Maintenance Manual

Site Master™
Model S810D and S820D

Broadband Microwave Transmission Line and Antenna Analyzer

SiteMaster

Anritsu

Anritsu Company
490 Jarvis Drive
Morgan Hill, CA 95037-2809
USA

P/N: 10680-00003
Revision: H
Printed: January 2014

DECLARATION OF CONFORMITY

Manufacturer's Name: ANRITSU COMPANY

Manufacturer's Address: Microwave Measurements Division
490 Jarvis Drive
Morgan Hill, CA 95037-2809
USA

declares that the product specified below:

Product Name: Broadband Handheld VNA

Model Number: S810D, S820D including options 2 and 22

conforms to the requirement of:

EMC Directive 89/336/EEC as amended by Council Directive 92/31/EEC & 93/68/EEC
Low Voltage Directive 73/23/EEC as amended by Council directive 93/68/EEC

Electromagnetic Compatibility: EN61326-1:1997 +A1:1998 +A2:2001 +A3:2003

Emissions:	EN55011: 1998 +A1:1999 +A2:2002 Group 1 Class A	
Immunity:	EN 61000-4-2:1995+ A1:1998+ A2:2001	- 4kV CD, 8kV AD
	EN 61000-4-3:2002+ A1:2002	- 10V/m
	EN 61000-4-4:2004	- 0.5kV SL, 1kV PL
	EN 61000-4-5:1995+ A1:2001	- 0.5kV L-L, 1kV L-E
	EN 61000-4-6:1996+ A1:2001	- 3V
	EN 61000-4-11:1994+ A1:2001	- 100% @ 20msec

Electrical Safety Requirement:

Product Safety: EN61010-1: 2001

Eric McLean, Corporate Quality Director

Morgan Hill, CA

1 Sept 2006
Date

European Contact: For Anritsu product EMC & LVD information, contact Anritsu LTD, Rutherford Close, Stevenage Herts, SG1 2EF UK, (FAX 44-1438-740202)

CE Conformity Marking

Anritsu affixes the CE Conformity marking onto its conforming products in accordance with Council Directives of The Council Of The European Communities in order to indicate that these products conform to the EMC and LVD directive of the European Union (EU).

CE

C-tick Conformity Marking

Anritsu affixes the C-tick marking onto its conforming products in accordance with the electromagnetic compliance regulations of Australia and New Zealand in order to indicate that these products conform to the EMC regulations of Australia and New Zealand.

N274

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When disposing of export-controlled items, the products and manuals need to be broken or shredded to such a degree that they cannot be unlawfully used for military purposes.

Mercury Notification

This product uses an LCD backlight lamp that contains mercury. Disposal may be regulated due to environmental considerations. Please contact your local authorities or, within the United States, the Electronics Industries Alliance (www.eiae.org) for disposal or recycling information.

EPC WEEE Directive 2002/96/EC

Equipment marked with the Crossed-out Wheelie Bin symbol complies with the European Parliament and Council Directive 2002/96/EC (the "WEEE Directive") in the European Union.

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Chinese RoHS Statement

产品中有毒有害物质或元素的名称及含量 For Chinese Customers Only YLYB

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 [Cr(VI)]	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷线路板 (PCA)	×	○	×	×	○	○
机壳、支架 (Chassis)	×	○	×	×	○	○
LCD	×	×	×	×	○	○
其他（电缆、风扇、连接器等） (Appended goods)	×	○	×	×	○	○

○：表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。
×：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求。

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注）电池的环保使用期限是 5 年。生产日期标于产品序号的前四码
(如 S/N 0728XXXX 为 07 年第 28 周生产)。

Safety Symbols

To prevent the risk of personal injury or loss related to equipment malfunction, Anritsu Company uses the following symbols to indicate safety-related information. For your own safety, please read the information carefully *before* operating the equipment.

Symbols Used in Manuals

Danger

This indicates a risk from a very dangerous condition or procedure that could result in serious injury or death and possible loss related to equipment malfunction. Follow all precautions and procedures to minimize this risk.

Warning

This indicates a risk from a hazardous condition or procedure that could result in light-to-severe injury or loss related to equipment malfunction. Follow all precautions and procedures to minimize this risk.

Caution

This indicates a risk from a hazardous procedure that could result in loss related to equipment malfunction. Follow all precautions and procedures to minimize this risk.

Safety Symbols Used on Equipment and in Manuals

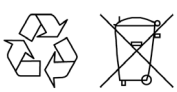
The following safety symbols are used inside or on the equipment near operation locations to provide information about safety items and operation precautions. Ensure that you clearly understand the meanings of the symbols and take the necessary precautions *before* operating the equipment. Some or all of the following five symbols may or may not be used on all Anritsu equipment. In addition, there may be other labels attached to products that are not shown in the diagrams in this manual.

This indicates a prohibited operation. The prohibited operation is indicated symbolically in or near the barred circle.

This indicates a compulsory safety precaution. The required operation is indicated symbolically in or near the circle.

This indicates a warning or caution. The contents are indicated symbolically in or near the triangle.

This indicates a note. The contents are described in the box.



These indicate that the marked part should be recycled.

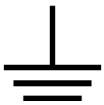
Warning

Always refer to the operation manual when working near locations at which the alert mark, shown on the left, is attached. If the operation, etc., is performed without heeding the advice in the operation manual, there is a risk of personal injury. In addition, the equipment performance may be reduced.

Moreover, this alert mark is sometimes used with other marks and descriptions indicating other dangers.

Warning

or



When supplying power to this equipment, connect the accessory 3-pin power cord to a 3-pin grounded power outlet. If a grounded 3-pin outlet is not available, use a conversion adapter and ground the green wire, or connect the frame ground on the rear panel of the equipment to ground. If power is supplied without grounding the equipment, there is a risk of receiving a severe or fatal electric shock.

Warning

This equipment can not be repaired by the operator. Do not attempt to remove the equipment covers or to disassemble internal components. Only qualified service technicians with a knowledge of electrical fire and shock hazards should service this equipment. There are high-voltage parts in this equipment presenting a risk of severe injury or fatal electric shock to untrained personnel. In addition, there is a risk of damage to precision components.

Caution

Electrostatic Discharge (ESD) can damage the highly sensitive circuits in the instrument. ESD is most likely to occur as test devices are being connected to, or disconnected from, the instrument's front and rear panel ports and connectors. You can protect the instrument and test devices by wearing a static-discharge wristband. Alternatively, you can ground yourself to discharge any static charge by touching the outer chassis of the grounded instrument before touching the instrument's front and rear panel ports and connectors. Avoid touching the test port center conductors unless you are properly grounded and have eliminated the possibility of static discharge.

Repair of damage that is found to be caused by electrostatic discharge is not covered under warranty.

Warning

This equipment is supplied with a rechargeable battery that could potentially leak hazardous compounds into the environment. These hazardous compounds present a risk of injury or loss due to exposure. Anritsu Company recommends removing the battery for long-term storage of the instrument and storing the battery in a leak-proof, plastic container. Follow the environmental storage requirements specified in the product data sheet.

Table of Contents

Chapter 1 — General Information

1-1 Introduction

This manual provides maintenance instructions for the Site Master Model S810D/S820D Broadband Microwave Transmission Line and Antenna Analyzer. It describes the product and provides performance verification procedures, parts replacement procedures, and a replaceable parts list.

1-2 Description

The Site Master S810D, covering 25 MHz to 10.5, and the S820D, covering 25 MHz to 20.0 GHz, are the most accurate, reliable and convenient one port microwave transmission line and antenna analyzers available for installation, verification, troubleshooting, and repair of microwave communication systems.

Measurement capabilities includes return loss, SWR, cable loss, and distance-to-fault (DTF) analysis. Patented RF interference rejection enables accurate measurements in the presence of high RF activity. Data Analysis software enables assessment of system trends, problems, and performance in addition to professional report generation. An optional power monitor is available to make power measurements quickly and easily. A built-in GPS receiver (optional) provides location information for each trace and saved with archived data.

The Site Master Models S810D and S820D use vector error correction, solving the most common and the most difficult accuracy problems of field test equipment operation, while improving system quality and reducing maintenance expenses. Difficult test specifications are easy to verify with the Site Master Models S810D and S820D. Vector error correction and a simple, friendly user interface within the unit further improve the quality and convenience of measurements compared to traditional scalar techniques. Vector error correction also improves the quality of Distance-To-Fault data. Not only is the reflection magnitude more accurate, the waveguide dispersion correction for fault distance (different frequencies travel at different speeds) is also more accurate and repeatable.

1-3 Related Documents

Other documents are available for the S810D and S820D at the Anritsu web site at www.anristu.com.

- Site Master S810D and S820D User Guide (10680-00001)
- Site Master S8x0D Programming Manual (10680-00002)

1-4 Front Panel Keys

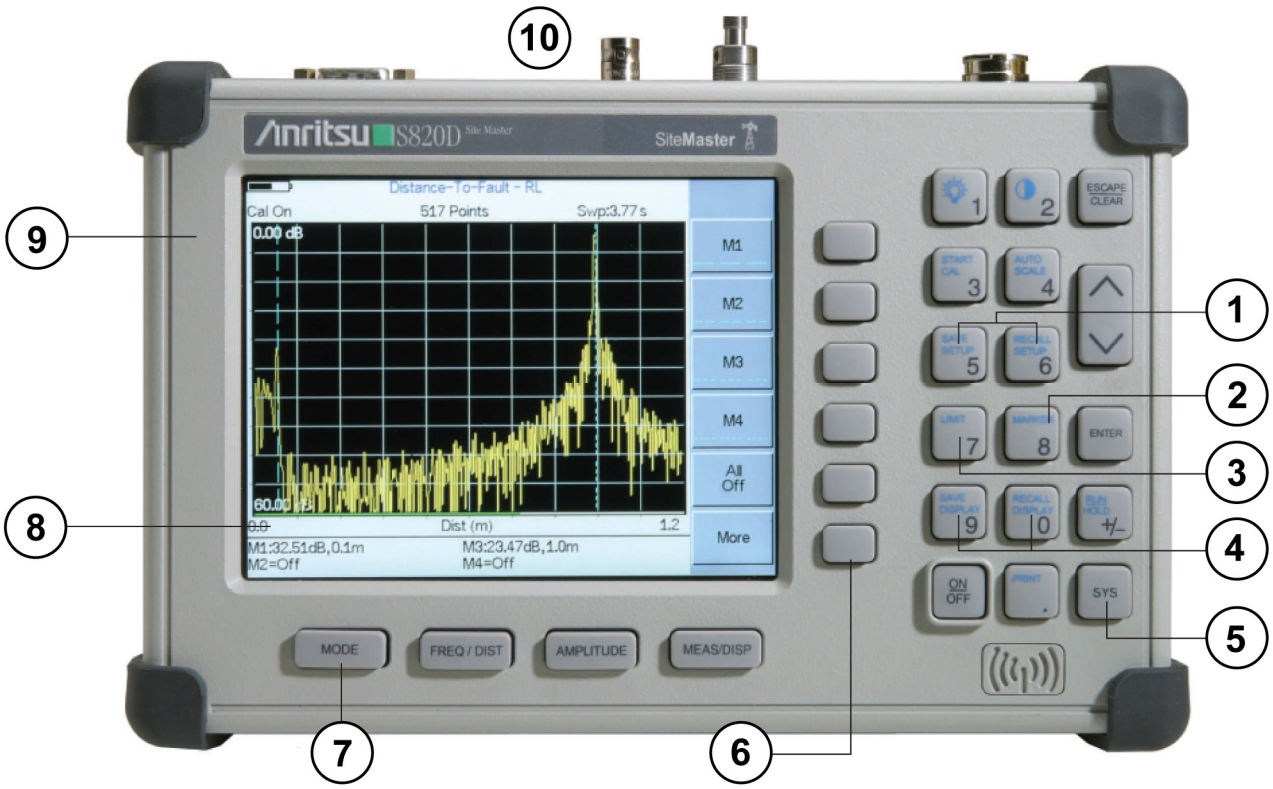


Figure 1-1. S810D/S820D Site Master Front Panel Hard and Soft Keys

Table 1-1. Callout Index for Figure 1-1, “S810D/S820D Site Master Front Panel Hard and Soft Keys”

Index	Description
1	**Save** and **Recall Setup** buttons. 21 setups available.
2	**Markers** button. Six markers available.
3	**Limits** button. Create pass/fail measurements with single limit line, upper mask limit, and/or lower mask limit.
4	**Save** and **Recall Display** buttons. Up to 200 memory locations with alphanumeric data labeling and automatic time/date stamps.
5	**Sys** button. Allows language selection for user interface on-screen menus and messages in Chinese, English, French, German, Japanese, and Spanish.
6	Soft Keys (six) on right with corresponding soft menu labels on left.
7	Function Hard Keys (four). From left to right, the keys are **Mode**, **Freq/Dist**, **Amplitude**, and **Meas/Disp**.
8	TFT Color Display. Standard TFT color display (640 x 480) with variable brightness control and viewable in direct sunlight. Displays signal traces and graphs, as well as Soft Key Menu on right side.
9	System case. Overall size is 24.4 cm x 17.8 cm x 6.1 cm (9.52” x 7.0” x 2.4”)
10	System top connectors. From left to right, RS-232 Serial Interface (DB-9 m), External DC Power Port (Coaxial Connector), GPS Antenna (BNC), RF Out/Reflection 50Ω.

1-5 Top Connectors

S810D/S820D with RF Detector Option

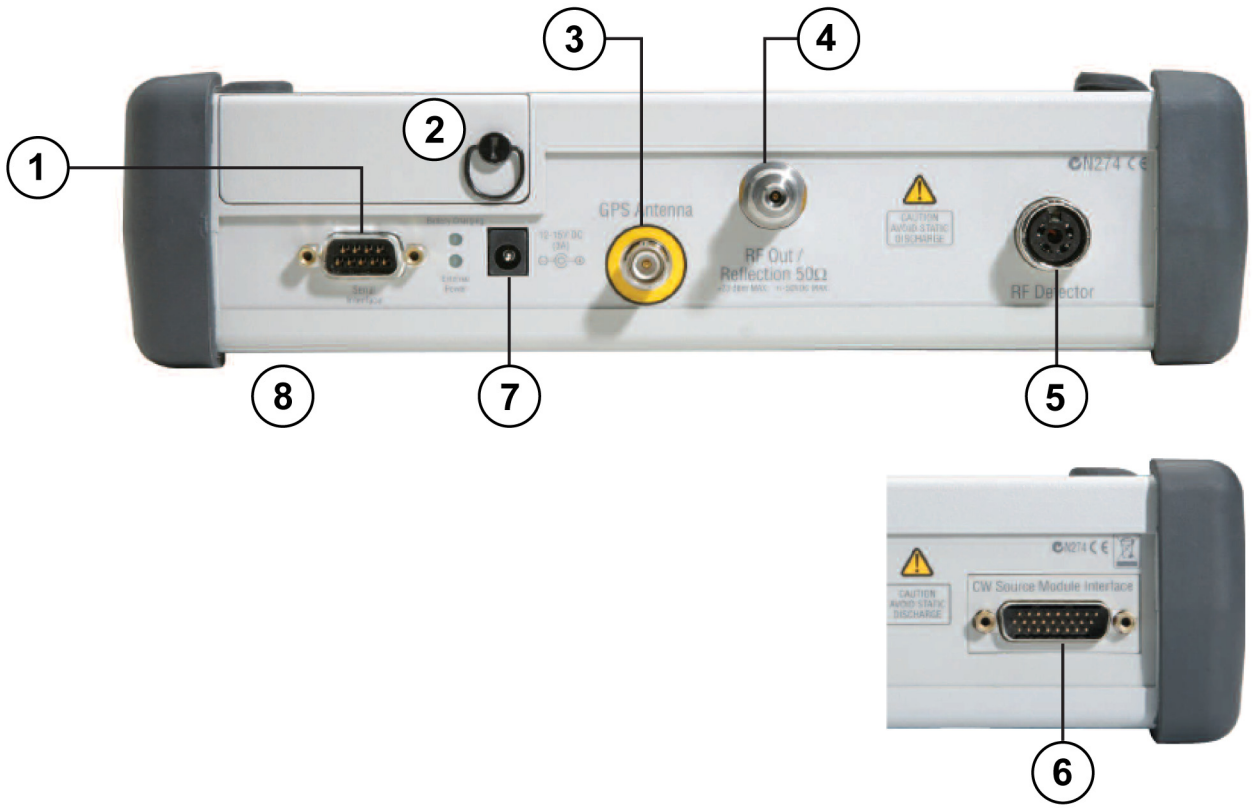


Figure 1-2. S810D/S820D Top Connectors with RF Detector Option on Right

Table 1-2. Callout Index for Figure 1-2, "S810D/S820D Top Connectors with RF Detector Option on Right"

Index	Description
1	RS-232C Serial Interface. DB-9(m).
2	Battery Compartment with opening ring.
3	GPS Antenna connector. Reverse BNC (m).
4	RF Out/Reflection 50Ω. –23 dBm Maximum. ±50 VDC Maximum.
5	RF Detector connector. *(Instrument will be equipped with this connector, or #6 below, or fitted with a hole plug.)*
6	CW Source Module Interface connector. DB-26(m). *(Instrument will be equipped with this connector, or #5 above, or fitted with a hole plug.)*
7	External DC Power connector for 12-15 VDC at 3A. Coaxial power connector (m). To the left are the Batter Charging Green LED (top) and External Power Green LED (bottom).
8	TFT Color Display.

1-6 Options

- Option 2, 2 MHz Frequency Extension (S8X0D/2)
- Option 5, Power Monitor (S8X0D/5 sensor not included)
- Option 11NF, Replaces Standard K (f) Test Port Connector with N(f) (S8X0D/11NF)
- Option 22NF, N(f) 2-Port Cable Loss Measurements (S8X0D/22NF)
- Option 22SF, SMA (f) 2-Port Cable Loss Measurements (S8X0D/22SF)
- Option 31, GPS Receiver (S8X0D/31)

1-7 Recommended Test Equipment

The following test equipment is recommended for use in testing and maintaining the Site Master S810D and S820D.

Table 1-3. Recommended Text Equipment

Instrument	Critical Specification	Recommended Manufacturer/Model
Frequency Counter	Frequency: < 3 GHz	Anritsu Model MF2412B/C with Option 01. Without Option 01 requires a 10 MHz external reference
Calibration/Verification Kit	Special, designed by Anritsu	Anritsu Model SC6815, includes components with N and K type connectors.
Calibration/Verification Kit	Special, designed by Anritsu	Anritsu Model SC7668, includes components with N connectors. Use with instruments with Option 11NF.
RF Reference Source	Frequency: 50 MHz Power Output: 0 dBm	Anritsu Model MA2418A
DC Power Supply	For Anritsu Model MA2418A	Anritsu Part Number 2000-933
RF Detector	Frequency: 10 MHz to 20 GHz	Anritsu Model 560-7N50B
Adapter	Connector: N(m) to K (f)	Anritsu Model 34NKF50
Attenuator	Attenuation: 10 dB Connector: N(m) to N(f)	Aeroflex/Weinschel Model 1-10
Attenuator	Attenuation: 30 dB Connector: N(m) to N(f)	Aeroflex/Weinschel Model 1-30
RF Coaxial Cable	Frequency: 10 MHz to 20 GHz Connector: K (m) to K (m)	Any
RF Coaxial Cable	Connector: BNC (m) to BNC (m)	Any
Personal Computer	Serial Port	Any Windows XP PC
Serial Cable	Null Modem	Anritsu Part Number 800-441
Attenuator	Attenuation: 10 dB Connector: K (m) to K (f)	Anritsu Model 43KC-10
Attenuator	Attenuation: 20 dB Connector: K (m) to K (f)	Anritsu Model 43KC-20
Adapter	Connector: N(f) to K (m)	Anritsu Model 34NFK50

Chapter 2 — Performance Verification

2-1 Introduction to Performance Verification

This chapter contains tests that can be used to verify the performance of the Site Master Models S810D and S820D.

2-2 Frequency Accuracy

The following test can be used to verify the CW frequency accuracy of the Site Master. Measurement calibration of the Site Master is not required for this test.

Equipment Required

- Anritsu Model MF2412B/C Frequency Counter or equivalent
- RF Cable with appropriate connectors to connect the instrument and the frequency counter

Frequency Accuracy Procedure

1. Connect the external power supply (Anritsu part number 40-187-R) to the Site Master.
2. Press and hold the **ESCAPE/CLEAR** key, then press the **ON/OFF** key to turn on the Site Master.
   - This sets the instrument to the factory preset state.

Note	Before continuing, allow a five minute warm up for the internal circuitry to stabilize.

3. Press the **FREQ/DIST** key.
4. Press the F1 soft key, set to 2 GHz, then press the **ENTER** key.
5. Press the F2 soft key, set to 2 GHz, then press the **ENTER** key.
6. Press the **MEAS/DISP** key and then the Fixed CW soft key to turn Fixed CW on.
7. Connect the RF cable from the Site Master Test Port to the RF Input on the Frequency Counter.
8. Verify that the frequency readout on the Frequency Counter is 2 GHz ±6 kHz.
9. Press the Fixed CW soft key to turn Fixed CW off.

2-3 Return Loss Verification

The following test can be used to verify the accuracy of return loss measurements. Measurement calibration of the Site Master is required for this test. The Verification Software (P/N 2300-488) included with the Anritsu SC6815 Calibration/Verification Kit or the Anritsu SC7668 Calibration Kit must be installed into the PC prior to performing this test.

Equipment Required

- Anritsu SC6815 Calibration/Verification Kit.
- Anritsu SC7668 Calibration/Verification Kit.

Note	The SC6815 kit can be used with all S8x0D units. The SC7668 kit can only be used with S8x0D units with Option 11NF.

- Personal Computer running Windows 95 or later, one available COM port, a CDROM drive and/or a USB port.

Return Loss Software Installation

1. Insert the Verification Software CD into the CDROM drive.
2. Click the Start button and select Run.
3. In the Run box, type **x:\setup** (where **x** is the drive letter of the CDROM drive) and select OK.
4. Follow the on screen setup instructions to install the Verification Software.
5. After the software has been installed, re-boot the PC.

Return Loss Verification Procedure

1. On the PC, start the Microwave CAL Verification Software from the Start menu and follow the steps below as presented in the opening dialog box.

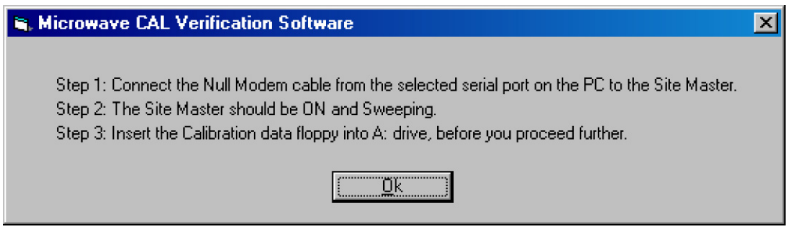


Figure 2-1. CAL Verification Software Opening Dialog Box

2. Install the Serial Interface cable (Anritsu P/N 800-441) to the PC COM port and the Serial Interface connector on the Site Master Test Connector Panel.
3. Connect the external power supply (Anritsu P/N 40-187-R) to the Site Master.
4. Press and hold the **ESCAPE/CLEAR** key, then press the **ON/OFF** key to turn on the Site Master.
   - This sets the instrument to the factory preset state.

Note	Before continuing, allow a five minute warm up for the internal circuitry to stabilize.

5. Press the **MEAS/DISP** key.
6. Press the Resolution soft key, and select 517.

7. Insert the Calibration USB memory device or disc that came with the SC6815 kit or the SC7668 kit into the PC disk drive.
8. On the PC, select OK to close the opening window. The test selection dialog box appears as shown below.

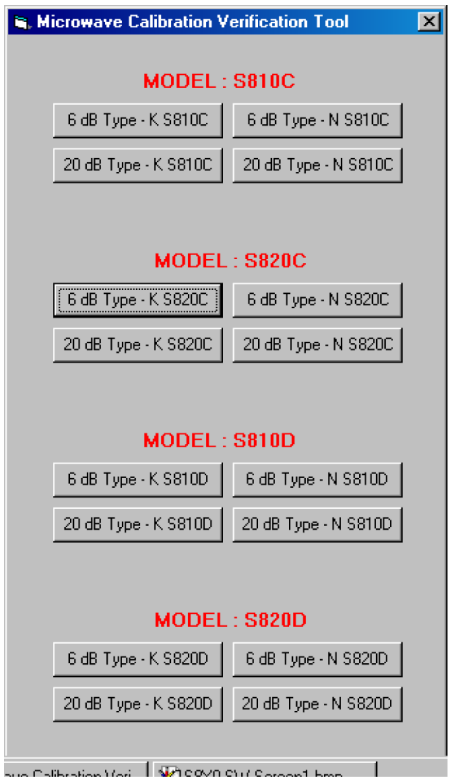


Figure 2-2. Test Selection Dialog Box

9. Click on the appropriate db Type button for the Site Master being tested:
   - If instrument is a Site Master S810D, click on the 6 dB Type - K S810D button.
   - If instrument is a Site Master S820D, click on the 6 dB Type - K S820D button.

Note	If the instrument has Option 11NF installed, skip Step #10 through Step #22 on page 2-4 and go to Step #23 on page 2-4,

10. Follow the on-screen instructions and connect the Open, Short, Load, and SC6729 6 dB Offset Termination from the SC6815 Calibration Kit to the S8X0D test port when instructed.
11. After the final test, the test results will be displayed on the screen. Verify that the displayed trace is within the limit lines.
12. The final selection screen provides options to save, print or continue testing.

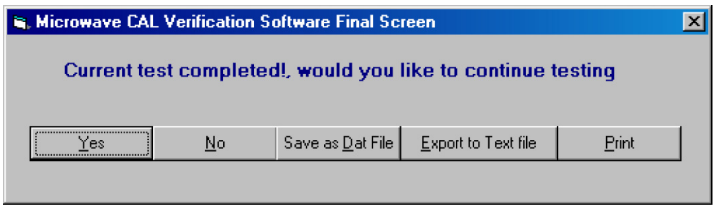


Figure 2-3. CAL Verification Software Final Screen Dialog Box

13. To save the data as a text file, select Export to Text File. The software will prompt for a name and location to save the file. The data will be saved in a tabular format that can be read by most text editor programs.

14. To save the data as a `dat` file, select Save as Dat File. The software will prompt for a name and location to save the file. A `dat` file saves the data in a graphical format that can be recalled and viewed using the Verification Software program.

15. To print the data, select Print. The software first prompts to save the data as a text file (see Step #13) and then prints the data to the default printer connected to the PC.

16. When the final selection screen reappears, click the Yes button to continue.

17. When the test selection screen reappears:

- If the instrument is a Site Master S810D, click on the 20 dB Type - K S810D button.
- If the instrument is a Site Master S820D, click on the 20 dB Type - K S820D button.

18. Click the Yes button to keep the existing calibration.

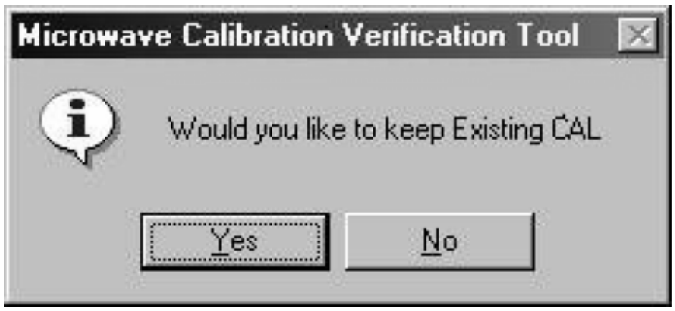


Figure 2-4. Keep Existing Calibration Screen

19. Follow the instructions on the screen to test the 20 dB offset termination. Verify that the measured results are within the limit lines.

20. Save or print the test data if desired.

21. When the final selection screen reappears, click the Yes button to continue.

22. Install the 34RKNF50 to the S8X0D K female test port.

23. On the test selection screen, click on the appropriate db Type button for the Site Master being tested:

- If instrument is a Site Master S810D, click on the 6 dB Type - N S810D button.
- If instrument is a Site Master S820D, click on the 6 dB Type - N S820D button.

24. Follow the instructions on screen to perform the calibration and measurement.

25. Save or print the test data if desired.

26. Repeat the measurement process for the 20 dB offset termination.

27. Verify that the measured result is within the limit lines.

28. Save or print the test data if desired.

Note	For the S820D, N-Type verification will be performed up to 18 GHz only due to the frequency limit of the N-Type connector. Any data displayed above 18 GHz is for reference only.

2-4 Power Monitor (Option 5) Verification

If the Power Monitor (Option 5) is installed in the Site Master, the following test can be used to verify the accuracy of the power measurements. Measurement calibration of the Site Master is not required for this test.

Equipment Required

- RF Detector, 10 MHz to 20 GHz, Anritsu 560-7N50B
- 10 dB Attenuator, Aeroflex/Weinschel 1-10
- 30 dB Attenuator, Aeroflex/Weinschel 1-30
- 0 dBm 50 MHz RF Reference Source, Anritsu MA2418A
  - The 50 MHz Calibrator Output on a power meter can be used as a substitute for the RF Reference Source.
- DC Power Supply for the MA2418A, Anritsu 2000-933

Procedure

1. Connect the DC power supply to the MA2418A Reference Source.
   - For Power Monitor Setup, see Figure 2-5, “Power Monitor Verification Setup” on page 2-6.
2. Connect the external power supply (Anritsu part number 40-187-R) to the Site Master.
3. Press and hold the **ESCAPE/CLEAR** key, then press the **ON/OFF** key to turn on the Site Master.
   - This sets the instrument to the factory preset state.
4. Press the **MODE (9)** key.
5. Use the **Up/Down** arrow key to highlight Power Monitor, then press **ENTER**.
6. Connect the RF Detector output to the RF Detector input of the Site Master.
7. With no power applied to the detector, press the Zero soft key to zero the power monitor. When complete, Zero Adj:On is displayed in the message area.
8. Connect the MA2418A Reference Source to the input of the 560-7N50B RF detector. Verify that the power monitor reading is 0.0 dBm ±1 dB.
9. Connect the output of the MA2418A Reference Source to the two attenuators so as to add 40 dB of attenuation (see Figure 2-5, “Power Monitor Verification Setup” on page 2-6).
10. Connect the MA2418A Reference Source and the attenuators to the input of the 560-7N50B RF detector.

11. Verify that the power monitor reading is now –40.0 dBm ±2 dB.

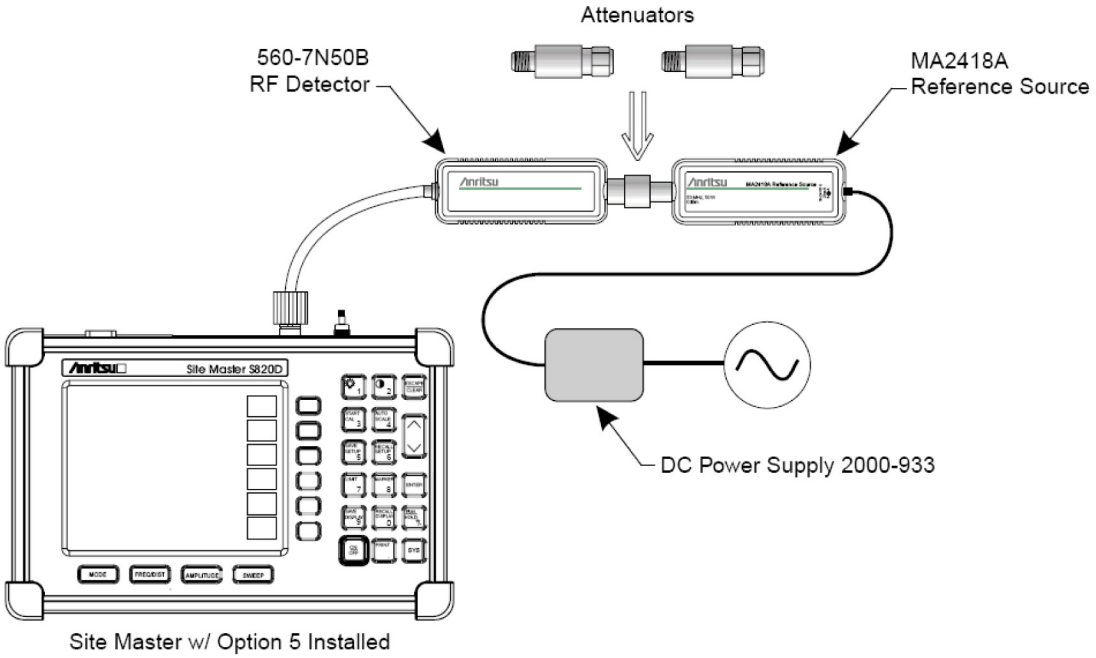


Figure 2-5. Power Monitor Verification Setup

2-5 Two-Port Cable Loss Measurement Verification (Option 22)

Overview

The two-port cable loss measurement verification consists of three procedures:

- CW Power Verification Procedure with the CW Frequency Verification
- Two-Port Cable-Loss Measurement Accuracy Verification Procedure

Equipment Required

- CW Source Module, Anritsu CWM220NF (shown below in Figure 2-6) or Anritsu CWM220SF.
- RF Detector, Anritsu 560-7N50B RF Detector (shown below in Figure 2-6) or Anritsu 560-7S50B.
- Anritsu MF2412B/C Frequency Counter
- BNC cable
- BNC to N adapter (or BNC to K adapter)
- Anritsu 43KC-10 10 dB Attenuator
- Anritsu 43KC-20 20 dB Attenuator
- Anritsu 34NKF50 N (m) to K (f) Adapter
- Anritsu 34NFK50 N (f) to K (m) Adapter

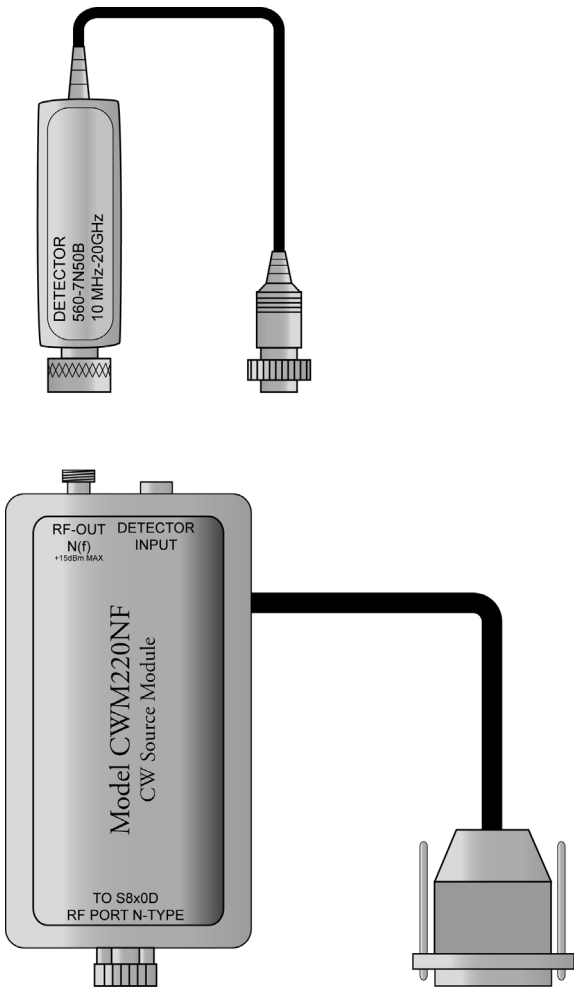


Figure 2-6. CW Source Module (CWM220NF) and RF Detector (560-7N50B)

Note	Always turn off the S8X0D before connecting or disconnecting the CWM220xF CW Source Module to the CW Source Module Interface port of the S8X0D.

CW Power Verification Procedure

1. Turn off the Site Master.
2. Connect the input port of the detector to the **RF OUT X (f)** of the CW Source Module.
3. Connect the cable of the detector to the **DETECTOR INPUT** of the CW Source Module.
4. Connect the **TO S8X0D RF PORT X-TYPE** of the CW Source Module to **RF OUT** of S8X0D.
5. Connect the cable of the CW Source Module to the **CW Source Module Interface** port of the S8X0D as shown in Figure 2-7 below.

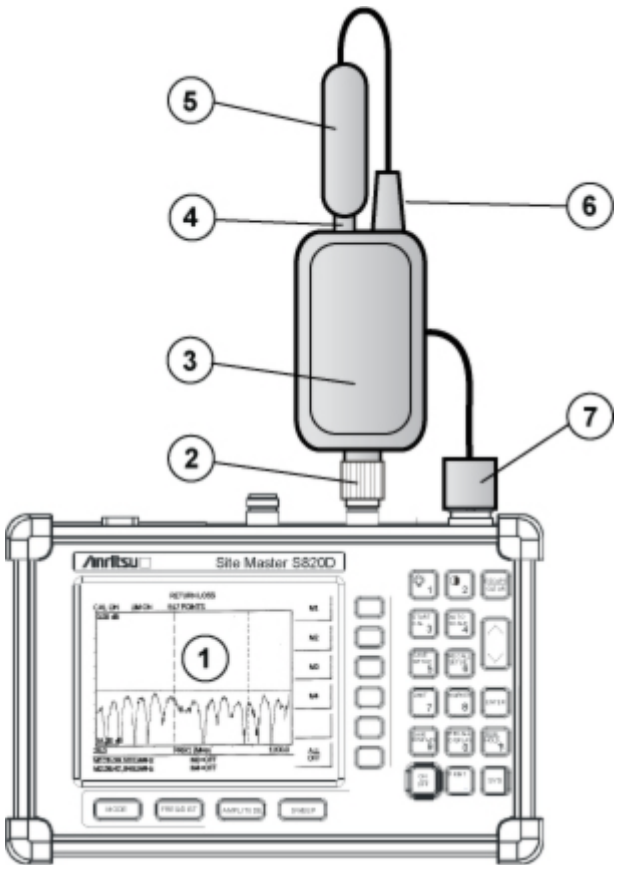


Figure 2-7. Two-Port Cable Loss General Connections

Table 2-1. Callout Index for Figure 2-7, “Two-Port Cable Loss General Connections”

Index	Callout Description (1 of 2)
1	S810D/S820D SiteMaster
2	CW Source Module **To S8X0D RF Port** connected to the S8xD **RF Out/Reflection 50Ω** connector
3	Anritsu CW Source Module
4	CW Source Module **RF OUT** port connected the RF Detector **Input Port**
5	RF Detector
6	RF Detector **Cable Input Plug** connected to the CW Source Module **Detector Input** port

Table 2-1. Callout Index for Figure 2-7, "Two-Port Cable Loss General Connections"

Index	Callout Description (2 of 2)
7	CW Source Module **CW Source Module Interface** port connected to the S8x0D **CW Source Module Interface**

6. Press and hold the **ESCAPE/CLEAR** key, then press the **ON/OFF** key to turn on the S8x0D.
7. Press **MODE** hard key.
8. Use the **Up/Down** arrow key to highlight Cable Loss – Two Port, then press **ENTER.**
9. Press the F1 soft key and set F1 = 10 MHz.
10. Press the F2 soft key and:
    - If the instrument is a Site Master S810D unit, set F2 = 10.5 GHz.
    - If the instrument is a Site Master S820D unit:
      with CWM220NF and CWM220B-NF, set F2 = 18 GHz
      with CWM220SF and CWM220B-SF, set F2 = 20 GHz.
11. Observe that the waveform displayed resembles the display shown in Figure 2-8 below.

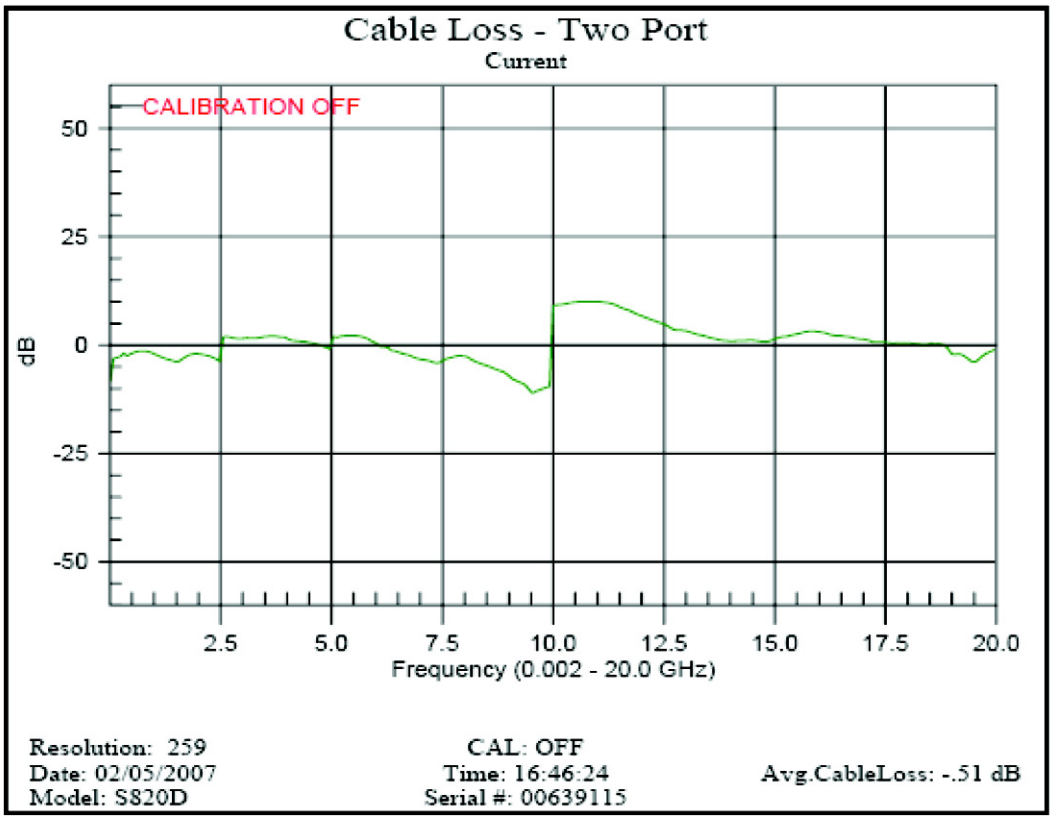


Figure 2-8. Cable Loss Two-Port Typical Waveform

12. Press the MARKER soft key and:
    - Select M1, select Marker to Peak.
    - Select M2, select Marker to Valley.
13. Verify that:
    - M1 is less than +15 dBm.
    - M2 is greater than –15 dBm.

CW Frequency Verification Procedure

1. Turn off the Site Master
2. Connect the **TO S8X0D RF PORT X-TYPE** of the CW Source Module to **RF OUT** of S8X0D.
3. Connect the cable of the CW Source Module to the **CW Source Module Interface** port of the S8X0D.
4. Connect the **RF-OUT X (f)** to the Anritsu MF2412B/C with appropriate adapter and BNC cable as shown in Figure 2-9 below.

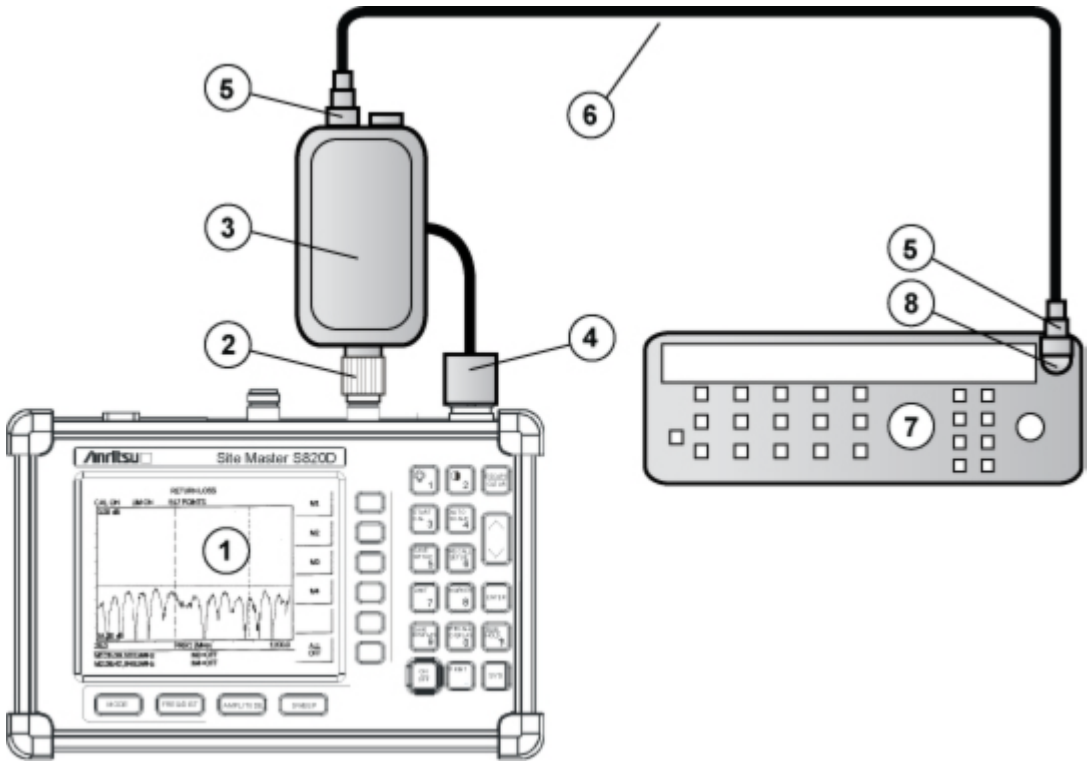


Figure 2-9. Two-Port CW Frequency Verification Connections

Table 2-2. Callout Index for Figure 2-9, "Two-Port CW Frequency Verification Connections"

Index	Callout Description
1	S810D/S820D SiteMaster
2	CW Source Module **To S8X0D RF Port** connected to the S8xD **RF Out/Reflection 50Ω** connector
3	Anritsu CW Source Module
4	CW Source Module **CW Source Module Interface** port connected to the S8x0D **CW Source Module Interface**
5	BNC to N connector or BNC to K connector adapters as required.
6	BNC Cable as required
7	Anritsu MF2412B/C Frequency Counter with Opt 01

Note	A 10 MHz external reference is required if the Anritsu MF2412B/C does not have Option 01 installed.

5. Press and hold the **ESCAPE/CLEAR** key, then press the **ON/OFF** key to turn on the S8X0D.

6. Press **MODE** hard key.
7. Use the **Up/Down** arrow key to highlight Cable Loss – Two Port, then press **ENTER.**
8. Press the F1 soft key and set F1 to 2.75 GHz.
9. Press the F2 soft key and set F2 to 2.75 GHz.
10. Power on the Anritsu MF2412B/C Frequency Counter.
11. Verify that the frequency displayed on the frequency counter is 2,750,000 kHz ±8.25 kHz.

Two-Port Cable Loss Measurement Accuracy Procedure

1. Turn off the Site Master
2. Connect the input port of the detector to the **RF OUT X (f)** of the CW Source Module.
   - When using the Anritsu CWM220NF CW Source Module and the Anritsu 560-7N50B RF Detector, insert Anritsu 34NKF50 and 34NFK50 adapters between the CWM220NF and the 560-7N50B, as shown below in Figure 2-11 below
   - When using the Anritsu CWM220SF CW Source Module and the Anritsu 560-7S50B RF Detector, adapters are not required.

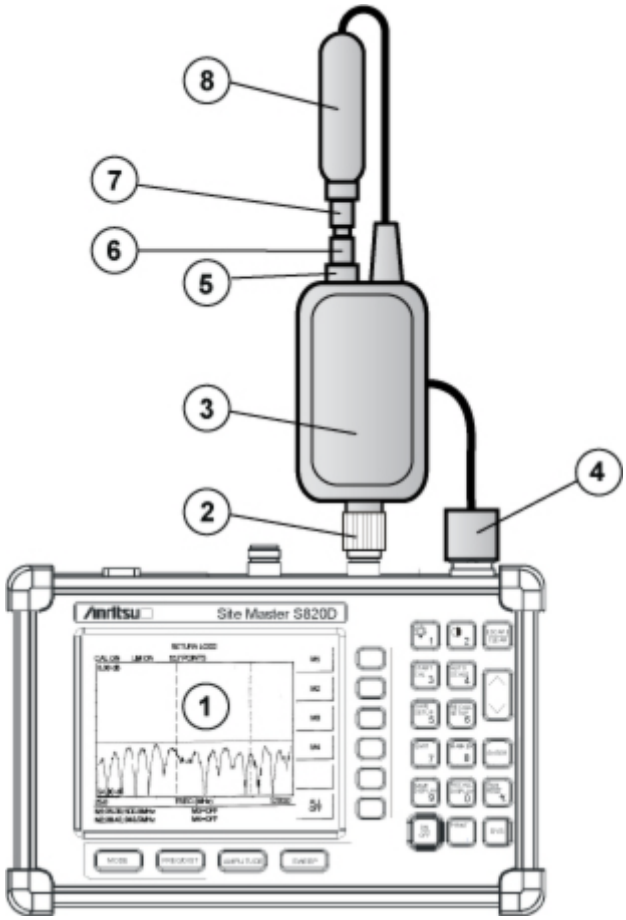


Figure 2-10. Two-Port Cable Loss Measurement Accuracy Connections

Table 2-3. Callout Index for Figure 2-10, "Two-Port Cable Loss Measurement Accuracy Connections"

Index	**Callout Description** *(1 of 2)*
1	S810D/S820D SiteMaster
2	CW Source Module **To S8X0D RF Port** connected to the S8xD **RF Out/Reflection 50Ω** connector
3	Anritsu CW Source Module If using the Anritsu CWM220NF CW Source Module and the Anritsu 560-7N50B RF Detector, insert an Anritsu 34NKF50* adapter (see index #6) and an Anritsu 34NFK50 adapter (see index #7 below) between the CW Source Module and the RF Detector. * The 34NKF50 adapter is not required if the instrument is equipped with Option 11NF (N-connector)

Table 2-3. Callout Index for Figure 2-10, "Two-Port Cable Loss Measurement Accuracy Connections"

Index	**Callout Description** *(2 of 2)*
4	CW Source Module **CW Source Module Interface** port connected to the S8x0D **CW Source Module Interface**
5	CW Source Module **RF Out** port.
6	Adapter, Anritsu 34NKF50 adapter, N(m) to K (f). Only required if using a CWM220NF CW Source Module and a 560-7N50B RF Detector.
7	Adapter, Anritsu 34NFK50 adapter, N(f) to K (m). Only required if using a CWM220NF CW Source Module and a 560-7N50B RF Detector.
8	RF Detector, Anritsu 560-7N50B or Anritsu 560-7S50B.

3. Connect the cable of the detector to the **DETECTOR INPUT** of the CW Source Module.
4. Connect the **TO S8X0D RF PORT X-TYPE** of the CW Source Module to **RF OUT** of S8x0D.
5. Connect the cable of the CW Source Module to the **CW Source Module Interface** port of the S8x0D.
6. Press and hold the **ESCAPE/CLEAR** key, then press the **ON/OFF** key to turn on the S8x0D.
7. Let the S8x0D warm up for 15 minutes.
8. Press **MODE** hard key.
9. Use the **Up/Down** arrow key to highlight **Cable Loss – Two Port**, then press **ENTER**.
10. Press **START CAL**, then press **ENTER.**

11. Wait until the Cal On display appears in the top left corner of the screen.

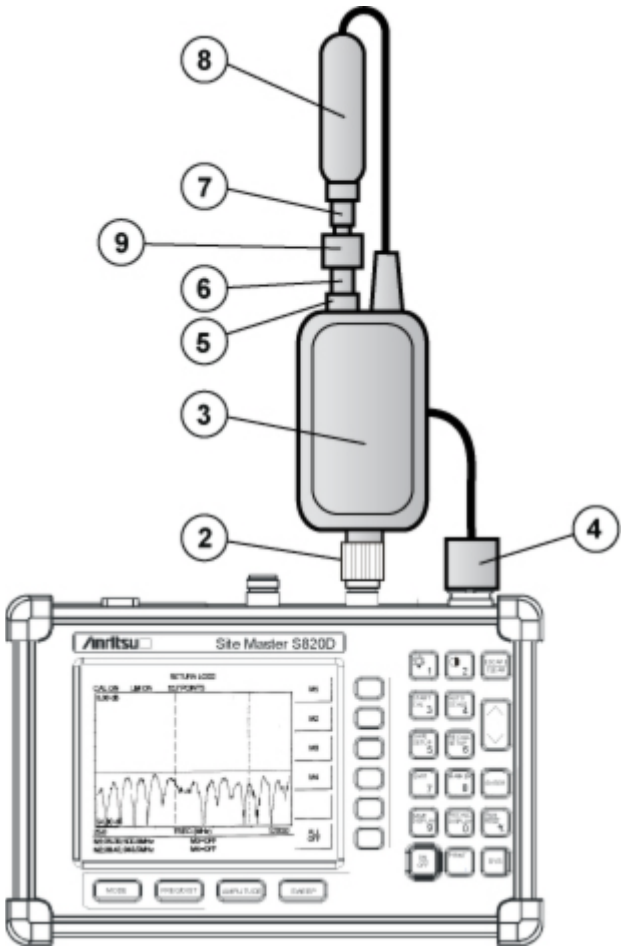


Figure 2-11. Two-Port Cable Loss Measurement Verification with 10 db Attenuator

Table 2-4. Callout Index for Figure 2-11, "Two-Port Cable Loss Measurement Verification with 10 db Attenuator"

Index	**Callout Description** *(1 of 2)*
1	S810D/S820D SiteMaster
2	CW Source Module **To S8X0D RF Port** connected to the S8xD **RF Out/Reflection 50Ω** connector
3	Anritsu CW Source Module If using the Anritsu CWM220NF CW Source Module and the Anritsu 560-7N50B RF Detector, insert an Anritsu 34NKF50* adapter (see index #6) and an Anritsu 34NFK50 adapter (see index #7 below) between the CW Source Module and the RF Detector. * The 34NKF50 adapter is not required if the instrument is equipped with Option 11NF (N-connector)
4	CW Source Module **CW Source Module Interface** port connected to the S8x0D **CW Source Module Interface.**
5	CW Source Module **RF Out** port.
6	Adapter, Anritsu 34NKF50 adapter, N(m) to K (f). Only required if using a CWM220NF CW Source Module and a 560-7N50B RF Detector.
7	Adapter, Anritsu 34NFK50 adapter, N(f) to K (m). Only required if using a CWM220NF CW Source Module and a 560-7N50B RF Detector.

Table 2-4. Callout Index for Figure 2-11, "Two-Port Cable Loss Measurement Verification with 10 db Attenuator"

Index	**Callout Description** *(2 of 2)*
8	RF Detector, Anritsu 560-7N509B or Anritsu 560-7S50B.
9	Attenuator, Anritsu 43KC-10, 10dB Attenuator.

12. Connect the Anritsu 43KC-10 10 dB Attenuator between the detector and the CW Source Module (or between the 34NKF50 and 34NFK50, as shown in Figure 2-12 above).

Note	The frequency range is from 10 MHz to 18 GHz for CWM220NF and CWM220B-NF. The frequency range is from 10 MHz to 20 GHz for CWM220SF and CWM220B-SF.

13. Press MARKER, then select M1, and then select Marker To Peak.

14. Press MARKER, then select M2, and then select Marker To Valley.

15. Verify that both M1 and M2 are –10 dB ±0.85 dB.

16. If they are marginally out of specification, repeat from Step #9 on page 2-13.

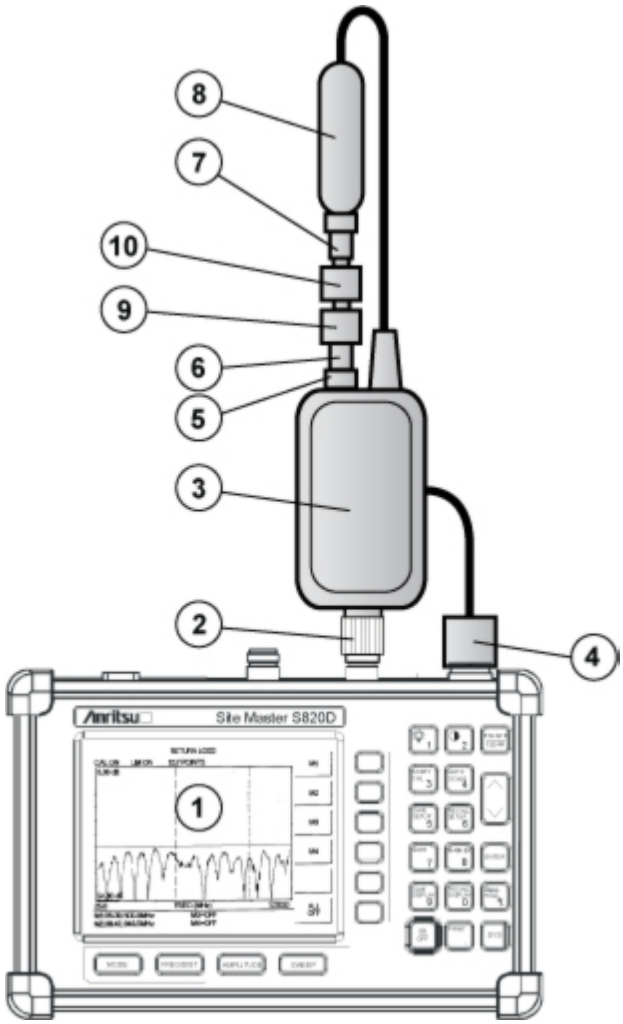


Figure 2-12. Two-Port Cable Loss Measurement Verification with 10 dB and 20 dB Attenuators

Table 2-5. Callout Index for Figure 2-12, "Two-Port Cable Loss Measurement Verification with 10 dB and 20 dB Attenuators"

Index	Callout Description
1	S810D/S820D SiteMaster
2	CW Source Module **To S8X0D RF Port** connected to the S8xD **RF Out/Reflection 50Ω** connector
3	Anritsu CW Source Module If using the Anritsu CWM220NF CW Source Module and the Anritsu 560-7N50B RF Detector, insert an Anritsu 34NKF50* adapter (see #6 below) and an Anritsu 34NFK50 adapter (see #7 below) between the CW Source Module and the RF Detector. * The 34NKF50 adapter is not required if the instrument is equipped with Option 11NF (N-connector)
4	CW Source Module **CW Source Module Interface** port connected to the S8x0D **CW Source Module Interface**
5	CW Source Module **RF Out** port.
6	Adapter, Anritsu 34NKF50 adapter, N(m) to K (f). Only required if using a CWM220NF CW Source Module and a 560-7N50B RF Detector.
7	Adapter, Anritsu 34NFK50 adapter, N(f) to K (m). Only required if using a CWM220NF CW Source Module and a 560-7N50B RF Detector.
8	RF Detector, Anritsu 560-7N50B or Anritsu 560-7S50B.
9	Attenuator, Anritsu 43KC-10, 10dB Attenuator.
10	Attenuator, Anritsu 43KC-20, 20 dB Attenuator.

17. Add the 43KC-20 attenuator to the 43KC-10 attenuator to make 30 dB attenuation.

18. Press **MARKER**, select M1, select Marker To Peak.

19. Press **MARKER**, select M2, select Marker To Valley**.**

20. Verify that both M1 and M2 are –30 dB ±1.35 dB.

21. If M1 and M2 are marginally out of specification, repeat from Step #9 on page 2-13, but skip Step #12, Step #13, and Step #14, and then continuing with the rest of this procedure.

Chapter 3 — Removal and Replacement

3-1 Introduction

The removal and replacement chapter provides the following sections, information, and procedures:

3-2 Accessories, Parts, and Hardware

Accessories

Table 3-1. S810D/S820D Site Master Accessories

Part Number	Description	Qty
10680-00001	User's Guide, Site Master S810D and S820D	1
10680-00002	Programming Manual, Site Master S810D and S820D (disk only)	1
2300-347	Handheld Software Tools	1
40-187-R	AC/DC Adapter	1
2000-1029	Battery Charger	1
806-141	Automotive Power Adapter	1
65717	Soft Carrying Case	1
800-441	Serial Interface Cable Assembly	1
551-1961-R	USB to RS232 Adapter Cable	1
22N50	Open/Short, N(m)	1
28N50-2	Precision Termination, N(m)	1
22K50	Open/Short, K (m)	1
28K50	Precision Termination, K (m)	1
34NFK50	Adapter, N(m) to K (f)	1
SC6815	Calibration/Verification Kit	1

Replaceable Parts

Table 3-2. S810D/S820D Site Master Replaceable Parts

Part Number	Description	Qty
15-123	Color Liquid Crystal Display Assembly	1
551-1694	Adapter, 2-Row 32-Pin Inter-Connect Adapter (m-m) for Option PCB	1
633-26	Lithium Coin Real-Time Clock Battery	1
633-27	Rechargeable Battery, NiMH	1
46649-4	Membrane Keypad, Main	1
3-71657-3	Keypad PCB Assembly	1
ND64376	Power Monitor PCB Assembly	1
ND66448	Main/RF PCB Exchange Assembly, S810D	1
ND66449	Main/RF PCB Exchange Assembly, S810D with Option 11NF	1
ND66450	Main/RF PCB Exchange Assembly, S820D	1
ND66451	Main/RF PCB Exchange Assembly, S820D with Option 11NF	1
ND67171	Exchange Module, CWM220NF	1
ND67172	Exchange Module, CWM220SF	1
ND68537	Source Control PCB Exchange Assembly, S8x0D, part of Option 22, Two-Port Cable Loss Measurement, provides control for external CW Source Module, CWM220xF	1

Hardware

Table 3-3. S810D/S820D Site Master Hardware

Part Number	Description	Qty
900-861	Pan Head Screw, 4-20, 0.365	19
900-791	Screw, 2-56, 0.375	77
900-720	Screw, 4-40, 0.187	6
900-326	Kep Nut, 4-40, 0.187	3
790-18	M-F Standoff, 4-40, 0.375, Hex	4
785-405	Plain Standoff, 4-40, 0.187, Hex	4
785-927	M-F Standoff, 4-40, 0.625	3
761-79	Cap Vinyl, Black, Round	2

Case Parts

Table 3-4. S810D/S820D Site Master Case Parts

Part Number	Description	Qty
61440-1	Top Case	1
46653-3	Bottom Case	1
48231-3	Battery Door	1
790-509, 790-510, and 48241	Battery Door Latch (3 pieces)	1
790-515	Spring, Battery Compartment	1
790-551	Door Lock Receptacle	1
46655	Case Corner Bumpers	4
62934	ID Label, Model S820D	1
62935	ID Label, Model S810D	1

3-3 Battery Pack Removal and Replacement

This procedure provides instructions for removing and replacing the Site Master battery pack.

Note	Many of the procedures in this section are generic, and apply to many similar instruments. Photos and illustrations used are representative and may show instruments other than the Site Master.

1. With the Site Master standing upright on a stable surface, locate the battery access door (see Figure 3-1).
2. Lift up the access door handle and rotate it 90 degrees counterclockwise.

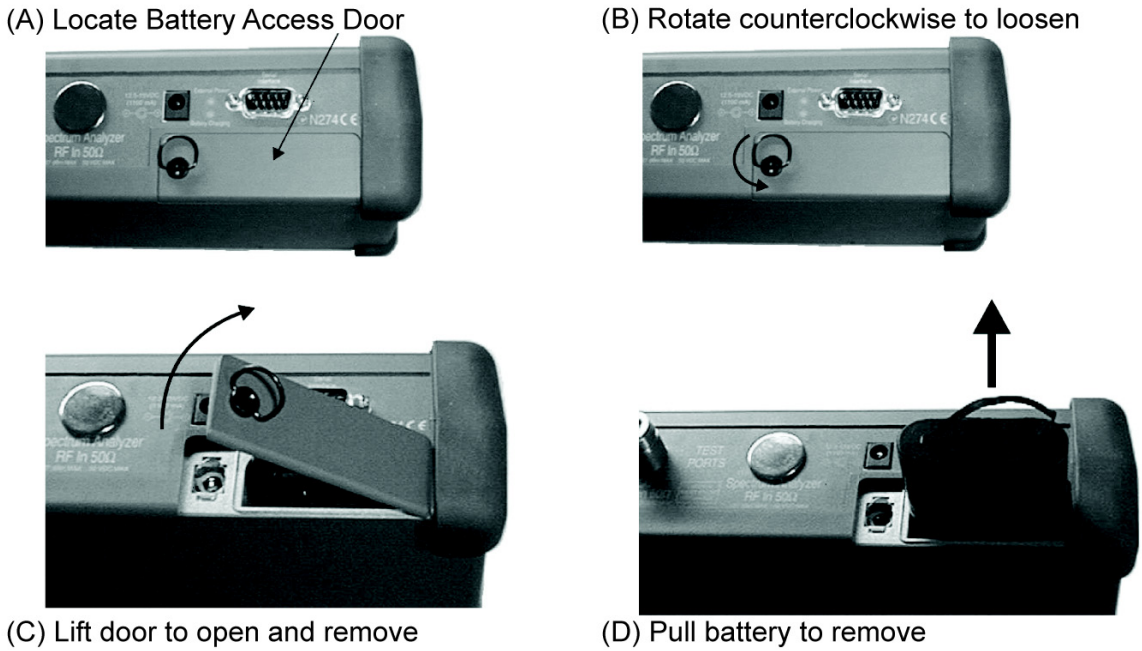


Figure 3-1. Removing the Battery Access Door

3. Lift the door and remove the door.
4. Grasp the battery lanyard and pull the battery straight up and out of the unit, as illustrated in Figure 3-1 above.

5. Replacement is the opposite of removal. Note the orientation of the battery contacts, and be sure to insert the new battery with the contacts facing the rear of the unit (Figure 3-2).

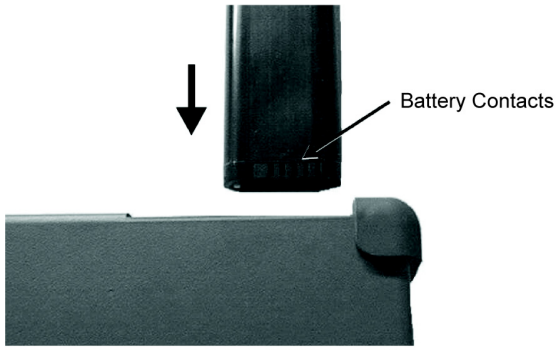


Figure 3-2. Battery Orientation

3-4 Battery General Information

The following information relates to the care and handling of the Site Master battery, and NiMH batteries in general.

Anritsu Batteries and Chargers

- Use only Anritsu approved battery packs.
- Recharge the battery only in the Site Master or in an Anritsu-approved charger.

Battery General Care and Use

- Always use the battery for its intended purpose only.
- Never use a damaged or worn out charger or battery.
- Never short-circuit the battery terminals.
- Do not drop, mutilate or attempt to disassemble the battery.

Charging

- The Nickel Metal Hydride (NiMH) battery supplied with the Site Master is shipped in a discharged state.
- Before using the Site Master, the internal battery must first be charged for three hours, either in the Site Master or in the optional battery charger (Anritsu part number: 2000-1029).
- When the Site Master or battery charger is not in use, disconnect it from the power source.
- Do not charge batteries for longer than 24 hours; overcharging may shorten battery life.
- If left unused a fully charged battery will discharge itself over time.

Storage Temperatures

- Temperature extremes will affect the ability of the battery to charge. Allow the battery to cool down or warm up as necessary before use or charging.
- Storing the battery in extreme hot or cold places will reduce the capacity and lifetime of the battery.

Battery Conditioning

- With a new NiMH battery, full performance is achieved after three to five complete charge and discharge cycles.
- Discharge an NiMH battery from time to time to improve battery performance and battery life.

Battery Replacement and Disposal

- The battery can be charged and discharged hundreds of times, but it will eventually wear out.
- The battery may need to be replaced when the operating time between charging becomes noticeably shorter than normal.
- Do not dispose of batteries in a fire!
- Batteries must be recycled or disposed of properly.
- Do not place batteries in household garbage.

3-5 Battery Testing Procedure

The following procedure describes how to test the battery.

1. With the Site Master off and the battery installed, connect the Universal AC Adapter to the 12.5-15VDC (1350 mA) connector. The **External Power LED** and the **Battery Charging LED** will light.

Note	If the **Battery Charging LED** does not light, the battery may be too low to immediately start full charging. Leaving the unit connected to AC power for several hours may bring the battery up to a level where full charging can begin. Turn the unit off and back on to see if the **Battery Charging LED** lights indicating a full charge cycle has begun. Charging is inhibited below 0ºC (0 degrees C) and above 45ºC (45 degrees C). If the unit is too hot, the battery will not start charging until the unit temperature has reached 43ºC (43 degrees C).

2. Disconnect the AC-DC Adapter when the **Battery Charging LED** turns off, indicating the battery is fully charged.
3. Press and hold the **ESCAPE/CLEAR** key, then press the **ON/OFF** key to turn on the Site Master. This sets the instrument to the factory preset state. Press **ENTER** when prompted to continue.
4. Press the **SYS** key, followed by the Status soft key. Verify that the indicated battery charge is greater than or equal to 80%.
   - If the value is 80% or above, press the **ESCAPE/CLEAR** key and continue with this procedure.
   - If the value is lower than 80%, a discharge/charge cycle may be needed to improve the battery capacity.
     - Completely discharge the battery, as described in Step #5 and Step #6 below.
     - Then recharge the battery as described in Step #1 and Step #2 above.
   - If the battery capacity does not increase after a discharge/charge cycle, replace the battery.
5. Press the **START CAL** key (to keep the Site Master from going into HOLD mode) and make note of the test start time.
6. When the Site Master display fades and the Site Master switches itself off, make note of the test stop time.
7. The total test time from Step #5 to Step #6 should be greater than or equal to 1.5 hours.
8. If the battery charge started at 80% or more and the total battery test time is less than 70 minutes, replace the battery.

3-6 Front Panel Assembly Removal and Replacement

Overview

This procedure provides instructions for removing and replacing the Site Master front panel assembly. With the front panel assembly removed, the LCD display, keypad PCB, keypad membrane, and main PCB assemblies can be removed and replaced.

Note	Many of the procedures in this section are generic, and apply to many similar instruments. Photos and illustrations used are representative and may show instruments other than the Site Master.

Replacement Procedure

1. Place the Site Master face up on a stable work surface.
2. Remove the four rubber corner bumpers by carefully lifting and sliding the bumpers off of the case corners (Figure 3-3).

Figure 3-3. Remove the Corner Bumpers

3. With the bumpers removed, the access holes for the case screws are revealed.
4. Use a Phillips screwdriver to remove the four screws securing the two halves of the Site Master case together.
5. Carefully lift up on the right side (as viewed from the front) of the front half of the case and begin to separate the two halves.

Caution	Do not force or pull the two halves of the case apart completely, as there are delicate cables attached between the two halves that must be disconnected first.

6. Carefully disconnect the LCD display cable from J14 on the main PCB.
7. Carefully disconnect the keypad interface cable from J4 on the main PCB.
8. Carefully disconnect the LCD display backlight cable from J1 on the main PCB.
9. Remove the front panel assembly.

10. Reverse the above steps to replace the front panel assembly.

Note	The corner bumpers only mount one way. That is, the raised area inside one end of the bumper (Figure 12) is made to conform to the contour of the front cover only.

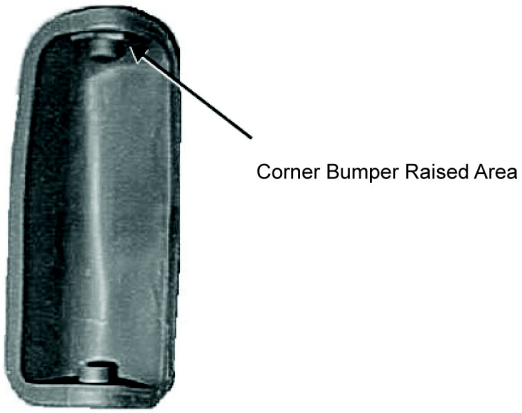


Figure 3-4. Corner Bumper Detail with Raised Area

3-7 LCD Assembly Replacement

Overview

This procedure provides instructions for removing and replacing the Liquid Crystal Display (LCD) once the front panel assembly has been separated from the Site Master.

Replacement Procedure

1. Remove the front panel assembly as directed in Section 3-6, "Front Panel Assembly Removal and Replacement" on page 3-9.
2. Place the front panel assembly face down on a protected work surface.
3. Remove the 14 Phillips screws that attach the backing plate to the front panel assembly.
4. Remove the front panel backing plate, carefully feeding the cables through the access holes to avoid damage to the cables or connectors.

Note	Remove the speaker wire from the retaining clip to allow the removal of the front backing plate. The speaker is not used in the S810D/S820D.

5. Remove the rubber cushion pad from the LCD assembly and remove the assembly.
6. Reverse the above steps to install the replacement assembly.

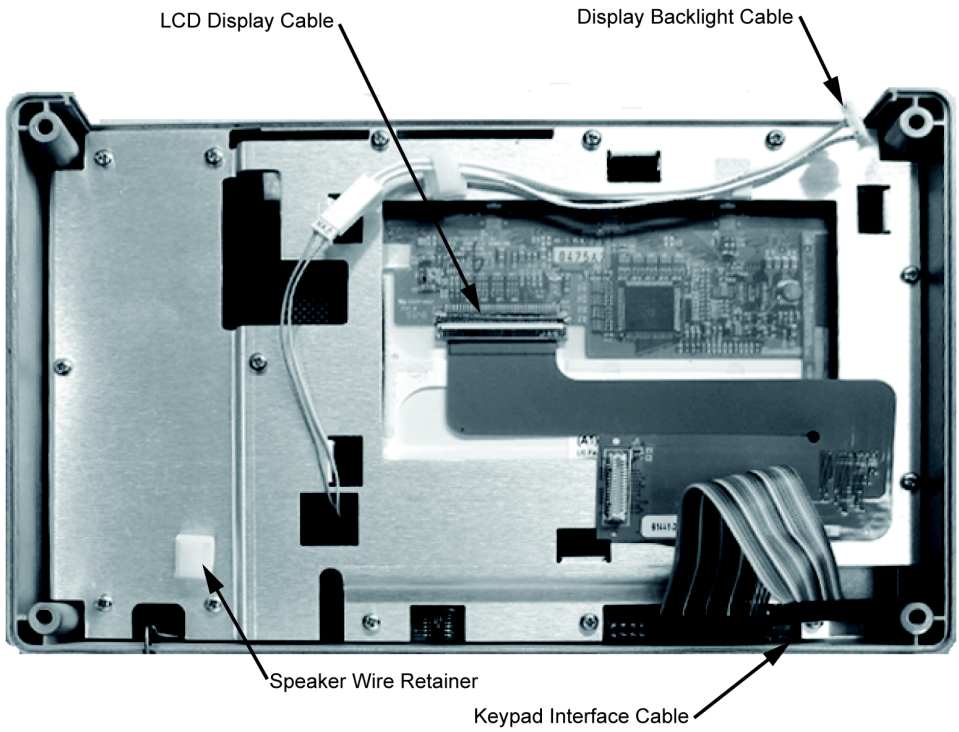


Figure 3-5. Front Panel Backing Plate

3-8 Keypad PCB Replacement

Overview

This procedure provides instructions for removing and replacing the keypad PCB.

Replacement Procedure

1. Remove the front panel assembly as directed in Section 3-6, “Front Panel Assembly Removal and Replacement” on page 3-9.
2. Place the front panel assembly face down on a protected work surface.
3. Remove the 14 Phillips screws that attach the backing plate to the front panel assembly.
4. Remove the front panel backing plate, carefully feeding the cables through the access holes to avoid damage to the cables or connectors.
5. Remove the rubber cushion pad from the key pad PCB and remove the PCB.

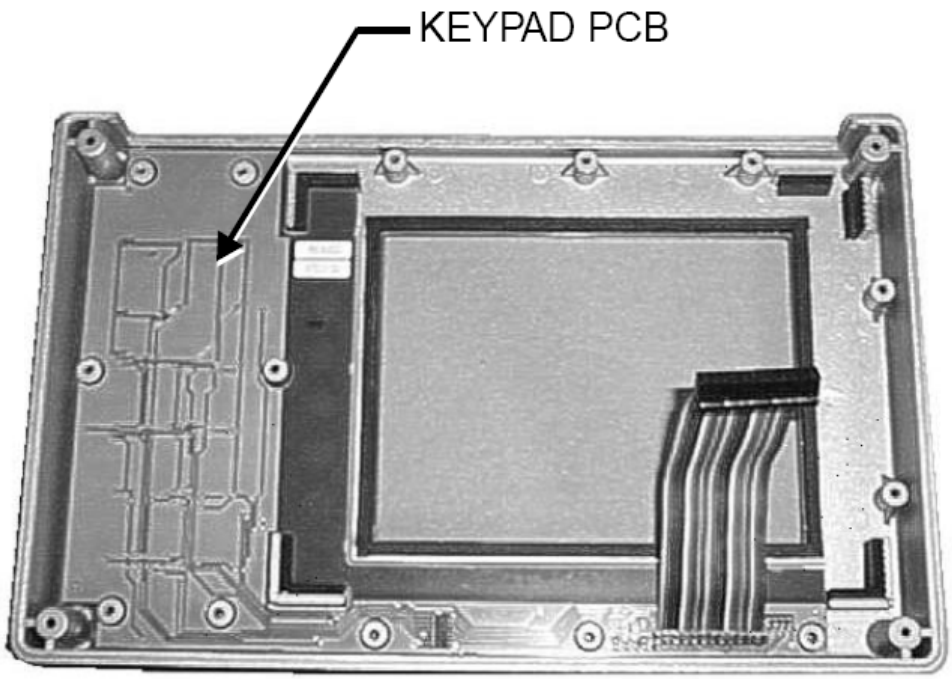


Figure 3-6. Front Panel Keypad PCB Location

6. Reverse the steps above steps to install the replacement assembly.

3-9 Keypad Membrane Replacement

Overview

This procedure provides instructions for replacing the key pad membrane.

Replacement Procedure

1. Remove the front panel assembly as directed in Section 3-6, “Front Panel Assembly Removal and Replacement” on page 3-9.
2. Remove the key pad PCB as directed in section Section 3-8, “Keypad PCB Replacement” on page 3-12
3. Remove the keypad membrane by gently pulling the membrane up and out of the holes in the front panel.
4. Reverse the above steps to install the replacement membrane.

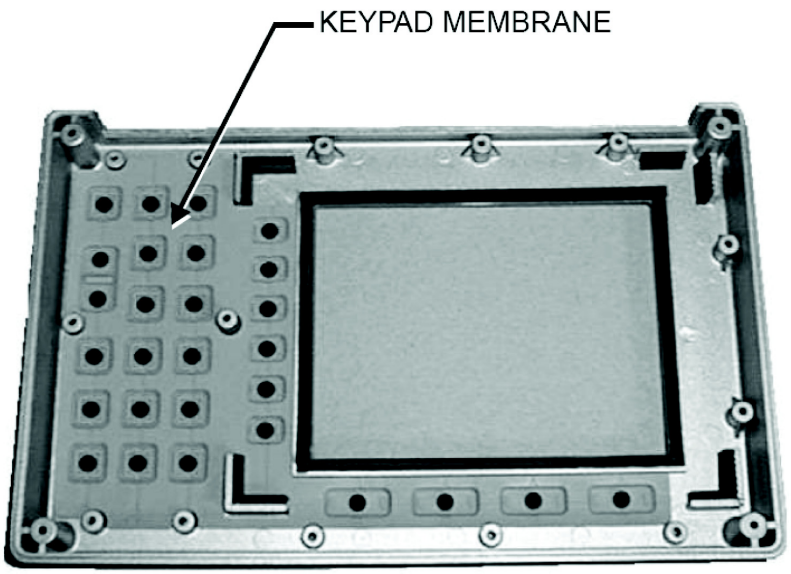


Figure 3-7. Front Panel Keypad Membrane

3-10 Power Monitor PCB Replacement

Overview

This procedure provides instructions for replacing the Power Monitor PCB (P/N ND64376).

Replacement Procedure

1. Remove the front panel assembly as directed in Section 3-6, “Front Panel Assembly Removal and Replacement” on page 3-9.
2. Disconnect the RF Detector connector ribbon cable from P1 on the Power Monitor PCB.

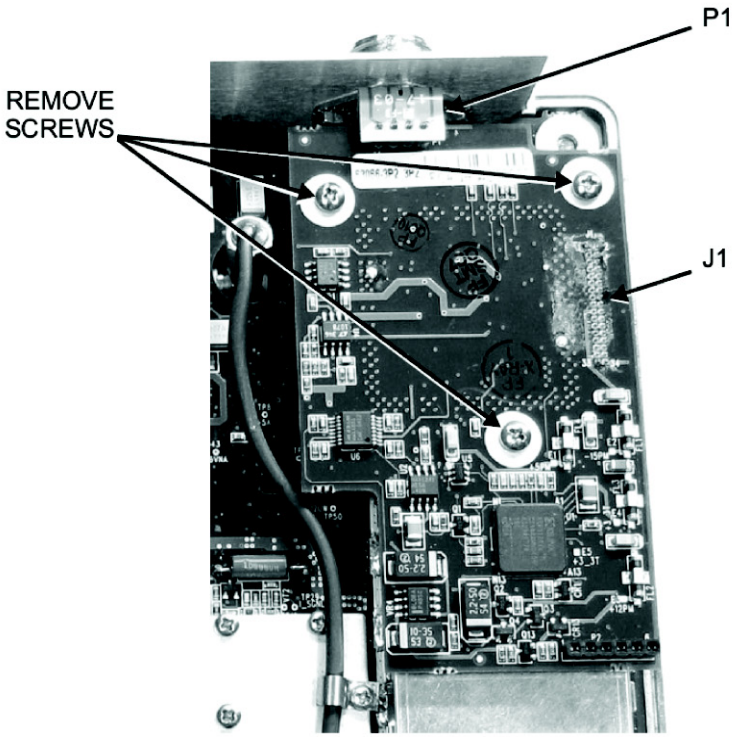


Figure 3-8. RF Detector PCB Replacement

3. Remove the three Phillips screws that secure the Power Monitor PCB to the Main PCB.
4. Gently lift the Power Monitor PCB and separate connector J1 of the Power Monitor PCB from J6 of the Main PCB.
5. Reverse the above steps to install the replacement Power Monitor PCB, taking care to properly align the pins of connector J1 of the Power Monitor PCB with connector J6 of the Main PCB.

3-11 Real Time Clock Battery Replacement

Overview

This procedure provides instructions for replacing the Lithium Coin Real Time Clock Battery (P/N 633-26).

Procedure

1. Remove the front panel assembly as directed in Section 3-6, “Front Panel Assembly Removal and Replacement” on page 3-9.
2. Locate the RTC battery as shown in Figure 3-9 below.

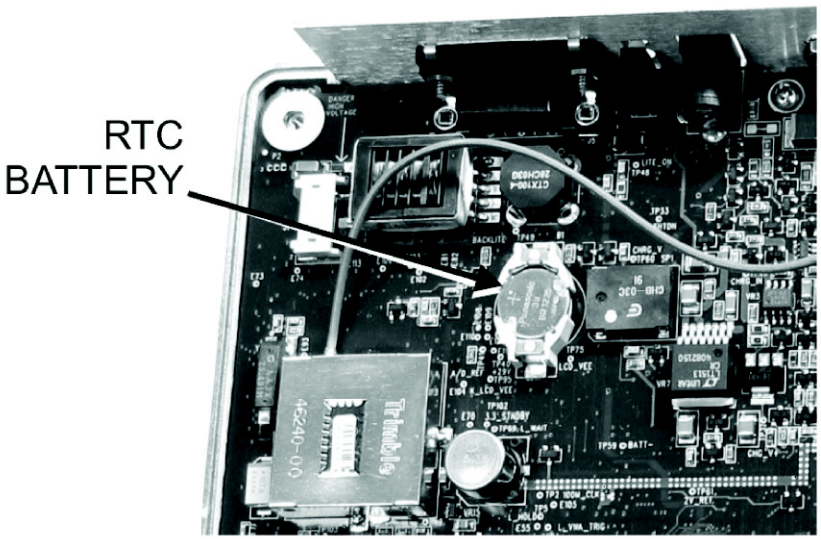


Figure 3-9. Real Time Clock Battery

3. Using a non-metallic probe, gently pry the battery from its holder, taking care not to damage the holder or surrounding components.

Note	The RTC battery may be secured in the holder with a small quantity of clear RTV sealant on top of the battery. Replace this sealant when replacing the battery to insure that the battery remains properly secured. Do not allow the sealant to come between the battery and the holder contacts.

4. Install the new RTC battery, making sure that the positive (+) side of the battery faces up.
5. Replace the front panel assembly as directed in Section 3-6, “Front Panel Assembly Removal and Replacement” on page 3-9.

3-12 Main/RF PCB Assembly Replacement

Overview

This procedure provides instructions for replacing the Main/RF PCB assembly.

Note	Some photos and steps in this procedure may vary depending on the options installed in the unit. Disregard any steps that do not apply to the specific unit being serviced.

Replacement Procedure

1. Remove the front panel assembly as directed in Section 3-6, “Front Panel Assembly Removal and Replacement” on page 3-9.
2. Disconnect the battery connector from J7 on the Main PCB.
3. Disconnect the semi-rigid coaxial cable from the RF PCB, as indicated in Figure 3-10 below.

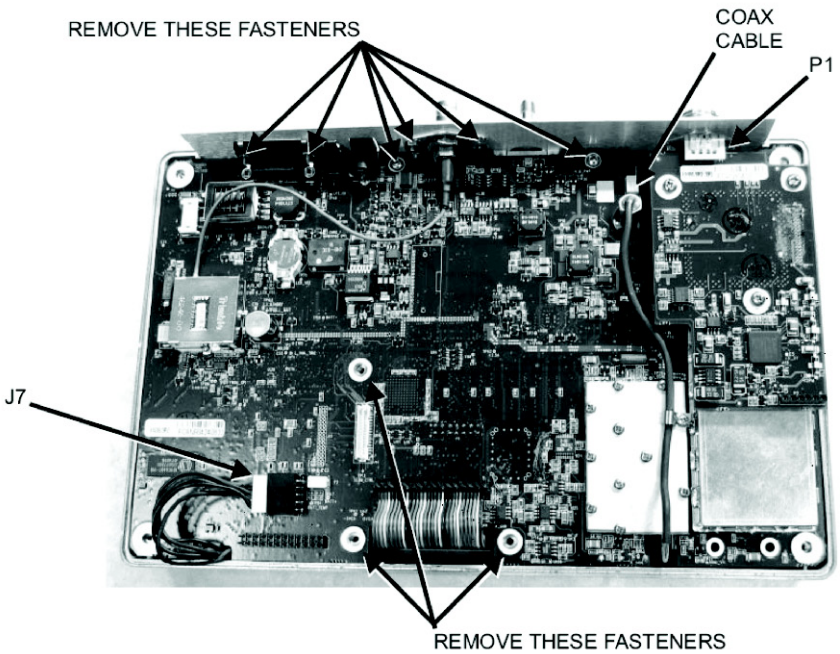


Figure 3-10. Main/RF PCB Assembly

4. Disconnect the RF Detector connector ribbon cable from P1 on the Power Monitor PCB.
5. Remove the PCB mounting screws and the GPS and Serial Interface connector mounting fasteners.
6. Remove the GPS connector from the connector panel.
7. Carefully lift the top of the Main PCB up and clear of the connector panel.
8. Fold the Main PCB back to allow access to the RF PCB below and remove the three 0.25” standoffs that secure the RF PCB to the case (Figure 3-11).
9. Remove the Main/RF PCB assembly with the connector panel.
10. Reverse the steps above to install the new Main/RF PCB assembly.

Note	The connector panel fits into grooves in the two halves of the case. Make sure the panel is correctly aligned with the grooves before reassembling the two halves together.

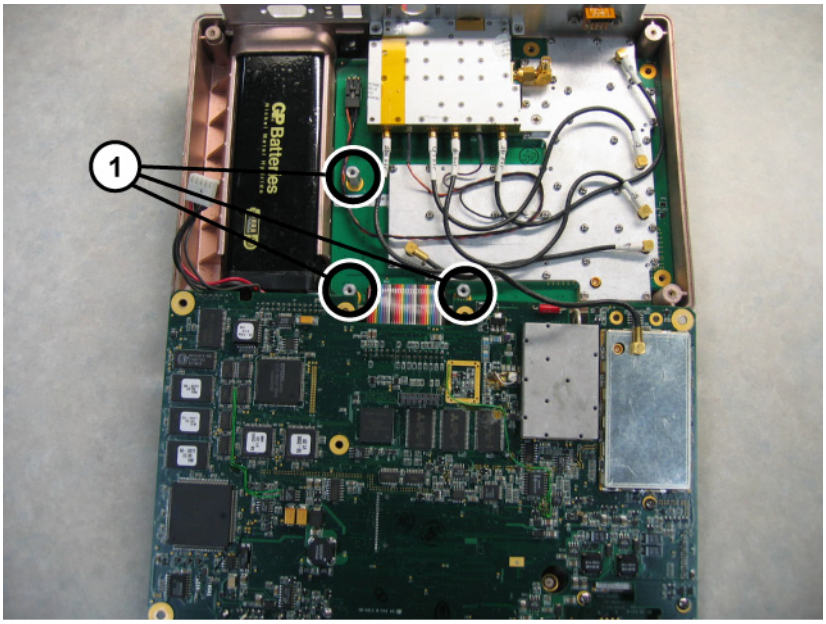


Figure 3-11. Main/RF PCB Removal

Table 3-5. Callout Index for Figure 3-11, “Main/RF PCB Removal”

Index	Callout Description
1	Remove the three (3) 0.25” standoffs that secure the RF PCB to the case.

3-13 Source Control PCB Assembly Replacement

Overview

This procedure provides instructions for replacing the Option 22 CW Source Control PCB assembly.

Note	Some photos and steps in this procedure may vary depending on the options installed in the unit. Disregard any steps that do not apply to the specific unit being serviced.

Replacement Procedure

Caution 	If the Option 22 CW Source Control PCB assembly removal procedure is done incorrectly, it can bend or break the pins on the 551-1694 2-row 32-pit (m-m) adapter that connects the Option 22 PCB assembly to the Main PCB assembly. It is highly recommended to only perform this procedure when spare 551-1694 adapters are available.

1. Remove the front panel assembly as directed in Section 3-6, “Front Panel Assembly Removal and Replacement” on page 3-9.
2. Place the instrument with the display and front panel buttons facing down.

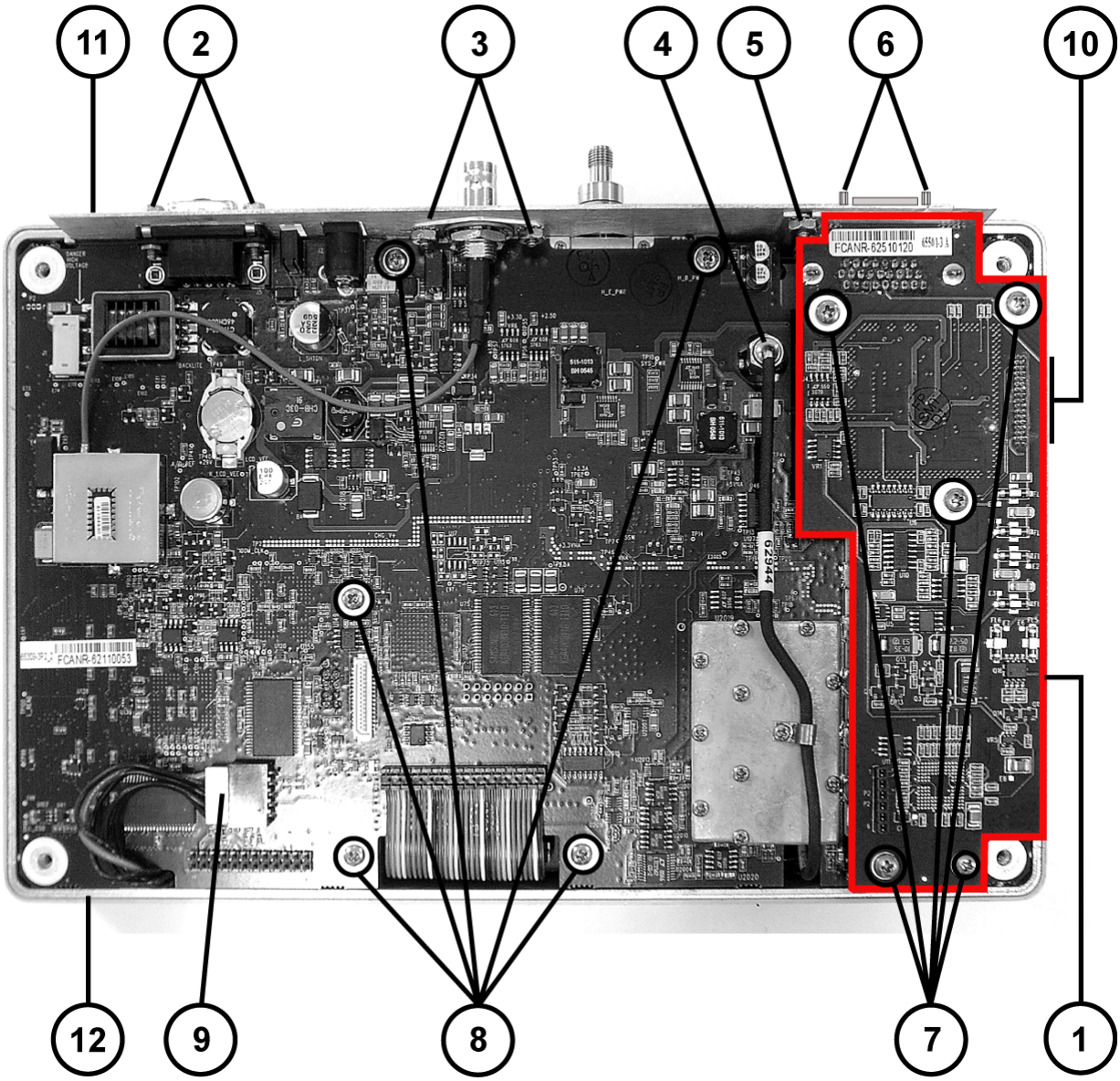


Figure 3-12. Main PCB Assembly and Option 22 CW Source Control PCB Assembly

Table 3-6. Callout Index for Figure 3-12, "Main PCB Assembly and Option 22 CW Source Control PCB Assembly"

Index	**Callout Description** *(1 of 2)*
1	Option 22 CW Source Control PCB assembly.
2	RS-232C DB-9 (m) connector. Remove two (2) hex mounting standoffs.
3	GPS Antenna connector. Remove to two (2) 6-32 kep nuts.
4	RF Coaxial cable and connector. Undo the SMA connector.
5	Internal mounting bracket for Option 22. Remove the 6-32 kep nut.
6	Option 22 CW Source DB-26 (m) connector. Remove two (2) hex mounting standoffs.
7	Option 22 CW Source Control PCB assembly. Remove five (5) 6-32 Phillips mounting screws.

Table 3-6. Callout Index for Figure 3-12, "Main PCB Assembly and Option 22 CW Source Control PCB Assembly"

Index	Callout Description *(2 of 2)*
8	Main PCB assembly. Remove five (5) 6-32 Phillips mounting screws.
9	Main PCB assembly. Disconnect the battery connector from J7.
10	Out of view and mounted on the other side of the Option 22 PCB assembly is the 2-Row 32-Socket Interconnect Header Connector. Below that is the 551-1694 2-row 32-pin (m-m) adapter. The adapter connects to a second 2-Row 32-Socket Interconnect Header Connector mounted on the Main PCB.
11	Connector panel and top of instrument.
12	Bottom of instrument

3. Outside the case, remove two (2) hex standoffs from the RS-232C DB-9 (m) connector (Figure 3-12 #2).
4. Inside the case, remove two (2) 6-32 kep nuts from the GPS connector (Figure 3-12 #3).
5. Disconnect the semi-rigid coaxial cable SMA connector from the RF PCB. Leave the cable in place (Figure 3-12 #4).
6. Remove the 6-32 kep nut holding the Connector Adapter Plate in place. The plate will be lose but not removable at this point (Figure 3-12 #5).
7. Outside the case, remove two (2) hex standoffs from the Option 22 CW Source DB-26 (m) connector (Figure 3-12 #6).
8. Inside the case, remove five (5) 6-32 Phillips mounting screws holding the Option 22 CW Source Control PCB assembly in place (Figure 3-12 #7).
9. Remove five (5) 6-32 Phillips mounting screws holding the Main PCB assembly in place (Figure 3-12 #8).
10. Disconnect the battery connector from J7 on the Main PCB (Figure 3-12 #9).
11. The Connector Panel, Main PCB, and the Option 22 CW Source Module assemblies should be loose.
12. Gently lift the bottom edge of the Main PCB assembly closest to the ribbon cable (Figure 3-12 #11) and gently pull towards the bottom of the case. The goal is to create clearance between the Connector Panel and the Main PCB assembly.
13. Gently lift the Connector Panel assembly (Figure 3-12 #12) and pull it towards the top of the instrument. The goal is to create more clearance between the Connector Panel and the DB-26 connector on the Option 22 CW Source Control PCB assembly.
14. Finally, gently lift the back edge of the Option 22 CW Source Control assembly.
15. When the Option 22 DB-26 connector is free from the Connector Panel, continue to lift the Option 22 CW Source Control PCB assembly.

Note Connecting the 2-row 32-pin header connectors on the Option 22 and Main PCB assemblies is the 551-1694 2-row 32-pin (m-m) adapter. The 32-pin adapter may remain in the Main PCB assembly or stay with the Option 22 PCB assembly.

16. Inspect the pins on the 551-1694 2-row 32-pin (m-m) adapter. If they are bent, replace the adapter.
17. Installation of the replacement Option 22 CW Source Control PCB assembly is the reverse process.
18. Start with installing the 551-1694 2-row 32-pin (m-m) adapter on the Main PCB.
19. Make sure the Connector Adapter Plate is in place and that the slot on the Plate is correctly positioned around the 6-32 mounting stud on the inside of the Back Panel.

20. Insert the DB-26 connector through the Connector Adapter Plate and Connector Panel openings.

21. When DB-26 connector is through the Connector Panel opening, gently lower the Option 22 CW Source Control PCB assembly onto the Main PBC, making sure the header on the Option 22 header connects successfully with the 551-1694 2-row 32-pin (m-m) adapter.

22. Once the headers and adapter have successfully connected, begin to add but not tighten the remaining hardware.

23. Reconnect the J5 power connector.

24. Tighten the Phillips screws holding the Main PCB assembly.

25. Tighten the Phillips screws holding the Option 22 CW Source Control PSCB assembly.

26. Tighten the hex standoff nuts on the DB-26 connector.

27. Tighten the 6-32 kep nut holding the Connector Adapter panel in place.

28. Tighten the RF coax connector.

29. Tighten the 6-32 kep nuts holding the GPS connector.

30. Tighten the hex standoff nuts on the RS-232C DB-9 serial connector.

Appendix A — Test Data Master for CW Source Modules

Anritsu

Customer

CWM220NF, CWM220B-NF

Model	Serial No.	Anritsu R.O.	Customer P.O.	Date	Tested By

Reason Submitted:	Calibration [ ] Evaluation [ ] Repair [ ] New Product Evaluation [ ]
Condition Received:	Mechanical: Good [ ] Fair [ ] Poor [ ] Beyond Repair [ ] Electrical: In Tolerance [ ] Out of Tolerance [ ]
Condition Returned:	In Tolerance [ ] Un-repaired [ ] Performance exception, see attachment [ ]

PRECALIBRATION EVALUATION

	Specification	Measured Value	In Tolerance?
2-Port Cable Loss Measurement Accuracy (10 MHz to 18 GHz)	+/- 0.85 dB @ 10 dB attenuation	_____dB	Yes [ ] No [ ]
	+/- 1.35 dB @ 30 dB attenuation	_____dB	Yes [ ] No [ ]

	Specification	Measured Value	In Tolerance?
Frequency Accuracy	+/- 8.25 kHz @ 2,750,000 kHz	_____kHz	Yes [ ] No [ ]

	Specification	Measured Value	In Tolerance?
CW Power (10 MHz to 18 GHz)	M1= < +15 dBm M2= > -15 dBm	_____dBm _____dBm	Yes [ ] No [ ] Yes [ ] No [ ]

POSTCALIBRATION EVALUATION

	Specification	Measured Value	In Tolerance?
2-Port Cable Loss Measurement Accuracy (10 MHz to 18 GHz)	+/- 0.85 dB @ 10 dB attenuation	_____dB	Yes [ ] No [ ]
	+/- 1.35 dB @ 30 dB attenuation	_____dB	Yes [ ] No [ ]

	Specification	Measured Value	In Tolerance?
Frequency Accuracy	+/- 8.25 kHz @ 2,750,000 kHz	_____kHz	Yes [ ] No [ ]

	Specification	Measured Value	In Tolerance?
CW Power (10 MHz to 18 GHz)	M1= < +15 dBm M2= > -15 dBm	_____dBm _____dBm	Yes [ ] No [ ] Yes [ ] No [ ]

Anritsu

Customer

CWM220SF, CWM220B-SF

Model	Serial No.	Anritsu R.O.	Customer P.O.	Date	Tested By

Reason Submitted:	Calibration [ ] Evaluation [ ] Repair [ ] New Product Evaluation [ ]
Condition Received:	Mechanical: Good [ ] Fair [ ] Poor [ ] Beyond Repair [ ] Electrical: In Tolerance [ ] Out of Tolerance [ ]
Condition Returned:	In Tolerance [ ] Un-repaired [ ] Performance exception, see attachment [ ]

PRECALIBRATION EVALUATION

	Specification	Measured Value	In Tolerance?
2-Port Cable Loss Measurement Accuracy (10 MHz to 20 GHz)	+/- 0.85 dB @ 10 dB attenuation	_____dB	Yes [ ] No [ ]
	+/- 1.35 dB @ 30 dB attenuation	_____dB	Yes [ ] No [ ]

	Specification	Measured Value	In Tolerance?
Frequency Accuracy	+/- 8.25 kHz @ 2,750,000 kHz	_____kHz	Yes [ ] No [ ]

	Specification	Measured Value	In Tolerance?
CW Power (10 MHz to 20 GHz)	M1= < +15 dBm M2= > -15 dBm	_____dBm _____dBm	Yes [ ] No [ ] Yes [ ] No [ ]

POSTCALIBRATION EVALUATION

	Specification	Measured Value	In Tolerance?
2-Port Cable Loss Measurement Accuracy (10 MHz to 20 GHz)	+/- 0.85 dB @ 10 dB attenuation	_____dB	Yes [ ] No [ ]
	+/- 1.35 dB @ 30 dB attenuation	_____dB	Yes [ ] No [ ]

	Specification	Measured Value	In Tolerance?
Frequency Accuracy	+/- 8.25 kHz @ 2,750,000 kHz	_____kHz	Yes [ ] No [ ]

	Specification	Measured Value	In Tolerance?
CW Power (10 MHz to 20 GHz)	M1= < +15 dBm M2= > -15 dBm	_____dBm _____dBm	Yes [ ] No [ ] Yes [ ] No [ ]

Index

Numerics

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H

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