Anritsu Advancing beyond

# Site Master™

## Compact Handheld Cable & Antenna Analyzer with Spectrum Analyzer

### S331E
2 MHz to 4.0 GHz

### S332E
2 MHz to 4.0 GHz
9 kHz to 4 GHz

Cable and Antenna Analyzer
Spectrum Analyzer

### S361E
2 MHz to 6.0 GHz

### S362E
2 MHz to 6.0 GHz
9 kHz to 6 GHz

Cable and Antenna Analyzer
Spectrum Analyzer

## Introduction

Anritsu introduces its eighth generation compact handheld Cable and Antenna Analyzers with Spectrum Analyzers for installation and maintenance of wireless networks. They feature the highest performance and the most capabilities ever offered by Anritsu in a compact handheld tester since introducing its first line sweeper in 1995.

## Cable and Antenna Analyzer Highlights

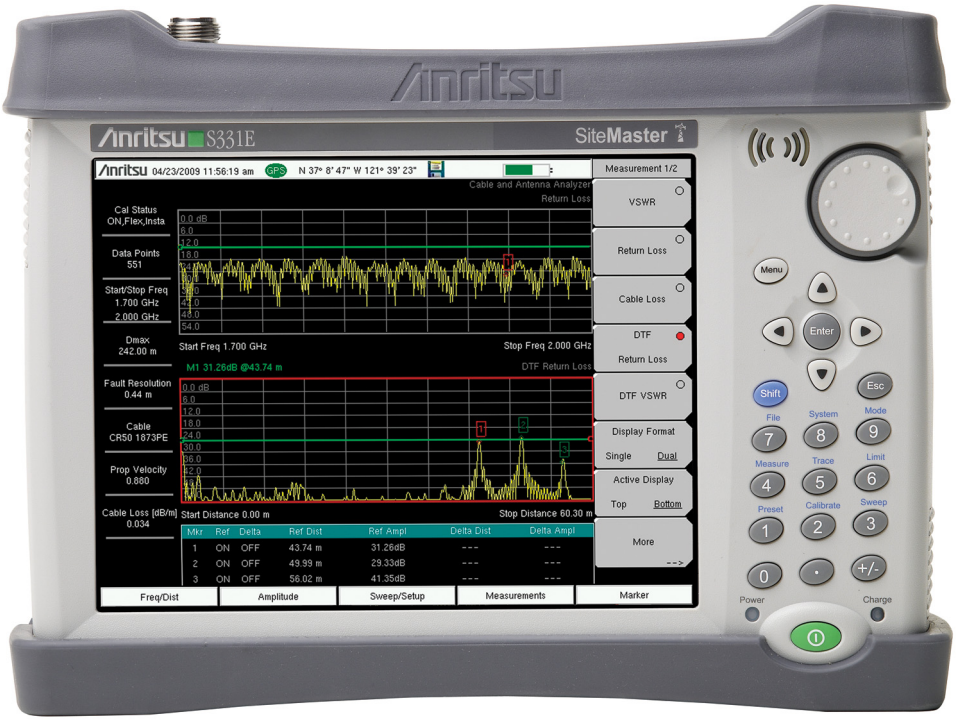
- Measurements: RL, VSWR, Cable Loss, DTF, Phase
- 2-port Transmission Measurement: High/Low Power
- Sweep Speed: 1 ms/data point, typical
- DTF Time Delay
- Display: Single or Dual Measurement Touchscreen
- Calibration: OSL, InstaCal™, and FlexCal™
- Bias Tee: 32 V internal

## Spectrum and Interference Analyzer Highlights

- Measurements: Occupied Bandwidth, Channel Power, ACPR, C/I
- Interference Analyzer: Spectrogram, Signal Strength, RSSI, Signal ID, Interference Mapping
- Dynamic Range: > 95 dB in 10 Hz RBW
- DANL: –152 dBm in 10 Hz RBW
- Phase Noise: –100 dBc/Hz max @ 10 kHz offset at 1 GHz
- Frequency Accuracy: < ± 50 ppb with GPS On

## Capabilities and Functional Highlights

- AM / FM / PM Analyzer
- EMF Test (S332E & S362E)
- High Accuracy Power Meter
- Up to 50 GHz USB Sensors
- PIM Alert Application (S332E & S362E)
- Master Software Tools™
- Line Sweep Tools™
- easyTest Tools™
- USB & Optional Ethernet (Option 413) for data transfer and instrument control
- PIM Hunting
- Certified Line Sweep Training
- E-Learning Training
- Handheld Interference Hunter support (S332E & S362E)
- On-Screen Interference Mapping
- On-Screen Coverage Mapping
- GPS tagging of saved traces
- Increase throughput by automating repetitive or operator intensive tasks via Ethernet or USB. Remote programming provided via Ethernet (Option 413)
- 4.5 hour battery operation time
- Store 2000 Traces internally
- Touchscreen keyboard
- Quick Name Matrix
- < 5 minute warm-up time




Site Master™ S331E Cable & Antenna Analyzer featuring 8.4 inch Daylight Viewable Touchscreen
Compact Size: 273 mm x 199 mm x 91 mm (10.7 in x 7.8 in x 3.6 in), Lightweight: 2.71 kg (6.0 lb)

## Table of Contents



## Definitions

| | |
|---|---|
| Specifications | All specifications and characteristics apply to Revision 2[1] instruments under the following conditions, unless otherwise stated:<br>• After 5 minutes of warm-up time, where the instrument is left in the ON state<br>• Sweep mode set to Performance<br>• When using the internal reference signal |
| Typical Performance | Typical performance is the measured performance of an average unit and is not warranted. |
| Calibration Cycle | Calibration is within the recommended 12 month period. |
| | All specifications subject to change without notice. For the most current data sheet, please visit the Anritsu web site: www.anritsu.com |

1.Applies to instruments with serial number ≥ 1606XXX.

## Cable and Antenna Analyzer

### Measurements

| | |
|---|---|
| Smart Measurements | VSWR<br>Return Loss<br>Cable Loss<br>Distance-to-Fault (DTF) Return Loss<br>Distance-to-Fault (DTF) VSWR<br>1-Port Phase<br>Smith Chart (50/75 Ω selectable)<br>PIM Alert Application (available for download)<br>PIM Hunting |

### Setup Parameters

| | |
|---|---|
| Measurement Display | Single/Dual Measurement Display with independent markers |
| Frequency | Start/Stop, Signal Standard, Start Cal |
| DTF | Start/Stop, DTF Aid, Units (m/ft), Cable Loss, Propagation Velocity, Cable, Windowing |
| Windowing | Rectangular, Normal Side Lobe, Low Side Lobe, Minimum Side Lobe |
| Amplitude | Top, Bottom Auto Scale, Full Scale |
| Sweep | Run/Hold, Single/Continuous, RF Immunity (High/Low), Data Points, Averaging/Smoothing, Output Power (High/Low), RF Pwr When Hold (On/Off) |
| Data Points | 137, 275, 551, 1102, 2204 |
| Markers | Markers 1-6 (On/Off), Delta Makers 1-6 (On/Off), Marker to Peak/Valley, Peak/Valley Auto, DTF Time Delay, Marker Table (On/Off), All Markers Off |
| Traces | Recall, Copy to Display Memory, No Trace Math, Trace ± Memory, (Trace + Memory)/2, and Trace Overlay (On/Off) |
| Limit Line | On/Off, Single Limit, Multi-segment Edit, Limit Alarm (On/Off), Pass Fail Message (On/Off), Pass/Fail (Unbounded/Bounded), Warning Limit Offset, Clear Limit |
| Calibration | Start Cal, Cal Type (Standard/FlexCal™), Disp Valid Cal Temp Range |
| Save | Setups (.stp), Measurements (.dat, .vna, .csv*), Screen Shots (.jpg) *Requires V4.00 firmware or higher |
| Recall | Setups (.stp), Measurements (.dat, .vna) |
| Application Options | Bias-Tee (On/Off), Impedance (50 Ω, 75 Ω, Other) |

### Frequency

| | |
|---|---|
| Frequency Range | 2 MHz to 4 GHz (S331E, S332E), 2 MHz to 6 GHz (S361E, S362E) |
| Frequency Accuracy | ≤ ± 2.5 ppm @ 25 °C |
| Frequency Resolution | 1 kHz (RF immunity low), 100 kHz (RF immunity high) |

### Output Power

| | |
|---|---|
| High | 0 dBm, typical |
| Low | 2 MHz to 1.5 GHz: –40 dBm, typical<br>>1.5 GHz to 4/6 GHz: –30 dBm, typical |

### Interference Immunity

| | |
|---|---|
| On-Channel | +17 dBm @ > 1.0 MHz from carrier frequency |
| On-Frequency | 0 dBm within ± 10 kHz of the carrier frequency |

### Measurement Speed

| | |
|---|---|
| Return Loss | ≤ 1.00 ms/data point, RF immunity low, typical |
| Distance-to-Fault | ≤ 1.25 ms/data point, RF immunity low, typical |

### Return Loss

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

### VSWR

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

### Cable Loss

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

### Distance-to-Fault

| | |
|---|---|
| Vertical Range Return Loss | 0 dB to 60 dB |
| Vertical Range VSWR | 1:1 to 65:1 |
| Fault Resolution (meters) | $(1.5 \times 10^8 \times vp) / \Delta F$ (vp = velocity propagation constant, ΔF is F2–F1 in Hz) |
| Horizontal Range (meters) | 0 to (Data Points–1) x Fault Resolution, to a maximum of 1500 meters (4921 ft) |

## Cable and Antenna Analyzer (continued)

### 1-Port Phase

| | |
|---|---|
| Measurement Range | –180° to +180° |
| Resolution | 0.01° |

### Smith Chart

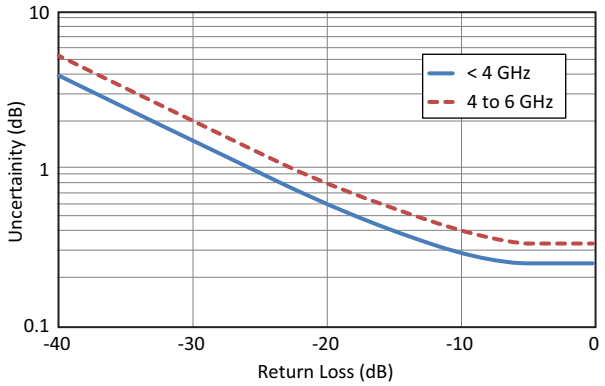
| | |
|---|---|
| Resolution | 0.01 50/75 ohm selectable |

### Measurement Accuracy

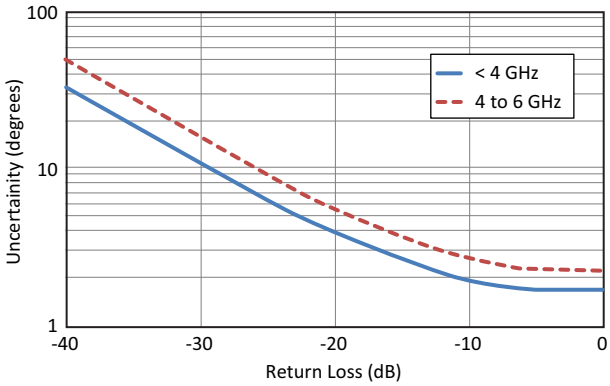
| | |
|---|---|
| Corrected Directivity | > 42 dB, OSL Calibration<br>> 38 dB, InstaCal™ Calibration |

### Measurement Uncertainty

**Reflection Magnitude Uncertainty**




**Reflection Phase Uncertainty**




## 2-Port Transmission Measurement (Option 21)

### Frequency

| | |
|---|---|
| Frequency Range | 2 MHz to 4 GHz (S331E, S332E), 2 MHz to 6 GHz (S361E, S362E) |
| Frequency Resolution | 10 Hz |

### Output Power

| | |
|---|---|
| High | 0 dBm, typical |
| Low | 2 MHz to 1.5 GHz: –40 dBm, typical<br>>1.5 GHz to 4/6 GHz: –30 dBm, typical |

### High Dynamic Range (On)

| | |
|---|---|
| 2 MHz to 4 GHz | 80 dB, 95 dB, typical |
| 4 GHz to 6 GHz | 70 dB, 85 dB, typical |
| Application Options | Bias-Tee (On/Off), Impedance (50 Ω, 75 Ω, Other) |

## Bias-Tee (Option 10) (requires Option 21 for S331E and S361E)

| | |
|---|---|
| Setup | On/Off, Voltage, Current (Low/High) |
| Voltage Range | +12 V to +32 V |
| Current (Low/High) | 250 mA/450 mA, 1 A surge for 100 ms |
| Resolution | 0.1 V |

## Spectrum Analyzer (S332E, S362E only)

### Measurements

| | |
|---|---|
| Smart Measurements | Field Strength (uses antenna calibration tables to measure dBm/m$^2$, dBmV/m, dBV/m, dBµV/m, Volt/m, Watt/m$^2$, dBW/m$^2$, A/m, dBA/m and Watt/cm$^2$)<br>Occupied Bandwidth (measures 99 % to 1 % power channel of a signal)<br>Channel Power (measures the total power in a specified bandwidth)<br>ACPR (adjacent channel power ratio)<br>AM/FM/SSB Demodulation (wide/narrow FM, USB and LSB), (audio out only)<br>C/I (carrier-to-interference ratio)<br>Emission Mask<br>Coverage Mapping (requires Option 431)<br>PIM Alert Application (available for download)<br>PIM Hunting |

### Setup Parameters

| | |
|---|---|
| Frequency | Center/Start/Stop, Span, Frequency Step, Signal Standard, Channel #, Channel Increment |
| Amplitude | Reference Level (RL), Scale, Attenuation Auto/Level, RL Offset, Pre-Amp On/Off, Detection |
| Span | Span, Span Up/Down (1-2-5), Full Span, Zero Span, Last Span |
| Bandwidth | RBW, Auto RBW, VBW, Auto VBW, RBW/VBW, Span/RBW |
| File | Save, Save-on-Event, Recall, Copy, Delete |
| Save | Setups, Measurements, Screen Shots (JPEG), Limit Lines, Spurious Emission Mask |
| Save-on-Event | Crossing Limit Line, Sweep Complete, Save-then-Stop, Clear All |
| Recall | Setups, Measurements, Limit Lines, Spurious Emission Mask |
| Copy | Selected file or files to internal/external memory (USB) |
| Delete | Selected file or files from internal/external memory (USB) |
| Application Options | Bias-Tee (On/Off), Impedance (50 Ω, 75 Ω, Other) |

### Sweep Functions

| | |
|---|---|
| Sweep | Single/Continuous, Sweep Mode (Fast, Performance, No FFT), Reset, Detection, Minimum Sweep Time, Trigger Type, Gated Sweep (see Option 90) |
| Detection | Peak, RMS, Negative, Sample, Quasi-peak |
| Triggers | Free Run, External, Video, Change Position, Manual |

### Trace Functions

| | |
|---|---|
| Traces | Up to three Traces (A, B, C), View/Blank, Write/Hold, Trace A/B/C Operations |
| Trace A Operations | Normal, Max Hold, Min Hold, Average, # of Averages, (always the live trace) |
| Trace B Operations | A → B, B ↔ C, Max Hold, Min Hold |
| Trace C Operations | A → C, B ↔ C, Max Hold, Min Hold, A – B → C, B – A → C, Relative Reference (dB), Scale |

### Marker Functions

| | |
|---|---|
| Markers | Markers 1-6 each with a Delta Marker, or Marker 1 Reference with Six Delta Markers, Marker Table (On/Off), All Markers Off |
| Marker Types | Style (Fixed/Tracking), Noise Marker, Frequency Counter Marker |
| Marker Auto-Position | Peak Search, Next Peak (Right/Left), Peak Threshold %, Set Marker to Channel, Marker Frequency to Center, Delta Marker to Span, Marker to Reference Level |
| Marker Table | 1-6 markers frequency and amplitude plus delta markers frequency amplitude and offset |

### Limit Line Functions

| | |
|---|---|
| Limit Lines | Upper/Lower, On/Off, Edit, Move, Envelope, Advanced, Limit Alarm, Default Limit |
| Limit Line Edit | Frequency, Amplitude, Add Point, Add Vertical, Delete Point, Next Point Left/Right |
| Limit Line Move | To Current Center Frequency, By dB or Hz, To Marker 1, Offset from Marker 1 |
| Limit Line Envelope | Create Envelope, Update Amplitude, Points (41 max), Offset, Shape Square/Slope |
| Limit Line Advanced | Type (Absolute/Relative), Mirror, Save/Recall |

### Frequency

| | |
|---|---|
| Frequency Range | 9 kHz to 4 GHz (S332E), 9 kHz to 6 GHz (S362E) (useable to 0 Hz) |
| Tuning Resolution | 1 Hz |
| Frequency Reference | Aging: ± 1.0 ppm/year<br>Accuracy: ± 1.5 ppm (25 °C ± 25 °C) + aging, < ± 50 ppb with GPS On |
| Frequency Span | 10 Hz to 4 GHz including zero span (S332E), 10 Hz to 6 GHz including zero span (S362E) |
| Sweep Time | Minimum 100 ms, 7 µs to 3600 s in zero span |
| Sweep Time Accuracy | ± 2 % in zero span |

### Bandwidth

| | |
|---|---|
| Resolution Bandwidth (RBW) | 10 Hz to 3 MHz in 1–3 sequence ± 10% (1 MHz max in zero-span) (–3 dB bandwidth) |
| Video Bandwidth (VBW) | 1 Hz to 3 MHz in 1–3 sequence (–3 dB bandwidth) (auto or manually selectable) |
| RBW with Quasi-Peak Detection | 200 Hz, 9 kHz, 120 kHz (–6 dB bandwidth) |
| VBW with Quasi-Peak Detection | Auto VBW is On, RBW/VBW = 1 |

## Spectrum Analyzer (S332E, S362E only) (continued)

### Spectral Purity

| | |
|---|---|
| SSB Phase Noise @ 1 GHz | –100 dBc/Hz, –110 dBc/Hz typical @ 10 kHz offset |
| | –105 dBc/Hz, –112 dBc/Hz typical @ 100 kHz offset |
| | –115 dBc/Hz, –121 dBc/Hz typical @ 1 MHz offset |

### Amplitude Ranges

| | |
|---|---|
| Dynamic Range | > 95 dB (2.4 GHz), 2/3 (TOI-DANL) in 10 Hz RBW |
| Measurement Range | DANL to +26 dBm (≥ 50 MHz) |
| | DANL to 0 dBm (< 50 MHz) |
| Display Range | 1 dB to 15 dB/div in 1 dB steps, ten divisions displayed |
| Reference Level Range | –150 dBm to +30 dBm |
| Attenuator Range | 0 dB to 55 dB in 5 dB steps |
| Maximum Continuous Input | +30 dBm |
| Amplitude Units | Log Scale Modes: dBW, dBm, dBµW, dBV, dBmV, dBµV, dBA, dBmA, dBµA |
| | Linear Scale Modes: nV, µV, mV, V, kV, nW, µW, mW, W, kW, nA, µA, mA, A |

### Amplitude Accuracy

| | |
|---|---|
| 9 kHz to 100 kHz | ± 2.0 dB typical (Preamp Off) |
| 100 kHz to 4.0 GHz | ± 1.25 dB, ± 0.5 dB typical |
| > 4.0 GHz to 6 GHz | ± 1.50 dB, ± 0.5 dB typical |

### Displayed Average Noise Level (DANL)

| | Preamp Off (Reference Level –20 dBm) | | Preamp On (Reference Level –50 dBm) | |
|---|---|---|---|---|
| (RBW Normalized to 1 Hz, 0 dB attenuation) | Maximum | Typical | Maximum | Typical |
| 10 MHz to 2.4 GHz | –141 dBm | –146 dBm | –157 dBm | –162 dBm |
| > 2.4 GHz to 4 GHz | –137 dBm | –141 dBm | –154 dBm | –159 dBm |
| > 4 GHz to 5 GHz | –134 dBm | –138 dBm | –150 dBm | –155 dBm |
| > 5 GHz to 6 GHz | –126 dBm | –131 dBm | –143 dBm | –150 dBm |
| (RBW = 10 Hz, 0 dB attenuation | | | | |
| 10 MHz to 2.4 GHz | –131 dBm | –136 dBm | –147 dBm | –152 dBm |
| > 2.4 GHz to 4 GHz | –127 dBm | –131 dBm | –144 dBm | –149 dBm |
| > 4 GHz to 5 GHz | –124 dBm | –128 dBm | –140 dBm | –145 dBm |
| > 5 GHz to 6 GHz | –116 dBm | –121 dBm | –133 dBm | –140 dBm |

### Spurs

| | |
|---|---|
| Residual Spurious | < –90 dBm (RF input terminated, 0 dB input attenuation, > 10 MHz) |
| Input-Related Spurious | < –75 dBc (0 dB attenuation, –30 dBm input, span < 1.7 GHz, carrier offset > 4.5 MHz) |
| Exceptions, typical | < –70 dBc @ < 2.5 GHz, with 2072.5 MHz Input |
| | < –68 dBc @ F1 – 280 MHz with F1 Input |
| | < –70 dBc @ F1 + 190.5 MHz with F1 Input |
| | < –52 dBc @ 7349 – (2F2) MHz, with F2 Input, where F2 < 2437.5 MHz |
| | < –55 dBc @ 190.5 ± (F1/2) MHz, where F1 < 1 GHz |

### Third-Order Intercept (TOI)

| | Preamp Off (–20 dBm tones 100 kHz apart, 10 dB attenuation) |
|---|---|
| 800 MHz | +16 dBm |
| 2400 MHz | +20 dBm |
| 200 MHz to 2200 MHz | +25 dBm, typical |
| > 2.2 GHz to 5.0 GHz | +28 dBm, typical |
| > 5.0 GHz to 6.0 GHz | +33 dBm, typical |

### Second Harmonic Distortion

| | Preamp Off, 0 dB input attenuation, –30 dBm input |
|---|---|
| 50 MHz | –56 dBc |
| > 50 MHz to 200 MHz | –60 dBc, typical |
| > 200 MHz to 3000 MHz | –70 dBc, typical |

### VSWR

2:1, typical

## Coverage Mapping (Option 431) (S332E, S362E only; requires Option 31 GPS)

### Measurements

| | |
|---|---|
| Indoor Mapping | RSSI, ACPR |
| Outdoor Mapping | RSSI, ACPR |

### Setup Parameters

| | |
|---|---|
| Frequency | Center/Start/Stop, Span, Freq Step, Signal Standard, Channel #, Channel Increment |
| Amplitude | Reference Level (RL), Scale, Attenuation Auto/Level, RL Offset, Pre-Amp On/Off, Detection |
| Span | Span, Span Up/Down (1-2-5), Full Span, Zero Span, Last Span |
| BW | RBW, Auto RBW, VBW, Auto VBW, RBW/VBW, Span/VBW |
| Measurement Setup | ACPR, RSSI |
| Point Distance / Time Setup | Repeat Type Time Distance |
| Save Points Map | Save KML, JPEG, Tab Delimited |
| Recall Points Map | Recall Map, Recall KML Points only, Recall KML Points with Map, Recall Default Grid |

## Interference Analyzer (Option 25) (S332E, S362E only)

### Measurements

| | |
|---|---|
| Spectrum | Field Strength<br>Occupied Bandwidth<br>Channel Power<br>Adjacent Channel Power Ratio (ACPR)<br>AM/FM/SSB Demodulation (Wide/Narrow FM, Upper/Lower SSB), (audio out only)<br>Carrier-to-Interference ratio (C/I) |
| Spectrogram | Collect data up to 72 hours |
| Signal Strength | Gives visual and aural indication of signal strength |
| Received Signal Strength Indicator (RSSI) | Collect data up to 168 hours (one week)<br>Gives visual and aural indication of signal strength |
| Signal ID (up to 12 signals) | Center Frequency<br>Bandwidth<br>Signal Type (FM, GSM, W-CDMA, CDMA, Wi-Fi)<br>Closest Channel Number<br>Number of Carriers |
| Signal-to-Noise Ratio (SNR) | > 10 dB |
| Interference Mapping | Triangulate location of interference with on-display maps |
| Application Options | Bias-Tee (On/Off), Impedance (50 Ω, 75 Ω, Other)<br>Support for MA2700A Handheld Interference Hunter |

## GPS Receiver (Option 31) (requires external GPS antenna, sold separately)

| | |
|---|---|
| Setup | On/Off, Antenna Voltage 3.3/5.0 V, GPS Info |
| GPS Time/Location Indicator | Time, Latitude, Longitude and Altitude on display<br>Time, Latitude, Longitude and Altitude with trace storage |
| High Frequency Accuracy | Spectrum Analyzer, Interference Analyzer, CW Signal Analyzers<br>< ± 50 ppb with GPS On, GPS antenna connected, 3 minutes after satellite lock in selected mode |
| Connector | SMA, Female |

## Channel Scanner (Option 27) (S332E, S362E only)

| | |
|---|---|
| Number of Channels | 1 to 20 Channels |
| Measurements | Graph/Table, Max Hold (On/5 s/Off), Freq/Channel, Current/Max, Single/Dual Color |
| Scanner | Scan Channels, Scan Frequencies, Scan Customer List, Scan Script Master™ |
| Amplitude | Reference Level, Scale |
| Custom Scan | Signal Standard, Channel, # of Channels, Channel Step Size, Custom Scan |
| Frequency Range | 9 kHz to 4 GHz (S332E), 9 kHz to 6 GHz (S362E) |
| Frequency Accuracy | ± 10 Hz + Time base error |
| Measurement Range | –110 dBm to +26 dBm |
| Application Options | Bias-Tee (On/Off), Impedance (50 Ω, 75 Ω, Other) |

## CW Signal Generator (Option 28) (S332E, S362E only; requires CW Signal Generator Kit, P/N 69793)

### Setup Parameters

| | |
|---|---|
| Frequency | Frequency, Signal Standard, Channel Number, Display Setup Help |
| Amplitude | Power Level (Low/High), Offset (dB) |
| Frequency Range | 2 MHz to 2 GHz |
| Frequency Reference | Accuracy: ± 1.5 ppm (25 °C ± 25 °C) + aging, < ± 50 ppb with GPS On |
| Output Power | High 0 dBm typical, Low –30 dBm typical<br>Attenuator (included in kit 69793): 0 to 90 dB in 1 dB steps |

## Gated Sweep (Option 90) (S332E, S362E only)

| | |
|---|---|
| Mode | Spectrum Analyzer, Sweep |
| Trigger | External TTL |
| Setup | Gated Sweep (On/Off)<br>Gate Polarity (Rising, Falling)<br>Gate Delay (0 ms to 65 ms typical)<br>Gate Length (1 μs to 65 ms typical)<br>Zero Span Time |

## Electromagnetic Field Test (Option 444) (S332E, S362E only)

### Measurements

| | |
|---|---|
| Setup | Limit lines, axis dwell time, measurement time, auto-logging, measurement units, trace display |
| Spectrum Analyzer | Field strength is measured |
| Units | dBm/m$^2$, dBV/m, dBmV/m, dBuV/m, V/m, W/m$^2$, dBW/m$^2$, A/m, dBA/m, W/cm$^2$ |
| Results | Maximum, minimum, and average of all measurements conducted |
| Display | Measurement status, number of measurements taken, pass/fail indicators |

### Frequency Range

| Supported Antenna | |
|---|---|
| 2000-1800-R | 9 kHz to 300 MHz |
| 2000-1792-R | 30 MHz to 3 GHz |
| 2000-1791-R | 700 MHz to 6 GHz |

### Modes where EMF Measurements Available

Spectrum Analyzer

## Ethernet Connectivity (Option 413)

| | |
|---|---|
| Connector | RJ45 |
| LAN Speed | 10 Mbps |
| Mode | Static, DHCP |
| Static IP settings | IP address<br>Subnet Mask<br>IP Gateway |
| Remote Control | Remote capability provided with Web Remote Control and SCPI programming |
| Data Upload | With Line Sweep Tools through Ethernet connection |

## Power Meter (Option 29) (S332E, S362E only)

### General

| | |
|---|---|
| Frequency | Center/Start/Stop, Span, Frequency Step, Signal Standard, Channel #, Full Band |
| Amplitude | Maximum, Minimum, Offset, Relative On/Off, Units, Auto Scale |
| Average | Acquisition Fast/Med/Slow, # of Running Averages |
| Limits | Limit On/Off, Limit Upper/Lower |
| Frequency Range | 10 MHz to 4 GHz (S332E), 10 MHz to 6 GHz (S362E) |
| Span | 1 kHz to 100 MHz |
| Display Range | –140 dBm to +30 dBm, ≤ 40 dB span |
| Measurement Range | –120 dBm to +26 dBm |
| Offset Range | 0 dB to +100 dB (External Gain or Loss) |
| VSWR | 2:1 typical |
| Maximum Continuous Input Power | +30 dBm without attenuator |
| Accuracy | Same as Spectrum Analyzer |
| Application Options | Impedance (50 Ω, 75 Ω, Other) |

## High Accuracy Power Meter (Option 19) (requires external USB Power Sensors)

| | |
|---|---|
| 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 Ω | Type N(m), 50 Ω | Type N(m), 50 Ω (8/18 GHz)<br>Type K(m), 50 Ω (26 GHz) | Type N(m), 50 Ω | Type K(m), 50 Ω (33/40 GHz)<br>Type V(m), 50 Ω (50 GHz) |
| Dynamic Range | +3 dBm to +51.76 dBm (2 mW to 150 W) | –40 dBm to +23 dBm (0.1 µW to 200 mW) | –40 dBm to +20 dBm (0.1 µW to 100 mW) | –60 dBm to +20 dBm (1 nW to 100 mW) | –70 dBm to +20 dBm (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 | ± 0.17 dB[a] | ± 0.16 dB[b] | ± 0.18 dB[c] | ± 0.17 dB[d] | ± 0.17 dB[e] |
| Data sheet (for complete specifications) | 11410-00621 | 11410-00424 | 11410-00504 | 11410-00841 | 11410-00906 |

Notes:

a. 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.
b. Total RSS measurement uncertainty (0 °C to 50 °C) for power measurements of a CW signal greater than –20 dBm with zero mismatch errors.
c. Expanded uncertainty with K=2 for power measurements of a CW signal greater than –20 dBm with zero mismatch errors.
d. 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.
e. Includes linearity over temperature uncertainties, but not the effects of calibration factor, mismatch, zero set and drift, and noise.

## AM/FM/PM Signal Analyzers (Option 509) (S332E, S362E only)

### Measurements

| Display Type | RF Spectrum AM/FM/PM | Audio Spectrum (AM) | Audio Spectrum (FM/PM) | Audio Waveform (AM) | Audio Waveform (FM/PM) | Summary (AM) | Summary (FM/PM) |
|---|---|---|---|---|---|---|---|
| Graphic Display | Power (dBm) vs. Frequency | Depth (%) vs. Modulation Frequency | Deviation (kHz/rad) vs. Modulation Frequency | Depth (%) vs. Time | Deviation (kHz/rad) vs. Time | None | None |
| Numerical Displays | Carrier Power<br>Carrier Frequency<br>Occupied Bandwidth | AM Rate<br>RMS Depth<br>(Pk-Pk)/2 Depth<br>SINAD*<br>THD*<br>Distortion/Total Vrms* | FM/PM Rate<br>RMS Deviation<br>(Pk-Pk)/2 Deviation<br>SINAD*<br>THD*<br>Distortion/Total Vrms* | AM Rate<br>RMS Depth<br>(Pk-Pk)/2 Depth<br>SINAD*<br>THD*<br>Distortion/Total Vrms* | FM/PM Rate<br>RMS Depth<br>(Pk-Pk)/2 Depth<br>SINAD*<br>THD*<br>Distortion/Total Vrms* | RMS Depth (AM)<br>Peak + Depth<br>Peak – Depth<br>(Pk-Pk)/2 Depth<br>Carrier Power<br>Carrier Frequency<br>Occupied Bandwidth<br>AM Rate<br>SINAD*<br>THD*<br>Distortion/Total Vrms* | RMS Deviation (FM/PM)<br>Peak + Depth<br>Peak – Depth<br>(Pk-Pk)/2 Depth<br>Carrier Power<br>Carrier Frequency<br>Occupied Bandwidth<br>AM Rate<br>SINAD*<br>THD*<br>Distortion/Total Vrms* |

* Requires Sinewave modulation

### Setup Parameters

| | |
|---|---|
| Frequency | Center Freq, Span, Freq Step, Signal Standard, Channel, Channel Increment, Set Carrier Freq |
| Amplitude | Scale, Power Offset, Adjust Range |
| Setup | Demod Type (AM, FM, PM), IFBW, Auto IFBW |
| Measurements | RF Spectrum AM/FM/PM, Audio Spectrum (AM/FM/PM), Audio Waveform (AM/FM/PM), Summary (AM/FM/PM), Average |
| Marker | On/Off, Delta, Peak Search, Marker Freq to Center, Marker to Ref Lvl, Marker Table, All Markers Off |

### Specifications

| | |
|---|---|
| AM | Modulation Rate: ± 1 Hz (< 100 Hz), ± 2% (> 100 Hz)<br>Depth: ± 5% for (Modulation rates 10 Hz to 100 kHz) |
| FM | Modulation Rate: ± 1 Hz (< 100 Hz); ± 2% (100 Hz to 100 kHz)<br>Deviation Accuracy: ± 5%<br>(100 Hz to 100 kHz, IFBW must be greater than 95 % occupied BW) |
| PM | Modulation Rate: ± 1 Hz (< 100 Hz); ± 2% (100 Hz to 100 kHz)<br>Deviation Accuracy: ± 5%<br>(deviation 0 to 93 Rad, rate 10 Hz to 5 kHz, IFBW must be greater than 95 % occupied BW) |
| IF bandwidth | 1 kHz to 300 kHz in 1-3 sequence |
| Frequency Span | RF Spectrum: 10 kHz to 10 MHz<br>Audio Spectrum: 2 kHz, 5 kHz, 10 kHz, 20 kHz, 70 kHz, 140 kHz |
| RBW/VBW | 30 |
| Span/RBW | 100 |
| Sweep time | 50 µs to 50 ms (Audio Waveform) |

## General Specifications

| | | |
|---|---|---|
| **System Parameters** | System | Status (Temperature, Battery Info, Serial Number, Firmware Version, Options Installed)<br>Self Test, Application Self Test, GPS (see Option 31) |
| | System Options | Name, Date and Time, Brightness, Volume<br>Language (English, French, German, Spanish, Chinese, Japanese, Korean, Italian, Russian, Portuguese)<br>Reset (Factory Defaults, Master Reset, Update Firmware) |
| | Internal Trace/Setup Memory | 2,000 traces, 2,000 setups |
| | External Trace/Setup Memory | Limited by size of USB Flash drive |
| | Mode Switching | Auto-Stores/Recalls most recently used Setup Parameters in the Mode |
| **File Management** | File Types | Vary with measurement mode |
| | File | Save, Recall, Copy, Delete |
| | Save | Setups, Measurements, Screen Shots (JPEG) |
| | Recall | Setups, Measurements |
| | Copy | Selected file or files to internal/external memory (USB) |
| | Delete | Selected file or files from internal/external memory (USB) |
| | File Sort Method | By Name/Date/Type, Ascend/Descend |
| **Connectors** | RF Out | Type N, female, 50 Ω (Reflection In) |
| | RF Out Damage Level | +42 dBm, ± 50 VDC |
| | RF In | Type N, female, 50 Ω |
| | RF Input Damage Level | +30 dBm peak, ± 50 VDC, Maximum Continuous Input (≥ 10 dB attenuation) |
| | GPS | SMA(f) |
| | External Power | 5.5 mm barrel connector, 12.5 VDC to 15 VDC, < 4.0 Amps |
| | USB Interface (2) | Type A (Connect USB Flash Drive and Power Sensor) |
| | USB Interface | 5-pin mini-B (Connect to PC for data transfer) |
| | Ethernet Interface | RJ45 connector for Ethernet 10-Base T (available with Option 413 Ethernet) |
| | Headset Jack | 3.5 mm mini-phone plug |
| | External Reference In | BNC, female, Maximum Input +10 dBm, 1 MHz, 5 MHz, 10 MHz, 13 MHz |
| | External Trigger/Clock Recovery | BNC, female, Maximum Input ± 5.0 VDC |
| **Display** | Type | Resistive Touchscreen |
| | Size | 8.4" daylight viewable color LCD |
| | Resolution | 800 x 600 |
| | Pixel Defects | No more than five defective pixels (99.9989% good pixels) |
| **Battery** | Type | Li-Ion |
| | Battery Operation | 4.5 hours, typical (S331E, S361E), 3.5 hours, typical (S332E, S362E) |
| **Regulatory Compliance** | | |
| | European Union | EMC 2014/30/EU, EN 61326-1:2013<br>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 + 2015/863 |
| | United Kingdom | EMC SI 2016/1091; BS EN 55011 & BS 61000-4-2/3/4/5/6/8/11; Consumer Protection (Safety) SI 2016/1101; BS EN 61010-1:2010; Environmental Protection SI 2012/3032;2011/65/EU & 2015/863 |
| | Australia and New Zealand | RCM AS/NZS 4417:2012 |
| | South Korea | KCC-REM-A21+-0004 |
| | Canada | ICES-1(A)/NMB-1(A) |
| **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 $g_n$ |
| | 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 |
| | Ingress Protection Rating | Complies with IP51 |
| **ESD** | RF Port Center Pin | Withstands up to ± 15 kV |
| **Size and Weight** | Size | 273 mm x 199 mm x 91 mm (10.7 in x 7.8 in x 3.6 in) |
| | Weight | 2.71 kg, (6.0 lb), (S331E, S361E)<br>3.71 kg, (8.2 lb), (S332E, S362E) |
| **Warranty** | Duration | Standard three-year warranty (one-year warranty on battery) |

## Line Sweep Tools (for your PC)

| | |
|---|---|
| **Trace Capture** | |
| Browse to Instrument | View and copy traces from the test equipment to your PC using Windows Explorer |
| Open Legacy Files | Open DAT files captured with Hand Held Software Tools v6.61 |
| Open Current Files | Open VNA or DAT files |
| Capture Plots To | The Line Sweep Tools screen, DAT files, Database, or JPEG |
| **Traces** | |
| Trace Types | Return Loss, VSWR, DTF-RL, DTF-VSWR, Cable Loss, Smith Chart, and PIM |
| Trace Formats | DAT, VNA, CSV, PNG, BMP, JPG, HTML, Data Base, and PDF |
| **Report Generation** | |
| Report Generator | Includes GPS location along with measurements |
| Report Format | Create reports in HTML or PDF format |
| Report Setup | Report Title, Company, Prepared for, Location, Date and Time, Filename, Company logo |
| Trace Setup | 1 Trace Portrait Mode, 2 Trace Portrait Mode, 1 Trace Landscape Mode |
| **Trace Validation** | |
| Presets | 7 presets allow “one click” setting of up to 6 markers and one limit line |
| Marker Controls | 6 regular Markers, Marker Peak, Marker Valley, Marker between, and frequency entry |
| Delta Markers | 6 Delta markers |
| Limit Line | Enable and drag or value entry. Also works with presets |
| Next Trace Button | Next Trace and Previous trace arrow keys allow quick switching between traces |
| **Tools** | |
| Cable Editor | Allows creation of custom cable parameters |
| Distance to Fault | Converts a Return Loss trace to a Distance to Fault trace |
| Measurement Calculator | Converts Real, Imaginary, Magnitude, Phase, RL, VSWR, Rho, and Transmit power |
| Signal Standard Editor | Creates new band and channel tables |
| Renaming Grid | 36 user definable phrases for creation of file names, trace titles, and trace subtitles |
| **Connectivity** | |
| Connections | USB cable, USB Memory Stick |

## 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 | Ethernet, USB cable or USB memory stick (Ethernet requires Option 413) |

## Master Software Tools (for your PC)

| | |
|---|---|
| **Mapping** (GPS Required) | |
| Spectrum Analyzer Mode | MapInfo, MapPoint |
| Mobile WiMAX OTA, LTE OTA Options | Google Earth, Google Maps, MapInfo |
| **Folder Spectrogram** (Spectrum Monitoring for Interference Analysis and Spectrum Clearing) | |
| Folder Spectrogram – 2D View | Creates a composite file of multiple traces<br>Peak Power, Total Power, Peak Frequency, Histogram, Average Power (Max/Min)<br>File Filter (Violations over limit lines or deviations from averages)<br>Playback |
| Video Folder Spectrogram – 2D View | Create AVI file to export for management review/reports |
| Folder Spectrogram – 3D View | Views (Set Threshold, Markers)<br>- 3D (Rotate X, Y, Z Axis, Level Scale, Signal ID)<br>- Playback (Frequency and/or Time Domain) |
| **List/Parameter Editors** | |
| Traces | Add, delete, and modify limit lines and markers |
| Product Updates | Auto-checks Anritsu website for latest revision firmware |
| Pass/Fail | Create, download, or edit Signal Analysis Pass/Fail Limits |
| Languages | Add custom language or modify non-English language menus |
| **Connectivity** | |
| Connections | Connect to PC using USB or Ethernet (Ethernet requires Option 413) |
| Remote Operation | Operate unit remotely with MST Remote Access Tool |

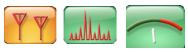
## Web Remote Control (requires Ethernet Option 413)

| | |
|---|---|
| Control | Full instrument control through a browser – all instrument functions except power switch and rotary knob |
| Connections | RJ45 Ethernet jack<br>Third party Wi-Fi router |
| Protocol | HTTP/TCP/IP |
| Physical Layer | Cat 5 Cable, Wi-Fi router compatible |
| Software Required | HTML 5 Compliant Browser – Newer versions of Chrome, Firefox, Internet Explorer and others |
| Operating System | iOS, Windows, Linux, Android operating systems that can host the HTML 5 Compliant browser |
| Remote Hardware | PCs, Tablets, and Smart Phones with Ethernet or Wi-Fi connections and a HTML 5 Compliant browser |
| Download | Individual instrument files downloaded via browser<br>Multiple instrument files and directories zipped and downloaded via browser<br>Screen capture capability |
| Display Modes | Normal: All modes & displays supported<br>Fast: Spectrum traces update faster (up to 5 updates per second) |
| Password | The instrument can be password protected<br>Passwords may be used to manage who is controlling the instrument |
| Users/Instruments | One user/device can view and control many instruments |

## Programmable Remote Control

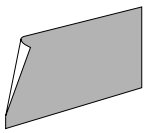
| | |
|---|---|
| Functionality | Many instrument functions are programmable. See the Programming Manual for details. |
| Programming Language | Standard Commands for Programmable Instruments (SCPI) |
| Interfaces | USB, Ethernet (with Option 413) |
| Available Drivers | LabView (visit NI.com for driver) |

## Ordering Information – Options

| | S331E | S332E | S361E | S362E | Description |
|---|---|---|---|---|---|
| | 2 MHz to 4 GHz | 2 MHz to 4 GHz | 2 MHz to 6 GHz | 2 MHz to 6 GHz | Cable and Antenna Analyzer |
| | | 9 kHz to 4 GHz | | 9 kHz to 6 GHz | Spectrum Analyzer |
| | **Options** | **Options** | **Options** | **Options** | |
|  | S331E-0021 | S332E-0021 | S361E-0021 | S362E-0021 | 2-Port Transmission Measurement |
| | S331E-0010 | S332E-0010 | S361E-0010 | S362E-0010 | Bias-Tee (requires Option 21 for S331E /S361E) |
|  | S331E-0019 | S332E-0019 | S361E-0019 | S362E-0019 | High-Accuracy Power Meter (requires External Power Sensor) |
|  | | S332E-0029 | | S362E-0029 | Power Meter |
|  | | S332E-0025 | | S362E-0025 | Interference Analyzer (recommend Option 31) |
|  | | S332E-0027 | | S362E-0027 | Channel Scanner |
|  | | S332E-0028 | | S362E-0028 | C/W Signal Generator (requires CW Signal Generator Kit, P/N 69793) |
| | S331E-0031 | S332E-0031 | S361E-0031 | S362E-0031 | GPS Receiver (requires GPS Antenna) |
| | | S332E-0090 | | S362E-0090 | Gated Sweep |
| | S331E-0413 | S332E-0413 | S361E-0413 | S362E-0413 | Ethernet Connectivity |
|  | | S332E-0431 | | S362E-0431 | Coverage Mapping (requires Option 31) |
|  | | S332E-0444 | | S362E-0444 | EMF Measurements (requires Anritsu Isotropic Antenna) |
|  | | S332E-0509 | | S362E-0509 | AM/FM/PM Analyzer |
| | S331E-0098 | S332E-0098 | S361E-0098 | S362E-0098 | Standard Calibration to ISO17025 and ANSI/NCSL Z540-1. Includes calibration certificate. |
| | S331E-0099 | S332E-0099 | S361E-0099 | S362E-0099 | Premium Calibration to ISO17025 and ANSI/NCSL Z540-1. Includes calibration certificate, test report, and uncertainty data. |

## Standard Accessories (included with instrument)

| Accessory | Description |
|---|---|
|  | 2000-1654-R<br>Soft Carrying Case |
|  | 2000-1691-R<br>Stylus with Coiled Tether |
|  | 633-75<br>Rechargeable Li-Ion Battery, 7500 mAh |
|  | 806-141-R<br>Automotive Power Adapter, 12 VDC, 60 W |

| Accessory | Description |
|---|---|
|  | 2000-1797-R<br>Screen Protector Film, 8.4 inch (2, one installed) |
|  | 3-2000-1498<br>USB A/5-pin mini-B Cable, 10 ft |
|  | 40-187-R<br>AC-DC Adapter with AC power Cord (country dependent) |

## USB Power Sensors (for complete ordering information, see the respective data sheets of each sensor)

| Accessory | Description |
|---|---|
|  | MA24330A<br>Microwave CW USB Power Sensor, 10 MHz to 33 GHz, +20 dBm |
| | MA24340A<br>Microwave CW USB Power Sensor, 10 MHz to 40 GHz, +20 dBm |
| | MA24350A<br>Microwave CW USB Power Sensor, 10 MHz to 50 GHz, +20 dBm |
|  | MA24208A<br>Microwave Universal USB Power Sensor, 10 MHz to 8 GHz, +20 dBm to –60 dBm |
| | MA24218A<br>Microwave Universal USB Power Sensor, 10 MHz to 18 GHz, +20 dBm to –60 dBm |
|  | MA24106A<br>High Accuracy RF Power Sensor, 50 MHz to 6 GHz, +23 dBm to –40 dBm |

| Accessory | Description |
|---|---|
|  | MA24108A<br>Microwave USB Power Sensor, 10 MHz to 8 GHz, +20 dBm to –40 dBm |
| | MA24118A<br>Microwave USB Power Sensor, 10 MHz to 18 GHz, +20 dBm to –40 dBm |
| | MA24126A<br>Microwave USB Power Sensor, 10 MHz to 26 GHz, +20 dBm to –40 dBm |
|  | MA24105A<br>Inline Dual Directional High Power Sensor, 350 MHz to 4 GHz, +3 dBm to +51.76 dBm |
|  | MA25100A<br>RF Power Indicator |

## Optional Accessories

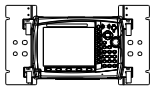
### Backpack and Transit Case

| Accessory | Description |
|---|---|
|  | 67135<br>Anritsu Backpack (for Handheld Instrument and PC) |
|  | 760-243-R<br>Large Transit Case with Wheels and Handle<br>56 cm x 45.5 cm x 26.5 cm (22.07" x 17.92" x 10.42") |
|  | 760-286-R<br>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") |

| Accessory | Description |
|---|---|
|  | 760-261-R<br>Large Transit Case with Wheels and Handle<br>63.1 cm x 50 cm x 30 cm (24.83" x 19.69" x 11.88"), space for MA2700A, antennas, filters, instrument inside soft case, and other interference hunting accessories/tools |
|  | 760-262-R<br>Transit Case for MA2700A, holds several Yagi antennas and filters/port extender<br>96.8 x 40.6 x 15.5 cm (38.12" x 16.00" x 6.12") |
|  | 760-271-R<br>Transit Case for Portable Directional Antennas and Port Extender<br>52.4 cm x 42.8 cm x 20.6 cm (20.62" x 16.87" x 8.12")<br>(for 2000-1777-R, 2000-1778-R, 2000-1779-R, 2000-1798-R) |

### Miscellaneous Accessories

| Accessory | Description |
|---|---|
| | 69793<br>CW Signal Generator Kit |
|  | 2000-1374-R<br>External Charger for Li-Ion Batteries |
|  | 2000-1371-R<br>Ethernet Cable, 213 cm (7 ft) |
|  | MA2700A<br>Handheld Interference Hunter (For full specifications, refer to the MA2700A Technical Data Sheet 11410-00692) |

| Accessory | Description |
|---|---|
|  | 2000-2149-R<br>EMI Near-Field Probe Kit, 100 kHz to 1 GHz<br>Requires 1092-172-R Type N to BNC Adapter and 1 m BNC to BNC Cable (sold separately)<br>(For full specifications, refer to the Near-Field Probe Set User Guide 10580-00347) |
|  | 66864<br>Rack Mount Kit, Master Platform |
|  | 3-806-152<br>Cat 5e Crossover Patch Cable, 213 cm (7 ft) |
|  | 2000-1884-R<br>PIM Hunter™ Test Probe (For full specifications, refer to the 2000-1884-R Technical Data Sheet 11410-00999) |

## Coaxial Calibration Components, 50 Ω

| Accessory | Description |
|---|---|
|  | ICN50B<br>InstaCal™ Calibration Module, 38 dB, 2 MHz to 6 GHz, N(m), 50 Ω |
|  | OSLNF50A<br>High Performance Type N (f), DC to 8 GHz, 50 Ω |
|  | 2000-1915-R<br>Precision Open/Short/Load, 4.3-10(m), DC to 6 GHz, 50 Ω |
|  | 2000-1619-R<br>Precision Open/Short/Load, 7/16 DIN(f), DC to 6 GHz 50 Ω |
|  | 22NF50<br>Open/Short, N(f), DC to 18 GHz, 50 Ω |
|  | SM/PLNF-1<br>Precision Load, N(f), 42 dB, 6 GHz, 50 Ω |

| Accessory | Description |
|---|---|
|  | OSLN50A-8<br>High Performance Type N(m), DC to 8 GHz, 50 Ω |
|  | 2000-1914-R<br>Precision Open/Short/Load, 4.3-10(f), DC to 6 GHz, 50 Ω |
|  | 2000-1618-R<br>Precision Open/Short/Load, 7/16 DIN(m), DC to 6 GHz 50 Ω |
|  | 22N50<br>Open/Short, N(m), DC to 18 GHz, 50 Ω |
|  | SM/PL-1<br>Precision Load, N(m), 42 dB, 6 GHz, 50 Ω |

## Coaxial Calibration Components, 75 Ω

| Accessory | Description |
|---|---|
|  | 22N75<br>Open/Short, N(m), DC to 3 GHz, 75 Ω |
|  | 26N75A<br>Precision Termination, N(m), DC to 3 GHz, 75 Ω |
|  | 12N50-75B<br>Matching Pad, DC to 3 GHz, 50 Ω to 75 Ω |

| Accessory | Description |
|---|---|
|  | 22NF75<br>Open/Short, N(f), DC to 3 GHz, 75 Ω |
|  | 26NF75A<br>Precision Termination, N(f), DC to 3 GHz, 75 Ω |

## Adapters

| Accessory | Description |
|---|---|
|  | 1091-26-R<br>SMA(m) to N(m), DC to 18 GHz, 50 Ω |
|  | 1091-27-R<br>SMA(f) to N(m), DC to 18 GHz, 50 Ω |
|  | 1091-80-R<br>SMA(m) to N(f), DC to 18 GHz, 50 Ω |
|  | 1091-81-R<br>SMA(f) to N(f), DC to 18 GHz, 50 Ω |
|  | 1091-172-R<br>BNC(f) to N(m), DC to 1.3 GHz, 50 Ω |
|  | 1091-465-R<br>Low PIM Adapter, DC to 6 GHz, 4.3-10(f) to N(f), 50 Ω |
|  | 1091-467-R<br>Low PIM Adapter, DC to 6 GHz, 4.3-10(m) to N(f), 50 Ω |
|  | 1091-434-R<br>Low PIM Adapter, DC to 3.0 GHz, 4.1to 9.5(m) to 7/16 DIN(f), 50 Ω |

| Accessory | Description |
|---|---|
|  | 510-102-R<br>N(m) to N(m), DC to 11 GHz, 50 Ω, 90 degrees 50 Ω |
|  | 510-90-R<br>7/16 DIN(f) to N(m), DC to 7.5 GHz, 50 Ω |
|  | 510-91-R<br>7/16 DIN(f) to N(f), DC to 7.5 GHz, 50 Ω |
|  | 510-92-R<br>7/16 DIN(m) to N(m), DC to 7.5 GHz, 50 Ω |
|  | 510-93-R<br>7/16 DIN(m) to N(f), DC to 7.5 GHz, 50 Ω |
|  | 510-96-R<br>7/16 DIN(m) to 7/16 DIN (m), DC to 7.5 GHz, 50 Ω |
|  | 510-97-R<br>7/16 DIN(f) to 7/16 DIN (f), DC to 7.5 GHz, 50 Ω |
|  | 1091-433-R<br>Low PIM Adapter, 4.1/9.5(f) to 7/16 DIN(f), DC to 3.0 GHz, 50 Ω |

## Precision Adapters

| Accessory | Description |
|---|---|
|  | 34NN50A<br>N(m) to N(m), DC to 18 GHz, 50 Ω |

| Accessory | Description |
|---|---|
|  | 34NFNF50<br>N(f) to N(f), DC to 18 GHz, 50 Ω |

## Attenuators

| Accessory | Description |
|---|---|
|  | 1010-121-R<br>40 dB, 100 W, DC to18 GHz, N(m) to N(f), Uni-directional |
|  | 3-1010-122<br>20 dB, 5 W, DC to 12.4 GHz, N(m) to N(f) |
|  | 3-1010-123<br>30 dB, 50 W, DC to 8.5 GHz, N(m) to N(f) |
|  | 3-1010-124<br>40 dB, 100 W, DC to 8.5 GHz, N(m) to N(f), Uni-directional |

| Accessory | Description |
|---|---|
|  | 42N50-20<br>20 dB, 5 W, DC to 18 GHz, N(m) to N(f) |
|  | 42N50A-30<br>30 dB, 50 W, DC to 18 GHz, N(m) to N(f) |
|  | 1010-127-R<br>30 dB, 150 W, DC to 3 GHz, N(m) to N(f) |
|  | 1010-128-R<br>40 dB, 150 W, DC to 3 GHz, N(m) to N(f) |

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

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

| Accessory | Description |
|---|---|
|  | 15RNFN50-1.5-R<br>1.5 m, DC to 6 GHz, N(m) to N(f), 50 Ω |
| | 15RNFN50-3.0-R<br>3.0 m, DC to 6 GHz, N(m) to N(f), 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.)

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

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

| Accessory | Description |
|---|---|
|  | 15NNF50-1.5C<br>1.5 m, DC to 6 GHz, N(m) to N(f), 50 Ω |
| | 15NN50-1.5C<br>1.5 m, DC to 6 GHz, N(m) to N(m), 50 Ω |
| | 15NNF50-3.0C<br>3.0 m, DC to 6 GHz, N(m) to N(f), 50 Ω |
| | 15NN50-3.0C<br>3.0 m, DC to 6 GHz, N(m) to N(m), 50 Ω |
| | 15NNF50-5.0C<br>5.0 m, DC to 6 GHz, N(m) to N(f), 50 Ω |
| | 15NN50-5.0C<br>5.0 m, DC to 6 GHz, N(m) to N(m), 50 Ω |

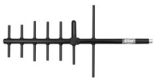
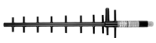
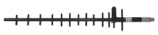
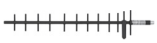
| Accessory | Description |
|---|---|
|  | 15NDF50-1.5C<br>1.5 m, DC to 6 GHz, N(m) to 7/16 DIN(f), 50 Ω |
| | 15ND50-1.5-R<br>1.5 m, DC to 6 GHz, N(m) to 7/16 DIN(m), 50 Ω |
| | 15N43M50-1.5C<br>Test Port Extension Cable, Armored,<br>1.5 m, DC to 6 GHz, N(m) to 4.3-10(m) |
| | 15N43F50-1.5C<br>Test Port Extension Cable, Armored,<br>1.5 m, DC to 6 GHz, N(m) to 4.3-10(f) |
| | 15N43M50-3.0C<br>Test Port Extension Cable, Armored,<br>3 m, DC to 6 GHz, N(m) to 4.3-10(m) |
| | 15N43F50-3.0C<br>Test Port Extension Cable, Armored,<br>3 m, DC to 6 GHz, N(m) to 4.3-10(f) |

**GPS Antennas**

| Accessory | Description |
|---|---|
|  | 2000-1528-R<br>Magnet Mount, SMA(m) with 5 m (16.4 ft) cable, requires 5 VDC |
|  | 2000-1652-R<br>Magnet Mount, SMA(m) with 0.3 m (1 ft) cable, requires 3.3 VDC or 5 VDC |

| Accessory | Description |
|---|---|
|  | 2000-1760-R<br>Miniature Antenna, SMA(m), requires 2.5 VDC to 3.7 VDC |

## Directional Antennas

| Accessory | Description |
|---|---|
|  | 2000-1411-R<br>824 MHz to 896 MHz, N(f), 12.3 dBi, Yagi |
|  | 2000-1412-R<br>885 MHz to 975 MHz, N(f), 12.6 dBi, Yagi |
|  | 2000-1413-R<br>1710 MHz to 1880 MHz, N(f), 12.3 dBi. Yagi |
|  | 2000-1414-R<br>1850 MHz to 1990 MHz, N(f), 11.4 dBi, Yagi |
|  | 2000-1415-R<br>2400 MHz to 2500 MHz, N(f), 14.1 dBi, Yagi |
|  | 2000-1416-R<br>1920 MHz to 2170 MHz, N(f), 14.3 dBi, Yagi |
|  | 2000-1659-R<br>698 MHz to 787 MHz, N(f), 10.1 dBi, Yagi |
|  | 2000-1660-R<br>1425 MHz to 1535 MHz, N(f), 14.3 dBi, Yagi |
|  | 2000-2107-R<br>Log Periodic, 20 MHz to 8.5 GHz |

| Accessory | Description |
|---|---|
|  | 2000-1726-R<br>2500 MHz to 2700 MHz, N(f), 14.1 dBi, Yagi |
|  | 2000-1798-R<br>Port Extender, DC to 6 GHz |
|  | 2000-1748-R<br>Log Periodic, 1 GHz to 18 GHz, N(f), 6 dBi, typical |
|  | 2000-1777-R<br>9 kHz to 20 MHz, N(f) |
|  | 2000-1778-R<br>20 MHz to 200 MHz, N(f) |
|  | 2000-1779-R<br>200 MHz to 500 MHz, N(f) |
|  | 2000-1812-R<br>Portable Yagi Antenna, 450 MHz to 512 MHz, N(f), 7.1 dBi |
|  | 2000-1825-R<br>Portable Yagi Antenna, 380 MHz to 430 MHz, N(f), 7.1 dBi |

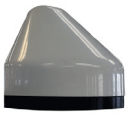
## Portable Antennas (requires 1091-27-R SMA(f) to N(m) or 1091-172-R BNC(f) to N(m) adapter)

| Accessory | Description |
|---|---|
|  | 2000-1200-R<br>806 MHz to 866 MHz, SMA(m), 50 Ω |
|  | 2000-1473-R<br>870 MHz to 960 MHz, SMA(m), 50 Ω |
|  | 2000-1035-R<br>896 MHz to 941 MHz, SMA(m), 50 Ω (1/2 wave) |
|  | 2000-1030-R<br>1710 MHz to 1880 MHz, SMA(m), 50 Ω (1/2 wave) |
|  | 2000-1474-R<br>1710 MHz to 1880 MHz with knuckle elbow (1/2 wave) |
|  | 2000-1031-R<br>1850 MHz to 1990 MHz, SMA(m), 50 Ω (1/2 wave) |

| Accessory | Description |
|---|---|
|  | 2000-1475-R<br>1920 MHz to 1980 MHz and 2110 MHz to 2170 MHz, SMA(m), 50 Ω |
|  | 2000-1032-R<br>2400 MHz to 2500 MHz, SMA(m), 50 Ω (1/2 wave) |
|  | 2000-1487-R<br>Telescoping Whip Antenna, BNC |
|  | 2000-1361-R<br>2400 MHz to 2500 MHz, 5000 MHz to 6000 MHz, SMA(m), 50 Ω |
|  | 2000-1636-R<br>Antenna Kit (Consists of: 2000-1030-R, 2000-1031-R, 2000-1032-R, 2000-1200-R, 2000-1035-R, 2000-1361-R, and carrying pouch) |

## Magnet Mount and Broadband Antennas

| Accessory | Description |
|---|---|
|  | 2000-2141-R<br>20 MHz to 21000 MHz, N(f), 50 Ω |
|  | 2000-1646-R<br>750 MHz to 1250 MHz, 3 dBi peak gain,<br>1650 MHz to 2000 MHz, 5 dBi peak gain,<br>2100 MHz to 2700 MHz, 5 dBi peak gain, N(m), 50 Ω, 10 ft |
|  | 2000-1648-R<br>1700 MHz to 6000 MHz, 3 dBi peak gain, N(m), 50 Ω, 10 ft |

| Accessory | Description |
|---|---|
|  | 2000-1645-R<br>694 MHz to 894 MHz, 3 dBi peak gain<br>1700 MHz to 2700 MHz, 3 dBi peak gain, N(m), 50 Ω, 10 ft |
|  | 2000-1647-R<br>Cable 1: 698 MHz to 1200 MHz, 2 dBi peak gain,<br>1700 MHz to 2700 MHz, 5 dBi peak gain,<br>N(m), 50 Ω, 10 ft<br>Cable 2: 3000 MHz to 6000 MHz, 5 dBi peak gain,<br>N(m), 50 Ω, 10 ft<br>Cable 3: GPS 26 dB gain, SMA(m), 50 Ω, 10 ft |
|  | 2000-1946-R<br>Cable 1: 617 MHz to 960 MHz, 3 dBi peak gain,<br>1710 MHz to 3700 MHz, 4 dBi peak gain,<br>N(m), 50 Ω, 10 ft<br>Cable 2: 3000 MHz to 6000 MHz, 5 dBi peak gain,<br>N(m), 50 Ω, 10 ft<br>Cable 3: GPS 26 dB gain, SMA(m), 50 Ω, 10 ft |

## Isotropic Antennas

| Accessory | Description |
|---|---|
|  | 2000-1800-R<br>H-Field, 9 kHz to 300 MHz, N(m) |
|  | 2000-1792-R<br>E-Field, 30 MHz to 3000 MHz, N(m) |

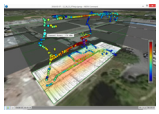
| Accessory | Description |
|---|---|
|  | 2000-1791-R<br>700 MHz to 6000 MHz, N(m) |

**Bandpass Filters**

| Accessory | Description |
|---|---|
| | 1030-114-R<br>806 MHz to 869 MHz, N(m) to SMA(f), 50 Ω |
| | 1030-109-R<br>824 MHz to 849 MHz, N(m) to SMA(f), 50 Ω |
| | 1030-110-R<br>880 MHz to 915 MHz, N(m) to SMA(f), 50 Ω |
| | 1030-111-R<br>1850 MHz to 1910 MHz, N(m) to SMA(f), 50 Ω |
| | 1030-112-R<br>2400 MHz to 2484 MHz, N(m) to SMA(f), 50 Ω |
| | 1030-105-R<br>890 MHz to 915 MHz, N(m) to N(f), 50 Ω |
| | 1030-106-R<br>1710 MHz to 1790 MHz, N(m) to N(f), 50 Ω |
| | 1030-107-R<br>1910 MHz to 1990 MHz, N(m) to N(f), 50 Ω |
|  | 1030-149-R<br>High Pass, 150 MHz, N(m) to N(f), 50 Ω |
| | 1030-150-R<br>High Pass, 400 MHz, N(m) to N(f), 50 Ω |
| | 1030-151-R<br>High Pass, 700 MHz, N(m) to N(f), 50 Ω |
| | 1030-152-R<br>Low Pass, 200 MHz, N(m) to N(f), 50 Ω |
| | 1030-153-R<br>Low Pass, 550 MHz, N(m) to N(f), 50 Ω |
| | 1030-155-R<br>2500 MHz to 2700 MHz, N(m) to N(f), 50 Ω |
| | 1030-178-R<br>1920 MHz to 1980 MHz, N(m) to N(f), 50 Ω |
| | 1030-179-R<br>777 MHz to 798 MHz, N(m) to N(f), 50 Ω |
| | 1030-180-R<br>2500 MHz to 2570 MHz, N(m) to N(f), 50 Ω |

| Accessory | Description |
|---|---|
| | 2000-1734-R<br>699 MHz to 715 MHz, N(m) and N(f), 50 Ω |
| | 2000-1735-R<br>776 MHz to 788 MHz, N(m) and N(f), 50 Ω |
| | 2000-1736-R<br>815 MHz to 850 MHz, N(m) and N(f), 50 Ω |
| | 2000-1737-R<br>1711 MHz to 1756 MHz, N(m) and N(f), 50 Ω |
| | 2000-1738-R<br>1850 MHz to 1910 MHz, N(m) and N(f), 50 Ω |
| | 2000-1739-R<br>880 MHz to 915 MHz, N(m) and N(f), 50 Ω |
| | 2000-1740-R<br>1710 MHz to 1785 MHz, N(m) and N(f), 50 Ω |
|  | 2000-1741-R<br>1920 MHz to 1980 MHz, N(m) and N(f), 50 Ω |
| | 2000-1742-R<br>832 MHz to 862 MHz, N(m) and N(f), 50 Ω |
| | 2000-1743-R<br>2500 MHz to 2570 MHz, N(m) and N(f), 50 Ω |
| | 2000-1799-R<br>2305 MHz to 2320 MHz, N(m) and N(f), 50 Ω |
| | 2000-1911-R<br>703 MHz to 748 MHz, N(m) and N(f), 50 Ω |
| | 2000-1912-R<br>788 MHz to 798 MHz, N(m) and N(f), 50 Ω |
| | 2000-1925-R<br>663 MHz to 698 MHz, N(m) and N(f), 50 Ω |
| | 2000-1926-R<br>776 MHz to 806 MHz, N(m) and N(f), 50 Ω |
|  | 2000-1684-R<br>791 MHz to 821 MHz, N(m) to N(f), 50 Ω |

### NEON® MA8100A Signal Mapper

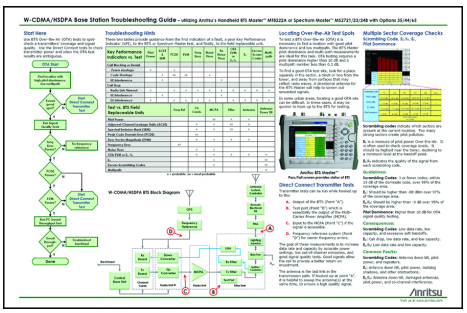
| Accessory | Description |
|---|---|
| | MA8100A-000<br>NEON Signal Mapper with Anritsu Integration and Tracking Unit. Includes 3 months NEON Software License with 3 months of maintenance and support and 3 months of Cloud Service (PN: 2300-607). |
| | MA8100A-001<br>NEON Signal Mapper with Anritsu Integration and Tracking Unit. Includes 1 year NEON Software License with 1 year of maintenance and support and 1 year of Cloud Service (PN: 2300-574). |
|  | MA8100A-003<br>NEON Signal Mapper with Anritsu Integration and Tracking Unit. Includes 3 year NEON Software License with 3 years of maintenance and support and 3 years of Cloud Service (PN: 2300-575). |
| | MA8100A-005<br>NEON Signal Mapper with Anritsu Integration and Tracking Unit. Includes 5 year NEON Software License with 5 years of maintenance and support and 5 years of Cloud Service (PN: 2300-576). |
| | MA8100A-100<br>NEON Signal Mapper with Anritsu Integration and Tracking Unit. Includes Perpetual NEON Software License with 3 years of maintenance and support and 3 years of Cloud Service (PN: 2300-606). |
|  | 2000-1852-R<br>NEON Tracking Unit (includes USB cable and belt clip, Worldwide version) |
| | 2000-2015-R<br>NEON Tracking Unit (includes USB cable and belt clip, Japan version) |
| | 2000-1853-R<br>Belt clip (for NEON Tracking Unit) |

| Accessory | Description |
|---|---|
| | 2300-606<br>Perpetual NEON Software License with 3 years of maintenance and support and 3 years of Cloud Service. Part number can also be used to order a perpetual license after a limited term license has expired. |
| | 2300-612<br>Renewal of 1 year NEON Software License with 1 year of maintenance and support and 1 year of Cloud Service. |
| | 2300-613<br>Renewal of 3 year NEON Software License with 3 years of maintenance and support and 3 years of Cloud Service. |
| | 2300-614<br>Renewal of 5 year NEON Software License with 5 years of maintenance and support and 5 years of Cloud Service. |

## Manuals (available at www.anritsu.com)

| Part Number | Description |
|---|---|
| 10100-00065 | Product Information, Compliance, and Safety |
| 10580-00252 | Site Master User Guide |
| 10580-00241 | Cable and Antenna Analyzer Measurement Guide |
| 10580-00242 | 2-Port Transmission Measurement Guide |
| 10580-00349 | Spectrum Analyzer Measurement Guide |
| 10580-00240 | Power Meter Measurement Guide |
| 10580-00455 | EMF Measurement Guide |
| 10580-00256 | Programming Manual |

## Troubleshooting Guides (available at www.anritsu.com)



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

## Related Literature For related literature, visit your product page:

https://www.anritsu.com/en-us/test-measurement/products/s331e
https://www.anritsu.com/en-us/test-measurement/products/s332e
https://www.anritsu.com/en-us/test-measurement/products/s361e
https://www.anritsu.com/en-us/test-measurement/products/s362e

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List Revision Date: 20230816