RF Generator T/R Port Calibration is completed ("Calibration Completed Successfully" is displayed on screen), press "Ok" to return to the Calibrations Screen.



C. Generator Calibration (cont)

ANT CONNECTOR



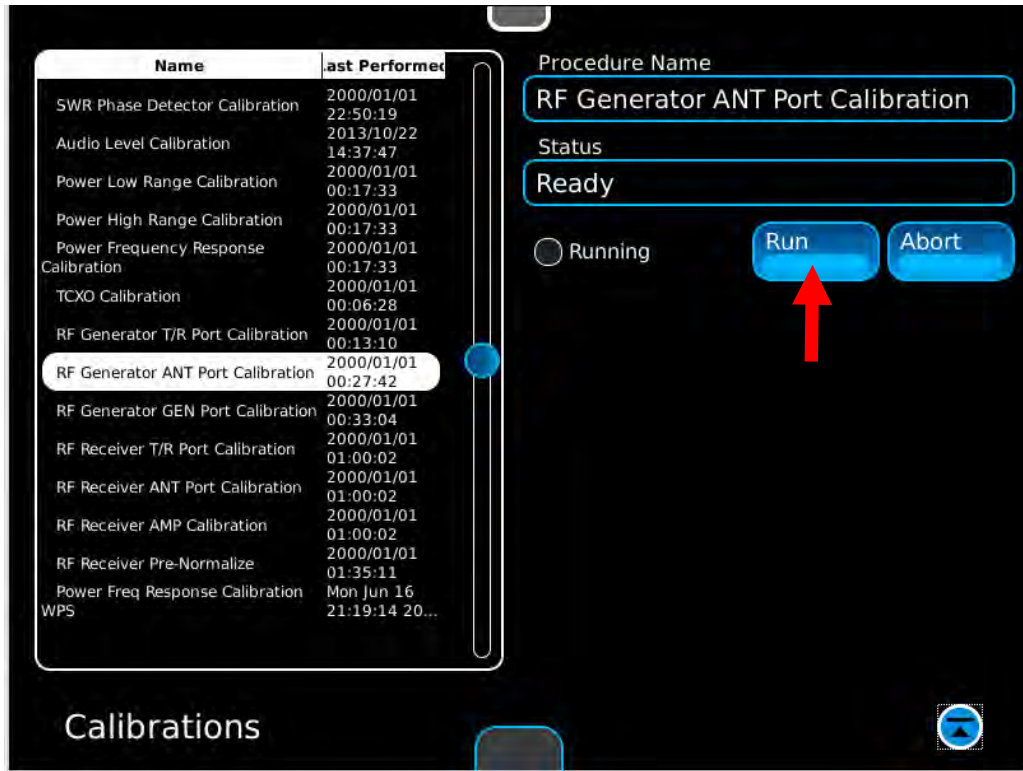
C. Generator Calibration (cont)

6. With the Calibration Screen displayed, select “RF Generator ANT Port Calibration.”

Select “Run.”

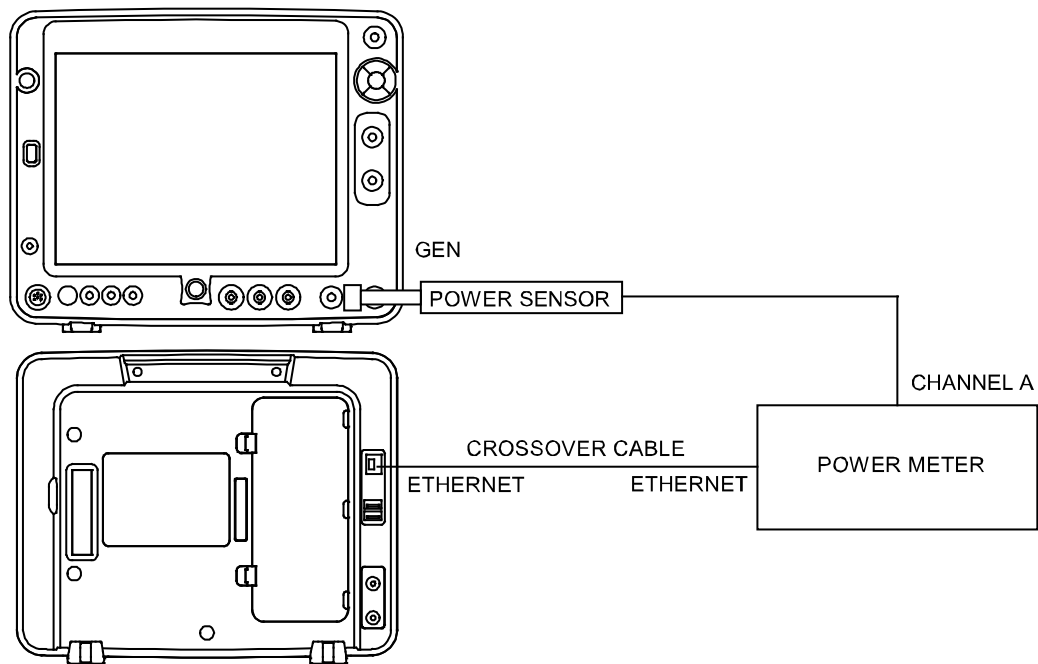
Select “Auto” and follow instructions.

When the RF Generator ANT Port Calibration is completed (“Calibration Completed Successfully” is displayed on screen), press “Ok” to return to the Calibrations Screen.



C. Generator Calibration (cont)

GEN CONNECTOR



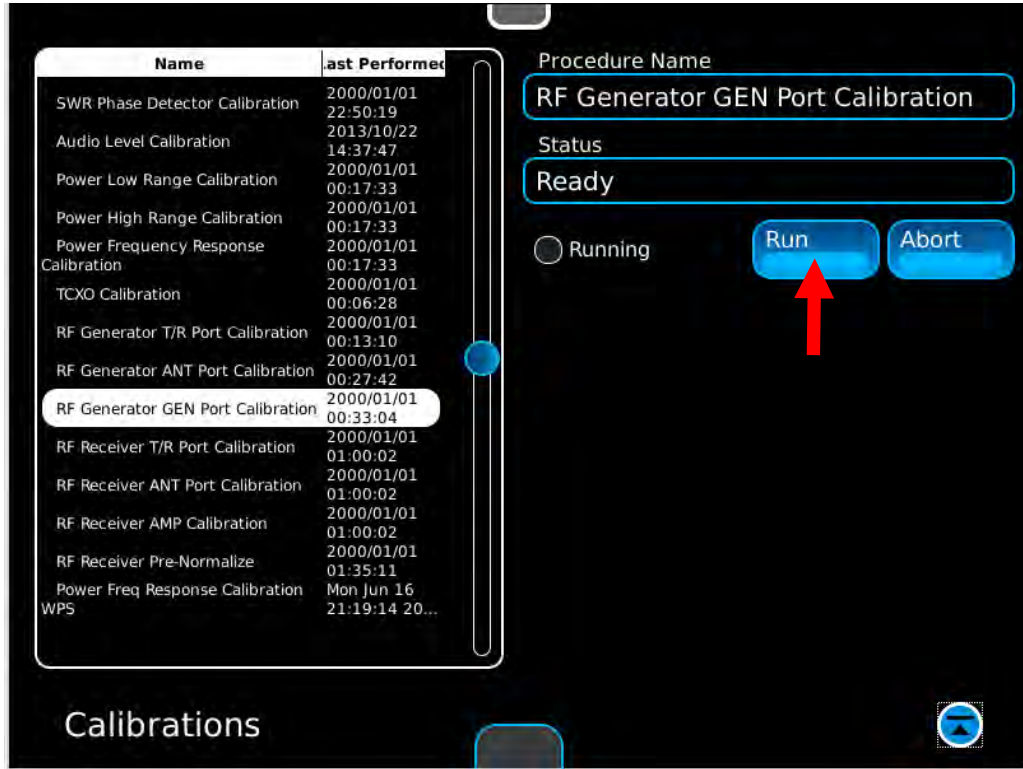
C. Generator Calibration (cont)

7. With the Calibration Screen displayed, select “RF Generator GEN Port Calibration.”

Select “Run.”

Select “Auto” and follow instructions.

When the RF Generator GEN Port Calibration is completed (“Calibration Completed Successfully” is displayed on screen), press “Ok” to return to the Calibrations Screen.



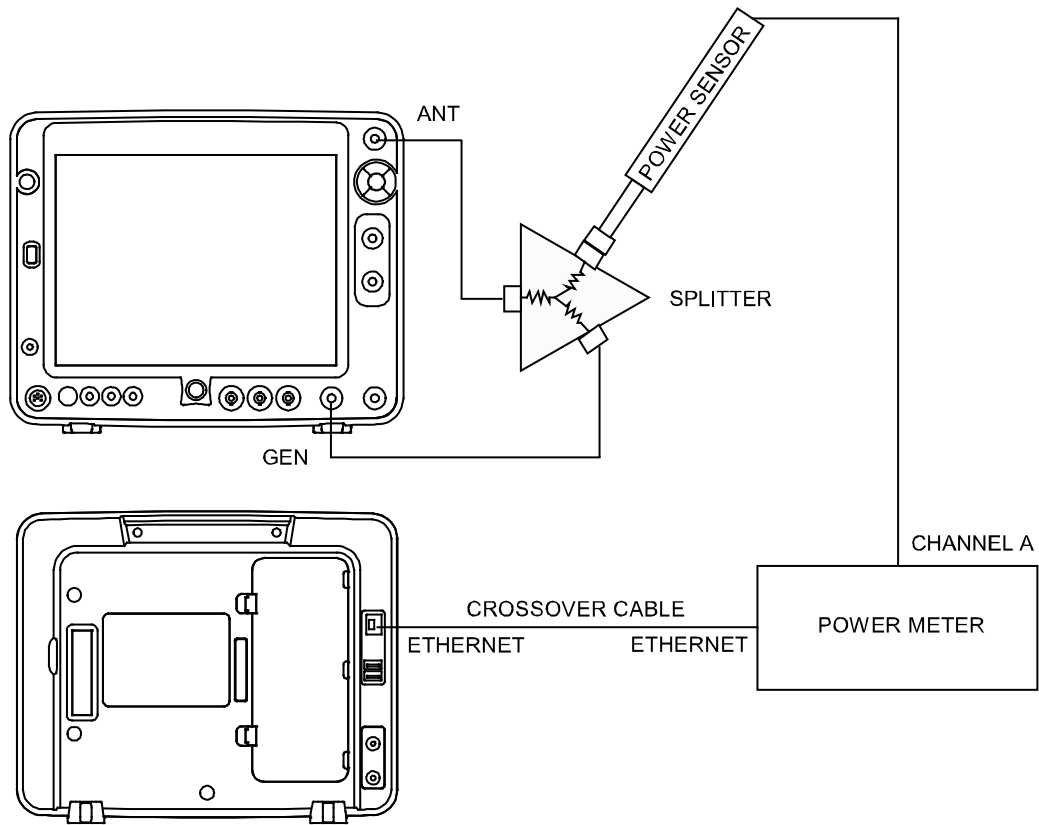
8. Cycle power on the 8800 / 8800S.

D. Receiver Calibration

TEST EQUIPMENT: Power Meter
Power Meter Sensor

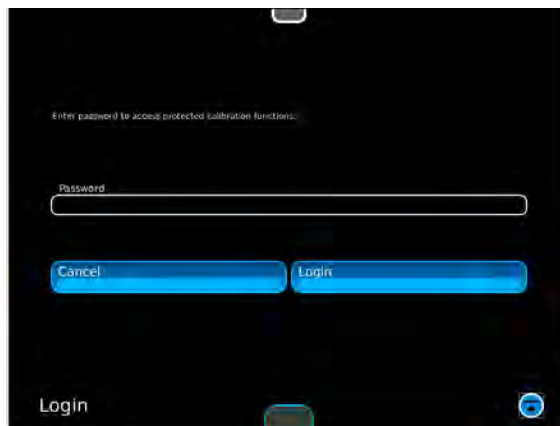
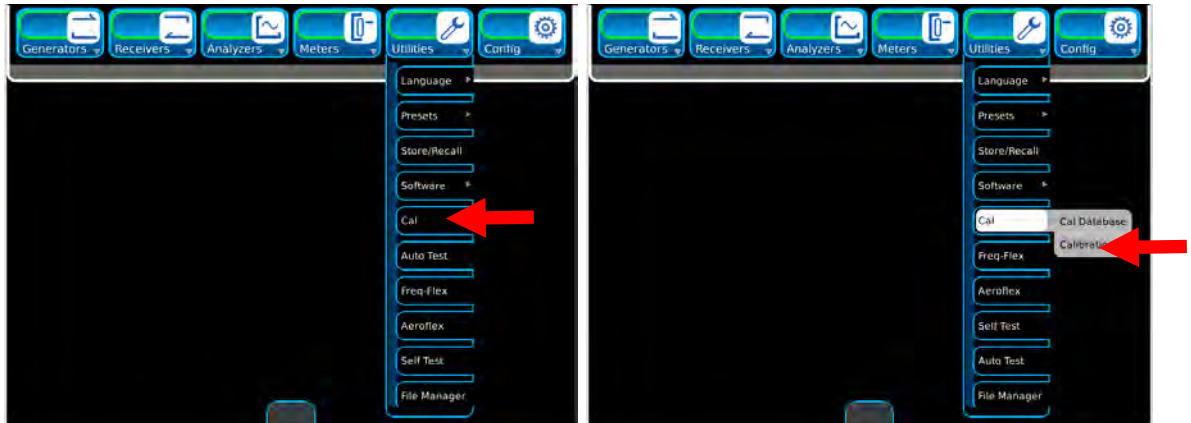
TEST ACCESSORIES: Ethernet Crossover Cable
Splitter Assembly (2-Way, Resistive)

1. Establish the following test setup:



D. Receiver Calibration (cont)

2. Select the Utilities Function Icon to display the Utilities Dropdown Menu. Select the Cal icon to display the Cal extended icons. Select "Calibrations" to select the Calibration Login Screen.



3. Type in the Calibration Password (9992) and press Enter.

D. Receiver Calibration (cont)

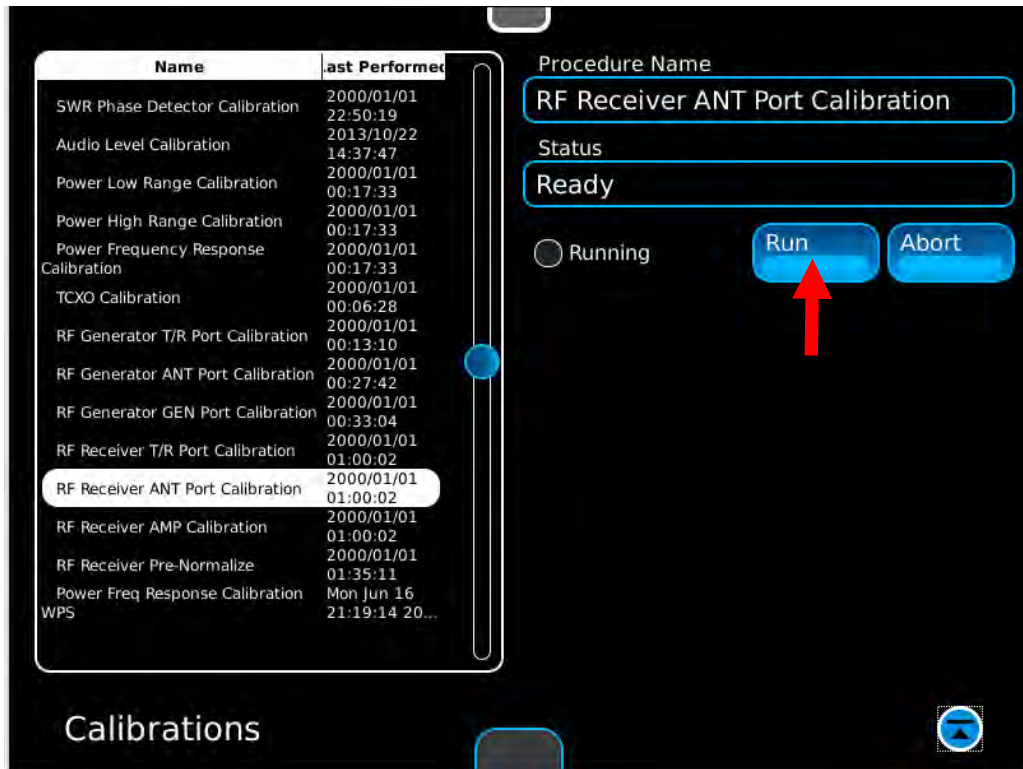
ANT CONNECTOR

4. With the Calibration Screen displayed, select "RF Receiver ANT Port Calibration."

Select "Run."

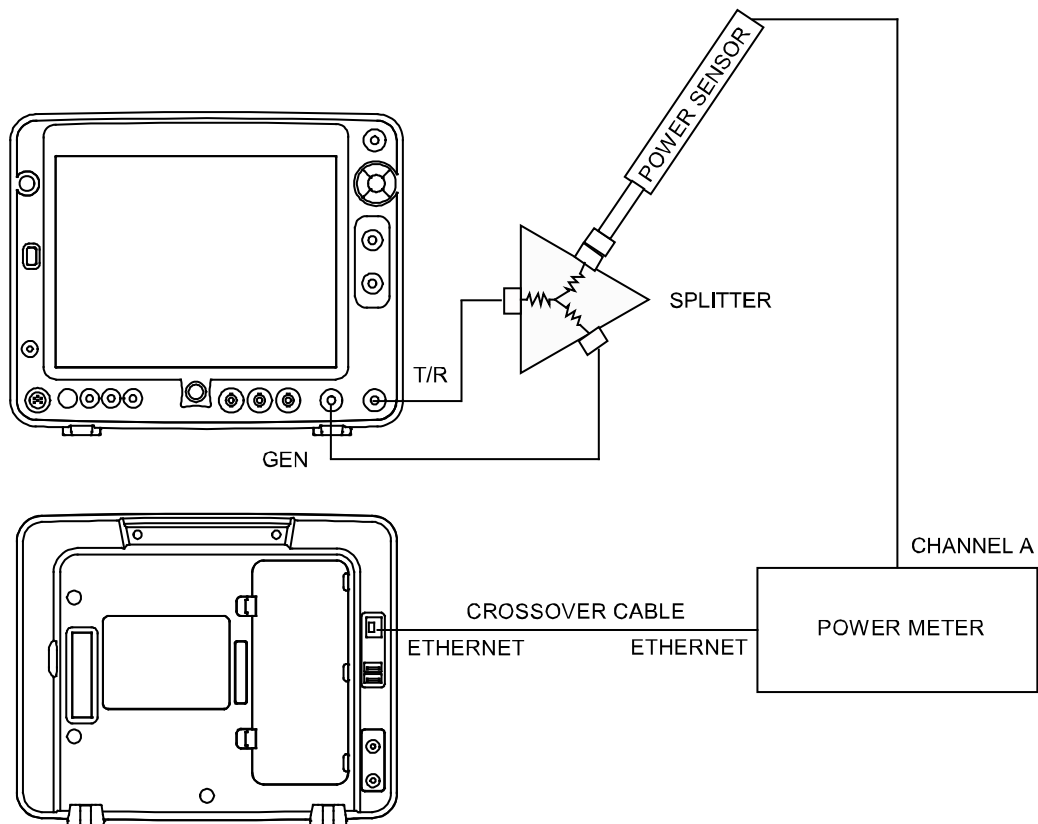
Select "Auto" and follow instructions.

When the RF Receiver ANT Port Calibration is completed ("Calibration Completed Successfully" is displayed on screen), press "Ok" to return to the Calibrations Screen.



D. Receiver Calibration (cont)

T/R CONNECTOR



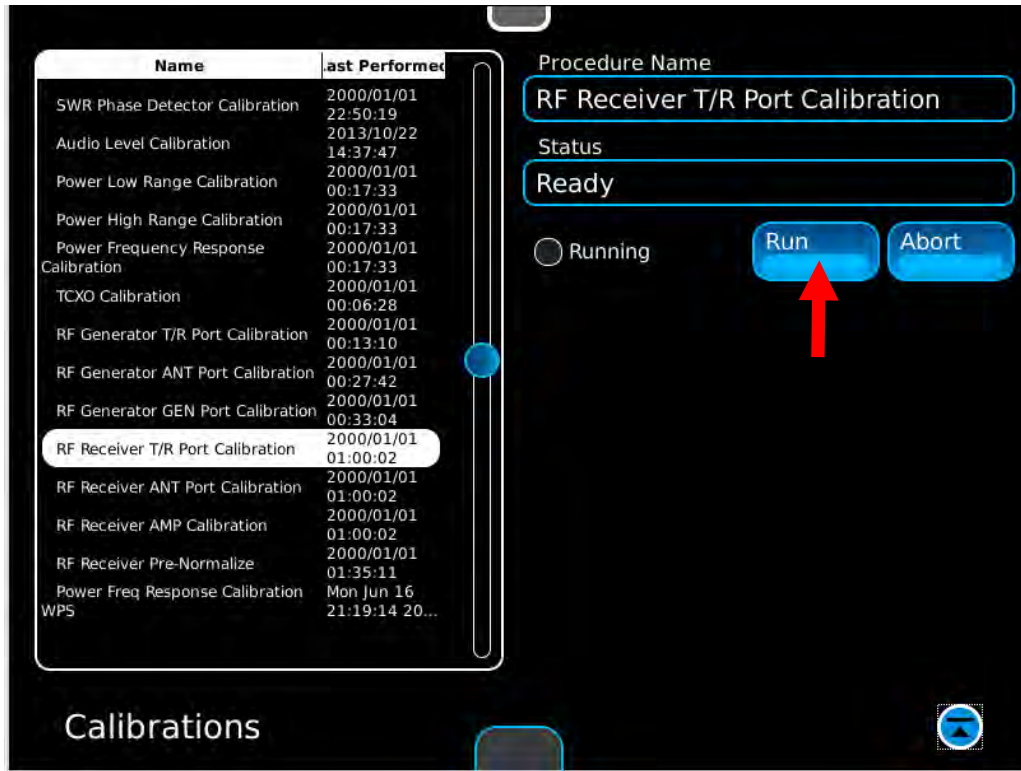
D. Receiver Calibration (cont)

5. With the Calibration Screen displayed, select "RF Receiver T/R Port Calibration."

Select "Run."

Select "Auto" and follow instructions.

When the RF Receiver T/R Port Calibration is completed ("Calibration Completed Successfully" is displayed on screen), press "Ok" to return to the Calibrations Screen.



D. Receiver Calibration (cont)

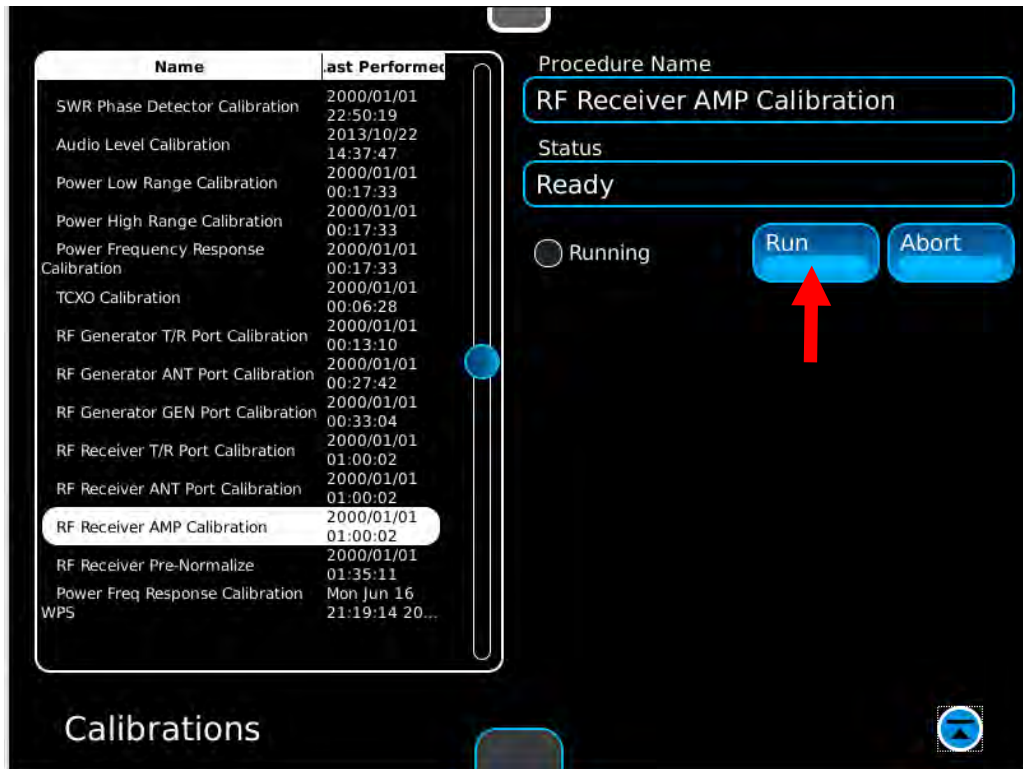
AMP

6. With the Calibration Screen displayed, select "RF Receiver AMP Calibration."

Select "Run."

Select "Auto" and follow instructions.

When the RF Receiver AMP Calibration is completed ("Calibration Completed Successfully" is displayed on screen), press "Ok" to return to the Calibrations Screen.



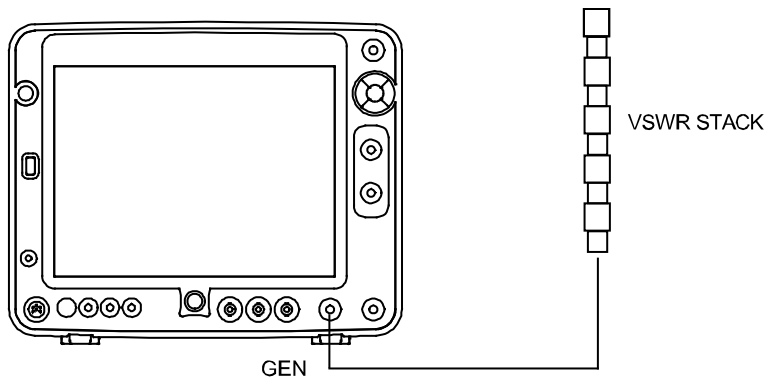
7. Cycle power on the 8800 / 8800S.

E. SWR Phase Detector Calibration

TEST EQUIPMENT: None

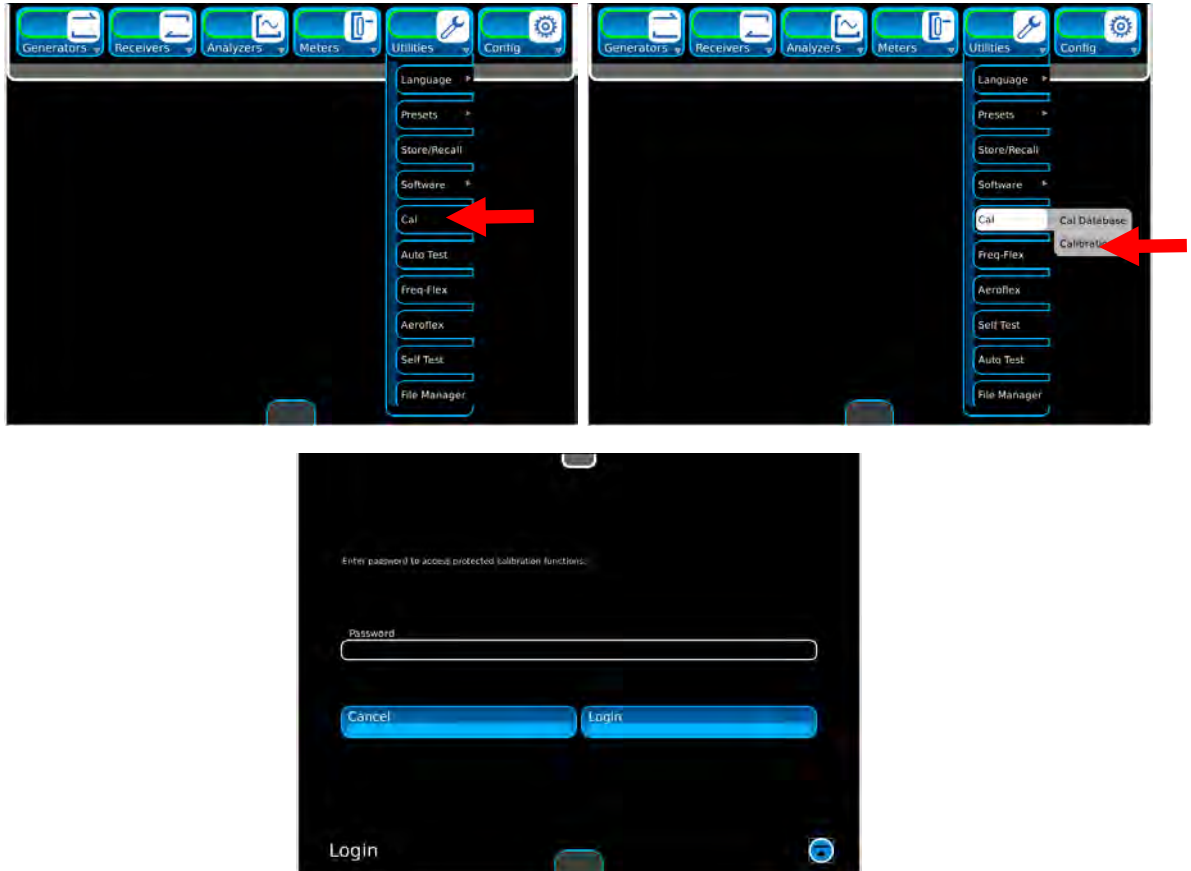
TEST ACCESSORIES: SWR Stack
Short-Open-Load VSWR Calibrator (TNC)

1. Establish the following test setup:



E. SWR Phase Detector Calibration (cont)

2. Select the Utilities Function Icon to display the Utilities Dropdown Menu. Select the Cal icon to display the Cal extended icons. Select "Calibrations" to select the Calibration Login Screen.



3. Type in the Calibration Password (9992) and press Enter.

E. SWR Phase Detector Calibration (cont)

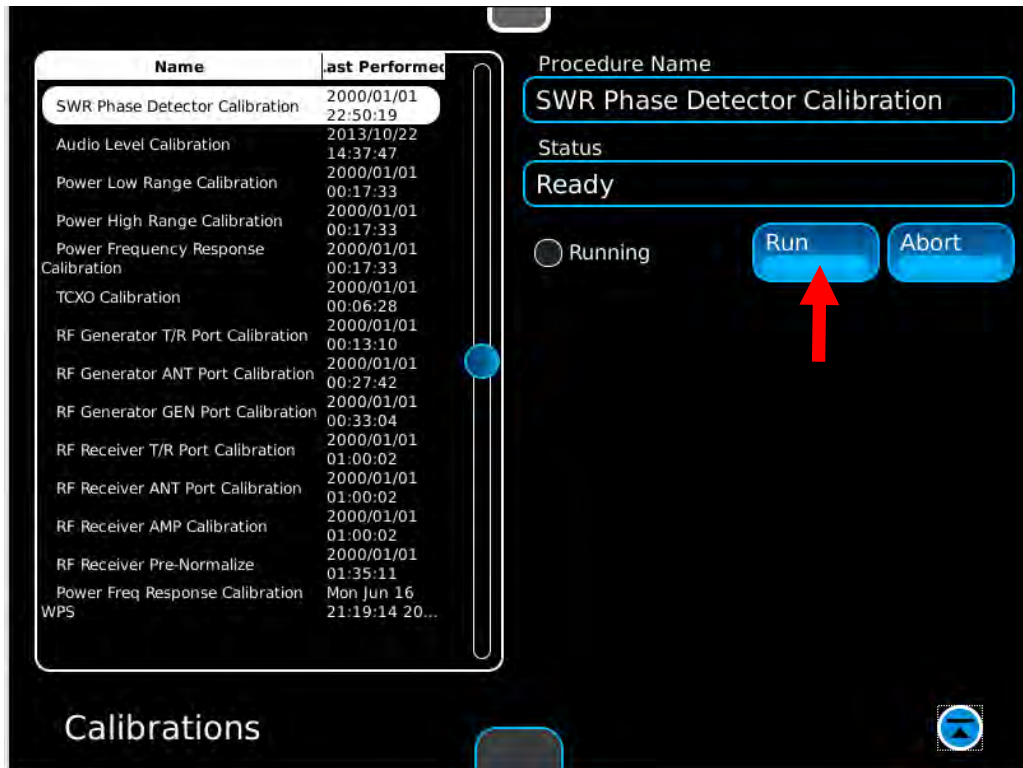
4. With the Calibration Screen displayed, select "SWR Phase Detector Calibration."

Select "Run."

Follow instructions.

Use the TNC (F) Short - Open - Load when prompted to connect a short or open. Connect the calibrated short or open through the SWR Stack.

When the SWR Phase Detector Calibration is completed ("Calibration Completed Successfully" is displayed on screen), press "Ok" to return to the Calibrations Screen.



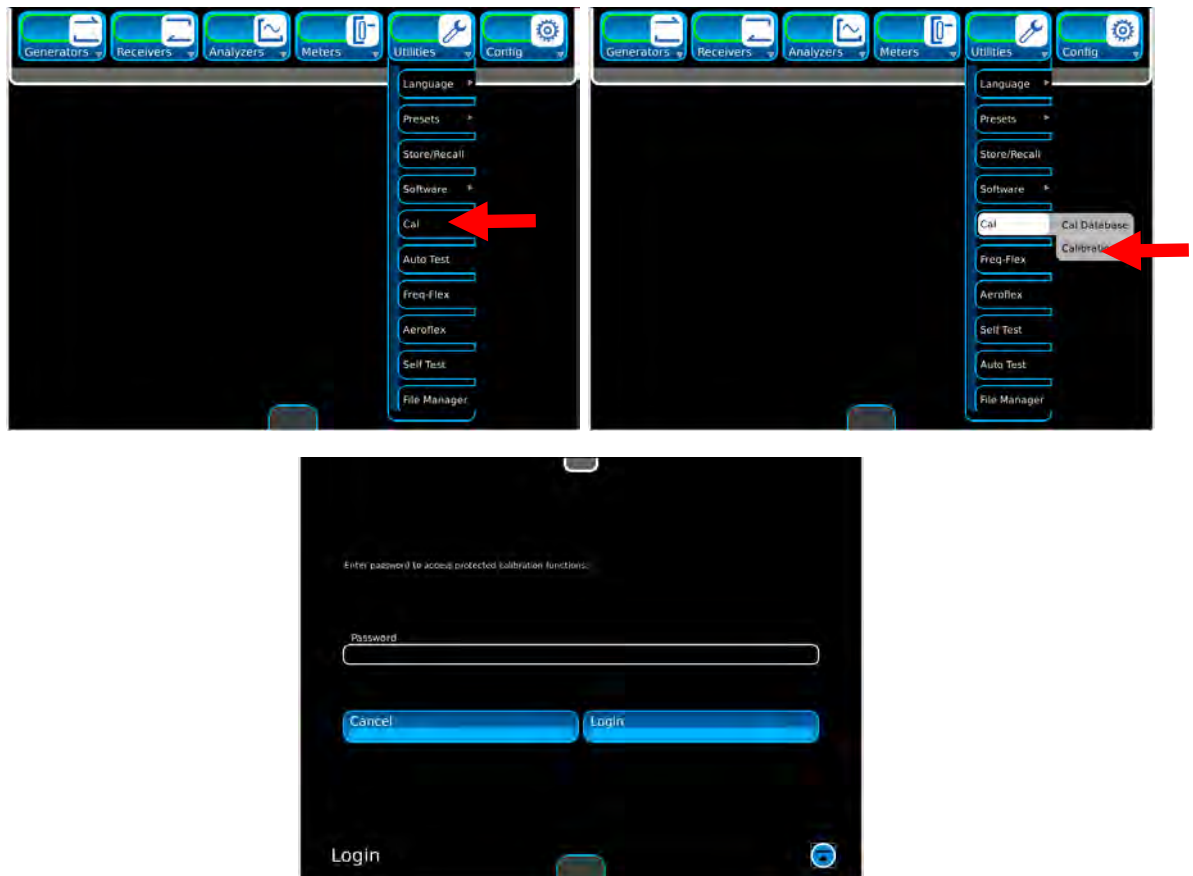
5. Cycle power on the 8800 / 8800S.

F. Receiver Pre Normalize Calibration

TEST EQUIPMENT: None

TEST ACCESSORIES: None

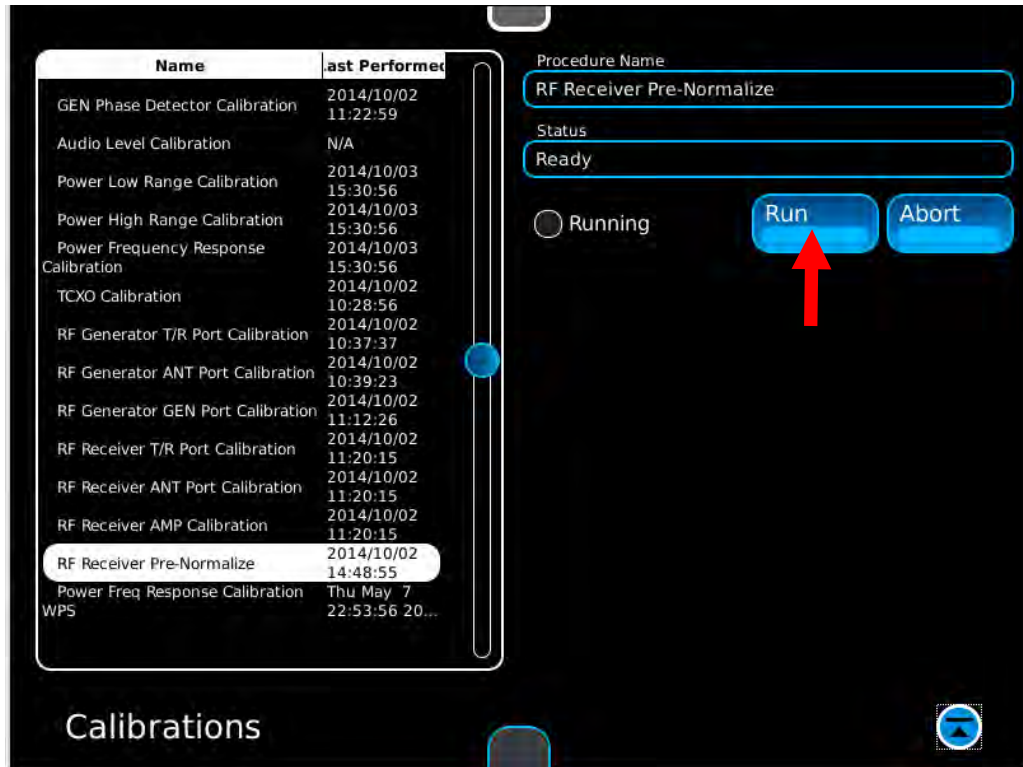
1. Remove all test connections from the 8800 / 8800S.
2. Select the Utilities Function Icon to display the Utilities Dropdown Menu. Select the Cal icon to display the Cal extended icons. Select "Calibrations" to select the Calibration Login Screen.



3. Type in the Calibration Password (9992) and press Enter.

F. Receiver Pre Normalize Calibration (cont)

4. With the Calibration Screen displayed, select “RF Receiver Pre-Normalize.”
Select “Run.”
Follow instructions.



5. Cycle power on the 8800 / 8800S.

G. RF Power Meter Calibration

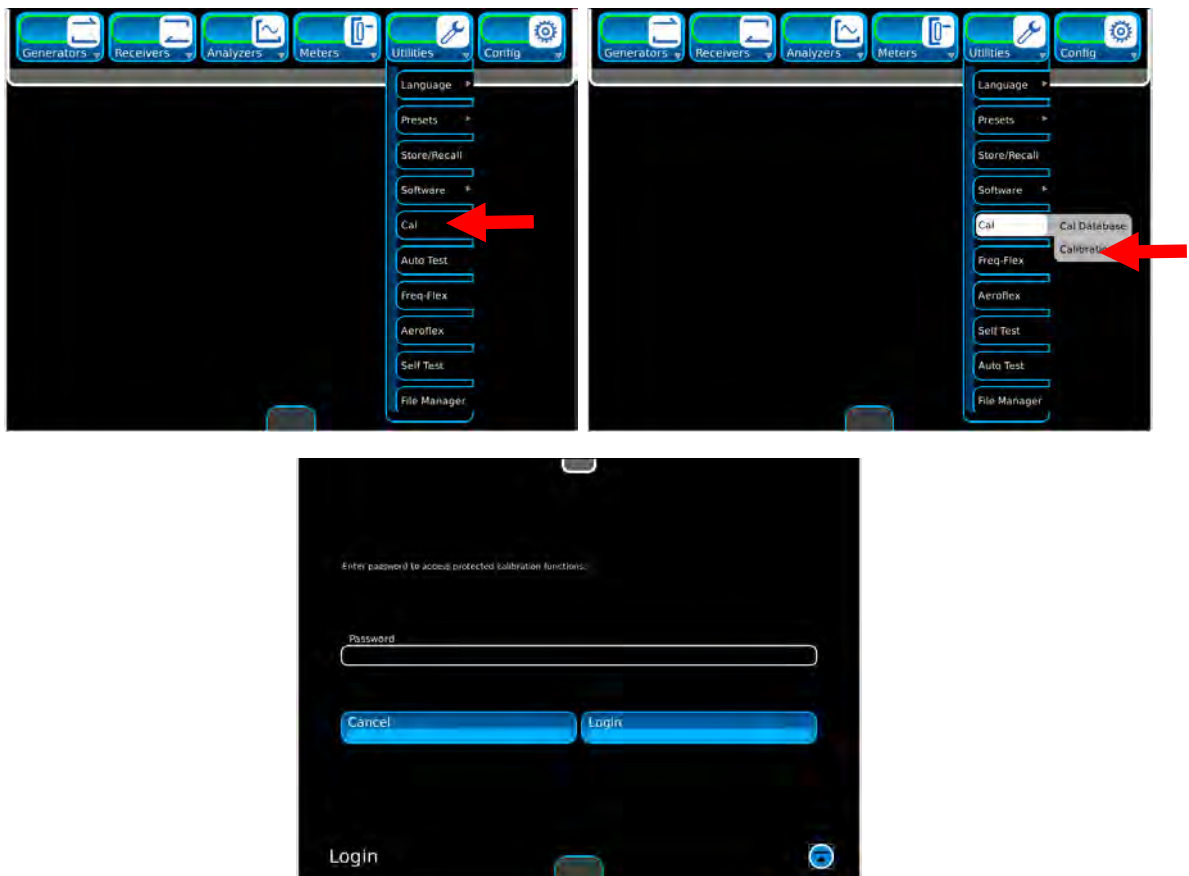
TEST EQUIPMENT: Coupler
Power Meter
RF Power Amplifier (200 W)
Signal Generator

TEST ACCESSORIES: 10 dB Attenuator (50 W)
20 dB Attenuator (5 W)
50 Ω Termination (2)
100 MHz Low-Pass Filter
300 MHz Low-Pass Filter
700 MHz Low-Pass Filter
1200 MHz Low-Pass Filter
Stub Tuner

The following steps must be performed in the order shown.

RF POWER CAL LOW RANGE

1. Select the Utilities Function Icon to display the Utilities Dropdown Menu. Select the Cal icon to display the Cal extended icons. Select “Calibrations” to select the Calibration Login Screen.



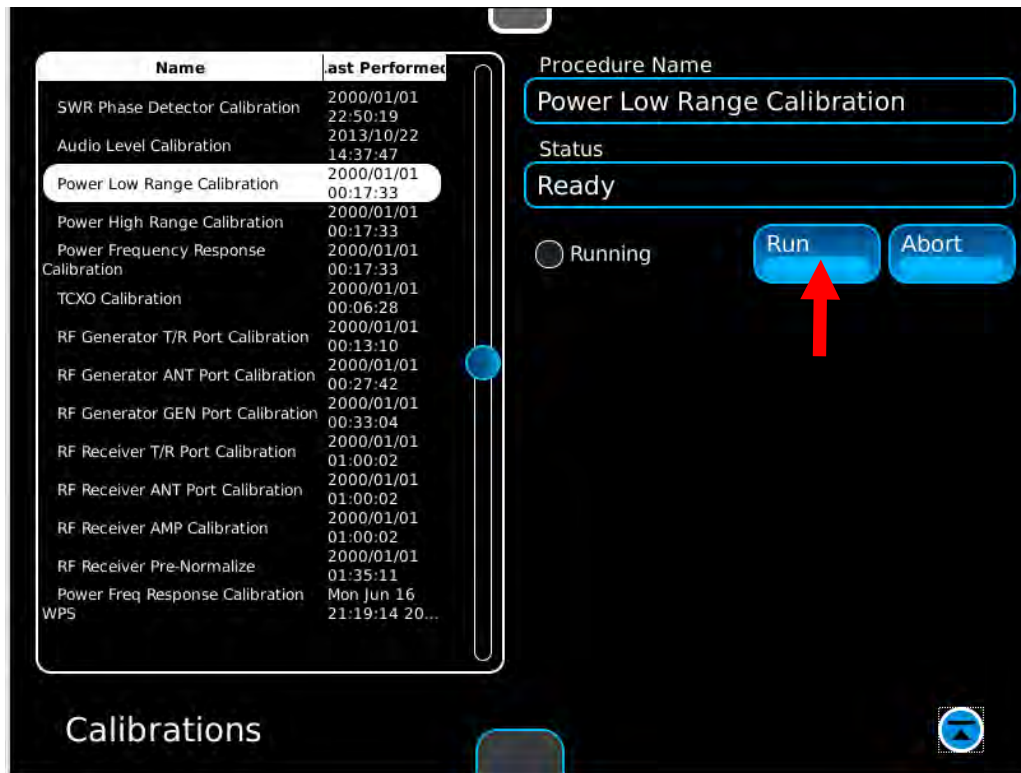
G. RF Power Meter Calibration (cont)

2. Type in the Calibration Password (9992) and press Enter.
3. With the Calibration Screen displayed, select "Power Low Range Calibration."

Select "Run."

Follow the instructions.

Coupled Port Attenuation (dB)	
100 MHz	
300 MHz	
500 MHz	
700 MHz	
900 MHz	



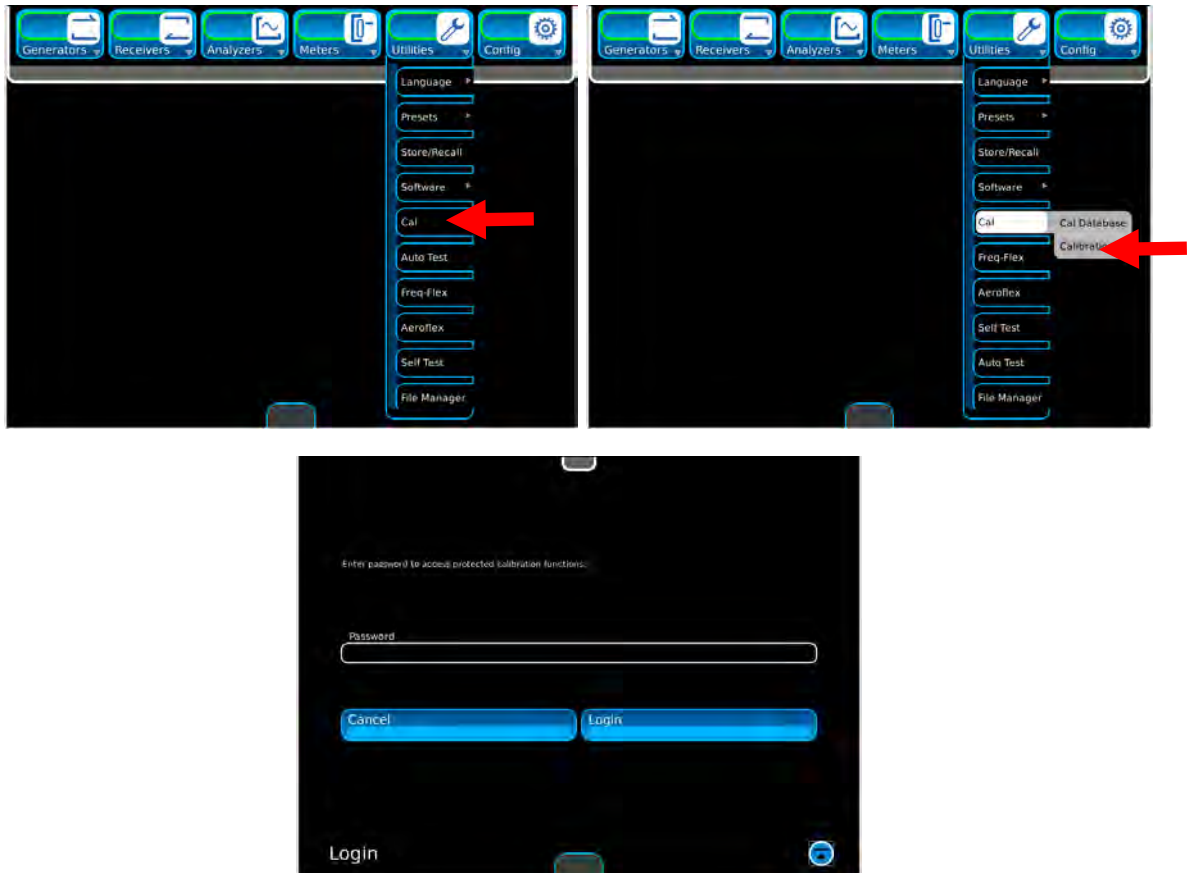
When the Power Low Range Calibration is completed ("Calibration Completed Successfully" is displayed on screen), press "Ok" to return to the Calibrations Screen.

4. Cycle power on the 8800 / 8800S.

G. RF Power Meter Calibration (cont)

RF POWER CAL HIGH RANGE

5. Select the Utilities Function Icon to display the Utilities Dropdown Menu. Select the Cal icon to display the Cal extended icons. Select "Calibrations" to select the Calibration Login Screen.



6. Type in the Calibration Password (9992) and press Enter.

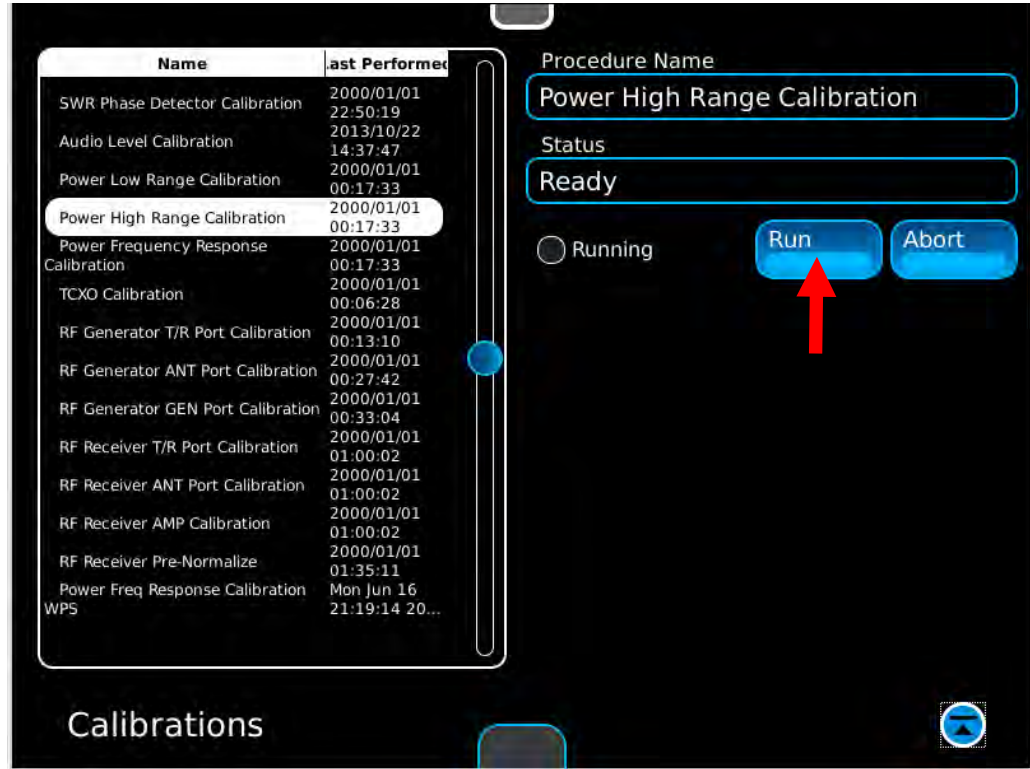
G. RF Power Meter Calibration (cont)

7. With the Calibration Screen displayed, select "Power High Range Calibration."

Select "Run."

Follow the instructions.

When the Power High Range Calibration is completed ("Calibration Completed Successfully" is displayed on screen), press "Ok" to return to the Calibrations Screen.

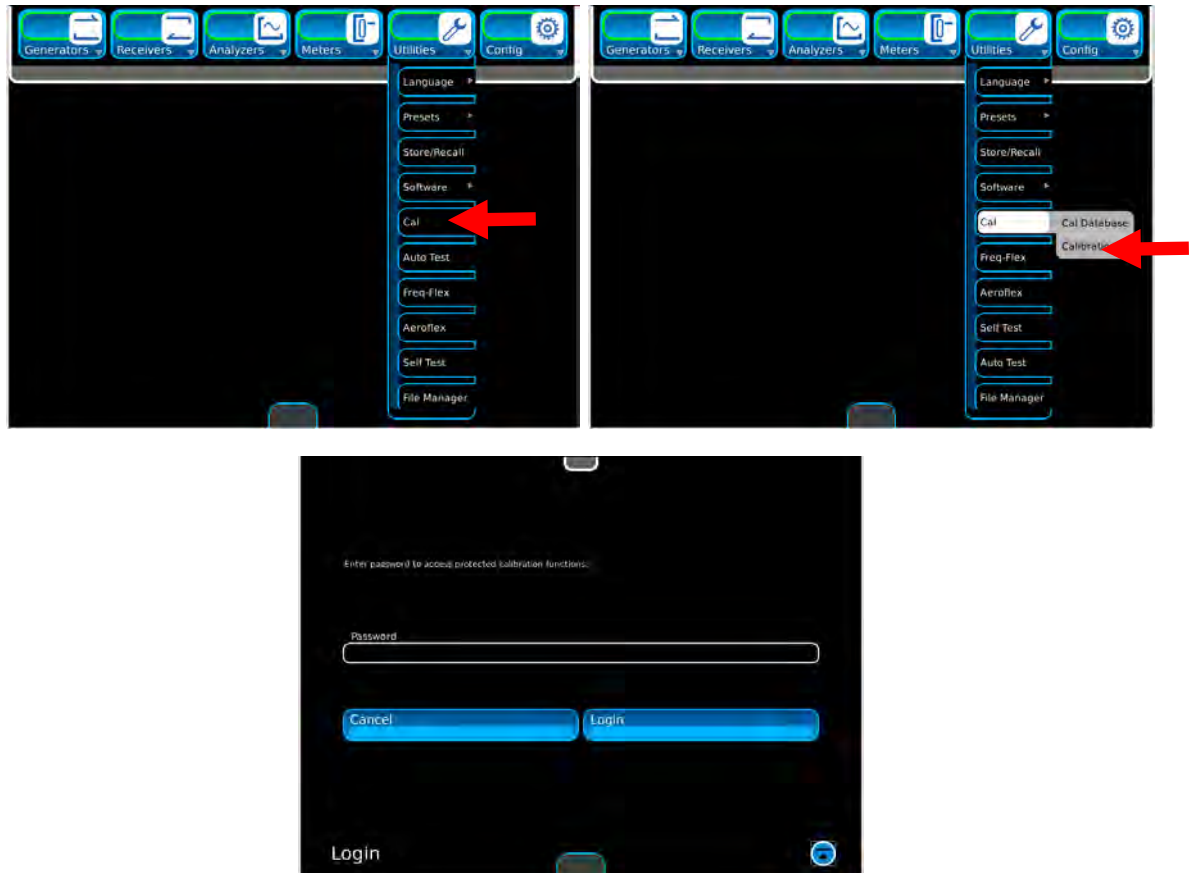


8. Cycle power on the 8800 / 8800S.

G. RF Power Meter Calibration (cont)

FREQUENCY RESPONSE POWER CAL

9. Select the Utilities Function Icon to display the Utilities Dropdown Menu. Select the Cal icon to display the Cal extended icons. Select "Calibrations" to select the Calibration Login Screen.



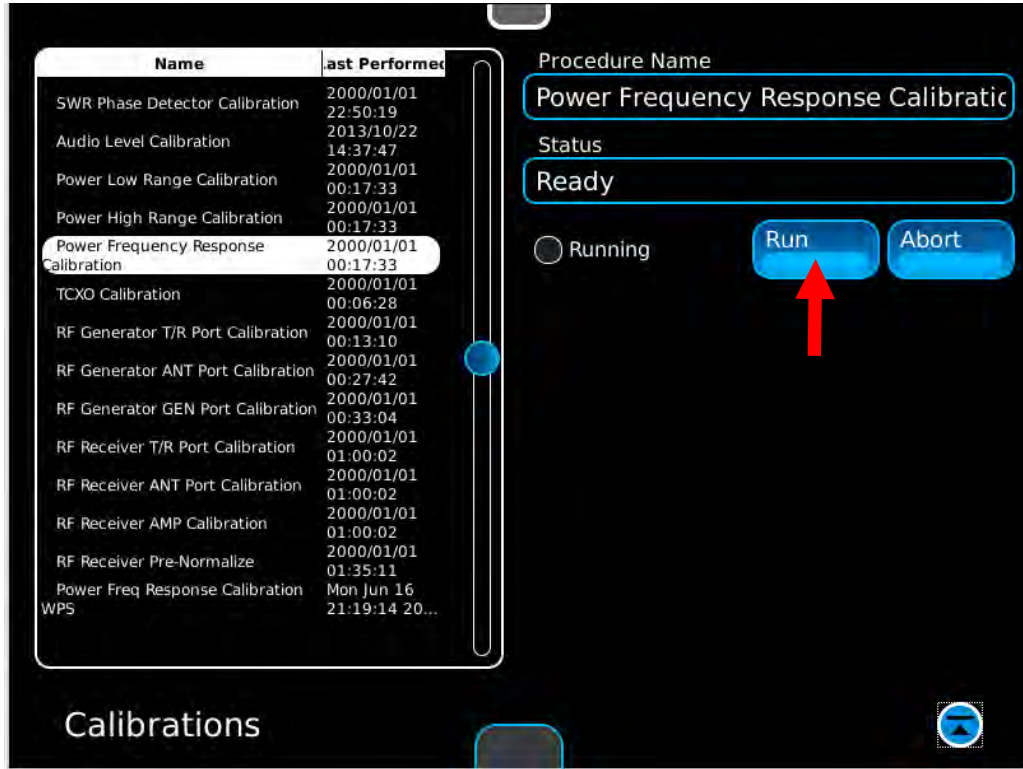
10. Type in the Calibration Password (9992) and press Enter.

G. RF Power Meter Calibration (cont)

11. With the Calibration Screen displayed, select "Power Frequency Response Calibration."
Select "Run."

Follow the instructions.

When the Power Frequency Response Calibration is completed ("Calibration Completed Successfully" is displayed on screen), press "Ok" to return to the Calibrations Screen.



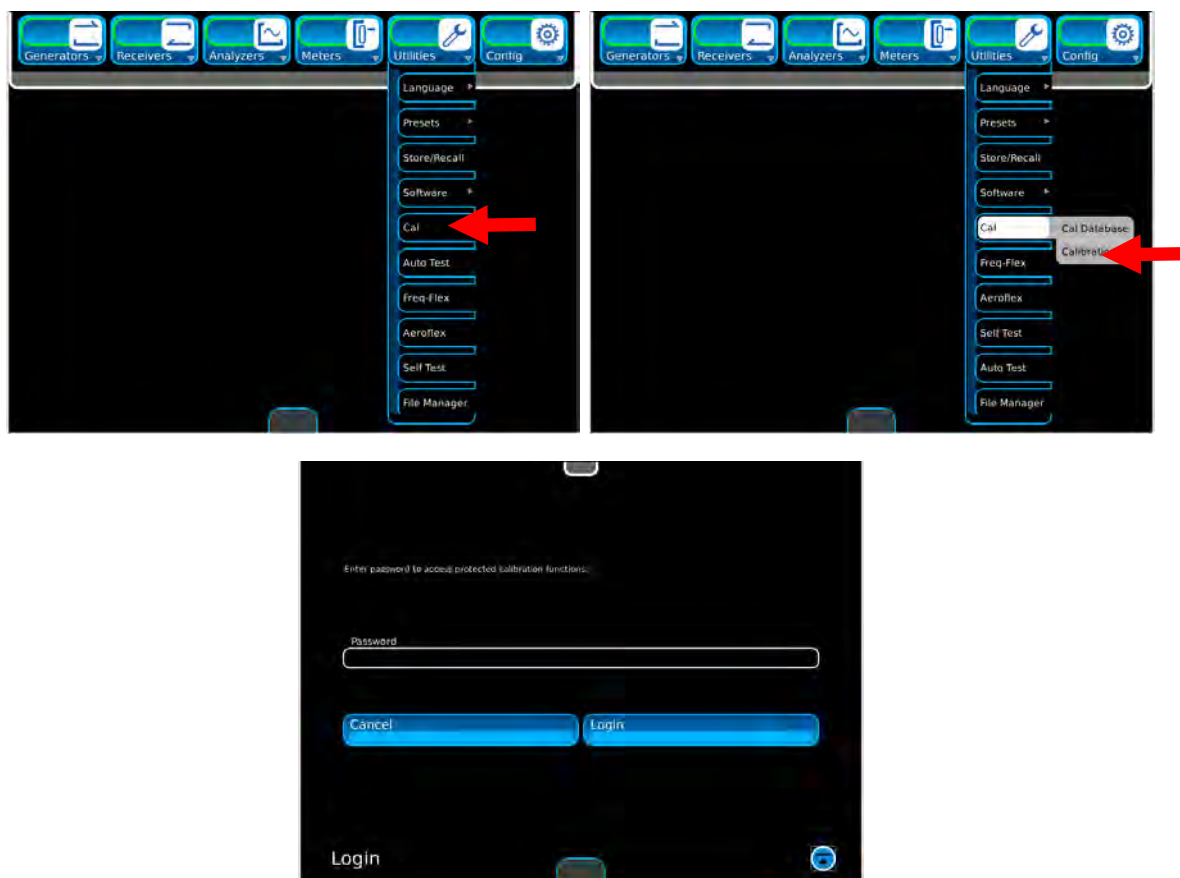
12. Cycle power on the 8800 / 8800S.
13. Set the Signal Generator to RF OFF.
14. Set the RF Amplifier to OFF.

H. Audio Level Meter Calibration

TEST EQUIPMENT: Calibrator
 Digital Multimeter

TEST ACCESSORIES: None

1. Select the Utilities Function Icon to display the Utilities Dropdown Menu. Select the Cal icon to display the Cal extended icons. Select "Calibrations" to select the Calibration Login Screen.



2. Type in the Calibration Password (9992) and press Enter.

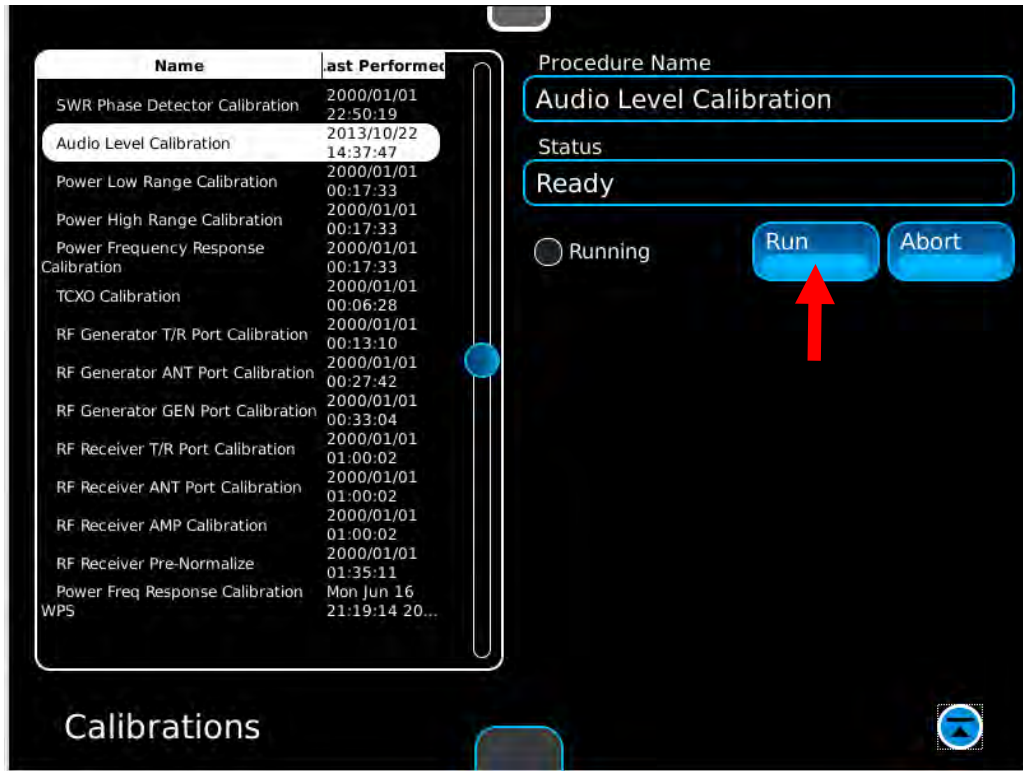
H. Audio Level Meter Calibration (cont)

3. With the Calibration Screen displayed, select “Audio Level Calibration.”

Select “Run.”

Follow instructions.

When the Audio Level Calibration is completed (“Calibration Completed Successfully” is displayed on screen), press “Ok” to return to the Calibrations Screen.



4. Cycle power on the 8800 / 8800S.

2-4. REMOVE/REPLACE PROCEDURES

SUBJECT	PAGE
Battery	2-90
Fuse	2-92
Feet.....	2-94
Open Case Assy.....	2-96
Power Supply PCB Assy (1A3)	2-101
RF Attenuator Assy (1A1).....	2-103
RF Assy (1A2).....	2-105
Multi-Function PCB Assy (1A4A1)	2-107
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Touch Screen Controller Assy (1A4A4)	2-114
DMM Assy (1A4A7).....	2-115
Audio I/O PCB Assy (1A4A6)	2-117
Touch Screen Assy (1A4A3)	2-119
Arrow Control PCB Assy (1A4A5)	2-123
Bird Power Meter (1A5) (Option)	2-127

TOOL	SIZE
SCREWDRIVER	#2 PHILLIPS
DRIVER BIT	2 MM HEX 2.5 MM HEX T8 TORQ T20 TORQ
SOCKET	3/16" 3/8" 5/8" 5.5 MM
WRENCH	5/16" 3/16" 5/8" 22 MM
PLIERS	NEEDLE-NOSE

SPECIAL TOOL	AEROFLEX PART NUMBER
MIC Tool	113540
BNC Tool	113549
Power Meter Alignment Tool	138584
Cable Bend Tool	114488
Chassis Assy Fixture	139243
Flex Cable Tool	139244

2-4. REMOVE/REPLACE PROCEDURES (cont)

CAUTION

REPLACE ONLY WITH THE BATTERY SPECIFIED. DO NOT ATTEMPT TO INSTALL A NON-RECHARGEABLE BATTERY.

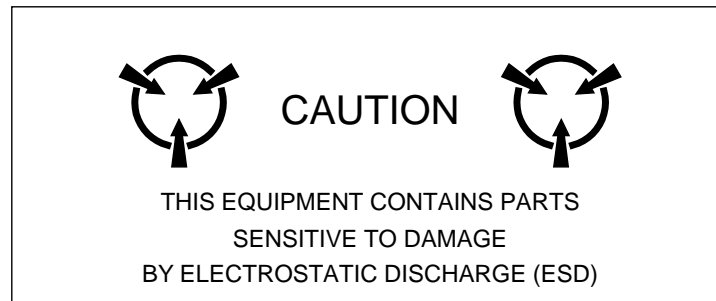
TAG EACH WIRE AND CABLE PRIOR TO REMOVAL.

AVOID BENDING OR TWISTING SEMI-RIGID COAXIAL CABLES.

AVOID PLACING UNDUE STRAIN ON ANY WIRE OR CABLE.

AVOID DISCARDING LOOSE ITEMS (NUTS, SCREWS, WASHERS, ETC.).

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 TO SATISFY THE SAFETY AND EMC COMPLIANCE STANDARDS.



A. Battery

DESCRIPTION

This procedure covers: Remove. Install.

PRELIMINARY PROCEDURES

None

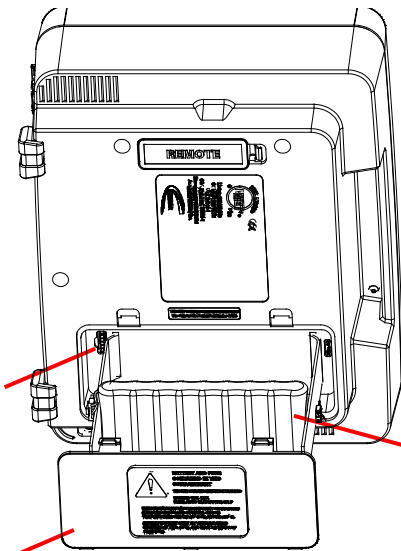
CAUTION

REPLACE ONLY WITH THE BATTERY SPECIFIED. DO NOT ATTEMPT TO INSTALL A NON-RECHARGEABLE BATTERY.

WARNING

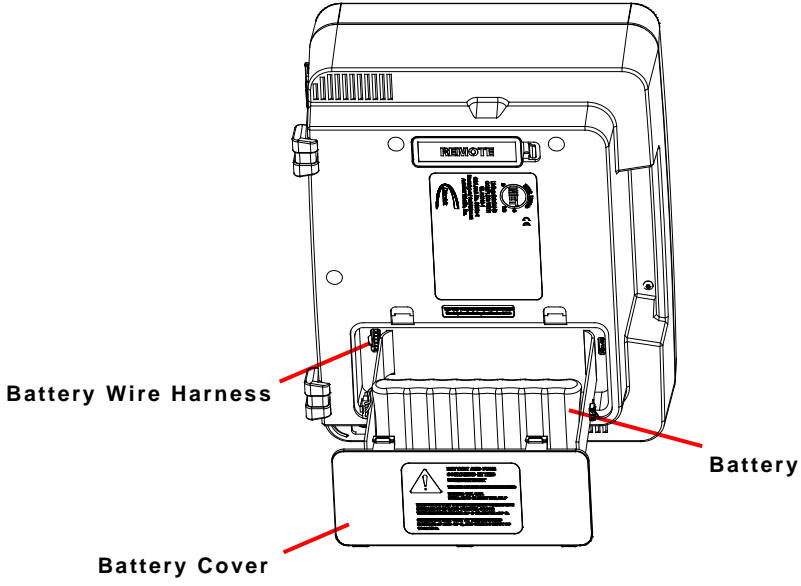
- **DISPOSE OF THE LITHIUM ION BATTERY PACK ACCORDING TO LOCAL STANDARD SAFETY PROCEDURES. DO NOT CRUSH, INCINERATE OR DISPOSE OF THE LITHIUM ION BATTERY PACK IN NORMAL WASTE.**
- **DO NOT SHORT CIRCUIT OR FORCE DISCHARGE THE LITHIUM ION BATTERY PACK AS THIS MIGHT CAUSE THE LITHIUM ION BATTERY PACK TO VENT, OVERHEAT OR EXPLODE.**

REMOVE

1.	Unlatch the Battery Cover to expose the Battery.	 <p>The diagram shows a top-down view of the battery compartment. A battery cover is at the bottom, with a warning label. Above it is the battery pack. To the left, a wire harness is connected to the battery. Labels with red arrows point to the 'Battery Wire Harness', 'Battery', and 'Battery Cover'.</p>
2.	Disconnect the Battery Wire Harness (connecting the Battery to the Test Set) and remove the Battery.	

A. Battery (cont)

INSTALL

1.	Install the Battery in the 8800 / 8800S and connect the Battery Wire Harness.	
2.	Relatch the Battery Cover on the Test Set.	

FOLLOW-ON MAINTENANCE

None

END OF TASK

B. Fuse

DESCRIPTION

This procedure covers: Remove. Install.

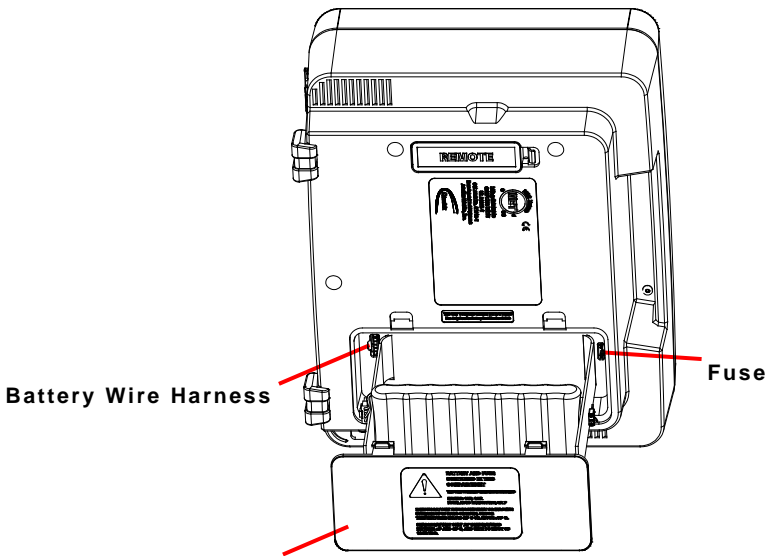
PRELIMINARY PROCEDURES

None

CAUTION

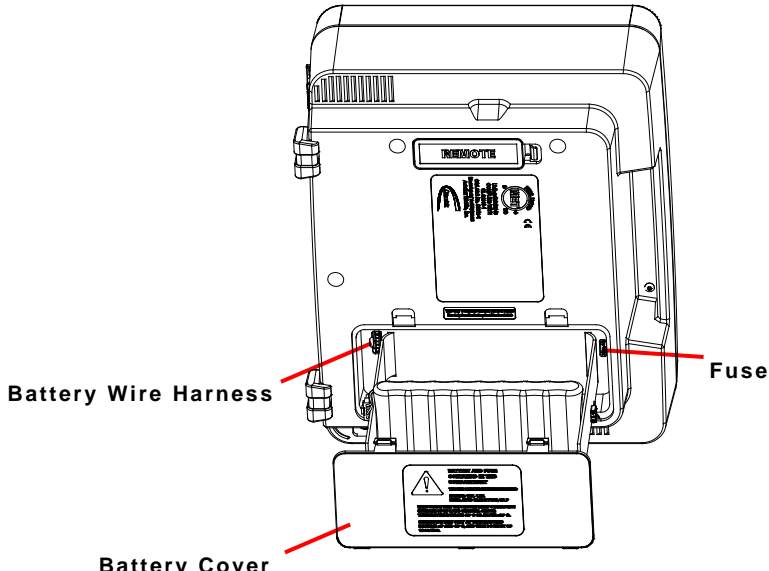
FOR CONTINUOUS PROTECTION AGAINST FIRE, REPLACE ONLY WITH FUSES OF THE SPECIFIED VOLTAGE AND CURRENT RATINGS. (5 A, 32 Vdc, Type F - Mini Blade Fuse)

REMOVE

1.	Unlatch the Battery Cover to expose the Fuse.	 <p>The diagram shows a top-down view of a battery pack. A rectangular battery cover is shown at the bottom, partially open, with a red line pointing to it from the label 'Battery Cover'. Inside the pack, a battery wire harness is visible on the left side, with a red line pointing to it from the label 'Battery Wire Harness'. On the right side of the pack, a fuse is located, with a red line pointing to it from the label 'Fuse'. The battery cells are visible in the center of the pack.</p>
2.	Locate and remove the Fuse.	

B. Fuse (cont)

INSTALL

1.	Install the Fuse.	 <p>The diagram shows a top-down view of a battery compartment. A battery is seated in the center. A wire harness is connected to the left side of the battery. A fuse is located on the right side of the battery. A battery cover is shown below the battery, with a warning label. Red lines point from the labels to the corresponding parts in the diagram.</p>
2.	Relatch the Battery Cover on the Test Set.	

FOLLOW-ON MAINTENANCE

None

END OF TASK

C. Feet

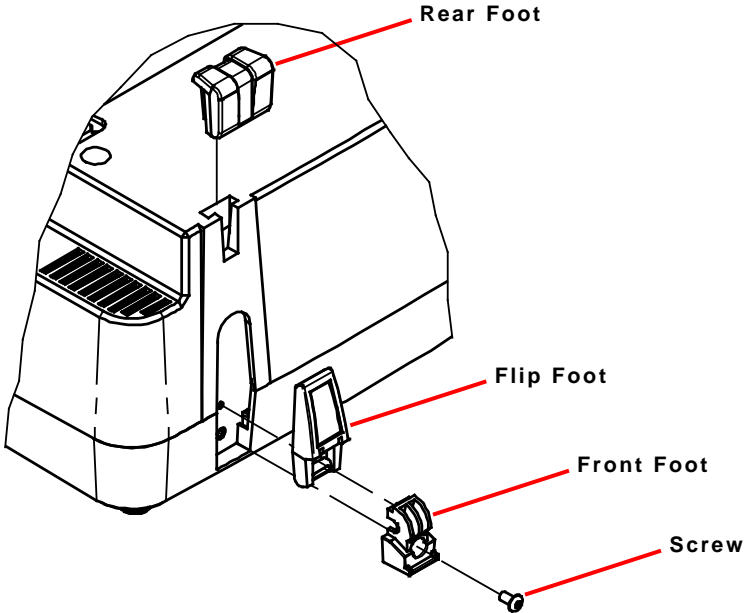
DESCRIPTION

This procedure covers: Remove. Install.

PRELIMINARY PROCEDURES

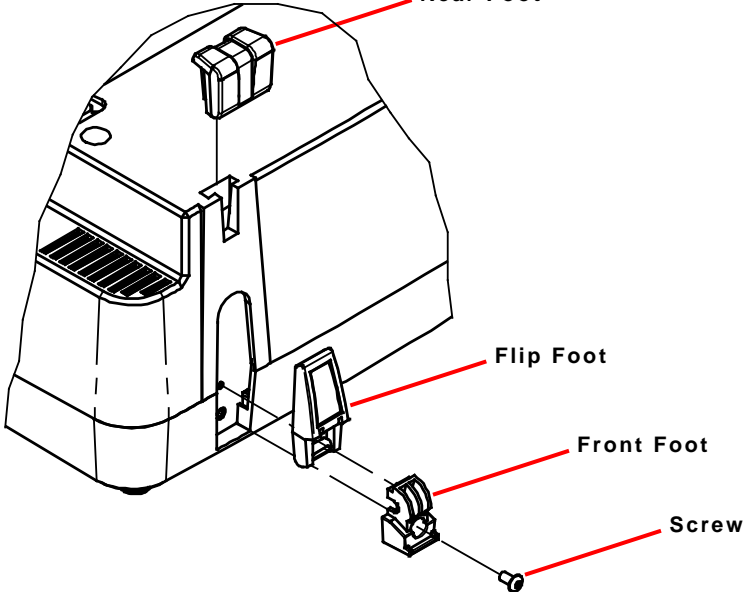
None

REMOVE

1.	Remove screw from the 8800 / 8800S. Remove front foot and flip foot from the 8800 / 8800S.	 <p>The diagram shows a perspective view of a machine's base. A red line points to a rectangular component on the top surface labeled "Rear Foot". Another red line points to a small, angled component on the side labeled "Flip Foot". A third red line points to a larger, rectangular component at the front labeled "Front Foot". A fourth red line points to a small screw-like component at the bottom right labeled "Screw".</p>
2.	Lift Tab on Rear Foot and remove from the 8800 / 8800S.	

C. Feet (cont)

INSTALL

1.	Install the flip foot and front foot on the 8800 / 8800S. Install the screw in the 8800 / 8800S (6 in/lbs.).	 <p>The diagram shows a perspective view of a machine with four feet. Red lines point to each component with labels: 'Rear Foot' at the top, 'Flip Foot' on the side, 'Front Foot' at the bottom front, and 'Screw' at the bottom right. The screw is shown being inserted into the front foot.</p>
2.	Install Rear Foot in the 8800 / 8800S.	

FOLLOW-ON MAINTENANCE

None

END OF TASK

D. Open Case Assy


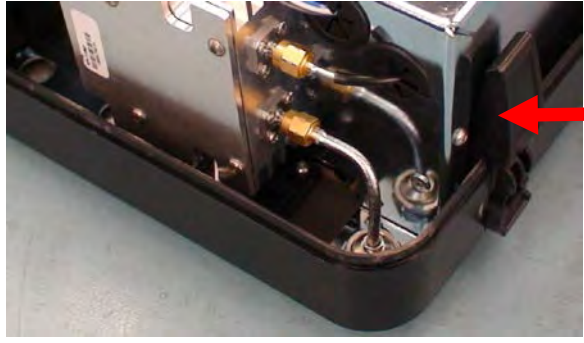

DESCRIPTION

This procedure covers: Open. Close.

PRELIMINARY PROCEDURES

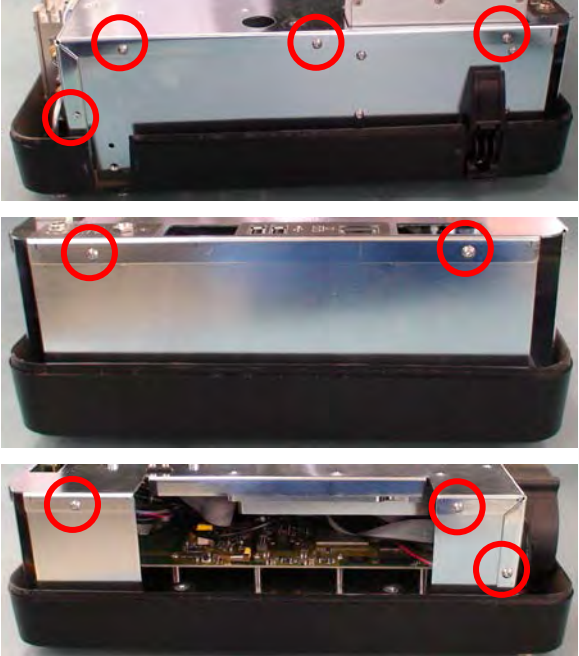
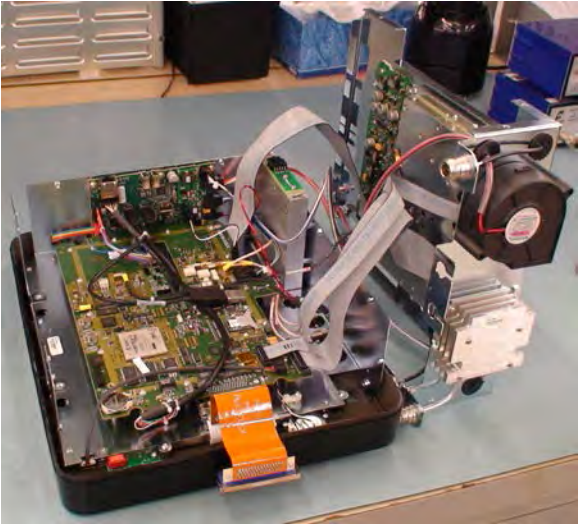
Remove Battery (para 2-4A).

OPEN

1.	Remove seven screws. Remove back cover.	
2.	Remove foot (para 2-4C).	
3.	Remove two standoffs.	

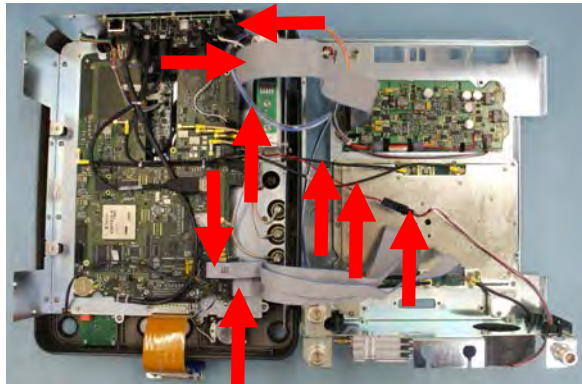
D. Open Case Assy (cont)

OPEN (cont)

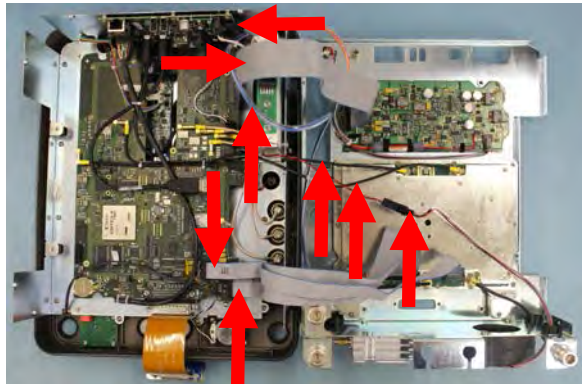
4.	Remove nine screws.	
5.	Open the Case Assy.	

D. Open Case Assy (cont)

OPEN (cont)

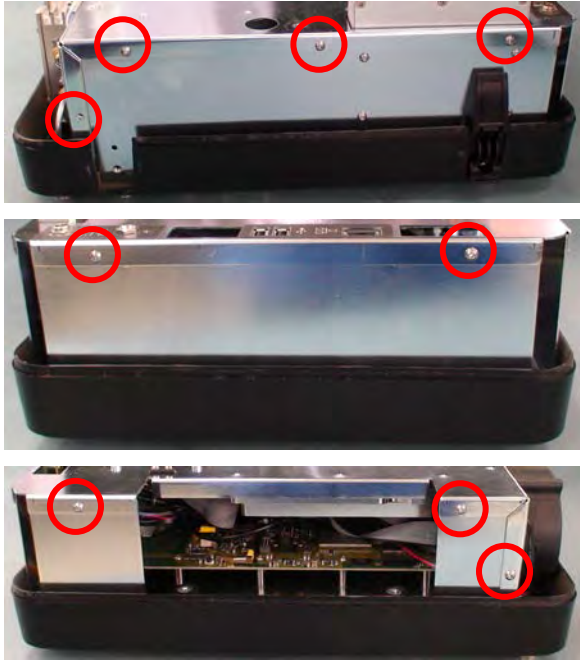
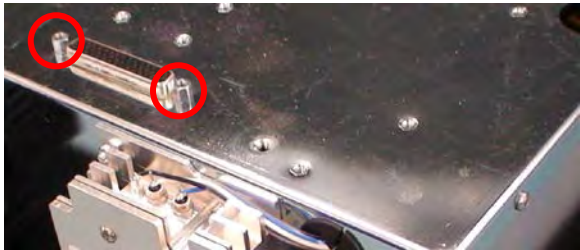
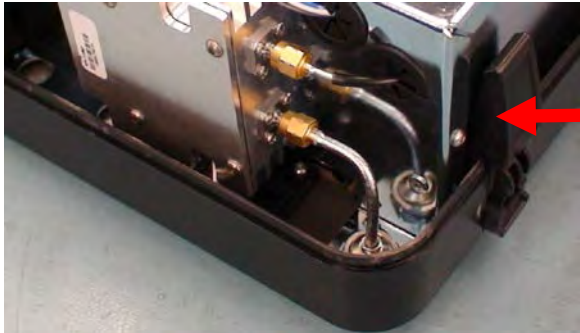
6.	To split the Unit into two sides, disconnect eight cables.	
----	--	--

CLOSE

1.	To join the Unit together, connect eight cables.	
2.	Close the Case Assy.	


D. Open Case Assy (cont)

CLOSE (cont)

3.	Install nine screws (8 in/lbs.).	
4.	Install two standoffs (6 in/lbs.).	
5.	Install foot (para 2-4C).	

D. Open Case Assy (cont)

CLOSE (cont)

6.	Install back cover. Install seven screws (6 in/lbs.).	
----	--	--

FOLLOW-ON MAINTENANCE

Install Battery (para 2-4A).

END OF TASK

E. Power Supply Assy (1A3)

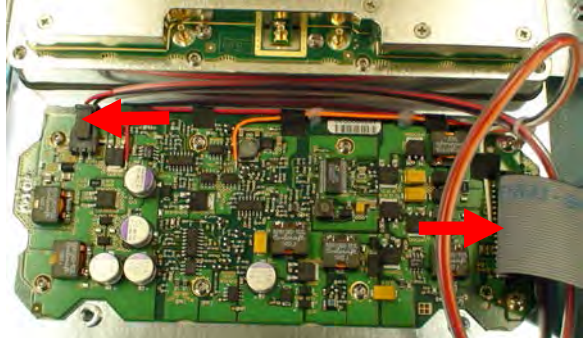
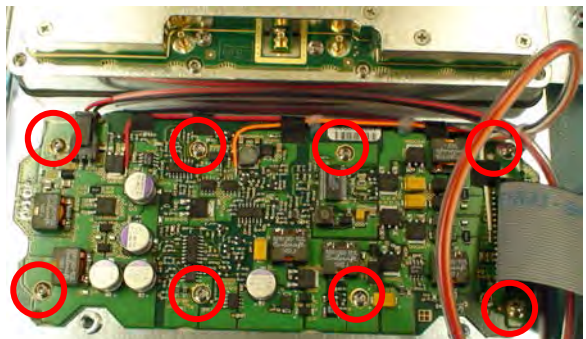
DESCRIPTION

This procedure covers: Remove. Install.

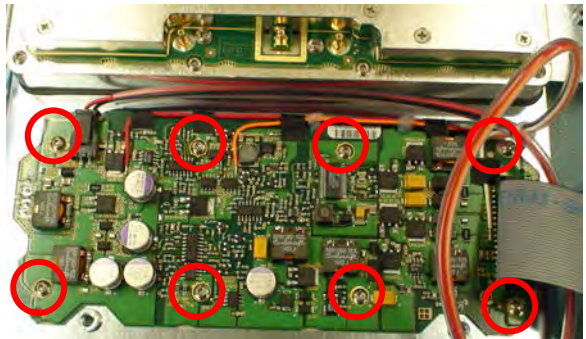
PRELIMINARY PROCEDURES

Remove Battery (para 2-4A).
Open Case Assy (para 2-4D).

REMOVE

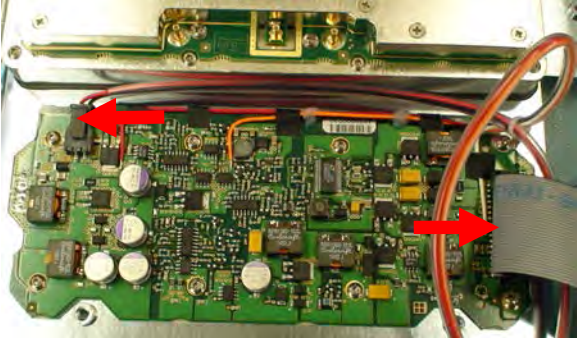
2.	Disconnect two cables.	
3.	Remove eight screws.	
4.	Remove Power Supply PCB Assy.	

INSTALL

1.	Install Power Supply PCB Assy.	
2.	Install eight screws (6 in/lbs.).	

E. Power Supply Assy (1A3) (cont)

INSTALL (cont)

3.	Connect two cables.	
----	---------------------	--

FOLLOW-ON MAINTENANCE

Close Case Assy (para 2-4D).
Install Battery (para 2-4A).

END OF TASK

F. RF Attenuator Assy (1A1)

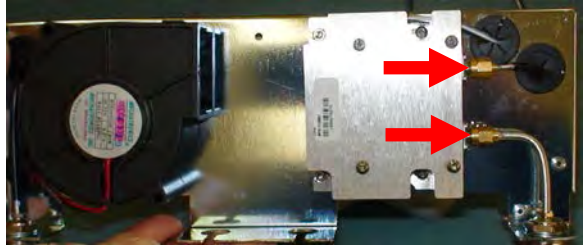
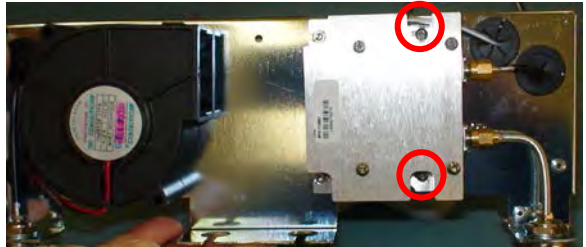
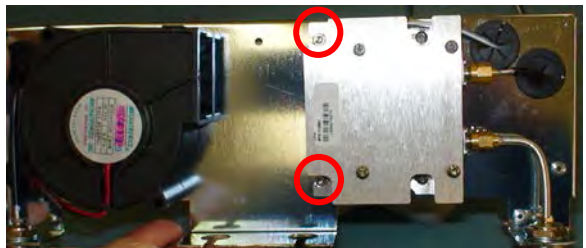
DESCRIPTION

This procedure covers: Remove. Install.

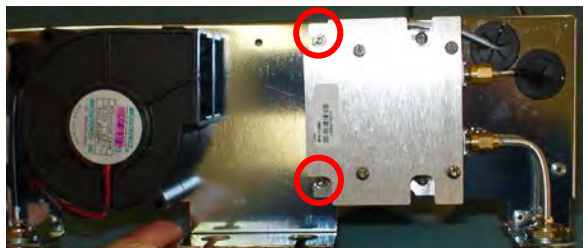
PRELIMINARY PROCEDURES

Remove Battery (para 2-4A).
Open Case Assy (para 2-4D).

REMOVE

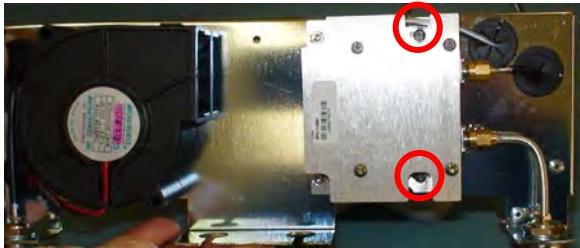
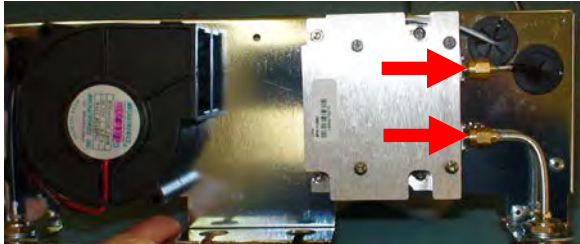
1.	Disconnect two coaxial cables.	
2.	Remove two screws.	
3.	Remove two washers and nuts.	
4.	Remove the RF Attenuator Assy.	

REMOVE

1.	Install the RF Attenuator Assy.	
2.	Install two washers and two nuts (8 in/lbs.).	

F. RF Attenuator Assy (1A1) (cont)

REMOVE (cont)

3.	Install two screws (8 in/lbs.).	
4.	Connect two coaxial cables.	

FOLLOW-ON MAINTENANCE

Close Case Assy (para 2-4D).
Install Battery (para 2-4A).

END OF TASK

G. RF Assy (1A2)

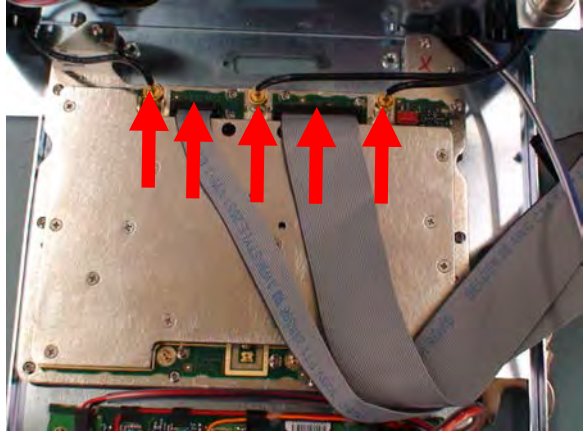
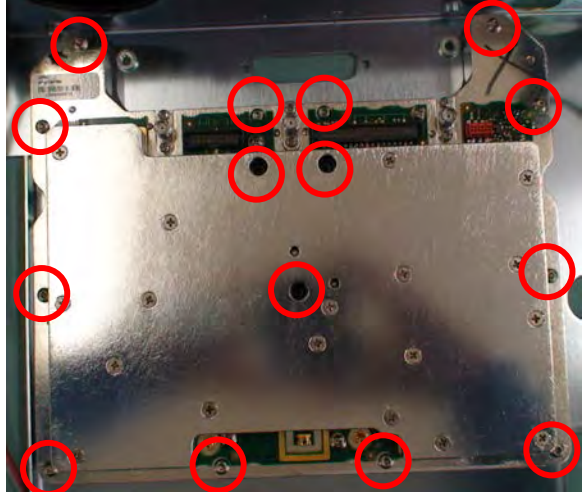
DESCRIPTION

This procedure covers: Remove. Install.

PRELIMINARY PROCEDURES

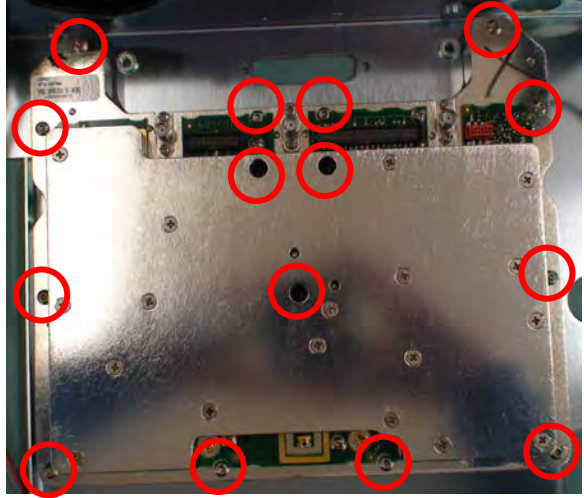
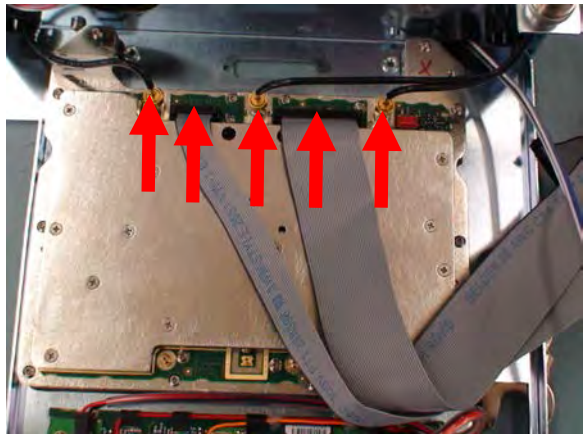
Remove Battery (para 2-4A).
Open Case Assy (para 2-4D).

REMOVE

1.	Disconnect five cables.	
2.	Remove 15 screws.	
3.	Remove the RF Assy.	

G. RF Assy (1A2) (cont)

INSTALL

1.	Install the RF Assy.	
2.	Install 15 screws (8 in/lbs.).	 A photograph showing the back of the RF assembly. The assembly is a rectangular metal plate with various electronic components and connectors. Fifteen screws are highlighted with red circles, indicating their installation points. The screws are distributed across the plate, with some at the corners and others in the center.
3.	Connect five cables.	 A photograph showing the front of the RF assembly. Five cables are connected to the assembly, with red arrows pointing to each connection point. The cables are of different colors and are connected to various ports on the assembly. The cables are labeled with blue text, including 'SAMSUNG' and 'SAMSUNG'.

FOLLOW-ON MAINTENANCE

Close Case Assy (para 2-4D).
Install Battery (para 2-4A).

END OF TASK

H. Multi-Function PCB Assy (1A4A1)


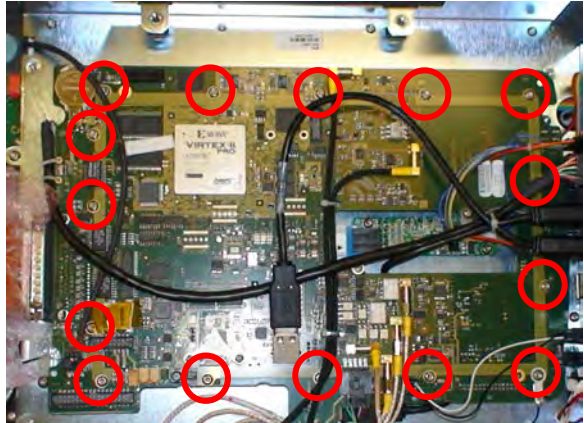
DESCRIPTION

This procedure covers: Remove. Install.

PRELIMINARY PROCEDURES

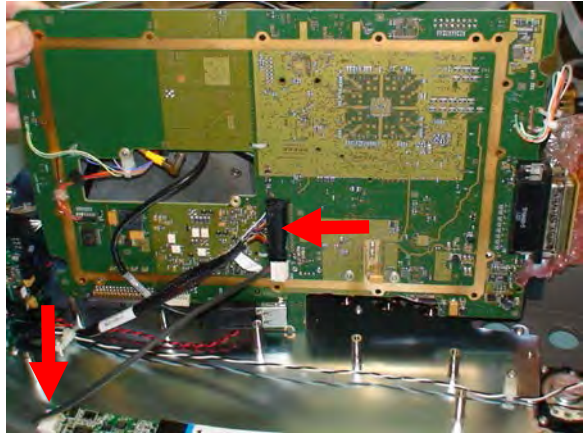
Remove Battery (para 2-4A).
Open Case Assy (para 2-4C).

REMOVE

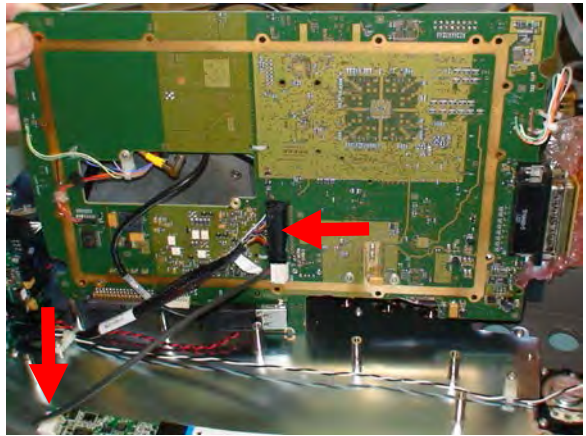
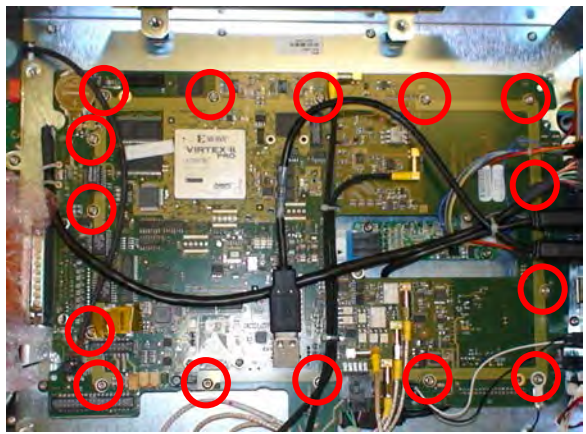
1.	Disconnect 11 cables.	
2.	Remove 15 screws.	
3.	Flip Multi-Function PCB Assy over.	

H. Multi-Function PCB Assy (1A4A1) (cont)

REMOVE (cont)

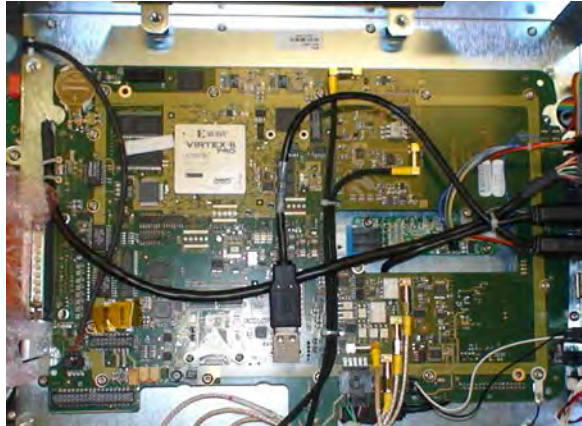
4.	Disconnect two cables.	
5.	Remove Multi-Function PCB Assy.	

INSTALL

1.	Connect two cables.	
2.	Install Multi-Function PCB Assy.	
3.	Install 15 screws (6 in/lbs.).	

H. Multi-Function PCB Assy (1A4A1) (cont)

INSTALL (cont)

4.	Connect 11 cables.	
----	--------------------	--

FOLLOW-ON MAINTENANCE

Close Case Assy (para 2-4C).
Install Battery (para 2-4A).

END OF TASK

I. LED Display Assy (1A4A2)

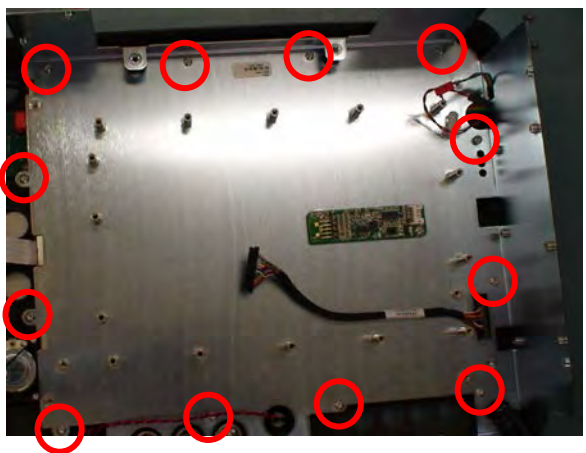
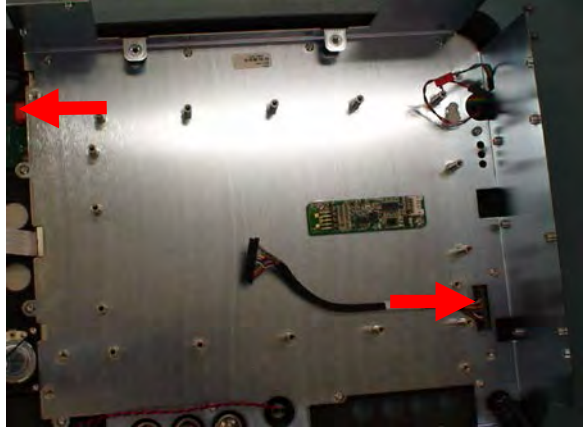
DESCRIPTION

This procedure covers: Remove. Install.

PRELIMINARY PROCEDURES


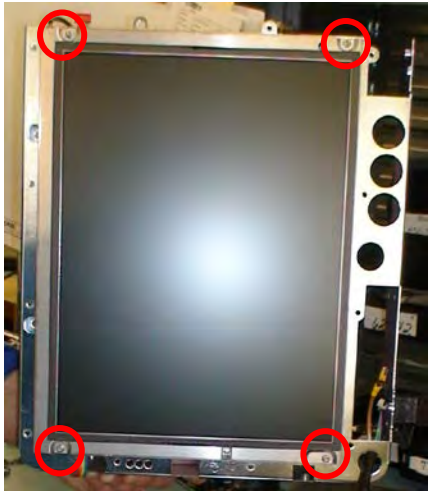
Remove Battery (para 2-4A).
Open Case Assy (para 2-4D).
Remove Multi-Function PCB Assy (para 2-4H).
Remove DMM Assy (para 2-4J).
Remove Audio I/O PCB Assy (para 2-4K).

REMOVE

1.	Remove 12 screws.	
2.	Disconnect two cables.	


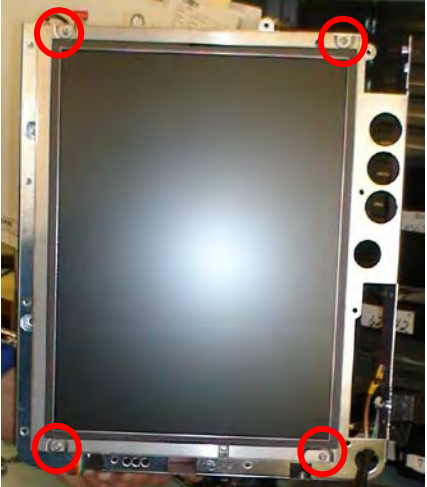
I. LED Display Assy (1A4A2)

REMOVE (cont)

3.	Lift up LED Display Assy and mounting bracket.	
4.	Remove 4 screws.	
5.	Remove LED Display Assy.	

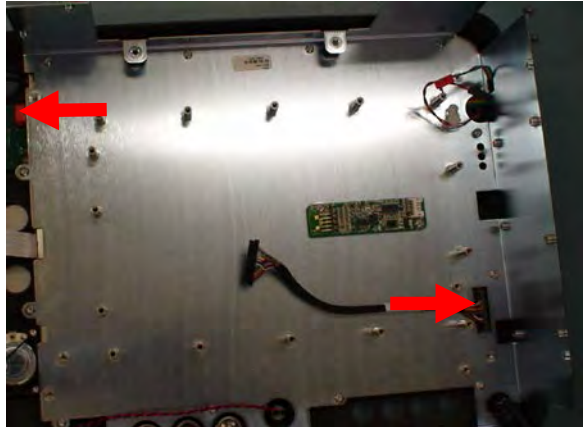
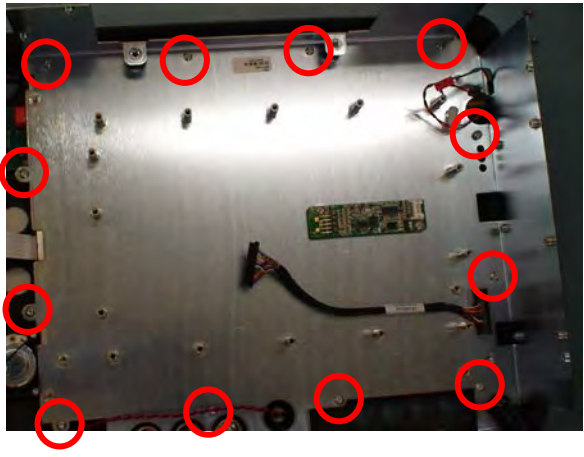
I. LED Display Assy (1A4A2)

INSTALL

1.	Install LED Display Assy on mounting bracket.	 A photograph showing a rectangular LED display assembly mounted on a silver metal mounting bracket. The display is dark and centered within the bracket's frame. The bracket has several circular cutouts on the right side and a small red tab at the top left.
2.	Install 4 screws (5 in/lbs.).	 A photograph of the same LED display assembly on the mounting bracket. Four red circles are drawn around the corners of the display frame, indicating the locations where screws should be installed. The circles are positioned at the top-left, top-right, bottom-left, and bottom-right corners.
3.	Install LED Display Assy and mounting bracket.	

I. LED Display Assy (1A4A2)

INSTALL (cont)

4.	Connect two cables.	 A photograph of the LED display assembly. Two red arrows point to specific connection points on the board. One arrow points to a connector on the left edge, and the other points to a connector on the right edge.
5.	Install 12 screws (5 in/lbs.).	 A photograph of the LED display assembly. Twelve red circles are drawn around the locations where screws should be installed. The circles are arranged in a rectangular pattern around the perimeter of the board.

FOLLOW-ON MAINTENANCE

Install Audio I/O PCB Assy (para 2-4K).
Install DMM Assy (para 2-4J).
Install Multi-Function PCB Assy (para 2-4H).
Close Case Assy (para 2-4D).
Install Battery (para 2-4A).

END OF TASK

J. Touch Screen Controller Assy (1A4A4)


DESCRIPTION

This procedure covers: Remove. Install.


PRELIMINARY PROCEDURES

Remove Battery (para 2-4A).
Open Case Assy (para 2-4D).
Remove Multi-Function PCB Assy (para 2-4H).

REMOVE

1.	Remove two screws.	
2.	Remove Touch Screen Controller Assy.	

INSTALL

1.	Install Touch Screen Controller Assy.	
2.	Install two screws (6 in/lbs.).	

FOLLOW-ON MAINTENANCE

Install Multi-Function PCB Assy (para 2-4H).
Close Case Assy (para 2-4D).
Install Battery (para 2-4A).

END OF TASK

K. DMM Assy (1A4A7)

DESCRIPTION

This procedure covers: Remove. Install.

PRELIMINARY PROCEDURES

Remove Battery (para 2-4A).

Open Case Assy (para 2-4D).

Remove Multi-Function PCB Assy (para 2-4H).

REMOVE

1.	Disconnect cable.	
2.	Remove four screws.	
3.	Remove DMM Assy.	

K. DMM Assy (1A4A7) (cont)

INSTALL

1.	Install DMM Assy.	
2.	Install four screws (8 in/lbs.).	
3.	Connect cable.	

FOLLOW-ON MAINTENANCE

Install Multi-Function PCB Assy (para 2-4H).
Close Case Assy (para 2-4D).
Install Battery (para 2-4A).

END OF TASK

L. Audio I/O PCB Assy (1A4A6)

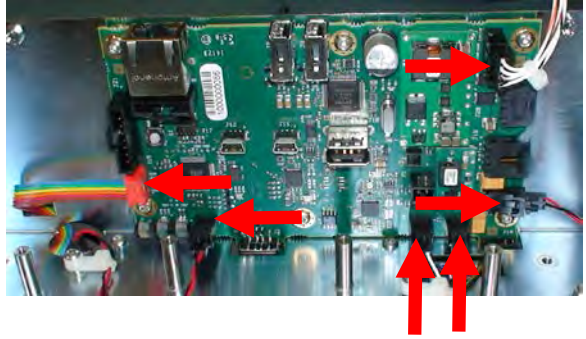
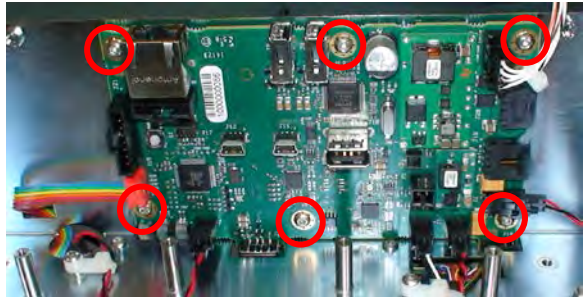
DESCRIPTION

This procedure covers: Remove. Install.

PRELIMINARY PROCEDURES

Remove Battery (para 2-4A).
Open Case Assy (para 2-4D).
Remove Multi-Function PCB Assy (para 2-4H).

REMOVE

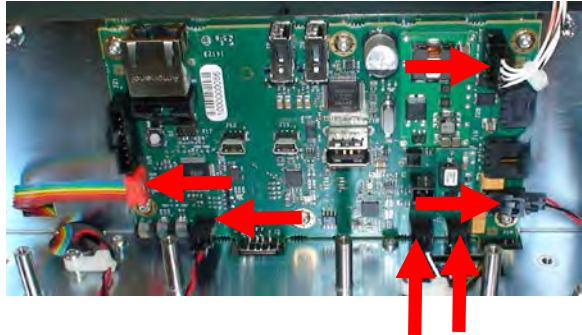
1.	Remove six cables.	
2.	Remove six screws.	
3.	Remove Audio I/O PCB Assy.	

INSTALL

1.	Install Audio I/O PCB Assy.	
2.	Install six screws (6 in/lbs.).	

L. Audio I/O PCB Assy (1A4A6) (cont)

INSTALL (cont)

3.	Connect six cables.	
----	---------------------	--

FOLLOW-ON MAINTENANCE

Install Multi-Function PCB Assy (para 2-4H).
Close Case Assy (para 2-4D).
Install Battery (para 2-4A).

END OF TASK

M. Touch Screen Assy (1A4A3)

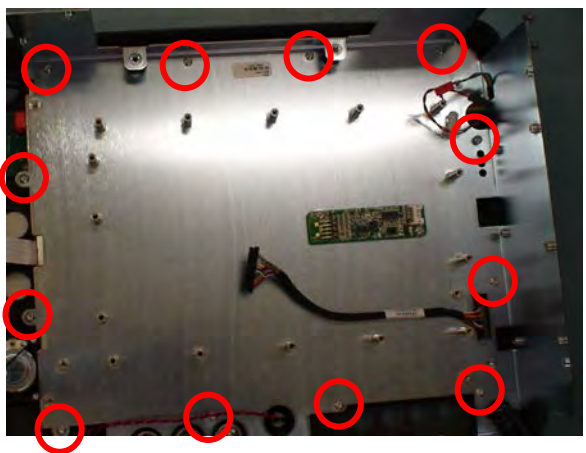
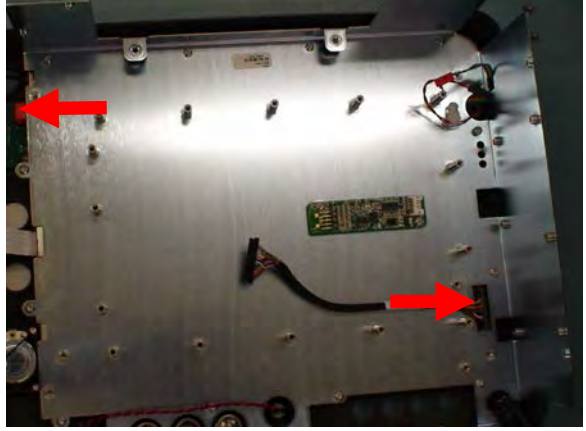
DESCRIPTION

This procedure covers: Remove. Install.

PRELIMINARY PROCEDURES

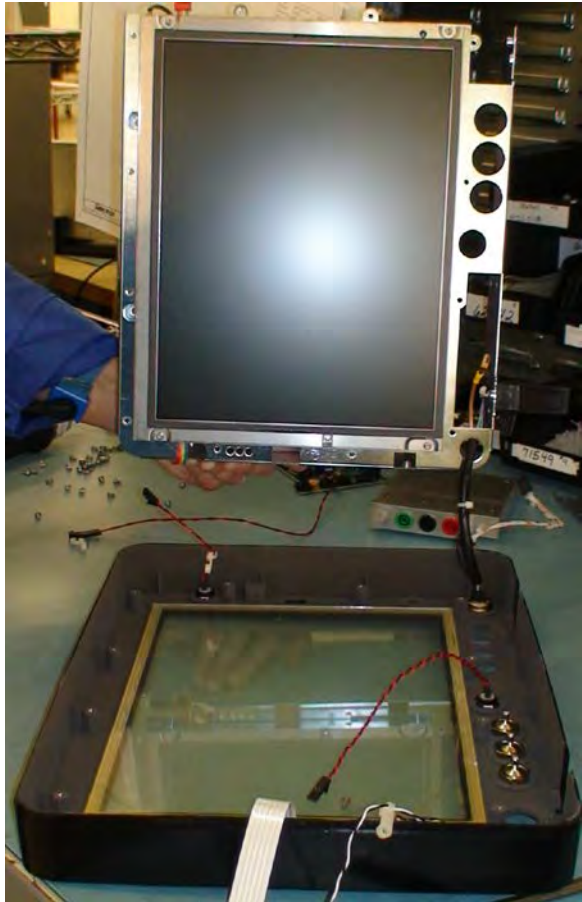
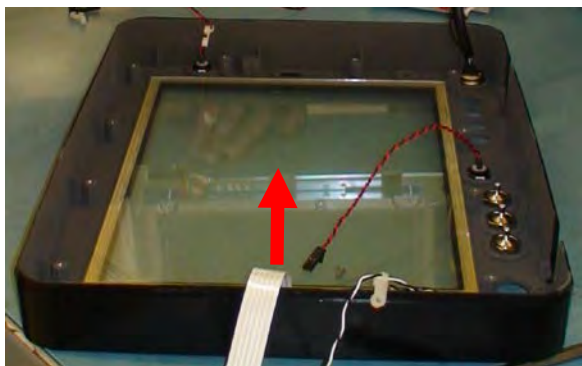
Remove Battery (para 2-4A).
Open Case Assy (para 2-4D).
Remove Multi-Function PCB Assy (para 2-4H).
Remove DMM Assy (para 2-4J).
Remove Audio I/O PCB Assy (para 2-4K).

REMOVE

1.	Remove 12 screws.	
2.	Disconnect two cables.	

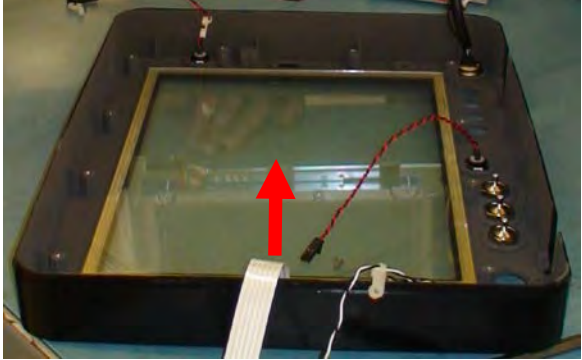
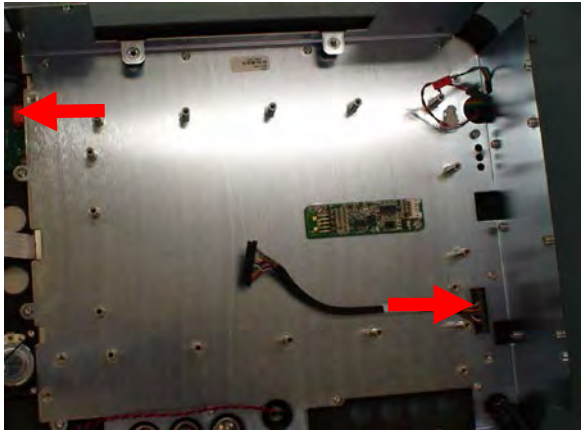
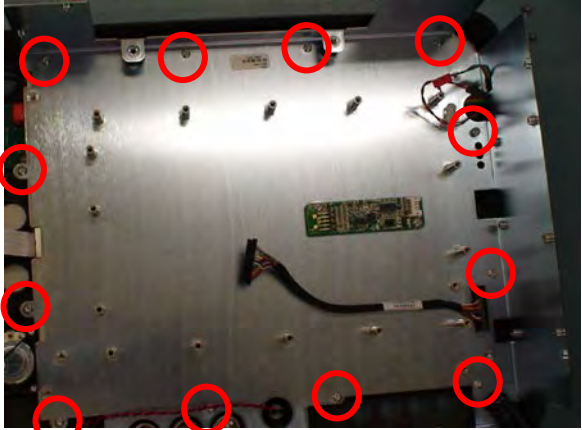
M. Touch Screen Assy (1A4A3) (cont)

REMOVE (cont)

3.	Lift up LED Display Assy and mounting bracket.	 A photograph showing a person's hands lifting a rectangular LED display assembly with a silver metal frame from a black plastic device chassis. The display is held up, showing its backside with various connectors and components. The chassis below is open, revealing internal components and a white ribbon cable connected to the bottom edge.
4.	Remove Touch Screen Assy.	 A close-up photograph of the device chassis with the touch screen assembly being removed. A red arrow points to the bottom edge of the touch screen assembly, which is being lifted away from the chassis. The white ribbon cable is visible at the bottom of the chassis.

M. Touch Screen Assy (1A4A3) (cont)

INSTALL

1.	Install Touch Screen Assy.	
2.	Install LED Display Assy and mounting bracket.	
3.	Connect two cables.	
4.	Install 12 screws (5 in/lbs.).	

M. Touch Screen Assy (1A4A3) (cont)

FOLLOW-ON MAINTENANCE

Install Audio I/O PCB Assy (para 2-4K).
Install DMM Assy (para 2-4J).
Install Multi-Function PCB Assy (para 2-4H).
Close Case Assy (para 2-4D).
Install Battery (para 2-4A).

END OF TASK

N. Arrow Control PCB Assy (1A4A5)

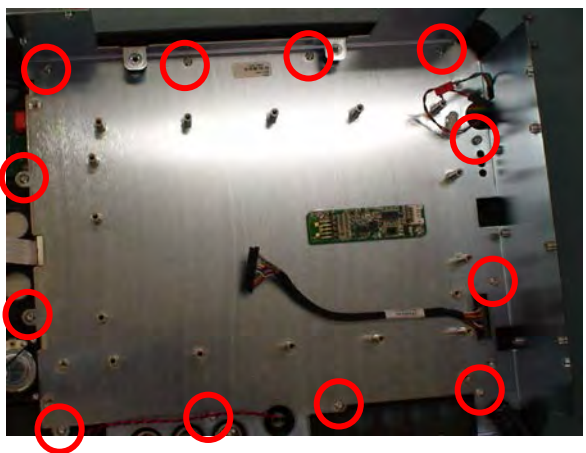
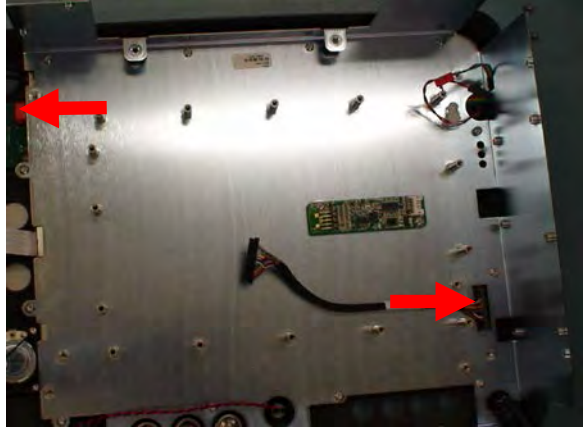
DESCRIPTION

This procedure covers: Remove. Install.

PRELIMINARY PROCEDURES


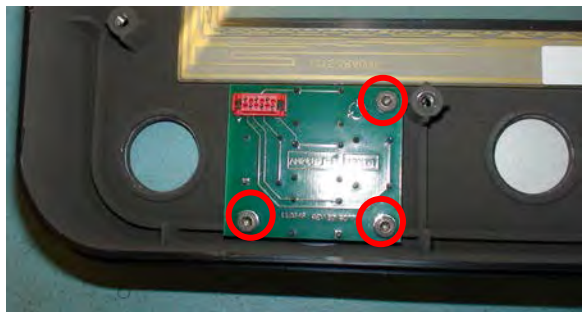
Remove Battery (para 2-4A).
Open Case Assy (para 2-4D).
Remove Multi-Function PCB Assy (para 2-4H).
Remove DMM Assy (para 2-4J).
Remove Audio I/O PCB Assy (para 2-4K).

REMOVE

1.	Remove 12 screws.	
2.	Disconnect two cables.	

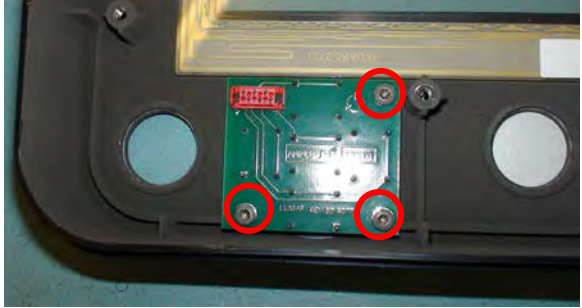
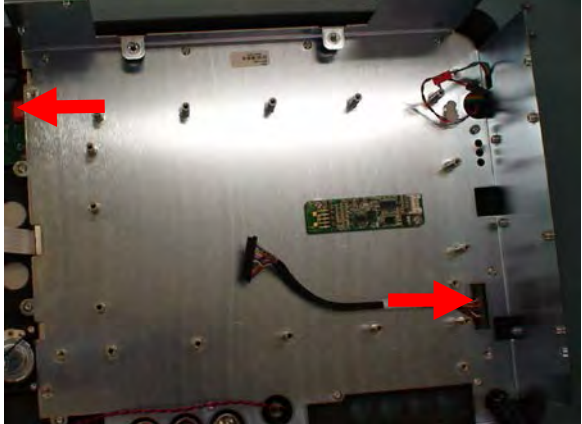
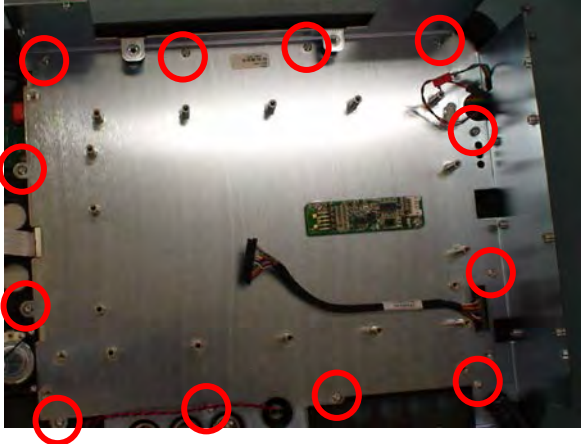
N. Arrow Control PCB Assy (1A4A5) (cont)

REMOVE (cont)

3.	Lift up LED Display Assy and mounting bracket.	 A photograph showing a person's hands lifting a rectangular LED display assembly out of a black plastic device chassis. The display is mounted on a metal frame. The chassis is open, revealing internal components and a green PCB. A red wire is connected to the display. The background shows a workshop environment with various tools and components.
4.	Remove three screws.	 A close-up photograph of the green PCB assembly mounted inside the black chassis. Three screws are circled in red, indicating they need to be removed. The PCB has a red label with the number '113319' and other markings. The chassis has two circular cutouts on either side of the PCB.
5.	Remove Arrow Control PCB Assy.	

N. Arrow Control PCB Assy (1A4A5) (cont)

INSTALL

1.	Install Arrow Control PCB Assy.	
2.	Install three screws.	
3.	Install LED Display Assy and mounting bracket.	
4.	Connect two cables.	
5.	Install 12 screws (5 in/lbs.).	

N. Arrow Control PCB Assy (1A4A5) (cont)

FOLLOW-ON MAINTENANCE

Install Audio I/O PCB Assy (para 2-4K).
Install DMM Assy (para 2-4J).
Install Multi-Function PCB Assy (para 2-4H).
Close Case Assy (para 2-4D).
Install Battery (para 2-4A).

END OF TASK

O. Bird Power Meter (1A5) (Option)


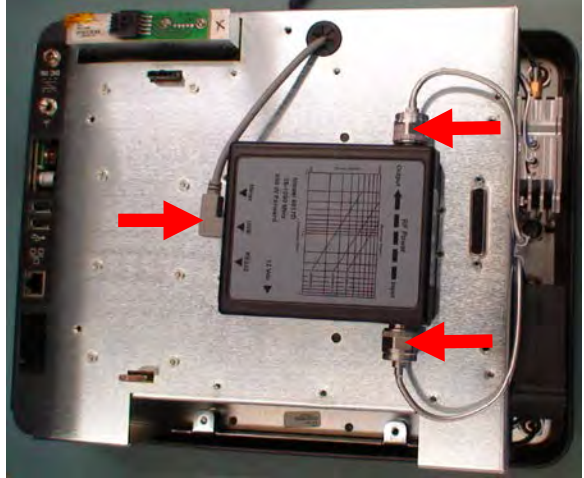
DESCRIPTION

This procedure covers: Remove. Install.

PRELIMINARY PROCEDURES

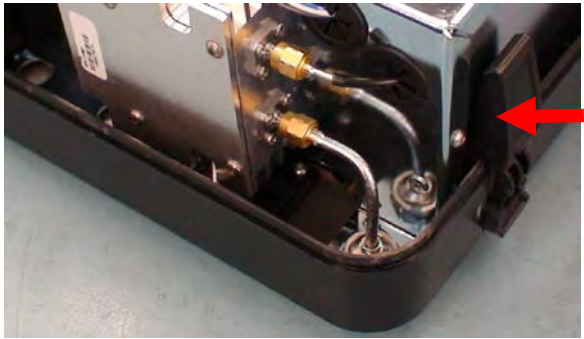
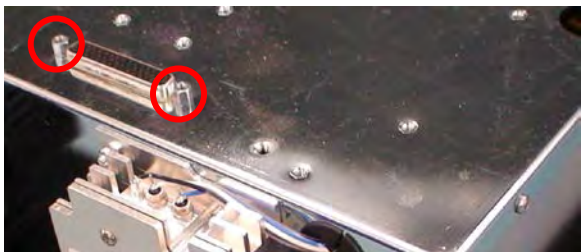
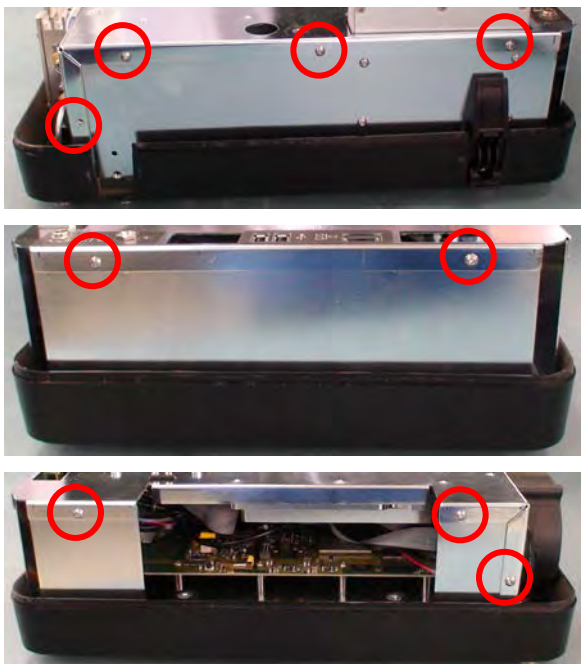
Remove Battery (para 2-4A).

REMOVE

1.	Remove seven screws. Remove back cover.	
2.	Disconnect three cables.	
3.	Remove Bird Power Meter.	


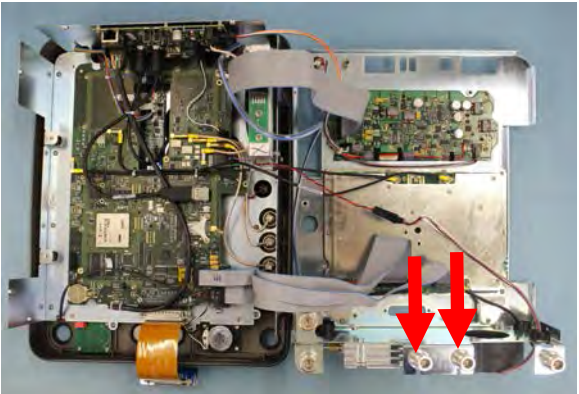
O. Bird Power Meter (1A5) (Option) (cont)

REMOVE (cont)

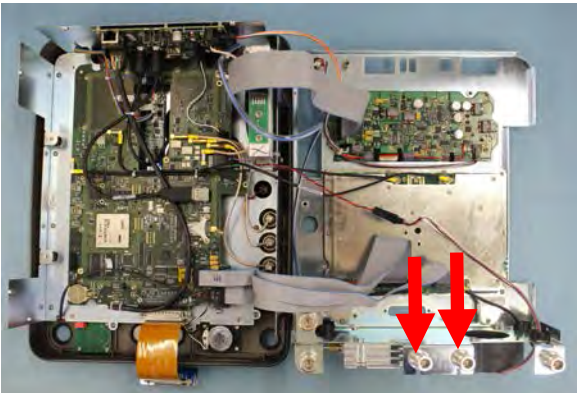
4.	Remove foot (para 2-4C).	
5.	Remove two standoffs.	
6.	Remove nine screws.	

O. Bird Power Meter (1A5) (Option) (cont)

REMOVE (cont)

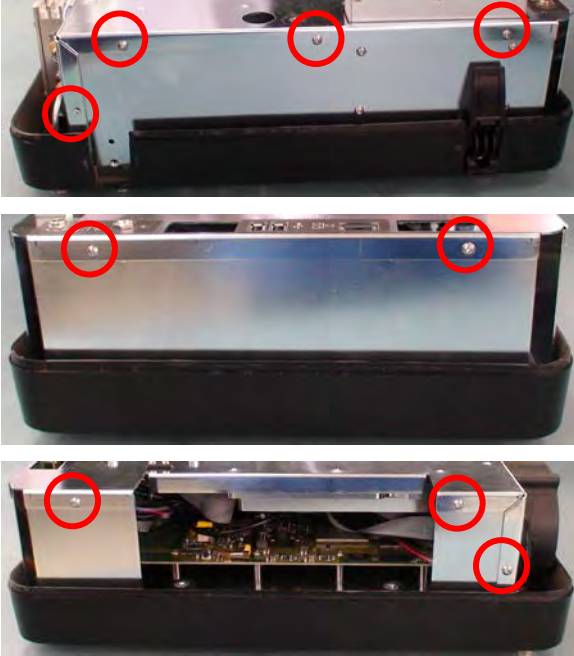


7.	Open the Case Assy.	
8.	Remove nuts securing Bird Power Meter coaxial cable connectors to bracket.	
9.	Remove Bird Power Meter coaxial cables.	

INSTALL

1.	Install Bird Power Meter coaxial cables.	
2.	Install nuts securing Bird Power Meter coaxial cable connectors to bracket. (40 in/lbs.).	

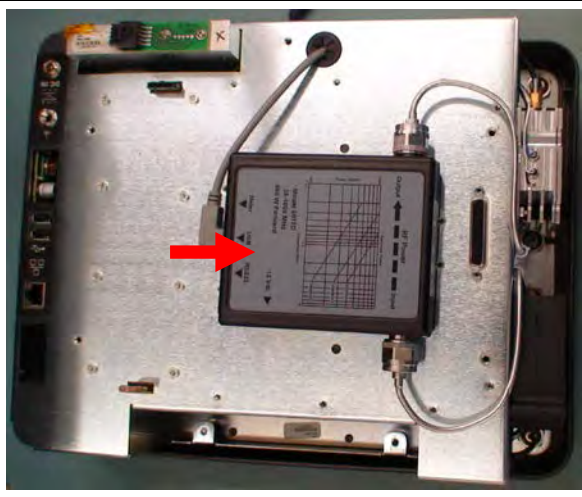
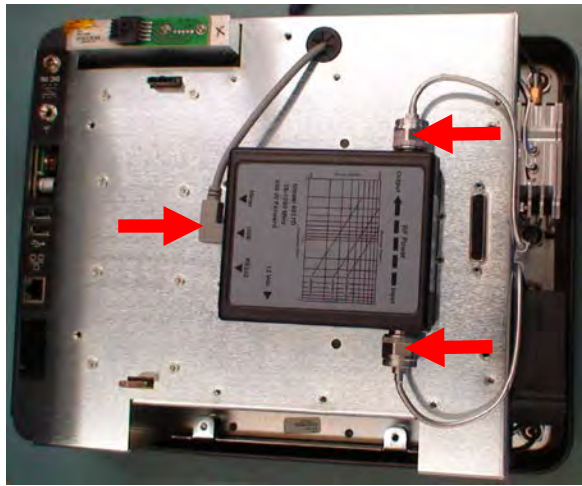
O. Bird Power Meter (1A5) (Option) (cont)

INSTALL (cont)

3.	Close the Case Assy.	
4.	Install nine screws. (8 in/lbs.).	
5.	Install two standoffs (6 in/lbs.).	
6.	Install foot (para 2-4C).	


O. Bird Power Meter (1A5) (Option) (cont)

INSTALL (cont)

7.	Install Bird Power Meter.	
8.	Connect three cables (20 in/lbs.).	

O. Bird Power Meter (1A5) (Option) (cont)

INSTALL (cont)

9.	Install back cover. Install seven screws (6 in/lbs.).	
10.	Remove Bird Power Meter coaxial cables.	

FOLLOW-ON MAINTENANCE

Install Battery (para 2-4A).

END OF TASK

2-5. PREPARATION FOR STORAGE OR SHIPMENT

A. Packaging

Package the 8800 / 8800S in the original shipping container. When using packing materials other than the original, use the following guidelines:

- Wrap the Test Set in plastic packing material.
- Use a double-wall cardboard shipping container.
- Protect all sides with shock-absorbing material to prevent Test Set movement within the container.
- Seal the shipping container with approved sealing tape.
- Mark "FRAGILE" on the top, bottom and all sides of the shipping container.

B. Environment

The Test Set should be stored in a clean, dry environment. In high humidity environments, protect the Test Set from temperature variations that could cause internal condensation. The following environmental conditions apply to both shipping and storage:

Temperature:..... -30°C to +71°C*
Relative Humidity:..... 0% to 95%
Altitude:..... 0 to 4600 m
Vibration:..... <2 g
Shock: <30 g

* The Battery must not be subjected to temperatures <-20°C or >+60°C.

APPENDIX A - REPLACEMENT PARTS

STANDARD ITEMS

DESCRIPTION	PART NUMBER	QTY
8800 / 8800S Digital Radio Test System	112581 / 138803	1
Battery, Spare	67076	1
External DC Power Supply	67374	1
Front Cover	138167	1
Fuse, Spare (5 A, 32 Vdc, Type F)	56080	2
Manual, Getting Started (Paper) (English)	139254	1
Manual, Operation (CD) (English)	139274	1
Power Cable (AC) (China)	91803	1
Power Cable (AC) (Continental Europe)	27480	1
Power Cable (AC) (North America)	27478	1
Power Cable (AC) (UK)	27477	1

STANDARD ITEMS (cont)



8800 / 8800S
112581 / 138803



Battery, Spare
67076



External DC Power Supply
67374



Front Cover
138167



Fuse, Spare (5 A, 32 Vdc, Mini-Blade)
56080



Power Cable (AC) (China)
91803



Power Cable (AC) (Continental Europe)
27480



Power Cable (AC) (North America)
27478

STANDARD ITEMS (cont)



Power Cable (AC) (UK)
27477



Manual, Getting Started (Paper)
139254



Manual, Operation (CD)
139274

OPTIONAL ITEMS

DESCRIPTION	PART NUMBER	QTY
Antenna Kit	114475	1
Attenuator (20 dB / 150 W)	82560	1
Battery Charger, External	114479	1
Battery, Spare	67076	1
Case, Soft-Sided Carrying Case	114478	1
Case, Transit	114477	1
DMM Test Leads	63936	1
Handset (Microphone)	112861	1
Manual, Maintenance (CD) (English)	113614	1
Power Cable (DC Cigarette Lighter)	62404	1
Power Sensor (Bird 5017B)	113309	1
Precision DTF / VSWR Accessory Kit	114348	1
Rackmount Kit	114312	1

OPTIONAL ITEMS (cont)



Antenna Kit
114475



Attenuator (20 dB / 150 W)
38242



Battery Charger, External
114479



Battery, Spare
67076



Case, Soft-Sided Carrying Case
114478



Case, Transit
114477



DMM Test Leads
63936



Handset (Microphone)
112861

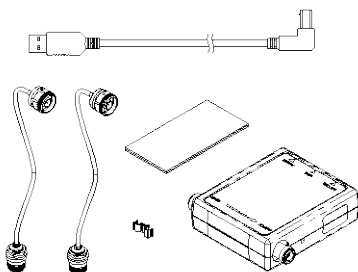
OPTIONAL ITEMS (cont)



Manual, Maintenance (CD)
113614



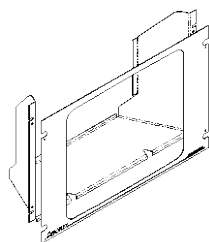
Power Cable (DC Cigarette Lighter)
62404



Power Sensor (Bird 5017B)
113309



Precision DTF / VSWR Accessory Kit
114348



Rackmount Kit
114312

REFERENCE DESIGNATOR	PART NUMBER	CAGE CODE	DESCRIPTION
1	112812	51190	CHASSIS, REAR, 8XXX
2	138165	51190	COVER, BATTERY, 8XXX, PAINTED
3	113513	51190	COVER, REAR, 8XXX, SHIELDED/PAINTED
4	112986	51190	FOOT, REAR, 8XXX
5	90864	51190	OVERLAY, LITHIUM ION BATTERY
6	111833	51190	GAP PAD, POWER SUPPLY
7	69766	51190	FOAM, PAD BATTERY
8	90846	51190	OVERLAY, BATTERY COVER
9	34237	51190	GASKET, RF
10	37823	51190	LUG, GND, #8 RT.ANG NON-LOCKING
11	113202	51190	GROMMET, SPLIT BUSHING, SNAP-IN, 3/4 HOL
12	113189	51190	OVERLAY, IDENT, 8800
13	112328	51190	JACK, BANANA NON-INS PANEL MNT
14	138118	51190	OVERLAY, REAR, 8XXX, PAINTED
15	92046	51190	WSHR, FLAT, 0.505ID, 0.730OD, 0.075THK SS
16	87385	51190	NUT, HEX, M3 X .5, STANDARD, A2
17	87387	51190	WSHR, M3 INTL LK, 6MM O.D., .4MM THK, A2
18	87723	51190	SM, M3 X .5 X 12, ABT, A2, PA, TL
19	87190	51190	SM, M3 X .5 X 5, ABT, A2, PA, TL
20	70990	51190	WASHER FLAT #4 .209 OD, .115 ID, .016TK
21	138166	51190	COVER, REMOTE, 8XXX, PAINTED
22	113239	51190	FOOT, FRONT, 8XXX
23	113247	51190	FOOT, FLIP, 8XXX
24	86954	51190	SM, M4 X .7 X 8, ABT, A2, PA, TL
25	37821	51190	NUT, PUSH, .312ID, .625OD
26	113257	51190	SF, M4.5 X 1.63 X 10, TPH, SS, PA
27	113254	51190	STRAP, VELCRO, BATTERY, 8XXX
28	71004	51190	WASHER INT TOOTH 1/4 X 20 STAI
29	35844	51190	STANDOFF, .188 HEX M/F, .187LG
30	138167	51190	COVER, FRONT, 8XXX, PAINTED
31	71549	51190	CABLE TIE NYLON .6 BUNDLE MAX
32	113658	51190	LABEL, S/N, 8800
A1	112897	51190	MECH ASSY, RF ATTENUATOR, 8XXX
A2	112719	51190	MECH ASSY, RF, 8XXX
A3	112765	51190	PCB ASSY, POWER SUPPLY, 8XXX
A4	112947	51190	MECH ASSY, FRONT CHASSIS, 8XXX
A5*	92793	51190	POWER SENSOR BIRD 5017
A5-1*	113253	51190	STRAP, VELCRO, POWER METER, 8XXX
A5-2*	113248	51190	CLIP, ROUTING, HALF-U, DOUBLE 3/16 DIA
A5-3*	113202	51190	GROMMET, SPLIT BUSHING, SNAP-IN, 3/4 HOL
A5W1*	113028	51190	COAX ASSY, RG402U, 11.0, N, F, ST, BH/N, M, ST
A5W2*	113028	51190	COAX ASSY, RG402U, 11.0, N, F, ST, BH/N, M, ST
A5W3*	113005	51190	CABLE, USB, ST, A, M/RA, B, M, 0.5MM
W1	113029	51190	COAX ASSY, RG405U, 8.50, N, F, ST BH/SMA, M, ST
W2	113026	51190	COAX ASSY, RG405U, 5.50, N, F, ST BH/SMA, M, ST
W3	113027	51190	COAX ASSY, RG402U, 3.25, N, F, ST BH/SMA, M, ST
W4	113025	51190	COAX ASSY, RG405U, 8.00, SMA, M, ST/SMA, M, ST
W5	65007	51190	WIRE HARN ASSY, DC INPUT
W6	62988	51190	RBN CA ASSY, 28GA, 34P, 13.0L, 2MM
W7	62990	51190	RBN CA ASSY, 28GA, 16P, 14.25L, 2M
W8	62988	51190	RBN CA ASSY, 28GA, 34P, 13.0L, 2MM
W9	112975	51190	WIRE HARN ASSY, FAN, 8XXX

* The Bird Power Meter Assy is an Option for the 8800.

138803

8800S

A0

REFERENCE DESIGNATOR	PART NUMBER	CAGE CODE	DESCRIPTION
1	112812	51190	CHASSIS, REAR, 8XXX
2	138165	51190	COVER, BATTERY, 8XXX, PAINTED
3	113513	51190	COVER, REAR, 8XXX, SHIELDED/PAINTED
4	112986	51190	FOOT, REAR, 8XXX
5	90864	51190	OVERLAY, LITHIUM ION BATTERY
6	111833	51190	GAP PAD, POWER SUPPLY
7	69766	51190	FOAM, PAD BATTERY
8	90846	51190	OVERLAY, BATTERY COVER
9	34237	51190	GASKET, RF
10	37823	51190	LUG, GND, #8 RT.ANG NON-LOCKING
11	113202	51190	GROMMET, SPLIT BUSHING, SNAP-IN, 3/4 HOL
12	138801	51190	OVERLAY, IDENT, 8800S
13	112328	51190	JACK, BANANA NON-INS PANEL MNT
14	113188	51190	OVERLAY, REAR, 8XXX
15	92046	51190	WSHR, FLAT, 0.505ID, 0.730OD, 0.075THK SS
16	87385	51190	NUT, HEX, M3 X .5, STANDARD, A2
17	87387	51190	WSHR, M3 INTL LK, 6MM O.D., .4MM THK, A2
18	87723	51190	SM, M3 X .5 X 12, ABT, A2, PA, TL
19	87190	51190	SM, M3 X .5 X 5, ABT, A2, PA, TL
20	70990	51190	WASHER FLAT #4 .209 OD, .115 ID, .016TK
21	138166	51190	COVER, REMOTE, 8XXX, PAINTED
22	113239	51190	FOOT, FRONT, 8XXX
23	113247	51190	FOOT, FLIP, 8XXX
24	86954	51190	SM, M4 X .7 X 8, ABT, A2, PA, TL
25	37821	51190	NUT, PUSH,.312ID,.625OD
26	113257	51190	SF, M4.5 X 1.63 X 10, TPH, SS, PA
27	113254	51190	STRAP, VELCRO, BATTERY, 8XXX
28	71004	51190	WASHER INT TOOTH 1/4 X 20 STAI
29	35844	51190	STANDOFF, .188 HEX M/F, .187LG
30	138167	51190	COVER, FRONT, 8XXX, PAINTED
31	71549	51190	CABLE TIE NYLON .6 BUNDLE MAX
32	138829	51190	LABEL, S/N, 8800S
A1	112897	51190	MECH ASSY, RF ATTENUATOR, 8XXX
A2	138799	51190	MECH ASSY, RF BLOCK, 8XXX, 125W
A3	112765	51190	PCB ASSY, POWER SUPPLY, 8XXX
A4	138800	51190	MECH ASSY, FRONT PANEL, 8XXX, 125W
A5*	92793	51190	POWER SENSOR BIRD 5017
A5-1*	113253	51190	STRAP, VELCRO, POWER METER, 8XXX
A5-2*	113248	51190	CLIP, ROUTING, HALF-U, DOUBLE 3/16 DIA
A5-3*	113202	51190	GROMMET, SPLIT BUSHING, SNAP-IN, 3/4 HOL
A5W1*	113028	51190	COAX ASSY, RG402U, 11.0, N, F, ST, BH/N, M, ST
A5W2*	113028	51190	COAX ASSY, RG402U, 11.0, N, F, ST, BH/N, M, ST
A5W3*	113005	51190	CABLE, USB, ST, A, M/RA, B, M, 0.5MM
BT1	67076	51190	AC27005 BATTERY, SPARE
W1	113029	51190	COAX ASSY, RG405U, 8.50, N, F, ST BH/SMA, M, ST
W2	113026	51190	COAX ASSY, RG405U, 5.50, N, F, ST BH/SMA, M, ST
W3	113027	51190	COAX ASSY, RG402U, 3.25, N, F, ST BH/SMA, M, ST
W4	113025	51190	COAX ASSY, RG405U, 8.00, SMA, M, ST/SMA, M, ST
W5	65007	51190	WIRE HARN ASSY, DC INPUT
W6	62988	51190	RBN CA ASSY, 28GA, 34P, 13.0L, 2MM
W7	62990	51190	RBN CA ASSY, 28GA, 16P, 14.25L, 2M
W8	62988	51190	RBN CA ASSY, 28GA, 34P, 13.0L, 2MM
W9	112975	51190	WIRE HARN ASSY, FAN, 8XXX

* The Bird Power Meter Assy is an Option for the 8800S.

112947

FRONT CHASSIS ASSY (8800)

A0

REFERENCE DESIGNATOR	PART NUMBER	CAGE CODE	DESCRIPTION
1	112811	51190	CHASSIS, FRONT, 8XXX
2	112919	51190	OVERLAY, FRONT, 8XXX
3	113512	51190	BEZEL, FRONT, 8XXX, SHIELDED/PAINTED
4	87016	51190	GASKET, TOUCH SCREEN
5	62042	51190	TY-RAP, #4 SCREW MOUNT, 5.5L
6	87190	51190	SM, M3 X .5 X 5, ABT, A2, PA, TL
7	113256	51190	SF, M2.63 X 1.06 X 6, TPH, SS, PA
8	113255	51190	GASKET, URETHANE, 250 X 5 X 0.5MM
9	71549	51190	CABLE TIE NYLON .6 BUNDLE MAX
10	71088	51190	SCREW PHP #4-40 X .188 SS
11	86964	51190	SM, M3 X .5 X 8, ABT, A2, PA, TL
12	113634	51190	SF, M2.63 X 1.06 X 8, TPH, SS, PA
13	35844	51190	STANDOFF, .188 HEX M/F, .187LG
A1	112768	51190	PCB ASSY, MFB-OMAP, 8XXX
A2	112614	51190	PURCHASED ASSY, LED DISPLAY, NEC
A3	112615	51190	PURCHASED ASSY, TOUCHSCREEN
A4	88610	51190	PURCH ASSY,CONTROLLER,TOUCHSCREEN,5W,USB
A5	112923	51190	PCB ASSY, CONTROL, ARROW BD
A6	112682	51190	PCB ASSY, AUDIO I/O, 8XXX
A7	112948	51190	MECH ASSY, DMM, 8XXX
J1	20953	51190	CONN, F, BNC, BH, ADP, SMB, WTRPRF
J2	20953	51190	CONN, F, BNC, BH, ADP, SMB, WTRPRF
J3	20953	51190	CONN, F, BNC, BH, ADP, SMB, WTRPRF
W1	112912	51190	COAX ASSY, RG316, 7.0, SMB, F, RA/SSMB, F, ST
W2	112912	51190	COAX ASSY, RG316, 7.0, SMB, F, RA/SSMB, F, ST
W3	112912	51190	COAX ASSY, RG316, 7.0, SMB, F, RA/SSMB, F, ST
W4	112779	51190	WIRE HARN ASSY, RES.TOUCH PNL
W5	112780	51190	WIRE HARN ASSY, LVDS 8820 DISPLAY
W6	112778	51190	WIRE HARN ASSY, BACKLIGHT, 8XXX
W7	112917	51190	WIRE HARN ASSY, DMM-IO, 8XXX
W8	112857	51190	WIRE HARN ASSY, SPEAKER_8XXX
W9	112896	51190	RBN CA ASSY, PUSH-BUTTON, SWITCH 8XXX
W10	112860	51190	WIRE HARN ASSY, MICROPHONE, 8XXX
W11	112859	51190	WIRE HARN ASSY, MFIO_AUDIO IO, 8XXX
W12	62418	51190	CABLE ASSY, MINI USB B - USB A
W13	62418	51190	CABLE ASSY, MINI USB B - USB A
W14	112940	51190	COAX ASSY, LMR, 15.0, SSMB, F, RA/SSMB, F, RA
W15	112941	51190	COAX ASSY, LMR, 17.0, SSMB, F, RA/SSMB, F, RA
W16	112751	51190	PCB ASSY, FLEX 44-PIN / I/O
W17	112970	51190	WIRE HARN ASSY, FAN, EXTENDER, 8XXX
W18	112942	51190	WIRE HARN ASSY, PUSH-BUTTON SW, 8XXX, BLK
W19	113479	51190	WIRE HARN ASSY, PUSH-BUTTON SW, 8XXX, GRN

112947

FRONT CHASSIS ASSY (8800)

A1

Contains all parts shown in Revision A0.

112947

FRONT CHASSIS ASSY (8800)

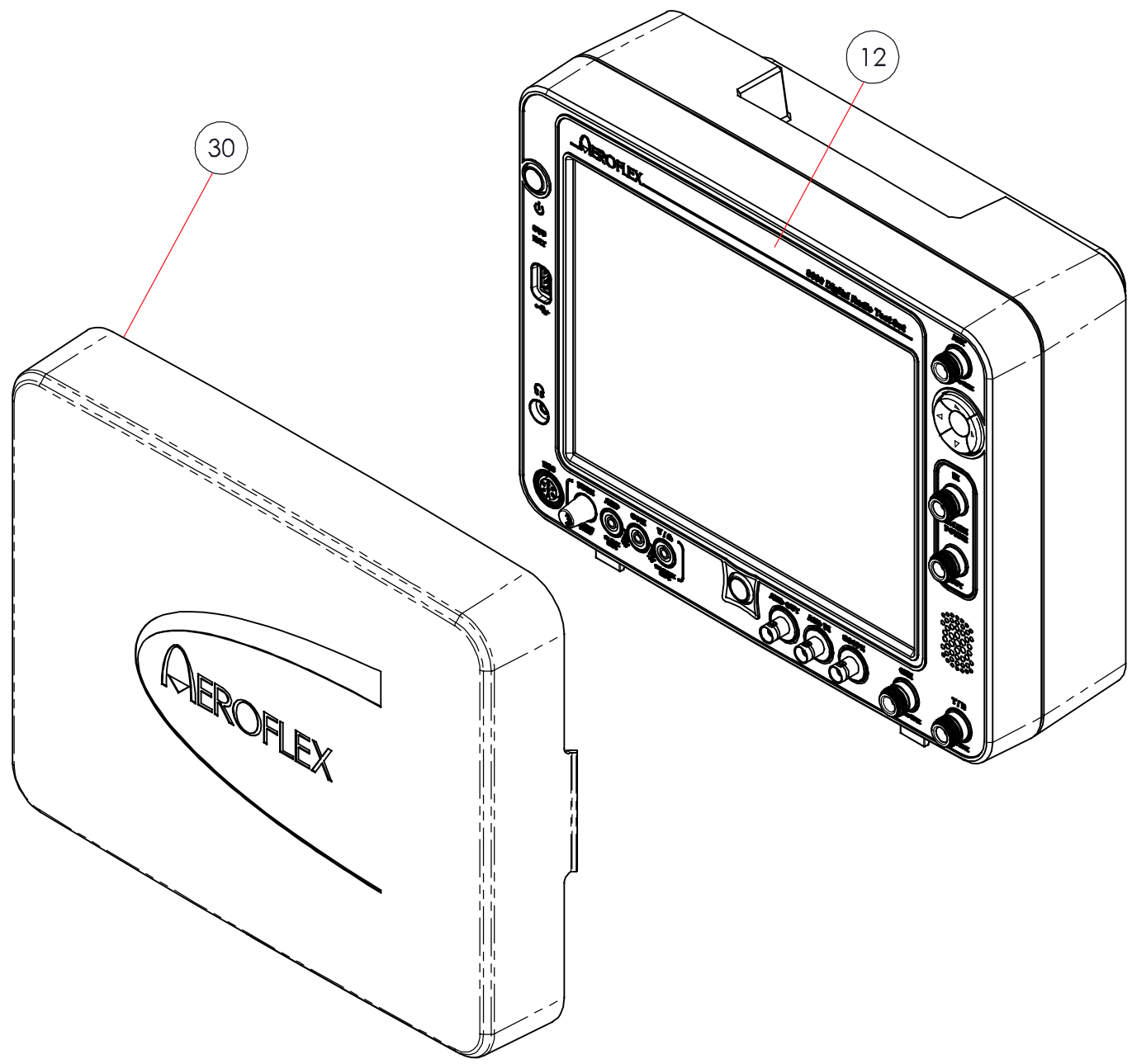
B0

Contains all parts shown in Revision A1 with the following exception:

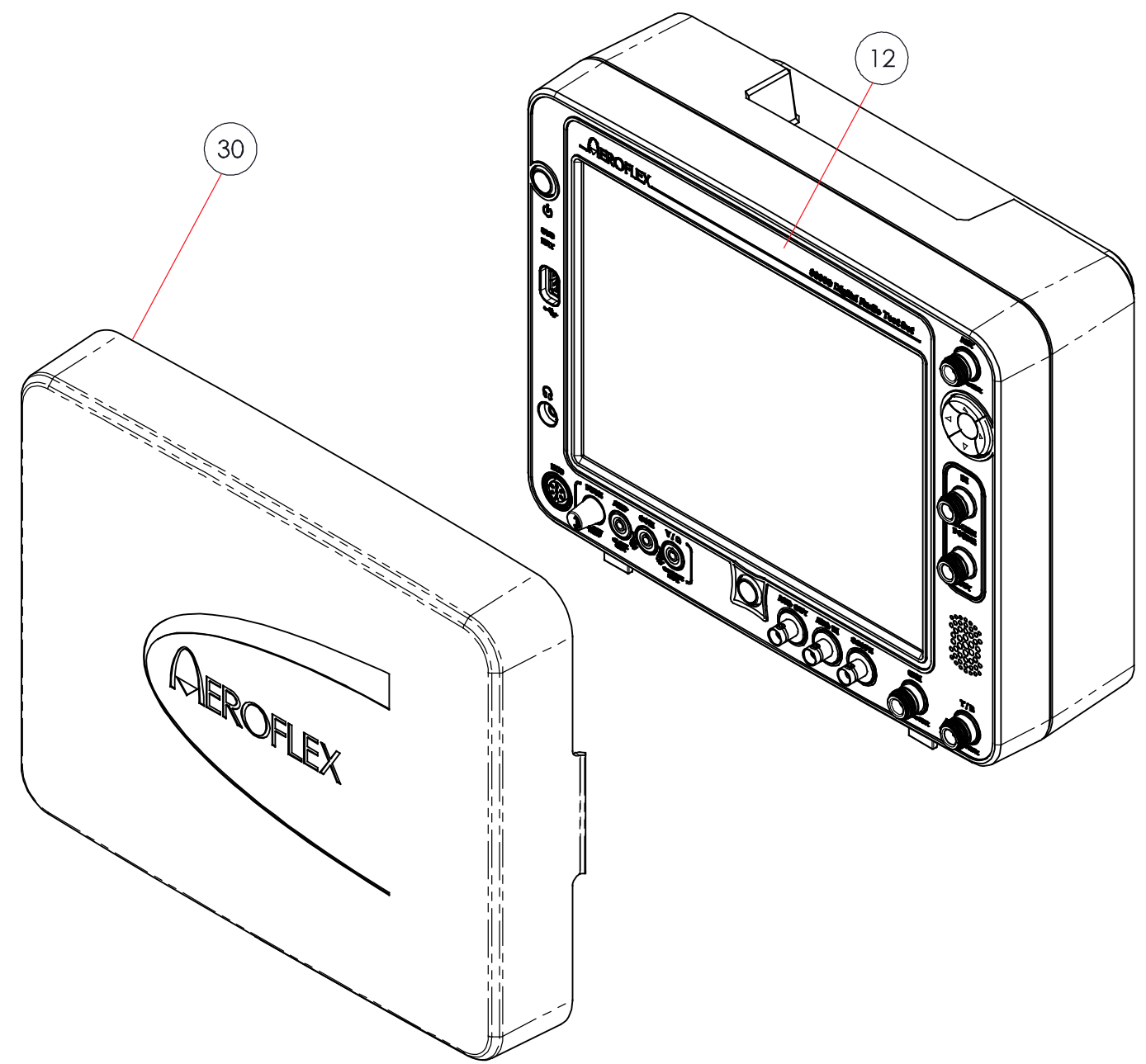
REFERENCE DESIGNATOR	PART NUMBER	CAGE CODE	DESCRIPTION
A4	138614	51190	PURCH ASSY, CONTROLLER, RE-TOUCHSCREEN

REFERENCE DESIGNATOR	PART NUMBER	CAGE CODE	DESCRIPTION
1	112811	51190	CHASSIS, FRONT, 8XXX
2	138802	51190	OVERLAY, FRONT, 8XXX, 125W
3	113512	51190	BEZEL, FRONT, 8XXX, SHIELDED/PAINTED
4	87016	51190	GASKET, TOUCH SCREEN
5	62042	51190	TY-RAP, #4 SCREW MOUNT, 5.5L
6	87190	51190	SM, M3 X .5 X 5, ABT, A2, PA, TL
7	113256	51190	SF, M2.63 X 1.06 X 6, TPH, SS, PA
8	113255	51190	GASKET, URETHANE, 250 X 5 X 0.5MM
9	71549	51190	CABLE TIE NYLON .6 BUNDLE MAX
10	71088	51190	SCREW PHP #4-40 X .188 SS
11	86964	51190	SM, M3 X .5 X 8, ABT, A2, PA, TL
12	113634	51190	SF, M2.63 X 1.06 X 8, TPH, SS, PA
13	35844	51190	STANDOFF, .188 HEX M/F, .187LG
A1	112768	51190	PCB ASSY, MFB-OMAP, 8XXX
A2	112614	51190	PURCHASED ASSY, LED DISPLAY, NEC
A3	112615	51190	PURCHASED ASSY, TOUCHSCREEN
A4	138614	51190	PURCH ASSY, CONTROLLER, RE-TOUCHSCREEN
A5	112923	51190	PCB ASSY, CONTROL, ARROW BD
A6	112682	51190	PCB ASSY, AUDIO I/O, 8XXX
A7	112948	51190	MECH ASSY, DMM, 8XXX
J1	20953	51190	CONN, F, BNC, BH, ADP, SMB, WTRPRF
J2	20953	51190	CONN, F, BNC, BH, ADP, SMB, WTRPRF
J3	20953	51190	CONN, F, BNC, BH, ADP, SMB, WTRPRF
W1	112912	51190	COAX ASSY, RG316, 7.0, SMB, F, RA/SSMB, F, ST
W2	112912	51190	COAX ASSY, RG316, 7.0, SMB, F, RA/SSMB, F, ST
W3	112912	51190	COAX ASSY, RG316, 7.0, SMB, F, RA/SSMB, F, ST
W4	112779	51190	WIRE HARN ASSY, RES.TOUCH PNL
W5	112780	51190	WIRE HARN ASSY, LVDS 8820 DISPLAY
W6	112778	51190	WIRE HARN ASSY, BACKLIGHT, 8XXX
W7	112917	51190	WIRE HARN ASSY, DMM-IO, 8XXX
W8	112857	51190	WIRE HARN ASSY, SPEAKER_8XXX
W9	112896	51190	RBN CA ASSY, PUSH-BUTTON, SWITCH 8XXX
W10	112860	51190	WIRE HARN ASSY, MICROPHONE, 8XXX
W11	112859	51190	WIRE HARN ASSY, MFIO_AUDIO IO, 8XXX
W12	62418	51190	CABLE ASSY, MINI USB B - USB A
W13	62418	51190	CABLE ASSY, MINI USB B - USB A
W14	112940	51190	COAX ASSY, LMR, 15.0, SSMB, F, RA/SSMB, F, RA
W15	112941	51190	COAX ASSY, LMR, 17.0, SSMB, F, RA/SSMB, F, RA
W16	112751	51190	PCB ASSY, FLEX 44-PIN / I/O
W17	112970	51190	WIRE HARN ASSY, FAN, EXTENDER, 8XXX
W18	112942	51190	WIRE HARN ASSY, PUSH-BUTTON SW, 8XXX, BLK
W19	113479	51190	WIRE HARN ASSY, PUSH-BUTTON SW, 8XXX, GRN

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



8800



8800S

Figure A-1. 8800 / 8800S (Sheet 1 of 5)
(8800) (112581)
(8800S) (138803)

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

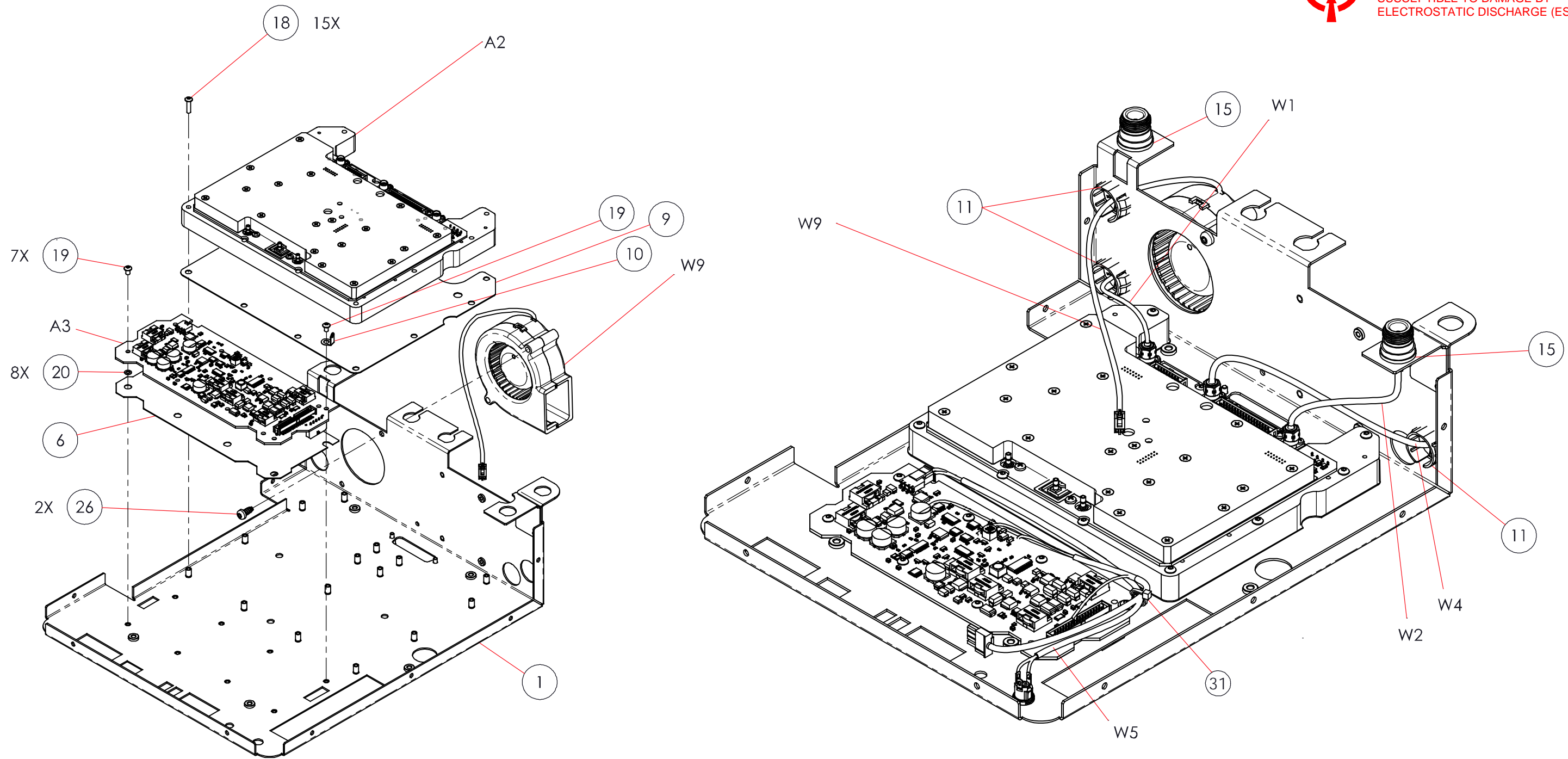


Figure A-1. 8800 / 8800S (Sheet 2 of 5)
(8800) (112581)
(8800S) (138803)



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

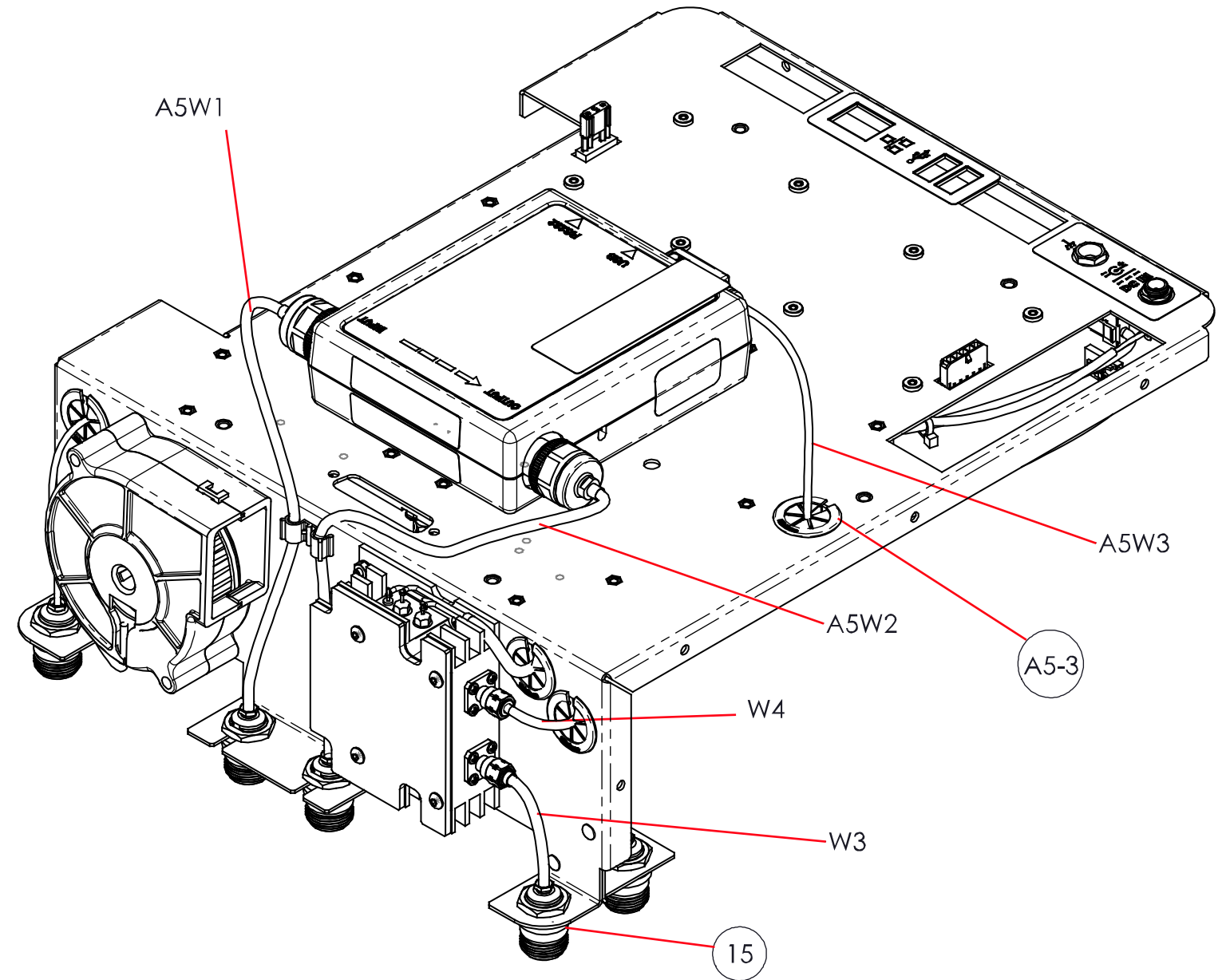
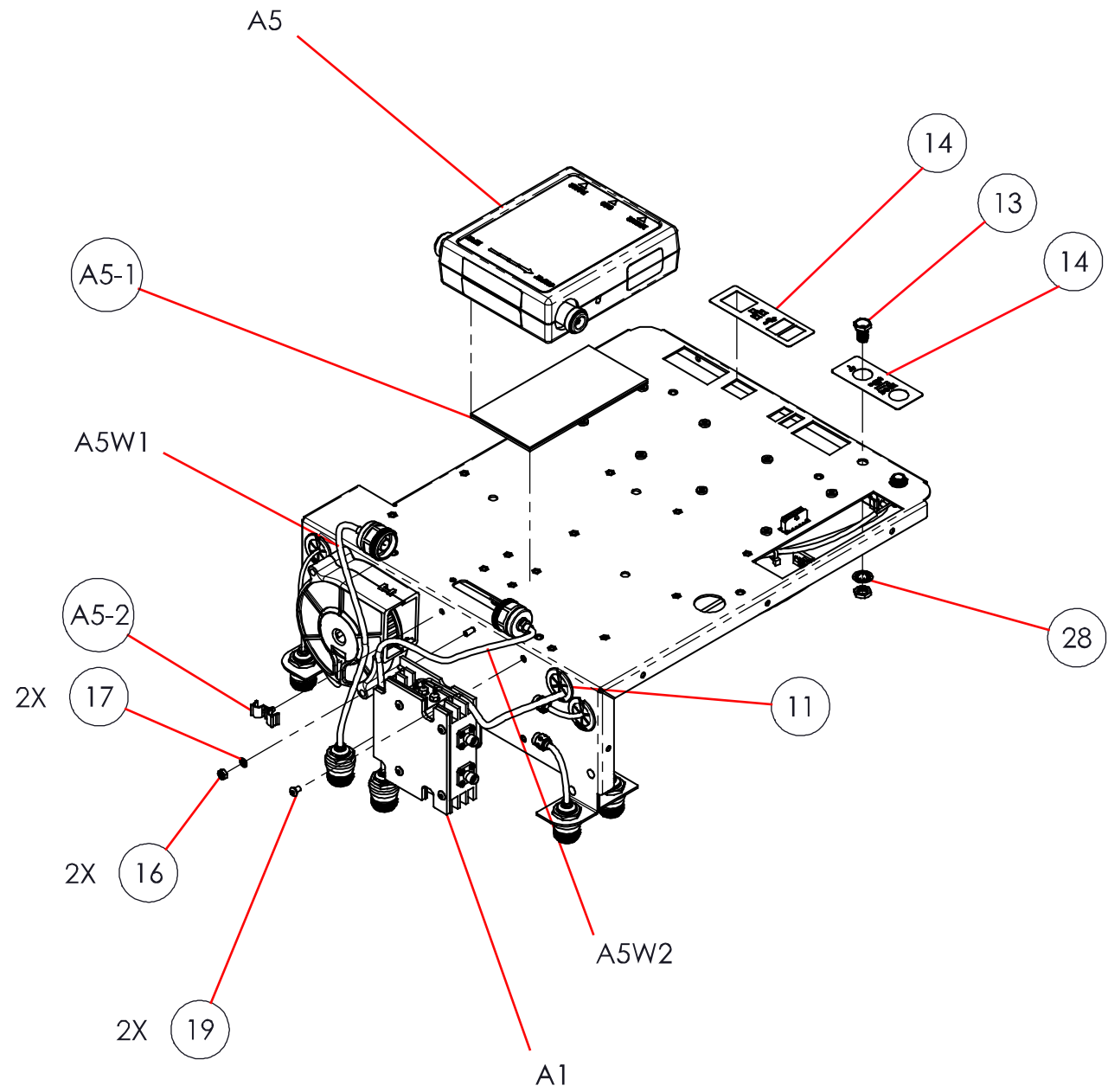


Figure A-1. 8800 / 8800S (Sheet 3 of 5)
(8800) (112581)
(8800S) (138803)



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

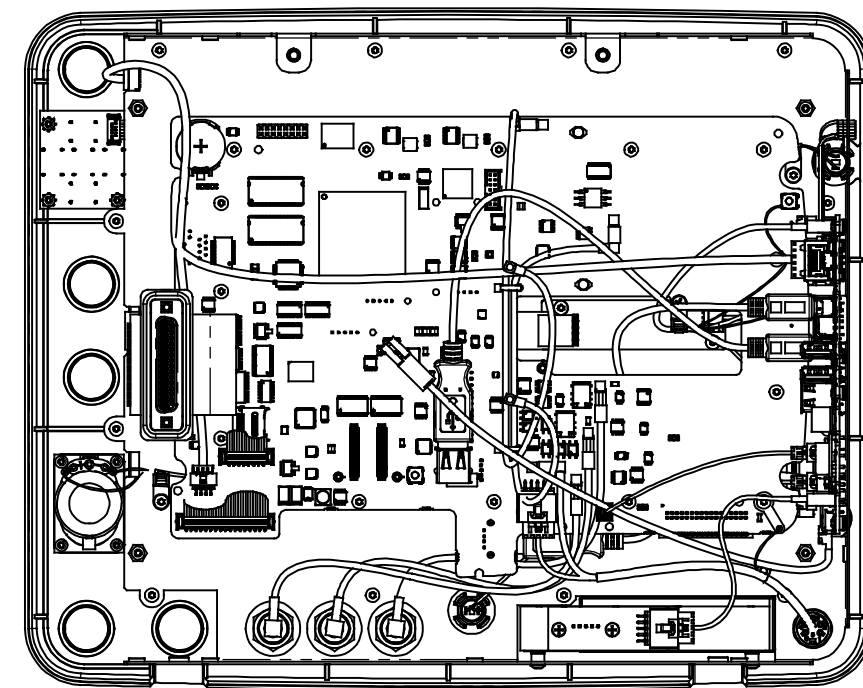
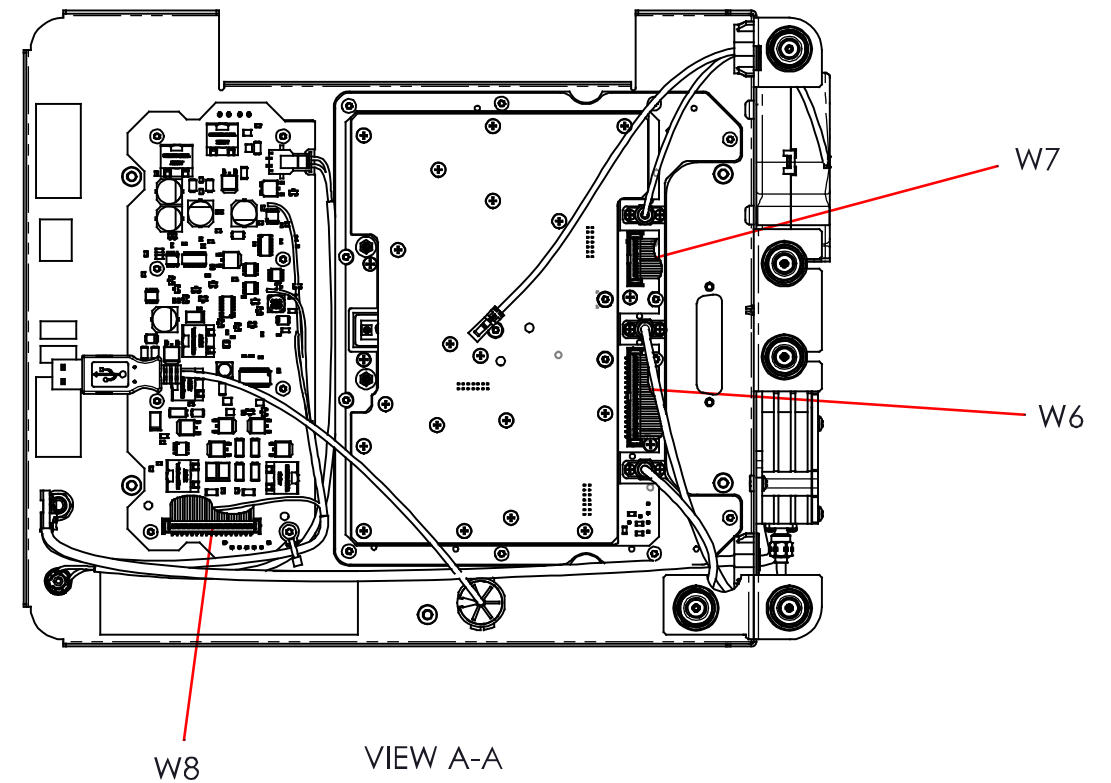
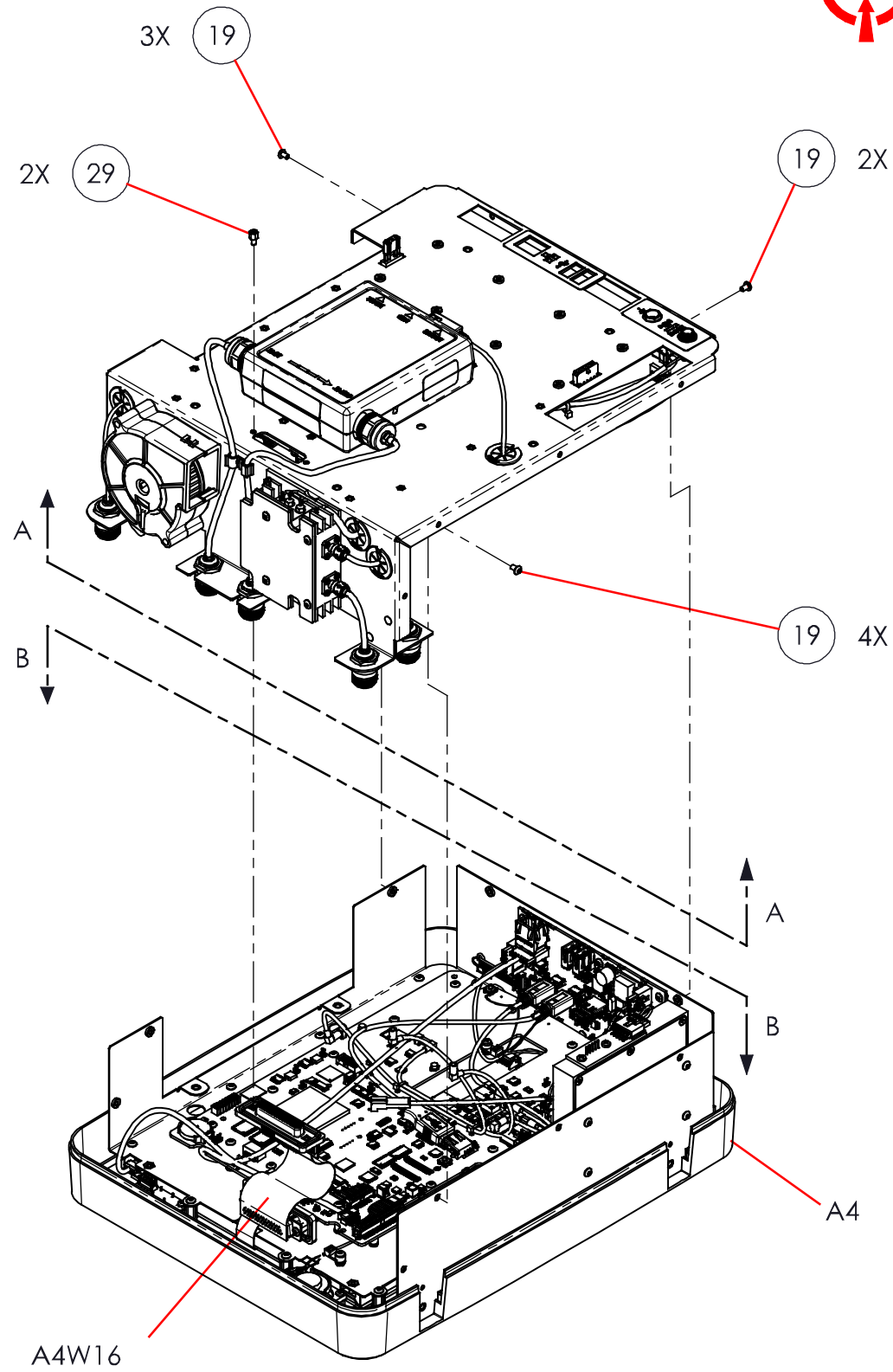
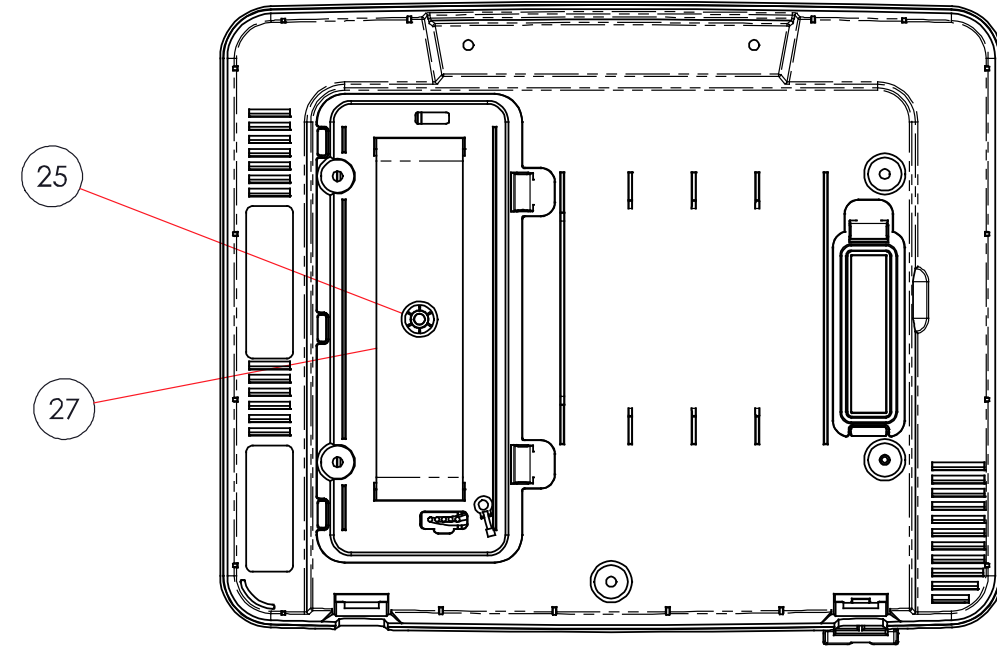
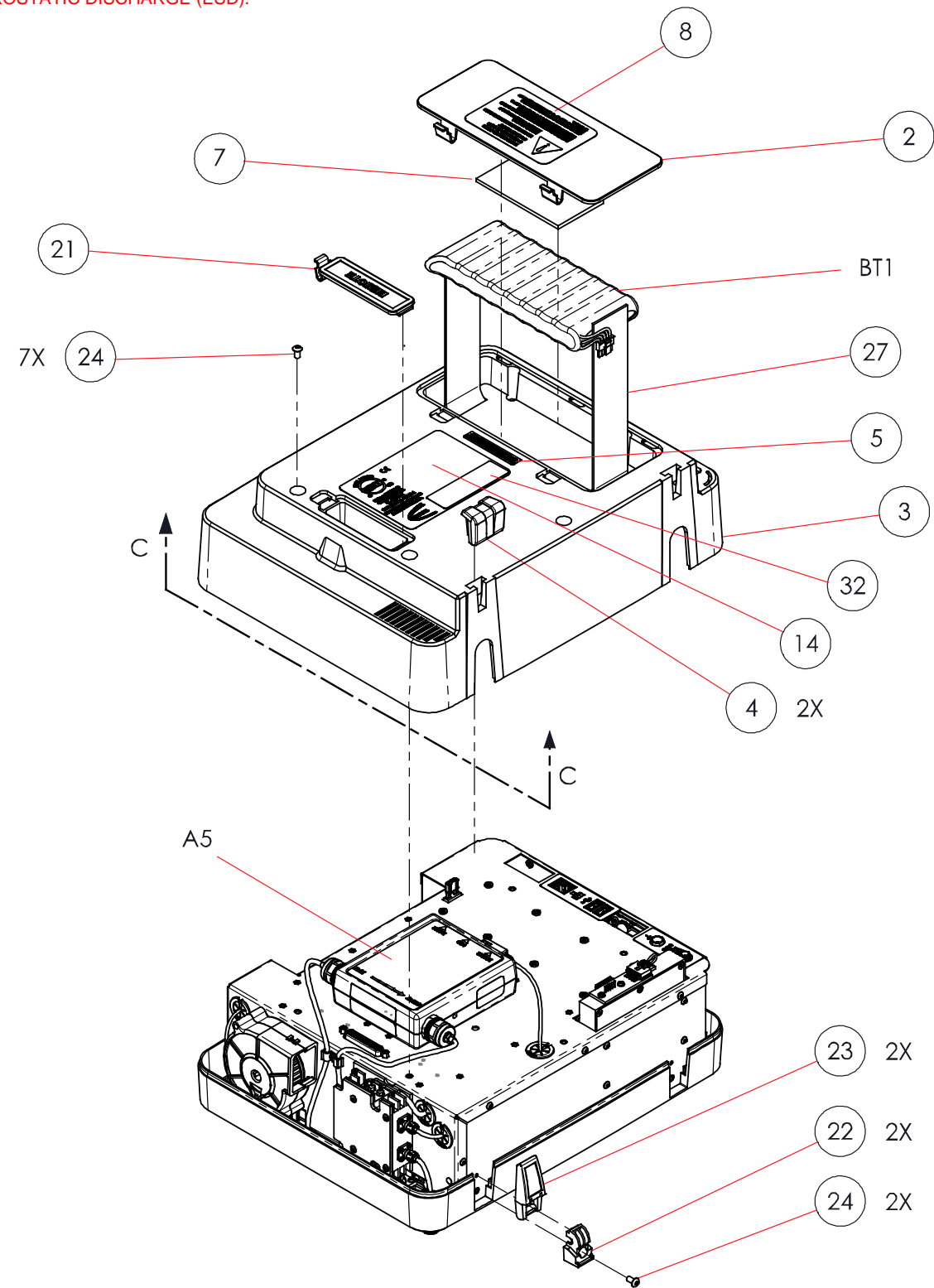


Figure A-1. 8800 / 8800S (Sheet 4 of 5)
(8800) (112581)
(8800S) (138803)



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



VIEW C-C

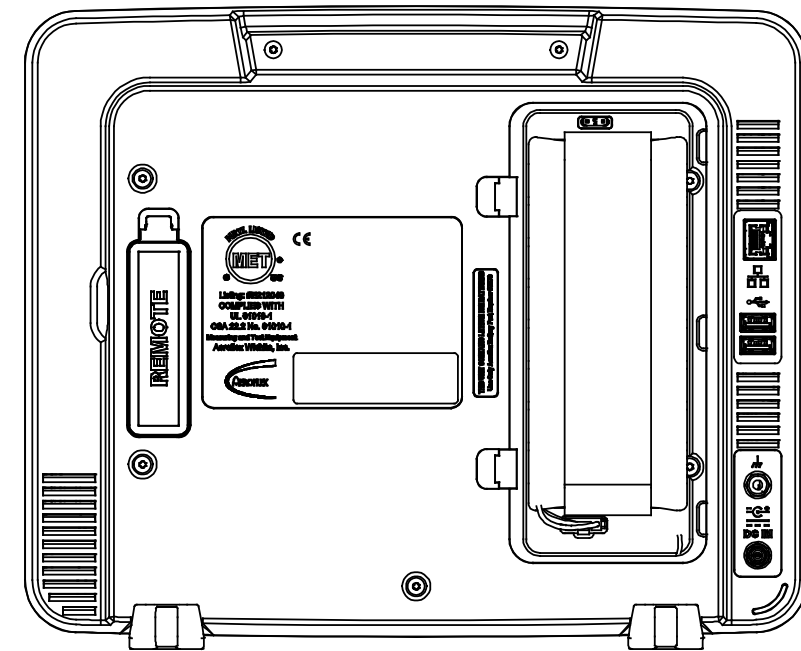


Figure A-1. 8800 / 8800S (Sheet 5 of 5)
(8800) (112581)
(8800S) (138803)



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

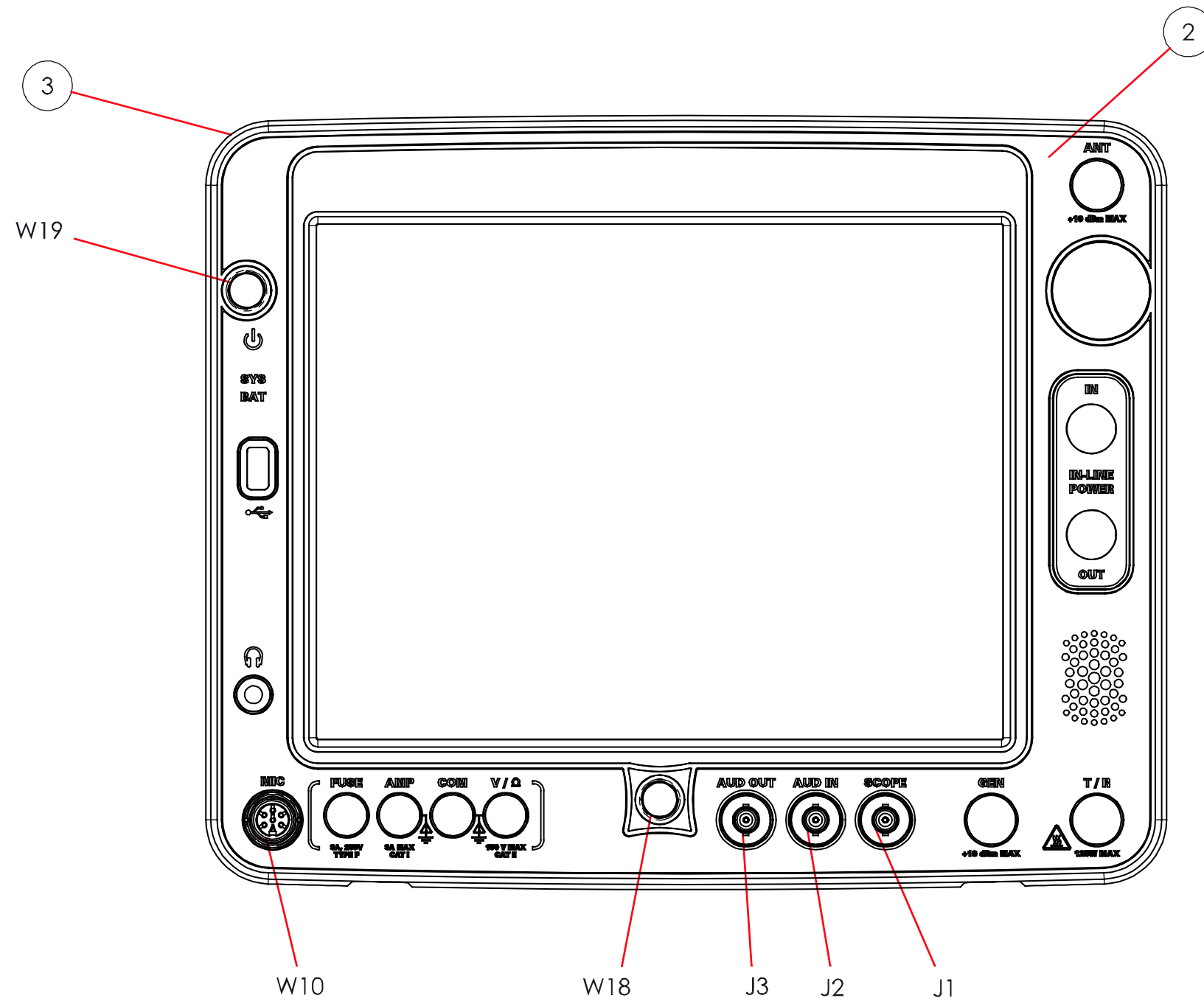


Figure A-2. Front Chassis / Panel Assy (Sheet 1 of 6)
(8800) (112947)
(8800S) (138800)

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

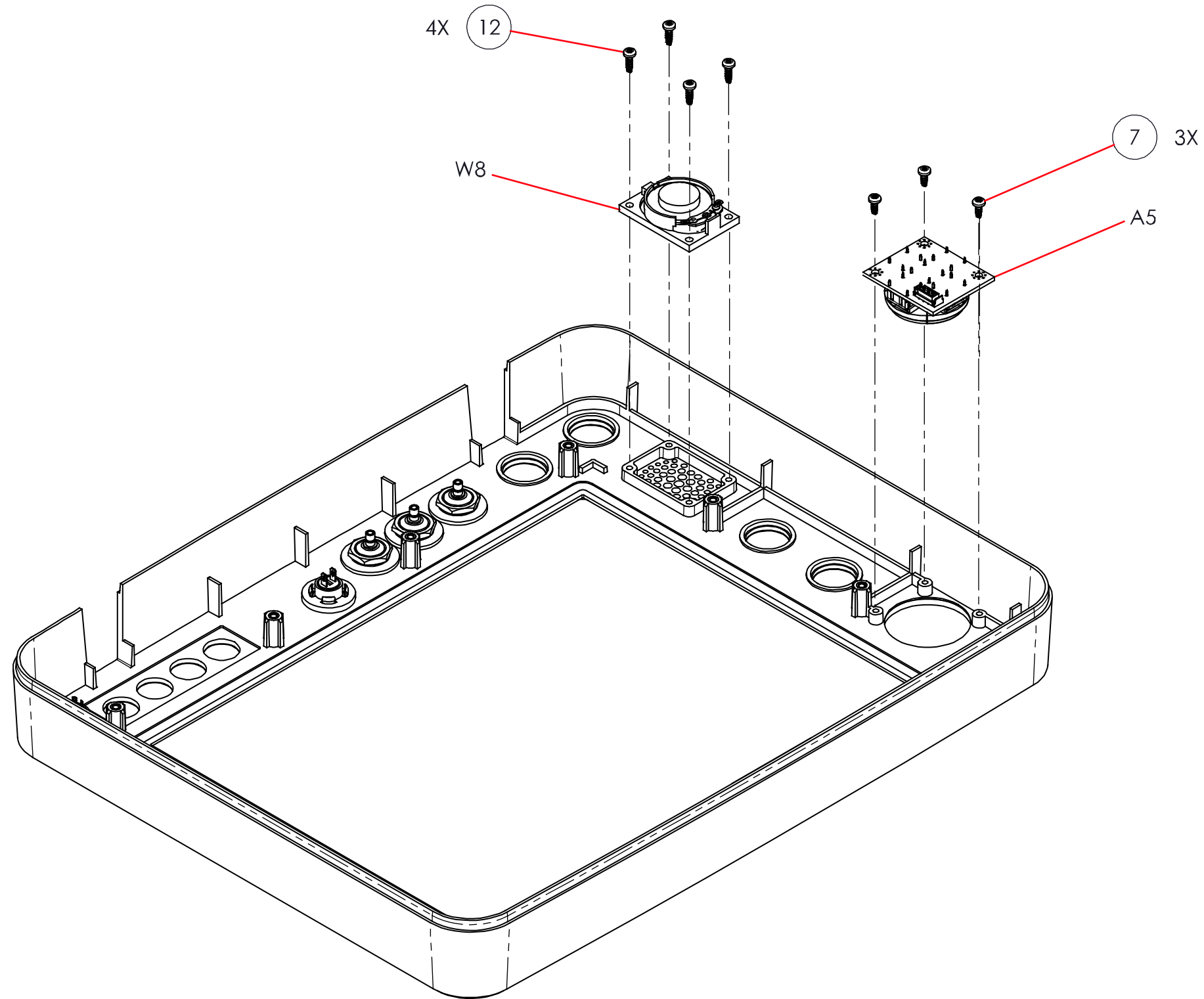



Figure A-2. Front Chassis / Panel Assy (Sheet 2 of 6)
(8800) (112947)
(8800S) (138800)

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

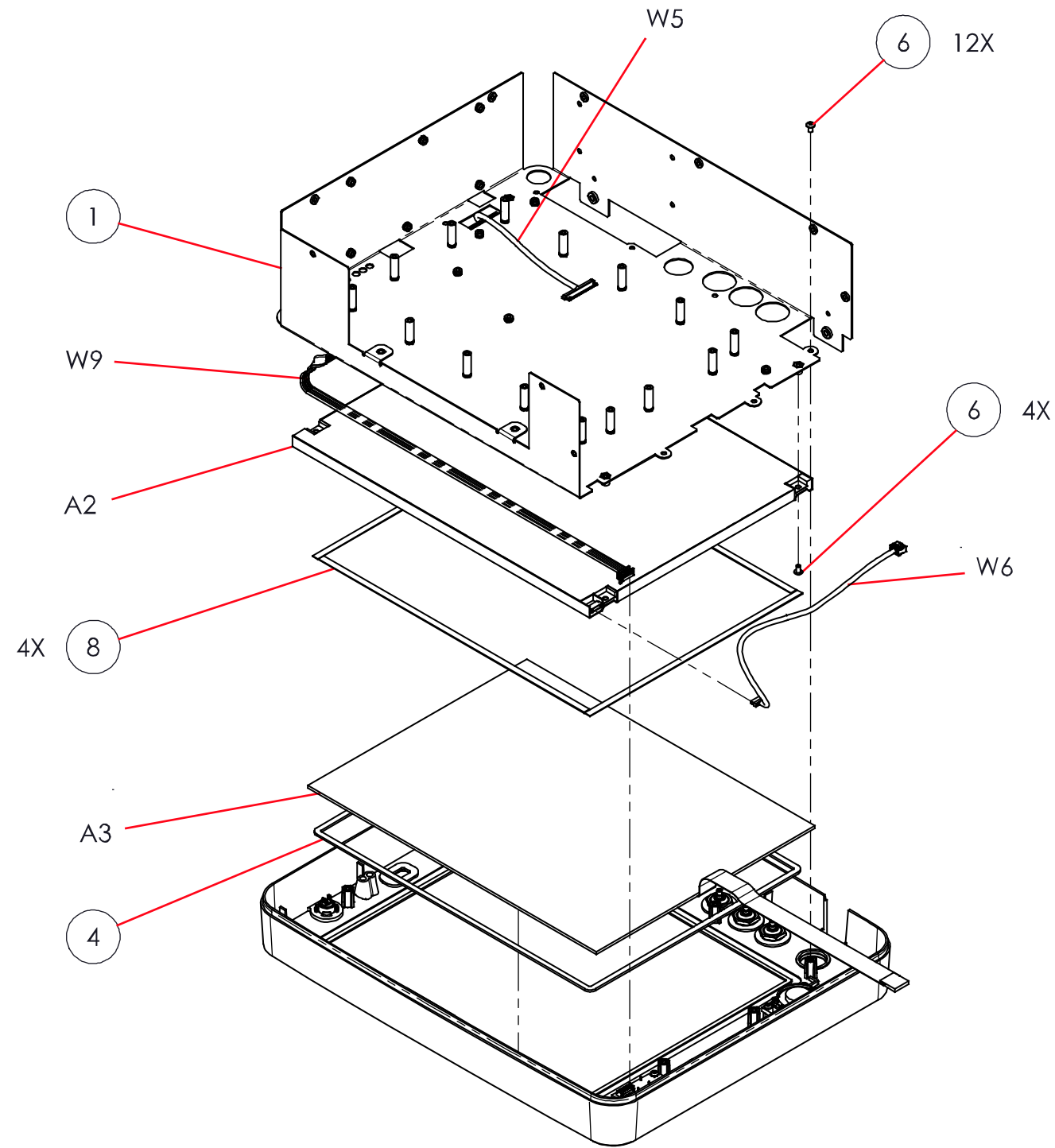
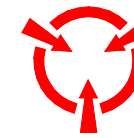


Figure A-2. Front Chassis / Panel Assy (Sheet 3 of 6)
(8800) (112947)
(8800S) (138800)



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

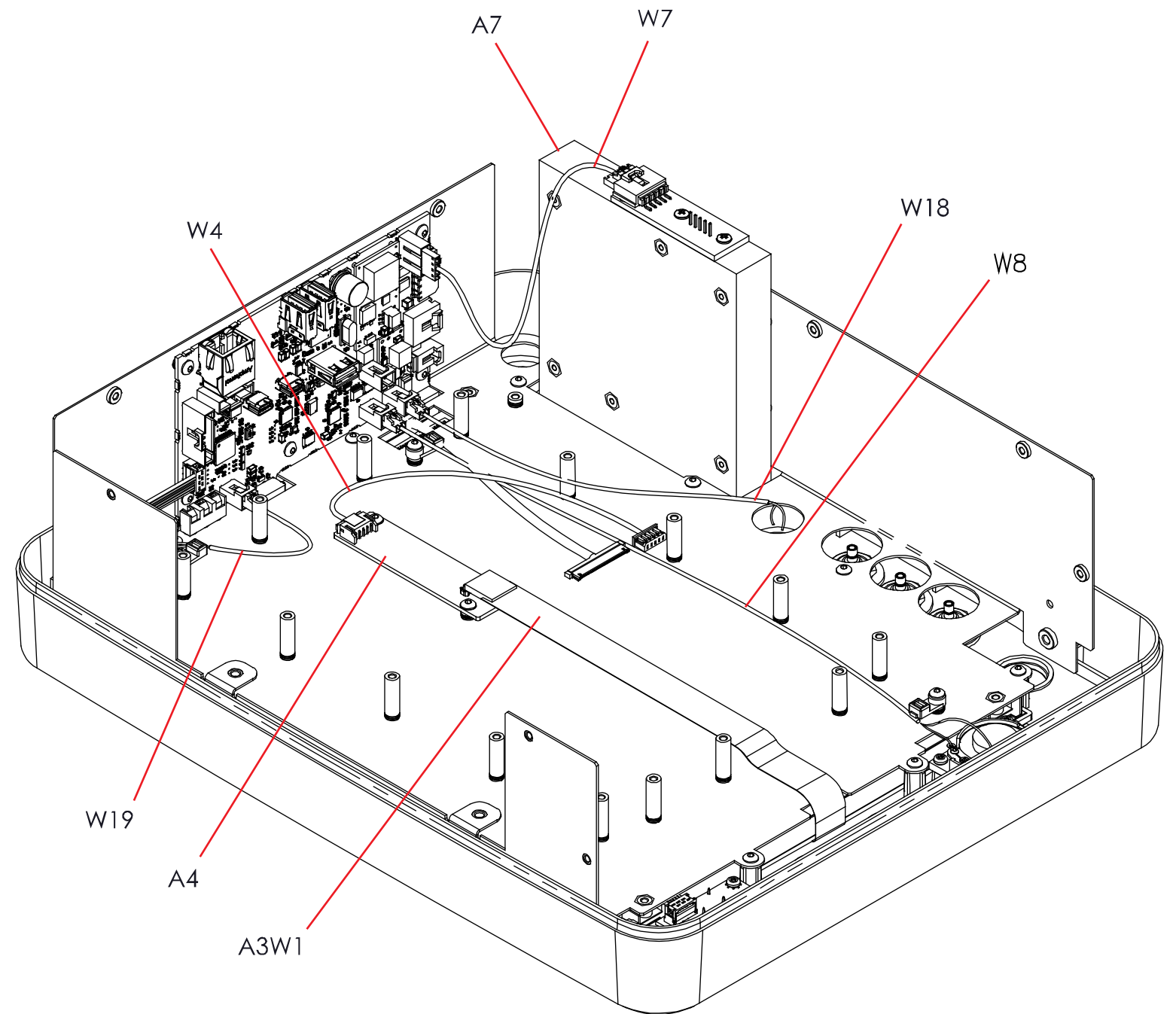
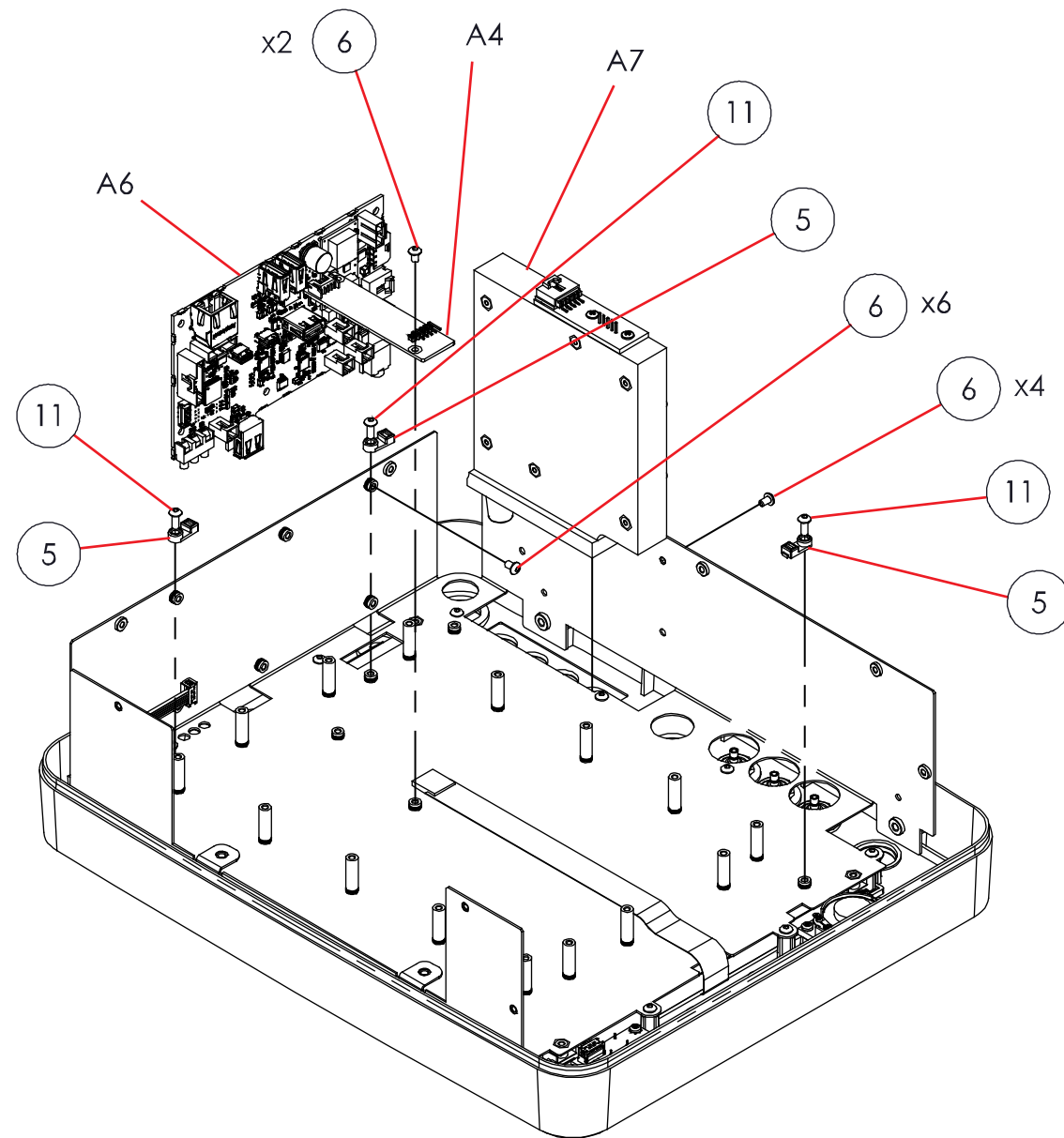
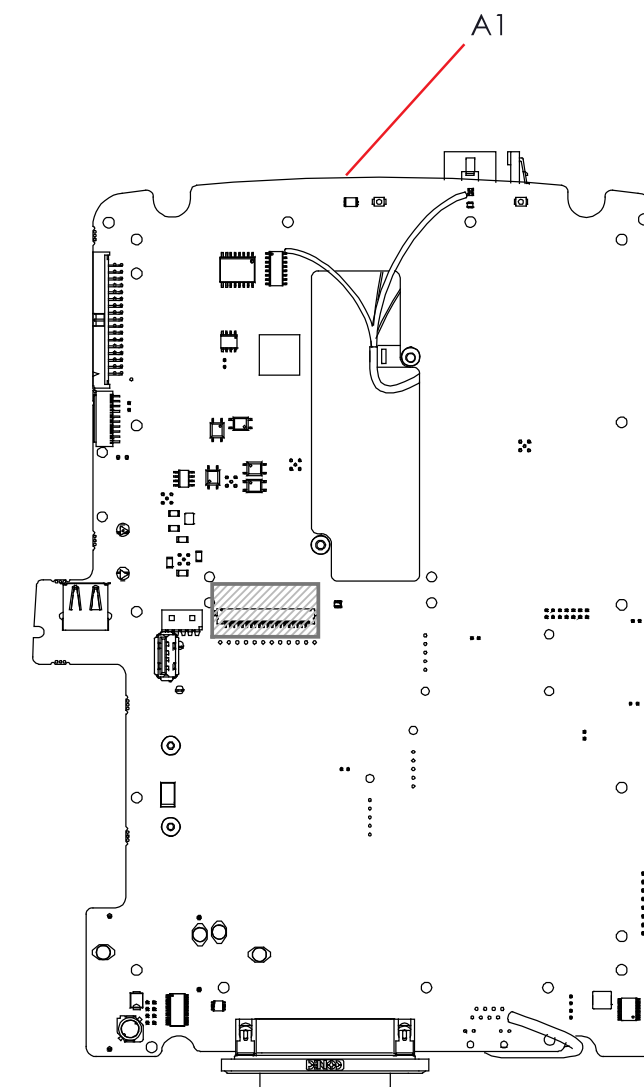
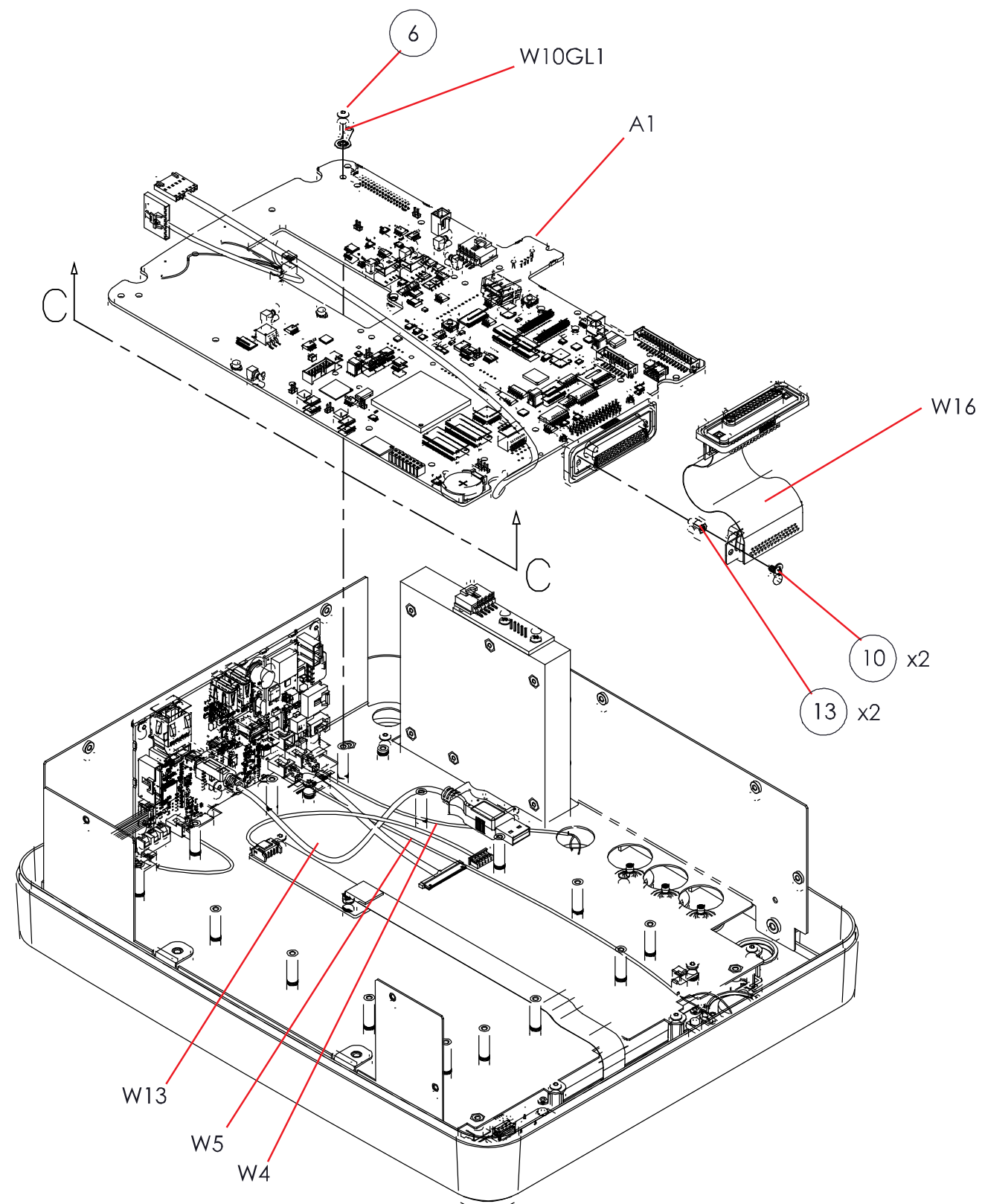


Figure A-2. Front Chassis / Panel Assy (Sheet 4 of 6)
(8800) (112947)
(8800S) (138800)



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



VIEW C-C

Figure A-2. Front Chassis / Panel Assy (Sheet 5 of 6)
(8800) (112947)
(8800S) (138800)



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

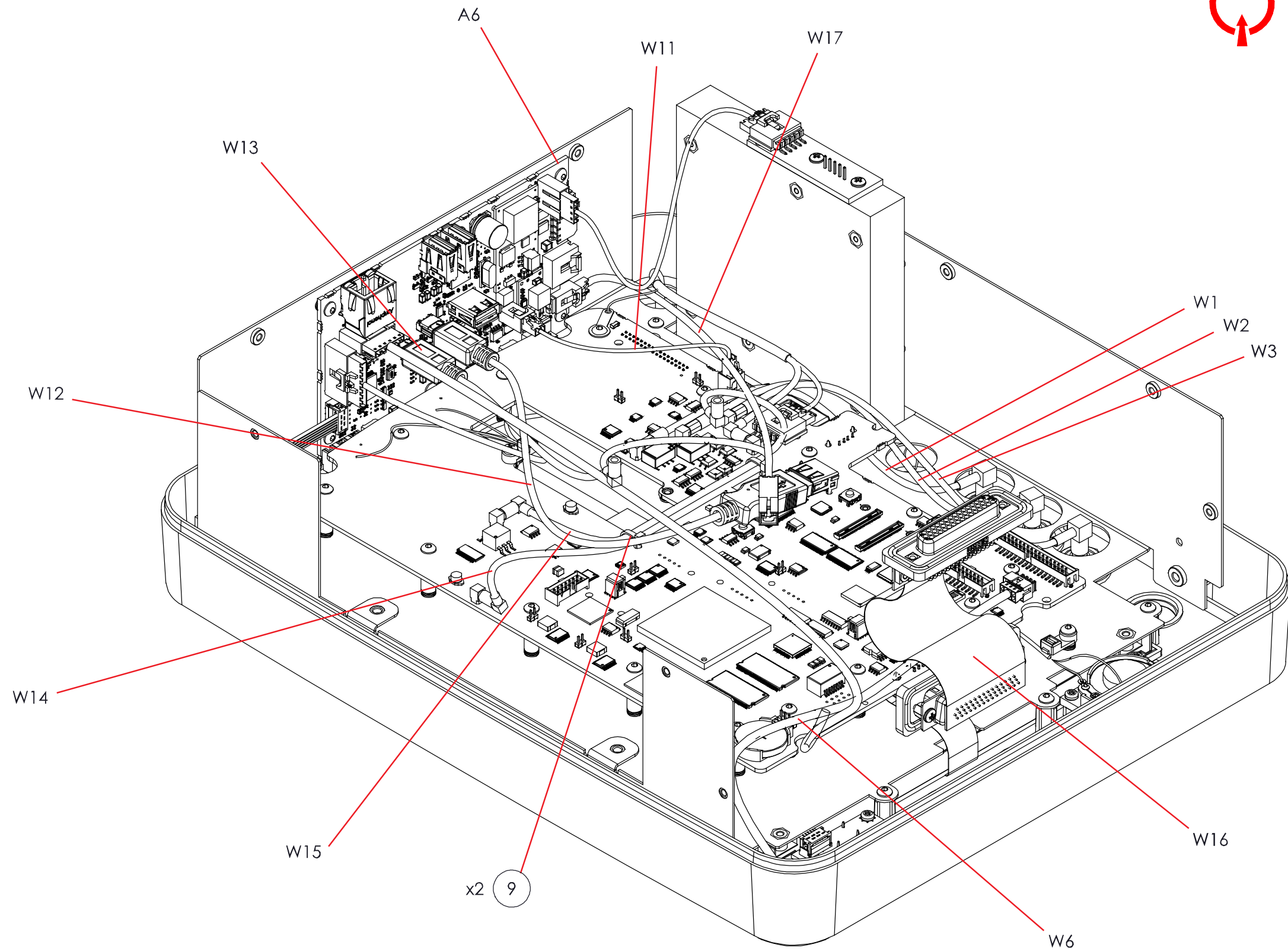


Figure A-2. Front Chassis / Panel Assy (Sheet 6 of 6)
(8800) (112947)
(8800S) (138800)



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

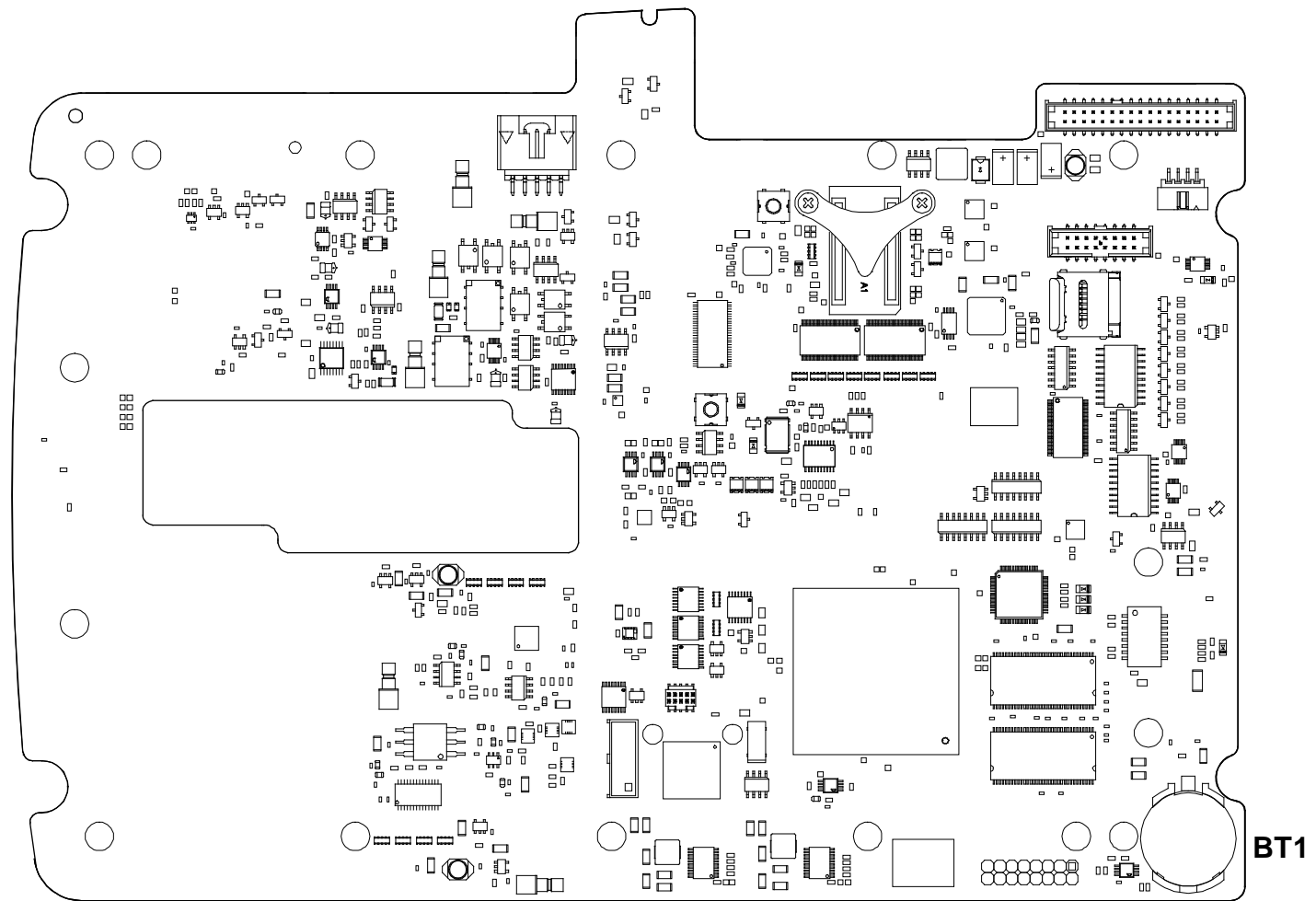


Figure A-3. Multi-Function PCB Assy
(90384)

APPENDIX B - CONNECTOR PIN-OUT TABLES

B-1. I/O CONNECTORS



(Front Panel)

CONNECTOR	TYPE	INPUT/OUTPUT
AMP	DMM Banana Plug Female	INPUT
ANT	N Female	INPUT/OUTPUT
AUD IN	BNC Female	INPUT
AUD OUT	BNC Female	OUTPUT
COM	DMM Banana Plug Female	INPUT
GEN	N Female	OUTPUT
HEAD PHONES	2.5 mm CIRCULAR	OUTPUT
IN LINE POWER IN	N Female	INPUT
IN LINE POWER OUT	N Female	OUTPUT
MIC	6 Pin CIRCULAR Female	INPUT/OUTPUT
	Refer to Table B-3 for MIC Connector description	
SCOPE	BNC Female	INPUT
T/R	N Female	INPUT/OUTPUT
USB	USB 2.0	INPUT/OUTPUT
	Refer to Table B-6 for USB Connector description	
V / Ω	DMM Banana Plug Female	INPUT

Table B-1. I/O Connectors (Front Panel)

B-1. I/O CONNECTORS (cont)

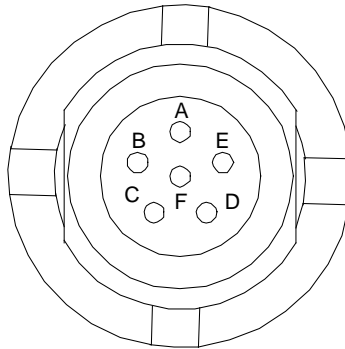


(Rear Panel)

CONNECTOR	TYPE	INPUT/OUTPUT
DC IN	2.5 mm CIRCULAR	INPUT
ETHERNET	RJ45	INPUT/OUTPUT
	Refer to Table B-5 for ETHERNET Connector description	
GROUND	2.5 mm CIRCULAR	INPUT/OUTPUT
REMOTE	44-Pin D-SUB Female	INPUT/OUTPUT
	Refer to Table B-4 for REMOTE Connector description	
USB	USB 2.0	INPUT/OUTPUT
	Refer to Table B-6 for USB Connector description	

Table B-2. I/O Connectors (Rear Panel)

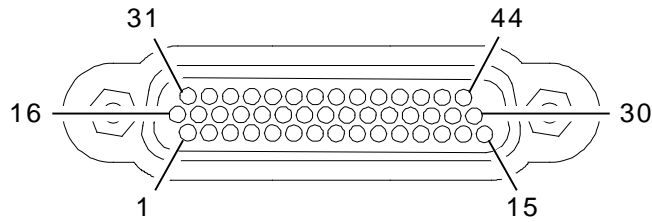
B-2. MIC CONNECTOR PIN-OUT TABLE



PIN NO.	SIGNAL NAME
A	GND
B	SPEAKER+
C	PTT
D	MIC
E	MICSEL1
F	MICSEL2

Table B-3. MIC Connector Pin-Out Table

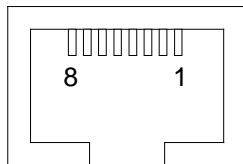
B-3. REMOTE CONNECTOR PIN-OUT TABLE



PIN NO.	SIGNAL NAME	PIN NO.	SIGNAL NAME
1	USB3_VBUS	23	GND
2	USB3_GND	24	PPC_ETX_P
3	+5V_ACC	25	GND
4	PPCDEBUG_TXD	26	PPCUSR_CTS
5	GND	27	PPCUSR_TXD
6	OMAPRCI_RTS	28	REM_GPIO(5)
7	GND	29	REM_GPIO(1)
8	PPC_ERX_N	30	REM_GPIO(3)
9	PPC_ETX_N	31	USB3_VBUS
10	GND	32	USB3_GND
11	PPCUSR_RTS	33	+5V_ACC
12	PPCUSR_RXD	34	PPCDEBUG_RXD
13	REM_GPIO(7)	35	GND
14	REM_GPIO(6)	36	OMAPRCI_RXD
15	REM_GPIO(2)	37	GND
16	USB3_FD_N	38	PPC_ERX_P
17	USB3_FD_P	39	GND
18	OMAPCON_TXD	40	REM_GPIO(4)
19	OMAPCON_RXD	41	REM_GPIO(0)
20	GND	42	OMAPCON_RTS
21	OMAPRCI_TXD	43	OMAPCON_CTS
22	OMAPRCI_CTS	44	BKBOX#

Table B-4. REMOTE Connector Pin-Out Table

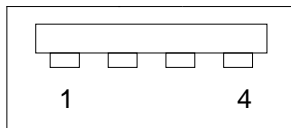
B-4. ETHERNET CONNECTOR PIN-OUT TABLE



PIN NO.	SIGNAL NAME
1	TX+
2	TX-
3	RX+
4	NOT USED
5	NOT USED
6	RX-
7	NOT USED
8	NOT USED

Table B-5. ETHERNET Connector Pin-Out Table

B-5. USB CONNECTOR PIN-OUT TABLE



PIN NO.	SIGNAL NAME
1	VCC
2	D-
3	D+
4	GND

Table B-6. USB Connector Pin-Out Table

APPENDIX C - SUPPORT 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
Digital Multimeter	HP 34401A or Equivalent
Universal Frequency Counter	Agilent 53131A or Equivalent
Calibrator	Fluke 5520 or Equivalent
Power Meter	Agilent N1911A or Equivalent
Power Meter Sensor	Agilent E4412A or Equivalent
RF Signal Generator	HP 8648C or Equivalent
RF Power Amplifier (200 W)	
Oscilloscope	Tektronix TDS 2024 or Equivalent
Spectrum Analyzer	Aeroflex AN940 or Equivalent

Table C-1. Test Equipment

TYPE	MODEL
Short-Open-Load VSWR Calibrator	Aeroflex (38245)
Directional Coupler	Narda 3020A or Equivalent
Power Splitter (2-Way, Resistive)	(See para C-1)
Stub Tuner	Murray Microwave 1778E or 1778EQ
SWR Stack	(See para C-2)
N (F) to N (F) Adapter	Amphenol 082-101
100 MHz Low-Pass Filter	
300 MHz Low-Pass Filter	
700 MHz Low-Pass Filter	
1200 MHz Low-Pass Filter	
50 Ω Termination (2)	
10 dB Attenuator (50 W)	
20 dB Attenuator (5 W)	
BNC T-Connector	
Ethernet Crossover Cable (5 ft.)	L-COM TRD815CRBLK-5 or Equivalent
TNC (F) Short - Open - Load (DC - 2 GHz)	Weinschel 6850

Table C-2. Adapters, Cables and Accessories

C-1. POWER SPLITTER



Figure C-1. Power Splitter




DESCRIPTION		P/N	QTY
Broadband Resistive Power Splitter (N-M)		Weinschel 1870A	1
Coaxial Cable (N-M to TNC-M)		Aeroflex 62375	1
Adapter (N-M to N-M)		Pasternak PE9007	1

Table C-3. Power Splitter

C-2. SWR STACK



Figure C-2. SWR Stack




DESCRIPTION		P/N	QTY
Adapter (N-M to TNC-M)		Pasternak PE9446	1
Adapter (N-M to N-M)		Pasternak PE9007	2
Barrel Adapter (N-F to N-F)		Amphenol 082-101	2

Table C-4. SWR Stack

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APPENDIX D - ABBREVIATIONS

A		H	
A	Amperes	H	Hour
AC	Alternating Current	HI	High
AF	Audio Frequency	HP	High-Pass
AFBW	Audio Frequency Bandwidth	Hr	Hour
AM	Amplitude Modulation	Hz	Hertz
ANT	Antenna		
Assy	Assembly		
ATTN	Attenuation		
Aud	Audio		
B		I	
Bat	Battery	i.e.,	That is ...
Batt	Battery	IF	Intermediate Frequency
BP	Bandpass	IN	Input
BW	Bandwidth	In/lbs.	Inch/Pounds
		I/O	Input/Output
C		K	
C	Celsius or Centigrade		
CAL	Calibrate/Calibration		
CAL'D	Calibrated		
CFM	Coldfire Firmware		
Config	Configure/Configuration		
CPLD	Complex Processing Logic Device		
CW	Continuous Wave	kHz	Kilohertz (10 ³ Hertz)
D		L	
D	Day	LCD	Liquid Crystal Display
dB	Decibel	LO	Low
dBc	Decibels below Carrier	LP	Low-Pass
dBm	Decibels above one Milliwatt	Lvl	Level
DC	Direct Current		
DEV	Deviation		
DIST	Distortion		
E		M	
e.g.	For Example ...	M, m	Month or Meters or Minutes
EMC	Electromagnetic Compatibility	Mm	Millimeter
EMI	Electromagnetic Interference	MFIO	Multi-Function I/O
Err	Error	MHz	Megahertz (10 ⁶ Hertz)
ESC	Escape	MIC	Microphone
		MIN, min	Minimum or Minutes
		MOD	Modulation
		mm	Millimeter (10 ⁻³ Meters)
F		N	
FH	Frequency Hop	NORM	Normal or Normalize
Fgen	Function Generator		
FM	Frequency Modulation		
FPGA	Field Programmable Gate Array		
FREQ	Frequency		
G		O	
Gen	Generate	OUT	Output
GHz	Gigahertz (10 ⁹ Hertz)	Ovr	Overload
H		P	
		para	Paragraph
		PC	Printed Circuit
		PCB	Printed Circuit Board
		PPC	PowerPC
		ppm	Parts per Million
		PTT	Push to Talk
		Pwr	Power
I		R	
		REC	Receive
		RF	Radio Frequency
		RSSI	Received Signal Strength Indication
		RX	Receive

S

SWR Standing Wave Ratio

T

Tem Temperature
Temp Temperature
T/R Transmit/Receive
TX Transmit

U

UNCAL'D Uncalibrated
UUT Unit Under Test

V

V Volt
VAC Volts, Alternating Current
Vdc Volts, Direct Current
VHF Very High Frequency
Vol Volume
Vrms Volts Root Mean Square
VSWR Voltage Standing Wave Ratio

W

W Watt

Y

Y Year

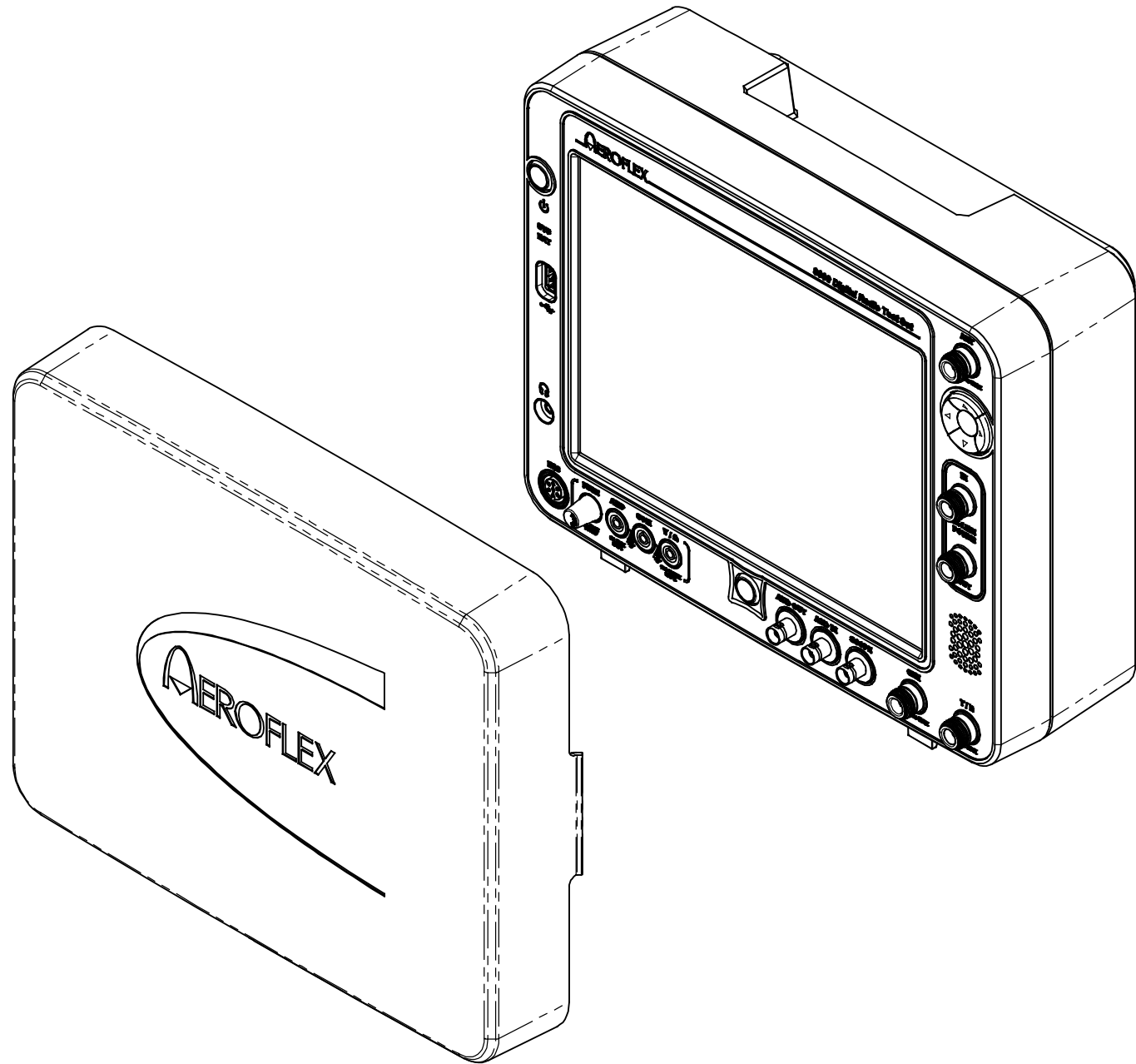
APPENDIX E - ASSEMBLY DRAWINGS / SCHEMATICS

ASSEMBLY		PAGE
(1) 8800 Interconnect Diagram	(112581)	E-3 E-8
8800S Interconnect Diagram	(138803)	E-3 E-9
(A1) RF Attenuator Assy	(112897)	E-10
(A2) RF Assy (8800)	(112719)	E-11
(A2) RF Assy (8800S)	(138799)	E-11
(A3) Power Supply PCB Assy	(112765)	E-12
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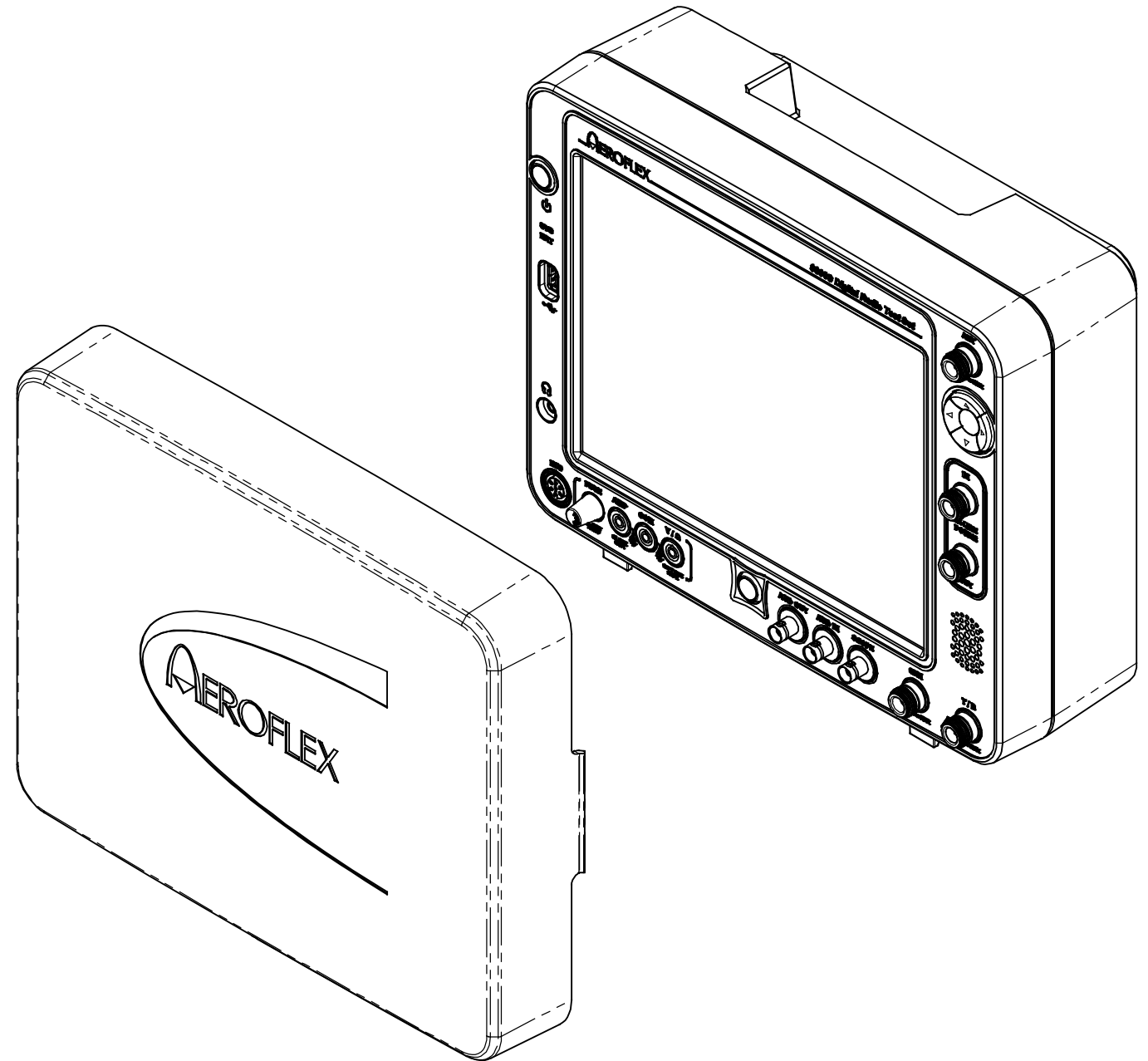
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CAUTION:
CONTAINS PARTS AND ASSEMBLIES
SUSCEPTIBLE TO DAMAGE BY
ELECTROSTATIC DISCHARGE (ESD).




8800



8800S

Figure E-1. 8800 / 8800S (Sheet 1 of 7)
(8800) (112581 A0, A1, A2, A3) (1)
(8800S) (138803 A0) (1)

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

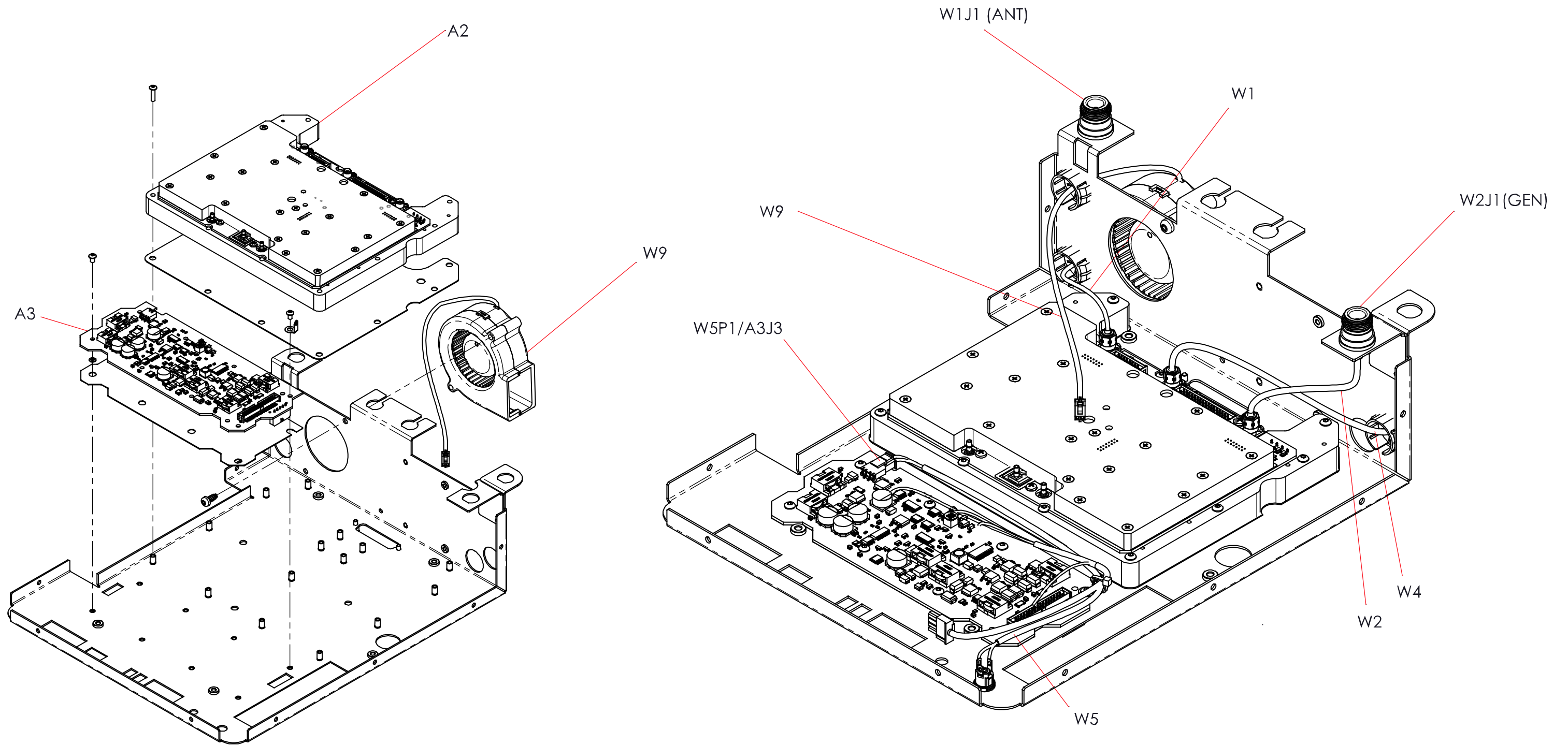


Figure E-1. 8800 / 8800S (Sheet 2 of 7)
(8800) (112581 A0, A1, A2, A3) (1)
(8800S) (138803 A0) (1)



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

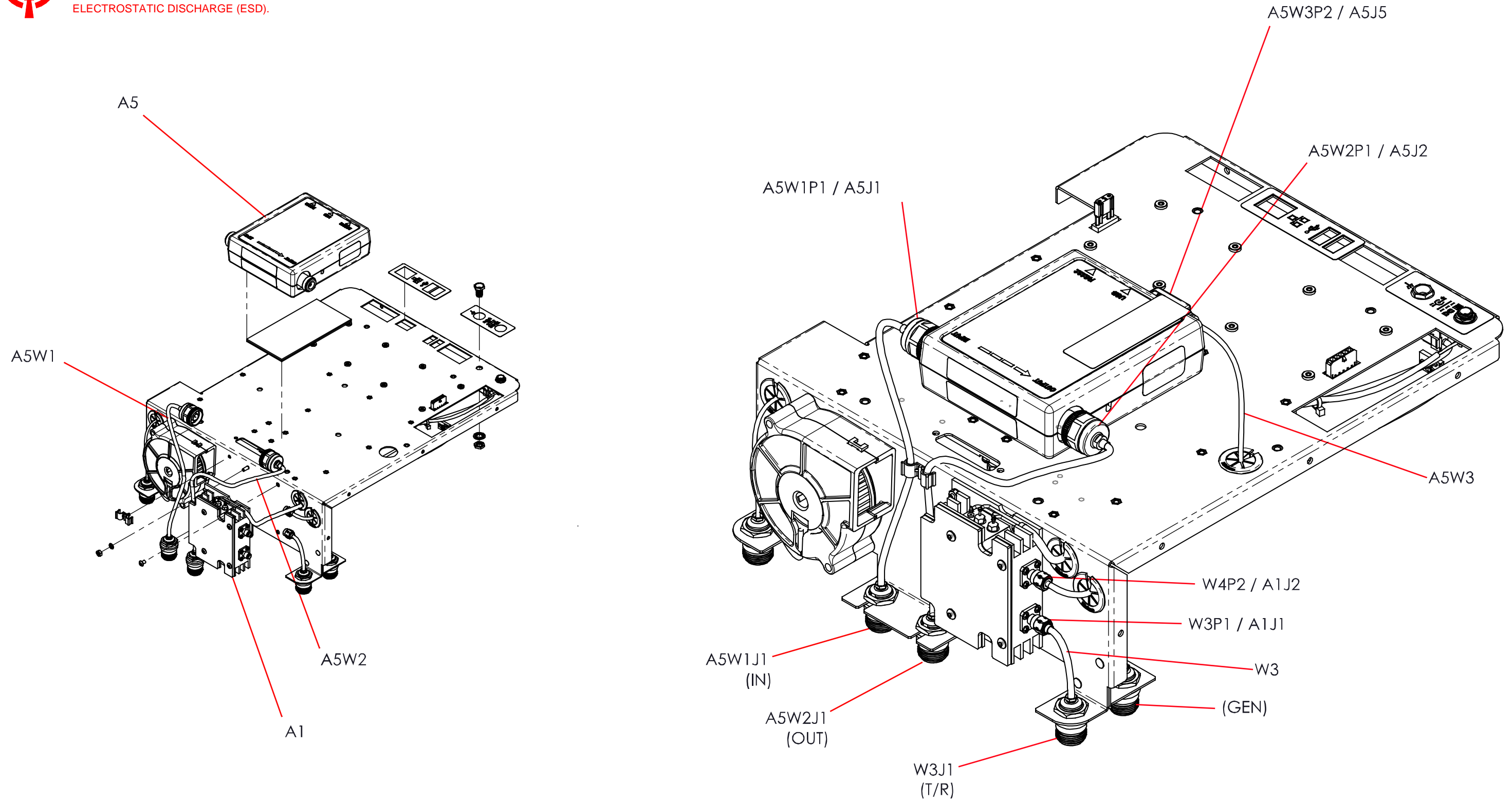


Figure E-1. 8800 / 8800S (Sheet 3 of 7)
(8800) (112581 A0, A1, A2, A3) (1)
(8800S) (138803 A0) (1)



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

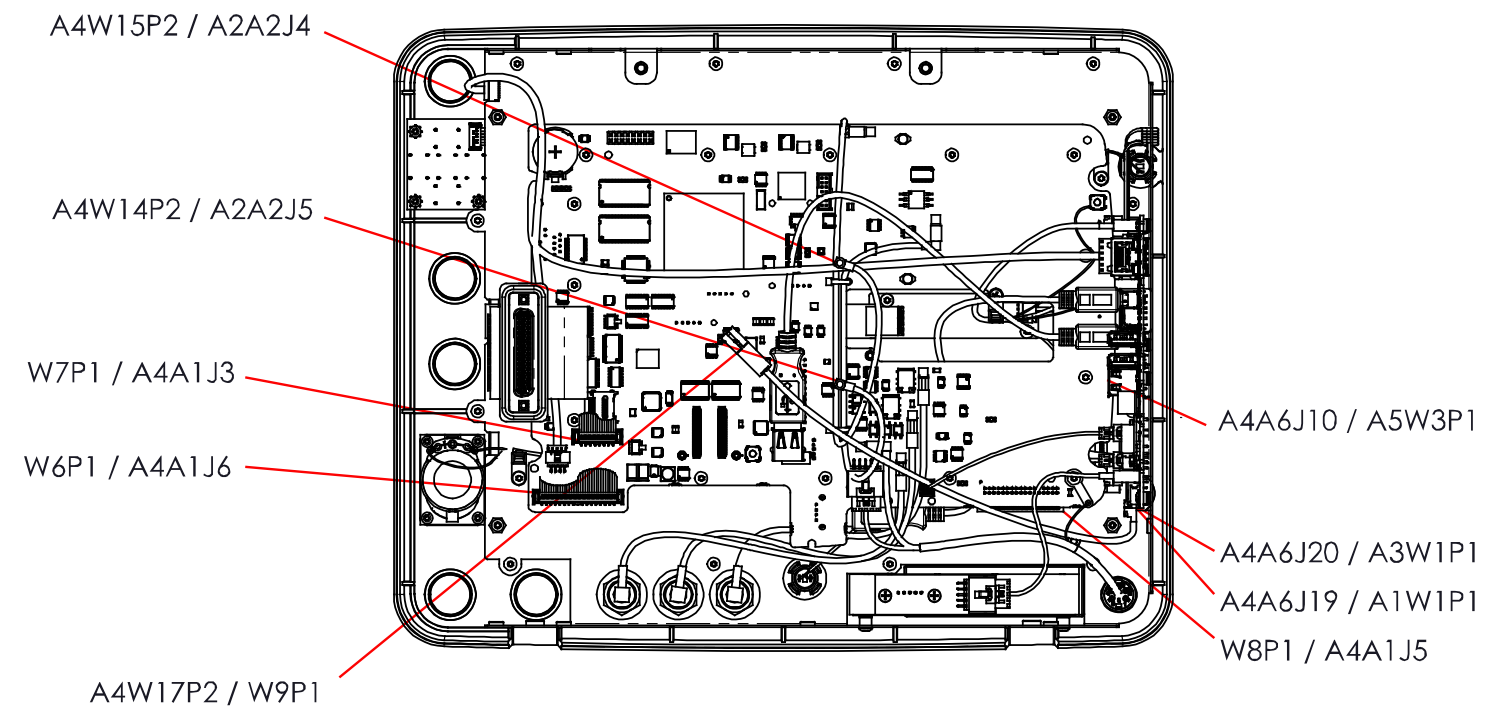
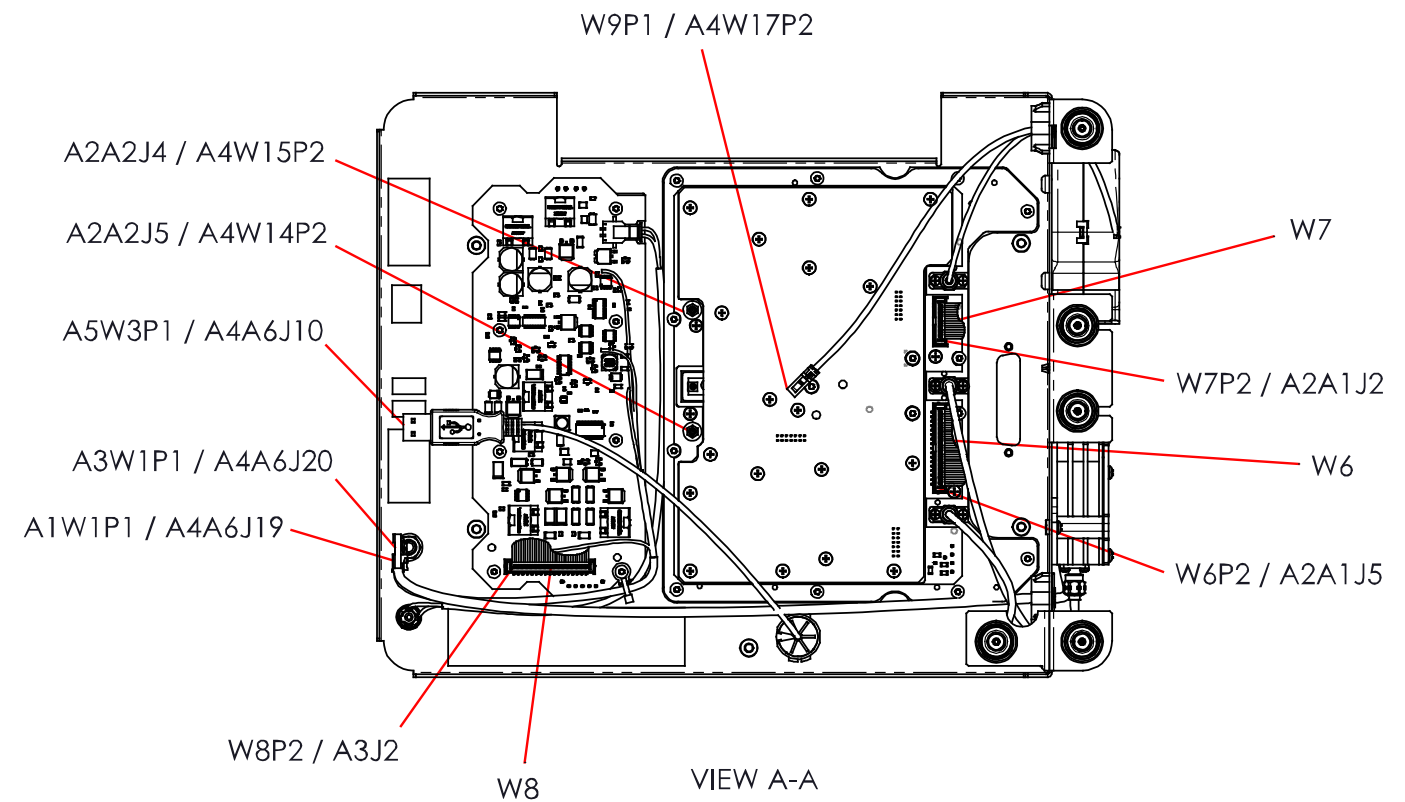
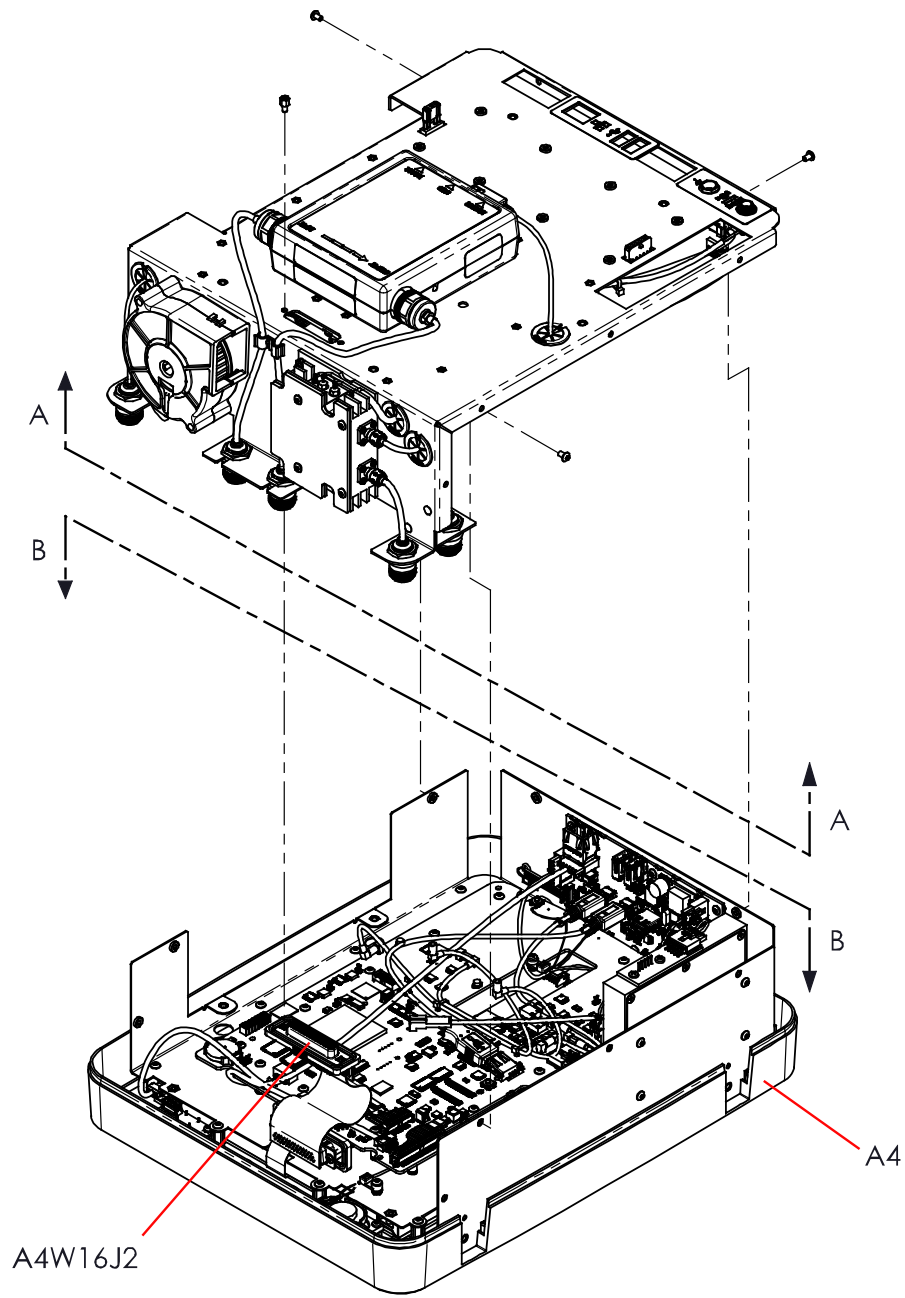
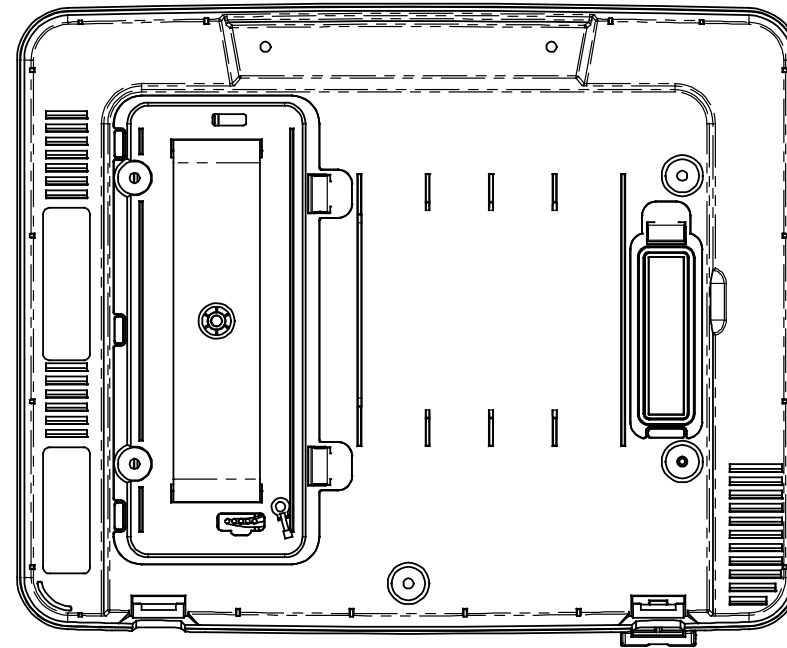
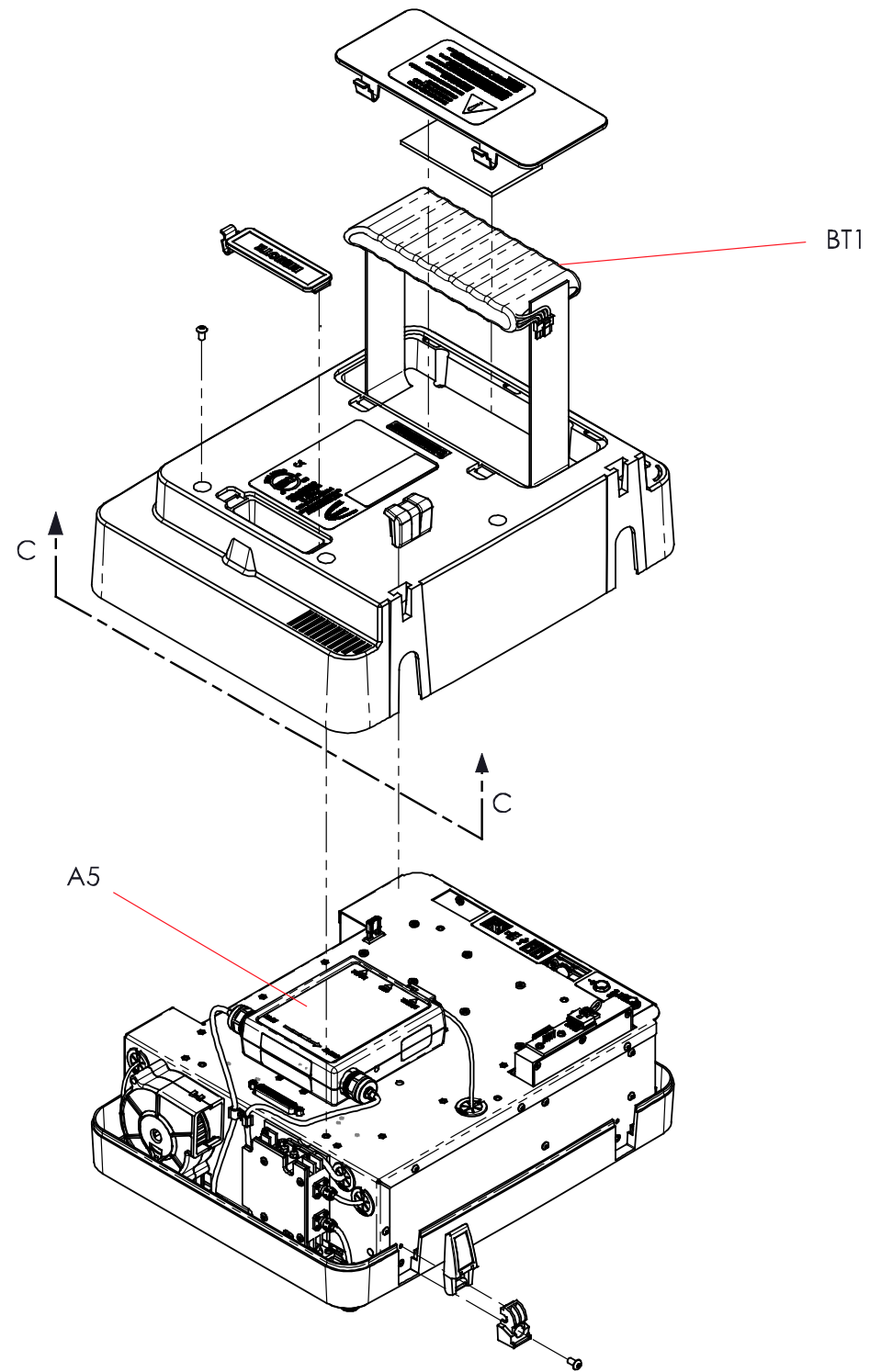


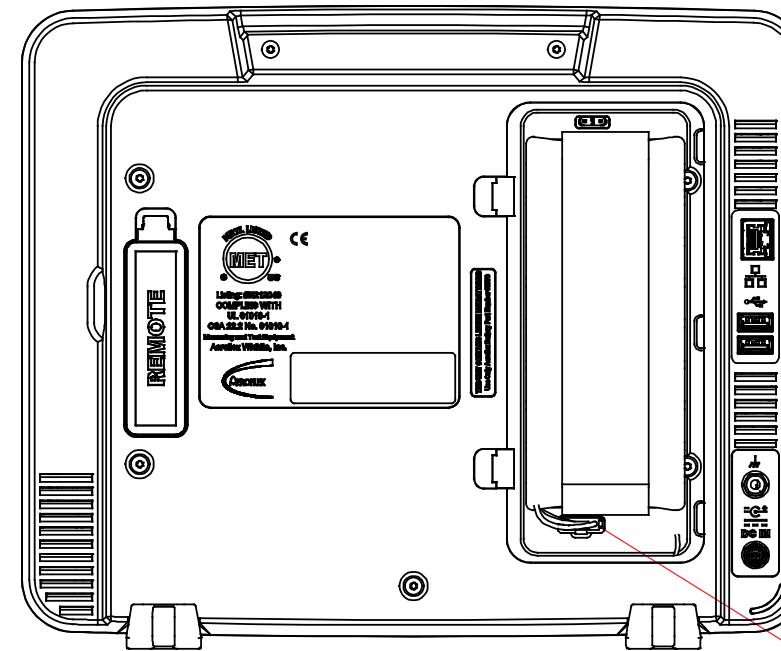
Figure E-1. 8800 / 8800S (Sheet 4 of 7)
(8800) (112581 A0, A1, A2, A3) (1)
(8800S) (138803 A0) (1)



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



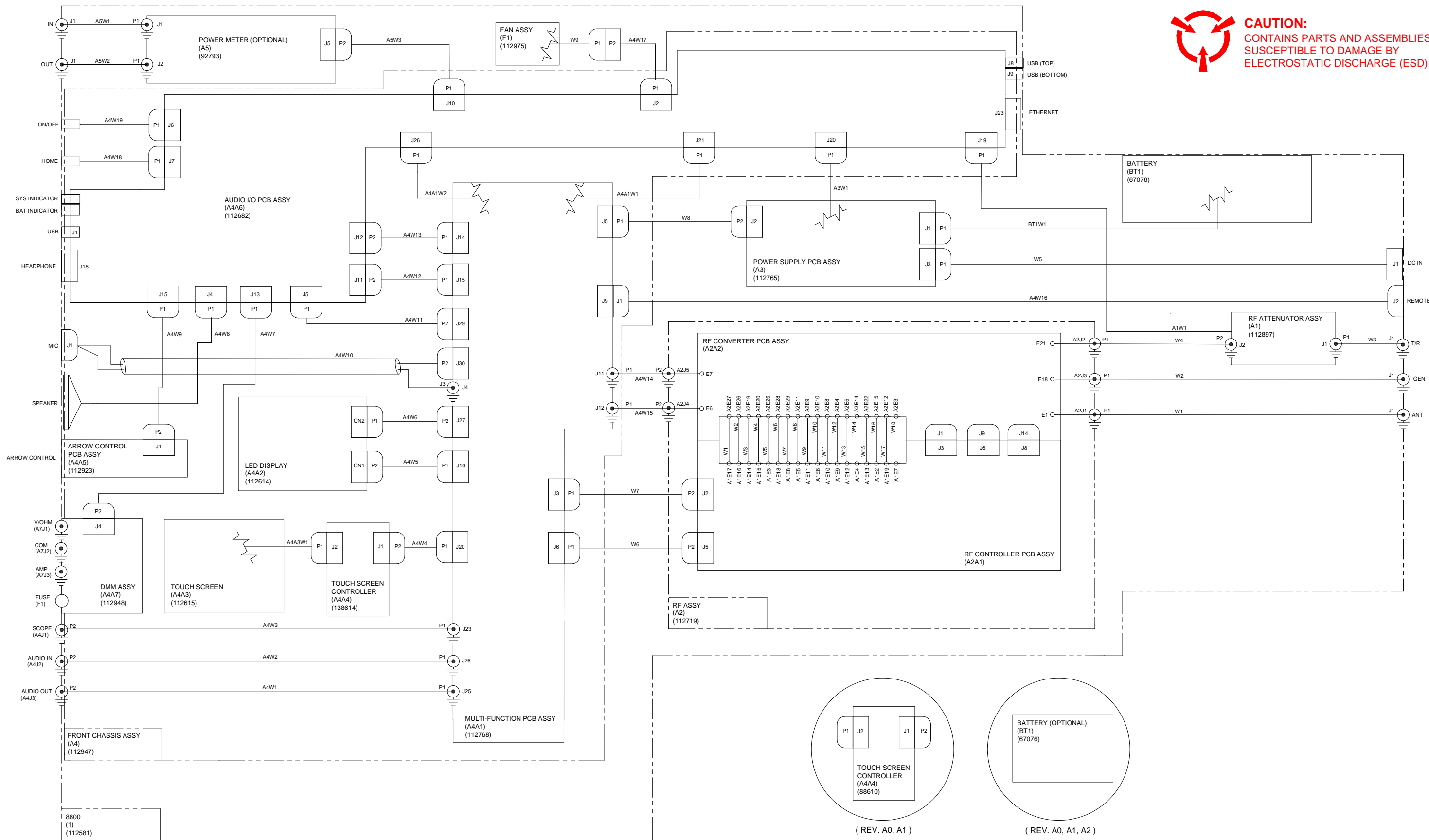
VIEW C-C



BT1W1P1/A3J1

Figure E-1. 8800 / 8800S (Sheet 5 of 7)
(8800) (112581 A0, A1, A2, A3) (1)
(8800S) (138803 A0) (1)

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



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

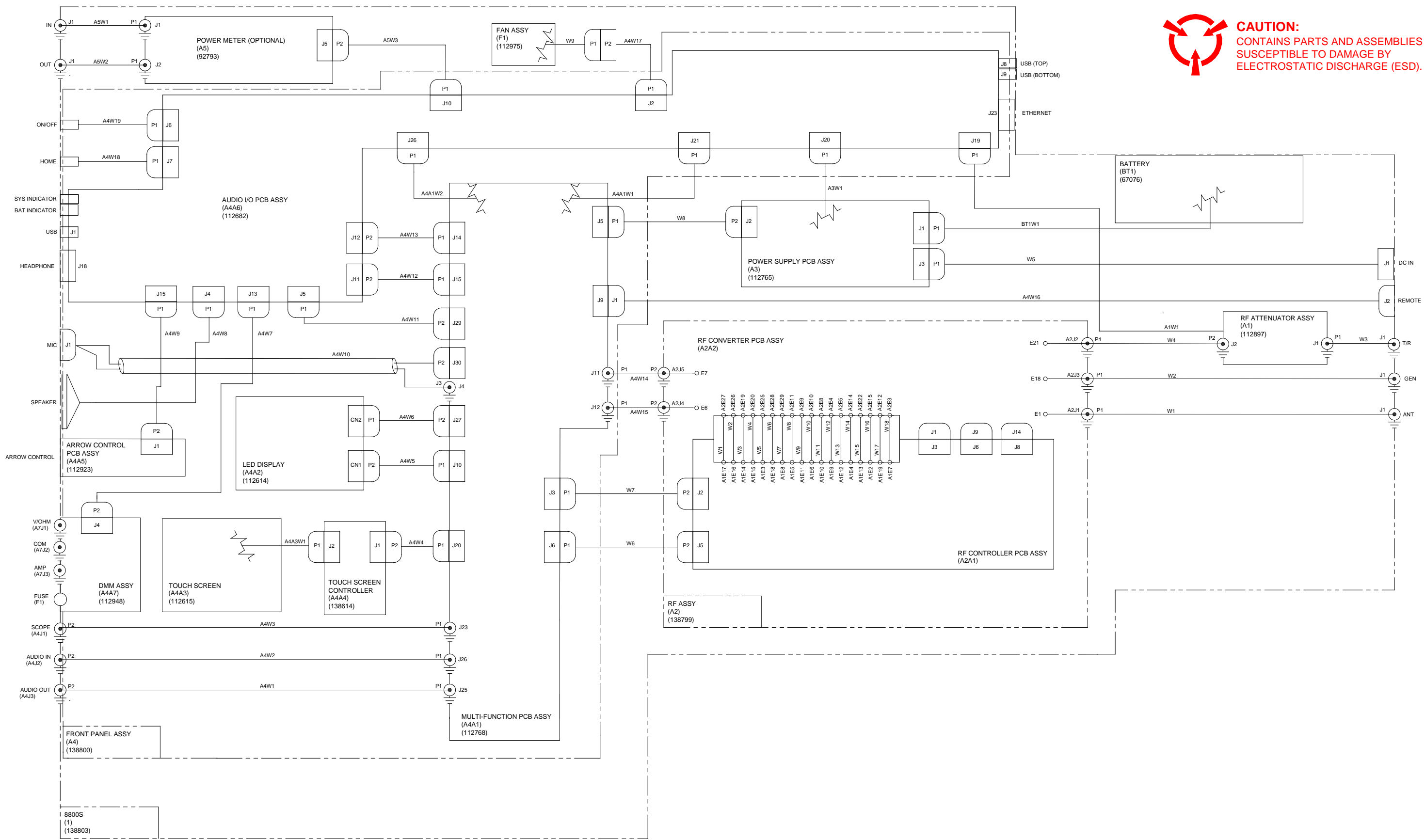


Figure E-1. 8800 / 8800S (Sheet 7 of 7)
(8800S Interconnect Diagram)



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

A1W1P1	
PIN	DESCRIPTION
1	+3.3V_PWR
2	RF_ATTEN_INT1
3	NOT USED
4	GND

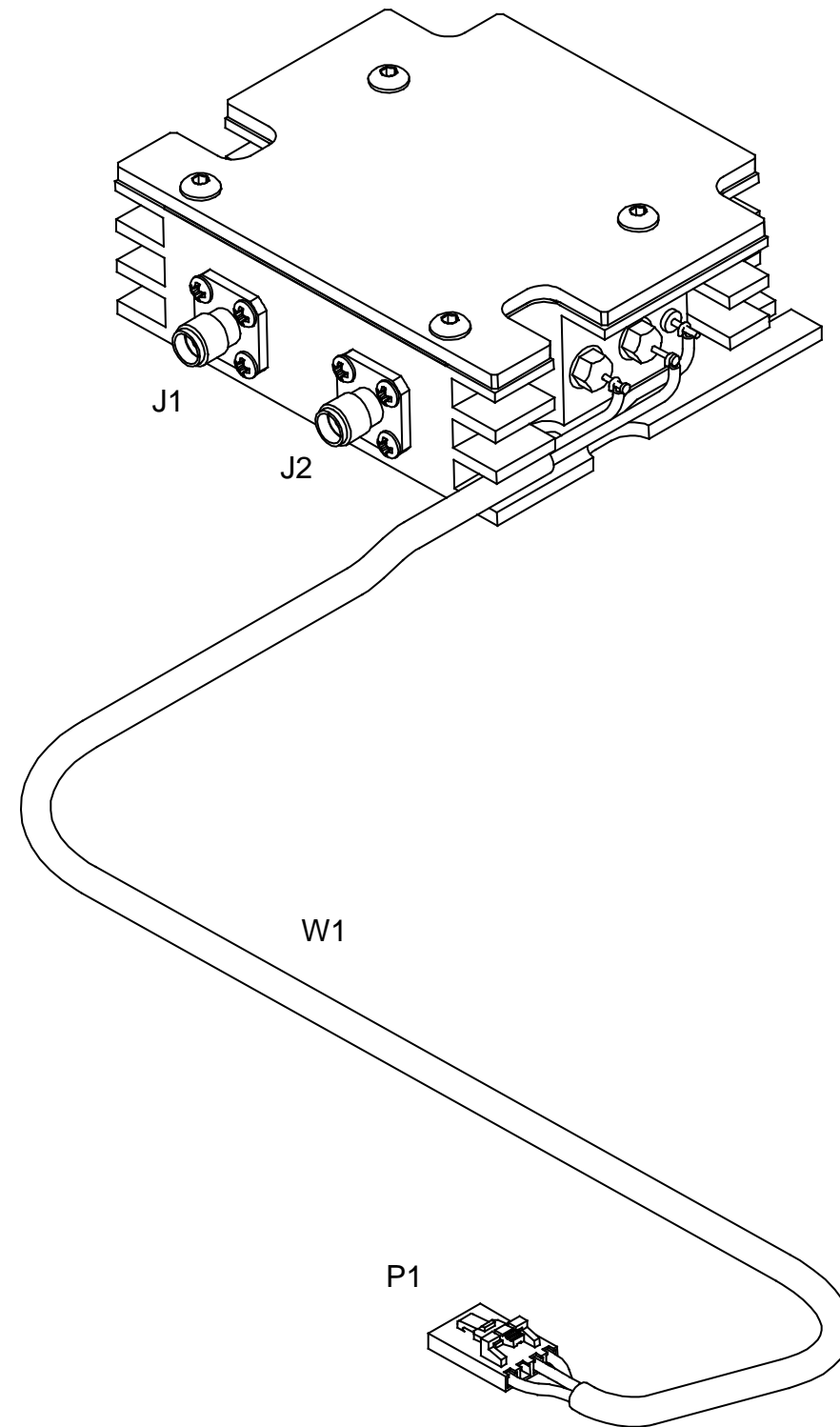
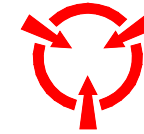


Figure E-2. RF Attenuator Assy
(112897 A0) (A1)



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

A2A1J2	
PIN	DESCRIPTION
1	+18.0 V POWER
2	+18.0 V POWER
3	+12.5 V POWER
4	+12.5 V POWER
5	GND
6	GND
7	-5.0 V POWER
8	-5.0 V POWER
9	+5.5 V POWER
10	+5.5 V POWER
11	+5.5 V POWER
12	+5.5 V POWER
13	GND
14	GND
15	+3.3 V POWER
16	+3.3 V POWER

A2A1J5	
PIN	DESCRIPTION
1	SPI2_IN_P
2	SPI2_IN_N
3	SPI2_CLK_P
4	SPI2_CLK_N
5	SPI2_DATA_P
6	SPI2_DATA_N
7	SPI2_LATCH0_P
8	SPI2_LATCH0_N
9	SPI2_LATCH1_P
10	SPI2_LATCH1_N
11	RFCLK80_EN
12	RF_INT
13	GND
14	GND
15	SPI_CLK_P
16	SPI_CLK_N
17	GND
18	GND
19	SPI_DATA_P
20	SPI_DATA_N
21	GND
22	SPI_DI_P
23	SPI_DI_N
24	GND
25	SPI_L0_P
26	SPI_L0_N
27	SPI_L1_P
28	SPI_L1_N
29	SPI_L2_P
30	SPI_L2_P
31	GND
32	GND
33	80 LVDS_P
34	80 LVDS_N

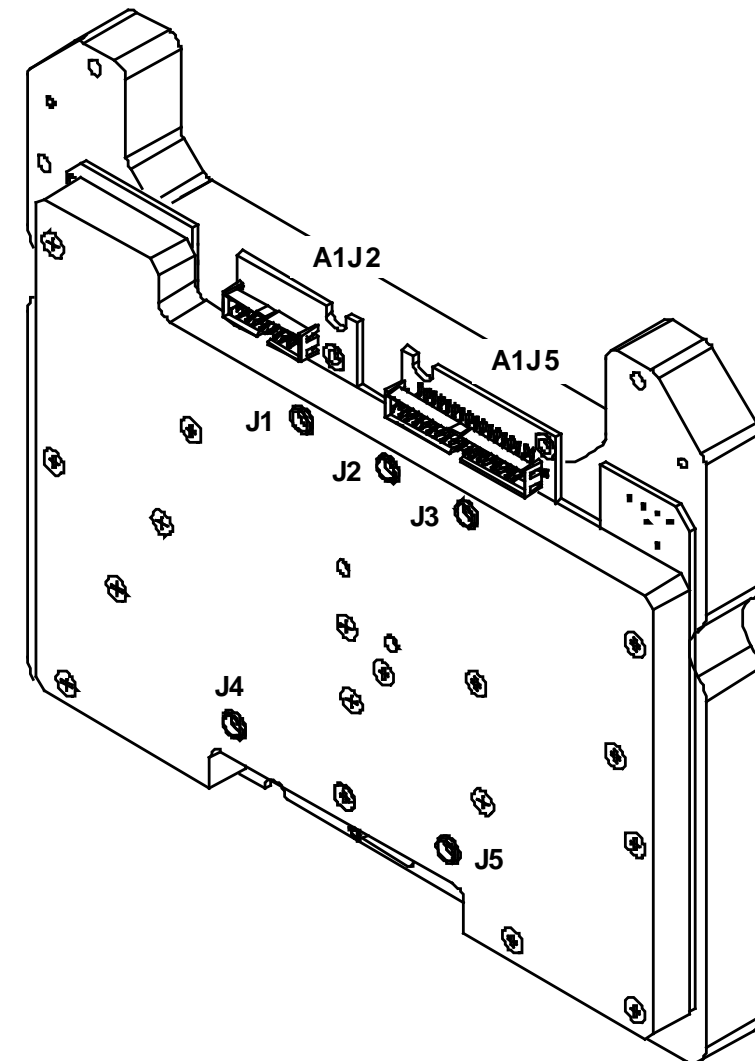


Figure E-3. RF Assy
(8800) (112719 A0) (A2)
(8800S) (138799 A0) (A2)



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

A3J1	
PIN	DESCRIPTION
1	SDA
2	SCL
3	VBTEMP
4	VBAT+
5	VBAT_

A3J2	
PIN	DESCRIPTION
1	GND
2	GND
3	+5 V
4	GND
5	+5 V
6	SDA
7	+5 V
8	SCL
9	+5 V
10	PWR_ON_OFF
11	+5 V
12	GND
13	+3.3 V
14	GND
15	+3.3 V
16	GND
17	+3.3 V
18	GND
19	+3.3 V
20	PSINT
21	+3.3 V
22	CHG
23	+18 V
24	FCHG
25	+18 V
26	+5.5 V
27	-5 V
28	+5.5 V
29	-5 V
30	GND
31	-5 V
32	GND
33	GND
34	GND

A3J3	
PIN	DESCRIPTION
1	+VIN
2	GND
3	GND
4	GND

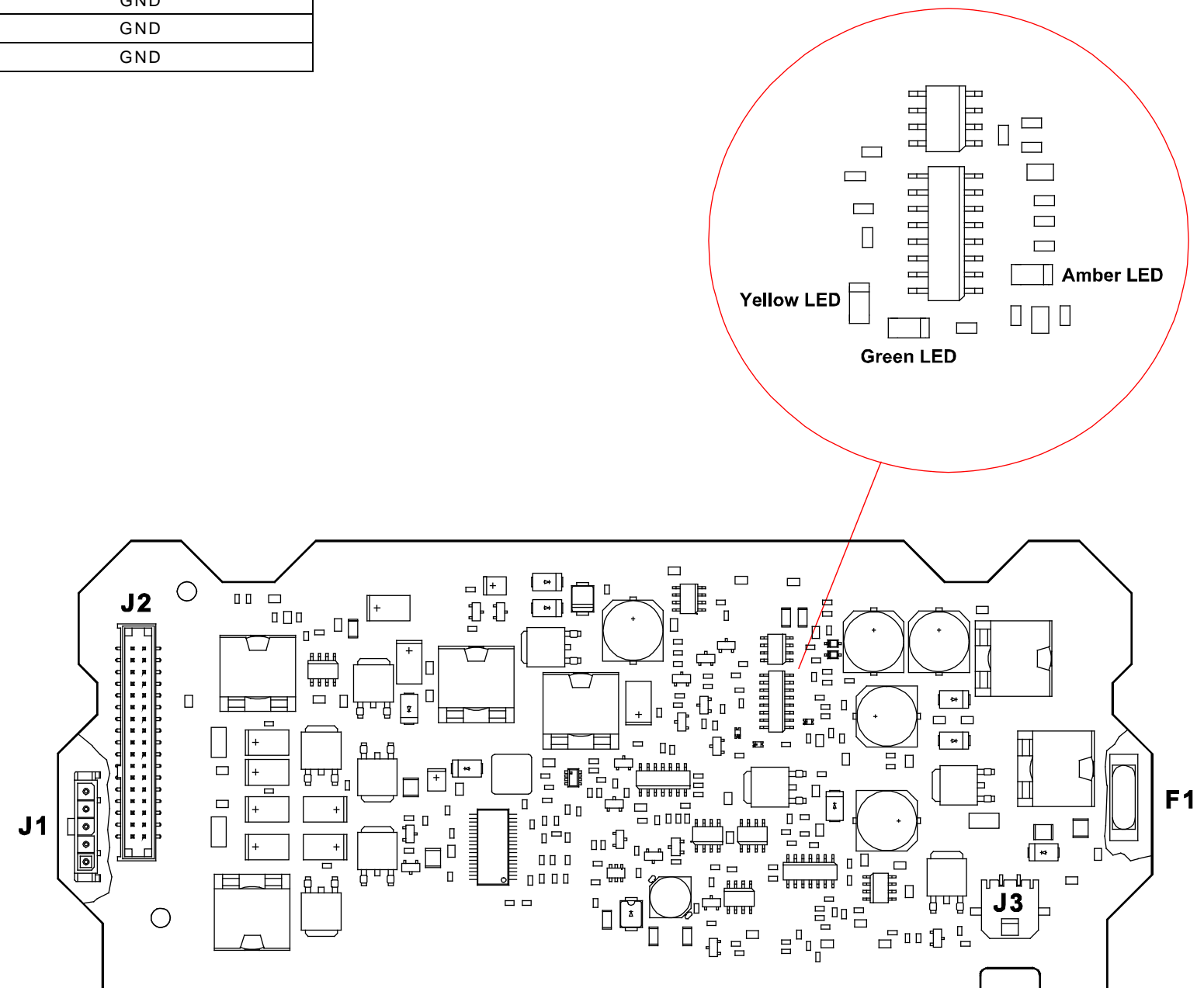


Figure E-4. Power Supply PCB Assy
(112765 A0) (A3)

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

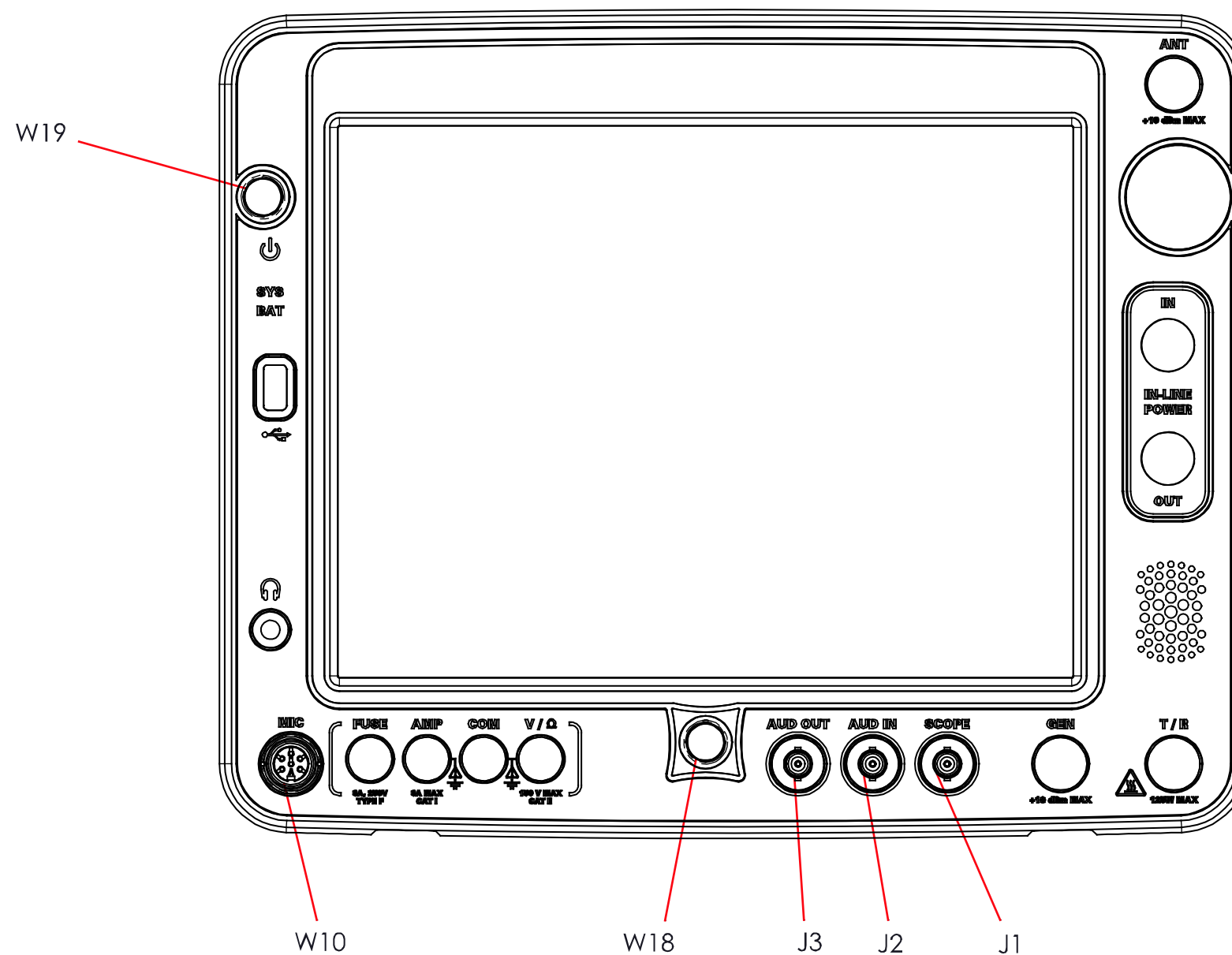


Figure E-5. Front Chassis / Panel Assy (Sheet 1 of 6)
(8800) (112947 A0, A1, B0) (A4)
(8800S) (138800 A0) (A4)



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

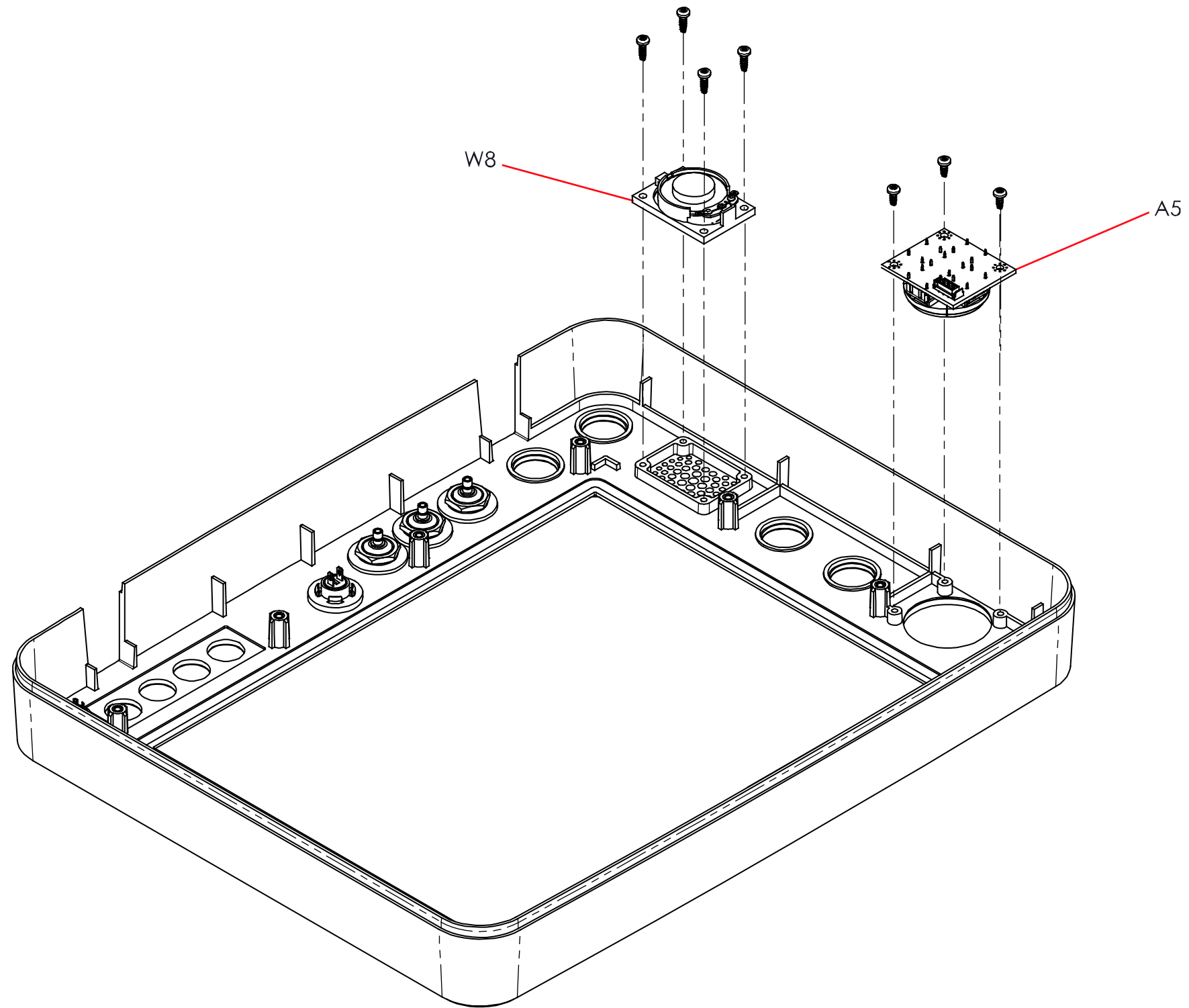


Figure E-5. Front Chassis / Panel Assy (Sheet 2 of 6)
(8800) (112947 A0, A1, B0) (A4)
(8800S) (138800 A0) (A4)



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

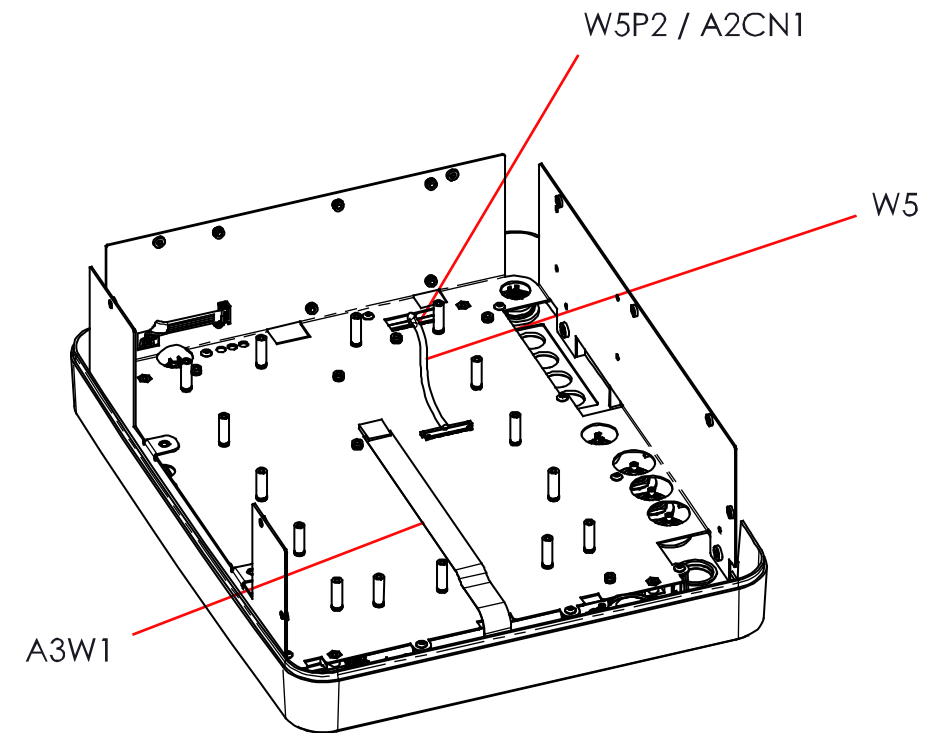
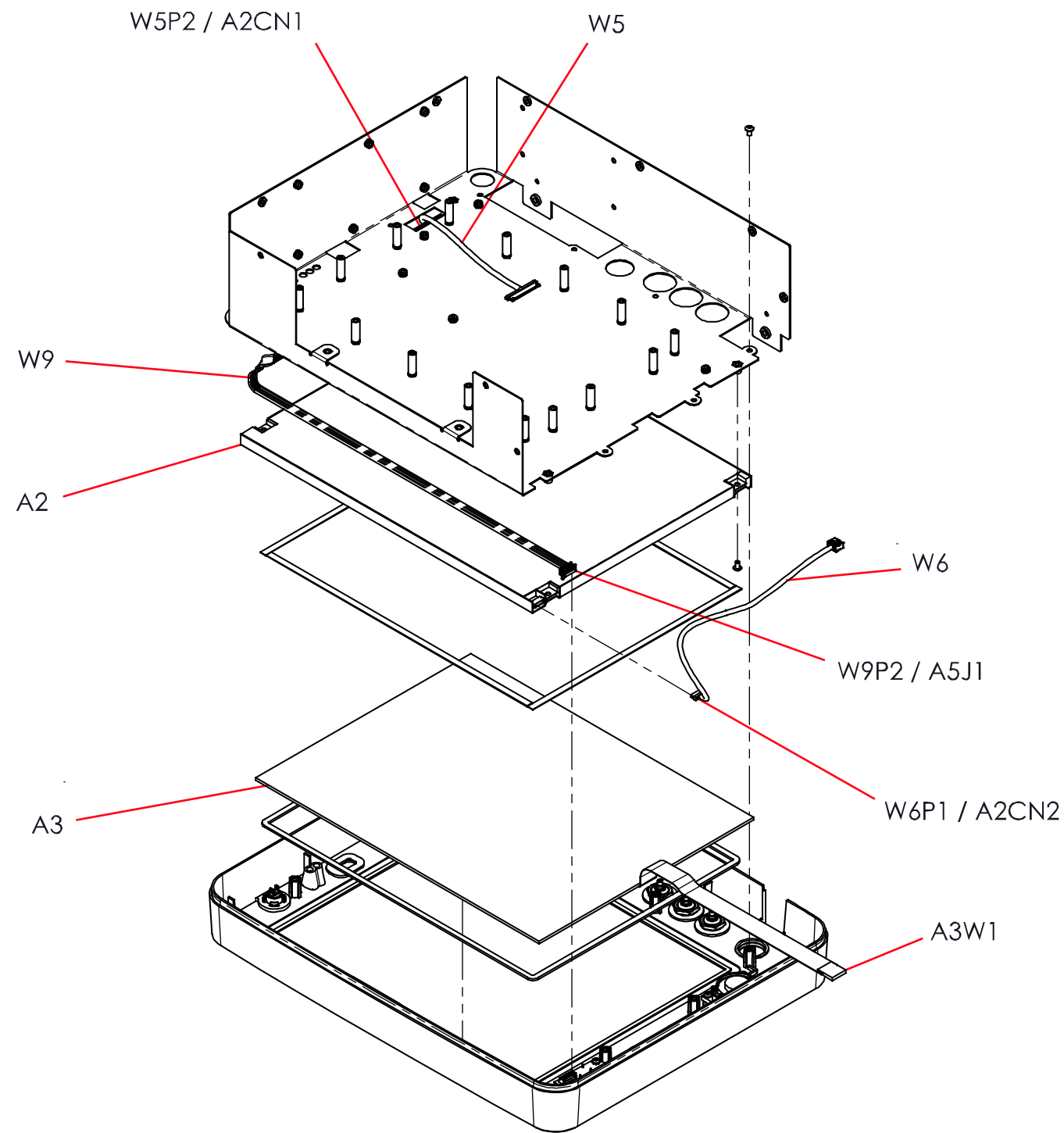


Figure E-5. Front Chassis / Panel Assy (Sheet 3 of 6)
(8800) (112947 A0, A1, B0) (A4)
(8800S) (138800 A0) (A4)



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

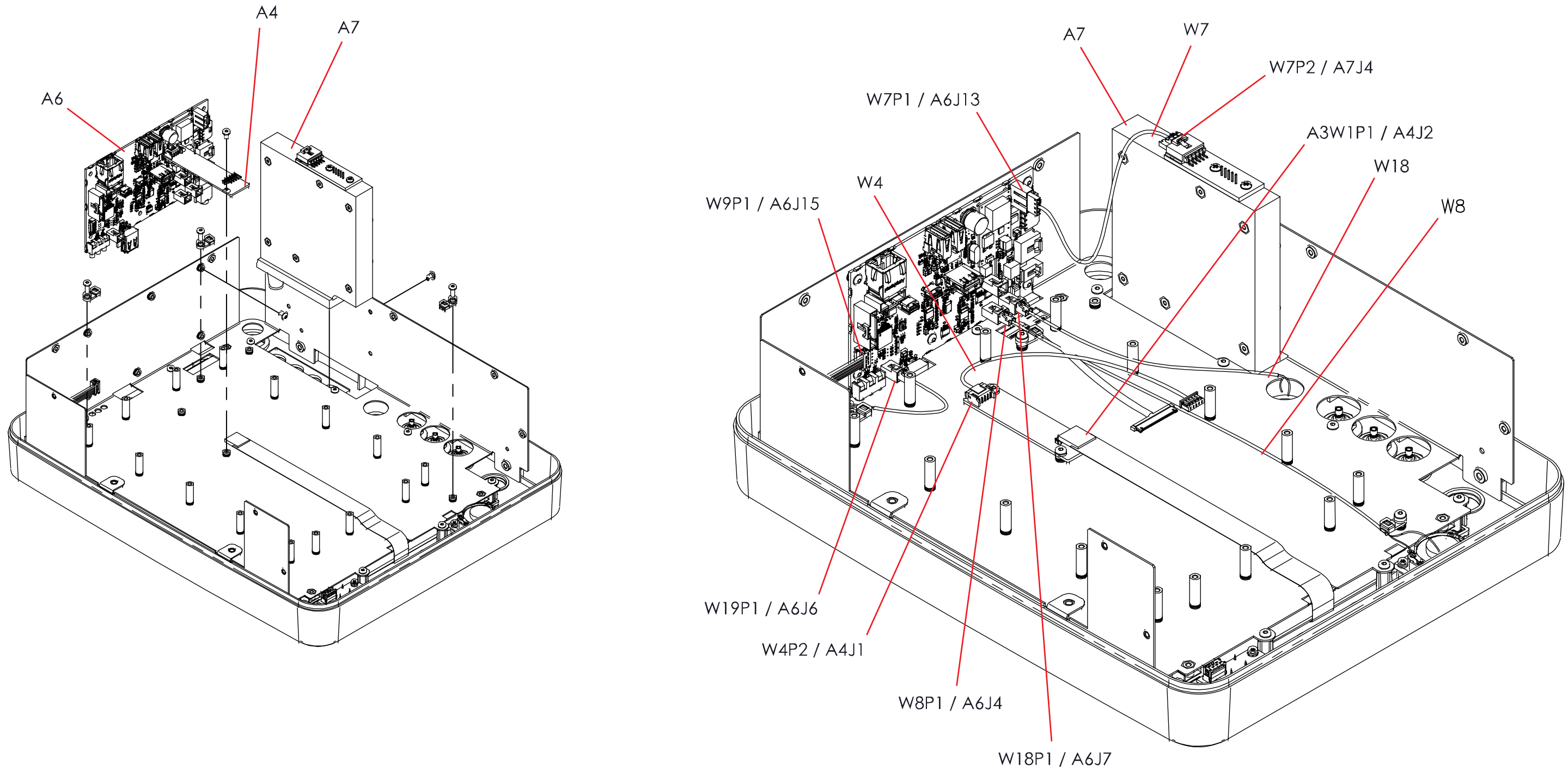
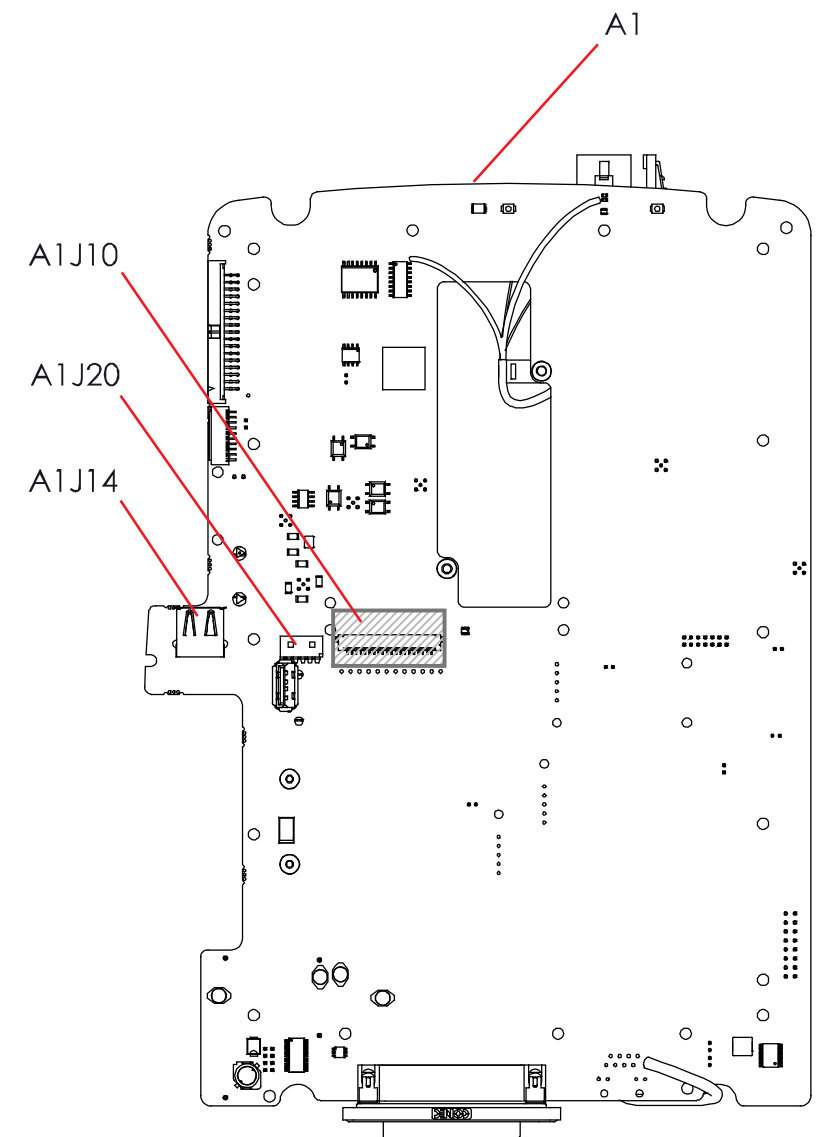
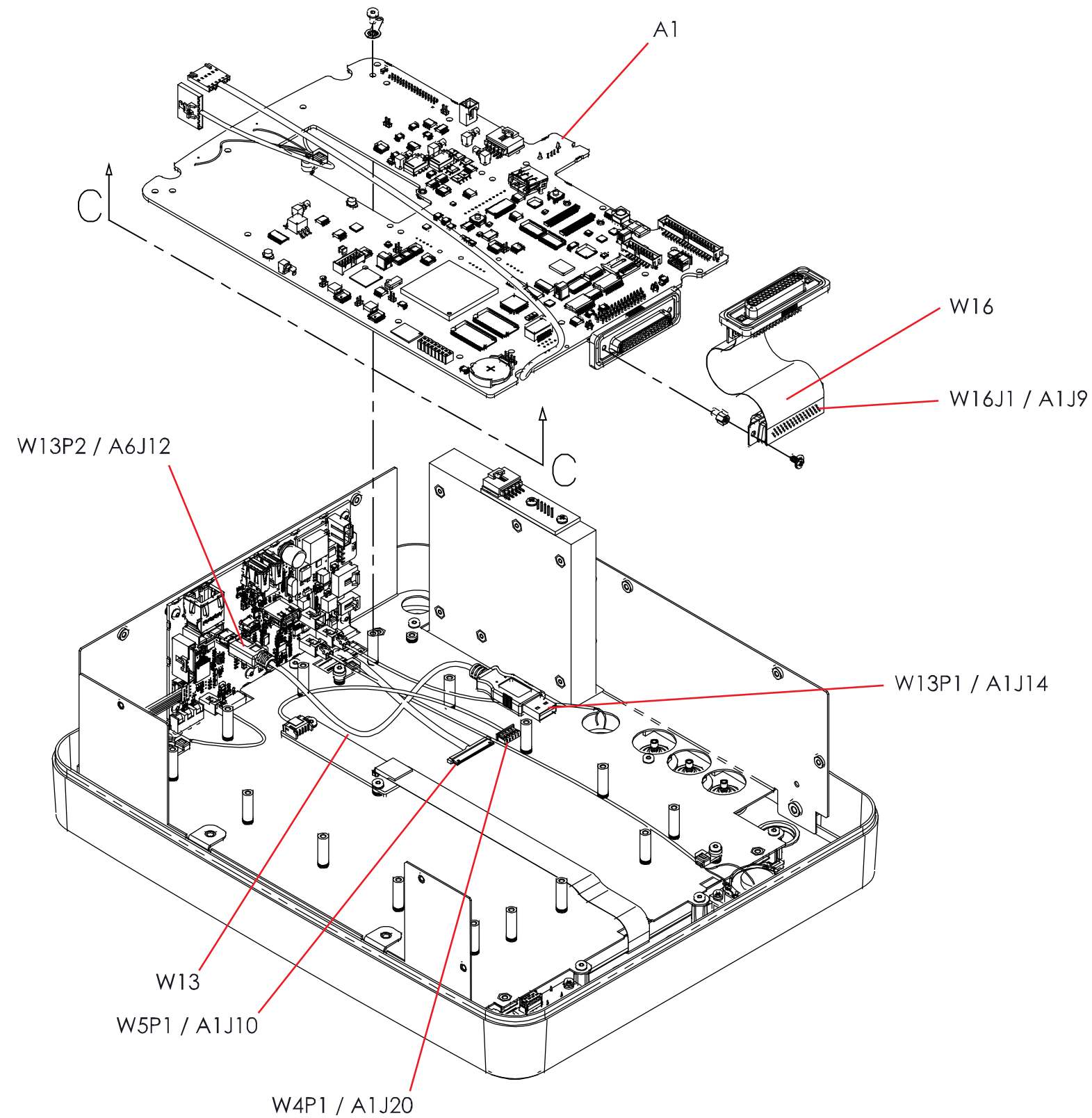


Figure E-5. Front Chassis / Panel Assy (Sheet 4 of 6)
(8800) (112947 A0, A1, B0) (A4)
(8800S) (138800 A0) (A4)



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



VIEW C-C

Figure E-5. Front Chassis / Panel Assy (Sheet 5 of 6)
(8800) (112947 A0, A1, B0) (A4)
(8800S) (138800 A0) (A4)



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

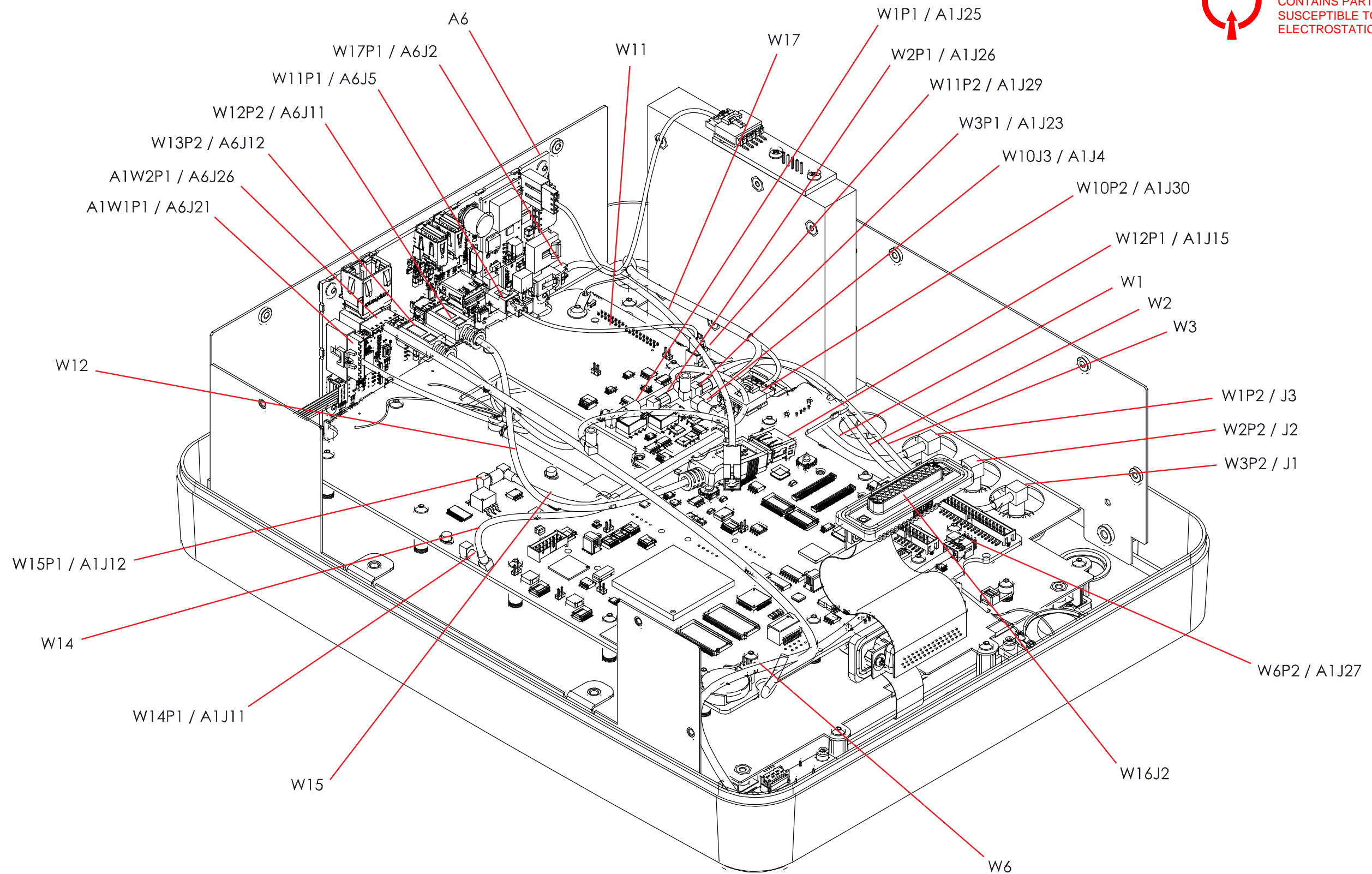

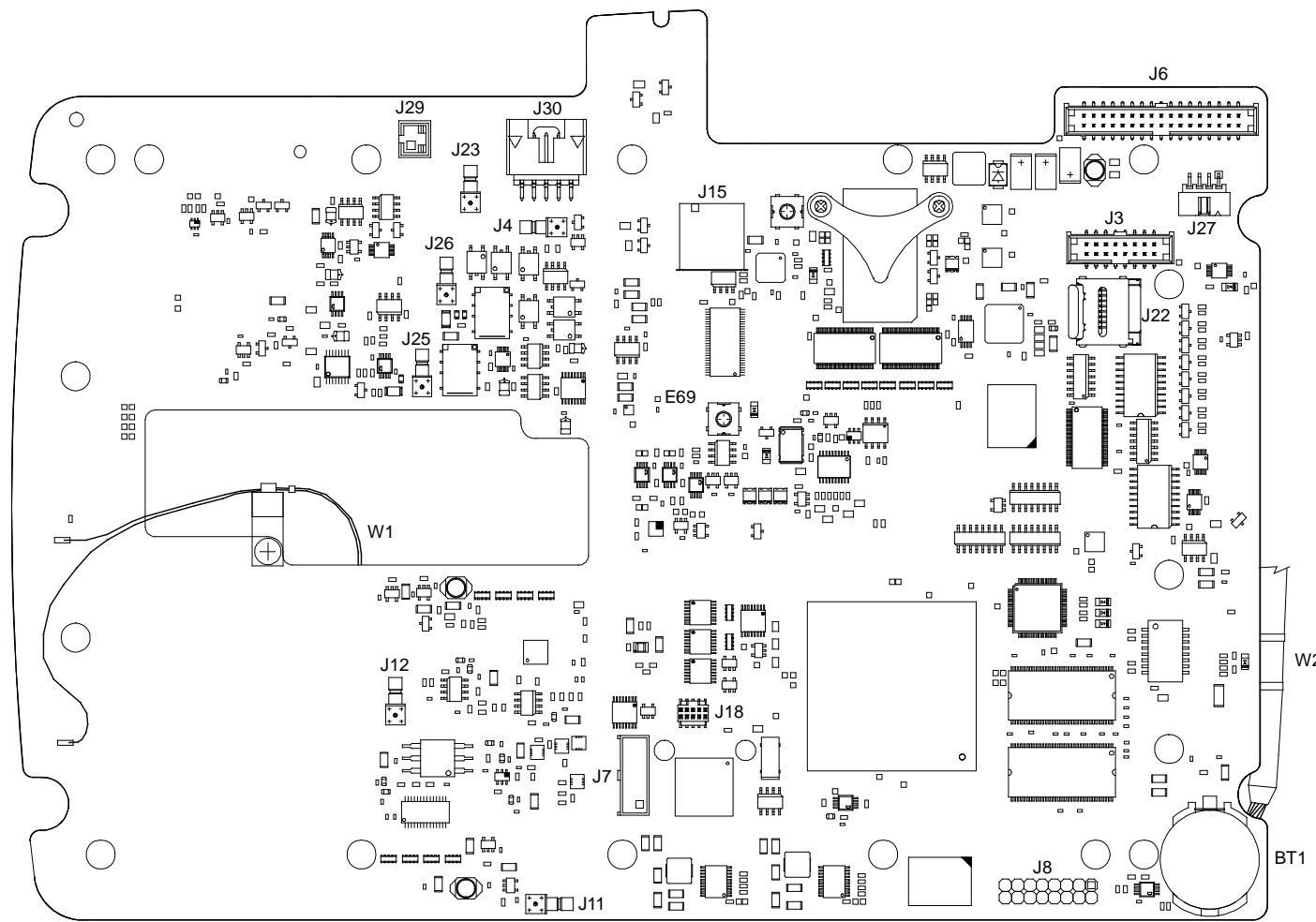
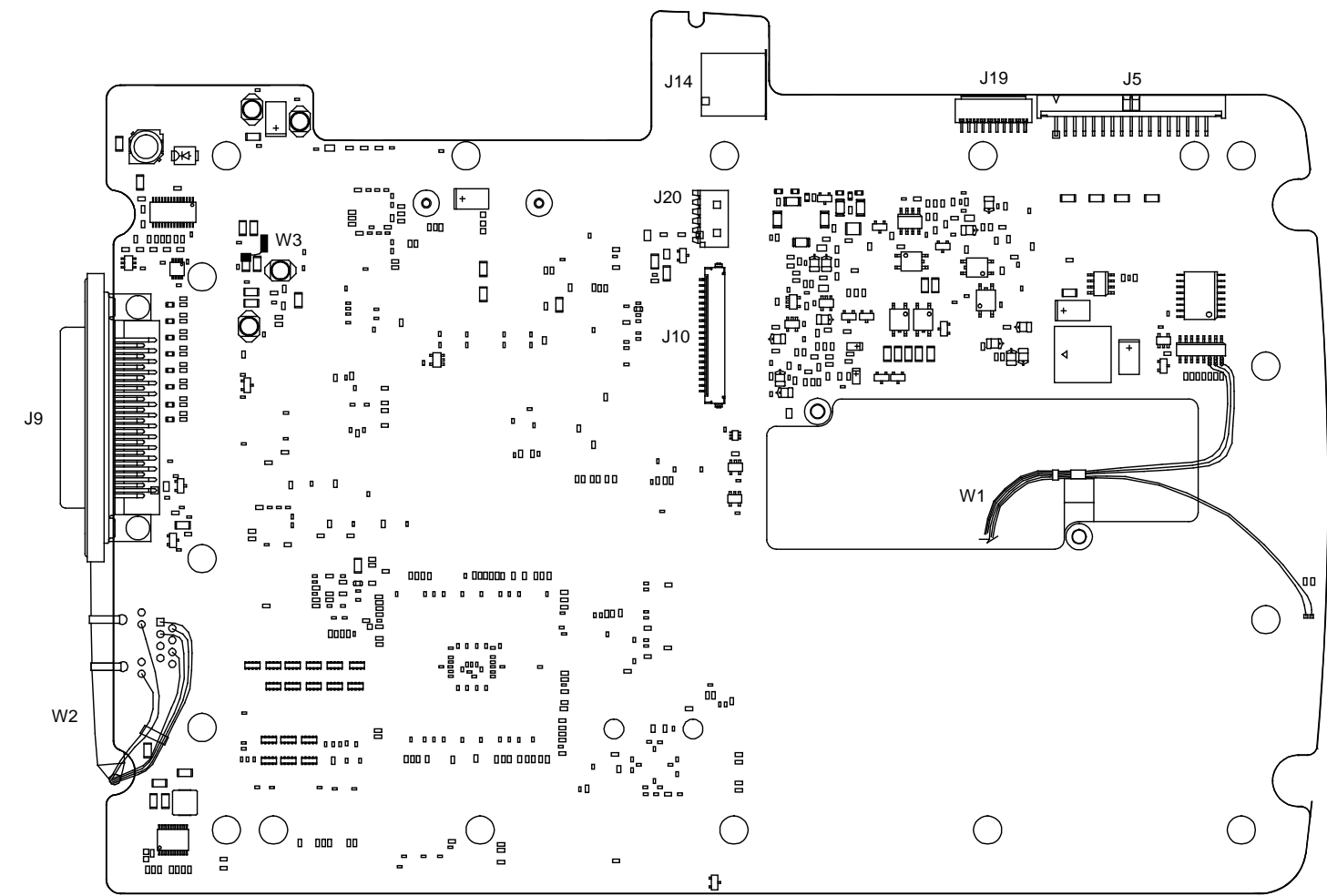


Figure E-5. Front Chassis / Panel Assy (Sheet 6 of 6)
(8800) (112947 A0, A1, B0) (A4)
(8800S) (138800 A0) (A4)

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



TOP



BOTTOM

Figure E-6. Multi-Function PCB Assy (Sheet 1 of 4)
(112768 A0, A1, A2, A3) (A4A1)



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

A4A1J3	
PIN	DESCRIPTION
1	+18.0 V POWER
2	+18.0 V POWER
3	+12.5 V POWER
4	+12.5 V POWER
5	GND
6	GND
7	-5.0 V POWER
8	-5.0 V POWER
9	+5.5 V POWER
10	+5.5 V POWER
11	+5.5 V POWER
12	+5.5 V POWER
13	GND
14	GND
15	+3.3 V POWER
16	+3.3 V POWER

A4A1J5	
PIN	DESCRIPTION
1	GND
2	GND
3	+5.0 V
4	GND
5	+5.0 V
6	BATTERY I2C SDA
7	+5.0 V
8	BATTERY I2C SCL
9	+5.0 V
10	POWER ON/OFF CONTROL
11	+5.0 V
12	GND
13	+3.3 V
14	GND
15	+3.3 V
16	GND
17	+3.3 V
18	GND
19	+3.3 V
20	POWER DOWN STATUS
21	+3.3 V
22	BATTERY CHARGING STATUS
23	RF +18.0 V
24	BATTERY FULLY CHARGED STATUS
25	RF +18.0 V
26	RF +5.5 V
27	RF -5.0 V
28	RF +5.5 V
29	RF -5.0 V
30	GND
31	RF -5.0 V
32	GND
33	GND
34	GND

A4A1J6	
PIN	DESCRIPTION
1	SPI2_IN_P
2	SPI2_IN_N
3	SPI2_CLK_P
4	SPI2_CLK_N
5	SPI2_DATA_P
6	SPI2_DATA_N
7	SPI2_LATCH0_P
8	SPI2_LATCH0_N
9	SPI2_LATCH1_P
10	SPI2_LATCH1_N
11	RFCLK80_EN
12	RF_INT
13	GND
14	GND
15	SPI_CLK_P
16	SPI_CLK_N
17	GND
18	GND
19	SPI_DATA_P
20	SPI_DATA_N
21	GND
22	SPI_DI_P
23	SPI_DI_N
24	GND
25	SPI_L0_P
26	SPI_L0_N
27	SPI_L1_P
28	SPI_L1_N
29	SPI_L2_P
30	SPI_L2_N
31	GND
32	GND
33	80LVDS_P
34	80LVDS_N

A4A1J7	
PIN	DESCRIPTION
1	GND
2	VREF
3	GND
4	TEST MODE SELECT
5	GND
6	TEST CLOCK
7	GND
8	TEST DATA OUT
9	GND
10	TEST DATA IN
11	GND
12	DO NOT CONNECT
13	PSEUDO-GND
14	HALT

A4A1J8	
PIN	DESCRIPTION
1	Q ACKNOWLEDGE
2	TEST DATA OUT
3	TEST RESET
4	TEST DATA IN
5	+3.3 V
6	PPC HALTED STATUS
7	NOT USED
8	TEST CLOCK
9	NOT USED
10	TEST MODE SELECT
11	NOT USED
12	PPC HALT
13	NOT USED
14	HARDWARE RESET
15	GND
16	CLOCK/STEP OUT

Figure E-6. Multi-Function PCB Assy (Sheet 2 of 4)
(112768 A0, A1, A2, A3) (A4A1)



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

A4A1J9		PIN	DESCRIPTION
1	OMAP USB +5 V VBUS	40	REMOTE GPIO4
2	OMAP USB GND	41	REMOTE GPIO0
3	ACCESSORY +5 V	42	OMAP CONSOLE UART REQUEST TO SEND
4	PPC DEBUG UART TRANSMIT	43	OMAP CONSOLE UART CLEAR TO SEND
5	GND	44	BREAKOUT BOX DETECT
6	OMAP RCI UART REQUEST TO SEND		
7	GND		
8	PPC ETHERNET RECEIVE-		
9	PPC ETHERNET TRANSMIT-		
10	GND		
11	PPC USER UART REQUEST TO SEND		
12	PPC USER UART RECEIVE		
13	REMOTE GPIO7		
14	REMOTE GPIO6		
15	REMOTE GPIO2		
16	OMAP USB DATA-		
17	OMAP USB DATA+		
18	OMAP CONSOLE UART TRANSMIT		
19	OMAP CONSOLE UART RECEIVE		
20	GND		
21	OMAP RCI UART TRANSMIT		
22	OMAP RCI UART CLEAR TO SEND		
23	GND		
24	PPC ETHERNET TRANSMIT+		
25	GND		
26	PPC USER UART CLEAR TO SEND		
27	PPC USER UART TRANSMIT		
28	REMOTE GPIO5		
29	REMOTE GPIO1		
30	REMOTE GPIO3		
31	(OMAP USB +5 V VBUS)		
32	(OMAP USB GND)		
33	(ACCESSORY +5 V [500 mA MAX])		
34	PPC DEBUG UART RECEIVE		
35	GND		
36	OMAP RCI UART RECEIVE		
37	GND		
38	PPC ETHERNET RECEIVE+		
39	GND		

A4A1J10		PIN	DESCRIPTION
1	LCD +3.3 V POWER		
2	LCD +3.3 V POWER		
3	GND		
4	GND		
5	LVDS CHAN0 DATA-		
6	LVDS CHAN0 DATA+		
7	GND		
8	LVDS CHAN1 DATA-		
9	LVDS CHAN1 DATA+		
10	GND		
11	LVDS CHAN2 DATA-		
12	LVDS CHAN2 DATA+		
13	GND		
14	LVDS CLOCK-		
15	LVDS CLOCK+		
16	GND		
17	LVDS CHAN3 DATA-		
18	LVDS CHAN3 DATA+		
19	8-BIT/16-BIT MODE		
20	MIRROR/NORMAL SCAN		

A4A1J14		PIN	DESCRIPTION
1	VCC		
2	D-		
3	D+		
4	GND		

A4A1J15		PIN	DESCRIPTION
1	VCC		
2	D-		
3	D+		
4	GND		

Figure E-6. Multi-Function PCB Assy (Sheet 3 of 4)
(112768 A0, A1, A2, A3) (A4A1)



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

A4A1J19	
PIN	DESCRIPTION
1	+18 V
2	+5.5 V
3	+5.0 V
4	+3.3 V
5	NOT USED
6	-5.0 V
7	GND
8	GND
9	GND
10	GND

A4A1J20	
PIN	DESCRIPTION
1	VBUS +5 V
2	DATA-
3	DATA+
4	GND
5	SHIELD

A4A1J22	
PIN	DESCRIPTION
1	SD1_DATA2
2	SD1_DATA3
3	SD1_CMD
4	V_MMC1
5	SD1_CLK
6	GND
7	SD1_DATA0
8	SD1_DATA1

A4A1J27	
PIN	DESCRIPTION
1	CH1 ANODE (+)
2	CH1 CATHODE (-)
3	CH3 ANODE (+)
4	CH3 CATHODE (-)
5	CH4 ANODE (+)
6	CH4 CATHODE (-)
7	CH2 ANODE (+)
8	CH2 CATHODE (-)

A4A1J29	
PIN	DESCRIPTION
1	SPKR+
2	SPKR-


A4A1J30	
PIN	DESCRIPTION
1	PUSH-TO-TALK SWITCH
2	MIC SELECT 1
3	GND
4	SPEAKER OUTPUT
5	MIC SELECT 2

Figure E-6. Multi-Function PCB Assy (Sheet 4 of 4)
(112768 A0, A1, A2, A3) (A4A1)

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



Figure E-7. LED Display Assy
(112614 A0) (A4A2)

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

A3W1P1	
PIN	DESCRIPTION
1	RT / UR
2	RL / UL
3	SG / COM
2	LT / LR
3	LL / LL

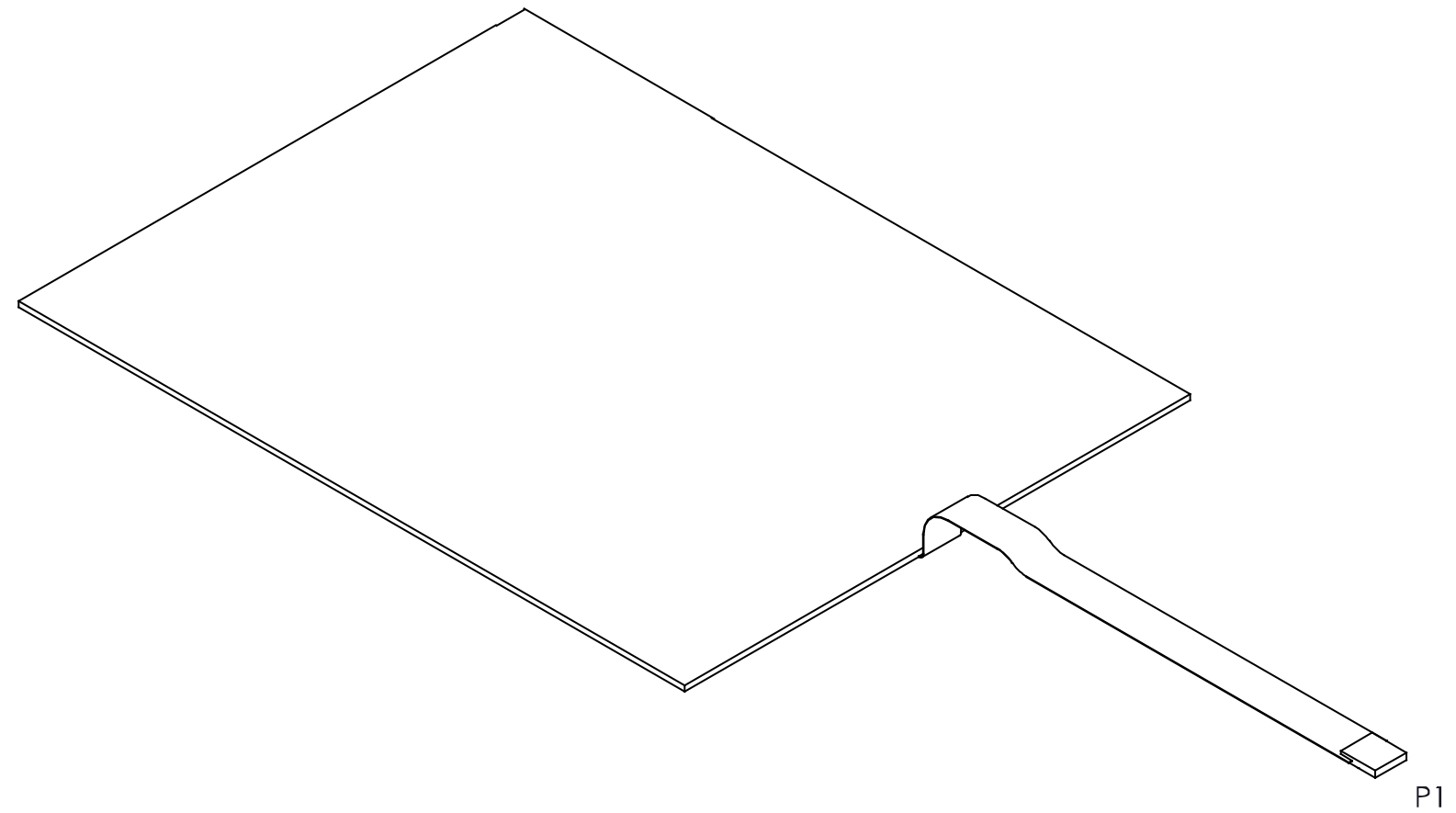
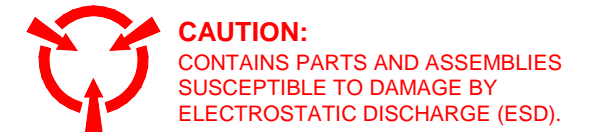


Figure E-8. Touch Screen Assy
(112615 A0) (A4A3)



A4A4J1	
PIN	DESCRIPTION
1	G
2	V
3	G
4	D+
5	D-

A4A4J2	
PIN	DESCRIPTION
1	UR
2	UL
3	COM
4	LR
5	LL

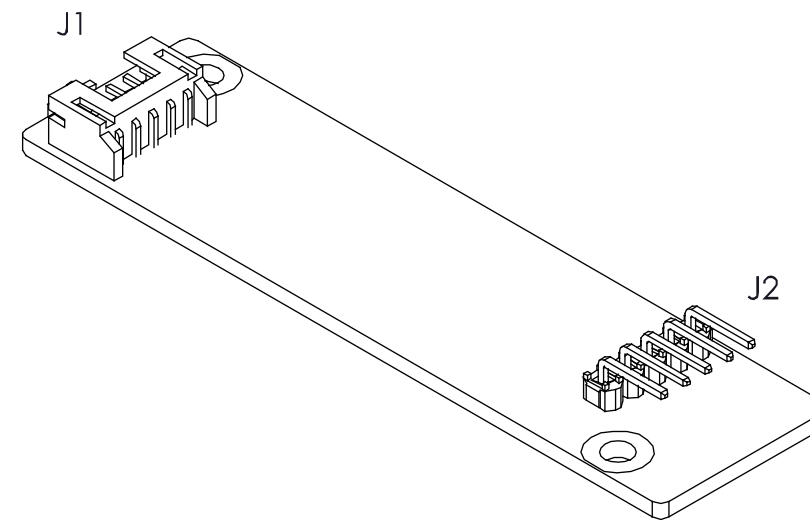

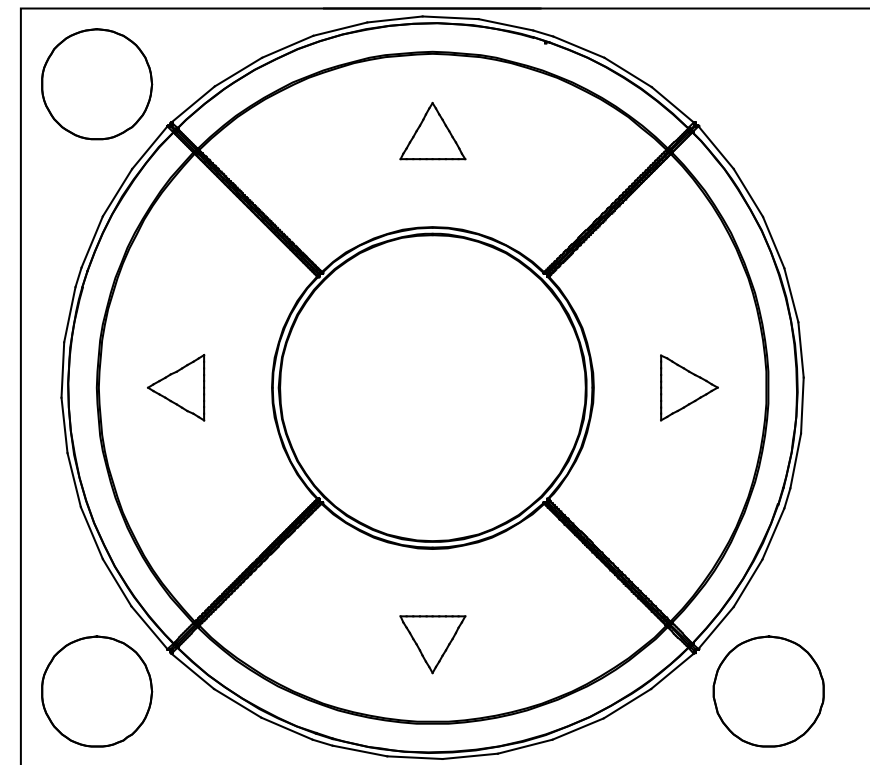


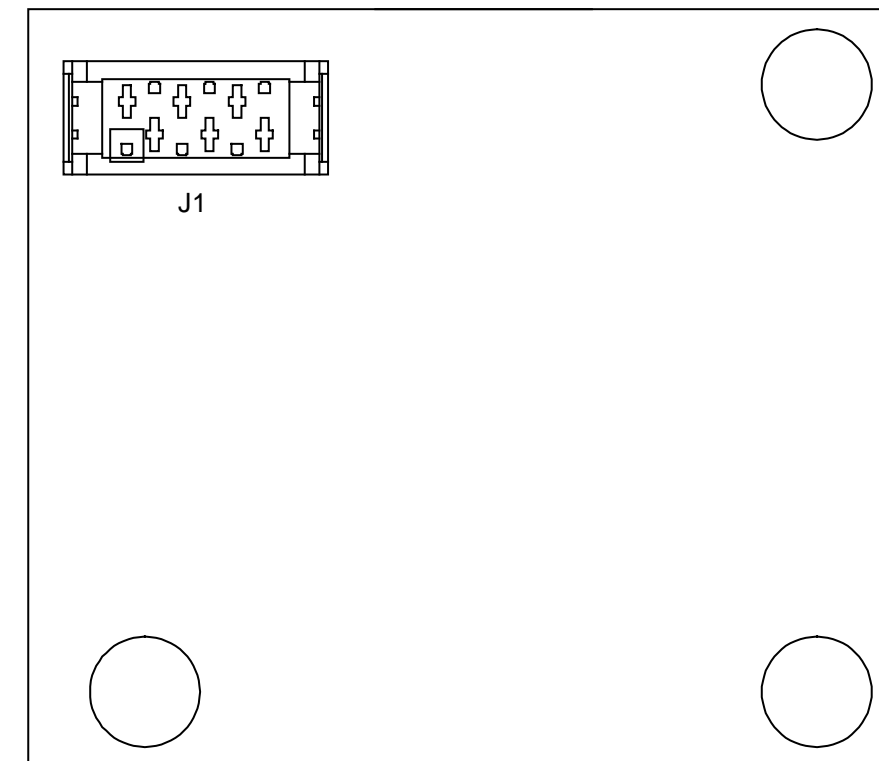
Figure E-9. Touch Screen Controller PCB Assy
(138614 A0) (A4A4)

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

A4A5J1	
PIN	DESCRIPTION
1	SW4_HID
2	SW5_HID
3	SW3_HID
4	SW1_HID
5	SW2_HID
6	GND




TOP



BOTTOM

Figure E-10. Arrow Control PCB Assy
(112923 A0) (A4A5)

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

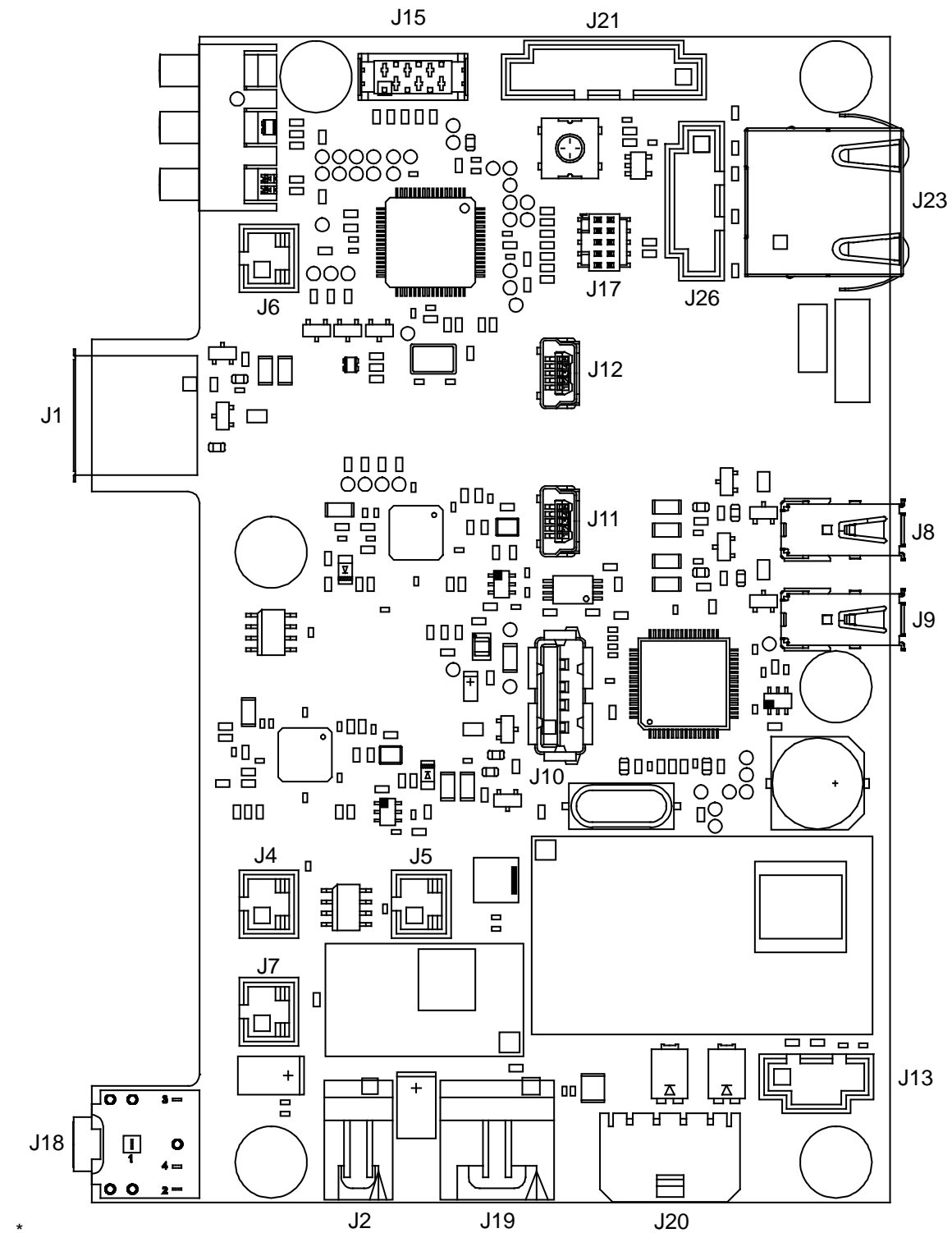


Figure E-11. Audio I/O PCB Assy (Sheet 1 of 2)
(112682 A0, B0, B1, C0) (A4A6)



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

A4A6J1	
PIN	DESCRIPTION
1	VCC
2	D-
3	D+
4	GND

A4A6J2	
PIN	DESCRIPTION
1	+12V
2	GND

A4A6J4	
PIN	DESCRIPTION
1	SPEAKER+
2	SPEAKER-

A4A6J5	
PIN	DESCRIPTION
1	SPEAKER+
2	SPEAKER-

A4A6J6	
PIN	DESCRIPTION
1	ON_OFF_SW
2	GND

A4A6J7	
PIN	DESCRIPTION
1	HOME_SW
2	GND

A4A6J8	
PIN	DESCRIPTION
1	VCC
2	D-
3	D+
4	GND

A4A6J9	
PIN	DESCRIPTION
1	VCC
2	D-
3	D+
4	GND

A4A6J10	
PIN	DESCRIPTION
1	VCC
2	D-
3	D+
4	GND

A4A6J11	
PIN	DESCRIPTION
1	VBUS
2	D-
3	D+
4	ID
5	GND

A4A6J12	
PIN	DESCRIPTION
1	VBUS
2	D-
3	D+
4	ID
5	GND

A4A6J13	
PIN	DESCRIPTION
1	RX (UART_TXD)
2	TX (UART_RXD)
3	PWR (+5.0V)
4	GND

A4A6J15	
PIN	DESCRIPTION
1	SW4_HID
2	SW5_HID
3	SW3_HID
4	SW1_HID
5	SW2_HID
6	GND

A4A6J17	
PIN	DESCRIPTION
1	TCK
2	GND
3	TDO
4	VCC (TRGT)
5	TMS
6	EXTERNAL_RESET
7	RS232_TXOUT
8	RS232_RX_IN
9	TDI
10	GND

A4A6J18	
PIN	DESCRIPTION
1	SPEAKER+
2	SPEAKER-
3	SPEAKER-
4	SPEAKER+

A4A6J19	
PIN	DESCRIPTION
1	+3.3V_PWR
2	RF_ATTEN_INT1
3	RF_ATTEN_INT2
4	GND


A4A6J20	
PIN	DESCRIPTION
1	EXT DC
2	V BATT
3	+3.3V
4	GND

A4A6J21	
PIN	DESCRIPTION
1	PANEL_R_LED
2	PANEL_G_LED
3	PANEL_B_LED
4	GND
5	BATT_AMBER_LED
6	BATT_GREEN_LED
7	ON_OFF_SW
8	HOME SW

A4A6J23	
PIN	DESCRIPTION
1	TX+
2	TX-
3	RX+
4	N/C
5	N/C
6	RX-
7	N/C
8	N/C

A4A6J26	
PIN	DESCRIPTION
1	TX+
2	TX-
3	RX+
4	RX-
5	GND
6	GND

Figure E-11. Audio I/O PCB Assy (Sheet 2 of 2)
(112682 A0, B0, B1, C0) (A4A6)

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

A4A7J4	
PIN	DESCRIPTION
1	RX
2	NOT USED
3	TX
4	+5 V SYSTEM
5	GND

A4A7J5	
PIN	DESCRIPTION
1	RX
2	NOT USED
3	TX
4	+5 V SYSTEM
5	GND

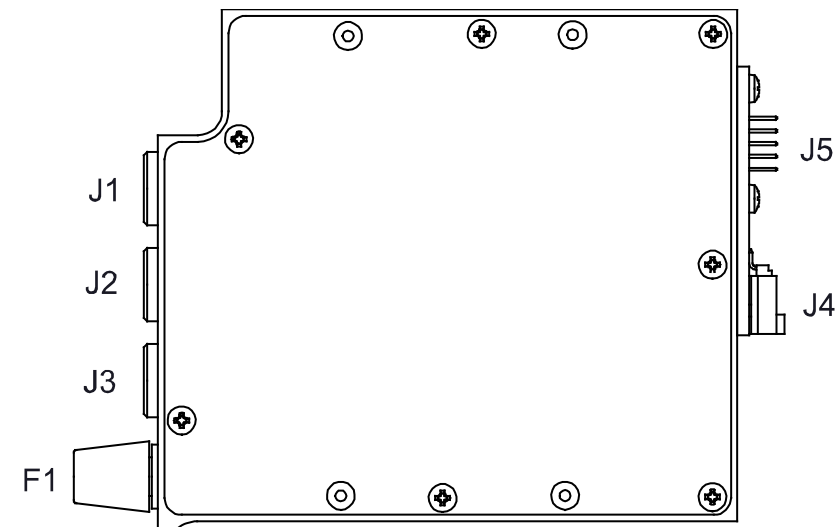


Figure E-12. DMM Assy
(112948 A0, A1) (A4A7)

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