Anritsu

Site Master™ S810C/S820C

MicrowaveTransmission Line and Antenna Analyzer

3.3 GHz to 10 GHz/3.3 GHz to 20 GHz

The World's Leading Handheld Microwave Transmission Line and Antenna Analyzer

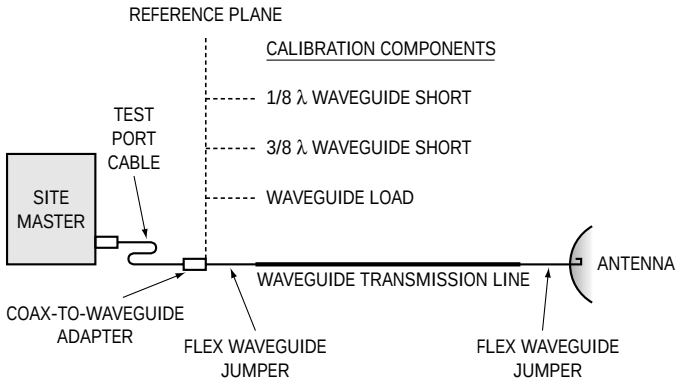
THE LEADING MICROWAVE TRANSMISSION LINE AND ANTENNA ANALYZER

Anritsu's hand held, battery operated Microwave Site Master is the most accurate and convenient tool available for field installation, verification, troubleshooting and repair of microwave communication systems. Difficult test specifications become easy to verify. The S800 "C" Series improves quality and reduces maintenance expenses by providing vector corrected measurements via calibration and a convenient user interface.

Microwave Site Master targets microwave site installers, point-to-point operators, point-to-multipoint operators, radio manufacturers, PCS/Cellular operators, utility companies and private/public networks that support microwave links. These microwave Site Master models test both waveguide and coaxial cables more conveniently than laboratory sized scalar analyzers or microwave test sets.

Vector Error Correction

Vector error correction within the S800 "C" 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 accounted for.



Vector Correction Avoids Bulky Waveguide Coupler

Waveguide Calibration

The test port connection to the waveguide under test is a small coaxial-to-waveguide adapter rather than a bulky coupler.

The calibration components include two offset shorts, 1/8 and 3/8 wave-length, and a precision waveguide load. The two offset shorts eliminate reference error suffered by scalar systems where only a single waveguide short is used to determine the 0.0 dB reflection reference level. Site Master's flange design mates to square, rectangular or circular flanges. For a given waveguide size, only one calibration set is required. Site Master's waveguide calibration components are built with precision alignment pins that mate the companion coaxial-to-waveguide adapters. As a result, proper alignment to the waveguide is fast and convenient.

Waveguide Dispersion

Vector error correction also 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. The post-vector corrected data accounts for the non-dispersive length of coaxial cable preceding the input of the waveguide under test. Unlike scalar-based systems, the Microwave Site Master S800 "C" 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.

Tune Mode

Tune Mode is a fast sweep mode used to quickly tune the waveguide by adjusting the flange connectors quickly at both ends of the waveguide.

There are three levels of resolution available for tune mode; 65, 43, and 33 data points. The higher the number of data points, the greater the measurement resolution.

Easy-to-Use

Site Master's S800 "C" Series menu driven interface requires little training and simplifies the field engineers' and technicians' task of deployment, site-to-site maintenance and trouble-shooting by identifying, recording and solving problems without sacrificing measurement accuracy.

- Store ten test setups for fast, repeatable testing.
- Store up to 200 measurement traces in nonvolatile memory.
- Multilingual user interface features on screen menus and messages in 7 different languages – English, German, French, Spanish, Portuguese, Chinese, and Japanese.

SITE MASTER S800 “C” SERIES FOR MICROWAVE APPLICATIONS

Powerful Data Analysis Software

Powerful data analysis software comes with every Site Master unit, providing users with an easy method of analyzing system performance, trends and problems in addition to professional report generation.

- Site Master PC software is Windows 95/98/NT4/2000/ME/XP workstation compatible and supports alpha-numeric file names for descriptive data labeling.
- Store an unlimited number of data traces for comparison to historical performance.
- Quickly and easily download data traces from the Site Master to a PC database with a single menu selection.

Accurate, Repeatable Measurements

Utilizing vector error correction, Site Master delivers accurate, reliable and repeatable Return Loss/VSWR and Fault Location measurements. Site Master’s high immunity to interference allows users to conduct measurements of an active site without loss of accuracy.

- Locate long range problems with 517 data points.
- Superior immunity to on-channel interference for testing at co-located antenna sites.
- Large, high-resolution display allows for easy viewing and trace interpretation under a variety of conditions.
- Full range of marker and limit functions facilitate quick, comprehensive measurements.

Measurement Accuracy

Return Loss and SWR

Accuracy = <0.9 + |20 log (1 ±$10^{-E\Delta/20}$)| dB, typical.
where EΔ = Directivity - Measured Return Loss.

Directivity is the largest source of return loss measurement uncertainty. The quality of the load or termination used for calibration determines directivity performance. Loads can be verified using a vector network analyzer calibrated with either sliding load or TRL.

Specifications*[1]

Frequency Range		S810C (3.3 to 10 GHz), S820C (3.3 to 20 GHz)
Frequency Accuracy (CW mode)		≤20 kHz for all frequencies
Display Resolution		130, 259, 517 data points
Interference Immunity (dBm) to interfering signals		–10 dBm
Return Loss	Range	0 to 54 dB
	Resolution	0.01 dB
SWR	Range	1 to 65
	Resolution	0.01
Distance-to-Fault	Vertical range	Return loss: 0 to 54 dB
		SWR: 1 to 65
	Horizontal range (meter)	0 to (data points -1) x resolution to a maximum of 1000 m (3281 ft.), where data points = 130, 259, 517
	Horizontal resolution, rectangular windowing for coaxial cable (meter)	(1.5 x 10^8) (υρ)/ Δ frequency*[2]
	Horizontal resolution for waveguide	$\frac{1.5 \times 10^8 (\sqrt{1-(F_c/F_1)^2})^{*3}}{\Delta F}$
Coax/Waveguide Insertion Loss	Range	0 to 54 dB
	Resolution	0.01 dB
Test port connector		Precision K female
RF power monitor, (Option 5)	Display range	–80 to +80 dBm
	Detector range	–45 to +20 dBm, 30 nW to 100 mW
	Offset range	0 to +60 dB
	Resolution	0.1 dB, 0.1 x W
Maximum input without damage	K(f) test port	+27 dBm
Trace memory		up to 200 traces
Instrument configuration with calibration memory		10 states
Custom cable configuration memory		50 configurations
Temperature	Operating	0 to 50˚C
	Storage	–20˚C to 75˚C
Weight		1.89 kgs (4.2 lbs.)
Size		25.4 x 17.8 x 6.10 cm (10 x 7 x 2.4 in.)
General	Electromagnetic compatibility	Meets European community CE requirements
	RS232	9 pin D-sub, three wire serial

*1: All Specifications apply when calibrated at ambient temperature after a five minute warm up.
*2: Where υρ is the cable’s relative propagation velocity. Δ frequency is the stop frequency minus the start frequency (in Hz). Wide frequency sweeps improve resolution but reduce maximum display range.
*3: Where F_c is waveguide cutoff frequency (Hz); F_1 is the start frequency (Hz); ΔF is the stop frequency minus the start frequency (Hz).

Key Features

- **Accurately tests coaxial cable/waveguide transmission line and antennas**
- **Tune mode for waveguide component alignment/testing**
- **Superior immunity to live site RF interference**
- **Clearly defined user interface for coaxial cable and waveguide media**
- **Pop up menus for cable list, waveguide list and compatible flange list**
- **Quickly select cable/waveguide type and test parameters without setup error**
- **Large, high resolution display allows for easy viewing and trace interpretation under a variety of conditions**

Calibration Components

XX represents Calibration components
- 23 = 1/8 Offset Short
- 24 = 3/8 Offset Short
- 26 = Precision Load
- 35 = Coaxial to waveguide adapter

N = N type connector
K = K type connector
ex: 35UA137N

Coaxial Calibration Components

S810C
- 22N50 Precision Short/Load, N(m) up to 18 GHz
- 28N50 Precision Load, 40 dB, N(m) up to 18 GHz

S820C
- 22K50 Precision Short/Load, K(m) up to 40 GHz
- 28K50 Precision Load, 40 dB, K(m) up to 40 GHz

Precision Waveguide Calibration Components			
Part Number	**Frequency Range**	**Waveguide Type**	**Compatible Flanges**
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
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			
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
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

Ordering Information

Model S810C	(3.3 GHz to 10.0 GHz), Built-in DTF
Model S820C	(3.3 GHz to 20.0 GHz), Built-in DTF

Standard Accessories:
- User's Guide
- Soft Carrying Case
- AC-DC Adapter
- Precision Adapter, Ruggedized K(m) to N(f)
- Automotive Cigarette Lighter/12 Volt DC Adapter
- Site Master Software Tools CD ROM containing Fault Location (DTF) Smith Chart and Software Management
- Serial Interface Cable
- Rechargeable Battery, NiMH

Optional Accessories:

Option 5	RF Power Monitor (RF Detector not included)
560-7N50B	RF Detector, N(m), 50 Ω, 10 MHz to 20 GHz
22N50	Precision N(m) Short/Open, 18 GHz
22NF50	Precision N(f) Short/Open, 18 GHz
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)
28N50-2	Precision Termination, DC to 18 GHz, 50 Ω, N(m)
28NF50-2	Precision Termination, DC to 18 GHz, 50 Ω, N(f)
34RKNF50	Precision Adapter, Ruggedized K(m) to N(f)
15NNF50-1.5C	Armored Test Port Cable, 1.5 meter N(m) to N(f) 18 GHz
15NNF50-3.0C	Armored Test Port Cable, 3.0 meter N(m) to N(f) 18 GHz
15NNF50-5.0C	Armored Test Port Cable, 5.0 meter N(m) to N(f) 18 GHz
15KKF50-1.5A	Armored Test Port Cable, 1.5 meter K(m) to K(f) 20 GHz
15KKF50-3.0A	Armored Test Port Cable, 3.0 meter K(m) to K(f) 20 GHz
15KKF50-5.0A	Armored Test Port Cable, 5.0 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
34NN50A	Precision N(m) to N(m) Adapter, 18 GHz
34NFNF50	Precision N(f) to N(f) Adapter, 18 GHz
34RSN50	Precision Adapter, Ruggedized WSMA(m) to N(m), 20 GHz
42N50-20	5W Attenuator, N(m) to N(f), 18 GHz
800-109	Detector Extender Cable, 7.6 m
K220B	Precision Adapter, K(m) to K(m), 40 GHz
K222B	Precision Adapter, K(f) to K(f), 40 GHz
42N50-20	5W Attenuator, N(m)-N(f), 18 GHz
D41955	Soft Carrying Case
40-115	AC/DC Adapter
633-27	Rechargeable NiMH Battery
2000-1029	Battery Charger (Ext.)
806-62	Automotive Cigarette Lighter/12 Volt DC Adapter
800-441	Serial Interface Cable
760-213	Transit Case for Microwave Site Master
2300-347	Site Master Software Tools
10580-00076	Site Master S810C/S820C User's Guide

Printers:

2000-766	HP DeskJet Printer Includes: Interface Cable, Black Print Cartridge, and U.S. Power Cable
2000-753	Spare Serial-to-Parallel Converter Cable
2000-662	Rechargeable Battery for DeskJet Printer
2000-663	Power Cable (Europe) for DeskJet Printer
2000-664	Power Cable (Australia) for DeskJet Printer
2000-665	Power Cable (U.K.) for DeskJet Printer
2000-667	Power Cable (So. Africa) for DeskJet Printer

Anritsu

Discover What's Possible™

Sales Centers:
United States (800) ANRITSU
Canada (800) ANRITSU
South America 55 (21) 286-9141

Microwave Measurements Division • 490 Jarvis Drive • Morgan Hill, CA 95037-2809
http://www.us.anritsu.com • FAX (408) 778-0239

Sales Centers:
Europe 44 (0) 1582-433433
Japan 81 (03) 3446-1111
Asia-Pacific 65-2822400