Technical Data Sheet

Site Master™

Compact Handheld Cable & Antenna Analyzer with Spectrum Analyzer

S331E	S332E	S361E	S362E	
2 MHz to 4 GHz	2 MHz to 4 GHz 100 kHz to 4 GHz	2 MHz to 6 GHz	2 MHz to 6 GHz 100 kHz to 6 GHz	Cable & 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 msec/data point, typical
- 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

- 4 hour battery operation time
- Store 2000 Traces internally
- Touchscreen keyboard
- Quick Name Matrix
- AM / FM / PM Analyzer
- High Accuracy Power Meter
- 4, 6, 8, 18, 26 GHz USB Sensors
- On-Screen Interference Mapping
- On-Screen Coverage Mapping
- Channel Scanner
- GPS tagging of saved traces
- USB Data Transfer
- < 5 minute warm-up time
- E-Learning Training
- Certified Line Sweep Training
- 8.4 in. daylight viewable color LCD

Site Master™ S331E Cable & Antenna Analyzer featuring 8.4" 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 lbs)

Site Master™ S331E, S332E, S361E, S362E Specifications

Cable and Antenna Analyzer

Measurements	
Measurements	VSWR
	Return Loss
	Cable Loss
	Distance-to-Fault (DTF) Return Loss
	Distance-to-Fault (DTF) VSWR
	1-Port Phase
	Smith Chart
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)
Data Points	137, 275, 551, 1102, 2204
Markers	Markers 1-6 (On/Off), Delta Makers 1-6 (On/Off), Marker to Peak/Valley, Marker Table
Traces	Recall, Copy to Display Memory, No Trace Math, Trace ± Memory, Trace Overlay
Limit Line	On/Off, Single Limit, Multi-segment (41), Limit Alarm, Clear
Calibration	Start Cal, Cal Type (Standard/FlexCal™)
Save/Recall	Setups, Measurements (.vna, .dat), Screen Shots Jpeg (save only)
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	–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 msec/data point, RF immunity low, typical
Distance-to-Fault	≤ 1.25 msec/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 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)	$(1.5 \times 10^8 \times vp)/\Delta F$ (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)

Site Master™ S331E, S332E, S361E, S362E Specifications

Cable and Antenna Analyzer (continued)

1-Port Phase

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

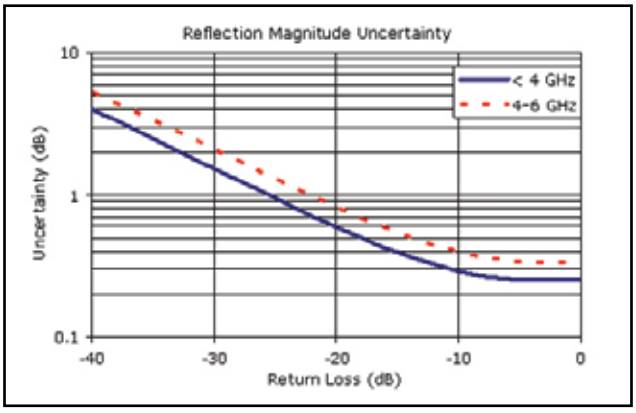
Smith Chart

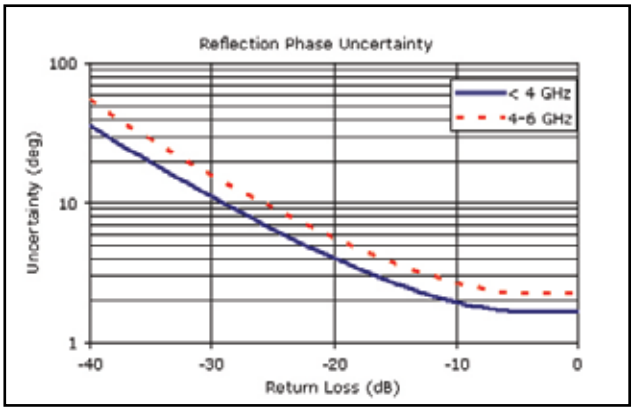
Resolution	0.01

Measurement Accuracy

Corrected Directivity	> 42 dB, OSL Calibration > 38 dB, InstaCal™ Calibration

Measurement Uncertainty





Optical Distance-to-Fault Module (P/N ODTF-1)

Wavelength	1550 nm, typical
Fiber Type	Single Mode Fiber
Event Resolution	10.2 cm (0.335 ft) maximum, or 150 / (n*ΔF), ΔF in MHz, n is IOR
Horizontal Range	1020 meter (3345 ft) maximum, or (#dp-1) *Event Resolution
Optical Dynamic Range	30 dB
Optical Output Power	3 dBm, typical
RF Connector	N(m)
Optical Connector	FC/APC
Datasheet	11410-00478 (for complete specifications)

2-Port Transmission Measurement (Option 0021)

Frequency	
Frequency Range	2 MHz to 4 GHz (MT8212E), 2 MHz to 6 GHz (MT8213E)
Frequency Resolution	10 Hz
Output Power	
High	0 dBm, typical
Low	–30 dBm, typical
Dynamic Range	
2 MHz to 4 GHz	80 dB
4 GHz to 6 GHz	70 dB
Application Options	Bias-Tee (On/Off), Impedance (50 Ω, 75 Ω, Other)

Bias-Tee (Option 0010)

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

Site Master™ S331E, S332E, S361E, S362E Specifications

Spectrum Analyzer (S332E, S362E)

Measurements	
Smart Measurements	Field Strength (uses antenna calibration tables to measure dBm/m^2 or dBmV/m)
	Occupied Bandwidth (measures 99% to 1% power channel of a signal)
	Channel Power (measures the total power in a specified bandwidth)
	ACPR (adjacent channel power ratio)
	AM/FM/SSB Demodulation (wide/narrow FM, USB and LSB), (audio out only)
	C/I (carrier-to-interference ratio)
	Emission Mask
	Coverage Mapping (requires Option 0431)
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, Recall, Delete, Directory Management
Save/Recall	Setups, Measurements, Limit Lines, Screen Shots Jpeg (save only), Save-on-Event
Save-on-Event	Crossing Limit Line, Sweep Complete, Save-then-Stop, Clear All
Delete	Selected File, All Measurements, All Mode Files, All Content
Directory Management	Sort Method (Name/Type/Date), Ascend/Descend, Internal/USB, Copy, Format 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 0090)
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	100 kHz to 4 GHz (S332E), 100 kHz to 6 GHz (S362E) (usable to 0 Hz)
Tuning Resolution	1 Hz
Frequency Reference	Aging: ± 1.0 ppm/year 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, 10 µs to 600 seconds 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) (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
Display Range	1 to 15 dB/div in 1 dB steps, ten divisions displayed
Reference Level Range	–120 dBm to +30 dBm
Attenuator Range	0 to 55 dB, 5.0 dB steps
Maximum Continuous Input	+35 dBm
Amplitude Units	Log Scale Modes: dBm, dBV, dBmv, dBµV Linear Scale Modes: nV, µV, mV, V, kV, nW, µW, mW, W, kW

Amplitude Accuracy

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 < 2424.5 MHz < –55 dBc @ 190.5 ± F1/2 MHz, 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
200-2200 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

Site Master™ S331E, S332E, S361E, S362E Specifications

Coverage Mapping (Options 0431)

Measurements

Indoor Mapping	Outdoor Mapping
RSSI	RSSI
ACPR	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 0025)

Measurements	Spectrum Field Strength Occupied Bandwidth Channel Power Adjacent Channel Power (ACPR) AM/FM/SSB Demodulation (Wide/Narrow FM, Upper/Lower SSB), (audio out only) 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 one week) Gives visual and aural indication of signal strength Signal ID (up to 12 signals) Center Frequency Bandwidth Signal Type (FM, GSM, W-CDMA, CDMA, Wi-Fi) Closest Channel Number Number of Carriers Signal-to-Nose 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)

GPS Receiver Option (Option 0031) (Antenna sold separately, P/N 2000-1528-R)

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

Site Master™ S331E, S332E, S361E, S362E Specifications

Channel Scanner (Option 0027) (S332E, S362E)

Number of Channels	1 to 20 Channels (Power Levels)
Measurements	Graph/Table, Max Hold (On/5 sec/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	100 kHz to 4 GHz (S332E), 100 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 (Option 0028) (S332E, S362E) (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 Attenuator (included in kit 69793): 0 dB to 90 dB in 1 dB steps

Gated Sweep (Option 0090) (S332E, S362E)

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

Site Master™ S331E, S332E, S361E, S362E Specifications

Power Meter (Option 0029) (S332E, S362E)

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 to +100 dB
VSWR	2:1 typical
Maximum Continuous Input	+35 dBm without attenuator
Accuracy	Same as Spectrum Analyzer
Application Options	Impedance (50 Ω, 75 Ω, Other)

High Accuracy Power Meter (Option 0019) (Requires external USB Power Sensor(s))

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	**PSN50**	**MA24104A**	**MA24106A**	**MA24108/18/26A**
Description	High Accuracy RF Power Sensor	Inline High Power Sensor	High Accuracy RF Power Sensor	Microwave USB Power Sensor
Frequency Range	50 MHz to 6 GHz	600 MHz to 4 GHz	50 MHz to 6 GHz	10 MHz to 8 GHz (**MA24108A)** 10 MHz to 18 GHz (**MA24118A)** 10 MHz to 26 GHz (**MA24126A)**
Connector	Type N(m), 50 Ω	Type N(m), 50 Ω	Type N(m), 50 Ω	Type N(m), 50 Ω (**MA24108/18A)** Type K(m), 50 Ω (**MA24126A)**
Dynamic Range	-30 to +20 dBm (.001 to 100 mW)	+3 to +51.76 dBm (2 mW to 150 W)	-40 to +23 dBm (0.1 µW to 200 mW)	-40 to +20 dBm (0.1 µW to 100 mW)
VBW	100 Hz	100 Hz	100 Hz	50 kHz
Measurand	True-RMS	True-RMS	True-RMS	True-RMS, Slot Power, Burst Average Power
Measurement Uncertainty	±0.16 dB[1]	±0.17 dB[2]	±0.16 dB[1]	±0.18 dB[3]
Datasheet (for complete specifications)	11410-00414	11410-00483	11410-00424	11410-00504

Notes:
1) Total RSS measurement uncertainty (0 ºC to 50 ºC) for power measurements of a CW signal greater than -20 dBm with zero mismatch errors.
2) 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.
3) Expanded uncertainty with K=2 for power measurements of a CW signal greater than -20 dBm with zero mismatch errors.

AM/FM/PM Signal Analyzers (Option 0509) (S332E, S362E)

Measurements

	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 Carrier Frequency Occupied Bandwidth	AM Rate RMS Depth (Pk-PK)/2 Depth SINAD* THD* Distortion/Total Vrms*	FM/PM Rate RMS Deviation (Pk-PK)/2 Deviation SINAD* THD* Distortion/Total Vrms*	AM Rate RMS Depth (Pk-PK)/2 Depth SINAD* THD* Distortion/Total Vrms*	FM/PM Rate RMS Depth (Pk-PK)/2 Depth SINAD* THD* Distortion/Total Vrms*	RMS Depth (AM) Peak + Depth Peak – Depth (Pk-PK)/2 Depth Carrier Power Carrier Frequency Occupied Bandwidth AM Rate SINAD* THD* Distortion/Total Vrms*	RMS Deviation (FM/PM) Peak + Depth Peak – Depth (Pk-PK)/2 Depth Carrier Power Carrier Frequency Occupied Bandwidth AM Rate SINAD* THD* Distortion/Total Vrms*

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) Depth: ± 5% for (Modulation rates 10 Hz to 100 kHz)
FM	Modulation Rate: ± 1 Hz (< 100 Hz); ± 2% (100 Hz to 100 kHz) Deviation Accuracy: ± 5% (100 Hz to 100 kHz)**
PM	Modulation Rate: ± 1 Hz (< 100 Hz); ± 2% (100 Hz to 100 kHz) Deviation Accuracy: ± 5% (deviation 0 to 93 Rad, rate 10 Hz to 5 kHz)**
IF bandwidth	1 to 300 kHz in 1-3 sequence
Frequency Span	RF Spectrum: 10 kHz to 10 MHz Audio Spectrum: 2, 5, 10, 20 kHz
RBW/VBW	30
Span/RBW	100
Sweep time	50 µs to 50 ms (Audio Waveform)

*Requires Sinewave modulation

**IFBW must be greater than 95% occupied BW

Site Master™ S331E, S332E, S361E, S362E Specifications

General Specifications

All specifications and characteristics apply under the following conditions, unless otherwise stated: 1) After 5 minutes of warm-up time, where the instrument is left in the ON state; 2) All specifications apply when using internal reference; 3) All specifications subject to change without notice; 4) Typical performance is the measured performance of an average unit; 5) Recommended calibration cycle is 12 months.

Setup Parameters	
System	Status (Temperature, Battery Info, Serial Number, Firmware Version, Options Installed)
	Self Test, Application Self Test
	GPS (see Option 0031)
System Options	Name, Date and Time, Volume, Display (Brightness, Default Colors, Black & White, Night Vision, High Contrast),
	Language (English, French, German, Spanish, Chinese, Japanese, Korean, Italian, User defined)
	Reset (Factory Defaults, Master Reset, Update Firmware)
File	Save, Recall, Delete, Directory Management
Save/Recall	Setups, Measurements, Screen Shots Jpeg (save only)
Delete	Selected File, All Measurements, All Mode Files, All Content
Directory Management	Sort Method (Name/Type/Date), Ascend/Descend, Internal/USB, Copy, Format USB
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
Connectors	
RF Out	Type N, female, 50 Ω (Reflection In)
RF Out Damage Level	23 dBm, ± 50 VDC (Option 21 only)
RF In	Type N, female, 50 Ω
RF In Damage Level	+35 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
Headset Jack	2.5 mm mini-phone plug
External Reference In	BNC, female, 50 Ω, Maximum Input +10 dBm
	1 MHz, 5 MHz, 10 MHz, 13 MHz
External Trigger/Clock Recovery	BNC, female, 50 Ω, Maximum Input ± 50 VDC
Display	
Type	Resistive Touchscreen
Size	8.4” daylight viewable color LCD
Resolution	800 x 600
Battery	
Type	Li-Ion
Battery Operation	4.0 hours, typical (S331E, S361E) 3.0 hours, typical (S332E, S362E)
Electromagnetic Compatibility	
European Union	CE Mark, EMC Directive 2004/108/EC
	Low Voltage Directive 2006/95/EC
Australia and New Zealand	C-tick N274
Interference	EN 61326-1
Emissions	EN 55011
Immunity	EN 61000-4-2/-4-3/-4-4/-4-5/-4-6/-4-11
Safety	
Safety Class	EN 61010-1 Class 1
Product Safety	IEC 60950-1 when used with Company supplied Power Supply
Environmental	
Operating Temperature	–10 ºC to 55 ºC
Maximum Humidity	95% RH (none condensing) at 40 °C
Shock	MIL-PRF-28800F Class 2
Storage	–40 ºC to 71 ºC
Altitude	4600 meters, operating and non-operating
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 lbs), (S331E, S361E) 3.71 kg, (8.2 lbs), (S332E, S362E)

Master Software Tools (for your PC)

Database Management	
Full Trace Retrieval	Retrieve all traces from instrument into one PC directory
Trace Catalog	Index all traces into one catalog
Trace Rename Utility	Rename measurement traces
Group Edit	Title, subtitles, plot scaling, markers and limit lines, simultaneously on similar files
DAT File Converter	Converts HHST files to MST file format and vice-versa
Data Analysis	
Trace Math and Smoothing	Compare multiple traces
Data Converter	Convert from/to Return Loss, VSWR, Cable Loss, DTF and also into Smith Charts
Measurement Calculator	Translates into other units
Report Generation	
Report Generator	Includes GPS, power level, and calibration status along with measurements
Edit Graph	Change scale, limit lines, and markers
Report Format	Create reports in HTML for PDF format
Export Measurements	Export measurements to *.s2p, *.jpg or *.csv format
Notes	Annotate measurements
Mapping (GPS Required)	
Spectrum Analyzer Mode	MapInfo, MapPoint
Folder Spectrogram (Spectrum Monitoring for Interference Analysis and Spectrum Clearing)	
Folder Spectrogram – 2D View	Creates a composite file of multiple traces Peak Power, Total Power, Peak Frequency, Histogram, Average Power (Max/Min) File Filter (Violations over limit lines or deviations from averages) Playback
Video Folder Spectrogram – 2D View	Create AVI file to export for management review/reports
Folder Spectrogram – 3D View	Views (Set Threshold, Markers) - 3D (Rotate X, Y, Z Axis, Level Scale, Signal ID) - 2D View (Frequency or Time Domain, Signal ID) - Top Down Playback (Frequency and/or Time Domain)
List/Parameter Editors	
Traces	Add, delete, and modify limit lines and markers
Antennas, Cables, Signal Standards	Modify instrument's Antenna, Cable, and Signal Standard List
Product Updates	Auto-checks Anritsu website for latest revision firmware
Firmware Upload	Upload new firmware into the instrument
Languages	Add up to two languages and modify non-English language menus
Display	Modify display settings
Script Master™	
Channel Scanner Mode	Automate scan up to 1200 channels, repeat for sets of 20 channels, repeat all channels
Connectivity	
Connections	Connect to PC using USB
Download	Download measurements and live traces to PC for storage and analysis
Upload	Upload measurements from PC to instrument
Firmware Updates	Create USB Flash Drive for firmware update

Site Master™ S331E, S332E, S361E, S362E Specifications

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
	100 kHz to 4 GHz		100 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 0021 for S331E /S361E)
S331E-0031	S332E-0031	S361E-0031	S362E-0031	GPS Receiver (Requires Antenna P/N 2000-1528-R)
S331E-0019	S332E-0019	S361E-0019	S362E-0019	High-Accuracy Power Meter**
	S332E-0029		S362E-0029	Power Meter
	S332E-0025		S362E-0025	Interference Analyzer*
	S332E-0027		S362E-0027	Channel Scanner
	S332E-0431		S362E-0431	Coverage Mapping*
	S332E-0090		S362E-0090	Gated Sweep
	S332E-0028		S362E-0028	C/W Signal Generator (Requires CW Signal Generator Kit, P/N 69793)
	S332E-0509		S362E-0509	AM/FM/PM Analyzer
S331E-0098	S332E-0098	S361E-0098	S362E-0098	Standard Calibration (ANSI 2540-1-1994)
S331E-0099	S332E-0099	S361E-0099	S362E-0099	Premium Calibration to Z540 plus test data

*Requires Option 0031
**Requires External Power Sensor

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

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

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

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

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

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

Standard Accessories (included with instrument)

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

Optional Accessories

Calibration Components, 50 Ω

Part Number	Description
ICN50B	InstaCal™ Calibration Module, 38 dB, 2 MHz to 6.0 GHz, N(m), 50 Ω
OSLN50-1	Precision Open/Short/Load, N(m), 42 dB, 6.0 GHz, 50 Ω
OSLNF50-1	Precision Open/Short/Load, N(f), 42 dB, 6.0 GHz, 50 Ω
2000-1618-R	Precision Open/Short/Load, 7/16 DIN(m), DC to 6.0 GHz 50 Ω
2000-1619-R	Precision Open/Short/Load, 7/16 DIN(f), DC to 6.0 GHz 50 Ω
22N50	Open/Short, N(m), DC to 18 GHz, 50 Ω
22NF50	Open/Short, N(f), DC to 18 GHz, 50 Ω
SM/PL-1	Precision Load, N(m), 42 dB, 6.0 GHz, 50 Ω
SM/PLNF-1	Precision Load, N(f), 42 dB, 6.0 GHz, 50 Ω

Calibration Components, 75 Ω

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

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

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

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

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

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

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

Adapters

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

Precision Adapters

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

Optional Accessories (continued)

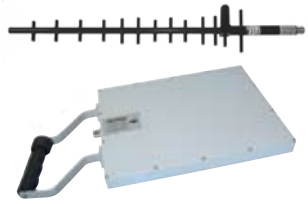
Miscellaneous Accessories

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

Backpack and Transit Case

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

Directional Antennas



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

Portable Antennas

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

Filters

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

Attenuators

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

Notes

The Master Users Group is an organization dedicated to providing training, technical support, networking opportunities and links to Master product development teams. As a member you will receive the Insite Quarterly Newsletter with user stories, measurement tips, new product news and more.

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Anritsu Corporation
5-1-1 Onna, Atsugi-shi, Kanagawa, 243-8555 Japan
Phone: +81-46-223-1111
Fax: +81-46-296-1238

• U.S.A.
Anritsu Company
1155 East Collins Boulevard, Suite 100,
Richardson, TX, 75081 U.S.A.
Toll Free: 1-800-ANRITSU (267-4878)
Phone: +1-972-644-1777
Fax: +1-972-671-1877

• Canada
Anritsu Electronics Ltd.
700 Silver Seven Road, Suite 120, Kanata,
Ontario K2V 1C3, Canada
Phone: +1-613-591-2003
Fax: +1-613-591-1006

• Brazil
Anritsu Electrônica Ltda.
Praça Amadeu Amaral, 27 - 1 Andar
01327-010 - Bela Vista - São Paulo - SP - Brasil
Phone: +55-11-3283-2511
Fax: +55-11-3288-6940

• Mexico
Anritsu Company, S.A. de C.V.
Av. Ejército Nacional No. 579 Piso 9, Col. Granada
11520 México, D.F., México
Phone: +52-55-1101-2370
Fax: +52-55-5254-3147

• U.K.
Anritsu EMEA Ltd.
200 Capability Green, Luton, Bedfordshire LU1 3LU, U.K.
Phone: +44-1582-433280
Fax: +44-1582-731303

• France
Anritsu S.A.
12 Avenue du Québec,
Bâtiment Iris 1-Silic 638,
91140 VILLEBON SUR YVETTE, France
Phone: +33-1-60-92-15-50
Fax: +33-1-64-46-10-65

• Germany
Anritsu GmbH
Nemetschek Haus, Konrad-Zuse-Platz 1
81829 München, Germany
Phone: +49 (0) 89 442308-0
Fax: +49 (0) 89 442308-55

• Italy
Anritsu S.p.A.
Via Elio Vittorini, 129, 00144 Roma, Italy
Phone: +39-06-509-9711
Fax: +39-06-502-2425

• Sweden
Anritsu AB
Borgafjordsgatan 13, 164 40 KISTA, Sweden
Phone: +46-8-534-707-00
Fax: +46-8-534-707-30

• Finland
Anritsu AB
Teknobulevardi 3-5, FI-01530 VANTAA, Finland
Phone: +358-20-741-8100
Fax: +358-20-741-8111

• Denmark
Anritsu A/S (for Service Assurance)
Anritsu AB (for Test & Measurement)
Kirkebjerg Allé 90 DK-2605 Brøndby, Denmark
Phone: +45-7211-2200
Fax: +45-7211-2210

• Russia
Anritsu EMEA Ltd.
Representation Office in Russia
Tverskaya str. 16/2, bld. 1, 7th floor.
Russia, 125009, Moscow
Phone: +7-495-363-1694
Fax: +7-495-935-8962

• United Arab Emirates
Anritsu EMEA Ltd.
Dubai Liaison Office
P O Box 500413 - Dubai Internet City
Al Thuraya Building, Tower 1, Suite 701, 7th Floor
Dubai, United Arab Emirates
Phone: +971-4-3670352
Fax: +971-4-3688460

• Singapore
Anritsu Pte. Ltd.
60 Alexandra Terrace, #02-08, The Comtech (Lobby A)
Singapore 118502
Phone: +65-6282-2400
Fax: +65-6282-2533

• India
Anritsu Pte. Ltd.
India Branch Office
3rd Floor, Shri Lakshminarayan Niwas, #2726, 80 ft Road,
HAL 3rd Stage, Bangalore - 560 075, India
Phone: +91-80-4058-1300
Fax: +91-80-4058-1301

• P. R. China (Hong Kong)
Anritsu Company Ltd.
Units 4 & 5, 28th Floor, Greenfield Tower, Concordia Plaza,
No. 1 Science Museum Road, Tsim Sha Tsui East,
Kowloon, Hong Kong, P.R. China
Phone: +852-2301-4980
Fax: +852-2301-3545

• P. R. China (Beijing)
Anritsu Company Ltd.
Beijing Representative Office
Room 2008, Beijing Fortune Building,
No. 5 , Dong-San-Huan Bei Road,
Chao-Yang District, Beijing 100004, P.R. China
Phone: +86-10-6590-9230
Fax: +86-10-6590-9235

• Korea
Anritsu Corporation, Ltd.
8F Hyunjuk Bldg. 832-41, Yeoksam-Dong,
Kangnam-ku, Seoul, 135-080, Korea
Phone: +82-2-553-6603
Fax: +82-2-553-6604

• Australia
Anritsu Pty Ltd.
Unit 21/270 Ferntree Gully Road, Notting Hill
Victoria, 3168, Australia
Phone: +61-3-9558-8177
Fax: +61-3-9558-8255

• Taiwan
Anritsu Company Inc.
7F, No. 316, Sec. 1, Neihu Rd., Taipei 114, Taiwan
Phone: +886-2-8751-1816
Fax: +886-2-8751-1817

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