

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.

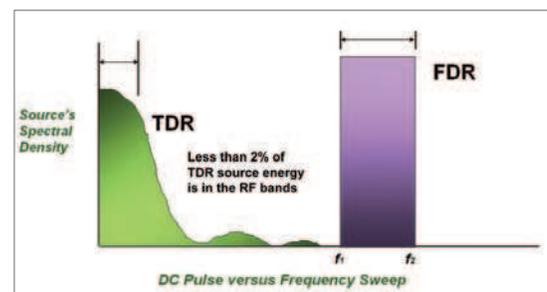
Cost Savings and Quality Improvement

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.

Vector Error Correction

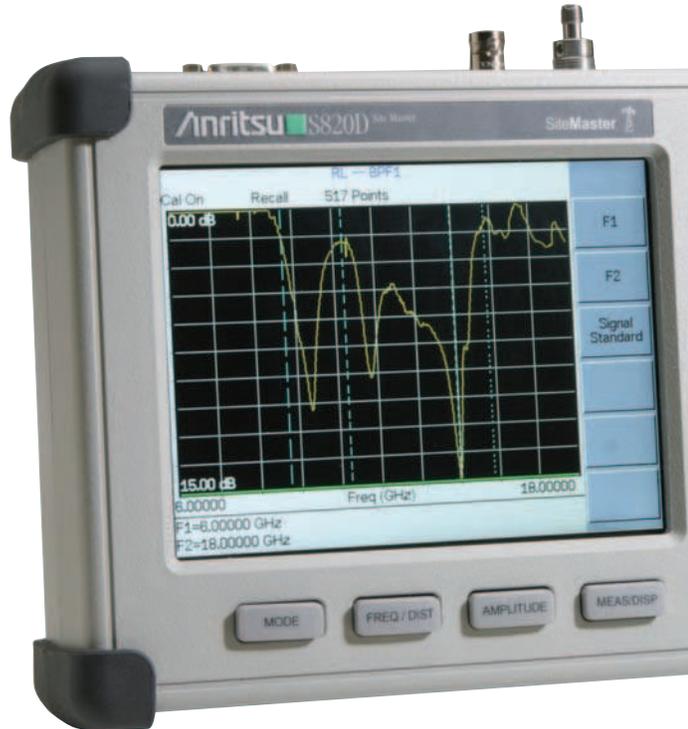
Vector error correction within the S8x0D Series improves the quality and convenience of measurements compared to traditional scalar techniques. Accuracy and repeatability are enhanced as errors such as test port match and source match are removed.

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.



Easy to use and easy to view measurement results



Adapt to a variety of coaxial connectors.



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

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

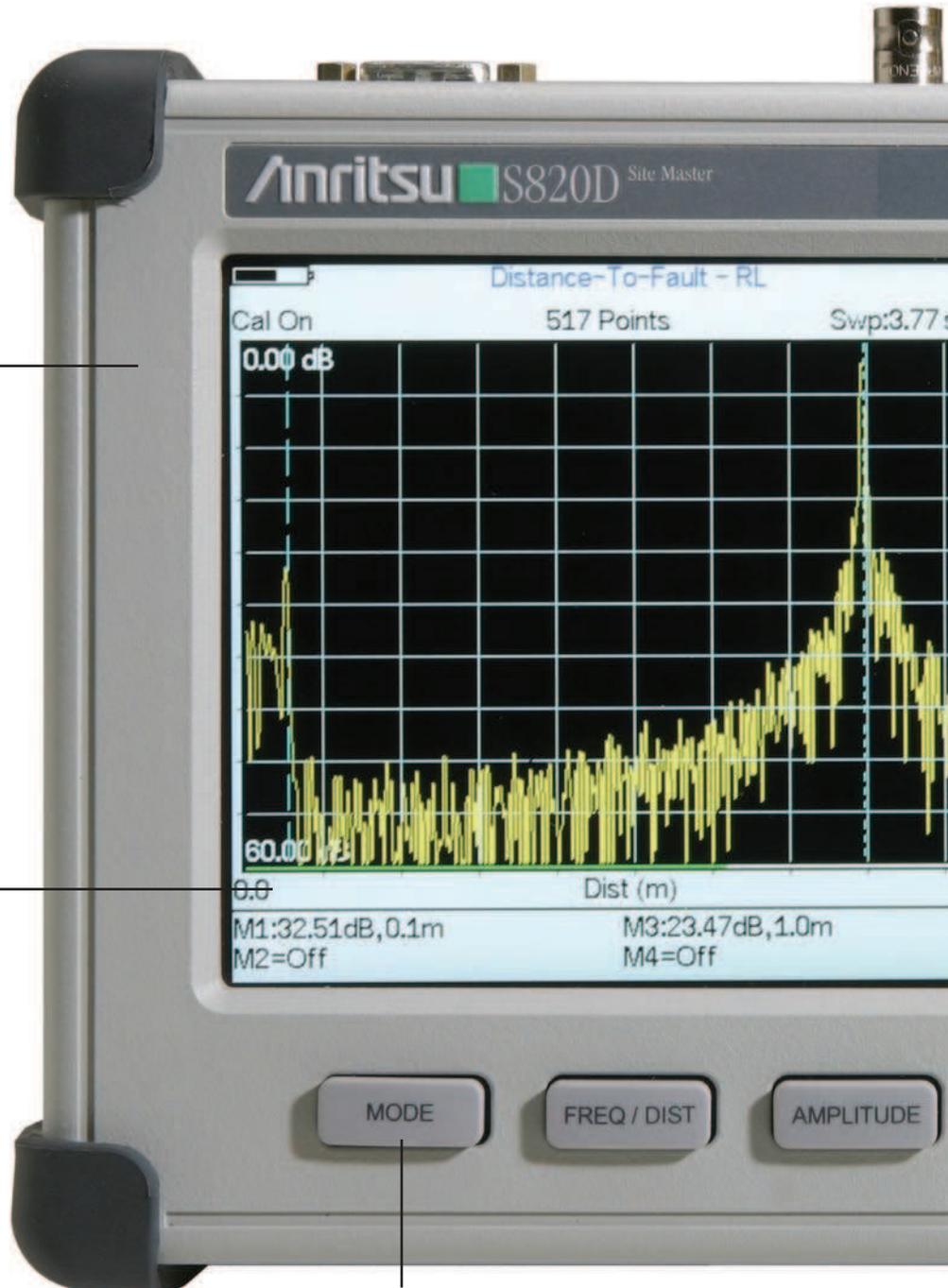
Ruggedized, lightweight, compact, high-impact housing is designed to withstand repeated drops and rough handling. Weather resistant seals and rubber membrane keypad protect unit from dirt and moisture.

TFT Color Display

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

Unit Dimensions

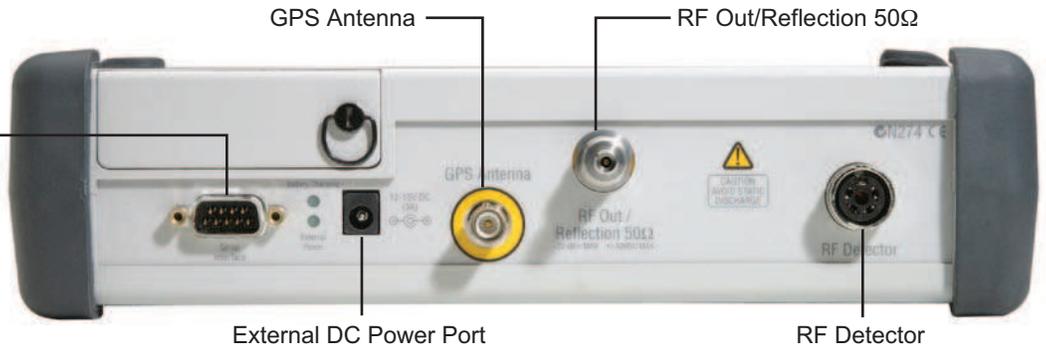
25.4 x 17.8 x 6.1 cm
(Actual Size Shown)



Function Keys

Four dedicated function keys simplify measurement tasks.

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.



Option 22 CW Source Mode Interface



Soft Keys
 Intuitive softkey menu and user 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.

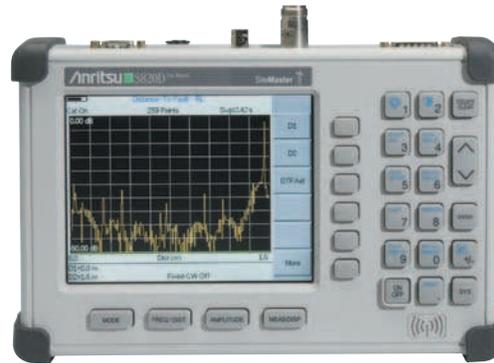
Multilingual User Interface
 Multilingual user interface features on-screen menus and messages in six different languages: Chinese, English, French, German, Japanese, and Spanish.

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.

GPS Receiver (S8x0D/31)

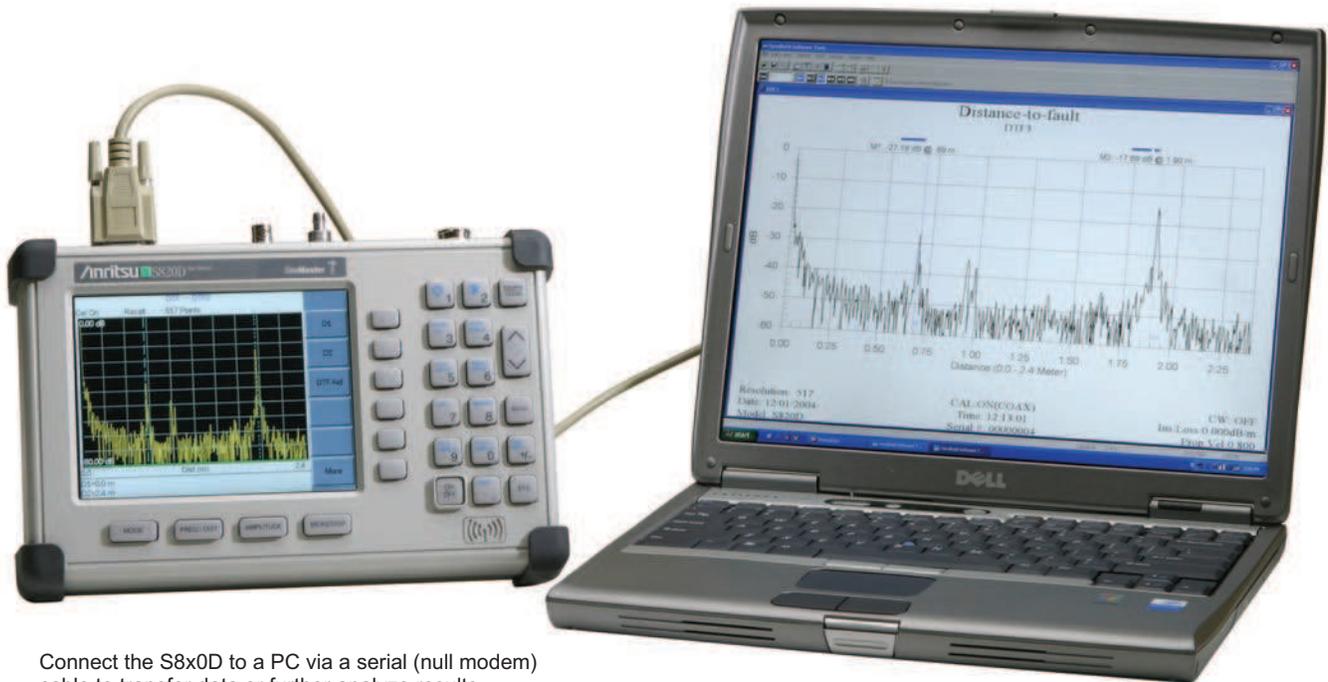
Built-in GPS provides location information (latitude, longitude, altitude) and Universal Time (UT) information. Site Master can stamp each trace with location information to check if the measurements are taken at the right location. Site Master stores the GPS location information until the unit is turned 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.



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

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 °C | | |
| 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 | | $\frac{1.5 \times 10^8 (\sqrt{1 - (F_c/F_1)^2})}{\Delta F}$ Where F_c 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.

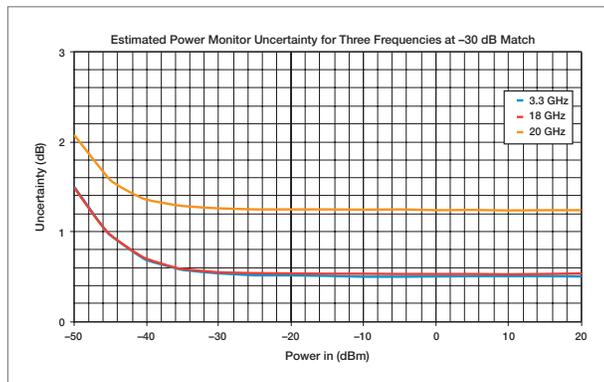
Maximum Input Power: +20 dBm
 Standard Cable Length: 122 cm (4 ft.)
 Dimensions: 7.6 x 2.9 x 2.2 cm (3 x 1-1/8 x 7/8 in.)
 Weight: 170g (6 oz.)



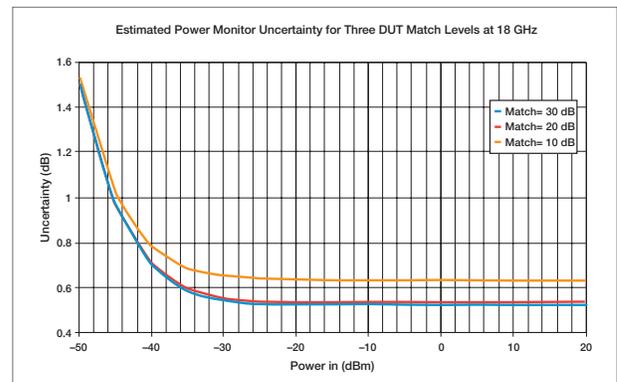
560-7N50B Detector

See www.anritsu.com for additional detectors

| Model | Frequency Range | Impedance | Return Loss | Input Connector | Frequency Response |
|-----------|-----------------|-------------|---|-----------------|---|
| 560-7N50B | 0.01 to 20 GHz | 50 Ω | 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 | 50 Ω | 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 °C |
| | 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, 10nW, 100mW |
| | 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

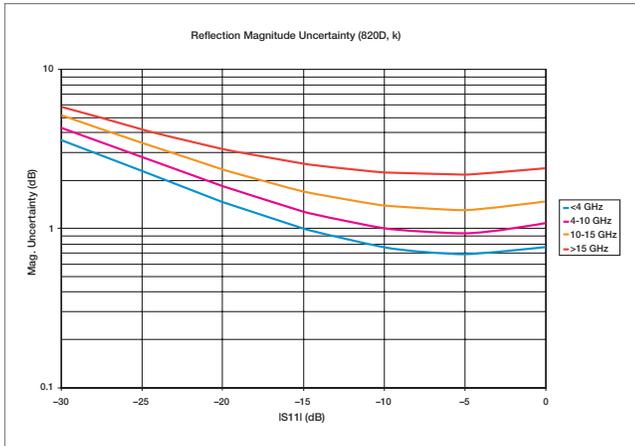
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|-----------------------------------|--|
| GPS Location Indicator (S8x0D/31) | Latitude, Longitude, Altitude, and Universal Time on display Latitude, Longitude, Altitude, and Universal Time on trace storage |
| Ports added to S8x0D | Reverse BNC(m),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

General

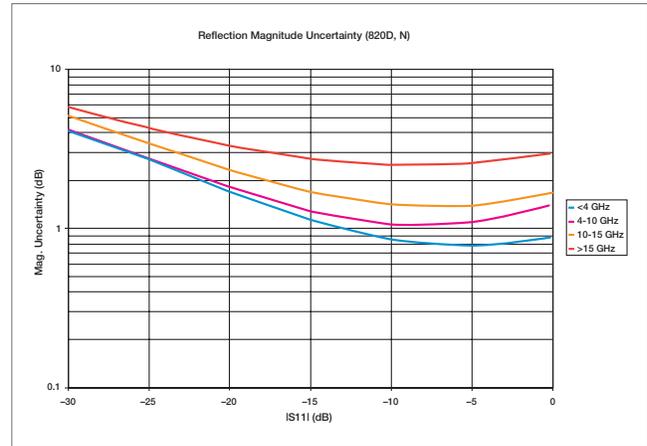
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|--|-------------------------------|--|---|
| Language Support | | Chinese, English, French, German, Japanese, and Spanish | |
| Internal Trace Memory | | Up to 200 traces | |
| Setup Configurations | | 21 | |
| Custom Cable Configuration Memory | | 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 °C to 55 °C, humidity 85% or less |
| | | Non-operating | -51 °C to +71 °C (recommend storing battery separately between 0 °C to +40 °C 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 $23\text{ }^{\circ}\text{C} \pm 3\text{ }^{\circ}\text{C}$ 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:

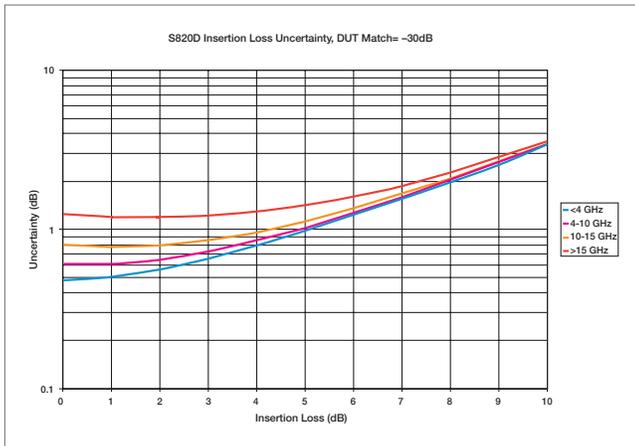


Reflection Magnitude Uncertainty (S820D, K Connector)

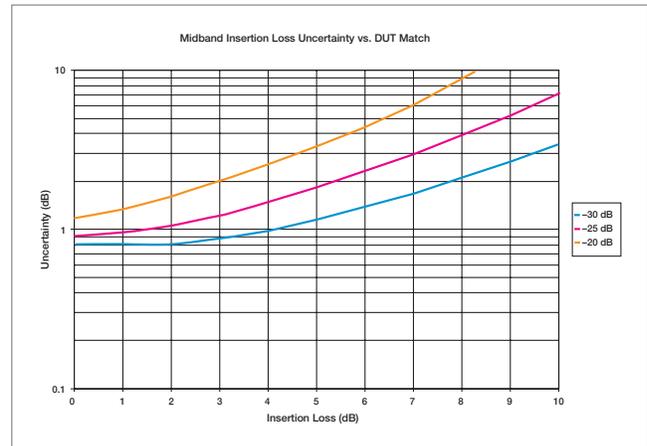


Reflection Magnitude Uncertainty (S820D, N Connector)

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 |
| 34NFN50 | 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 Components¹

| 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 Adapters¹

| 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 |



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