Product Brochure

Anritsu

Broadband Site Master™ S810D/S820D

Cable and Antenna Analyzer, 2 MHz to 20 GHz

The Leading Handheld Broadband Microwave Transmission Line and Antenna Analyzer

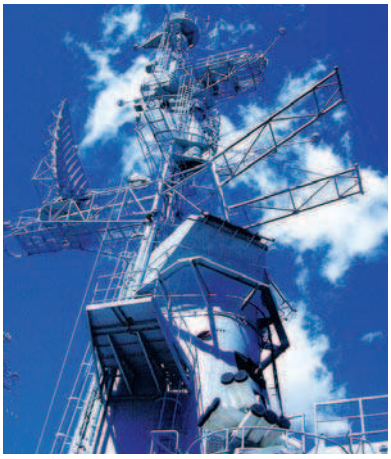
Anritsu's handheld, battery-operated Broadband Site Master is the most accurate and convenient tool available for field installation, verification, troubleshooting and repair of microwave cables and communication systems. With calibrated vector error correction and a convenient user interface, difficult test specifications become easy to verify, quality is improved, and maintenance expenses are reduced.

The Broadband Site Master targets microwave site installers, point-to-point operators, point-to-multipoint operators, radio manufacturers, private/public networks that support microwave links, and defense programs responsible for the installation and maintenance of microwave cables. The Broadband Site Master tests both waveguide and coaxial cables more conveniently than laboratory-sized scalar analyzers or microwave vector network analyzers.

Enhanced Performance and Functionality

The Broadband Site Master offers the following improvements over the preceding model:

- Increased frequency range to cover 2 MHz to 20 GHz with a single connection
- New CW source module for true two-port cable loss measurements of long cables operating up to 20 GHz
- New smoothing feature improves accuracy of cable loss measurements
- Added capability to support user-defined calibration kits: two coaxial and two waveguide kits
- Increased speed of power monitor measurements by four times
- Simplified calibration routine with more messages and added support for the new T-Calibration components (OSLK50, OSLN50)
- Enhanced calibration support for TNC cables



The Broadband Site Master provides cable and antenna measurements anywhere, anytime.

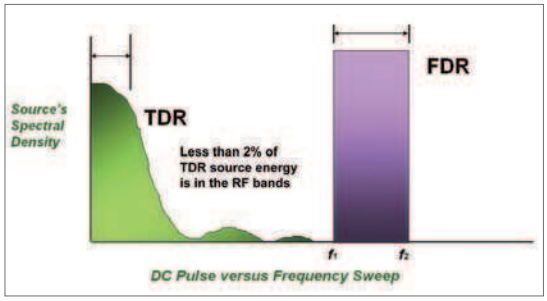
Cost Savings and Quality Improvement

Market competition requires operators to reduce per site maintenance expenses. Site Master's Frequency Domain Reflectometry (FDR) technique breaks away from the traditional fix-after-failure maintenance process by finding small, hard to identify problems before major failures occur.

Sixty to eighty percent of a typical cell site's problems are caused by problematic cables, connectors and antennas. Cables installed in aircraft and on-board ships are difficult to troubleshoot and can cause extensive down time. When cables are damaged, mis-positioned, or contaminated with moisture, Site Master identifies the problem quickly. Antenna degradation reduces the cell coverage pattern. Site Master can pinpoint the antenna problem from ground level in a few seconds so climbing the antenna tower becomes unnecessary.

FDR Technique

Frequency Domain Reflectometry (FDR) and Time Domain Reflectometry (TDR) have similar acronyms, and both techniques are used to test transmission lines, but that's where the similarities end. The TDR technique is not sensitive to RF problems. The TDR stimulus is a DC pulse, not RF. Thus, TDR is unable to detect system degradations that often lead to system failures. The FDR technique saves costly, time-consuming trouble shooting efforts by testing cable feedline and antenna systems at their proper operating frequency. Deficient connectors, lightning arrestors, cables, jumpers, or antennas are replaced before call quality is compromised.



The FDR approach in Site Master can detect faults earlier than TDR because RF spectral density is concentrated in the band-of-interest between f_1 and f_2.

Insightful and Convenient Measurements

Site Master performs various RF measurements aimed at simplifying transmission line and antenna system analysis: Return Loss, SWR, Cable Loss, and Distance-to-Fault (DTF). A single soft key selection on the main menu activates the desired measurement mode.

Return Loss, SWR

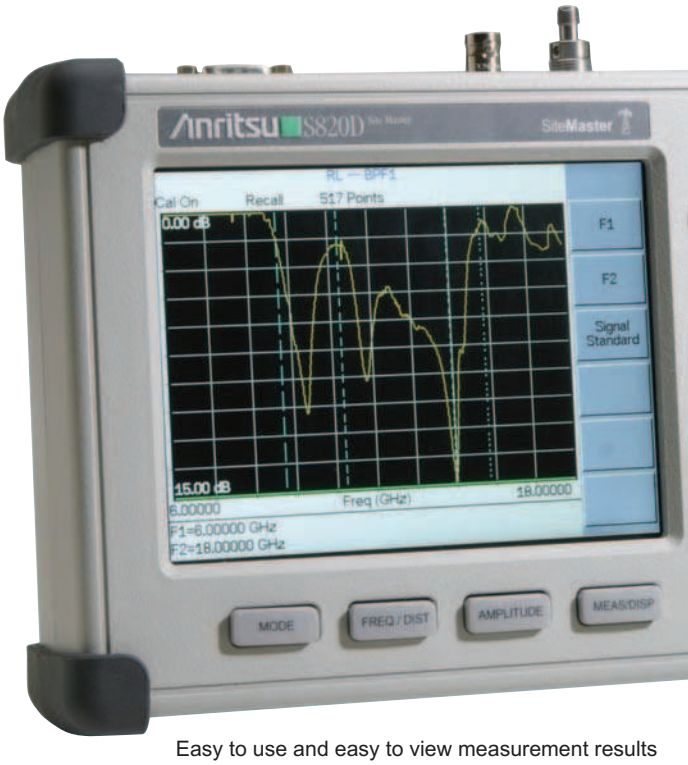
Return Loss and SWR measurements ensure conformance to system performance specifications. The measurement can easily be toggled between either one of the two modes, and can be performed without climbing the tower.

Cable Loss Measurements Using 1-Port Approach

Cable Loss measurements determine the level of insertion loss within the cable feedline system. Insertion loss can be verified prior to deployment, when you have access to both ends of the cable, or on installed cables without access to the opposite end. Smoothing feature can improve accuracy.

Distance-to-Fault

Although a Return Loss test can tell users the magnitude of signal reflections, it cannot tell the precise location of a fault within the cable system. A Distance-to-Fault measurement provides the clearest indication of trouble areas as it gives both the magnitude of signal reflection and the location of the signal anomaly.



Easy to use and easy to view measurement results

Vector Error Correction

Vector error correction within the S8x0D Series improves the quality and convenience of measurements compared to traditional scalar techniques. Accuracy and repeatability are enhanced as errors such as test port match and source match are removed.

Waveguide Dispersion and Calibration

Vector error correction using FDR improves the quality of Distance-to-Fault data. Not only is the reflection magnitude more accurate, but the waveguide dispersion correction for fault location (different frequencies propagate at different speeds) is more accurate and repeatable. Unlike scalar-based systems, the Broadband Site Master S8x0D Series does not suffer reflection magnitude errors and length inaccuracies in proportion to the relative lengths of the coaxial input cable and waveguide under test.

Coaxial Connections

Site Master supports frequently used coaxial connectors such as K, N, and TNC.

A short connection on one end and the measurement occurs at the other end

Adapt to a variety of coaxial connectors.

Transmission Line and Antenna Analyzer Anywhere, Anytime

Functionality and Benefits

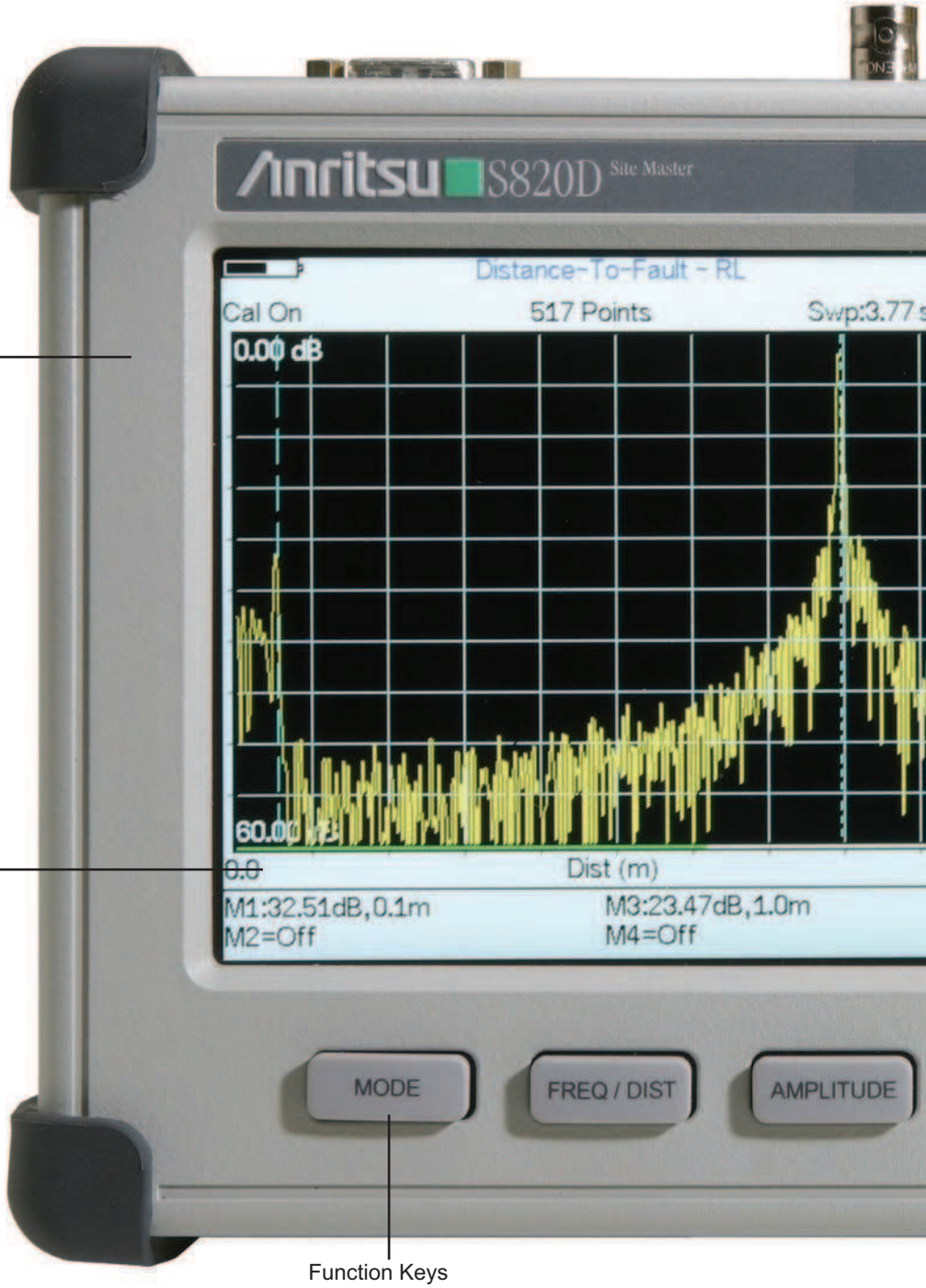
Functionality	Benefits
Cable and Antenna Analyzer	Quickly finds small, hard to identify faults before major failures occur.
Low Frequency Extension (S8x0D/2)	Broader frequency coverage for aerospace and defense electronics.
Power Monitor (S8x0D/5)	Performs accurate power measurements with more resolution in higher insertion loss situations.
2-Port Cable Loss (S8x0D/22xF)	Use CW Source for true 2-Port cable loss measurements of lossy cables.
GPS Receiver (S8x0D/31)	Built-in receiver for location information.

Rugged and Reliable Chassis Design

Ruggedized, lightweight, compact, high-impact housing is designed to withstand repeated drops and rough handling. Weather resistant seals and rubber membrane keypad protect unit from dirt and moisture.

TFT Color Display

Standard TFT (640x480) color display featuring variable brightness control. Viewable in direct sunlight.



Unit Dimensions

25.4 x 17.8 x 6.1 cm
(Actual Size Shown)

Function Keys

Four dedicated function keys simplify measurement tasks.

GPS Antenna

RF Out/Reflection 50Ω

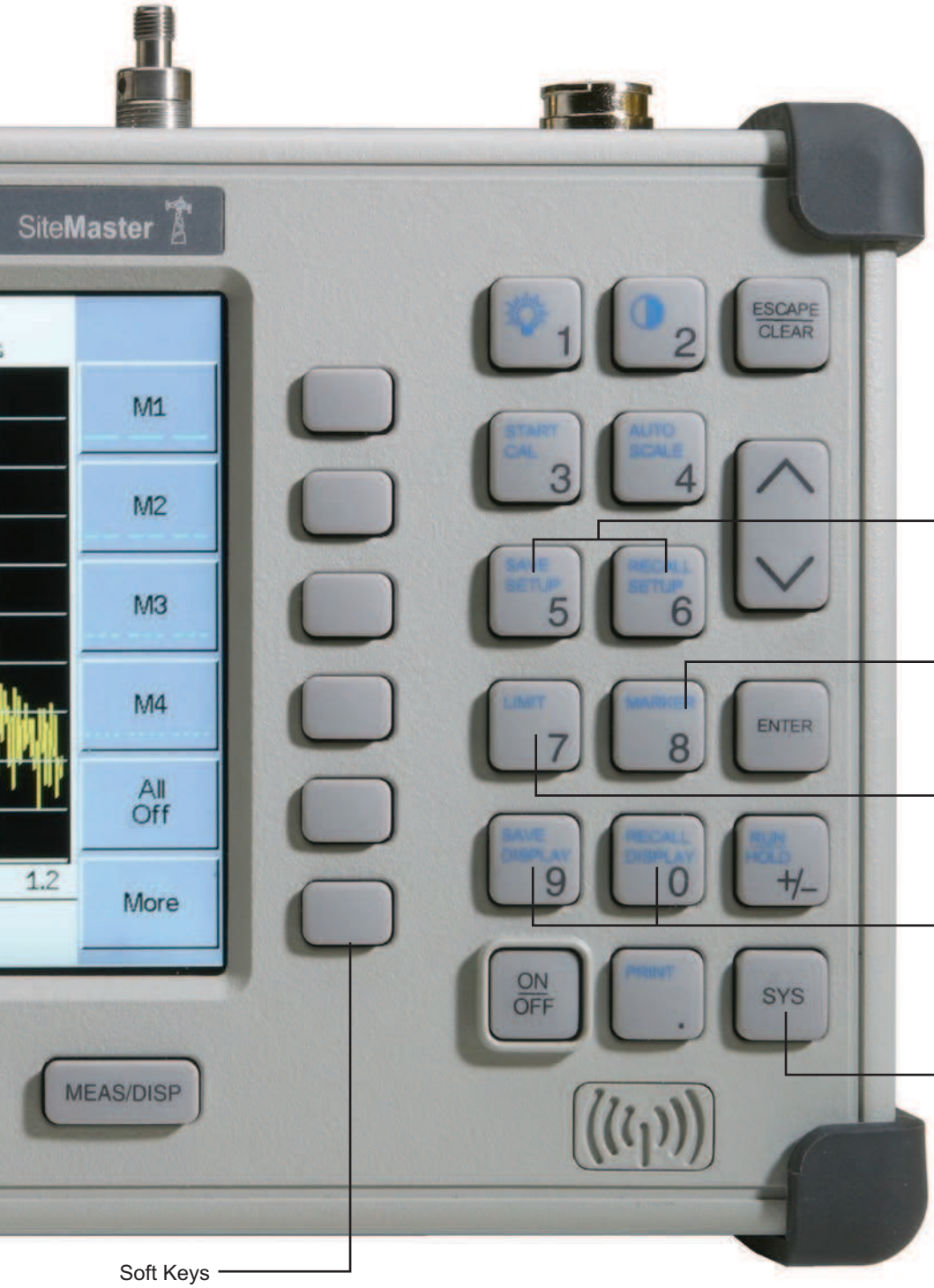
RS-232 Interface

Transfer stored data to and from a personal computer (PC) or output to a printer via a serial cable for further analysis. Use a PC to automatically control and collect data in the field.

External DC Power Port

RF Detector

Option 22 CW Source Mode Interface



Save and Recall Setup

21 setups for fast repeatable testing.

Markers

Six markers for more comprehensive measurements.

Limits

Create simple pass/fail measurements with a single limit line, upper and/or lower mask limits.

Save and Recall Display

Up to 200 memory locations. Alphanumeric data labeling and automatic time/date stamp simplifies data management.

Multilingual User Interface

Multilingual user interface features on-screen menus and messages in six different languages: Chinese, English, French, German, Japanese, and Spanish.

Soft Keys

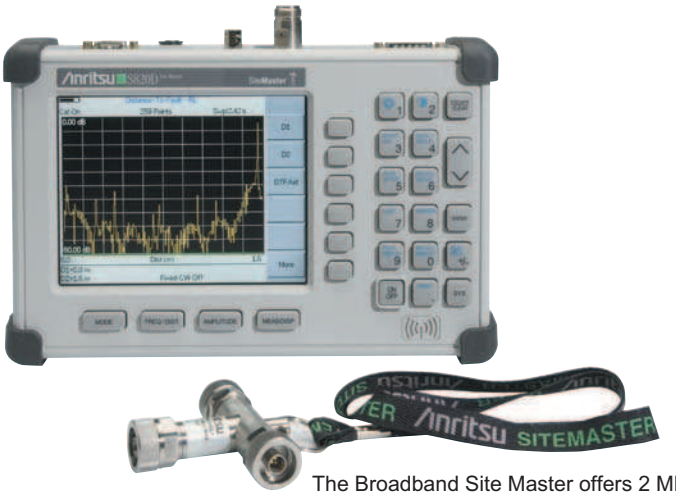
Intuitive softkey menu and user interface.

Optional Features

Low Frequency Extension (S8x0D/2)

The standard Broadband Site Master spans 25 MHz to 10.5 GHz or 20 GHz in a single coaxial connection. The start frequency can optionally extend to 2 MHz for handheld frequency coverage from 2 MHz to 10.5 GHz or 20 GHz.

With this extended frequency range, the Broadband Site Master offers a unique capability to test a wide range of cables and antennas in the field where access to AC power is limited or non-existent. As an alternative, Option 2 is also bundled with the CW Source of Option 22 for 2-port measurements.



The Broadband Site Master offers 2 MHz to 20 GHz in a truly portable product.

Power Monitor (S8x0D/5)

When cable losses or physical distances are too much for a one-port measurement, an external synthesizer can be used as a source and Option 5 with a 560 Series RF Detector as receiver to perform thru-line insertion loss measurements.

In addition, the detectors can be used to measure absolute power levels (dBm or mW) over the broadband frequency range of the detector. As an alternative, Option 5 is also bundled with the CW Source of Option 22 for 2-port measurements.

Use Power Monitor to perform absolute power measurements with or without an external synthesizer.

The easy-to-view Power Monitor display is configured to minimize keystrokes when testing in the field.

Power Monitor Display

With the Anritsu 560 series detectors, technicians can accurately measure broadband power up to 50 GHz using precision detectors designed to minimize mismatch uncertainty. Display formats include absolute power (dBm or Watts) and relative power (dBr or %). Built-in auto averaging automatically reduces the effects of noise while zeroing control allows optimum measurement accuracy at low power levels. The detector has a measurement range of –50 to +20 dBm.

Optional True 2-Port Cable Measurements

2-Port Cable Loss (S8x0D/22xF)

Using the standard 1-port approach, accurate cable loss measurements up to 10 dB are achievable, but the round trip loss of 20 dB is easy to exceed at higher frequencies. A CW source is needed when cable loss exceeds 10 dB. The Broadband Site Master offers an optional CW source with power monitor capability for conducting higher accuracy cable loss measurements in the field.

In this approach, the CW source provides swept frequency coverage (same frequency range as the Broadband Site Master) with the 560 Series RF Detectors as the receiver. The external CW Source Module only supports the 2-Port Cable Loss measurement where the display shows swept cable loss versus frequency for a true 2-Port Cable Loss measurement.

Use 2-port Cable Loss to conduct precise cable measurements of lossy microwave cables.

Option 22 upgrades the standard RF Detector DIN connector to a 25-pin D-sub connector. A DIN to D-sub adapter is included for Power Monitor measurements.

CW Source Module

The 2-Port Cable Loss option includes a CW Source Module, a 560 Series RF Detector, the 2 MHz Low Frequency Extension (S8x0D/2), and the Power Monitor mode (S8x0D/5). Choose the option that conveniently connects to the test port connector of the Broadband Site Master as shown in the following table.

The CW Source Module conveniently connects to the Broadband Site Master and supports Power Monitor, too.

Part No.	Description
S8x0D/22SF	Precision SMA(f) CW Source Module Precision WSMA(m) RF Detector
S8x0D/22NF	Precision N(f) CW Source Module Precision N(m) RF Detector

For conducting power monitor measurements without attaching the CW Source Module, the 66379 DIN to D-sub adapter cable is included in Option 22.

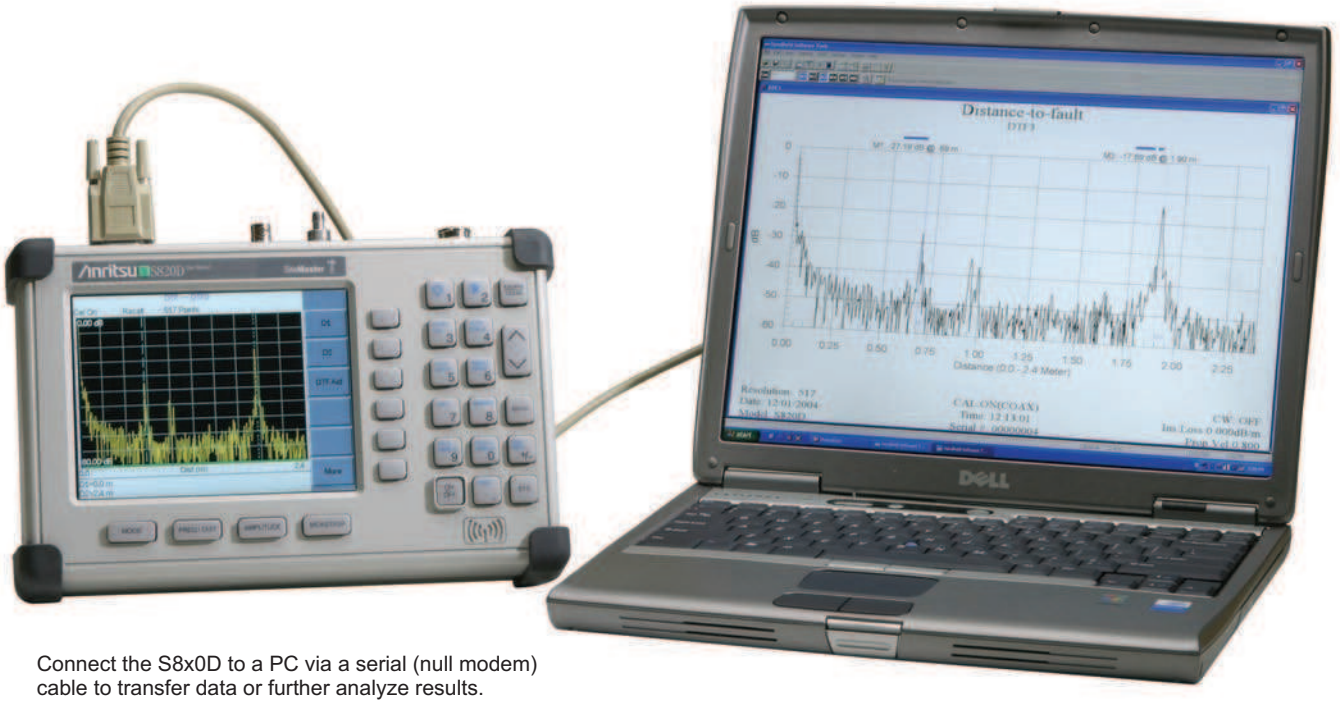
Built-in GPS provides time and location information using the included GPS Antenna (2000-1410).

GPS Receiver (S8x0D/31)

Built-in GPS provides location information (latitude, longitude, altitude) and Universal Time (UT) information. Site Master can stamp each trace with location information to check if the measurements are taken at the right location. Site Master stores the GPS location information until the unit is turned off. This stored location information can be used to stamp traces taken indoors at the same cell site location. The GPS option includes a magnet mount antenna with a 15 foot (~ 5m) cable to mount on the car or other useful surface.

Handheld Software Tools

Each Broadband Site Master ships with a test assistant: a copy of Anritsu's Handheld Software Tools for Windows® 2000/XP. This allows an operator to add the processing capabilities of a PC and this software utility to the S8x0D to form a powerful and flexible measurement solution.



Connect the S8x0D to a PC via a serial (null modem) cable to transfer data or further analyze results.

Benefits of Handheld Software Tools (HHST) with Broadband Site Master:

Feature	Benefit
Powerful data management tool for storing and analyzing measurement results	HHST simplifies transfers, printing, and archival of measurements
Connect to a PC using RS-232, or connect using USB to serial adapter (551-1691)	Unleash powerful HHST capabilities by using popular low-cost PC interfaces
Store an unlimited number of traces (limited only by PC memory) and overlay up to ten traces	Compare current and past measurements for detecting slight degradations
Convert Return Loss and VSWR to Smith Charts	Powerful post-processing for fine tuning antennas and observing cable impedance
Export data for spreadsheet (*.txt) or graphics (*.wmf) applications	Popular outputs for further analysis or presentations
Create custom cable and waveguide lists for upload into the Broadband Site Master	Easily adapt measurements for custom situations

Specifications

The specifications on the following pages describe the warranted performance of the instrument at 23 °C ± 3 °C when the unit is calibrated with the appropriate coaxial calibration kit for the built-in test port connector. A warm-up time of fifteen minutes should be allowed prior to verifying system specifications. Performance parameters denoted as “typical” indicate non-warranted specifications.

Frequency Range			25 MHz to 20000 MHz (S820D) 25 MHz to 10500 MHz (S810D)
Frequency Accuracy (Fixed CW On)			≤ 3 ppm at +25 ºC
Frequency Resolution			10 kHz (100 kHz for Distance-to-Fault)
Output Power (from RF Out Port)			<0 dBm (at any particular frequency)
Immunity to Interfering Signals	on-channel		+13 dBm
	on-frequency		–10 dBm
Measurement speed	Return Loss, SWR, DTF		≤ 2 sec/sweep for 517 data points (CW ON) ≤ 4 sec/sweep for 517 data points (CW OFF)
Number of data points			130, 259, 517
Return Loss	Range		0.00 to 60.00 dB
	Resolution		0.01 dB
VSWR	Range		1.00 to 65.53
	Resolution		0.01
Coax/Waveguide (1-port) Insertion Loss	Range		0.00 to 30.00 dB
	Resolution		0.01 dB
Measurement Accuracy			≥ 42 dB corrected directivity after calibration for <5 GHz ≥ 36 dB corrected directivity after calibration for <15 GHz ≥ 32 dB corrected directivity after calibration for >15 GHz (see uncertainty curves) (with option 11NF, the accuracy is only specified up to 18 GHz)
Distance-to-Fault	Vertical Range	Return Loss	0.00 to 60 dB
		VSWR	1.00 to 65.53
	Horizontal Range		0 to (# of data points –1) x Horizontal Resolution to a maximum of 1197m (3929 ft), # of data points = 130, 259, 517
	Horizontal Resolution	Coaxial Cable (Rectangular windowing)	$\frac{(1.5 \times 10^8)\ (V_p)}{\Delta F}$ Where V_p is the cable’s relative propagation velocity Where ΔF is the stop frequency minus the start frequency (in Hz)
		Waveguide	$\frac{1.5 \times 10^8\ (\sqrt{1-(Fc/F1)^2})}{\Delta F}$ Where Fc is waveguide cutoff frequency (in Hz); F_1 is the start frequency (in Hz), ΔF is the stop frequency minus the start frequency (in Hz)
Test Port Connector			Precision K(f) or N(f) (Option 11NF)

Low Frequency Extension (S8x0D/2)

Frequency Range	2 MHz to 20000 MHz (S820D) 2 MHz to 10500 MHz (S810D) (All other specs remain the same as standard S8x0D)

Specifications

RF Power Monitor (S8x0D/5) Requires External Detector

RF Power Monitor (S8X0D/5)	Detector Range	–50 to +20 dBm, 10 nW to 100 mW
	Offset Range	0 to +60 dB
	Display Range	–80 to 80 dBm
	Resolution	0.1 dB, 0.1 xW (x = n, μ, m based on detector power)
	Measurement Accuracy	±1 dB maximum for >–40 dBm and <18 GHz using 560-7N50B or 560-7S50B (see uncertainty curves)
	Ports added to S8x0D	4-pin DIN connector for use with Anritsu 560-7N50B or 560-7S50B Detectors

Detectors for RF Power Monitor

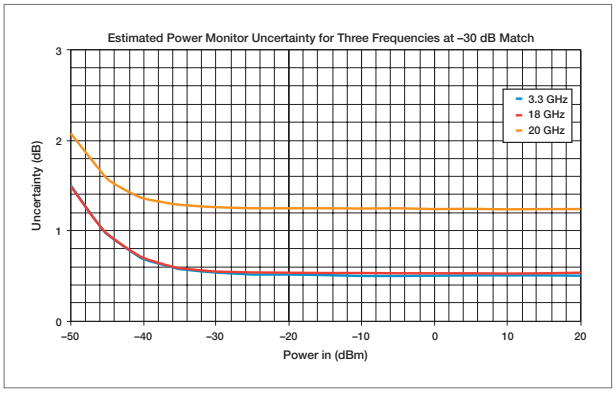
The 560 Series Detectors use zero-biased Schottky diodes. Measurements use a single cycle per sweep AC detection, and auto-zeroing with DC detection during the frequency sweep. Optional extender cables can be used with the S8x0D Series (see ordering information on page 15). Contact a local sales representative for special cables.

Maximum Input Power: +20 dBm
Standard Cable Length: 122 cm (4 ft.)
Dimensions: 7.6 x 2.9 x 2.2 cm (3 x 1-1/8 x 7/8 in.)
Weight: 170g (6 oz.)

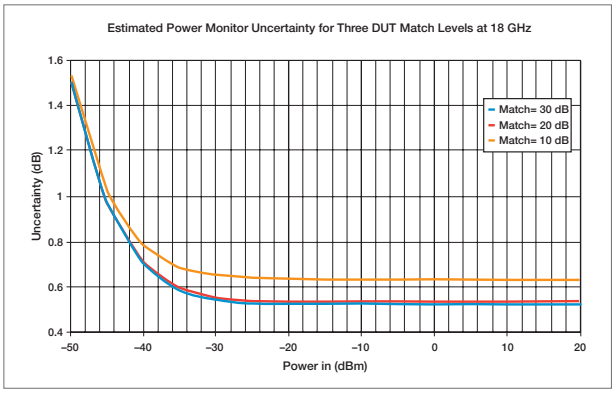
560-7N50B Detector

See www.anritsu.com for additional detectors

Model	Frequency Range	Impedance	Return Loss	Input Connector	Frequency Response
560-7N50B	0.01 to 20 GHz	50Ω	15 dB, <0.04 GHz 22 dB, <8 GHz 17 dB, <18 GHz 14 dB, <20 GHz	N(m)	±0.5 dB, <18 GHz ±1.25 dB, <20 GHz
560-7S50B	0.01 to 20 GHz	50Ω	15 dB, <0.04 GHz 22 dB, <8 GHz 17 dB, <18 GHz 14 dB, <20 GHz	WSMA(m)	±0.5 dB, <18 GHz ±1.25 dB, <20 GHz



Estimated Power Monitor Uncertainty for Three Frequencies at –30 dB Match



Estimated Power Monitor Uncertainty for Three DUT Match Levels at 18 GHz

Specifications

2-Port Cable Loss (S8x0D/22xF)

CW Source Module (CWM220B-xF)	Frequency Range		2 MHz to 20000 MHz (with S820D) 2 MHz to 10500 MHz (with S810D)
	Frequency Accuracy		≤3 ppm at 25 ºC
	Max Power at RF Out Port		+15 dBm, maximum (typically > –10 dBm)
	Ports	CWM220B-NF	N(f), ±15 vDC, +20 dBm, maximum input, no damage
		CWM220B-SF	SMA(f), ±15 vDC, +20 dBm, maximum input, no damage
2-Port Cable Loss Measurement	Detector Range		–50 to +20 dBm, 10 nW, 100 mW
	Display Range		–60 to +60 dB(m)
	Resolution		0.1 dB
	Measurement Accuracy (following a calibration; accuracy only specified from 0 to 30dB)		±0.85 dB, maximum for <10 dB cable loss ±1.35 dB, maximum for <30 dB cable loss (using 560-7S50B from 10 MHz to 20 GHz or 560-7N50B from 10 MHz to 18 GHz)

GPS Location Indicator (S8x0D/31) Includes GPS Antenna

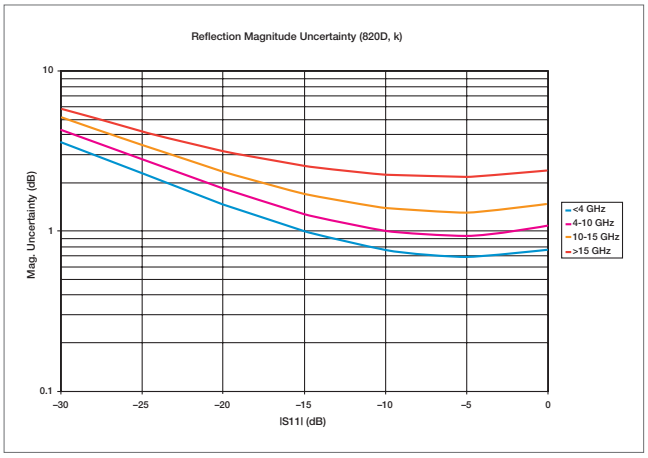
GPS Location Indicator (S8x0D/31)	Latitude, Longitude, Altitude, and Universal Time on display Latitude, Longitude, Altitude, and Universal Time on trace storage
Ports added to S8x0D	Reverse BNC(m), 50 ohm for use with GPS antenna only

General

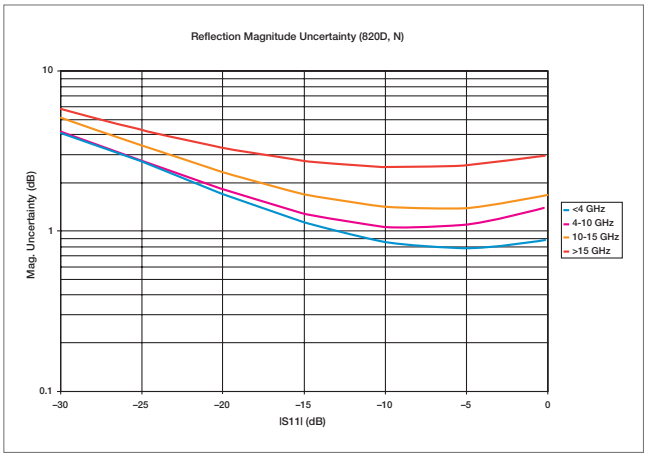
Language Support			Chinese, English, French, German, Japanese, and Spanish
Internal Trace Memory			Up to 200 traces
Setup Configurations			21
Custom Cable Configuration Memory			up to 200 configurations
Display			TFT color display with adjustable backlight
Ports	RF Out	Standard Type k(f) test port, 50 Ω	+23 dBm (Peak), ±50 VDC, Maximum input without damage
		Optional (S8x0D/11NF) Type N(f) test port, 50 Ω	+23 dBm (Peak), ±50 VDC, Maximum input without damage
	Serial Interface	9 pin D-sub	RS-232 three wire serial
CE	Electromagnetic Compatibility		Meets European Community requirement EN61326-1:1998
	Safety		Meets European Community requirement EN61010-1:2001
Environmental (MIL-PRF- 28800F Class 2)	Temperature/ Humidity	Operating	–10 ºC to 55 ºC, humidity 85% or less
		Non-operating	–51 ºC to +71 ºC (recommend storing battery separately between 0 ºC to +40 ºC for any prolonged non-operating storage period)
	Mechanical	Vibration	Sine (5 to 55 Hz); Random (10 to 500 Hz)
		Shock	30G, 11 msec, half sine
Power Supply			External: DC input: +12 to +15 Volt DC, 5A Internal: NiMH battery: 10.8 volts, 1800 mAh
Dimensions		Size (W x H x D)	254 mm x 178 mm x 61 mm (10.0 in x 7.0 in x 2.4 in)
		Weight	<2.28 kg (<5 lbs) including battery

Measurement Uncertainties

The following graphs provide measurement accuracy at 23 °C ±3 °C after vector error correction for the standard K and N connector types. The errors are worst case contributions of residual directivity, source match, frequency response, network analyzer dynamic accuracy, and connector repeatability. In preparing these graphs, Fixed CW is ON. Calibration components 22K50 and 28K50 are used for K test port results. Calibration components 22N50 and 28N50-2 are used for the N test port results:

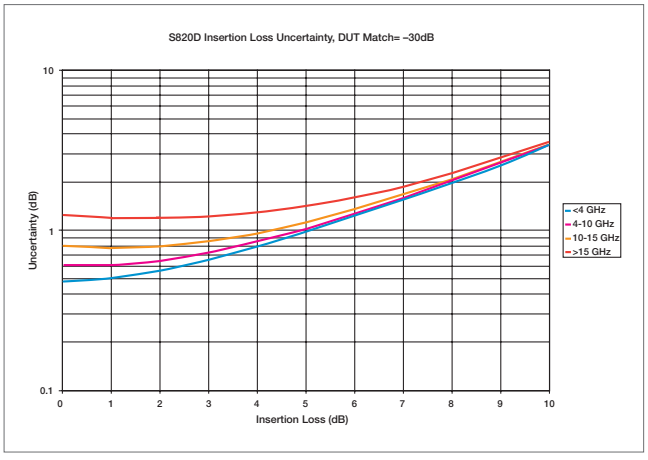


Reflection Magnitude Uncertainty (S820D, K Connector)

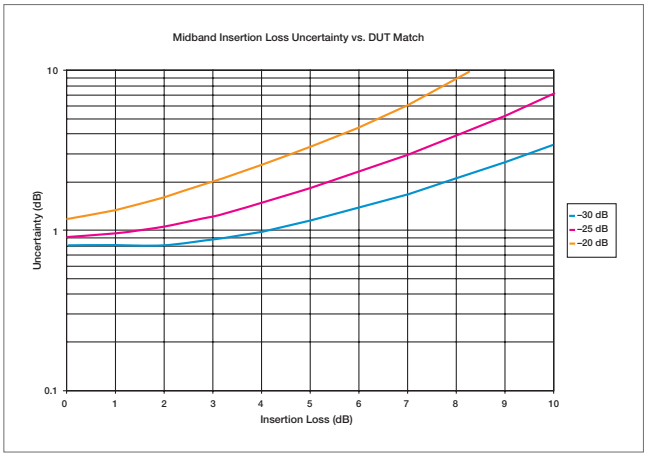


Reflection Magnitude Uncertainty (S820D, N Connector)

The reflection measurements of the S820D can be used to extract the insertion loss of cables or other devices when the far end of the device is terminated in a good reflector. The uncertainty in extracting the insertion loss is a function of basic measurement uncertainty and the base return loss of the device (often the cable's connector). The uncertainties are plotted versus the insertion loss to be measured as either the frequency or the base DUT's return loss vary:



S820D Insertion Loss Uncertainty, DUT Match = –30 dB



S820D Insertion Loss Uncertainty vs. DUT Match, Frequency = 10 GHz

Ordering Information

Basic Models

S810D	Cable and Antenna Analyzer (25 MHz to 10.5 GHz) with built-in DTF, K(f) Test Port Connector
S820D	Cable and Antenna Analyzer (25 MHz to 20 GHz) with built-in DTF, K(f) Test Port Connector

Standard Accessories

10680-00001	Site Master S810D/S820D User's Guide
2300-347	Anritsu Handheld Software Tools CD ROM
48258	Soft Carrying Case
633-27	Rechargeable NiMH Battery
34RKNF50	Precision Adapter, Ruggedized K(m) to N(f)
40-168	AC/DC Adapter
806-141	Automotive Cigarette Lighter/12 Volt Adapter
800-441	Serial Interface (Null Modem) Cable
551-1691-R	USB to RS-232 Adapter Cable

Options

S8x0D/2	2 MHz Low Frequency Extension
S8x0D/5	Power Monitor (detector not included)
S8x0D/11NF	Replaces standard K(f) Test Port Connector with N(f)
S8x0D/22SF	SMA 2-Port Cable Loss includes the following bundled items: CWM220B-SF, SMA(f) CW Source Module 560-7S50B, WSMA(m) RF Detector S8x0D/5, Power Monitor 66379, DIN to D-sub adapter cable for Power Monitor S8x0D/2, 2 MHz Low Frequency Extension
S8x0D/22NF	N(f) 2-Port Cable Loss includes the following bundled items: CWM220B-NF, N(f) CW Source Module 560-7N50B, N(m) RF Detector S8x0D/5, Power Monitor 66379, DIN to D-sub adapter cable for Power Monitor S8x0D/2, 2 MHz Low Frequency Extension
S8x0D/31	GPS Receiver (includes 2000-1410 GPS antenna)

Coaxial Calibration Components

K Connectors

22K50	Precision K(m) Short/Open, 40 GHz
22KF50	Precision K(f) Short/Open, 40 GHz
28K50	Precision Termination, DC to 40 GHz, 50 Ω, K(m)
28KF50	Precision Termination, DC to 40 GHz, 50 Ω, K(f)
15KKF50-1.5A	Armored Test Port Cable, 1.5 meter K(m) to K(f) 20 GHz
15RKKF50-1.5A	Ruggedized Armored Test Port Cable, 1.5 meter K(m) to K(f) 20 GHz
OSLK50	Precision Open, Short, Load, DC - 20 GHz, K(m), 50 Ω
OSLKF50	Precision Open, Short, Load, DC - 20 GHz, K(f), 50 Ω

N-Type Connectors

22N50	Precision N(m) Short/Open, 18 GHz
22NF50	Precision N(f) Short/Open, 18 GHz
28N50-2	Precision Termination, DC to 18 GHz, 50 Ω, N(m)
28NF50-2	Precision Termination, DC to 18 GHz, 50 Ω, N(f)
15NNF50-1.5B	Armored Test Port Cable, 1.5 meter N(m) to N(f) 18 GHz
42N50-20	5W Attenuator, N(m) to N(f), 18 GHz
OSLN50	Precision Open, Short, Load, DC - 18 GHz, N(m), 50 Ω
OSLNF50	Precision Open, Short, Load, DC - 18 GHz, N(f), 50 Ω

TNC Connectors

1015-54	TNC Termination (f), 18 GHz
1015-55	TNC Termination (m), 18 GHz
1091-53	TNC Open (m), 18 GHz
1091-54	TNC Short (m), 18 GHz
1091-55	TNC Open (f), 18 GHz
1091-56	TNC Short (f), 18 GHz

Adapters

34RKNF50	Precision Adapter, Ruggedized K(m) to N(f)
34NN50A	Precision N(m) to N(m) Adapter, 18 GHz
34NFNF50	Precision N(f) to N(f) Adapter, 18 GHz
K220B	Precision Adapter, K(m) to K(m), 40 GHz
K222B	Precision Adapter, K(f) to K(f), 40 GHz
1091-26	Adapter, N(m)-SMA(m), DC to 18 GHz, 50 Ω
1091-27	Adapter, N(m)-SMA(f), DC to 18 GHz, 50 Ω
1091-80	Adapter, N(f)-SMA(m), DC to 18 GHz, 50 Ω
1091-81	Adapter, N(f)-SMA(f), DC to 18 GHz, 50 Ω
513-62	Adapter, TNC(f) to N(f), 18 GHz, 50 Ω
1091-315	Adapter, TNC(m) to N(f), 18 GHz, 50 Ω
1091-324	Adapter, TNC(f) to N(m), 18 GHz, 50 Ω
1091-325	Adapter, TNC(m) to N(m), 18 GHz, 50 Ω
1091-317	Adapter, TNC(m) to SMA(f), 18 GHz, 50 Ω
1091-318	Adapter, TNC(m) to SMA(m), 18 GHz, 50 Ω
1091-323	Adapter, TNC(f) to TNC(f), 18 GHz, 50 Ω
1091-326	Adapter, TNC(m) to TNC(m), 18 GHz, 50 Ω

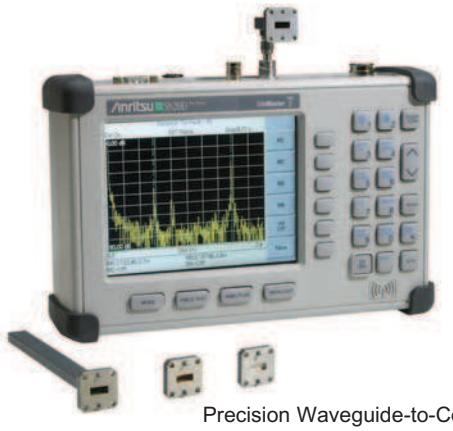
Ordering Information

Waveguide Calibration Components

xx (in the following table) specifies Waveguide Calibration components:

- 23 = 1/8 Offset Short
- 24 = 3/8 Offset Short
- 26 = Precision Load

Example: 23UA90, 24UA90, 26UA90, and 35UM90N



Precision Waveguide-to-Coaxial Adapters

Precision Waveguide Calibration Components[1]

Part No.	Frequency Range	Waveguide Type	Compatible Flanges
xxUM40	3.30 to 4.90 GHz	WR229, WG11A	PDR40
xxUM48	3.95 to 5.85 GHz	WR187,WG12	CAR48, PAR48, UAR48, PDR48
xxUM70	5.85 to 8.20 GHz	WR137, WG14	CAR70, PAR70, UAR 70, PDR70
xxUM84	7.05 to 10.00 GHz	WR112, WG15	CBR84, UBR84, PBR84, PDR84
xxUM100	8.20 to 12.40 GHz	WR90, WG16	CBR100, UBR100, PBR100, PDR100
xxUM120	10.00 to 15.00 GHz	WR75, WG17	CBR120, UBR120, PBR120, PDR120
xxUM140	12.40 to 18.00 GHz	WR62, WG18	CBR140, UBR140, PBR140, PDR140
xxUM220	17.00 to 26.50 GHz	WR42, WG20	CBR220, UBR220, PBR220, PDR220
xxUA187	3.95 to 5.85 GHz	WR187, WG12	CPR187F, CPR187G, UG-1352/U, UG-1353/U, UG-1728/U, UG-1729/U, UG-148/U, UG-149A/U
xxUA137	5.85 to 8.20 GHz	WR137, WG14	CPR137F, CPR137G, UG-1356/U, UG-1357/U, UG-1732/U, UG-1733/U, UG-343B/U, UG-344/U, UG-440B/U, UG-441/U
xxUA112	7.05 to 10.00 GHz	WR112, WG15	CPR112F, CPR112G, UG-1358/U, UG-1359/U, UG-1734/U, UG-1735/U, UG-52B/U, UG-51/U, UG-137B/U, UG-138/U
xxUA90	8.20 to 12.40 GHz	WR90, WG16	CPR90F, CPR90G, UG-1360/U, UG-1361/U, UG-1736/U, UG-1737/U, UG-40B/U, UG-39/U, UG-135/U, UG-136B/U
xxUA62	12.40 to 18.00 GHz	WR62, WG18	UG-541A/U, UG-419/U, UG-1665/U, UG1666/U
xxUA42	17.00 to 26.50 GHz	WR42, WG20	UG-596A/U, UG-595/U, UG-597/U, UG-598A/U

Precision Waveguide-to-Coaxial Adapters[1]

Part No.	Frequency Range	Waveguide Type	Compatible Flanges
35UM40N	3.30 to 4.90 GHz	WR229, WG11A	PDR40
35UM48N	3.95 to 5.85 GHz	WR187,WG12	CAR48, PAR48, UAR48, PDR48
35UM70N	5.85 to 8.20 GHz	WR137, WG14	CAR70, PAR70, UAR 70, PDR70
35UM84N	7.05 to 10.00 GHz	WR112, WG15	CBR84, UBR84, PBR84, PDR84
35UM100N	8.20 to 12.40 GHz	WR90, WG16	CBR100, UBR100, PBR100, PDR100
35UM120N	10.00 to 15.00 GHz	WR75, WG17	CBR120, UBR120, PBR120, PDR120
35UM140N	12.40 to 18.00 GHz	WR62, WG18	CBR140, UBR140, PBR140, PDR140
35UM220K	17.00 to 26.50 GHz	WR42, WG20	CBR220, UBR220, PBR220, PDR220
35UA187N	3.95 to 5.85 GHz	WR187, WG12	CPR187F, CPR187G, UG-1352/U, UG-1353/U, UG-1728/U, UG-1729/U, UG-148/U, UG-149A/U
35UA137N	5.85 to 8.20 GHz	WR137, WG14	CPR137F, CPR137G, UG-1356/U, UG-1357/U, UG-1732/U, UG-1733/U, UG-343B/U, UG-344/U, UG-440B/U, UG-441/U
35UA112N	7.05 to 10.00 GHz	WR112, WG15	CPR112F, CPR112G, UG-1358/U, UG-1359/U, UG-1734/U, UG-1735/U, UG-52B/U, UG-51/U, UG-137B/U, UG-138/U
35UA90N	8.20 to 12.40 GHz	WR90, WG16	CPR90F, CPR90G, UG-1360/U, UG-1361/U, UG-1736/U, UG-1737/U, UG-40B/U, UG-39/U, UG-135/U, UG-136B/U
35UA62N	12.40 to 18.00 GHz	WR62, WG18	UG-541A/U, UG-419/U, UG-1665/U, UG1666/U
35UA42K	17.00 to 26.50 GHz	WR42, WG20	UG-596A/U, UG-595/U, UG-597/U, UG-598A/U

[1] Contact an Anritsu sales representative for availability of waveguide calibration components and waveguide-to-coaxial adapters not listed in the table.

Ordering Information

Optional Accessories

760-245	Transit Case for Microwave Site Master
760-243-R	Transit Case with Wheels
2000-1029	Battery Charger (External)
2000-1410	Magnet Mount GPS Antenna with 15 ft. cable

Optional Extender Cables

800-109	Detector Extender Cable, 7.6m (25 ft)
800-111	Detector Extender Cable, 30.5m (100 ft)

Manuals

10680-00001	Site Master S810D/S820D User's Guide
10680-00002	Site Master S810D/S820D Programming Manual
10680-00003	Site Master S810D/S820D Maintenance Manual

Related Literature, Application Notes

11410-00214	Reflectometer Measurements - Revisited
11410-00206	Time Domain
11410-00270	What is Your Measurement Accuracy?
11410-00185	Distance-To-Fault

Anritsu

Anritsu Corporation
5-1-1 Onna, Atsugi-shi, Kanagawa, 243-8555 Japan
Phone: +81-46-223-1111
Fax: +81-46-296-1264

• U.S.A.
Anritsu Company
1155 East Collins Boulevard, Suite 100,
Richardson, Texas 75081 U.S.A.
Toll Free: 1-800-ANRITSU (267-4878)
Phone: +1-972-644-1777
Fax: +1-972-671-1877

• Canada
Anritsu Electronics Ltd.
700 Silver Seven Road, Suite 120, Kanata,
Ontario K2V 1C3, Canada
Phone: +1-613-591-2003
Fax: +1-613-591-1006

• Brazil
Anritsu Electrônica Ltda.
Praca Amadeu Amaral, 27-1 Andar
01327-010 - Paraiso, São Paulo, Brazil
Phone: +55-11-3283-2511
Fax: +55-11-3886940

• Mexico
Anritsu Company, S.A. de C.V.
Av. Ejército Nacional No. 579 Piso 9, Col. Granada
11520 México, D.F., México
Phone: +52-55-1101-2370
Fax: +52-55-5254-3147

• U.K.
Anritsu EMEA Ltd.
200 Capability Green, Luton, Bedfordshire LU1 3LU, U.K.
Phone: +44-1582-433280
Fax: +44-1582-731303

• France
Anritsu S.A.
16/18 Avenue du Québec-SILIC 720
91961 COURTABOEUF CEDEX, France
Phone: +33-1-60-92-15-50
Fax: +33-1-64-46-10-65

• Germany
Anritsu GmbH
Nemetschek Haus, Konrad-Zuse-Platz 1
81829 München, Germany
Phone: +49 (0) 89 442308-0
Fax: +49 (0) 89 442308-55

• Italy
Anritsu S.p.A.
Via Elio Vittorini, 129, 00144 Roma, Italy
Phone: +39-06-509-9711
Fax: +39-06-502-2425

• Sweden
Anritsu AB
Borgafjordsgatan 13, 164 40 Kista, Sweden
Phone: +46-8-534-707-00
Fax: +46-8-534-707-30

• Finland
Anritsu AB
Teknobulevardi 3-5, FI-01530 Vantaa, Finland
Phone: +358-20-741-8100
Fax: +358-20-741-8111

• Denmark
Anritsu A/S
Kirkebjerg Allé 90 DK-2605 Brøndby, Denmark
Phone: +45-72112200
Fax: +45-72112210

• Spain
Anritsu EMEA Ltd.
Oficina de Representación en España
Edificio Veganova
Avda de la Vega, nº 1 (edf 8, pl1, of 8)
28108 ALCOBENDAS - Madrid, Spain
Phone: +34-914905761
Fax: +34-914905762

• Russia
Anritsu EMEA Ltd.
Representation Office in Russia
Tverskaya str. 16/2, bld. 1, 7th floor.
Russia, 125009, Moscow
Phone: +7-495-363-1694
Fax: +7-495-935-8962

• United Arab Emirates
Anritsu EMEA Ltd.
Dubai Liaison Office
P O Box 500413 - Dubai Internet City
Al Thuraya Building, Tower 1, Suite 701, 7th Floor
Dubai, United Arab Emirates
Phone: +971-4-3670352
Fax: +971-4-3688460

• Singapore
Anritsu Pte. Ltd.
60 Alexandra Terrace, #02-08, The Comtech (Lobby A)
Singapore 118502
Phone: +65-6282-2400
Fax: +65-6282-2533

• India
Anritsu Pte. Ltd.
India Branch Office
3rd Floor, Shri Lakshminarayan Niwas,
#2726, 80 ft Road, HAL 3rd Stage, Bangalore - 560 075, India
Phone: +91-80-4058-1300
Fax: +91-80-4058-1301

• P. R. China (Hong Kong)
Anritsu Company Ltd.
Units 4 & 5, 28th Floor, Greenfield Tower, Concordia Plaza,
No. 1 Science Museum Road, Tsim Sha Tsui East,
Kowloon, Hong Kong, P.R. China
Phone: +852-2301-4980
Fax: +852-2301-3545

• P. R. China (Beijing)
Anritsu Company Ltd.
Beijing Representative Office
Room 2008, Beijing Fortune Building,
No. 5 , Dong-San-Huan Bei Road,
Chao-Yang District, Beijing 100004, P.R. China
Phone: +86-10-6590-9230
Fax: +86-10-6590-9235

• Korea
Anritsu Corporation, Ltd.
8F Hyunjuk Bldg. 832-41, Yeoksam-Dong,
Kangnam-ku, Seoul, 135-080, Korea
Phone: +82-2-553-6603
Fax: +82-2-553-6604

• Australia
Anritsu Pty Ltd.
Unit 21/270 Ferntree Gully Road, Notting Hill
Victoria, 3168, Australia
Phone: +61-3-9558-8177
Fax: +61-3-9558-8255

• Taiwan
Anritsu Company Inc.
7F, No. 316, Sec. 1, Neihu Rd., Taipei 114, Taiwan
Phone: +886-2-8751-1816
Fax: +886-2-8751-1817

Please Contact:

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