

MAINTENANCE MANUAL

Site Master™ Model S115BQ

Antenna and Cable Analyzer

1. INTRODUCTION

This manual provides maintenance instructions for the Site Master S115BQ Antenna and Cable Analyzer. It describes the product and provides performance verification procedures, parts replacement procedures, and a replaceable parts list.

2. DESCRIPTION

The Site Master is a hand held SWR/RL (standing wave ratio/return loss), and Distance-To-Fault measurement instrument. It combines a synthesized source, VSWR Bridge, and receiver on a single printed circuit board (PCB). An optional power monitor is also available. A block diagram is shown in Figure 1.

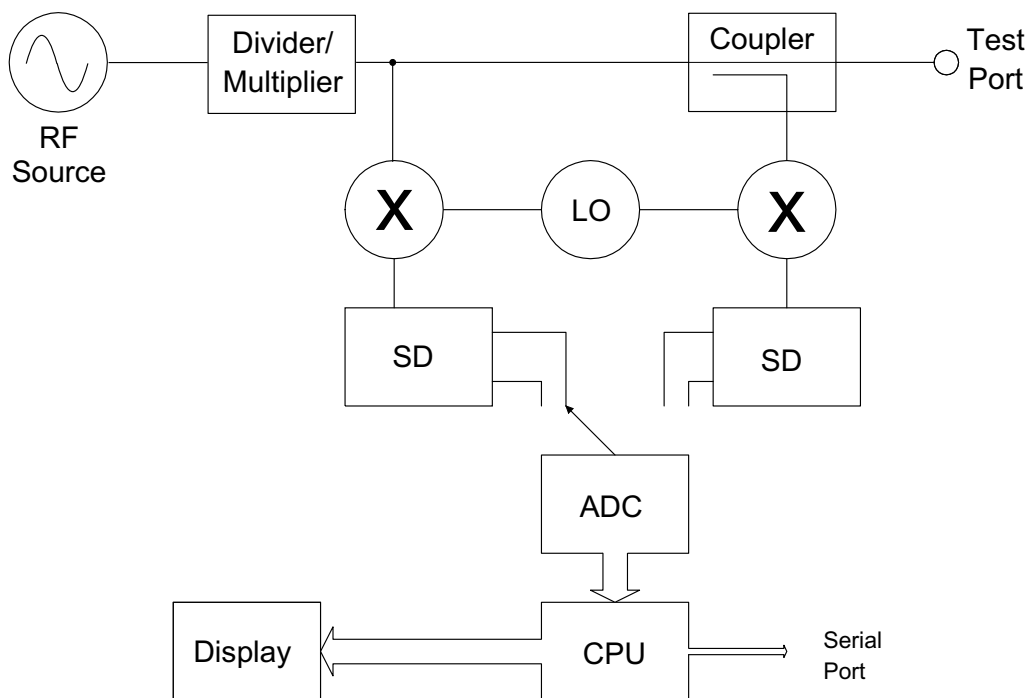


Figure 1. Site Master Block Diagram



3. PERFORMANCE VERIFICATION

Paragraphs 4 through 9 contain tests that can be used to verify the performance of the Site Master model S115BQ having any version of firmware.

3.1. Initial Setup for Testing

1. 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.)
2. Release the ESCAPE/CLEAR key and use the Up/Down arrow key to adjust the contrast to give a readable display.

4. 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.

a. Equipment Required:

- Spectrum Analyzer Anritsu Model MS2663C or equivalent

b. Procedure:

1. 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.

2. Press the **FREQ/DIST** key, then press the F1 soft key and set F1 to 1000 MHz, then press the **ENTER** key.
3. Press the F2 soft key, set F2 to 1000 MHz, then press the **ENTER** key.
4. Connect the RF cable from the Site Master Reflection Test Port to the RF Input on the MS2663C or equivalent.
5. Set up the Spectrum Analyzer as follows:
 - (a) Press the **Preset** key, then select **Preset All** (F1).

- (b) Press the **Frequency** key.
 - (c) Press the **1** key and then the **GHz** key to change the Center Frequency to 1 GHz.
 - (d) Press the **Span** key.
 - (e) Press the **7, 5, 0,** and **kHz** keys sequentially to change the Frequency Span to 750 kHz.
 - (f) Press the **RBW** key.
 - (g) Press the **1, 0** and **kHz** keys sequentially to change the RBW to 10 kHz.
 - (h) Press the **VBW** key.
 - (i) Press the **Filter Off** soft key (F3) to turn the VB filter off.
 - (j) Press the **Amplitude** key.
 - (k) Press the **1, 0,** and **dBm** keys sequentially to change the Reference Level to 10 dBm.
 - (l) Press the **Log Scale** soft key (F5)
 - (m) Select **2 dB/Div** (F3) and the press the **return** soft key (F6).
 - (n) Press the **Marker** key.
 - (o) Press the **Zone Width** soft key (F5).
 - (p) Select the **Spot** soft key (F1).
6. On the Site Master, press the **SYS** key, the **OPTIONS** soft key and then the **FIXED CW** soft key to turn Fixed CW on.

NOTE

If the Site Master has gone into the hold mode, press the **RUN/HOLD** key to return to normal mode.

7. On the Spectrum Analyzer, press the **A, B** and then the **Storage** key (F5).
8. Press the **Max Hold** soft key (F2).
9. A peak response should appear on the Spectrum Analyzer.
10. Press the **Marker Peak Search** key on the Spectrum Analyzer. Verify that the marker peak readout value is 1000 MHz \pm 75 kHz.

11. On the Site Master, press the **SYS** key, the **OPTIONS** soft key and then the **FIXED CW** soft key to turn Fixed CW Off.

5. 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.

a. Equipment Required:

- 20 dB offset, Anritsu SC5270
- 6 dB offset, Anritsu SC5237
- Open/Short, Anritsu 22N50
- 50 Ohm Termination, Anritsu SM/PL

b. Procedure:

1. 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.

2. Press the **MODE** soft key.
3. Use the **Up/Down Arrow** key to highlight **RETURN LOSS**, then press **ENTER**.
4. Press the **START CAL** key.
5. Follow the instructions on the screen to perform a calibration using a **22N50** Open/Short and **SM/PL** Termination.
6. Connect the **20 dB** offset to the **Refl Test Port** and verify that the reading is **20 dB ± 1.7 dB**.
7. Connect the **6 dB** offset to the **Refl Test Port** and verify that the reading is **6 dB ± 1.2 dB**.

6. POWER MONITOR 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.

a. Equipment Required:

- RF Detector, 10 MHz to 20 GHz, Anritsu 560-7N50B
- 10 dB Attenuator, Weinschel 1-10
- 30 dB Attenuator, Weinschel 1-30
- RF Reference Source, 0.050 GHz, Anritsu MA2418A
- DC Power Supply, Anritsu 2000-933

b. Procedure

1. Connect the DC power supply to the **MA2418A** Reference Source. (Refer to Figure 2, page 4.)
2. Connect the **MA2418A** Reference Source to the input of the **560-7N50B** RF detector.
3. Connect the **RF Detector** output to the **RF Detector** input of the Site Master.
4. Connect the DC power supply to the appropriate line voltage to supply power to the **MA2418A** Reference Source.
5. 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.)
6. Press the **MODE** soft key.
7. Use the **Up/Down Arrow** key to highlight **POWER MONITOR**, then press **ENTER**.
8. Press the **ZERO** soft key to zero the power monitor. When complete, **ZERO ADJ:ON** is displayed in the message area.
9. Verify that the power monitor reading is **0.0 dBm ± 1 dB**.
10. Connect the output of the **MA2418A** Reference Source to the two attenuators so as to add **40 dB** of attenuation (Figure 2).

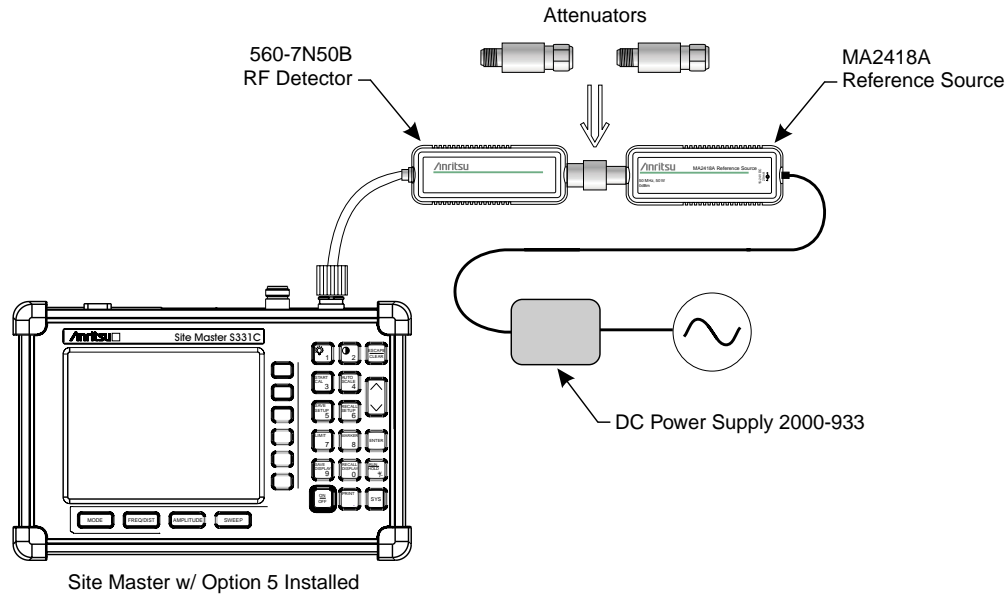


Figure 2. Power Monitor Verification

11. Connect the MA2418A Reference Source and the attenuators to the input of the 560-7N50B RF detector.
12. Verify that the power monitor reading is now $-40.0 \text{ dBm} \pm 2 \text{ dB}$.

This completes the Power Monitor Verification procedure.

7. TERMINATION VERIFICATION

This test verifies the accuracy of the Site Master SM/PL termination using the precision return loss mode of the 541XXA Scalar Measurement System. Measurements of terminations using this mode provide results that are traceable to the NIST (National Institute of Standards and Technology) standards for the precision airline.

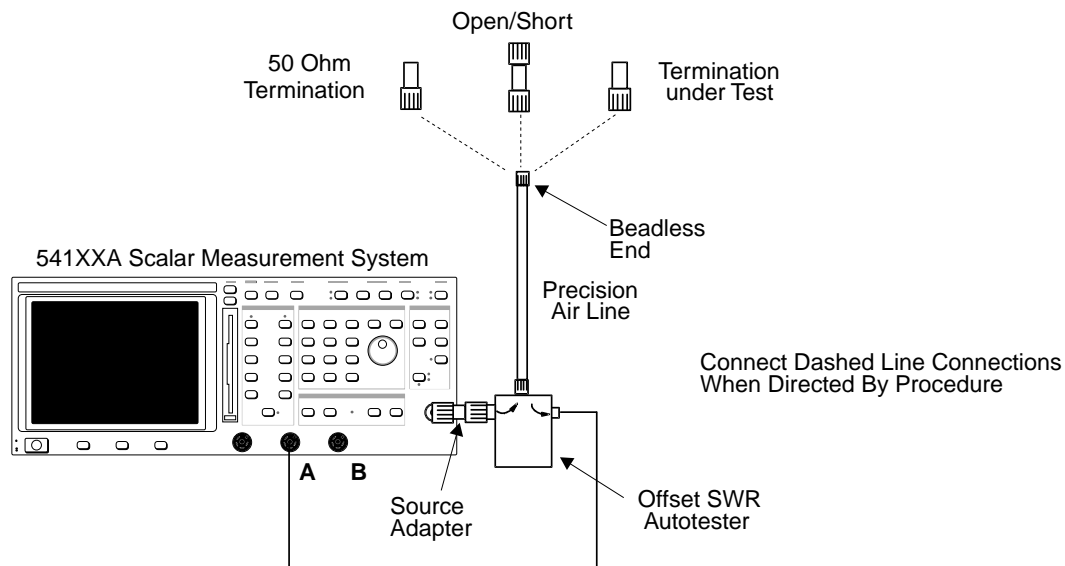


Figure 3. 541XXA Precision Return Loss Setup

a. Equipment Required:

- Scalar Measurement System, Anritsu 541XXA
- Offset SWR Autotester, Anritsu 560-97A50-20
- Precision Airline, Anritsu 18N50
- Open/Short, Anritsu 22N50
- 50 Ohm Termination, Anritsu 28N50-2
- Source Adapter, Anritsu 34NN50A

b. Procedure

1. Connect the test equipment as shown in Figure 3, page 4.
2. Press the Power key on the 541XXA to On.
3. Press the System Menu key.
4. Using the Menu up-down keys: Highlight RESET, then press the Select key.
5. At the RESET MENU display, use the Menu up-down keys to highlight RESET TO FACTORY DEFAULTS, then press the Select key.
6. Set the signal source for the frequency range as follows:
 - (a) Press the Frequency key.
 - (b) Using the Data Entry Keypad or Data Entry Knob, set the Start frequency to 0.01 GHz. Press the Enter key.
 - (c) Using the Data Entry Keypad or Data Entry Knob, set the Stop frequency to 4.0 GHz. Press the Enter key.
7. Press the Channel 2 Display On/Off key to Off.
8. Press the Channel 1 Menu key.
9. Using the Menu up-down keys: Highlight PRECISION RL, then press the Select key.
10. At the PRECISION RETURN LOSS menu display, use the Menu up-down keys to highlight FINAL, then press the Select key.
11. Press the Calibration key.

12. At the CALIBRATION menu display, use the Menu up-down keys to highlight START CAL, then press the Select key.
13. At the PRECISION RETURN LOSS CALIBRATION menu display prompt, connect the Offset SWR Autotester to Input A, if you have not done so yet.
14. Connect the precision air line to the Offset SWR Autotester test port. Position the air line pointing vertically upward. Downward or horizontal positions make connector pin alignment difficult.

NOTE

Ensure that the bead-less end of the precision airline is at the measurement connection point.

15. Press the Select key when ready.
16. At the PRECISION RETURN LOSS CALIBRATION menu prompt, connect the Open to the bead-less end of the airline. Press the Select key to start the calibration.
17. Verify that the display resembles that shown in Figure 4.

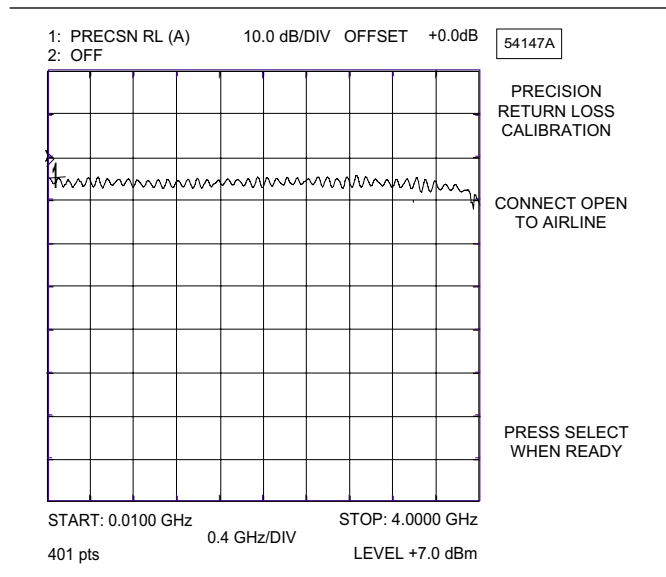


Figure 4. Example of a Good Connection

CAUTION

During both calibration and measurement, be sure to properly align the bead-less connector of the airline. When the connectors are mis-aligned, a spike will usually be visible on the display.

18. At the next menu prompt, remove the Open and connect the Short to the bead-less end of the airline. Press the Select key to start the calibration process.
19. At the next menu prompt, remove the Short and connect the 50 Ohm Termination to the bead-less end of the air line. Press the Select key to start the calibration process.
20. When the calibration is complete, remove the 50 Ohm Termination.
21. Connect the SM/PL termination to the bead-less end of the air line and press the Select key to begin the measurement.
22. Observe that the waveform displayed resembles that shown in Figure 5.

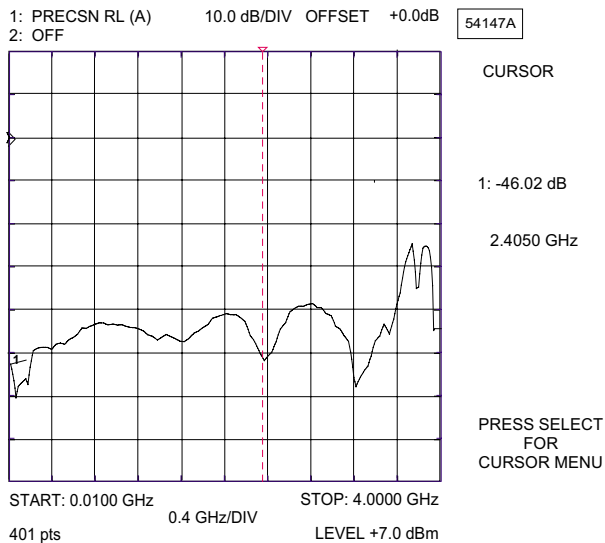


Figure 5. Direct Readout of the Precision Return Loss

23. Press the Cursor On/Off key to On.
24. Observe the Cursor menu readout. The minimum return loss reading for the SM/PL termination should be -42 dB.

8. BATTERY PACK REMOVAL AND REPLACEMENT

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

1. With the Site Master standing upright on a stable surface, locate the battery access door (Figure 6).

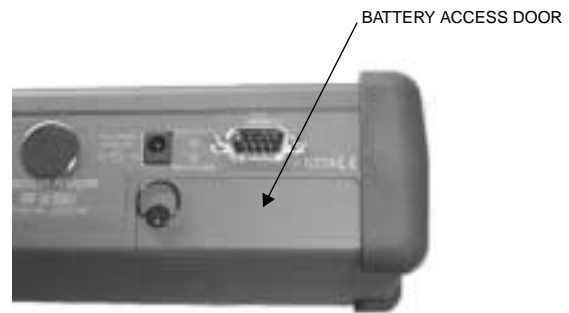


Figure 6. Battery Access Door Location

2. Lift up the access door handle and rotate it 90 degrees counterclockwise, as illustrated in Figure 7.

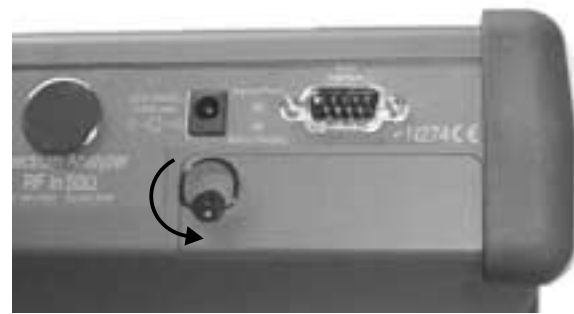


Figure 7. Rotate the Battery Access Door Handle

3. Lift the door and remove, as illustrated in Figure 10.
4. Grasp the battery lanyard and pull the battery straight up and out of the unit, as illustrated in Figure 8.

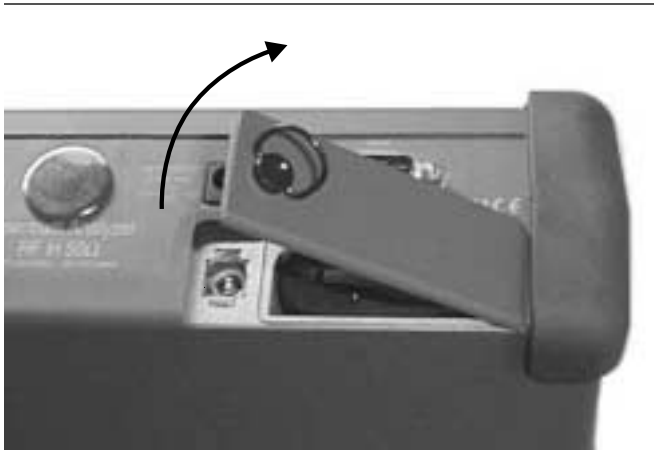


Figure 8. Removing the Battery Access Door

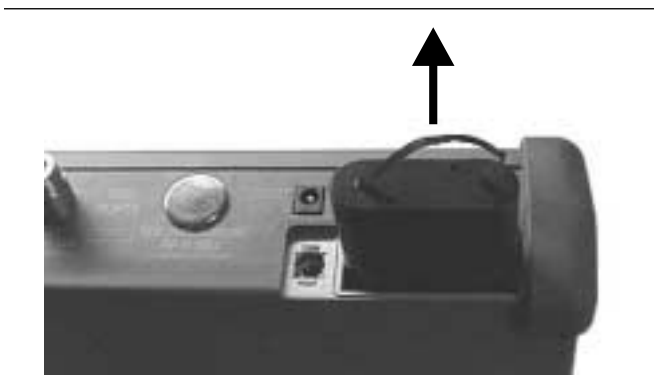


Figure 9. Removing the Battery

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 9).

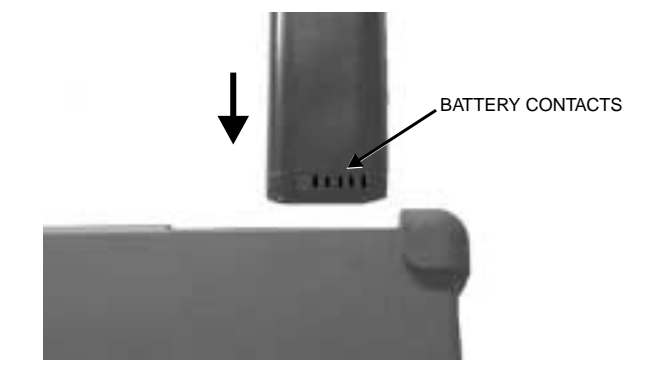


Figure 10. Battery Orientation

9. BATTERY INFORMATION

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

- 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).
- Use only Anritsu approved battery packs.
- Recharge the battery only in the Site Master or in an Anritsu approved charger.
- With a new NiMH battery, full performance is achieved after three to five complete charge and discharge cycles.
- When the Site Master or the 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.
- 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.
- Discharge an NiMH battery from time to time to improve battery performance and battery life.
- 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.
- Never use a damaged or worn out charger or battery.
- Storing the battery in extreme hot or cold places will reduce the capacity and lifetime of the battery.
- Never short-circuit the battery terminals.
- Do not drop, mutilate or attempt to disassemble the battery.

- Do not dispose of batteries in a fire!
- Batteries must be recycled or disposed of properly. Do not place batteries in household garbage.
- Always use the battery for its intended purpose only.

9.1. Battery Testing Procedure

1. With the Site Master off and the battery installed, connect the Universal AC Adapter to the 12.5-15VDC (1100 mA) connector. The External Power LED and the Battery Charging LED will light.
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 $\geq 80\%$. 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 Steps 5 and 6 below, and then recharge the battery as described in Steps 1 and 2. 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 (Step 5 to Step 6) should be ≥ 2.5 hours. If the total test time is < 2.5 hours, replace the battery.

10. FRONT PANEL ASSEMBLY REMOVAL AND REPLACEMENT

NOTE

Procedures in this manual apply to many similar instruments. Photos and illustrations used herein are representative only and may show instruments other than the S115BQ.

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.

1. Place the Site Master face up on a work surface.
2. Remove the four rubber corner bumpers by carefully sliding the bumpers off of the case corners (Figure 11).



Figure 11. Removing the Corner Bumpers

3. With the bumpers removed, the access holes for the case screws are revealed. Use a Phillips screwdriver to remove the four screws securing the two halves of the Site Master case together.
4. 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 as there are delicate cables attached between the two halves that must be disconnected first.

5. Carefully depress the latch tab and disconnect the LCD display cable from J12 on the main PCB.
6. Carefully disconnect the keypad interface cable from J4 on the main PCB.
7. Carefully disconnect the LCD display backlight cable from J15 on the main PCB.



Figure 12. *Corner Bumper Detail*

8. Remove the front panel assembly.
9. 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 13) is made to conform to the contour of the front cover only.

11. LCD ASSEMBLY REPLACEMENT

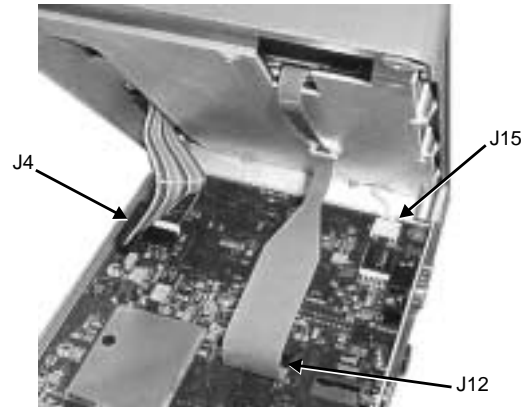


Figure 13. *Site Master Front Panel Cable Connections*

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.

1. Remove the front panel assembly as directed in Section 10.
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. Release the LCD display cable from the retaining clip on the front panel backing plate.

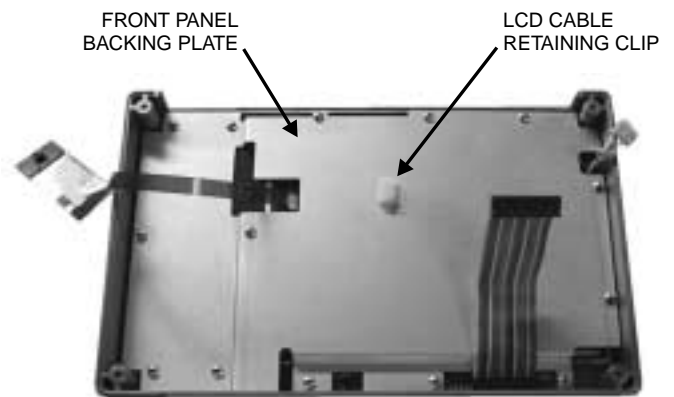


Figure 14. *Front Panel Backing Plate*

5. Remove the front panel backing plate, carefully feeding the LCD cable through the access hole to avoid damage to the cable or connector.
6. Remove the rubber cushion pad from the LCD assembly and remove the assembly.
7. Reverse the above steps to install the replacement assembly.

12. KEY PAD PCB REPLACEMENT

This procedure provides instructions for removing and replacing the key pad PCB.

1. Remove the front panel assembly as directed in Section 10.
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. Release the LCD display cable from the retaining clip on the front panel backing plate (Figure 14).
5. Remove the front panel backing plate, carefully feeding the LCD cable through the access hole to avoid damage to the cable or connector.
6. Remove the rubber cushion pad from the key pad PCB and remove the PCB.

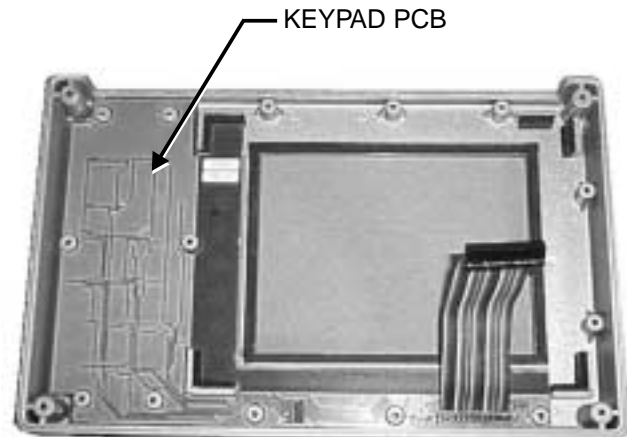


Figure 15. *Front Panel Keypad PCB Location*

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

13. KEY PAD MEMBRANE REPLACEMENT

This procedure provides instructions for replacing the key pad membrane.

1. Remove the front panel assembly as directed in Section 10.
2. Remove the key pad PCB as directed in Section 12.
3. Remove the keypad membrane by gently pulling the membrane up and out of the holes in the front panel.

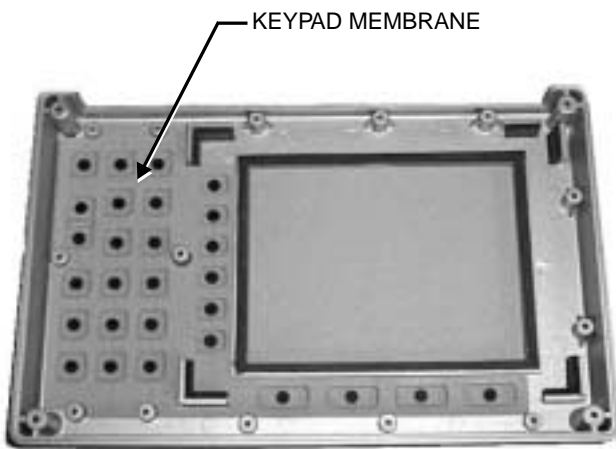


Figure 16. Front Panel Keypad Membrane

4. Reverse the above steps to install the replacement membrane.

14. MAIN PCB ASSEMBLY REPLACEMENT

This procedure provides instructions for replacing the main PCB assembly with the connector panel attached.

NOTE

The lithium-coin clock battery (part number 633-26) on the main PCB may be replaced as necessary without replacing the entire PCB.

1. Remove the front panel assembly as directed in Section 10.
2. Disconnect the battery connector from J13 on the main PCB.
3. Remove the three PCB mounting screws and remove the PCB assembly with the connector panel attached.

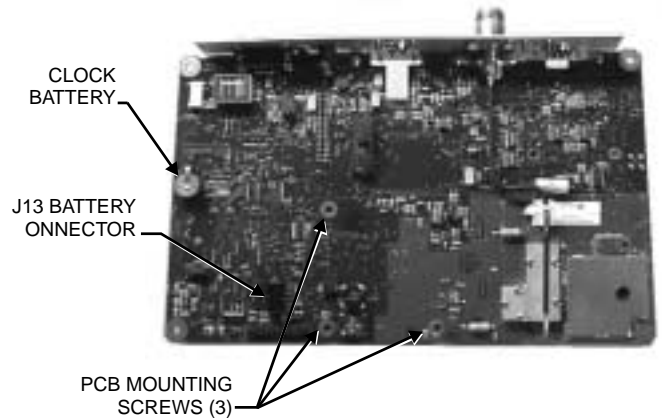


Figure 17. Main PCB

4. Reverse the above steps to install the new main PCB.

NOTE

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

15. REPLACEABLE PARTS

Replaceable parts and accessories for the Site Master Model S115BQ are listed below.

Table 1. *Replaceable Parts List*

Anritsu Part Number	Description	Provisioned Part Number	Quantity
Accessories			
10580-00064	User's Guide, Site Master S115BQ	10580-00064	1
10920-00043	CD, Site Master S115BQ UG, PM, MM	10920-00043	1
2300-347	Software Tools CD, Site Master	2300-347	1
40-115	Universal AC Adapter	40-115	1
2000-1029	Battery Charger	2000-1029	1
22N50	Precision Short/Open, N Male	22N50	1
SM/PL	Precision RF Terminator, N Male	SM/PL	1
OSLN50LF	Precision Open/Short/Load, N Male	OSLN50LF	1
1091-331	Adapter, NM-BNC (m)	1091-331	1
1091-329	Adapter, NM-BNC (f)	1091-329	1
1091-342	Adapter, NM-TNC (m)	1091-342	1
1091-341	Adapter, NM-TNC (f)	1091-341	1
1091-335	Adapter, NM-HN (m)	1091-335	1
1091-334	Adapter, NM-HN (f)	1091-334	1
1091-343	Adapter, NM- UHF (m)	1091-343	1
1091-344	Adapter, NM-UHF (f)	1091-344	1
1091-333	Adapter, NM- C (m)	1091-333	1
1091-332	Adapter, NM- C (f)	1091-332	1
1091-338	Adapter, NM-LC (m)	1091-338	1
1091-337	Adapter, NM- NF/90	1091-337	1
1091-336	Adapter, NM- LC (f)	1091-336	1
1091-339	Adapter, BNC(f) - PJ	1091-339	1
1091-340	Adapter, BNC(f) - PJ-S	1091-340	1
1091-330	Adapter, NM- 7/16 (m)	1091-330	1
1091-328	Adapter, NM- 7/16 (f)	1091-328	1
1091-327	NF - 1-5/8 EIA	1091-327	1
806-62	Automotive Cigarette Lighter/12 V Adapter	806-62	1
800-441	Null Modem Serial Interface Cable	800-441	1
48258	Soft Carrying Case	S115BQ-D-48258	1
760-215B	Transit Case	760-215B	1

Anritsu Part Number	Description	Provisioned Part Number	Quantity
Replaceable Parts			
ND59712	Main PCB Assembly, S115BQ	S115BQ-D-59712	1
ND59713	Main PCB Assembly, S115BQ with Option 5	S115BQ-D-59713	1
ND57371	Option 5 Input Connector w/Cable	S115BQ-D-57371	1
510-87	NF Panel Mount Connector	510-87	1
15-102	Liquid Crystal Display Assembly	15-102	1
633-27	Rechargeable Battery, NiMH	633-27	1
52737-3	Keypad PCB Assembly	S115BQ-D-52737-3	1
46649-1	Keypad Membrane	S115BQ-D-46649-1	1
802-4	LCD Interface Cable	802-4	1
Hardware			
900-861	Pan Head Screw, 4-20, 0.365	900-861	15
900-869	Screw, 4-40, 0.875	900-869	4
900-720	Screw, 4-40, 0.187	900-720	3
900-697	Screw, 4-40, 0.312	900-697	3
785-929	M-F Stand off, 4-40, 11/16	785-929	3
900-326	Kep Nut, 4-40, 0.187	900-326	8
790-42	Hole Plug, 0.625	790-42	1
761-79	Cap Vinyl, Black, round	761-79	1
Case Parts			
46652-2	Top Case only, S115BQ	S115BQ-D-46652-2	1
ND59731	Top Case with hardware, S115BQ	S115BQ-D-59731	1
46653-1	Bottom Case only	S115BQ-D-46653-1	1
ND59732	Bottom Case with hardware	S115BQ-D-59732	1
48231-1	Battery Door	48231-1	1
790-509 790-510 790-511	Battery Door Latch (3 pieces)	790-509 790-510 790-511	1 1 1
46655	Case Corner Bumpers	S115BQ-D-46655	4
48297	LCD Lens	S115BQ-D-48297	1
46662	LCD Retainer Plate	S115BQ-D-46662	1
48241	Foam, LCD Corners	S115BQ-D-48241	8
48278	Foam, LCD Window	S115BQ-D-48278	1
46659	Foam, LCD Backing	S115BQ-D-46659	1
46661	Foam, Keypad Backing	S115BQ-D-46661	1
48246	Foam, Battery Door	S115BQ-D-48246	4
720-19	Cable Clamp	720-19	1
790-515	Spring, Battery Compartment	790-515	3
55224	ID Label, Model S115BQ	S115BQ-D-55224	1

NOTES

Table 2. Anritsu Service Centers

UNITED STATES

ANRITSU COMPANY
685 Jarvis Drive
Morgan Hill, CA 95037-2809
Telephone: (408) 776-8300
FAX: 408-776-1744

ANRITSU COMPANY
10 NewMaple Ave., Suite 305
Pine Brook, NJ 07058
Telephone: 973-227-8999
FAX: 973-575-0092

ANRITSU COMPANY
1155 E. Collins Blvd
Richardson, TX 75081
Telephone: 1-800-ANRITSU
FAX: 972-671-1877

AUSTRALIA

ANRITSU PTY. LTD.
Unit 3, 170 Foster Road
Mt Waverley, VIC 3149
Australia
Telephone: 03-9558-8177
FAX: 03-9558-8255

BRAZIL

ANRITSU ELECTRONICA LTDA.
Praia de Botafogo 440. Sala 2401
CEP22250-040, Rio de Janeiro, RJ, Brasil
Telephone: 021-527-6922
FAX: 021-53-71-456

CANADA

ANRITSU INSTRUMENTS LTD.
700 Silver Seven Road, Suite 120
Kanata, Ontario K2V 1C3
Telephone: (613) 591-2003
FAX: (613) 591-1006

CHINA (SHANGHAI)

ANRITSU ELECTRONICS CO LTD
2F, Rm. B, 52 Section Factory Bldg.
NO 516 Fu Te Road (N)
Waigaoqiao Free Trade Zone
Pudong, Shanghai 200131
PR CHINA
Telephone: 86-21-58680226
FAX: 86-21-58680588

FRANCE

ANRITSU S.A
9 Avenue du Quebec
Zone de Courtaboeuf
91951 Les Ulis Cedex
Telephone: 016-09-21-550
FAX: 016-44-61-065

GERMANY

ANRITSU GmbH
Grafenberger Allee 54-56
D-40237 Dusseldorf
Germany
Telephone: 0211-968550
FAX: 0211-9685555

INDIA

MEERA AGENCIES (P) LTD
A-23 Hauz Khas
New Delhi, India 110 016
Telephone: 011-685-3959
FAX: 011-686-6720

ISRAEL

TECH-CENT, LTD
4 Raul Valenberg St.
Tel-Aviv, Israel 69719
Telephone: (03) 64-78-563
FAX: (03) 64-78-334

ITALY

ANRITSU Sp.A
Rome Office
Via E. Vittorini, 129
00144 Roma EUR
Telephone: (06) 50-2299-711
FAX: (06) 50-22-4252

JAPAN

ANRITSU CUSTOMER SERVICE LTD.
1800 Onna Atsugi—shi
Kanagawa-Prf. 243 Japan
Telephone: 0462-96-6688
FAX: 0462-25-8379

KOREA

ANRITSU SERVICE CENTER
8F Sanwon Bldg.
1329-8 Seocho-Dong
Seocho-Ku
Seoul, Korea 137-070
Telephone: 82-2-581-6603
FAX: 82-2-582-6603

SINGAPORE

ANRITSU (SINGAPORE) PTE LTD
10, Hoe Chiang Road
#07-01/02
Keppel Towers
Singapore 089315
Telephone: 65-282-2400
FAX: 65-282-2533

SOUTH AFRICA

ETESCSA
12 Surrey Square Office Park
330 Surrey Avenue
Ferndale, Randburt, 2194
South Africa
Telephone: (11) 787-7200
Fax: (11) 787-0446

SWEDEN

ANRITSU AB
Botvid Center
Fittja Backe 13A
145 84
Stockholm, Sweden
Telephone: (08) 534-707-00
FAX: (08) 534-707-30

TAIWAN

ANRITSU CO., LTD.
6F, No. 96, Section 3
Chien Kuo N. Road
Taipei, Taiwan, R.O.C.
Telephone: (02) 515-6050
FAX: (02) 509-5519

UNITED KINGDOM

ANRITSU LTD.
200 Capability Green
Luton, Bedfordshire
LU1 3LU, England
Telephone: 015-82-43-3200
FAX: 015-82-73-1303

Anritsu