

# Site Master™

Compact Handheld Cable & Antenna Analyzer  
with Spectrum Analyzer

S331E

2 MHz to 4 GHz

S332E

2 MHz to 4 GHz  
100 kHz to 4 GHz

S361E

2 MHz to 6 GHz

S362E

2 MHz to 6 GHz  
100 kHz to 6 GHz

Cable & Antenna Analyzer  
Spectrum Analyzer



# From the Leader in Cable and Antenna Analysis Anritsu Introduces Its 8th Generation Site Master



The wireless communications market continues to evolve at a rapid pace. Operators and service providers have to maintain old networks while upgrading to the new 3G and 4G networks so as to keep up with changing consumer demands. They face the additional challenge of needing to ensure their networks are competitive from a reliability, quality, and cost perspective. As a result of all this, they expect more of the contractors and technicians who maintain their networks. To stay competitive, these contractors and technicians must maintain more base stations than before and complete a wide variety of tasks in the shortest time possible.

Anritsu is pleased to introduce its eighth-generation compact handheld Site Master cable and antenna analyzer series with integrated spectrum analyzer. The new Site Master analyzers offer the same ease of use, ruggedness, and familiar menus as its predecessor S331D and S332D. In addition, Anritsu has enhanced the Site Master to address all the customer requirements and suggestions received over the years.

Indeed, for more than 14 years, Anritsu's Site Master has been the de facto standard for contractors, installers, and wireless service providers who need a portable and rugged cable and antenna analyzer. The Site Master reduces per site maintenance expense, maximizes system up-time, and breaks away from the traditional fix-after-failure maintenance mode by finding small problems before major failures occur. Radio frequency (RF) engineers and field technicians in the U.S. Navy, U.S. Air Force, and other global defense programs responsible for installing and maintaining communication systems use Site Master's frequency domain reflectometry (FDR)-based approach to improve the quality of their communication systems.

Although the new Site Master resides in a modern platform that takes advantage of the latest technologies and is loaded with features that will enhance productivity, it provides more value for better productivity without giving up the familiar look and feel.

## INTEGRATED

The Site Master is a 4 or 6 GHz cable and antenna analyzer that can be configured to include either a 4 or 6 GHz spectrum analyzer, 2-port transmission measurement with built-in 32V bias tee, an interference analyzer with spectrogram displays, a channel scanner, power meter, high accuracy power meter, and GPS receiver for time and location stamping. Because of its multi-functional capabilities, it eliminates the need for you to carry and learn multiple instruments.

## TRUSTED

Anritsu builds upon its expertise in portable compact cable and antenna analyzers and spectrum analyzers. The Site Master is approved by all major operators and service providers worldwide.

## DESIGNED FOR FIELD USE

The Site Master was designed specifically for field environments. It weighs less than 6 lbs and its field replaceable Li-Ion battery typically lasts for more than 4 hours. A new bright 8.4-inch color display provides visibility even in broad daylight. With an operating temperature range from -10 °C to 55 °C, the Site Master will work in the most extreme weather conditions. The analyzer is almost impervious to the bumps and bangs typically encountered by portable field equipment. Its ruggedized case and splash proof design allow you to depend on high performance anywhere, anytime.



Night time display



Black and White display

# Site Master is the Preferred Cable and Antenna Analyzer of Wireless Service Providers, Contractors and Installers

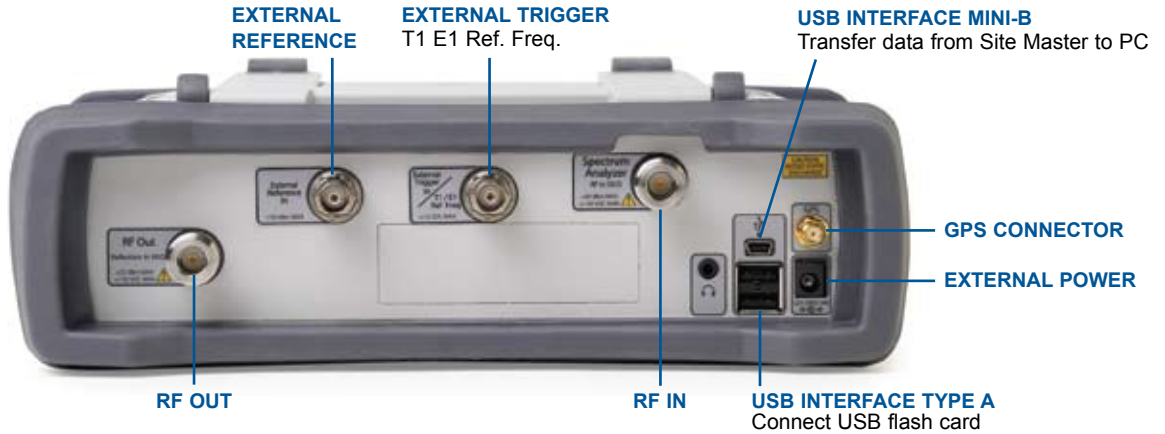
## INTEGRATED MEASUREMENT CAPABILITIES



### CONFIGURATION OVERVIEW

| FUNCTION                                     | DESCRIPTION   |
|--|---|
| Cable and Antenna Analyzer, 2 MHz to 4/6 GHz | Characterizes cable and antenna systems with return loss, cable loss, VSWR, distance-to-fault measurements. Also includes 1-port phase and Smith chart displays. Offers faster than 1 ms/data point sweep speed and a dual display. |
| Spectrum Analyzer, 100 kHz to 4/6 GHz        | Locates and identifies various signals over a wide frequency range. Detect signals as low as -152 dBm with phase noise better than -100 dBc/Hz.   |
| 2-port Transmission Measurement (Option 21)  | Provides high and low power settings for both TMA gain and antenna-antenna isolation measurements. Offers better than 80 dB dynamic range.  |
| Bias Tee (Option 10)                         | Provides built-in 32 V bias tee that can be turned on as needed, and which eliminates the need to carry an external supply.   |
| High Accuracy Power Meter (Option 19)        | Connects high accuracy 4, 6, 8, 18, and 26 GHz USB power sensors with better than $\pm 0.16$ dB accuracy.   |
| Power Meter (Option 29)                      | Makes channelized transmitter power measurements.   |
| Interference Analyzer (Option 25)            | Includes the popular spectrogram display for monitoring intermittent signals over time. Pin point the interfering source with on screen interference mapping.   |
| Channel Scanner (Option 27)                  | Measures the power of multiple transmitted signals.   |
| Coverage Mapping (Option 431)                | Outdoor and indoor coverage mapping for RSSI and ACPR measurements.   |
| CW Signal Generator (Option 28)              | Includes CW source to test low noise amplifiers, repeaters. (This requires an external CW generator kit.)   |
| GPS Receiver (Option 31)                     | Provides location and UTC time information. Also improves the accuracy of the reference oscillator.   |
| Gated Sweep (Option 90)                      | Views pulsed or burst signals such as WiMAX, GSM, and TD-SCDMA only when they are on.   |
| AM/FM/PM Analyzer (Option 509)               | Analyzes AM/FM/PM signals and measures FM/PM deviation, AM depth, SINAD, Total Harmonic Distortion and much more.   |

# Designed for the Field



ALL CONNECTORS ARE CONVENIENTLY LOCATED ON THE TOP PANEL, LEAVING THE SIDES CLEAR FOR HANDHELD USE.



## Convenient Soft Case and Tilt Bail

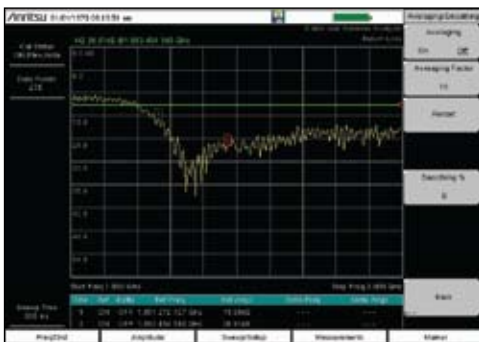
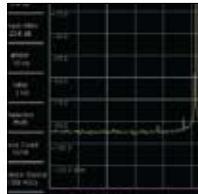
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TILT BAILS ARE INTEGRATED INTO THE CASE AND SOFT CASE FOR BETTER SCREEN VIEWING

# Master Cable & Antenna Analysis, Anywhere, Anytime

The majority of the problems you find at a typical cell site are caused by problematic cables, pinched cables, corroded connectors, antennas, lightning strikes, rain getting into cables, and bullet holes. Degraded cable systems and badly positioned antennas affect overall system coverage and eventually result in dropped calls. Site Master's FDR-based return loss and DTF measurements can pinpoint an antenna problem from ground level in a few seconds, enabling Site Master to identify small problems before they become big problems.



Return Loss/VSWR

## RETURN LOSS / VSWR

Use the Site Master to make return loss and VSWR and verify that the cable and antenna system conforms to performance specifications.

## CABLE LOSS

Cable Loss metrics measure the level of insertion loss within the cable feedline system. This measurement can be verified prior to deployment, when you have access to both ends. Site Master automatically calculates the average cable loss.

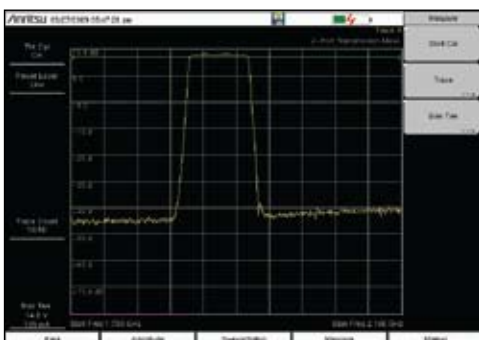


Distance-to-Fault

## DISTANCE-TO-FAULT

While the return loss metric is the best measurement to verify the health of a system, distance-to-fault (DTF) is used to troubleshoot systems and locate the problem.

The Site Master's DTF measurement uses the fast Fourier transform to convert frequency data to the time domain and displays signal anomalies with respect to distance. Using the standard trace math feature, you can monitor small relative changes over time.



2-Port Transmission Measurements

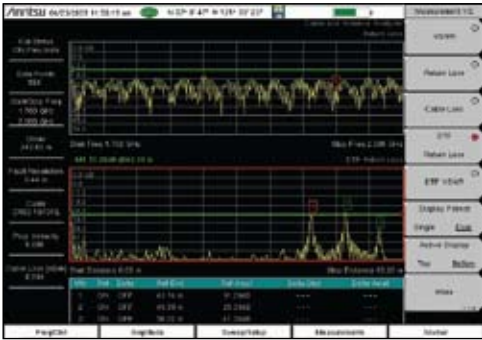
## 2-PORT TRANSMISSION MEASUREMENTS (OPTION 21)

Cellular/PCS and 3G base stations today use diplexers, duplexers, and tower-mounted amplifiers to extend the coverage area. Site Master's 2-port transmission measurement enables you to make gain, isolation, and insertion loss measurements as well as verify sector-to-sector isolation.

## BIAS TEE (OPTION 10)

The built-in bias tee can be turned on as needed to place +12 to +32V on the center conductor of the RF in port, eliminating the need for you to carry external supplies in the field.

# Enhance Productivity with Dual Displays and Instant Calibration



Dual Display



Quick Name Matrix



InstaCal

## DUAL DISPLAY

The dual display enables users to view two cable and antenna measurements on the same display. Because you can control the top and bottom displays independently, you can set markers and limit lines on each display. This results in significant time savings as there's no need to make two measurements.

## QUICK NAME MATRIX

The integrated quick name matrix and keyboard enables you to preset up to 42 commonly used names. The quick name matrix allows you to save long file names with cell site ID, sector information, color coding, measurement type, frequency, and termination in less than five seconds. Now you can label the traces of the entire site in minutes instead of hours.

## INSTACAL™ CALIBRATION

Although you need to get the job done as quickly as possible, you still need to make reliable and accurate measurements. Anritsu's InstaCal module enables you to make accurate calibrations at the end of the phase stable cable without connecting a short/open/load. This calibration method can cut the calibration time by as much as 50 percent and still deliver accurate calibrations.

## STANDARD OSL CALIBRATION

Open-Short-Load (OSL) calibration comes standard with the Site Master. All errors from source match, directivity, and frequency response are mathematically removed, allowing you to make accurate vector-corrected measurements. Directivity is usually the main contributor to measurement uncertainty, and corrected directivity of 42 dB or better is common using Anritsu's precision components.

## FLEXCAL™

The Site Master's FlexCal™ broadband calibration feature is an OSL-based calibration method that allows you to perform a broadband calibration and change the frequency range after calibration without having to recalibrate the instrument.

## RF IMMUNITY

Site Master's special dithering RF immunity solution enables you to make accurate cable and antenna measurements even in the presence of strong RF activity from co-located cell sites.

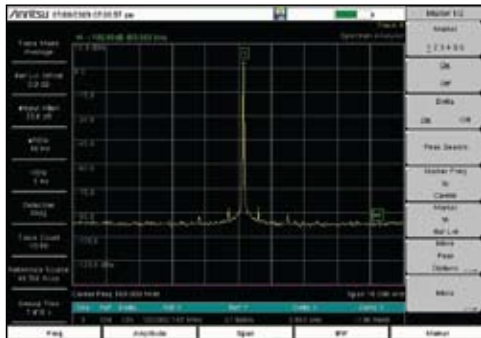
## CABLE AND ANTENNA ANALYZER HIGHLIGHTS

- Return loss, VSWR, cable loss, DTF
- 2-port transmission measurements with 32V bias tee
- 1-port phase, Smith chart
- Quick Name Matrix reduces trace labeling time in the field
- Optical DTF measurements
- Dual display mode capabilities
- Built-in, editable signal standard and cable standard lists
- Calibration: OSL Cal, FlexCal, InstaCal
- 137, 275, 551, 1102, 2204 data points
- < 1 msec per datapoint sweep speed
- Trace overlay and trace math to monitor changes with Reference traces
- Marker table with automatic peak/valley markers
- GPS tagging
- Limit lines and alarming for providing reference standards
- GPS tagging of data to verify location of tests
- Master Software Tools for post-analysis and report generation

# Best Performance in its Class

Site Master S332E and the S362E Site Master with integrated spectrum analysis capability provide users with a high-performance, easy-to-use, feature-rich spectrum analyzer for field environments and applications requiring mobility.

Site Master's integrated high performance spectrum analyzer makes it ideal for a broad range of activities, including spectrum monitoring, AM/FM broadcast proofing, interference analysis, field strength measurements, transmitter spectrum analysis, electro magnetic field strength, signal strength mapping, and overall field analysis of cellular 2G/3G/4G, land mobile radio, Wi-Fi, and broadcast signals.



Dynamic Range Performance

## HIGH PERFORMANCE

The dynamic range is better than 95 dB in 10 Hz RBW, enabling measurement of very small signals in the presence of much larger signals. The picture demonstrates the dynamic range in the Site Master



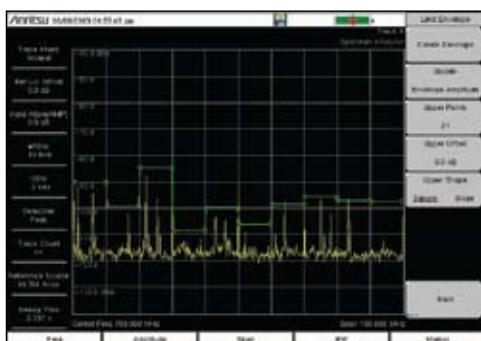
Low Level Performance

## DISPLAYED AVERAGE NOISE LEVEL

Site Master delivers impressive and best-in-class DANL performance. With the built-in pre-amp, better than -152 dBm DANL can typically be realized in 10 Hz RBW and -162 dBm when normalized to 1 Hz. This low-level performance capability is essential when looking for low-level interference signals.

## GPS-ASSISTED FREQUENCY ACCURACY

With GPS Option 0031 the frequency accuracy is < 50 ppb. This additional accuracy is important when characterizing 3GPP signals using counted frequency markers. Also all measurements can be GPS tagged for exporting to maps.



Limit Envelope

## SIMPLE BUT POWERFUL FOR FIELD USE

Convenience is a must in the field. This is why the Site Master is equipped with features that will enhance productivity in the field.

The Site Master is equipped with limit lines for all user levels. You can create single limit lines and segmented limit lines in one step using the one-button limit envelope feature.

The Site Master automatically sets the fastest sweep possible while still ensuring accurate measurements. This allows users to rely on the instrument to optimize accuracy and consistency.

Auto Attenuation ties the input attenuation to the reference level eliminating the need for the user to determine how much attenuation is needed.

Six regular and six delta markers can be displayed with a marker table that can be turned on as needed. The capability to measure noise level in terms of dBm/Hz or dBμV/Hz is a standard feature of the Site Master.



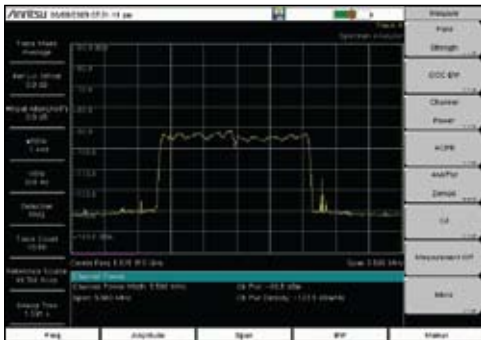
Comprehensive Marker Menu



# Master Transmitter Testing

## SMART MEASUREMENTS FOR TRANSMITTER SYSTEMS

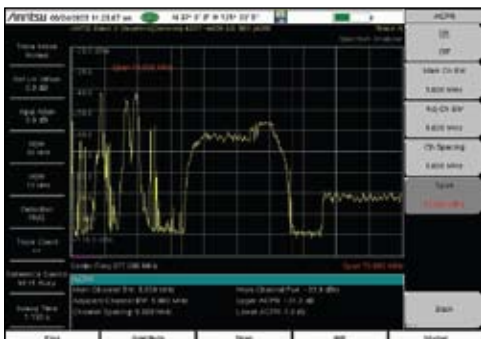
Commonly needed transmitter measurements are built in and can be accessed easily. These include field strength, occupied bandwidth, channel power, adjacent channel power ratio (ACPR), and emission mask.



Occupied Bandwidth

## OCCUPIED BANDWIDTH

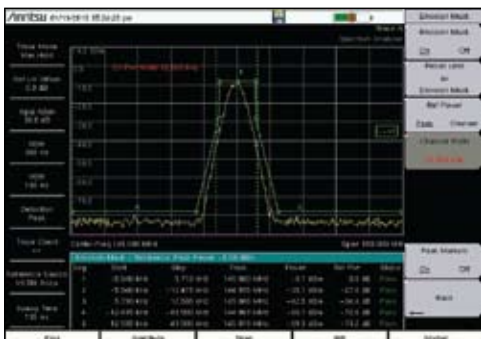
This measurement determines the amount of spectrum used by a modulated signal. The Site Master allows you to choose between two different methods of determining bandwidth: the percent-of-power method or the “x” dB down method.



Adjacent Channel Power Ratio

## ADJACENT CHANNEL POWER RATIO

Adjacent Channel Power Ratio is a common transmitter measurement. High ACPR will create interference for neighboring carriers. This measurement can be used to replace the traditional two-tone Intermodulation Distortion (IMD) test for system non-linear behavior.



Emission Mask

## FIELD STRENGTH MEASUREMENTS

The Site Master can determine the effects of electromagnetic fields caused by transmitter systems. Specific antenna factors of the connected antenna are automatically taken into account, and field strength is displayed directly in dBμV/m. The Site Master also supports a wide range of directional antennas. If you are using a different antenna, Master Software Tools can be used to edit the antenna list and upload the custom antenna list to the instrument to accurately measure the maximum field strength.

## EMISSION MASK

The emission mask is a segmented upper limit line that will display frequency range, peak power and frequency, relative power and pass/fail status for each segment of the mask. The emission mask must have at least two segments. Emission mask adjusts to the peak power value of transmitted signal level per government emission mask requirements.

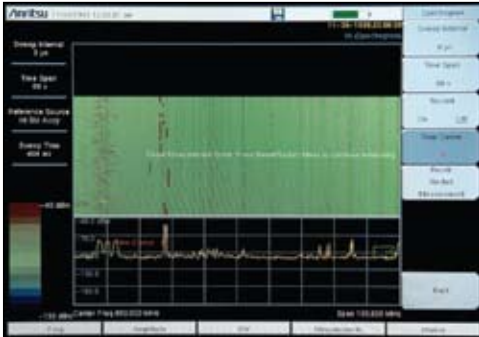
## SPECTRUM ANALYZER HIGHLIGHTS

- Measurements: Occupied bandwidth, channel power, ACPR, C/I, AM/FM demod, field strength, emission mask
- Interference analyzer: spectrogram, signal strength, RSSI, signal ID, Interference Mapping
- Dynamic range: > 95 dB
- DANL: -162 dBm typical (normalized to 1 Hz)
- Phase noise: -100 dBc/Hz @ 10 kHz offset
- Frequency accuracy: < ± 50 ppb with GPS on
- Advanced marker functions: noise marker, frequency counter, fixed, tracking
- Advanced limit line functions: one-button envelope creation
- Detection methods: peak, RMS, negative, sample, quasi-peak
- Save-on-event: automatically saves a sweep when crossing a limit line
- Gated sweep: view pulsed or burst signals only when they are on, or off

# Master the Location of Interference

As the wireless industry continues to expand, more diverse uses for the radio spectrum emerge, and the number of signals that may potentially cause interference is constantly increasing.

Compounding the problem are the many sources that can generate interference, including intentional radiators, unintentional radiators, and self interference. Interference causes Carrier-to-Interference degradation robbing the network of capacity. The goal of these measurements is to resolve interference issues as quickly as possible.



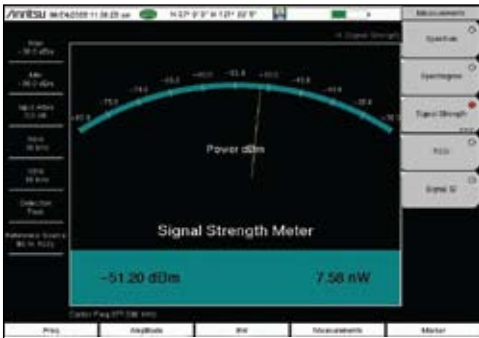
**Spectrogram Display**

## INTERFERENCE ANALYSIS (OPTION 25)

The interference analyzer option provides you with a spectrogram display, RSSI, signal strength meter, signal ID, and Signal Mapping capabilities. Site Master's integrated spectrum analyzer can detect signals as low as -152 dBm.

## SPECTROGRAM DISPLAY

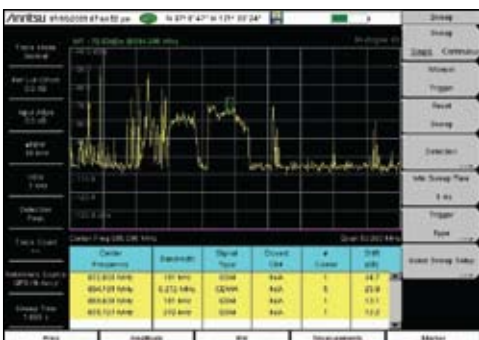
This option provides you with a three-dimensional display of frequency, power, and time of the spectrum activity to identify intermittent interference and track signal levels over time. The dual display screen allows for easy viewing of both the spectrum and 3D display. The Site Master allows you to save a history of data up to 72 hours.



**Signal Strength Meter**

## SIGNAL STRENGTH METER

The Site Master's signal strength meter can locate an interfering signal by using a directional antenna and measuring the signal strength. It displays power in Watts or dBm, in the graphical analog meter display and by an audible beep proportional to its strength.



**Signal ID**

## SIGNAL ID

Site Master's signal ID feature in the interference analyzer can help you quickly identify the type of the interfering signal. You can configure this measurement to identify all signals in the selected band or to simply monitor one single interfering frequency. The Site Master then displays results that include center frequency, signal bandwidth, and signal type (FM, GSM/GPRS/EDGE, W-CDMA/HSDPA, CDMA/EV-DO, Wi-Fi).



**Carrier-to-Interference (C/I)**

## CARRIER-TO-INTERFERENCE MEASUREMENT

Site Master's carrier-to-interference measurement capability makes it simple for you to determine if the level of interference will affect users in the intended service area.

## AM/FM/SSB DEMODULATION

A built-in demodulator for AM, narrowband FM, wideband FM and single sideband allows you to easily identify the interfering signal.

# Pin Point Location of Interfering Signal with Interference Mapping



Interference Mapping with Google Earth™



## INTERFERENCE MAPPING

The Interference Mapping measurement eliminates the need to use printed maps and draw lines to triangulate the interfering signal.

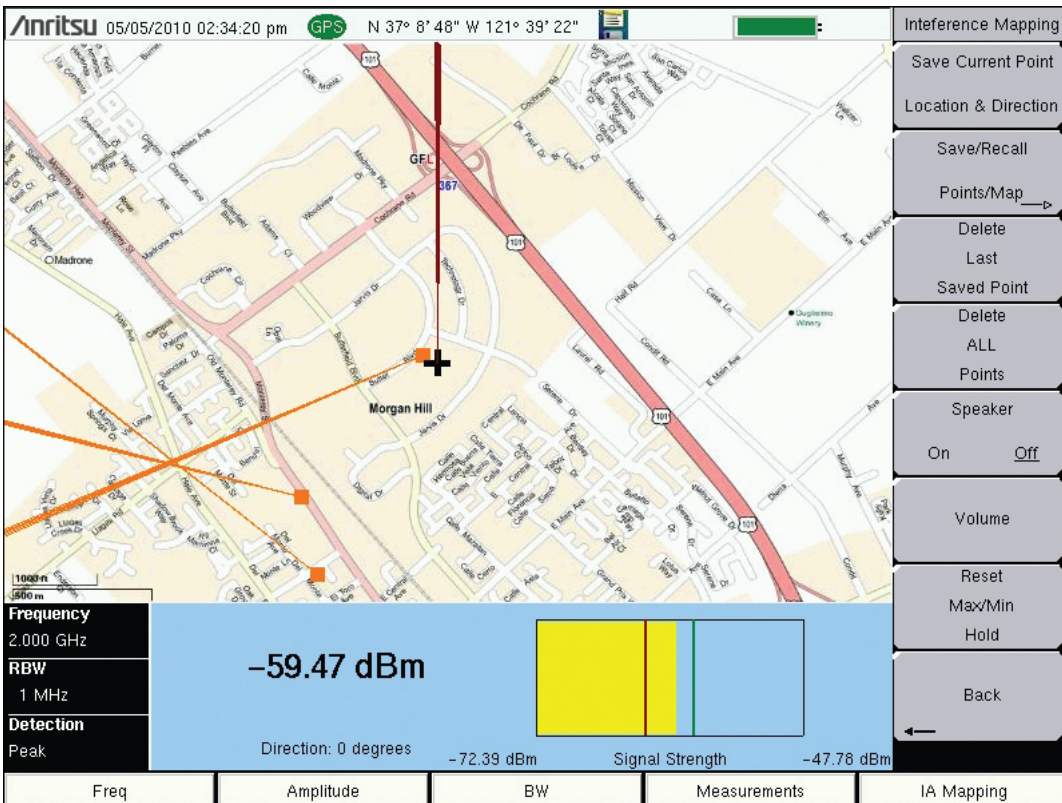
Using Map Master™, it is easy to convert maps and make them compatible with the Site Master. With a valid GPS signal, the instrument identifies the user location on the map. Using one of the recommended Anritsu Yagi antennas, you can identify the direction of the interfering signal and input the angle information with the rotary knob. With two or more lines from different locations, it is possible to obtain an estimate location of the interfering signal. The Interference Mapping can be done directly on the Site Master. Files can also be saved as kml and opened with Google Earth.

## DIRECTIONAL ANTENNAS

Anritsu offers more than eight different directional antennas covering a wide range of frequency bands including: 822 to 900 MHz, 885 to 975 MHz, 1710 to 1880 MHz, 1850 to 1990 MHz, 2400 to 2500 MHz, 1920 to 2170 MHz, 500 to 3000 MHz, and 600 to 21000 MHz.

## GPS ANTENNA

The 2000-1528-R GPS antenna and option (31) are required for the interference mapping and coverage mapping measurements.



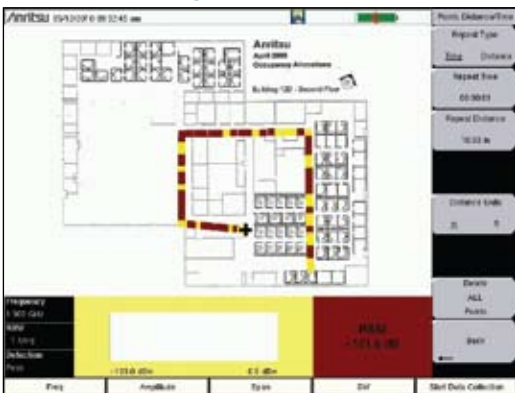
On Screen Interference Mapping

# Indoor and Outdoor Coverage Mapping Solutions (Option 0431)

There is a growing demand for coverage mapping solutions. Anritsu's Coverage Mapping measurements option provides wireless service providers, public safety users, land mobile radio operators, and government officials with indoor and outdoor mapping capabilities



Outdoor Mapping



Indoor Mapping



Saved KML File



Create maps with Map Master

## OUTDOOR MAPPING

With a GPS antenna connected to the instrument and a valid GPS signal, the instrument monitors RSSI and ACPR levels automatically. Using a map created with Map Master, the instrument displays maps, the location of the measurement, and a special color code for the power level. The refresh rate can be set up in time (1 sec min) or distance.

The overall amplitude accuracy coupled with the GPS update rate ensures accurate and reliable mapping results

## INDOOR MAPPING

When there is no GPS signal valid, the Site Master uses a start-walk-stop approach to record RSSI and ACPR levels. You can set the update rate, start location, and end location and the interpolated points will be displayed on the map.

## EXPORT KML FILES

Save files as KML or JPEG. Open kml files with Google Earth™.

When opening up a pin in Google Earth, center frequency, detection method, measurement type, and RBW are shown on screen.

## MAP MASTER

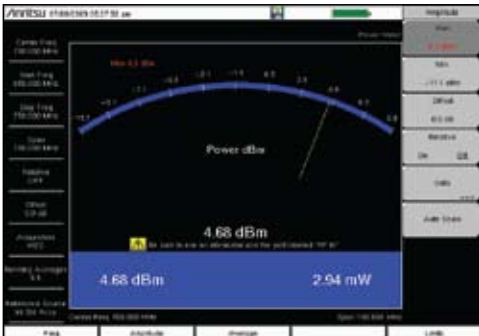
The Map Master program creates maps compatible with the Site Master. Maps are created by typing in the address or by converting existing JPEG, TIFF, BMP, GIF, and PNG files to MAP files. Utilizing the built-in zoom in and zoom out features, it is easy to create maps of the desired location and transfer to the instrument with a USB flash card. Map Master also includes a GPS editor for inputting latitude and longitude information of maps from different formats.

# Power Measurements for a Wide Range of Applications

The Anritsu Site Master provides many different power measurements to support a wide range of applications. The high-accuracy broadband sensor family provides the best accuracy ( $\pm 0.16$  dB) over a wide frequency range. The power meter is ideal for users looking to making channelized measurements in a few keystrokes with minimal training. Site Master's channel power measurement also makes channelized measurements but requires more knowledge and is recommended for more advanced users. And when you are measuring multiple channels, the channel scanner is your perfect choice.



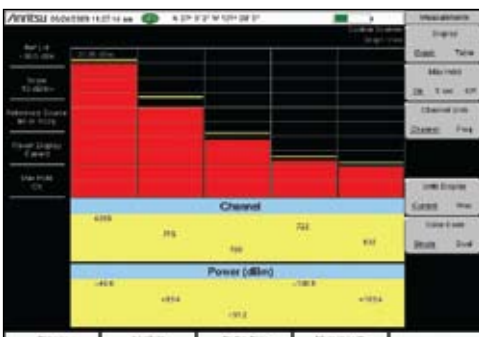
Power Meter



High Accuracy Power Meter



High Accuracy Power Sensors



Channel Scanner

## CHANNEL POWER

Use Site Master's channel power measurement to determine the power and power density of a transmission channel. Using the built-in signal standard list, you can measure the channel power of a wide range of signals.

## POWER METER (OPTION 29)

Site Master's internal power meter provides power measurements without any additional tools and is ideal for making channelized power measurements. You can display the results in both dBm and Watts. This option is easy to use and requires limited setup entries.

## HIGH ACCURACY POWER METER (OPTION 19)

Anritsu's high accuracy power meter option enables you to make high accuracy RMS measurements. This capability is perfect for measuring both CW and digitally modulated signals such as CDMA/EV-DO, GSM/EDGE, WCDMA/HSDPA, and P25. You can select from a wide range of USB sensors delivering better than  $\pm 0.16$  dB accuracy. An additional benefit of using the USB connection is that a separate DC supply (or battery) is not needed since the necessary power is supplied by the USB port.

- PSN50 High Accuracy RF Power Sensor, 50 MHz to 6 GHz, -30 to +20 dBm, True-RMS
- MA24104A Inline High Power Sensor, 600 MHz to 4 GHz, +3 to +51.76 dBm (150W), True-RMS
- MA24106A High Accuracy RF Power Sensor, 50 MHz to 6 GHz, -40 to +23 dBm, True-RMS
- MA24108A Microwave USB Power Sensor, 10 MHz to 8 GHz, -40 to +20 dBm, True-RMS
- MA24118A, Microwave USB Power Sensor, 10 MHz to 18 GHz, -40 to +20 dBm, True-RMS
- MA24126A, Microwave USB Power Sensor, 10 MHz to 26 GHz, -40 to +20 dBm, True-RMS

## PC POWER METER

These power sensors can be used with a PC running Microsoft Windows® via USB. They come with PowerXpert™ application, a data analysis, and control software. The application has abundant features, such as data logging, power versus time graph, big numerical display, and many more, that enable quick and accurate measurements.

## CHANNEL SCANNER (OPTION 27)

The channel scanner option measures the power of multiple transmitted signals, making it very useful for simultaneously measuring channel power of up to 20 channels in GSM, TDMA, CDMA, W-CDMA, HSDPA, and public safety networks. You can select the frequencies or the scanned data to be displayed by frequencies or the channel number. And in the custom setup menu each channel can be custom built with different frequency bandwidth, or with channels from different signal standards. With Script Master, scans can be automated for up to 1200 channels.

# Valuable Options and Features

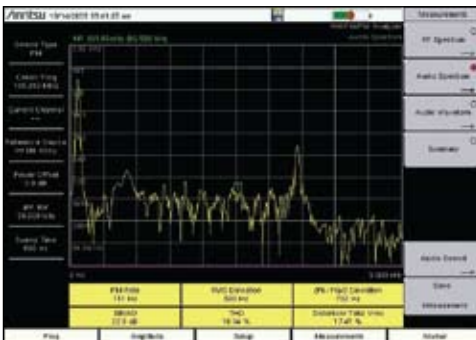


GPS Receiver

## GPS RECEIVER (OPTION 31)

Site Master’s GPS option can be used to confirm the exact measurement location (longitude, latitude, altitude) and Universal Time (UT) information. Each trace can be stamped with location information to ensure you are taking measurements at the right location.

In addition, the GPS option enhances the frequency accuracy of the internal reference oscillator. Within three minutes of acquiring the GPS satellite, the built-in GPS receiver provides a frequency accuracy to better than 50 ppb, for Spectrum Analyzer measurements.



AM/FM/PM Analyzer

## AM/FM/PM ANALYZER (OPTION 509)

The AM/FM/PM analyzer provides analysis and display of analog modulation. Four measurement displays are provided.

The RF Spectrum display shows the spectrum with carrier power, frequency, and occupied BW. The Audio Spectrum display shows the demodulated audio spectrum along with the Rate, RMS deviation, Pk-Pk/2 deviation, SINAD, Total Harmonic Distortion (THD), and Distortion/Total. Audio Waveform display shows the time-domain demodulated waveform. Finally, there is a Summary Table Display that includes all the RF and Demod parameters.



Touchscreen keyboard

## BUILT-IN KEYBOARD

The built-in touchscreen keyboard gives you access to a fully functional keyboard, saving valuable time in the field when entering trace names. You can create shortcuts to customer-configurable user “quick names” to program frequently used words.

## CW SIGNAL GENERATOR (OPTION 28)

This option provides a CW signal generator from 2 MHz to 4 or 6 GHz. The signal at the output port can be set high (approximately 0 dBm) or low (-30 dBm). With the use of the CW Signal Generator Kit’s attenuator connected to the RF port, the level can be varied in 1 dB steps, giving you the ability to generate signals as low as -110 dBm for receiver sensitivity measurements. The included splitter divides the signal, allowing for a simultaneous power measurement.



Menus with shortcut icons

## MENUS WITH SHORTCUT ICONS

Find your favorite measurements quickly by pressing the menu key. Create shortcuts for popular measurements, setups, and functions by simply holding down any key for more than three seconds. The display here shows the menu with standard measurements and with the lower part filled with shortcut icons.

## LOCAL LANGUAGE SUPPORT

Site Master features eight languages including English, Japanese, Chinese, Italian, French, German, Spanish and Korean. Two custom user-defined languages can be uploaded into the instrument using Master Software Tools.

# Master Software Tools - The Power Behind the Site Master

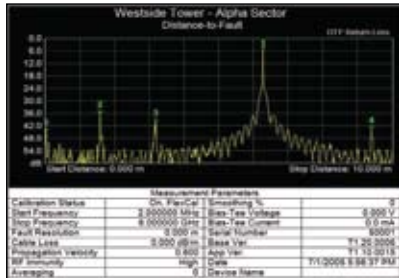
Master Software Tools (MST) is a powerful PC software post-processing tool designed to enhance the productivity of technicians in report generation, data analysis, and testing automation. Master Software Tools can be downloaded from [anritsu.com](http://anritsu.com). Site Master cable and antenna measurements can be saved as .DAT and are compatible with HHST.



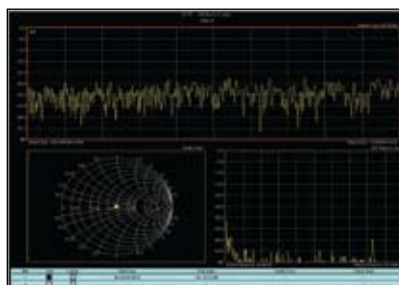
## Connect to PC using USB



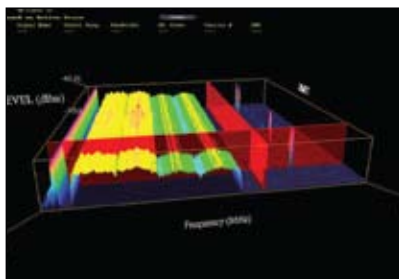
## Report Generation



## Import HHST \*.DAT Files



## Multiple Trace View



## 3D Spectrogram View

## FAST DOWNLOADS

Download all measurements to MST with a single menu selection.

## REPORT GENERATION

Create reports with company logo, GPS tagging information, calibration status, and serial number of the instrument for complete reporting. Add custom company logos.

## IMPORT HHST \*.DAT FILES

Compatibility is retained with Handheld Software Tools (HHST) with a \*.dat file converter which converts HHST files to MST file format and vice-versa.

## COMPARE TRACES

Use MST to build a record of all traces. Easy to use trace overlay features allow for easy comparison with historical traces.

## TRACE RENAMING

Rename hundreds of traces in minutes using the trace rename tool in MST.

## TRACE EDITOR

For VNA traces, select markers to peak and valley and displays individual values for Return Loss, Cable Loss, VSWR, Magnitude, Phase and milliRho. For SPA measurements set limit line envelopes, edit limit lines segments and turn on and off segments. Also, edit frequency and amplitude parameters.

## PRODUCT UPDATES

The product update tool will ensure you always use the latest instrument firmware.

## GROUP EDIT

Add limit lines and markers to all the traces in one folder with just one click.

## SIGNAL STANDARDS AND CABLE LISTS

While the Site Master signal standard and cable lists are updated frequently, Master Software Tools can be used to add custom signals and cables.

## MULTIPLE TRACE VIEW AND TRACE CONVERTER

Create multiple trace displays (RL, VSWR, Cable Loss, DTF, Phase) from a single 1-port measurement.



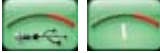




## FULL TRACE RETRIEVAL

Download and archive hundreds of traces instantly to your PC without opening them.

## FOLDER SPECTROGRAM

Folder Spectrogram – creates a composite file of up to 15,000 multiple traces for quick review.

## Optional Accessories

|   | S331E                    | S332E                                  | S361E                    | S362E                                  | Description  |
|---|--------------------------|--|--------------------------|--|--|
|   | 2 MHz to 4 GHz           | 2 MHz to 4 GHz<br>100 kHz to 4 GHz     | 2 MHz to 6 GHz           | 2 MHz to 6 GHz<br>100 kHz to 6 GHz     | Cable and Antenna Analyzer<br>Spectrum Analyzer  |
|  | S331E-0021<br>S331E-0010 | S332E-0021<br>S332E-0010               | S361E-0021<br>S361E-0010 | S362E-0021<br>S362E-0010               | 2-Port Transmission Measurement<br>Bias-Tee (Requires Option 0021 for S331E /S361E)  |
|   | S331E-0031<br>S331E-0019 | S332E-0031<br>S332E-0019<br>S332E-0029 | S361E-0031<br>S361E-0019 | S362E-0031<br>S362E-0019<br>S362E-0029 | GPS Receiver (Requires Antenna P/N 2000-1528-R)<br>High-Accuracy Power Meter**<br>Power Meter  |
|   |                          | S332E-0025<br>S332E-0027               |                          | S362E-0025<br>S362E-0027               | Interference Analyzer (Interference Mapping)*<br>Channel Scanner   |
|  |                          | S332E-0431                             |                          | S362E-0431                             | Coverage Mapping*  |
|  |                          | S332E-0090<br>S332E-0028               |                          | S362E-0090<br>S362E-0028               | Gated Sweep<br>C/W Signal Generator (Requires CW Signal Generator Kit, P/N 69793)  |
|  |                          | S332E-0509                             |                          | S362E-0509                             | AM/FM/PM Analyzer  |
|   | S331E-0098<br>S331E-0099 | S332E-0098<br>S332E-0099               | S361E-0098<br>S361E-0099 | S362E-0098<br>S362E-0099               | Standard Calibration (ANSI 2540-1-1994)<br>Premium Calibration to Z540 plus test data<br>*Requires Option 0031<br>**Requires External Power Sensor |

### Power Sensors (For complete ordering information see the respective datasheets of each sensor)



| Model Number | Description   |
|--------------|---|
| PSN50        | High Accuracy RF Power Sensor, 50 MHz to 6 GHz, +20 dBm |
| MA24104A     | Inline High Power Sensor, 600 MHz to 4 GHz, +51.76 dBm  |
| MA24106A     | High Accuracy RF Power Sensor, 50 MHz to 6 GHz, +23 dBm |
| MA24108A     | Microwave USB Power Sensor, 10 MHz to 8 GHz, +20 dBm    |
| MA24118A     | Microwave USB Power Sensor, 10 MHz to 18 GHz, +20 dBm   |
| MA24126A     | Microwave USB Power Sensor, 10 MHz to 26 GHz, +20 dBm   |

### Manuals (soft copy included on MST CD and at www.anritsu.com)



| Part Number | Description  |
|-------------|--|
| 10580-00252 | Site Master User Guide (Hard copy included)  |
| 10580-00241 | Cable and Antenna Analyzer Measurement Guide   |
| 10580-00242 | 2-Port Transmission Measurement<br>- Bias-Tee  |
| 10580-00231 | Spectrum Analyzer Measurement Guide<br>- Interference Analyzer, Channel Scanner, Gated Sweep,<br>CW Signal Generator, AM/FM/PM Analyzer,<br>Interference Mapping, Coverage Mapping |
| 10580-00240 | Power Meter Measurement Guide<br>- High Accuracy Power Meter   |
| 10580-00215 | ODTF-1 Optical Distance-to-Fault Module  |
| 10580-00256 | Programming Manual   |

### Troubleshooting Guides (soft copy included on MST CD and at www.anritsu.com)

|             |                               |
|-------------|-------------------------------|
| 11410-00473 | Cable, Antenna and Components |
| 11410-00551 | Spectrum Analyzers            |
| 11410-00472 | Interference                  |

### Standard Accessories (included with instrument)



| Part Number | Description   |
|-------------|---|
| 10580-00252 | Site Master User Guide  |
| 3-68736     | Soft Carrying Case  |
| 2300-498    | MST CD: Master Software Tools, User/Measurement Guides,<br>Programming Manual, Troubleshooting Guides, Application Notes  |
| 633-44      | Rechargeable Li-Ion Battery   |
| 40-168-R    | AC-DC Adapter   |
| 806-141-R   | Automotive Cigarette Lighter 12 VDC Adapter   |
| 3-2000-1498 | USB A/5-pin mini-B Cable, 10 feet/305 cm  |
| 11410-00484 | Site Master™ S331E, S332E, S361E, S362E Technical Data Sheet<br>One Year Warranty (Including battery, firmware, and software)<br>Certificate of Calibration and Conformance |



# Optional Accessories

## Calibration Components, 50 Ω



| Part Number | Description  |
|-------------|--|
| ICN50B      | InstaCal™ Calibration Module, 2 MHz to 6.0 GHz, N(m), 50 Ω |
| OSLN50-1    | Precision Open/Short/Load, N(m), 42 dB, 6.0 GHz, 50 Ω      |
| OSLNF50-1   | Precision Open/Short/Load, N(f), 42 dB, 6.0 GHz, 50 Ω      |
| 2000-1618-R | Precision Open/Short/Load, 7/16 DIN(m), DC to 6.0 GHz 50 Ω |
| 2000-1619-R | Precision Open/Short/Load, 7/16 DIN(f), DC to 6.0 GHz 50 Ω |
| 22N50       | Open/Short, N(m), DC to 18 GHz, 50 Ω                       |
| 22NF50      | Open/Short, N(f), DC to 18 GHz, 50 Ω                       |
| SM/PL-1     | Precision Load, N(m), 42 dB, 6.0 GHz, 50 Ω                 |
| SM/PLNF-1   | Precision Load, N(f), 42 dB, 6.0 GHz, 50 Ω                 |

## Calibration Components, 75 Ω



|           |  |
|-----------|--|
| 22N75     | Open/Short, N(m), DC to 3 GHz, 75 Ω            |
| 22NF75    | Open/Short, N(f), DC to 3 GHz, 75 Ω            |
| 26N75A    | Precision Termination, N(m), DC to 3 GHz, 75 Ω |
| 26NF75A   | Precision Termination, N(f), DC to 3 GHz, 75 Ω |
| 12N50-75B | Matching Pad, DC to 3 GHz, 50 Ω to 75 Ω        |

## Phase-Stable Test Port Cables, Armored w/ Reinforced Grip (recommended for cable & antenna line sweep applications)



|                |   |
|----------------|---|
| 15RNFN50-1.5-R | 1.5 m, DC to 6 GHz, N(m) to N(f), 50 Ω        |
| 15RDFN50-1.5-R | 1.5 m, DC to 6 GHz, N(m) to 7/16 DIN(f), 50 Ω |
| 15RDN50-1.5-R  | 1.5 m, DC to 6 GHz, N(m) to 7/16 DIN(m), 50 Ω |
| 15RNFN50-3.0-R | 3.0 m, DC to 6 GHz, N(m) to N(f), 50 Ω        |
| 15RDFN50-3.0-R | 3.0 m, DC to 6 GHz, N(m) to 7/16 DIN(f), 50 Ω |
| 15RDN50-3.0-R  | 3.0 m, DC to 6 GHz, N(m) to 7/16 DIN(m), 50 Ω |

## InterChangeable Adaptor Phase Stable Test Port Cables, Armored w/Reinforced Grip (recommended for cable and antenna line sweep applications. It uses the same ruggedized grip as the Reinforced grip series cables. Now you can also change the adaptor interface on the grip to four different connector types)



|               |  |
|---------------|--|
| 15RCN50-1.5-R | 1.5 m, DC to 6 GHz, N(m), N(f), 7/16 DIN(m), 7/16 DIN(f), 50 Ω |
| 15RCN50-3.0-R | 3.0 m, DC to 6 GHz, N(m), N(f), 7/16 DIN(m), 7/16 DIN(f), 50 Ω |

## Phase-Stable Test Port Cables, Armored (recommended for use with tightly spaced connectors and other general purpose applications)



|              |   |
|--------------|---|
| 15NNF50-1.5C | 1.5 m, DC to 6 GHz, N(m) to N(f), 50 Ω        |
| 15NN50-1.5C  | 1.5 m, DC to 6 GHz, N(m) to N(m), 50 Ω        |
| 15NDF50-1.5C | 1.5 m, DC to 6 GHz, N(m) to 7/16 DIN(f), 50 Ω |
| 15ND50-1.5C  | 1.5 m, DC to 6 GHz, N(m) to 7/16 DIN(m), 50 Ω |
| 15NNF50-3.0C | 3.0 m, DC to 6 GHz, N(m) to N(f), 50 Ω        |
| 15NN50-3.0C  | 3.0 m, DC to 6 GHz, N(m) to N(m), 50 Ω        |

## Adapters



|            |   |
|------------|---|
| 1091-26-R  | SMA(m) to N(m), DC to 18 GHz, 50 Ω                                |
| 1091-27-R  | SMA(f) to N(m), DC to 18 GHz, 50 Ω                                |
| 1091-80-R  | SMA(m) to N(f), DC to 18 GHz, 50 Ω                                |
| 1091-81-R  | SMA(f) to N(f), DC to 18 GHz, 50 Ω                                |
| 1091-172   | BNC(f) to N(m), DC to 1.3 GHz, 50 Ω                               |
| 510-90     | 7/16 DIN(f) to N(m), DC to 7.5 GHz, 50 Ω                          |
| 510-91     | 7/16 DIN(f) to N(f), DC to 7.5 GHz, 50 Ω                          |
| 510-92     | 7/16 DIN(m) to N(m), DC to 7.5 GHz, 50 Ω                          |
| 510-93     | 7/16 DIN(m) to N(f), DC to 7.5 GHz, 50 Ω                          |
| 510-96     | 7/16 DIN(m) to 7/16 DIN (m), DC to 7.5 GHz, 50 Ω                  |
| 510-97     | 7/16 DIN(f) to 7/16 DIN (f), DC to 7.5 GHz, 50 Ω                  |
| 1091-379-R | 7/16 DIN(f) to 7/16 DIN(f), DC to 6 GHz, 50 Ω, w/ Reinforced Grip |
| 510-102-R  | N(m) to N(m), DC to 11 GHz, 50 Ω, 90 degrees right angle          |

# Optional Accessories

## Precision Adapters



| Part Number | Description   |
|-------------|---|
| 34NN50A     | Precision Adapter, N(m) to N(m), DC to 18 GHz, 50 Ω |
| 34NFN50     | Precision Adapter, N(f) to N(f), DC to 18 GHz, 50 Ω |

## Miscellaneous Accessories



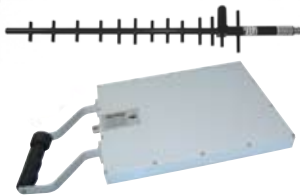
|             |  |
|-------------|--|
| 2000-1528-R | GPS Antenna, SMA(m)                                    |
| 69793       | CW Signal Generator Kit                                |
| ODTF-1      | Optical Distance-to-Fault Module, 1550 nm, Single Mode |
| 2000-1520-R | 2 GB USB Flash Drive                                   |
| 2000-1374   | External Charger for Li-Ion Batteries                  |
| 2300-532    | Map Master CD  |

## Backpack and Transit Case



|           |   |
|-----------|---|
| 67135     | Anritsu Backpack (For Handheld Instrument and PC) |
| 760-243-R | Large Transit Case with Wheels and Handle         |

## Directional Antennas



|             |   |
|-------------|---|
| 2000-1411-R | 822 MHz to 900 MHz, N(f), 10 dBd, Yagi    |
| 2000-1412-R | 885 MHz to 975 MHz, N(f), 10 dBd, Yagi    |
| 2000-1413-R | 1710 MHz to 1880 MHz, N(f), 10 dBd, Yagi  |
| 2000-1414-R | 1850 MHz to 1990 MHz, N(f), 9.3 dBd, Yagi |
| 2000-1415-R | 2400 MHz to 2500 MHz, N(f), 10 dBd, Yagi  |
| 2000-1416-R | 1920 MHz to 2170 MHz, N(f), 10 dBd, Yagi  |
| 2000-1519   | 500 MHz to 3 GHz, log periodic            |

## Portable Antennas



|             |   |
|-------------|---|
| 2000-1200-R | 806 MHz to 866 MHz, SMA(m), 50 Ω  |
| 2000-1473-R | 870 MHz to 960 MHz, SMA(m), 50 Ω  |
| 2000-1035-R | 896 MHz to 941 MHz, SMA(m), 50 Ω (1/4 wave)   |
| 2000-1030-R | 1710 MHz to 1880 MHz, SMA(m), 50 Ω (1/2 wave)   |
| 2000-1474-R | 1710 MHz to 1880 MHz with knuckle elbow (1/2 wave)  |
| 2000-1031-R | 1850 MHz to 1990 MHz, SMA(m), 50 Ω (1/2 wave)   |
| 2000-1475-R | 1920 MHz to 1980 MHz and 2110 MHz to 2170 MHz, SMA(m), 50 Ω   |
| 2000-1032-R | 2400 MHz to 2500 MHz, SMA(m), 50 Ω (1/2 wave)   |
| 2000-1361-R | 2400 MHz to 2500 MHz, 5000 MHz to 6000 MHz, SMA(m), 50 Ω  |
| 2000-1636-R | Antenna Kit (Consists of: 2000-1030-R, 2000-1031-R, 2000-1032-R, 2000-1200-R, 2000-1035-R, 2000-1361-R, and carrying pouch) |

# Optional Accessories

## Filters



|            |   |
|------------|---|
| 1030-114-R | 806 MHz to 869 MHz, N(m) to SMA(f), 50 Ω                      |
| 1030-109-R | 824 MHz to 849 MHz, N(m) to SMA (f), 50 Ω                     |
| 1030-110-R | 880 MHz to 915 MHz, N(m) to SMA (f), 50 Ω                     |
| 1030-105-R | 890 MHz to 915 MHz Band, 0.41 dB loss, N(m) to SMA(f), 50 Ω   |
| 1030-111-R | 1850 MHz to 1910 MHz, N(m) to SMA (f), 50 Ω                   |
| 1030-106-R | 1710 MHz to 1790 MHz Band, 0.34 dB loss, N(m) to SMA(f), 50 Ω |
| 1030-107-R | 1910 MHz to 1990 MHz Band, 0.41 dB loss, N(m) to SMA(f), 50 Ω |
| 1030-112-R | 2400 MHz to 2484 MHz, N(m) to SMA (f), 50 Ω                   |
| 1030-149-R | High Pass, 150 MHz, N(m) to N(f), 50 Ω                        |
| 1030-150-R | High Pass, 400 MHz, N(m) to N(f), 50 Ω                        |
| 1030-151-R | High Pass, 700 MHz, N(m) to N(f), 50 Ω                        |
| 1030-152-R | Low Pass, 200 MHz, N(m) to N(f), 50 Ω                         |
| 1030-153-R | Low Pass, 550 MHz, N(m) to N(f), 50 Ω                         |
| 1030-155-R | 2500 MHz to 2700 MHz, N(m) to N(f), 50 Ω                      |

## Attenuators



|            |  |
|------------|--|
| 3-1010-122 | 20 dB, 5 W, DC to 12.4 GHz, N(m) to N(f)                   |
| 42N50-20   | 20 dB, 5 W, DC to 18 GHz, N(m) to N(f)                     |
| 42N50A-30  | 30 dB, 50 W, DC to 18 GHz, N(m) to N(f)                    |
| 3-1010-123 | 30 dB, 50 W, DC to 8.5 GHz, N(m) to N(f)                   |
| 1010-127-R | 30 dB, 150 W, DC to 3 GHz, N(m) to N(f)                    |
| 3-1010-124 | 40 dB, 100 W, DC to 8.5 GHz, N(m) to N(f), Uni-directional |
| 1010-121   | 40 dB, 100 W, DC to 18 GHz, N(m) to N(f), Uni-directional  |
| 1010-128-R | 40 dB, 150 W, DC to 3 GHz, N(m) to N(f)                    |



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