

**Anritsu** envision : ensure

# Site Master™

Handheld Cable & Antenna Analyzer  
Featuring Classic and Advanced Modes

## S331L

2.0 MHz to 4.0 GHz Cable & Antenna Analyzer

50 MHz to 4.0 GHz Power Meter



## Introduction

Anritsu introduces its ninth generation, compact handheld Cable & Antenna Analyzer for installation and maintenance of antenna systems.

## Optimized for Field Use

- > 8 Hour Battery Life
- Rugged and Reliable
- Instant On from Standby Mode
- Highest RF Immunity
- Built-in InstaCal™ Module
  - Fast, One-connection Calibration
- FlexCal™ Calibration
  - One Calibration for All Frequencies
- Optical connector inspection with IEC 61300-3-35 based Pass/Fail standard (Requires USB Video Inspection Probe, sold separately)
- Built-in Power Meter
- High Accuracy USB Power Meter (Requires USB Sensor, sold separately)
- Impact, Dust, and Splash Resistant
- Smallest, Lightest Site Master™

## Easy to Use

- Integrated Help Function
- S331D-like Classic Mode
- S331E-like Advanced Mode
  - Additional Markers
  - Customizable Shortcuts
  - Full-screen View
- Multiple USB Ports
- 800 x 480 7" TFT Touch Screen
  - Alphanumeric Keyboard
  - EZ Name Quick Matrix
- Backlit Keypad
- easyTest™

## Efficient Sweep Management

- Internally Store >1000 Files
  - Sweeps, Setups, Screen Shots
- Line Sweep Tools (LST) Software
  - Edit Sweeps, Rename, Archive
  - Generate PDF or HTML Reports
- Fast Preview of Stored Sweeps
- Standard \*.dat Sweep File Format
- Compatible with HHST
  - Widely Accepted by Operators
- Location Data with Compatible USB GPS Module



Site Master™ S331L Cable & Antenna Analyzer Featuring 7.0 in Daylight Viewable Touch Screen  
Compact Size: 250 mm x 177 mm x 61 mm (10.0 in x 7.1 in x 2.4 in), Lightweight: < 2.0 kg (4.4 lb)

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## Definitions

|                     |                                                                                                                                                                                                                                                                                                                                                 |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | All specifications and characteristics apply to Revision 2 instruments under the following conditions, unless otherwise stated:                                                                                                                                                                                                                 |
| Warm-Up Time        | After 5 minutes of warm-up time, where the instrument has completely stabilized to the ambient temperature.                                                                                                                                                                                                                                     |
| Frequency Reference | Internal frequency reference is used.                                                                                                                                                                                                                                                                                                           |
| Calibration         | Instrument is within the recommended calibration cycle of 12 months. Cable and Antenna Analyzer measurements applicable after standard OSL calibration is performed using Anritsu calibration components.                                                                                                                                       |
| Typical Performance | Typical specifications in parenthesis () describe performance that will be met by a minimum of 80% of all products. They do not include guard bands and are not warranted.<br>Typical specifications that are not in parenthesis are not tested and not warranted. They are generally representative of the nominal characteristic performance. |
| Uncertainty         | A coverage factor of $k = 2$ is applied to the measurement uncertainties to facilitate comparison with other industry monitors.<br>All specifications subject to change without notice. For the most current data sheet, please visit the Anritsu web site: <a href="http://www.anritsu.com">www.anritsu.com</a>                                |



## Cable and Antenna Analyzer

### Measurements

|              |                                                                                                                                                                                                                                                                                  |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Measurements | VSWR<br>Return Loss<br>Cable Loss (One Port)<br>Distance-to-Fault (DTF) Return Loss<br>Distance-to-Fault (DTF) VSWR<br>Smith Chart 50 $\Omega$ / 75 $\Omega$ (Advanced Mode Only)<br>1-Port Phase (Advanced Mode Only)<br>Transmission with External Sensor (Advanced Mode Only) |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### Setup Parameters–Classic Mode

|                     |                                                                                                                                                                                                                                          |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Measurement Display | Single Display with independent markers                                                                                                                                                                                                  |
| Frequency           | F1/F2                                                                                                                                                                                                                                    |
| DTF                 | D1/D2, DTF Aid, Cable Loss, Propagation Velocity, Cable type                                                                                                                                                                             |
| Windowing           | Rectangular, Normal Side Lobe, Low Side Lobe, Minimum Side Lobe                                                                                                                                                                          |
| Amplitude           | Top, Bottom Auto Scale, Full Scale                                                                                                                                                                                                       |
| Sweep               | Data Points, Run/Hold, Single/Continuous, RF Immunity (High/Low), RF Power in Hold (On/Off), Trace                                                                                                                                       |
| Data Points         | 130, 259, 517, 1033, 2065                                                                                                                                                                                                                |
| Markers             | Markers 1 to 6 (On/Off), Delta Markers 2 to 4 (Ref M1), Marker to Peak/Valley, Marker Table, Marker 5 (Peak/Valley between M1 & M2), Marker 6 (Peak/Valley between M3 & M4), Independent Markers for Frequency and Distance Measurements |
| Traces              | Copy Trace To Memory, Trace Display, Trace Math [Trace - Memory, Trace + Memory, (Trace + Memory)/2]                                                                                                                                     |
| Limit Line          | On/Off, Edit Value, Limit Alarm, Pass/Fail On/Off, Limit Preset                                                                                                                                                                          |
| Calibration         | Start Calibration, Cal Info, Cal Correction (On/Off), Cal Method (OSL, InstaCal™), Cal Type (Standard, FlexCal™)                                                                                                                         |
| Save/Recall         | Setups, Measurements, Screen Shots                                                                                                                                                                                                       |

### Setup Parameters–Advanced Mode

|                     |                                                                                                                                                                                                                                                                            |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Measurement Display | Single/Dual Display with independent markers                                                                                                                                                                                                                               |
| Frequency           | Start Frequency (F1), Stop Frequency (F2)                                                                                                                                                                                                                                  |
| DTF                 | Start Distance (D1), Stop Distance (D2), Units m/ft, DTF Aid, Cable List, Cable Loss, Propagation Velocity                                                                                                                                                                 |
| Windowing           | Rectangular, Normal Side Lobe, Low Side Lobe, Minimum Side Lobe                                                                                                                                                                                                            |
| Amplitude           | Top, Bottom, Auto Scale, Full Scale                                                                                                                                                                                                                                        |
| Sweep               | Data Points, Run/Hold, Single/Continuous, RF Immunity (High/Low), RF Power in Hold (On/Off)                                                                                                                                                                                |
| Data Points         | 130, 259, 517, 1033, 2065                                                                                                                                                                                                                                                  |
| Markers             | Markers 1 to 8 (On/Off), Delta Markers 2 to 8 (Ref M1), Marker Tracking (On/Off), Marker to Peak/Valley, Marker Table, Marker 5 & 7 (Peak/Valley between M1 & M2), Marker 6 & 8 (Peak/Valley between M3 & M4), Independent Markers for Frequency and Distance Measurements |
| Traces              | Copy Trace to Memory, Trace Display, Trace Math [Trace - Memory, Trace + Memory, (Trace + Memory)/2]                                                                                                                                                                       |
| Limit Line          | Active Limit (Upper/Lower), Limit State (On/Off), Move Active Limit, Edit Segments (42 upper and 42 lower segments maximum), Limit Alarm, Pass/Fail On/Off, Limit Preset                                                                                                   |
| Calibration         | Start Calibration, Cal Info, Cal Correction (On/Off), Cal Method (OSL, InstaCal™, Transmission, OSL + Transmission), Cal Type (Standard, FlexCal™)                                                                                                                         |
| Save/Recall         | Setups, Measurements, Screen Shots                                                                                                                                                                                                                                         |

### Frequency

|                      |                                |
|----------------------|--------------------------------|
| Frequency Range      | 2 MHz to 4 GHz                 |
| Frequency Accuracy   | $\pm 5$ ppm @ 23 °C $\pm 3$ °C |
| Frequency Resolution | 1 kHz                          |

### Power

|              |                 |
|--------------|-----------------|
| Output Power | -3 dBm, typical |
|--------------|-----------------|

### Interference Immunity

|              |                                        |
|--------------|----------------------------------------|
| On-Channel   | +17 dBm outside calibrated sweep range |
| On-Frequency | +13 dBm within calibrated sweep range  |

### Measurement Speed

|                   |                                                     |
|-------------------|-----------------------------------------------------|
| Return Loss       | $\leq 1.50$ ms/data point, RF immunity low, typical |
| Distance-to-Fault | $\leq 1.75$ ms/data point, RF immunity low, typical |

### Return Loss

|                   |            |
|-------------------|------------|
| Measurement Range | 0 to 60 dB |
| Resolution        | 0.01 dB    |

### VSWR

|                   |         |
|-------------------|---------|
| Measurement Range | 1 to 65 |
| Resolution        | 0.01    |



## Cable and Antenna Analyzer (continued)

### Cable Loss

|                   |            |
|-------------------|------------|
| Measurement Range | 0 to 30 dB |
| Resolution        | 0.01 dB    |

### Distance-to-Fault

|                            |                                                                                                            |
|----------------------------|------------------------------------------------------------------------------------------------------------|
| Vertical Range Return Loss | 0 to 60 dB                                                                                                 |
| Vertical Range VSWR        | 1 to 65                                                                                                    |
| Fault Resolution (meters)  | $(1.5 \times 10^8 \times v_p) / \Delta F$ ( $v_p$ = propagation velocity, $\Delta F$ is $F_2 - F_1$ in Hz) |
| Horizontal Range (meters)  | 0 to (Data Points - 1) x Fault Resolution, to maximum of 1500 meters (4921 ft)                             |

### 1-Port Phase (Advanced Mode Only)

|                           |                  |
|---------------------------|------------------|
| Measurement Display Range | -450 ° to +450 ° |
| Resolution                | 0.01 °           |

### Smith Chart (Advanced Mode Only)

|            |                           |
|------------|---------------------------|
| Impedance  | 50 $\Omega$ , 75 $\Omega$ |
| Resolution | 0.01                      |

### Transmission Ext Sensor (Advanced Mode Only)

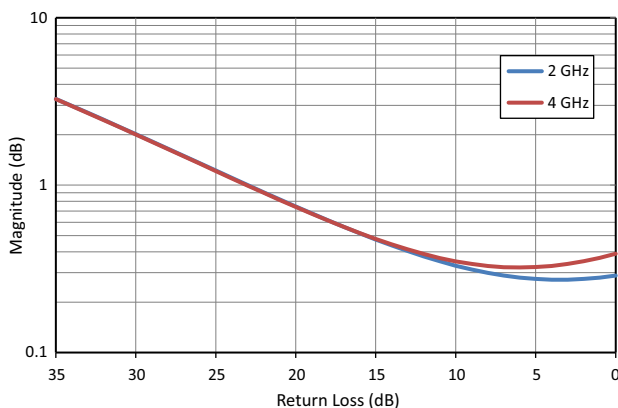
|                           |                    |
|---------------------------|--------------------|
| Measurement Display Range | -100 dB to +100 dB |
| Resolution                | 0.01 dB            |

### Measurement Accuracy (at 23 °C $\pm$ 3 °C)

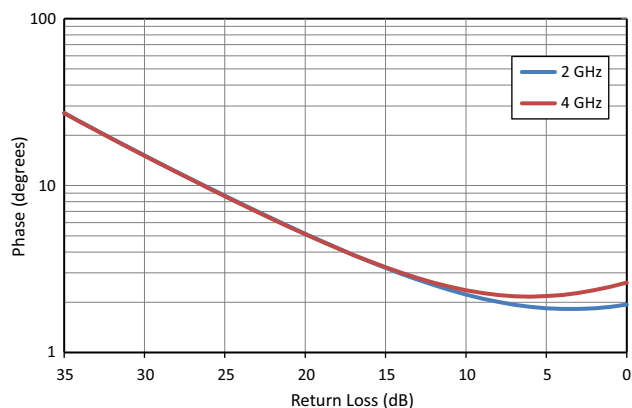
|                       |                                                                            |
|-----------------------|----------------------------------------------------------------------------|
| Corrected Directivity | $\geq 38$ dB, InstaCal™ calibration                                        |
|                       | $\geq 42$ dB, OSL calibration (OSLN50A-8, OSLNF50A-8, OSLN50-1, OSLNF50-1) |

### Return Loss Measurement Uncertainty (Standard OSL calibration. OSLN50-1 Precision Open/Short/Load calibration component.)

Magnitude Uncertainty



Phase Uncertainty





## Internal Power Meter

|                                  |                                                                                             |
|----------------------------------|---------------------------------------------------------------------------------------------|
| Frequency                        | Measurement Frequency (for Cal Factor)                                                      |
| Amplitude                        | Max Value, Min Value, Offset Value, Relative On/Off, Units dBm/Watts, Auto Scale, Fullscale |
| Calibration                      | Zero On/Off                                                                                 |
| Average                          | Running Average, Max Hold (On/Off), Run/Hold, Average Mode (Continuous/Single)              |
| Limits                           | Limit (On/Off), Upper Value, Lower Value                                                    |
| Frequency Range                  | 50 MHz to 4 GHz                                                                             |
| Display Range                    | -100 dBm to +100 dBm                                                                        |
| Offset Range                     | Max $\pm 100$ dB, user settable value                                                       |
| Measurement Range                | -33 dBm to +20 dBm                                                                          |
| VSWR                             | 1.5:1 typical                                                                               |
| Maximum Power                    | +27 dBm, $\pm 45$ VDC (damage level)                                                        |
| Connector                        | Type N(m), 50 $\Omega$                                                                      |
| Accuracy                         | $\pm 0.7$ dB (0 dBm, 1 GHz CW, @ 23 °C $\pm 3$ °C)                                          |
| Frequency Response and Linearity | Additional $\pm 0.8$ dB ( $\pm 0.5$ dB typical)                                             |
| Temperature Effect               | Additional $\pm 0.02$ dB per 1 °C change (typical)                                          |



## High Accuracy Power Meter (requires external USB Power Sensor)

|                                          |                                                              |                                               |                                                                      |                                           |                                                                       |
|------------------------------------------|--------------------------------------------------------------|-----------------------------------------------|----------------------------------------------------------------------|-------------------------------------------|-----------------------------------------------------------------------|
| Amplitude                                | Maximum, Minimum, Offset, Relative On/Off, Units, Auto Scale |                                               |                                                                      |                                           |                                                                       |
| Average                                  | # of Running Averages, Max Hold                              |                                               |                                                                      |                                           |                                                                       |
| Zero/Cal                                 | Zero On/Off, Cal Factor (Center Frequency, Signal Standard)  |                                               |                                                                      |                                           |                                                                       |
| Limits                                   | Limit On/Off, Limit Upper/Lower                              |                                               |                                                                      |                                           |                                                                       |
| Power Sensor Model                       | MA24105A                                                     | MA24106A                                      | MA24108A/18A/26A                                                     | MA24208A/18A                              | MA24330A/40A/50A                                                      |
| Description                              | Inline High Power Sensor                                     | High Accuracy RF Power Sensor                 | Microwave USB Power Sensor                                           | Microwave Universal USB Power Sensor      | Microwave CW USB Power Sensor                                         |
| Frequency Range                          | 350 MHz to 4 GHz                                             | 50 MHz to 6 GHz                               | 10 MHz to 8/18/26 GHz                                                | 10 MHz to 8/18 GHz                        | 10 MHz to 33/40/50 GHz                                                |
| Connector                                | Type N(f), 50 $\Omega$                                       | Type N(m), 50 $\Omega$                        | Type N(m), 50 $\Omega$ (8/18 GHz)<br>Type K(m), 50 $\Omega$ (26 GHz) | Type N(m), 50 $\Omega$                    | Type K(m), 50 $\Omega$ (33/40 GHz)<br>Type V(m), 50 $\Omega$ (50 GHz) |
| Dynamic Range                            | +3 dBm to +51.76 dBm<br>(2 mW to 150 W)                      | -40 dBm to +23 dBm<br>(0.1 $\mu$ W to 200 mW) | -40 dBm to +20 dBm<br>(0.1 $\mu$ W to 100 mW)                        | -60 dBm to +20 dBm<br>(1 nW to 100 mW)    | -70 dBm to +20 dBm<br>(0.1 nW to 100 mW)                              |
| Measurand                                | True-RMS                                                     | True-RMS                                      | True-RMS, Slot Power, Burst Average Power                            | True-RMS, Slot Power, Burst Average Power | Average Power                                                         |
| Measurement Uncertainty                  | $\pm 0.17$ dB <sup>a</sup>                                   | $\pm 0.16$ dB <sup>b</sup>                    | $\pm 0.18$ dB <sup>c</sup>                                           | $\pm 0.17$ dB <sup>d</sup>                | $\pm 0.17$ dB <sup>e</sup>                                            |
| Data sheet (for complete specifications) | 11410-00621                                                  | 11410-00424                                   | 11410-00504                                                          | 11410-00841                               | 11410-00906                                                           |

- Notes:
- Expanded uncertainty with K=2 for power measurements of a CW signal greater than +20 dBm with a matched load. Measurement results referenced to the input side of the sensor.
  - Total RSS measurement uncertainty (0 °C to 50 °C) for power measurements of a CW signal greater than -20 dBm with zero mismatch errors.
  - Expanded uncertainty with K=2 for power measurements of a CW signal greater than -20 dBm with zero mismatch errors.
  - Power uncertainty expressed with two sigma confidence level for CW measurement after zero operation. Includes calibration factor and linearity over temperature uncertainties, but not the effects of mismatch, zero set and drift, or noise.
  - Includes linearity over temperature uncertainties, but not the effects of calibration factor, mismatch, zero set and drift, and noise.


**Video Inspection Probe** (Requires external USB Video Inspection Probe, sold separately)

**Setup Parameters**

|                                 |                                                                  |
|---------------------------------|------------------------------------------------------------------|
| Probe Models                    | G0306A or G0306B 400X USB Visual Inspection Probe                |
| Tip Type (included with G0306A) | SC_APC_F; SC_PC_F; LC_PC_F; FC_PC_F; 2.5APC_M; 2.5PC_M; 1.25PC_M |
| Test Profile (IEC 61300-3-35)   | SM PC >45; SM APC; SM PC >25; MM PC 62.5; MM PC 50.0             |
| Auto Analyze                    | On/Off                                                           |
| Auto Filename                   | On/Off                                                           |
| Auto Filename Settings          | Location, File Prefix, Start Number, Include Date                |

**Measurement Parameters**

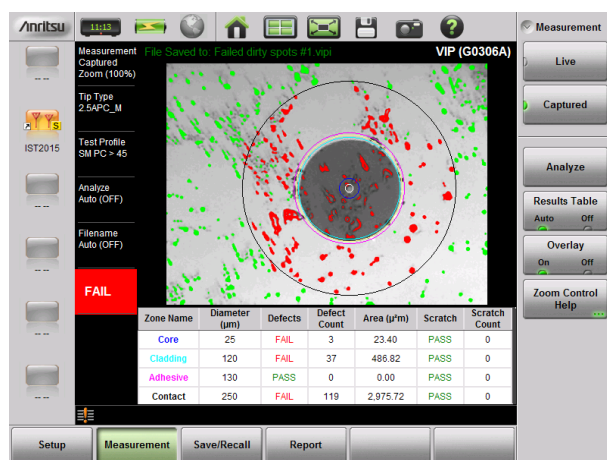
|                   |                                             |
|-------------------|---------------------------------------------|
| Live              | View Live Image                             |
| Captured          | Capture Image for Analysis                  |
| Analyze           | Analyze Image                               |
| Results Table     | Auto/Off                                    |
| Overlay           | On/Off                                      |
| Zoom Control Help | Displays instruction for image Zoom feature |

**Save/Recall Parameters**

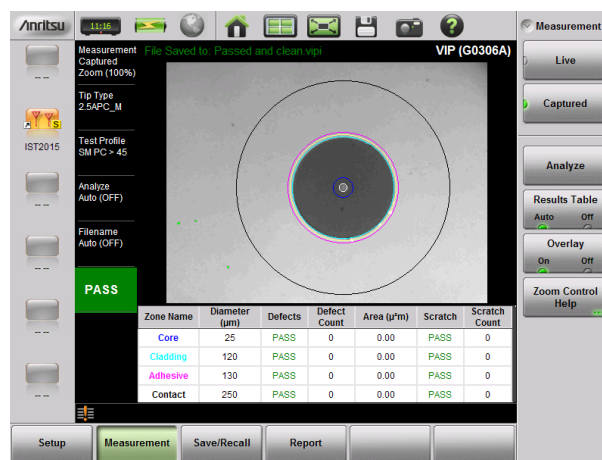
|                 |                                                            |
|-----------------|------------------------------------------------------------|
| Save            | Measurement (*.vpi), VIP Image (*.png), Screen Shot (.png) |
| Recall          | Measurement (*.vpi), VIP Image (*.png), Screen Shot (.png) |
| File Management | Rename, Create Folder, Copy, Paste, Delete                 |

**Report Parameters**

|                 |                                                                   |
|-----------------|-------------------------------------------------------------------|
| Header Settings | Customer, Project, Operator, Notes, Include Logo                  |
| Generate Report | Generates pdf report with options to include multiple *.vpi files |

**Instrument Displays**


Dirty, oily fiber fails inspection



After proper cleaning, fiber passes 100%



## General Specifications

### Setup Parameters

|                             |                                                                                           |
|-----------------------------|-------------------------------------------------------------------------------------------|
| System Info                 | Status, Battery                                                                           |
| System Setups               | Date/Time, Language, Display/Audio                                                        |
| Date/Time                   | Time and Date Settings, Time Zone Settings                                                |
| Language                    | English, French, German, Italian, Spanish, Russian, Portuguese, Japanese, Korean, Chinese |
| Display/Audio               | Brightness, Color Schemes, Screen Shot Settings, Volume                                   |
| Connectivity                | GPS, Ethernet Configuration (DHCP/Static)                                                 |
| Diagnostics                 | Self Test                                                                                 |
| Preset                      | Preset, Reset, Update Firmware                                                            |
| Reset                       | Factory Reset, Delete All User Files, Delete Custom Files, Master Reset                   |
| File                        | Save, Recall, File Management                                                             |
| Save                        | Measurement (*.dat), Setup (*.stp), Screen Shot (*.png)                                   |
| Recall                      | Recall, Create Folder, Copy, Paste, Delete                                                |
| File Management             | Rename, Create Folder, Copy, Paste, Delete                                                |
| Navigation                  | Top, Bottom, Page Up, Page Down                                                           |
| Help Menu                   | System Info, FAQ, User Guide                                                              |
| Internal Trace/Setup Memory | > 1000 files (files may be traces, setups, screen shots, or any combination)              |
| External Trace/Setup Memory | Limited only by size of USB Flash drive                                                   |

### Connectors

|                       |                                                                    |
|-----------------------|--------------------------------------------------------------------|
| RF Out/Reflect In     | Type N, female, 50 Ω, Maximum Input +42 dBm, ± 50 VDC              |
| InstaCal™/Power Meter | Type N, male, 50 Ω, Maximum Input +27 dBm, ± 45 VDC (Damage Level) |
| External Power        | 5.5 mm barrel connector, 11 to 14 VDC, < 3.0 A                     |
| USB Ports             | USB 2.0 Type A (two ports)                                         |
| USB Interface         | Type mini-B, Connect to PC for data transfer                       |

### Display

|               |                                                           |
|---------------|-----------------------------------------------------------|
| Type          | TFT Resistive Touch Screen                                |
| Size          | 7.0 in daylight viewable color LCD                        |
| Resolution    | 800 x 480                                                 |
| Pixel Defects | No more than five defective pixels (99.9986% good pixels) |

### GPS Connectivity (external GPS USB module sold separately)

|                             |                                                                                            |
|-----------------------------|--------------------------------------------------------------------------------------------|
| GPS Time/Location Indicator | Time, Latitude, Longitude and Altitude in GPS dialog (current or last known location)      |
|                             | Time, Latitude, Longitude and Altitude with trace storage (current or last known location) |
| Setup                       | Clear Data, Synchronize system time to GPS                                                 |

### Battery

|                   |                                                                                                      |
|-------------------|------------------------------------------------------------------------------------------------------|
| Type              | Li-Ion                                                                                               |
| Battery Operation | > 8.0 Hours typical (70 % brightness setting, continuous usage)                                      |
| Standby           | 7 days typical (With fully charged battery. Actual time will vary depending on battery charge level) |

### Regulatory Compliance

|                           |                                                                                                                                                                                                                                                            |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| European Union            | EMC 2014/30/EU, EN 61326:2013, CISPR 11/EN 55011, IEC/EN 61000-4-2/3/4/5/6/8/11<br>Low Voltage Directive 2014/35/EU<br>Safety EN 61010-1:2010<br>RoHS Directive 2011/65/EU applies to instruments with CE marking placed on the market after July 22, 2017 |
| Australia and New Zealand | RCM AS/NZS 4417:2012                                                                                                                                                                                                                                       |
| Canada                    | ICES-1(A)/NMB-1(A)                                                                                                                                                                                                                                         |
| South Korea               | KCC-REM-A21-0004                                                                                                                                                                                                                                           |

### Environmental

|                             |                                                                           |
|-----------------------------|---------------------------------------------------------------------------|
|                             | MIL-PRF-28800F Class 2                                                    |
| Operating Temperature Range | -10 °C to 55 °C                                                           |
| Storage Temperature Range   | -51 °C to 71 °C                                                           |
| Maximum Relative Humidity   | 95 % RH at 30 °C, non-condensing                                          |
| Vibration, Sinusoidal       | 5 Hz to 55 Hz                                                             |
| Vibration, Random           | 10 Hz to 500 Hz                                                           |
| Half Sine Shock             | 30 g <sub>n</sub>                                                         |
| Altitude                    | 4600 meters, operating and non-operating                                  |
| Explosive Atmosphere        | MIL-PRF-28800F Section 4.5.6.3<br>MIL-STD-810G, Method 511.5, Procedure 1 |

### Size and Weight

|        |                                                     |
|--------|-----------------------------------------------------|
| Size   | 250 mm x 177 mm x 61 mm (10.0 in x 7.1 in x 2.4 in) |
| Weight | < 2.0 kg (4.4 lb), including battery                |

### Warranty

|          |                                                          |
|----------|----------------------------------------------------------|
| Duration | Standard three-year warranty (battery one-year warranty) |
|----------|----------------------------------------------------------|

## Anritsu Tool Box and Line Sweep Tools (for your PC)

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 uncomplicated user interface, giving a new face to the term "ease of use."

|                                      |                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cable Editor <sup>1</sup>            | Instrument Cable Lists may be retrieved from the instrument, modified as required, and uploaded back into instrument.                                                                                                                                                                                                                                                                                                   |
| Distance to Fault <sup>2</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.                                                                                                                                                                                                                                                                                                                         |
| Signal Standard Editor <sup>1</sup>  | Signal Standard Lists may be retrieved from the instrument, modified as required, and uploaded back into instrument.                                                                                                                                                                                                                                                                                                    |
| 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. |
| 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.                                                                                                           |
| Report Generator                     | The report generator creates a professional PDF or HTML based report. Reports may include GPS <sup>3</sup> location, power level <sup>3</sup> , company logo <sup>4</sup> , instrument and calibration status along with a display of all open traces. It also may contain additional information such as addresses and phone numbers.                                                                                  |
| Capture                              | Plots to Screen, Database, *.dat, *.jpg                                                                                                                                                                                                                                                                                                                                                                                 |
| Connect                              | To PC using USB, Ethernet, Serial                                                                                                                                                                                                                                                                                                                                                                                       |
| Download/Upload <sup>1</sup>         | Lists/measurements and live traces to PC for storage and analysis.                                                                                                                                                                                                                                                                                                                                                      |
| Supported File Types                 | Input: *.dat, *.vna, *.mna, *.pim, *.tm<br>Output: *.dat, *.vna, *.pim, *.tm, *.csv, *.bmp, *.jpg, *.png                                                                                                                                                                                                                                                                                                                |

## easyTest Tools (for your PC)

### Instrument Mode

Cable & Antenna Analyzer Mode

### Commands

|               |                                                          |
|---------------|----------------------------------------------------------|
| Display Image | Allows putting a custom image on the instrument screen   |
| Recall Setup  | Places the instrument into a known state                 |
| Prompt        | Displays instructional messages on the instrument screen |
| Save          | Allows automatic or manual saving of traces              |

### Connectivity

|             |                               |
|-------------|-------------------------------|
| Connections | USB cable or USB memory stick |
|-------------|-------------------------------|

1. Instrument type/model must match original  
 2. Only \*.dat and \*.vna file types supported  
 3. Model dependent  
 4. Optionally set by user

## Ordering Information



**Model Number**  
S331L  
(Includes all items listed in the description)

**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                                                                                                                |
|------------|----------------------------------------------------------------------------------------------------------------------------|
| S331L-0098 | Standard Calibration to ISO17025 and ANSI/NCSL Z540-1. Includes calibration certificate.                                   |
| 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    | AC-DC Adapter                                            |
| 806-141-R   | Automotive Power Adapter, 12 VDC, 60 W                   |
| 3-2000-1498 | USB A/5-pin mini-B Cable, 305 cm (120 in)                |
|             | Standard Three-Year Warranty (battery one-year warranty) |
|             | Certificate of Calibration and Conformance               |

Documentation (available at [www.anritsu.com](http://www.anritsu.com))

| Part Number | Description                                                                                      |
|-------------|--------------------------------------------------------------------------------------------------|
| 10100-00065 | Product Information, Compliance, and Safety                                                      |
| 11410-00616 | Site Master™ S331L Technical Data Sheet                                                          |
| 10580-00321 | Site Master™ S331L User Guide                                                                    |
| 11410-00640 | Site Master S331L Product Brochure<br>(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                                                            |

## Optional Accessories

## Backpack and Transit Case



| Part Number | Description                                                                                          |
|-------------|------------------------------------------------------------------------------------------------------|
| 67135       | Anritsu Backpack (For Handheld Instrument and PC)                                                    |
| 760-286-R   | Compact Transit Case with Wheels and Handle<br>55.6 cm x 35.5 cm x 22.9 cm (21.89" x 13.98" x 9.01") |

## Optional Accessories (continued)

**USB Power Sensors and Transmission Sensors** (for complete ordering information, see the respective data sheets of each sensor)**Model Number Description**

|          |                                                                                                                |
|----------|----------------------------------------------------------------------------------------------------------------|
| MA24105A | Inline Peak Power Sensor, 350 MHz to 4 GHz, +3 dBm to +51.76 dBm                                               |
| MA24106A | RF USB Power Sensor and 2-Port Loss/Transmission Sensor, 50 MHz to 6 GHz, +23 dBm to -40 dBm                   |
| MA24108A | Microwave USB Power Sensor and 2-Port Loss/Transmission Sensor, 10 MHz to 8 GHz, +20 dBm to -40 dBm            |
| MA24118A | Microwave USB Power Sensor and 2-Port Loss/Transmission Sensor, 10 MHz to 18 GHz, +20 dBm to -40 dBm           |
| MA24126A | Microwave USB Power Sensor and 2-Port Loss/Transmission Sensor, 10 MHz to 26 GHz, +20 dBm to -40 dBm           |
| MA24208A | Microwave Universal USB Power Sensor and 2-Port Loss/Transmission Sensor, 10 MHz to 8 GHz, +20 dBm to -60 dBm  |
| MA24218A | Microwave Universal USB Power Sensor and 2-Port Loss/Transmission Sensor, 10 MHz to 18 GHz, +20 dBm to -60 dBm |
| MA24330A | Microwave CW USB Power Sensor and 2-Port Loss/Transmission Sensor, 10 MHz to 33 GHz, +20 dBm to -70 dBm        |
| MA24340A | Microwave CW USB Power Sensor and 2-Port Loss/Transmission Sensor, 10 MHz to 40 GHz, +20 dBm to -70 dBm        |
| MA24350A | Microwave CW USB Power Sensor and 2-Port Loss/Transmission Sensor, 10 MHz to 50 GHz, +20 dBm to -70 dBm        |
| SC8268   | USB Transmission Sensor, K(m), 1 MHz to 40 GHz, +10 dBm to -50 dBm                                             |
| MA25100A | RF Power Indicator                                                                                             |

**USB Extender Kit** (for use with external 2-port cable loss/transmission sensors; requires Cat 5e extension cable, sold separately)**Model Number Description**

|                          |                                                                                                                                                |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| 2000-1717-R <sup>a</sup> | USB 1.1 Passive 40 m Extender                                                                                                                  |
| 2000-1900-R              | USB 2.0 Active 100 meter Extender (with Type A power cord for USA, Japan, North America, Central America and Caribbean)                        |
| 2000-1901-R              | USB 2.0 Active 100 meter Extender (with Type C power cord for use in Europe, India, South Korea, and many countries in Middle East and Africa) |
| 2000-1902-R              | USB 2.0 Active 100 meter Extender (with Type I power cord for use in Australia, New Zealand, Argentina, and the South Pacific)                 |
| 2000-1903-R              | USB 2.0 Active 100 meter Extender (with Type G power cord for use in the UK, and several other countries in Asia, the Middle East, and Africa) |
| 2100-28-R                | Cat 5e extension cable for use with USB Extender (22.5 m)                                                                                      |

a. Not compatible with sensors MA24208A, MA24218A, MA24330A, MA24340A, MA24350A; must use active extenders with these sensors.

**Replacement Accessories****Part Number Description**

|             |                                       |
|-------------|---------------------------------------|
| 2000-1691-R | Replacement Stylus with coiled tether |
| 2000-1687-R | Replacement Torque Multiplier N(m)    |

**GPS Module****Part Number Description**

|             |                                           |
|-------------|-------------------------------------------|
| 2000-1723-R | High Performance USB Mag-Mount GPS Module |
|-------------|-------------------------------------------|

**Ethernet Adapter****Part Number Description**

|             |                                      |
|-------------|--------------------------------------|
| 2000-1810-R | Portable USB to Ethernet LAN Adapter |
|-------------|--------------------------------------|

## Optional Accessories (continued)

## Video Inspection Probe



| Part Number               | Description                                                                                                   |
|---------------------------|---------------------------------------------------------------------------------------------------------------|
| G0306B                    | Video Inspection Probe (400x), including the following standard connector tips:                               |
| Universal Tips            | H0361A 1.25PC-M, H0360A 2.5PC-M, H0362A 2.5APC-M                                                              |
| Bulkhead Tips             | H0363A LC-PC-F, H0364A FC-PC-F, H0375A ST-PC-F, H0366A SC-APC-F                                               |
| Additional Tips Available | H0372A E2000-PC-F, H0373A FC-APC-F, H0374A MU-PC-F, H0365A SC-PC-F, H0376A 1.25APC-M                          |
| Accessories               | 971-14-R Ferrule Cleaner, 2.5 mm SC<br>971-15-R Ferrule Cleaner, 1.25 mm LC<br>971-16-R Fiber Ferrule Cleaner |

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



| Part Number    | Description                                   |
|----------------|-----------------------------------------------|
| 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 Adapter 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 adapter interface on the grip to four different connector types)



| Part Number   | Description                                                    |
|---------------|----------------------------------------------------------------|
| 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 (ideal for use with tightly spaced connectors and other general use applications)



| Part Number   | Description                                                                   |
|---------------|-------------------------------------------------------------------------------|
| 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                                        |
| 15NNF50-5.0C  | 5.0 m, DC to 6 GHz, N(m) to N(f), 50 Ω                                        |
| 15NN50-5.0C   | 5.0 m, DC to 6 GHz, N(m) to N(m), 50 Ω                                        |
| 15N43M50-1.5C | Test Port Extension Cable, Armored, 1.5 meters, DC to 6GHz, N(m) to 4.3-10(m) |
| 15N43F50-1.5C | Test Port Extension Cable, Armored, 1.5 meter, DC to 6GHz, N(m) to 4.3-10(f)  |
| 15N43M50-3.0C | Test Port Extension Cable, Armored, 3 meters, DC to 6 GHz, N(m) to 4.3-10(m)  |
| 15N43F50-3.0C | Test Port Extension Cable, Armored, 3 meters, DC to 6 GHz, N(m) to 4.3-10(f)  |

## Optional Accessories (continued)

Calibration Components, 50  $\Omega$ 

| Part Number | Description                                                        |
|-------------|--------------------------------------------------------------------|
| OSLN50A-8   | Precision Open/Short/Load, N(m), 42 dB, DC to 8.0 GHz, 50 $\Omega$ |
| OSLNF50A-8  | Precision Open/Short/Load, N(f), 42 dB, DC to 8.0 GHz, 50 $\Omega$ |
| 2000-1618-R | Precision Open/Short/Load, 7/16 DIN(m), DC to 6.0 GHz 50 $\Omega$  |
| 2000-1619-R | Precision Open/Short/Load, 7/16 DIN(f), DC to 6.0 GHz 50 $\Omega$  |
| 2000-1914-R | Precision Open/Short/Load, 4.3-10(f), DC to 6 GHz, 50 $\Omega$     |
| 2000-1915-R | Precision Open/Short/Load, 4.3-10(m), DC to 6 GHz, 50 $\Omega$     |
| 22N50       | Open/Short, N(m), DC to 18 GHz, 50 $\Omega$                        |
| 22NF50      | Open/Short, N(f), DC to 18 GHz, 50 $\Omega$                        |
| SM/PL-1     | Precision Load, N(m), 42 dB, DC to 6.0 GHz                         |
| SM/PLNF-1   | Precision Load, N(f), 42 dB, DC to 6.0 GHz                         |

Calibration Components, 75  $\Omega$ 

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

## Adapters



| Part Number | Description                                                            |
|-------------|------------------------------------------------------------------------|
| 510-90-R    | 7/16 DIN(f) to N(m), DC to 7.5 GHz, 50 $\Omega$                        |
| 510-91-R    | 7/16 DIN(f) to N(f), DC to 7.5 GHz, 50 $\Omega$                        |
| 510-92-R    | 7/16 DIN(m) to N(m), DC to 7.5 GHz, 50 $\Omega$                        |
| 510-93-R    | 7/16 DIN(m) to N(f), DC to 7.5 GHz, 50 $\Omega$                        |
| 510-96-R    | 7/16 DIN(m) to 7/16 DIN(m), DC to 7.5 GHz, 50 $\Omega$                 |
| 510-97-R    | 7/16 DIN(f) to 7/16 DIN(f), DC to 7.5 GHz, 50 $\Omega$                 |
| 510-102-R   | N(m) to N(m), DC to 11 GHz, 50 $\Omega$ , 90 degrees right angle       |
| 1091-26-R   | SMA(m) to N(m), DC to 18 GHz, 50 $\Omega$                              |
| 1091-27-R   | SMA(f) to N(m), DC to 18 GHz, 50 $\Omega$                              |
| 1091-80-R   | SMA(m) to N(f), DC to 18 GHz, 50 $\Omega$                              |
| 1091-81-R   | SMA(f) to N(f), DC to 18 GHz, 50 $\Omega$                              |
| 1091-172-R  | BNC(f) to N(m), DC to 1.3 GHz, 50 $\Omega$                             |
| 1091-433-R  | Low PIM Adapter, 4.1-9.5(f) to 7/16 DIN(f), DC to 3.0 GHz, 50 $\Omega$ |
| 1091-434-R  | Low PIM Adapter, 4.1-9.5(m) to 7/16 DIN(f), DC to 3.0 GHz, 50 $\Omega$ |
| 1091-435-R  | Low PIM Adapter, 4.1-9.5(f) to N(m), DC to 3.0 GHz, 50 $\Omega$        |
| 1091-436-R  | Low PIM Adapter, 4.1-9.5(m) to N(m), DC to 3.0 GHz, 50 $\Omega$        |
| 1091-440-R  | Low PIM Adapter, 4.3-10(f) to 7/16 DIN(f), DC to 6.0 GHz, 50 $\Omega$  |
| 1091-441-R  | Low PIM Adapter, 4.3-10(m) to 7/16 DIN(f), DC to 6.0 GHz, 50 $\Omega$  |
| 1091-442-R  | Low PIM Adapter, 4.3-10(f) to N(m), DC to 6.0 GHz, 50 $\Omega$         |
| 1091-443-R  | Low PIM Adapter, 4.3-10(m) to N(m), DC to 6.0 GHz, 50 $\Omega$         |
| 1091-465-R  | Adapter, DC to 6 GHz, 4.3-10(f) to N(f), 50 $\Omega$                   |
| 1091-467-R  | Adapter, DC to 6 GHz, 4.3-10(m) to N(f), 50 $\Omega$                   |

## Precision Adapters



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

## Attenuators



| Part Number | Description                                               |
|-------------|-----------------------------------------------------------|
| 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(f) to N(m), Unidirectional |
| 1010-121    | 40 dB, 100 W, DC to 18 GHz, N(f) to N(m), Unidirectional  |
| 1010-128-R  | 40 dB, 150 W, DC to 3 GHz, N(m) to N(f)                   |

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