

# Site Master™ S331L

Handheld Cable & Antenna Analyzer

Featuring Classic & Advanced Modes 2 MHz to 4 GHz Cable & Antenna Analyzer 50 MHz to 4 GHz Power Meter







The Site Master S331L is the best value in a low cost, field optimized, trusted, reliable, rugged, easy to use, one port cable and antenna analyzer.

# **Optimized for Field Use**

- >8 hour battery life
- Instant On from standby mode
- Highest RF Immunity
- Built-in InstaCal™ Module
  - o Fast, one connection calibration
- FlexCal<sup>™</sup> Calibration
  - o One calibration for all frequencies
- Built-in power meter
- Rugged and reliable
- Impact, dust, and splash resistant
- Smallest, lightest, fully integrated Site Master
- Optical connector inspection with IEC 61300-3-35 based Pass/Fail standard (Requires USB Video Inspection Probe, sold separately)



# Easy to Use

- Integrated Help function
- S331D-like Classic Mode
- S331E-like Advanced Mode
  - o Additional markers
  - o Customizable shortcuts
  - o Full-screen view
- Multiple USB ports
- 800 x 480 7" TFT touchscreen o Alphanumeric keyboard
  - o EZ Name Quick Matrix
- Backlit keypad

# **Efficient Sweep Management**

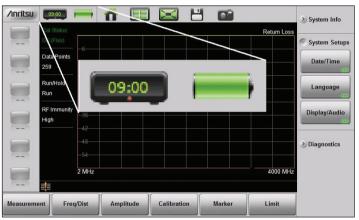
- Internally store >1000 files
   o Sweeps, setups, screenshots
- Fast preview of stored sweep
- Line Sweep Tools (LST) Software
   o Edit sweeps, rename, archive
   o Generate PDF or HTML reports
- Standard \*.dat sweep file format
- Compatible with Smart Aligner Android application for combined antenna alignment and line sweep closeout reports



### Cable & Antenna Analyzer



**S331L SITE MASTER IS SPLASH RESISTANT** 



STARTING OUT FULLY CHARGED AT 9:00 AM



ALL DAY ON BATTERY AND STILL RUNNING AT 5 PM

# Rugged, dust, and splash resistant. Reliable, lightweight and portable.

Site Master S331L is rugged, dust and splash resistant, reliable, field proven and always ready, even if you're not. At under 2.0 kg (4.4 lbs) including battery, it's effortless to carry whether you are on level ground, climbing a large tower, or heading through a roof hatch, your Site Master easily goes along with you.

### Beginning of a traditional workday

With the battery fully charged, you're ready for a full workday of measurements. This is the longest lasting Site Master operation time we've ever offered in a handheld cable and antenna analyzer. You won't need to look for outlets and drag power supplies with you from site to site anymore. Now you can focus on what matters, making measurements and getting the job completed.

### 8 hours later, still running and still measuring

After 8 continuous hours of battery operation, the Site Master S331L is still measuring. We understand that 8 continuous hours is an unlikely scenario, but we are proud of the S331L's extended battery life and feel it deserves to be recognized.

The S331L also has intelligent power saving features to extend the operating time further, providing as much as 10 hours of operation.

Features like sleep mode with instant on, handy for travelling between sites, and auto-display brightness that will reduce the screen backlight automatically if the instrument has not been accessed for some time. One touch of the screen, keypad, or twiddle-knob will automatically restore brightness levels.



# **Cable & Antenna Analyzer**

### **Efficient Menu Screen**

The Menu Key activates the touch screen menu for one button access to all of the Analyzers modes, and quick access to the dedicated setup shortcut icons



MAIN MENU SCREEN PROVIDES ONE TOUCH MODE SELECTION

### **One Button Help**

An intelligent, useful help menu launches with the press of the Help Key.



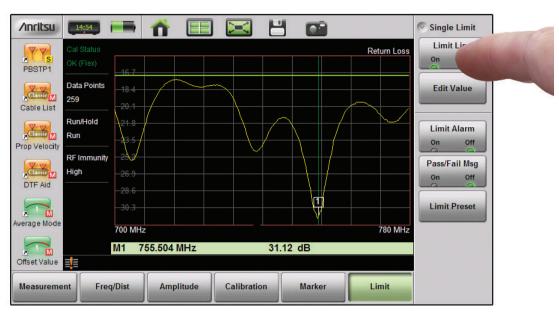
ON SCREEN HELP MENU



### **Cable & Antenna Analyzer**

### **Markers & Limits**

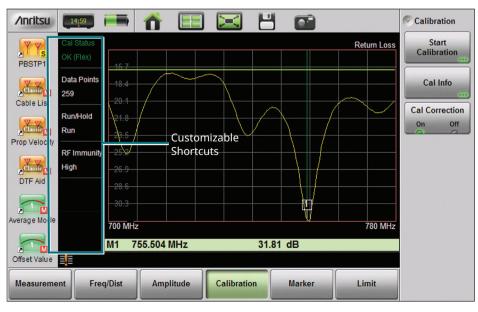
Using the stylus pen (provided) or fingers, users can drag or place markers anywhere on the measurement screen. The number keys and/or the rotary knob can be used for entering values and applying or adjusting limits. As a safety measure limits are not affected by the stylus or finger activity to ensure they are not accidentally moved while adjusting markers via the touch screen.



DRAGGING MARKERS AND LIMITS WITH FINGERS IS REALLY EASY AND CONVENIENT

### **Convenient Shortcuts**

User defined shortcuts can be created for one-button access to commonly used functions. (Advanced Mode only)



**USER DEFINABLE SHORTCUTS FOR FREQUENTLY USED FUNCTIONS** 



### Cable & Antenna Analyzer



**CONVENIENT MULTIPLE USB PORTS** 

### **Multiple USB ports**

The Site Master S331L comes with two USB type A ports and one USB type mini B port. This allows for a quick and convenient file transfer, memory expansion, or you can add an external mouse or keyboard to enhance usability. You can even charge your cellphone in case it happens to run out of battery power.



INSTACAL™/POWER METER MODULE

# Menu Enter Esc Save System Preset 9 SomShig Trace 6 File Touch 3 Help AutoSci Price +/-

**EASY TO SEE BACKLIT KEYS** 

### Field replaceable module

We know accidents can happen out there, so we developed a field replaceable module solution to save valuable time and money, allowing you to keep your productivity up. If a user accidentally damages the Power Meter module by putting too much power into it, simply contact Anritsu and we will send you a replacement exchange module\* that simply plugs into the dedicated slot and is held in with 4 screws. There's no need to return your instrument, no need to recalibrate the instrument, (calibration factors are stored within each module) and most importantly, down time is reduced to the absolute minimum. Order a spare module for your field kits and your downtime in the event of an accident is essentially zero.

### **LED Backlit Keypad**

The LED backlit keypad allows for operation in dimly lit environments. Whether it's the winter season, or you are just working late into the evening, you'll be able to see the keypad without any strain. You'll know exactly what key you are pressing so you can complete your measurements more efficiently.

<sup>\*</sup>Charges may apply. Exchange module pricing is based on defective core returned to Anritsu. Contact Anritsu for more details.



### Cable & Antenna Analyzer



**BUILT IN POWER METER MEASUREMENT SCREEN** 

### Internal Power Meter

The Site Master S331L includes a convenient, easy to use, built in power meter.

Setting the transmitter output power of a base station properly is critical to the overall operation of wireless networks. A very small change in power levels can create a large change in actual coverage area, resulting in dropped calls and low data rates.



CLASSIC MODE CAN REDUCE OR ELIMINATE TRAINING FOR EXPERIENCED SITE MASTER USERS.

### Classic Mode

The Site Master S331L offers a convenient Classic Mode that's easy to use. If you have used the Site Master D series model, or even older Site Master models, you'll find this Classic Mode familiar and easy to use. We didn't keep all of the D characteristics though, Classic Mode allows you to use the convenient popup keyboard for saving data. Complex filenames are no longer limited to 16 characters, there's plenty of characters available to suit any filenames you might require.



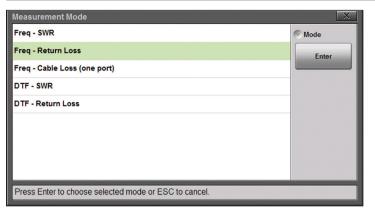
ADVANCED MODE CONTAINS SEVERAL POWERFUL NEW FEATURES
NOT AVAILABLE IN CLASSIC MODE.

### **Advanced Mode**

The Site Master S331L also offers a mode with more capability, we call it Advanced Mode. Advanced Mode has a much more modern look and feel to it, and many users will immediately appreciate the new Advanced Mode GUI and button layout/function. With Advanced Mode you also get some extra capabilities such as 8 markers instead of 6. There are 6 customizable touch screen icons for quick recalling of regularly used setups, making operation easier and more efficient.



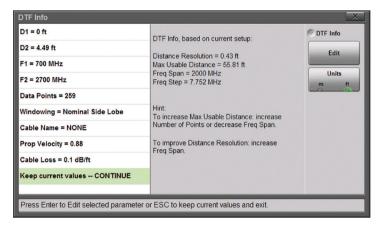
### **Cable & Antenna Analyzer**



CLASSIC MODE SELECTOR SCREEN. SAME FAMILIAR LAYOUT AS D MODELS.

### **Classic Mode Measurement Selector Screen**

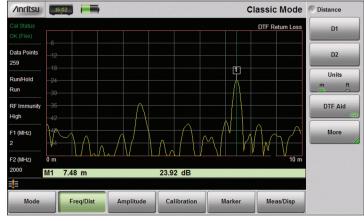
The Site Master S331L classic mode was developed based on customer feedback. Many of our loyal customers have asked us to create an easy to use GUI like the one they have become accustomed to on the Site Master D models. The result of that valuable feedback is what we are proud to announce as Classic Mode.



DTF AID PARAMETER SCREEN. SAME FAMILIAR LAYOUT AS D MODELS.

### Classic Mode Distance-to-Fault Aid Menu Screen

DTF Aid screen contains the same options in a similar layout format as the Site Master D models. Former Site Master D model users should have no difficulty setting DTF parameters in Classic Mode. We've even added some useful hints to help optimize the settings.



DISTANCE-TO-FAULT (DTF) MEASUREMENT SCREEN.

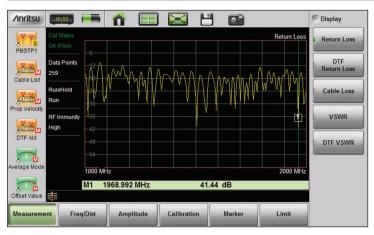
### **Classic Mode Distance-to-Fault Measurement**

Here is an example of the Classic Mode Distance-to-Fault (DTF) measurement screen. Notice the Distance menu buttons labeled "D1" and "D2" just as they are in the D models.

These changes allow users experienced with older Site Master models to become immediately productive with the new S331L. Saves training costs and downtime.



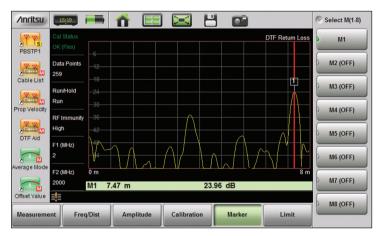
### Cable & Antenna Analyzer



EASIER ACCESS TO DESIRED MEASUREMENT TYPES IN ADVANCED MODE

### Advanced Mode Measurement Selector Screen

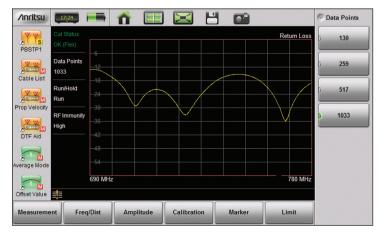
In Advanced Mode, users no longer need to press the Mode key before selecting desired measurement. Users are now able to select the desired measurement directly, simply by pressing the primary menu key "Measurement" then choose the desired measurement from the secondary menu keys on the right side.



8 MARKERS IN ADVANCED MODE PROVIDES MORE FLEXIBILITY

### More Markers in Advanced Mode

In Advanced Mode you have 8 markers available to you. That's 2 additional markers which can be used as you wish, either as additional regular markers, additional delta markers, or additional bounded markers. Provides more flexibility than Classic Mode.



WITH 1033 DATAPOINTS YOU CAN EXTEND THE MAXIMUM DISTANCE-TO-FAULT RANGE EASILY

### 2065 Datapoints

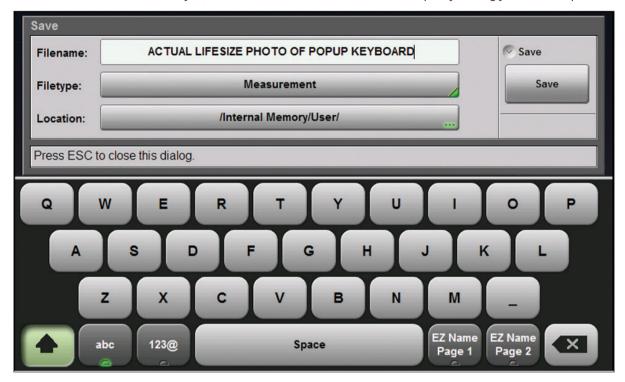
You have up to 2065 datapoints available for use. Increased datapoints can be used to provide better frequency resolution for your VSWR/RL measurements, or they can be used to extend the maximum distance range for your Distance-to-Fault (DTF) measurements without sacrificing distance resolution. A handy feature at your fingertips.



### **Cable & Antenna Analyzer**

### Large, easy to see touch screen Keyboard

A large built-in popup keyboard saves valuable time in the field when entering trace names. For Cable and Antenna Analysis, an EZ Name Matrix can be customized for quickly naming your line sweeps



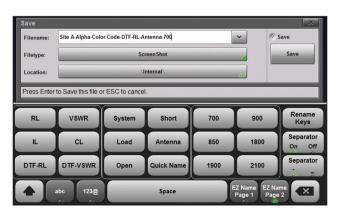
BUTTONS ARE LARGE, EASY TO SEE AND PRESS. MAKES FILE SAVING EASIER THAN EVER.

### **EZ Name Quick Naming Matrix saves valuable time**

Unique to Anritsu, the customizable EZ Name Quick Naming Matrix saves valuable time. Users can preset up to 36 commonly used names. The resulting time saved is immediately beneficial. Save file names labeled with Site ID, Sector, Color Code, Measurement type, Termination and Frequency in less than 5 seconds. Now you can label the traces of the entire site in minutes instead of hours.



MOST COMMON SITE NAME REQUIREMENTS ARE PRE-PROGRAMMED INTO THE EZ NAME MATRIX. PAGE 1 OF 2 SHOWN.



18 ADDITIONAL CUSTOMIZABLE EZ NAME BUTTONS AVAILABLE ON PAGE 2.



### **Cable & Antenna Analyzer**

### OSL Calibration just got a lot easier!

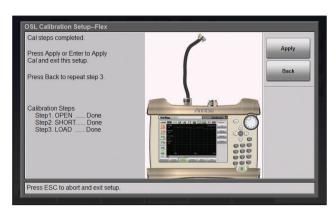
The S331L guides you through the entire OSL calibration process with not only text instructions, but with actual on screen photos to aid the user during the entire process. What could be easier? InstaCal™ of course, *psst...*we have that too!



**ACTUAL INSTRUMENT ON-SCREEN INSTRUCTIONS.** 

### Step 1

Connect Open as shown. S331L will automatically guide you through the entire OSL calibration sequence step by step with pictures and instructions on screen



**ACTUAL INSTRUMENT ON-SCREEN INSTRUCTIONS.** 

# Step 4 Complete!

### **Internal InstaCal/Power Meter**

Quick, easy (one connection), and accurate calibrations anytime, anywhere with InstaCal. Measure power anytime with the built in power meter. With these two standard items built into the instrument, you will always be prepared for whatever scenario you may encounter.



CLOSE UP VIEW OF INSTRUMENT TOP PANEL SHOWING INTERNAL INSTACAL MODULE

### InstaCal in action

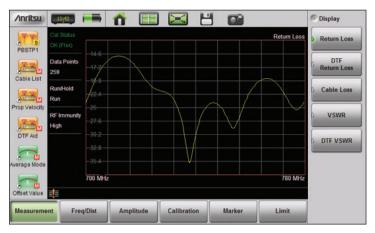
Simply connect the test port cable to the InstaCal module, select InstaCal in the calibration menu, then the S331L does the rest automatically!



ACTUAL INSTRUMENT ON-SCREEN INSTRUCTIONS.



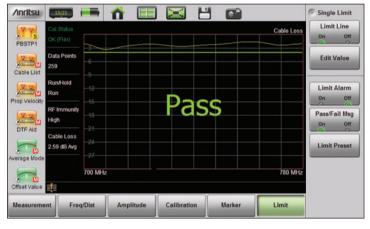
# Cable & Antenna Analyzer



RETURN LOSS MEASUREMENT SCREEN (ADVANCED MODE)

### **Return Loss/VSWR Measurement**

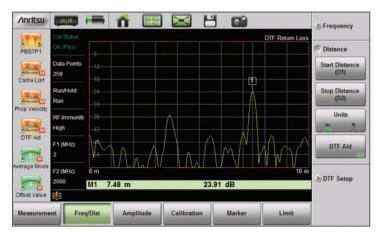
Poor Return Loss/VSWR can damage transmitters, reduce the coverage area, increase dropped and blocked calls, and lower data rates.



**CABLE LOSS MEASUREMENT SCREEN (ADVANCED MODE)** 

### **Cable Loss Measurement**

This an important commissioning check. Excessive loss reduces the coverage area and can mask return loss issues, creating false good readings later.



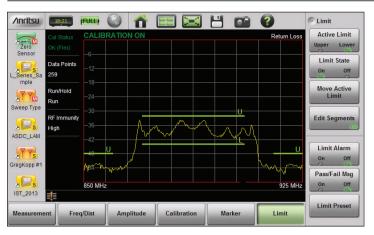
**DISTANCE-TO-FAULT MEASUREMENT SCREEN (ADVANCED MODE)** 

### Distance-to-Fault (DTF) Measurement

DTF can be used to identify and precisely locate faulty cables, components, or connector pairs with poor Return Loss/VSWR in meters or feet. Use 1033 points in Advanced mode to get more maximum distance without sacrificing resolution.



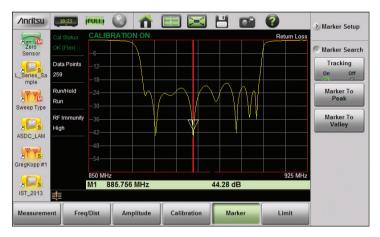
# Cable & Antenna Analyzer



UPPER/LOWER LIMITS AND SEGMENTED LIMIT LINES SCREEN (ADVANCED MODE ONLY)

### Feature additions/enhancements (Advanced Mode Only):

Upper/lower limits and segmented limit lines are now available. Up to 42 segments for both upper and lower limits may be created (84 segments total).



MARKER PEAK/VALLEY TRACKING SCREEN (ADVANCED MODE ONLY)

Marker peak/valley tracking. This allows users to have the marker automatically track either the peak or valley response of a measurement, which is very useful when tuning devices.



Smith Chart (50/75  $\Omega$  selectable) has been added as an advanced measurement type. 75  $\Omega$  Smith Chart measurements are shown.

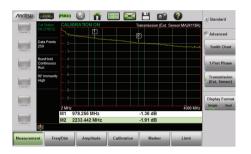
SMITH CHART 50/75  $\Omega$  SELECTABLE SCREEN (ADVANCED MODE ONLY)



### Cable & Antenna Analyzer



1-PORT PHASE MOVEMENT SCREEN (ADVANCED MODE ONLY)



**EXTERNAL SENSOR TRANSMISSION MEASUREMENT** 



**DUAL SCREEN SPLIT HORIZONTALLY SCREEN (ADVANCED MODE ONLY)** 



VIP (VIDEO INSPECTION PROBE)



DHCP AND STATIC IP SCREEN (ADVANCED MODE ONLY)

### Feature additions/enhancements (Advanced Mode Only):

1-Port phase measurement has been added as an advanced measurement type.

To make more accurate cable loss measurements, especially for cables with more than 10 dB of loss, you can use the Transmission measurement with External Sensor.

Dual screen (split horizontally) has been added as an advanced measurement feature. Users may select any of the available measurement types when in dual screen mode.

Dirty or damaged optical connectors can greatly effect network performance. Scratches, chips and contamination on optical fiber connector end faces reduce transmission quality and increase errors. This leads to additional I&M work and cost.

The G0306B Video Inspection Probe can reduce these issues by verifying the condition and cleanliness of connector end faces during the installation phase. The connector image and detailed PASS/FAIL status is displayed as defined by IEC 61300-3-35 ensuring quality and consistency from connector to connector, technician to technician.

DHCP and Static IP settings are now in the System menu. With the new 2000-1810-R USB to Ethernet LAN adapter, units are now able to be connected to via Ethernet.

# Site Master™ S331L Cable & Antenna Analyzer Information

# **Physical Information**



All Connectors are conveniently located on the top panel, leaving the sides clear for handheld use. Connectors have splash proof covers to provide additional protection from harsh elements





# Site Master™ S331L Line Sweep Tools



### Line Sweep Tools™ (for your PC) Smart Aligner Application (for Android)

**Collect** Sweeps from Anritsu line sweep gear

**Verify** That cables and antenna systems meet specifications

and that the sweeps were done properly

**Report** Findings quickly to the standards required by contract



### The Anritsu Tool Box

The Anritsu Tool Box (included on disc or freely downloadable at www.anritsu.com) is a convenient central location where Anritsu supporting software programs and online support options can be found for most of our handheld product portfolio. Simply choose the desired application that suits your needs. The Anritsu Tool Box comes with LST and grows as more Anritsu tool box programs are added.

### **Marker and Limit Line Presets**

Presets make applying markers and a limit line to similar traces quick and easy. They only need to be set once, and recorded. After this, applying them to a similar trace requires only one button push. This speeds up trace processing and makes providing consistent marker and limit line settings easy.

### **Naming Grid**

A naming grid function makes changing file names, trace titles, and trace subtitles from field values to those required by contract simple and quick. Once the naming grid is populated with user defined file name segments, a few simple button presses will then fill out the file, title, and sub-title names. Quickly applied to multiple traces, the naming grid can save time, increase efficiency and accuracy.

### **Report Generator**

The report generator will create a professional PDF or HTML based report. Reports includes GPS', power level', company logo², instrument and calibration status along with a display of all open traces. It also may contain additional information such as addresses and phone numbers.

HTML type reports may be post edited using programs such as Microsoft Word.

Line Sweep Tools (LST) is a free PC based program that increases productivity for people who deal with numerous Cable and Antenna traces every day. LST is the next generation of Anritsu's familiar Handheld Software Tools (HHST) and shares its user interface, giving a new face to the term "ease of use."



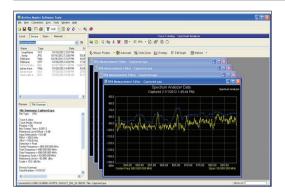
### **Smart Aligner Application**

The Smart Aligner application, developed in partnership with Multiwave Sensors, is freely downloadable from the Google Play app store. This Android application imports results data from Multiwave Sensors antenna alignment tools and Anritsu's Site Master cable and antenna analyzers to facilitate a quick creation of measurement results closeout reports in .pdf format. Closeout reports are required from contractors to network operators before payment is authorized. With the Smart Aligner app, these reports can be created on site and emailed directly from a smartphone speeding up the process.

# Site Master™ S331L Line Sweep Tools



# easyTest Tools™ (for your PC)



### Cable Editor<sup>3</sup>

Instrument Cable Lists may be retrieved from the instrument, modified as required, and uploaded back into instrument.

### Signal Standard Editor<sup>3</sup>

Signal Standard Lists may be retrieved from the instrument, modified as required, and uploaded back into instrument.

### Distance to Fault<sup>4</sup> (DTF)

Easily convert Return Loss or VSWR traces to Distance to Fault traces with one button press.

### **Measurement Calculator**

Provides quick conversion between commonly used measurement units such as VSWR, RL, and others.

Capture: Plots to Screen, Database, \*.dat, \*.jpg

Connect: To PC using USB, Ethernet, Serial

**Download:** Lists/measurements and live traces to PC for

storage and analysis.

**Upload**<sup>3</sup>: Lists/measurements from PC to instrument.

### **Supported File Types**

Input: \*.dat, \*.vna, \*.mna, \*.pim, \*.tm

Output: \*.dat, \*.vna, \*.pim, \*.tm, \*.csv, \*.bmp, \*.jpg, \*.png

<sup>1</sup>Model dependent

<sup>2</sup>Optionally set by user

<sup>3</sup>Instrument type/model must match original

<sup>4</sup>Only \*.dat and \*.vna file types supported

## easyTest Tools™

easyTest Tools allows users to create work instruction files on their PC, deliver these files by e-mail, and then display work instructions on the Site Master™ or Cell Master™ "E" series cable and antenna analyzers. These easyTest™ files provide step-by-step instructions for both the test setup and instrument operation.

easyTest works with the S331L, S331E, S332E, S361E, S362E, S820E, MT8212E, and MT8213E when operating in Cable and Antenna Analyzer mode.

### **Instrument Mode**

Cable and Antenna Mode

### **PC Requirements**

Anritsu's software tools runs on computers using Windows operating systems, specifically:

Windows XP, Service Pack 2 or higher, Windows Vista, Windows 7, 8, or 10.

PC must have at least 1 GB of RAM and 1 GB of available hard drive space.

# Site Master™ S331L Ordering Information

### **Ordering Information**









(Includes all items listed in description)

S331L

### Description

Cable and Antenna Analyzer - 2 MHz to 4 GHz

Internal InstaCal™ - 2 MHz to 4 GHz

Internal Power Meter - 50 MHz to 4 GHz

High Accuracy Power Meter (requires External USB Power Sensor, sold separately)

GPS Location/System Time Sync (requires External GPS Module 2000-1723-R, sold separately)

Optical connector inspection with IEC 61300-3-35 based Pass/Fail standard (requires USB Video

Inspection Probe, sold separately)

### **Calibration and Extended Warranty Options**

Warranty

Warranty with Z540 Calibration

Description

S331L-ES510

S331L-ES513

Warranty Extension to 5 Years, Return to Anritsu

### **Calibration Only Options**

Option

Description

Standard Calibration to ISO/IEC 17025:2005 and ANSI/NCSL Z540-1. Includes calibration certificate.

S331L-0098 S331L-0099

Premium Calibration to ISO17025 and ANSI/NCSL Z540-1. Includes calibration certificate, test report

and uncertainty data.

### Standard Accessories (included with instrument)



**Part Number** Description 2000-1676-R

Soft Carrying Case 2000-1691-R Stylus with Coiled Tether 2000-1687-R Torque Multiplier N(m)

40-187-R 806-141-R

AC-DC Adapter Automotive Power Adapter, 12 VDC, 60 W

USB A/5-pin mini-B Cable, 305 cm (120 in)

3-2000-1498

Standard Three-Year Warranty (battery one-year warranty)

Certificate of Calibration and Conformance

### **Documentation** (available at www.anritsu.com)



Part Number	Description

Product Information, Compliance, and Safety 10100-00065 11410-00616 Site Master S331L Technical Data Sheet 10580-00321 Site Master S331L User Guide 11410-00640 Site Master S331L Product Brochure (Includes information about additional Site Master models) 11410-00662 Site Master S331L Quick Fact Sheet 11410-00674 Cable and Antenna Analysis Troubleshooting Guide 10580-00253 Site Master S331L Maintenance Manual

