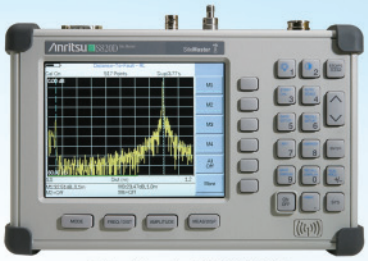
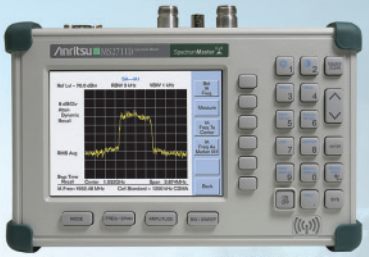
Product Brochure

World's Most Trusted Family of RF and Microwave Handheld Analyzers

Now in our eighth generation – field-proven since 1995



Site **Master**™ S820D



Spectrum **Master**™ MS2711D

LMR **Master**™ S412D

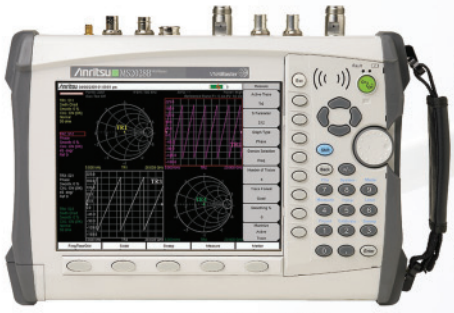
Value Handheld Analyzers

Site **Master**™ S331E

Spectrum **Master**™ MS2713E

Cell **Master**™ MT8212E

Compact Handheld Analyzers



VNA **Master**™ MS2028B

Spectrum **Master**™ MS2724B

BTS **Master**™ MT8221B

Performance Handheld Analyzers

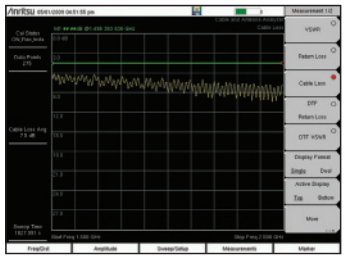
Site **Master**

Handheld Cable & Antenna Analyzers

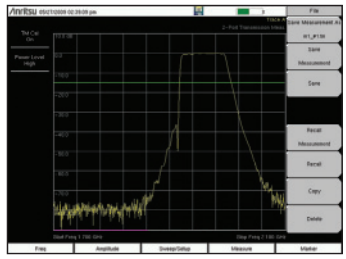
Since 1995, the Site Master™ has been the leader in handheld Cable and Antenna Analyzers for installers, contractors, and wireless service providers worldwide. With its unsurpassed measurement uncertainty and best-in-class sweep speed, the Site Master gives you extremely accurate and fast measurements that you can totally trust, whenever and wherever.

The Site Master family includes seven models to meet a variety of needs. They all can make traditional line sweep measurements such as Return Loss, VSWR, Cable Loss, and Distance-to-Fault (DTF). To increase productivity, the Site Master completes sweeps quickly, performs calibrations quickly with InstaCal™, provides fast trace naming, and comes with automatic report generating capabilities.

The 2-port transmission measurement option with its excellent dynamic range allows you to measure gain, insertion loss, or isolation of critical RF devices including tower mounted amplifiers (TMA), repeaters and passive RF components such as filters and antennas. Models with Spectrum Analyzers can make RF channel measurements and hunt down interference. Get the most trusted name in cable and antenna analyzers – the worldwide standard – the Site Master.



Cable Loss



2-port Transmission Measurement

S331E – Return Loss and DTF

FEATURES and OPTIONS (not available on all models)

- ► Cable & Antenna Analyzer
  - ► 25 MHz to 1.6 GHz, S311D
  - ► 2 MHz to 4/6 GHz, S331E/S361E
  - ► 2 MHz to 10.5/20 GHz, S810D/S820D
- ► Cable & Antenna Analyzer w/ Spectrum Analyzer
  - ► 2 MHz to 4 GHz / 100 kHz to 4 GHz, S332E
  - ► 2 MHz to 6 GHz / 100 kHz to 6 GHz, S362E
- ► InstaCal™, FlexCal™, and OSL Calibration
- ► 2-port Transmission Measurement
- ► 2-port Cable Loss
- ► Internal Bias Tee
- ► Internal GPS Receiver
- ► Internal Power Meter
- ► High Accuracy Power Meter with Power Sensor
- ► Power Monitor up to 50 GHz
- ► Interference Analyzer
- ► Channel Scanner
- ► CW Signal Generator
- ► AM/FM/PM Signal Analyzer
- ► 254 x 178 x 61 mm, 10.0 x 7.0 x 2.4 in (S311D, S8x0D)
- ► 273 x 199 x 91 mm, 10.7 x 7.8 x 3.6 in (S33xE, S36xE)

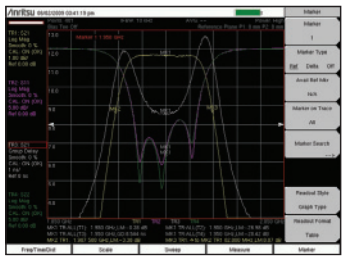
VNA **Master**

Handheld Vector Network Analyzers

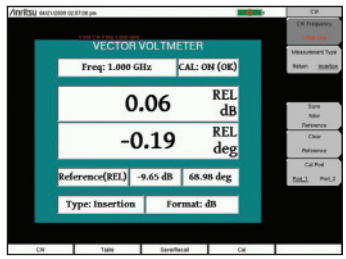
The VNA Master™ is the advanced handheld 2-port Vector Network Analyzer for demanding wireless backhaul, aerospace, defense and general purpose applications. With frequency coverage from 5 kHz to 20 GHz, VNA Master is a cable and antenna analyzer that specializes in S-parameter measurements of isolators, circulators, filters, and phase matched cables.

The MS202xA/MS203xA series are the RF 1-path, 2-port models, with integrated spectrum analysis to 7.1 GHz. The MS202xB series are the higher performing fully-reversing 2-port RF & microwave models to 20 GHz so you can view all four S-parameters with a single connection at 750 µsec/point sweep speeds. Ideally suited for the field, the VNA Master is also an attractive low-cost solution for passive measurements in manufacturing and R&D lab environments.

The VNA Master is a viable alternative to obsolete vector voltmeters, scalars, and laboratory-grade vector network analyzers. With battery powered operation, field personnel can freely roam the sites they service. This freedom enables swift and precise measurements as they phase match cables, troubleshoot critical system faults, and perform routine installation and maintenance tasks anytime, anywhere.



Overlay 4 S-parameters of Filters



Phase match cables using Vector Voltmeter

MS2028B – Quad-Trace View

FEATURES and OPTIONS (not available on all models)

- ► Vector Network Analyzer
  - ► 2 MHz to 4/6 GHz, MS2024A/MS2026A
  - ► 5 kHz to 6/20 GHz, MS2026B/MS2028B
- ► Vector Network Analyzer w/Spectrum Analyzer
  - ► 2 MHz to 4 GHz / 9 kHz to 4 GHz, MS2034A
  - ► 2 MHz to 6 GHz / 9 kHz to 7.1 GHz, MS2036A
- ► Time Domain
- ► Secure Data
- ► Balanced/Differential S-Parameters
- ► Vector Voltmeter
- ► Internal Bias Tee
- ► Internal GPS Receiver
- ► Internal Power Meter
- ► High Accuracy Power Meter with USB Power Sensor
- ► Power Monitor up to 50 GHz
- ► Interference Analyzer
- ► Channel Scanner
- ► 315 x 211 x 77 mm, 2.4 x 8.3 x 3.1 in (MS2024/26A)
- ► 315 x 211 x 77 mm, 2.4 x 8.3 x 3.1 in (MS2026/28B)
- ► 315 x 211 x 94 mm, 2.4 x 8.3 x 3.7 in (MS2034/36A)

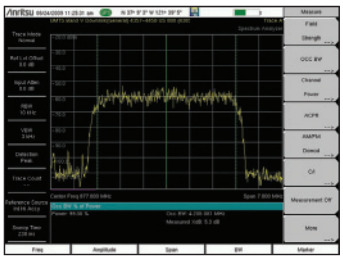
Spectrum **Master**

Handheld Spectrum Analyzers

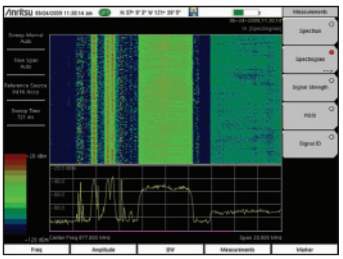
Anritsu's Spectrum Master™ handheld spectrum analyzers provide excellent flexibility in field environments for locating, identifying, recording, and solving communication systems problems without sacrificing measurement accuracy. There are six models to choose from to meet a variety of needs.

All models have dedicated routines for simple one-button measurements for field strength, channel power, occupied bandwidth, Adjacent Channel Power Ratio (ACPR), Carrier-to-Interference ratio (C/I), and AM/FM/SSB demodulator. Interference Analyzers feature spectrogram, RSSI, signal strength, and signal ID for efficient interference monitoring, detection and location.

Compact models start at 3 GHz and high performance models go to 20 GHz offering benchtop quality measurements in dynamic range, sensitivity, and phase noise. With advanced marker and limit line capabilities, the flexibility and the power is available to meet all types of field measurement needs. Whether it is for spectrum monitoring, interference analysis, RF and microwave measurements, broadcast proofing, or Wi-Fi and wireless network measurements, the Spectrum Master is the ideal instrument for making fast and reliable measurements, anytime or anywhere.



Occupied Bandwidth



Spectrogram

MS2724B – Channel Scanner

FEATURES and OPTIONS (not available on all models)

- Spectrum Analyzer
  - 100 kHz to 3 GHz, MS2711D
  - 100 kHz to 4/6 GHz, MS2712E/MS2713E
  - 9 kHz to 7.1/13/20 GHz, MS2721B/23B/24B
- 2-port Transmission Measurement
- Internal Bias Tee
- Internal GPS Receiver
- Internal Power Meter
- High Accuracy Power Meter with Power Sensor
- Interference Analyzer
- Channel Scanner
- Gated Sweep
- CW Signal Generator or Tracking Generator
- AM/FM/PM Signal Analyzer
- Zero Span IF Output
- Signal Analyzers (up to 10 MHz demodulation)
  - GSM/GPRS/EDGE and W-CDMA/HSDPA
  - TD-SCDMA/HSDPA
  - LTE
  - cdmaOne/CDMA2000 1X and CDMA2000 1xEV-DO
  - WiMAX, Fixed and Mobile
  - DVB-T/H, DVB-T/H SFN, BER, ISDB-T, ISDB-T SFN
- 254 x 178 x 61 mm, 10.0 x 7.0 x 2.4 in (MS2711D)
- 273 x 199 x 91 mm, 10.7 x 7.8 x 3.6 in (MS271xE)
- 315 x 211 x 77 mm, 12.4 x 8.3 x 3.0 in (MS2721/23/24B)

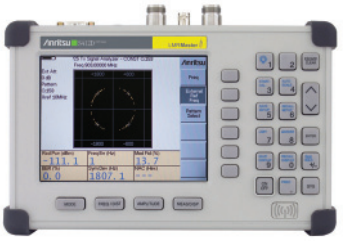
LMR **Master**

Handheld Land Mobile Radio Analyzer

The LMR Master S412D from Anritsu is a single instrument that combines all of the tools for field based technicians and engineers required to install, maintain, and certify Land Mobile Radio networks.

In a single, lightweight, handheld, battery-operated package, the LMR Master combines the functionality of a cable and antenna analyzer, spectrum analyzer, interference analyzer, power meter, channel scanner, transmitter analyzer (P25, NXDN, and iDEN), transmission measurements for 2-port devices (built-in RF source), and GPS receiver.

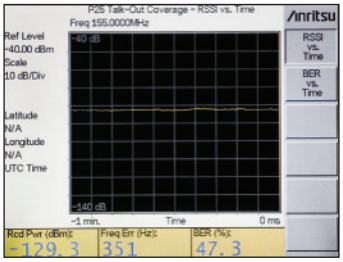
The LMR Master S412D features P25 and NXDN Talk-Out Coverage Measurements that support coverage mapping with received power and BER measurements along with GPS location and time. Displays can be automatically stored, providing up to 8 hours of internally stored measurements. Master Software Tools can be used to convert stored traces to comma delimited ASCII files containing GPS location/time, RSSI, and BER for exporting to mapping tools.



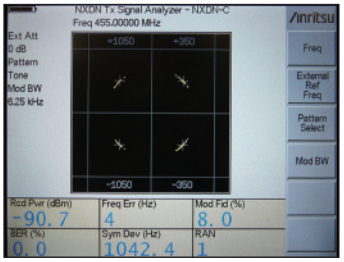
S412D – P25 Tx Signal Analyzer

FEATURES and OPTIONS (not available on all models)

- Cable and Antenna Analyzer
  - 25 MHz to 1.6 GHz
- Spectrum Analyzer
  - 100 kHz to 1.6 GHz
- 2-port Transmission Measurement
- Internal Bias Tee
- Internal GPS Receiver
- Internal Power Meter
- High Accuracy Power Meter with Power Sensors
- Interference Analyzer
- Channel Scanner
- Signal Analyzers
  - P25
  - NXDN
  - P25 Talk-Out Coverage
  - NXDN Talk-Out Coverage
  - iDEN
- 254 x 178 x 61 mm, 10.0 x 7.0 x 2.4 in



P25 Talk-Out Coverage – RSSI vs. Time



NXDN Signal Analyzer Measurements

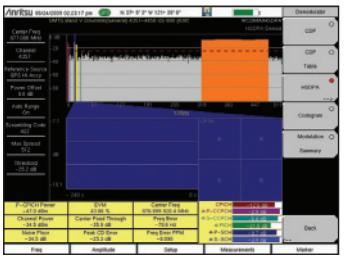
Cell Master

Compact Handheld Base Station Analyzer

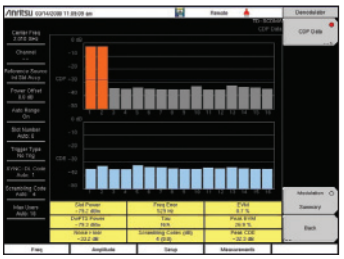
The MT8212E Cell Master™ handheld multi-function base station analyzer is the smallest, lightest, and most economical solution for 2/3/4G and WiMAX base station testing during installation and commissioning, and for maintenance and troubleshooting.

The Cell Master combines the functionality and the capabilities of a Cable and Antenna Analyzer, Spectrum Analyzer, Interference Analyzer, Signal Analyzers, Backhaul Analyzer, and a Power Meter into one instrument making it the most full-featured compact base station analyzer on the market.

This optimal combination of base station test capabilities eases the job of the user by eliminating the need for several independent test instruments, reducing the number of tools the user must carry and learn to operate. Whether it's sweeping cables, making power measurements, finding interference, troubleshooting 2/3/4G base station signal quality, or verifying backhaul performance; the Cell Master MT8212E is the ideal all-in-one instrument.



HSDPA Demodulation



TD-SCDMA Demodulation

MT8212E – EDGE Demodulation

FEATURES and OPTIONS (not available on all models)

- Cable and Antenna Analyzer
  - 2 MHz to 4 GHz
- Spectrum Analyzer
  - 100 kHz to 4 GHz
- 2-port Transmission Measurement
- Internal Bias Tee
- Internal GPS Receiver
- Internal Power Meter
- High Accuracy Power Meter with Power Sensors
- Interference Analyzer
- Channel Scanner
- Gated Sweep
- CW Signal Generator
- AM/FM/PM Signal Analyzer
- Signal Analyzers (up to 10 MHz demodulation)
  - GSM/GPRS/EDGE and W-CDMA/HSDPA
  - TD-SCDMA/HSDPA
  - LTE
  - cdmaOne/CDMA2000 1X and CDMA2000 1xEV-DO
  - WiMAX, Fixed and Mobile
  - DVB-T/H, DVB-T/H SFN
- Backhaul Analyzers – E1, T1, T3/T1
- 273 x 199 x 91 mm, 10.7 x 7.8 x 3.6 in

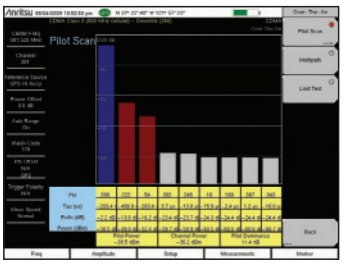
BTS Master

High Performance Handheld Base Station Analyzer

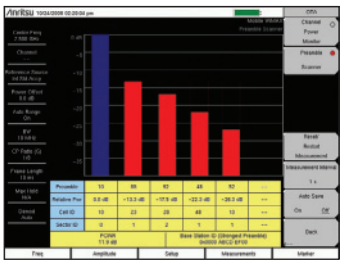
The MT8221B BTS Master™ Base Station Analyzer has been specifically developed to support emerging 4G standards as well as installed 2G/3G networks. The MT8221B's platform provides 20 MHz demodulation capability for wideband signals like LTE and a Vector Signal Generator (VSG) option with the flexibility to generate two modulated signals for comprehensive receiver testing.

The MT8221B features a full 2-port Cable and Antenna Analyzer designed to work in the harshest RF environments, an ultra sensitive Spectrum Analyzer for finding low level interference, and a platform for transmitter and receiver testing of future 4G base stations. It is the most advanced base station analyzer available for installation, commissioning, maintenance and troubleshooting.

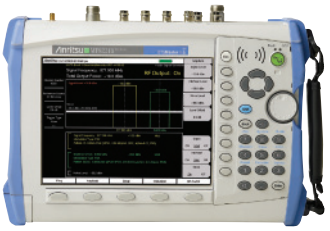
When key performance indicators (KPIs) such as call drop, call denial, or call blocking rates degrade due to a malfunction at the cell site or due to interference, the BTS Master is the definitive all-in-one tool that cell site technicians and RF engineers can rely on for accurate diagnostic measurements leading to quick problem resolution.



CDMA2000 1X Pilot Scanner



Mobile WiMAX Pre-amble Scanner



MT8221B – Vector Signal Generator

FEATURES and OPTIONS (not available on all models)

- Cable and Antenna Analyzer
  - 400 MHz to 4 GHz, MT8221B
  - 10 MHz to 6 GHz, MT8222A
- Spectrum Analyzer
  - 150 kHz to 7.1 GHz, MT8221B
  - 100 kHz to 7.1 GHz, MT8222A
- Internal Bias Tee
- Internal GPS Receiver
- Internal Power Meter
- High Accuracy Power Meter with Power Sensor
- Interference Analyzer
- Channel Scanner
- Gated Sweep
- Vector Signal Generator
- Zero-Span IF Output
- Signal Analyzers (up to 20 MHz demodulation)
  - GSM/GPRS/EDGE and W-CDMA/HSDPA
  - TD-SCDMA/HSDPA
  - LTE
  - cdmaOne/CDMA2000 1X and CDMA2000 1xEV-DO
  - WiMAX, Fixed and Mobile
  - DVB-T/H, DVB-T/H SFN
- Backhaul Analyzers – E1, T1, T3/T1
- 315 x 211 x 94 mm, 12.4 x 8.3 x 3.7 in

Master Software Tools™

The Power Behind the Master Handheld Family

Master Software Tools (MST) is a powerful PC software post-processing tool included with every instrument designed to enhance the productivity of technicians in report generation, data analysis, and testing automation. Compatibility is retained with Handheld Software Tools (HHST) with a *.dat file converter which converts HHST files to MST file format and vice-versa.

Report Generation is made simpler and faster with the Trace Rename Utility allowing a user to globally rename filenames, titles, and subtitles. Group Edit allows users to edit the actual traces simultaneously (trace plots title, subtitles, plot scaling, markers and limit lines) on similar files. These can both be done without opening the files.

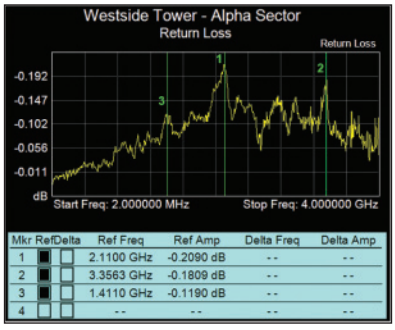
Graph Editor gives you complete control of a Cable and Antenna Analyzer trace. Change the scale, add markers, and have up to four graphs per view from the same sweep (e.g. Return Loss, VSWR, Cable Loss, Group Delay, milliRho, Phase, Magnitude, Smith Chart).

Trace Overlay and Math compares reference traces to current traces to diagnose changes. Overlay several traces on an existing trace or use Trace Math (Trace + Overlay, Trace – Overlay, and Overlay – Trace) to compare two traces.

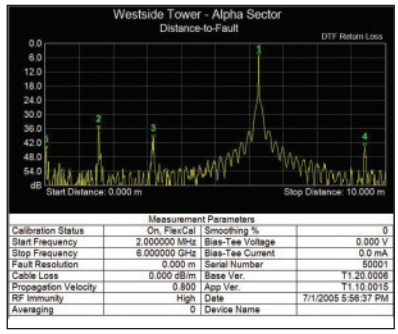
Interference Monitoring data collected on the instrument can be analyzed and diagnosed easily with MST. These applications include: Folder Spectrogram which creates a composite file of multiple traces for quick review; an *.avi movie can be generated for playback analysis; a Histogram that allows filtering of data and searches for the number of occurrences and the time of day; and 3D Spectrogram – for in-depth analysis with 3-axis rotation viewing and zoom control.

Remote Access Tool allows supervisor's to remotely view and control the instrument over the Internet with the high performance models that have an Ethernet port. Remote Access Tool is ideal for monitoring applications such as spectrum clearing and interference analysis remotely.

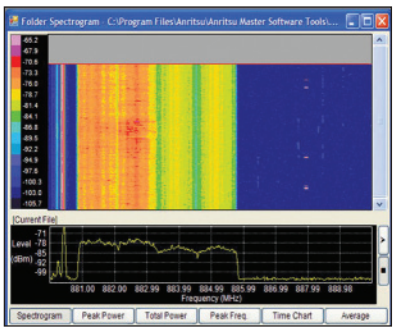
Script Master™ is an automation tool which allows the user to embed the operator's test procedure inside the instrument. This feature is available for GSM/EDGE, WCDMA/HSDPA and Channel Scanner applications. In W-CDMA/HSDPA and GSM/EDGE the user can include instructions in the form of pictures and text to help the technicians configure their setup prior to the test. One test can be configured to run across both W-CDMA and GSM modes. Using Channel Scanner Script Master, the user can create a list of up to 1200 channels and let's the instrument sequence through the channels 20 at a time and automatically make and save measurements.



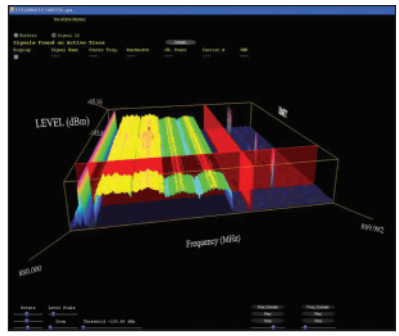
Return Loss – Marker View



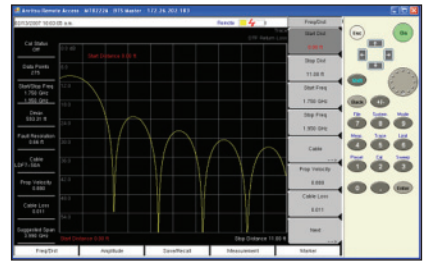
DTF Measurement / Parameter View



Folder Spectrogram – 2D View



Folder Spectrogram – 3D View



Remote Access PC View

FEATURES (not available with all models)

- Database Management
  - Full Trace Retrieval: retrieve all traces from instrument into one PC directory
  - Trace Catalog: index all traces on PC into one catalog
  - Trace Rename Utility: Rename measurement traces
  - Group Edit: title, subtitles, plot scaling, markers and limit lines, simultaneously on similar files
  - DAT File Converter: converts HHST files to MST file format and vice-versa
- Data Analysis
  - Trace Math and Smoothing: compare multiple traces
  - Data Converter: Convert from/to Return Loss/ VSWR/ Cable Loss/ DTF and also into Smith Charts
  - Measurement Calculator: translates into other units
- Report Generation and Mapping
  - Includes GPS, power level, and calibration status along with measurements
  - Edit Graph's scale, limit lines, and markers
  - Display measurement locations on mapping programs
  - Create reports in HTML or PDF format
  - Export measurements to *.s2p, *.jpg or *.csv format
  - Annotate measurements with notes
- Folder Spectrogram
  - 2D View: Creates a composite file of multiple traces. View Peak Power, Total Power, Peak Frequency, Histogram, Average Power (Max/Min).
  - 3D View: Rotate X, Y, Z axis, zoom
  - File Filter: View violations over limit lines or deviations from averages
  - Playback: In 2D, 3D or *.AVI movie format
- List/Parameter Editors
  - Traces: add, delete, and modify limit lines/markers
  - Cables: modify instrument's Cable List
  - Antennas: modify instrument's Antenna List
  - Signal Standards: modify instrument's Signal Standard List
  - Pass/Fail: create, download, or edit Tx Signal Analysis Pass/Fail lists
  - VSG Pattern Converter: Import user-defined patterns (ASCII text or MATLAB file format required)
  - Languages: Add up to two languages or modify non-English language menus
  - Mobile WiMAX DL-MAP Parameter
  - Display: modify display settings
- Script Master™
  - Channel Scanner: Automate scan up to 1200 channels, repeat for sets of 20 channels, repeat all channels
  - GSM/EDGE and W-CDMA/HSDPA: Automate Signal Analysis testing requirements with annotated how-to pictures
- Connectivity
  - Connect to PC using USB, LAN, or Direct Ethernet connection (varies by model)
  - Download measurements and live traces to PC for storage and analysis
  - Upload measurements from PC to instrument
  - Firmware Update: download latest firmware version
  - Remote Access Tool: remote control operation and monitoring of the instrument over the Internet (not available on all models)

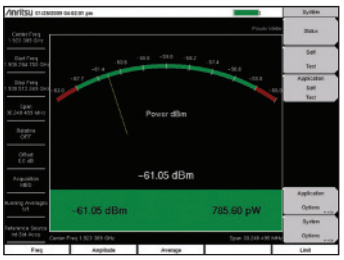
Power Sensors

Accuracy Where It Counts

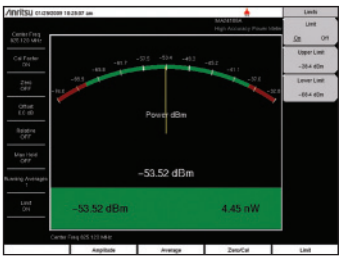
Anritsu offers a built-in Power Meter on most instruments and an optional High Accuracy Power Meter requiring external power sensors. Anritsu's family of high accuracy power sensors is an economical alternative to traditional benchtop meters. These instruments can be connected to the instrument via USB (some with RS232C) or be driven directly by a PC with our PowerXpert™ application software included with every sensor.

Setting base station power correctly is a critical parameter for optimal network performance. A power setting error of ±1.5 dBm means an approximate 15% change in coverage, either creating island cells with gaps in coverage or overlapping cells causing self interference. Anritsu's power sensors have measurement uncertainty of ≤ ±0.18 dB.

These sensors make true RMS power measurements over a wide dynamic range enabling users to make benchtop accurate measurements in the field for both CW and digitally modulated signals such as GSM/EDGE, W-CDMA/HSDPA, TD-SCDMA/HSDPA, CDMA/EV-DO, WiMAX, ISDB-T, and DVB-T/H. There is no need for a reference calibrator.



Built-in Power Meter



High Accuracy Power Meter

True-RMS Power Sensors

HIGH ACCURACY POWER SENSORS

- PSN50 High Accuracy Power Sensor
  - 150 MHz to 6 GHz
  - -30 to +20 dBm dynamic range (.001 to 100 mW)
- MA24104A Inline High Power Sensor
  - 600 MHz to 4 GHz
  - +3 to 51.76 dBm dynamic range (2 mW to 150 W)
- MA24106A High Accuracy RF Power Sensor
  - 50 MHz to 6 GHz
  - -40 to +23 dBm dynamic range (0.1 µW to 200 mW)
- MA24108A Microwave USB Power Sensor
  - 10 MHz to 8 GHz
  - -40 to +20 dBm dynamic range (0.1 µW to 100 mW)
- MA24118A Microwave USB Power Sensor
  - 10 MHz to 18 GHz
  - -40 to +20 dBm dynamic range (0.1 µW to 100 mW)
- MA24126A Microwave USB Power Sensor
  - 10 MHz to 26 GHz
  - -40 to +20 dBm dynamic range (0.1 µW to 100 mW)

Training and Service

Getting the Most Out of Your Instrument

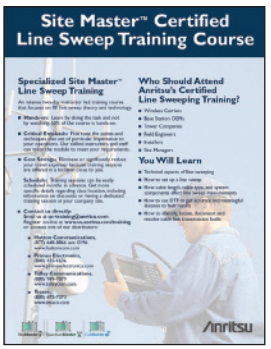
Anritsu has designed a variety of eLearning and Hands-on Courses that focus on the practical aspects of getting the job done. Our Hands-on Courses typically include about a 50/50 split between lectures and labs. The labs are simulations based on real life applications to enhance the learning experience.

Anritsu offers the only line sweeping certification training program in the industry. Everyone who passes the Site Master Line Sweep Certification Exam will receive a Site Master Certificate of Completion, along with a photo ID card, which demonstrates that you have acquired the necessary skills and knowledge of Site Master operation and RF line sweep training.

Anritsu is committed to delivering superior customer support. We achieve this through a global network of customer service centers that are registered to ISO 9001:2000 quality system compliance and staffed by factory trained professionals who provide accurate, reliable, high quality repair and calibration services. When you entrust your Anritsu products to us, you get the expertise and quality you would expect from an industry leader and the fast turnaround time you demand.

Site Master Line Sweep Web-Based eLearning Course

Line Sweep Interpretation Web-Based eLearning Course



HANDS-ON CLASS ROOM TRAINING

- Line Sweeping
  - Site Master Certified Line Sweep
  - Microwave Line Sweep Principles
- Base Station Measurements
  - LTE Theory and Measurements
  - W-CDMA/HSDPA Node B Measurements
  - CDMA/EV-DO Base Station Measurements
  - WiMAX Theory and Measurements
- Interference Analysis
  - Cellular Networks
  - Land Mobile Radio
  - Healthcare Environment
- Introduction to Spectrum Analysis

WEB-BASED eLEARNING COURSES

- Site Master Line Sweep (English, Chinese)
- Line Sweep Trace Interpretation

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Models and Options	Option	Site Master					Broadband Site Master		VNA Master						Spectrum Master						LMR Master	Cell Master	BTS Master	
	#	S311D	S331E	S332E	S361E	S362E	S810D	S820D	MS2024A	MS2026A	MS2026B	MS2028B	MS2034A	MS2036A	MS2711D	MS2712E	MS2713E	MS2721B	MS2723B	MS2724B	S412D	MT8212E	MT8221B	MT8222A
Cable & Antenna Analyzer																								
Frequency Range		25 MHz to 1.6 GHz	2 MHz to 4 GHz	2 MHz to 4 GHz	2 MHz to 6 GHz	2 MHz to 6 GHz	25 MHz to 10.5 GHz	25 MHz to 20 GHz	2 MHz to 4 GHz	2 MHz to 6 GHz	5 kHz to 6 GHz	5 kHz to 20 GHz	2 MHz to 4 GHz	2 MHz to 6 GHz							25 MHz to 1.6 GHz	2 MHz to 4 GHz	400 MHz to 4 GHz	10 MHz to 4 GHz
2 MHz Frequency Extension	0002						√	√													√			
6 GHz Frequency Extension	0026																							Standard
2-port Transmission Measurement (amplitude)	0021		√	√	√	√									√	√	√				√	√		
2-port Transmission Measurement (amplitude and phase)									Standard	Standard	Standard	Standard	Standard	Standard									Standard	Standard
Bias Tee (built-in)	0010		√	√	√	√			√	√	√	√	√	√		√	√				√	√	√	√
2-port Cable Loss	0022						√	√																
K(f) Test Port Connectors	0011						Standard	Standard				√												
Replaces Standard K(f) connector with N(f)	11NF						√	√																
Vector Network Analyzer																								
Frequency Range									2 MHz to 4 GHz	2 MHz to 6 GHz	5 kHz to 6 GHz	5 kHz to 20 GHz	2 MHz to 4 GHz	2 MHz to 6 GHz										
S-Parameters									S11, S21		S11, S21, S12, S22		S11, S21											
Time Domain (includes DTF capability)	0002										√	√												
Secure Data Operation	0007										√	√												
Vector Voltmeter	0015								√	√	√	√	√	√										
Balanced/Differential S-Parameters, 1-Port	0077										√	√												
Spectrum Analyzer																								
Frequency Range				100 kHz to 4 GHz		100 kHz to 6 GHz							9 kHz to 4 GHz	9 kHz to 7.1 GHz	100 kHz to 3 GHz	100 kHz to 4 GHz	100 kHz to 6 GHz	9 kHz to 7.1 GHz	9 kHz to 13 GHz	9 kHz to 20 GHz	100 kHz to 1.6 GHz	100 kHz to 4 GHz	150 kHz to 7.1 GHz	100 kHz to 7.1 GHz
Interference Analyzer	0025			√		√							√	√	√	√	√	√	√	√	√	√	√	√
Channel Scanner	0027			√		√							√	√	√	√	√	√	√	√	√	√	√	√
Gated Sweep	0090			√		√										√	√	√	√	√		√	√	√
Zero Span IF Output	0089																		√	√			√	
AM/FM/PM Signal Analyzer	0509			√		√										√	√							
Signal Generators																								
Tracking Generator	0020																	√						
CW Signal Generator	0028			√		√										√	√				√	√		√
Vector Signal Generator	0023																						√	
Power Meter																								
Power Meter	0029			√		√							Standard	Standard	√	√	√					Standard	Standard	Standard
High Accuracy Power Meter	0019	√	√	√	√	√			√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Power Monitor up to 50 GHz	0005	√					√	√	√	√	√	√	√	√							√			√
GPS Receiver																								
GPS Location (L) and/or High Frequency Accuracy (HFA)	0031		L only	L & HFA	L only	L & HFA	L only	L only	L only	L only	L only	L only	L & HFA	L & HFA		L & HFA	L & HFA	L & HFA	L & HFA	L & HFA	L & HFA	L & HFA	L & HFA	L & HFA
Tx Signal Analyzer																								
10 MHz BW Demodulation Hardware	0009															√	√	√	√	√	Standard	Standard	20 MHz	Standard
GSM/GPRS/EDGE RF Measurements	0040															√	√	√	√	√		√	√	√
GSM/GPRS/EDGE RF Demodulations	0041															√	√	√	√	√		√	√	√
W-CDMA/HSDPA RF Measurements	0044															√	√	√	√	√		√	√	√
W-CDMA Demodulation	0045															√	√	√	√	√		√	√	√
W-CDMA/HSDPA Demodulation	0065															√	√	√	√	√		√	√	√
W-CDMA/HSDPA OTA Measurements	0035															√	√	√	√	√		√	√	√
TD-SCDMA RF Measurements	0060															√	√	√	√	√		√	√	√
TD-SCDMA Demodulation	0061															√	√	√	√	√		√	√	√
TD-SCDMA OTA Measurements	0038															√	√	√	√	√		√	√	√
LTE RF Measurements	0541															√	√	√	√	√		√	√	√
LTE Modulation Measurements (up to 10 MHz)	0542															√	√	√	√	√		√	√	√
LTE OTA Measurements	0546															√	√	√	√	√			√	√
cdmaOne/CDMA2000 1X RF Measurements	0042															√	√	√	√	√		√	√	√
cdmaOne/CDMA2000 1X Demodulation	0043															√	√	√	√	√		√	√	√
cdmaOne/CDMA2000 1X OTA Measurements	0033															√	√	√	√	√		√	√	√
CDMA2000 1xEV-DO RF Measurements	0062															√	√	√	√	√		√	√	√
CDMA2000 1xEV-DO Demodulation	0063															√	√	√	√	√		√	√	√
CDMA2000 1xEV-DO OTA Measurements	0034															√	√	√	√	√		√	√	√
Fixed WiMAX RF Measurements	0046															√	√	√	√	√		√	√	√
Fixed WiMAX Demodulation	0047															√	√	√	√	√		√	√	√
Mobile WiMAX RF Measurements	0066															√	√	√	√	√		√	√	√
Mobile WiMAX Demodulation	0067															√	√	√	√	√		√	√	√
Mobile WiMAX OTA Measurements	0037															√	√	√	√	√		√	√	√
DVB-T/H Digital Measurements, 30-990 MHz	0064																	√						√
DVB-T/H SFN Field Measurements	0078																	√						√
DVB-T/H BER Unit	0057																	√						
ISDB-T Measurements	0030															√	√	√				√		
ISDB-T SFN	0032															√	√	√				√		
iDEN Signal Analyzer	0068																				√			
P25 Tx Signal Analyzer	0520																				√			
P25 Talk-Out Coverage Measurement	0522																				√			
NXDN Tx Signal Analyzer	0530																				√			
NXDN Talk-Out Coverage Measurement	0532																				√			
Backhaul Analyzer																								
T1 Bit-Error-Rate Tester	0051																					√	√	√
E1 Bit-Error-Rate Tester	0052																					√	√	√
T3/T1 Bit-Error-Rate Tester	0053																					√	√	√
Calibration Certification Services																								
Standard/Premium Calibration	0098/0099	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√