

Site Master™

Ultraportable Cable & Antenna Analyzer Featuring Classic and Advanced Modes

S331P

150 kHz to 6.0 GHz



S331P **Specifications**

Introduction

Anritsu introduces its ninth generation, compact handheld Cable & Antenna Analyzer for installation and maintenance of antenna systems. It is available in two frequency ranges starting from 150 kHz and up to 4 GHz or 6 GHz.

Optimized for Field Use

- FlexCal™ Calibration
 - One Calibration for All Frequencies

- Impact, Dust, and Splash Resistant
- Smallest, Lightest, and Fastest Site Master™

Easy to Use

- S331D-like Classic Mode
- S331E-like Advanced Mode
 - Additional Markers
 - Customizable Shortcuts
 - Full-screen View
- S331L-like Graphical User Interface and Functionality
- Integrated Help Function
- EZ Name Quick Matrix
- easyTest™
- Controlled and Powered by a Windows tablet or PC using standard USB 2.0 (not included)

Efficient Sweep Management

- Internal File Storage (limited only by space on PC or Tablet)
- Sweeps, Setups, Screen Shots
- Line Sweep Tools (LST) Software
 - Generate PDF or HTML Reports
 - Edit Sweeps, Rename, Archive

- Fast Preview of Stored Sweeps
- Standard *.dat Sweep File Format
- Compatible with HHST
 - Widely Accepted by Operators



Site Master[™] S331P Cable & Antenna Analyzer Featuring USB Connectivity with a Windows PC or Tablet Size: 52 mm x 148 mm 36 mm (2 in x 5.8 in x 1.4 in), Lightweight: < 0.4 kg (< 0.9 lb)

Specifications S331P

Table of Contents

Definitions	3
Cable and Antenna Analyzer	4
Cable and Antenna Analyzer	
General Specifications	5
Recommended External PC Configuration	
Anritsu Tool Box and Line Sweep Tools	
easyTest Tools (for your PC)	7
Ordering Information	
Calibration and Extended Warranty Options	
Standard Accessories	8
Reference Documents.	
Optional Accessories	
USB Extender Kit	10

Definitions

All specifications and characteristics apply to Revision 2 instruments under the following conditions, unless

After 5 minutes of warm-up time, where the instrument has completely stabilized to the ambient Warm-Up Time temperature.

Temperature Range Over the 23 °C ±5 °C temperature range. Internal frequency reference is used. Frequency Reference

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

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.

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

All specifications subject to change without notice. For the most current data sheet, please visit the Anritsu web site: www.anritsu.com

S331P **Specifications**

Cable and Antenna Analyzer

Measurements

Measurements **VSWR**

Calibration

Save/Recall

Return Loss

Cable Loss (One Port)

Distance-to-Fault (DTF) Return Loss

Distance-to-Fault (DTF) VSWR

Smith Chart 50 $\Omega/75 \Omega$ (Advanced Mode Only)

1-Port Phase (Advanced Mode Only)

Setup Parameters-Classic Mode

Measurement Display Single Display with independent markers

Frequency Start Frequency (F1), Stop Frequency (F2)

Start Distance (D1), Stop Distance (D2), DTF Aid, Cable Loss, Propagation Velocity, Cable type DTF

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, Trace

Data Points 130, 259, 517, 1033, 2065

Markers 1 to 6 (On/Off), Delta Markers 2 to 4 (Ref M1), Marker to Peak/Valley, Marker Table, Marker 5 Markers

(Peak/Valley between M1 & M2), Marker 6 (Peak/Valley between M3 & M4), Independent Markers for

Frequency and Distance Measurements

Copy Trace To Memory, Trace Display, Trace Math [Trace - Memory, Trace + Memory, (Trace + Memory)/2] Traces

Limit Line On/Off, Edit Value, Limit Alarm, Pass/Fail On/Off, Limit Preset

Start Calibration, Cal Info, Cal Correction (On/Off), Cal Method (OSL), Cal Type (Standard, FlexCal™)

Setups, Measurements, Screen Shots

Setup Parameters-Advanced Mode

Measurement Display Single/Dual Display with independent markers

> Frequency Start Frequency (F1), Stop Frequency (F2)

> > Start Distance (D1), Stop Distance (D2), Units m/ft, DTF Aid, Cable List, Cable Loss, Propagation Velocity DTF

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

Data Points 130, 259, 517, 1033, 2065

Markers 1 to 8 (On/Off), Delta Markers 2 to 8 (Ref M1), Marker Tracking (On/Off), Marker to Peak/Valley, Markers

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

Copy Trace to Memory, Trace Display, Trace Math [Trace - Memory, Trace + Memory, (Trace + Memory)/2] Traces

Active Limit (Upper/Lower), Limit State (On/Off), Move Active Limit, Edit Segments (42 upper and 42 lower Limit Line segments maximum), Limit Alarm, Pass/Fail On/Off, Limit Preset

Calibration Start Calibration, Cal Info, Cal Correction (On/Off),

Cal Method (OSL), Cal Type (Standard, FlexCal™)

Save/Recall Setups, Measurements, Screen Shots

Frequency

500 kHz to 4 GHz (S331P-0704) Frequency Ranges 500 kHz to 6 GHz (\$331P-0706)

Either option can be set as low as 150 kHz

Frequency Accuracy ± 2.5 ppm @ 23 °C ± 3 °C

Frequency Resolution 1 kHz

Power

-5 dBm, typical **Output Power**

Interference Immunity +17 dBm, typical

Measurement Speed 500 μs/data point, typical¹

Return Loss

Measurement Range 0 to 60 dB

> Resolution 0.01 dB

VSWR

Measurement Range 1 to 65

Resolution 0.01

4 of 12 PN: 11410-00964 Rev. A S331P TDS

^{1.} Timing dependent on external computer configuration

Specifications S331P



Table and Antenna Analyzer (continued)

Cable Loss

Measurement Range 0 to 30 dB Resolution 0.01 dB

Distance-to-Fault

0 to 60 dB Vertical Range Return Loss Vertical Range VSWR 1 to 65

Fault Resolution (meters) $(1.5 \times 10^8 \times \text{vp})/\Delta F$ (vp = propagation velocity, ΔF is F2 – F1 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)

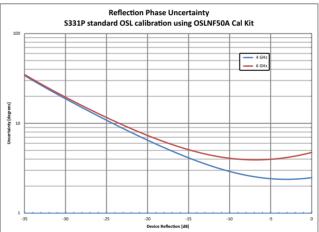
Impedance 50 Ω, 75 Ω Resolution 0.01

Measurement Accuracy (at 23 °C ± 3 °C)

Corrected Directivity ≥ 42 dB, OSL calibration (OSLN50A-8, OSLNF50A-8)

Return Loss Measurement Uncertainty (Standard OSL calibration. OSLNF50A-8 Precision Open/Short/Load calibration component.)





General Specifications

Setup Parameters

System Info Status

System Setups Language, Display/Audio

Language English, French, German, Italian, Spanish, Russian, Portuguese, Japanese, Korean, Chinese

Brightness, Color Schemes, Screen Shot Settings, Volume Display/Audio

Connectivity USB Self Test Diagnostics Preset, Reset Preset

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

Top, Bottom, Page Up, Page Down Navigation Help Menu System Info, FAQ, User Guide

> 1000 files for traces, setups, screen shots, or any combination (limited by PC/Tablet storage) Internal Trace/Setup Memory

Limited only by size of USB Flash drive External Trace/Setup Memory

Connectors

RF Port Type N(m), 50 Ω, Maximum input +23 dBm maximum, ±50 VDC maximum

USB Port USB 2.0 port for connecting to an external PC controller S331P Specifications

Electromagnetic Compatibility

European Union CE Mark
EMC Directive 2014/30/EU

Emissions EN 55011:2009 +A1:2010 Group 1 Class A

Immunity EN 61000-4-2/3/4/5/6/8/11

Australia and New Zealand RSM South Korea KCC

Safety

Low Voltage Directive 2014/35/EU

Product Safety EN 61010-1:2010 Class 1, IEC 60950-1

Environmental

Operating Temperature
Storage Temperature
Storage Temperature

-10 °C to +55 °C
-51 °C to +71 °C
95 %, non-condensing
Mechanical Shock
MIL-PRF-28800F Class 2

Explosive Atmosphere MIL-PRF-28800F Section 4.5.6.3

Altitude 4600 m (15092 ft), operating and non-operating

Size and Weight

Size 52 mm x 148 mm 36 mm (2 in x 5.8 in x 1.4 in)

Weight < 0.4 kg (< 0.9 lb), typical

Recommended External PC Configuration

One USB 2.0 (or higher) port

S331P software is compatible with Windows® 7, 8, 8.1, or 10; 32 or 64 bit operating systems.

Tested with tablets running Windows 10 and Intel Atom X5-Z8300 processor.

Specifications S331P



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 Editor¹ Instrument Cable Lists may be retrieved from the instrument, modified as required, and uploaded back into

instrument.

Distance to Fault² (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 Editor¹

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

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 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.

The report generator creates a professional PDF or HTML based report. Reports may include GPS³ location, Report Generator

power level³, company logo⁴, instrument and calibration status along with a display of all open traces. It also may contain additional information such as addresses and phone numbers.

Connection File transfer.

Presets

Supported File Types Input: *.dat, *.vna, *.mna, *.pim, *.tm

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



easyTest Tools (for your PC)

Instrument Mode

Cable & Antenna Analyzer Mode

Commands

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

Instrument type/model must match original
 Only *.dat and *.vna file types supported

^{3.} Model dependent

^{4.} Optionally set by user

S331P Specifications

Ordering Information



Model Number Description

S331P Cable and Antenna Analyzer (required one frequency option)

Frequency Options

S331P-0704 150 kHz to 4 GHz S331P-0706 150 kHz to 6 GHz

Calibration and Extended Warranty Options

OptionS331P-ES510
S331P-ES513
S331P-0098

S331P-0099

Description

Warranty Extension to 5 Years

Warranty Extension to 5 Years with Z540 Calibration Standard Calibration only (to ISO/IEC 17025:2005) Premium Calibration only with test data (to ISO/IEC

17025:2005)

Standard Accessories (included with instrument)



Part Number Description

2000-1864-R Soft Carrying Case

2000-1606-R USB-A to Micro-B with latch cable, 1.8 m (6 ft)

2000-1687-R Torque Multiplier N(m)

2300-578-R USB memory device with the S331P Site Master application and

user documentation

Standard Three-Year Warranty

Certificate of Calibration and Conformance

Reference Documents (Soft copies available at www.anritsu.com)

Part Number D

11410-00964 Site Master[™] S331P Technical Data Sheet

10580-00426 Site Master[™] S331P User Guide

11410-00674 Cable and Antenna Analysis Troubleshooting Guide

Specifications S331P

Optional Accessories

Calibration Components, 50 Ω



Part Number	Description
OSLN50A-8	Precision Open/Short/Load, N(m), 42 dB, DC to 8.0 GHz, 50 Ω
OSLNF50A-8	Precision Open/Short/Load, N(f), 42 dB, DC to 8.0 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, DC to 6.0 GHz
SM/PLNF-1	Precision Load, N(f), 42 dB, DC to 6.0 GHz

Calibration Components, 75 Ω



Part Number Description

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

Adapters



Part Number Description

510-91-R	7/16 DIN(f) to N(f), DC to 7.5 GHz, 50 Ω
510-96-R	7/16 DIN(m) to 7/16 DIN(m), DC to 7.5 GHz, 50 Ω
510-97-R	7/16 DIN(f) to 7/16 DIN(f), DC to 7.5 GHz, 50 Ω
1091-80-R	SMA(m) to N(f), DC to 18 GHz, 50Ω
1091-81-R	SMA(f) to N(f), DC to 18 GHz, 50 Ω
1091-433-R	Low PIM Adapter, 4.1/9.5(f) to 7/16 DIN(f), DC to 3.0 GHz, 50 Ω
1091-434-R	Low PIM Adapter, 4.1/9.5(m) to 7/16 DIN(f), DC to 3.0 GHz, 50 Ω
1091-435-R	Low PIM Adapter, 4.1/9.5(f) to N(m), DC to 3.0 GHz, 50 Ω
1091-436-R	Low PIM Adapter, 4.1/9.5(m) to N(m), DC to 3.0 GHz, 50 Ω
1091-440-R	Low PIM Adapter, 4.3/10(f) to 7/16 DIN(f), DC to 3.0 GHz, 50 Ω
1091-441-R	Low PIM Adapter, 4.3/10(m) to 7/16 DIN(f), DC to 3.0 GHz, 50 Ω
1091-442-R	Low PIM Adapter, 4.3/10(f) to N(m), DC to 3.0 GHz, 50 Ω
1091-443-R	Low PIM Adapter, 4.3/10(m) to N(m), DC to 3.0 GHz, 50 Ω

Precision Adapters



Part Number Description

34NN50A Precision Adapter, N(m) to N(m), DC to 18 GHz, 50Ω 34NFNF50 Precision Adapter, N(f) to N(f), DC to 18 GHz, 50Ω

3-1010-122 20 dB, 5 W, DC to 12.4 GHz, N(m) to N(f)

Attenuators





Part Number Description

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)

S331P Specifications

Optional Accessories (continued)

USB Extender Kit (for 2-port cable loss/transmission (external sensor) measurements)

Model Number Description

2000-1717-R USB Extender, Requires Cat 5e extension cable (sold separately) 2100-28-R Cat 5e extension cable for use with USB Extender (22.5 m)

Backpack and Transit Case



Part Number Description

67135 Anritsu Backpack (for instrument and PC)

760-283 Transit Case, USB 1 Port VNA (for MS46121A and S331P models)

Specifications S331P

Notes

Training at Anritsu

Anritsu has designed courses to help you stay up to date with technologies important to your job. For available training courses, visit: www.anritsu.com/training



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