Anritsu

Site Master™
S331D/S332D

Cable and Antenna Analyzer
25 MHz to 4000 MHz

SiteMaster The World's Leading Cable and Antenna System Analyzer

Site Master is the preferred cable and ant

RS-232 Interface
Transfer stored data to and from a personal computer (PC) or download to a printer via a serial cable for further analysis. Use PC to automatically control and collect data in the field.

Snap-in Field replaceable battery location

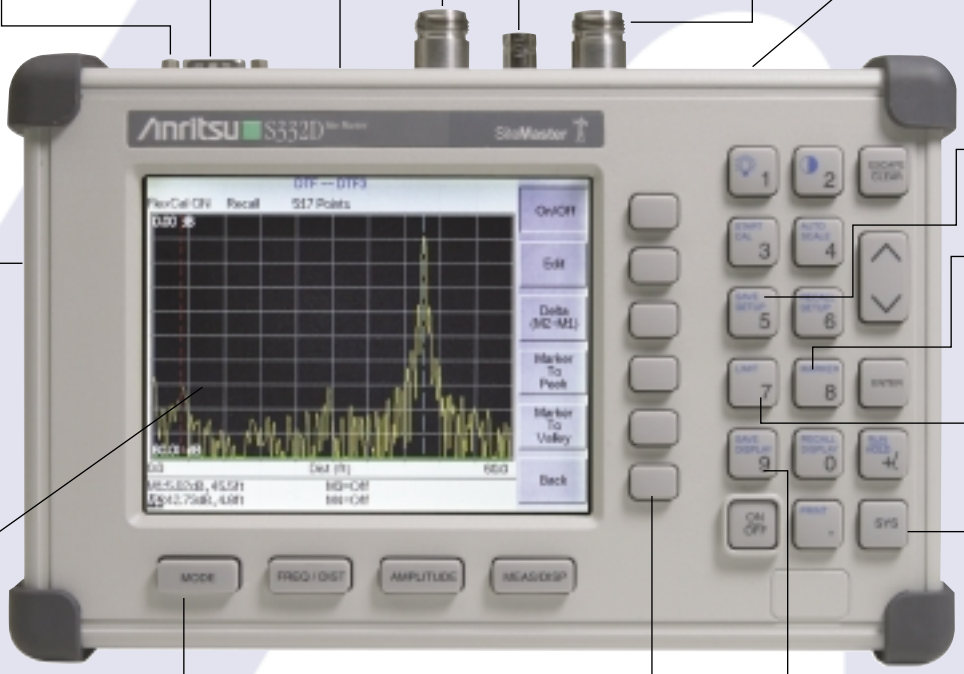
External DC Power Port

Spectrum Analyzer & Power Meter Port

Ext Trig & Ext Ref In

Cable & Antenna Analyzer Port

T1/E1 Receive & Transmit Port
(S331D Models with Option 50)



Save & Recall Setup
Setups for fast repeatable testing:
S332D Models - 20
S331D Models - 25

Rugged & Reliable Chassis Design
Ruggedized, lightweight, compact, high-impact housing is designed to withstand repeated drops and rough handling. Weather resistant seals and rubber membrane keypad protect unit from dirt and moisture.

Markers
6 markers for more comprehensive measurements.

Limits
Create simple pass/fail measurements with a single limit line, upper and/or lower mask limit lines.

Large High Resolution Display
Standard VGA (640x480) or optional color monitor STN (640x480) display featuring contrast and variable back-lighting capability. Easy viewing under a variety of conditions.

Multilingual User Interface
Multi-language user interface features on-screen menus and messages in 6 different languages: Chinese, English, French, German, Japanese, Spanish.

Save & Recall Display
Up to 200 memory locations. Alphanumeric data labeling and automatic time/date stamp simplifies data management.

Function Keys
Four dedicated function keys simplify measurement tasks.

Soft Keys
Intuitive soft key menu and user interface.

Cost Savings and Quality Improvement

Wireless market competition requires operators to reduce per site maintenance expense. Site Master's Frequency Domain Reflectometry (FDR) techniques break away from the traditional fix-after-failure maintenance process by finding small, hard to identify problems before major failures occur.

Sixty to eighty percent of a typical cell site's problems are caused by problematic cables, connectors and antennas. When cables / antennas are contaminated with moisture or are damaged / mis-positioned during storms, Site Master identifies the problem quickly. Antenna degradation reduces the cell coverage pattern and can cause dropped calls. Site Master can pinpoint the antenna problem from ground level in a few seconds so climbing to the antenna tower becomes unnecessary.

A poorly installed weather seal will corrode connectors and, if undetected, will eventually damage an expensive coaxial cable. Site Master has the sensitivity to identify the connector problem before the cable is damaged. Distance-To-Fault provides the clearest indication of troubled areas.

Site Master revolutionizes Cable and Antenna Sweeping in the Wireless Industry.

tenna analyzer of wireless providers, contracto

Cable and Antenna Analyzer

The cable and antenna analyzer tool provides for return loss/SWR, cable loss, and distance-to-fault measurements. This enables quick evaluations of the health and status of transmission lines and antenna systems, and speeds the benchmarking of new cell site installations at the time of commissioning.

Test / Capability	Benefits
25 MHz to 4000 MHz	Covers all cell site frequency ranges without additional plug-ins or instruments
Built-in worldwide signal standards	Common language for cell technicians that eliminates the need to remember and manually input start and stop frequencies
Built-in calibration intelligence	Ensures accurate and proper calibration
FlexCal™	Allows troubleshooting cable and antenna systems without multiple calibrations and calibration setups
Superior immunity to interference	Accurate and repeatable measurements in RF-noisy environments
130, 259, and 517 data points	Optimizes distance measurement resolution and fault locations
<500 msec per sweep	Enables easier identification of intermittent, real-time problems
Built-in average cable loss value computation	No more guess work or need to calculate a measured cable loss value

Power Meter (Option 29)

The power meter tool performs accurate power measurements, reducing coverage holes and interference.

Test / Capability	Benefits
Requires no additional power sensors	No additional parts to carry to the field

T1 and E1 Analyzer (Option 50 on S331D Models only)

The Site Master performs full T1/E1 functional tests, simplifying the task of determining if the source of problems is on the wireline or the wireless side.

Test / Capability	Benefits
Full function T1 and E1 tests	No need to purchase or carry separate wireline testers
Histogram display	Provide continuous monitoring or overnight monitoring of wireline health

ors and installers.

Spectrum Analyzer (S332D Models)

The spectrum analyzer enables field technicians to analyze and identify over-the-air interference and transmitter characteristics easily, without having to lug a separate instrument.

Test / Capability	Benefits
100 kHz to 3000 MHz	Covers all mobile system frequencies without requiring additional plug-ins or instruments
Built-in worldwide signal standards and frequency channels	Common language to cell technicians and eliminates the need to perform channel-to-frequency translation
≤–135 dBm amplitude sensitivity	Ability to detect low level signals
One-button measurements: Field Strength, Occupied Bandwidth Channel Power, Adjacent Channel Power Ratio, Interference Analysis and Carrier-to-Interference Ratio	Quicker, convenient measurements
Interference Analysis measurement	Analyzes a received signal and displays signal standard and bandwidth to understand interference problems
Carrier-to-Interference Ratio (C/I) measurement	Ensures received signal quality in the presence of interference

Powerful PC based Data Management and Analysis Software

A comprehensive data management and analysis software suite comes with every Site Master unit, providing users with a simple and easy method of managing, archiving, and analyzing system performance, trends, and the general health of monitored base stations. The Handheld Software Tools also provide a professional report generator, for those times when recorded data must be communicated.

- The Handheld Software Tools are Windows 95/98/NT4/2000/ME/XP compatible, and supports long alpha-numeric file names for descriptive data labeling
- Stores an unlimited number of data traces for comparison of historical performance measurements, easing the task of trend analysis
- Transfer data traces between the Site Master and the PC with a single menu selection
- Has the ability to convert Return Loss measurements to Distance-To-Fault measurements
- Handheld Software Tools has DTF and Smith Chart analysis capabilities

Color LCD Display (Option 3)

640x480 color STN display for crisp display/trace representation in indoor lighting conditions.

Specifications

All specifications apply when the unit is calibrated at ambient temperature after a five minute warm up. Typical values are given for reference, and are not guaranteed.

Cable and Antenna Analyzer

Frequency Range: 25 MHz to 4.0 GHz
Frequency Accuracy: ≤ ±75 ppm @ +25˚C
Frequency Resolution: 100 kHz
Output Power: < 0 dBm (–10 dBm nominal)
Immunity to Interfering Signals:
on-channel +17 dBm
on-frequency –5 dBm
Measurement speed: ≤3.5 msec / data point (CW ON)
Number of data points: 130, 259, 517
Return Loss: Range: 0.00 to 60.00 dB
Resolution: 0.01 dB
VSWR: Range: 1.00 to 65.00
Resolution: 0.01
Cable Loss: Range: 0.00 to 30.00 dB
Resolution: 0.01 dB
Measurement Accuracy: >42 dB corrected directivity after calibration
Distance-To-Fault
Vertical Range: Return Loss: 0.00 to 60.00 dB
VSWR: 1.00 to 65.00
Horizontal Range: Range: 0 to (# of data pts –1) x Resolution to a maximum of 1197 m (3929 ft), # of data pts = 130, 259, 517
Horizontal Resolution (Rectangular windowing):
Resolution (meter) = (1.5 x 10^8) x (Vp)/DF
Where Vp is the cable's relative propagation velocity and where DF is the stop frequency minus the start frequency (in Hz)

Spectrum Analyzer (S332D Models)

Frequency:
Frequency Range: 100 kHz to 3.0 GHz
Measurement Range: +20 dBm to –135 dBm
Frequency Reference (Internal Timebase):
Aging: ±1 ppm/yr
Accuracy: ±2 ppm
Frequency Span: 10 Hz to 2.99 GHz in 1, 2, 5 step selections in auto mode, plus zero span
Sweep Time: ≤1.1 sec full span;
≤ 50 µsec to 20 sec selectable in zero span
Resolution Bandwidth (–3 dB):
100 Hz to 1 MHz in 1-3 sequence ± 5% Accuracy
Video Bandwidth (–3 dB):
3 Hz to 1 MHz in 1-3 sequence ± 5% Accuracy
SSB Phase Noise (1 GHz) @ 30 kHz Offset:
≤–75 dBc/Hz
Spurious Responses: ≤–45 dBc
Spurious Residual Responses: ≤–90dBm, >10 MHz
≤–80 dBm, ≤10 MHz (10 kHz RBW, pre-amp on)
Amplitude:
Total Level Accuracy:
±1 dB typical (±1.5 dBm max), >2 GHz to 3 GHz
±0.5 dB typical (±1 dB max), ≥10 MHz to 2 GHz
±2 dB, ≥ 500 kHz to <10 MHz
±3 dB typical, <500 kHz
for input signal levels ≥ –60 dBm,
excludes input VSWR mismatch
Measurement Range: +20 dBm to –135 dBm
Input Attenuator Range: 0 to 51 dB,
selected manually or automatically coupled to the reference level. Resolution in 1 dB steps.
Displayed Average Noise Level:
≤–135 dBm typical, ≥10 MHz (preamp on)
≤–115 dBm typical, <10 MHz (preamp on)
for input terminated , 0 dB attenuation,
RMS detection, 100 Hz RBW
Dynamic Range: >65 dB
Display Range: 1 to 15 dB/division, in 1 dB steps, 10 divisions displayed
Scale Units: dBm, dBV, dBmV, dBuV, V, W
RF Input VSWR: 1.5:1 typical, (≥20 dB atten., (10 MHz to 2.4 GHz)

Power Meter (Option 29)

Frequency Range: 3 MHz to 3.0 GHz
Measurement Range: –80 dBm to +20 dBm
Display Range: –80 dBm to +80 dBm
Offset Range: 0 to +60 dB
Accuracy: ±1 dB typical (±1.5 dBm max), >2 GHz to 3 GHz
±0.5 dB typical (±1 dB max), ≥10 MHz to 2 GHz
±2 dB, 3 MHz to <10 MHz
VSWR: 1.5:1 typical (Pin> -30 dBm, 10 MHz to 2.4 GHz)
Maximum Power: +20 dBm (0.1W) without external attenuator

T1 Analyzer (Option 50 on S331D Models only)

Line Coding: AMI, B8ZS
Framing Modes: D4 (Superframe), ESF (Extended Superframe)
Connection Configurations:
Terminate (100Ω)
Bridge (≥1000Ω)
Monitor (Connect via 20 dB pad in DSX)
Receiver Sensitivity: 0 to –36 dBdsx
Transmit Level: 0 dB, –7.5 dB, and -15 dB
Clock Sources: External
Internal: 1.544 MHz ± 30 ppm
Pulse Shapes: Conform to ANSI T1.403
Pattern Generation and Detection: PRBS: 2-9, 2-11, 2-15, 2-20, 2-23 Inverted and non-inverted, QRSS, 1-in-8 (1-in-7), 2-in-8, 3-in-24, All ones, All zeros, T1-Daly, User defined (≤ 32 bits)
Circuit Status Reports: Carrier present, Frame ID and Sync., Pattern ID and Sync.
Alarm Detection: AIS (Blue Alarm), RAI (Yellow Alarm)
Error Detection: Frame Bits, Bit, BER, BPV, CRC, Error Sec
Error Insertion: Bit, BPV, Framing Bits, RAI, AIS
Loopback Modes: Self loop, CSU, NIU, User defined, In-band or Data Link
Level Measurements: Vp-p (± 5%)
Data Log: Continuous, up to 48 hrs

E1 Analyzer (Option 50 on S331D Models only)

Line Coding: AMI, HDB3
Framing Modes: PCM30, PCM30CRC, PCM31, PCM31CRC
Connection Configurations:
Terminate (75, 120Ω)
Bridge (≥1000Ω)
Monitor (Connect via 20 dB pad in DSX)
Receiver Sensitivity: 0 to –43 dB
Clock Sources: External
Internal 2.048 MHz ±30 ppm
Pulse Shapes: Conform to ITU G.703
Pattern Generation and Detection:
PRBS: 2-9, 2-11, 2-15, 2-20, 2-23 Inverted and non-inverted, QRSS, 1-in-8 (1-in-7), 2-in-8, 3-in-24, All ones, All zeros, T1-Daly, User defined (≤32 bits)
Circuit Status Reports: Carrier present, Frame ID and Sync., Pattern ID and Sync.
Alarm Detection: AIS, RAI, MMF
Error Detection: Frame Bits, Bit, BER, BPV, CRC, E-Bits, Error Sec
Error Insertion: Bit, BPV, Framing Bits, RAI, AIS
Loopback Modes: Self loopback
Level Measurements: Vp-p (±5%)
Data Log: Continuous, up to 48 hrs

General

Language Support: Chinese, English, French, German, Japanese, Spanish,
Internal Trace Memory: 200 traces
Setup Configuration: S332D - 20, S331D - 25
Display: VGA monochrome or VGA color LCD (Option 3) with adjustable backlight
Inputs and Outputs Ports:
RF Out: Type N, female, 50Ω
Maximum Input without Damage: +23 dBm, ± 50 VDC
RF In: Type N, female, 50Ω
Maximum Input without Damage: +43 dBm (Peak), ± 50 VDC
Ext. Trig In: BNC, female (5 V TTL) (S332D Models only)
Ext. Freq Ref In (2 to 20 MHz): Shared BNC, female, 50Ω, (–15 dBm to +10 dBm) (S332D Models only)
T1/E1 (Receive & Transmit): Bantam Jack (S331D Models with Option 50 only)
Serial Interface: RS-232 9 pin D-sub, three wire serial
Electromagnetic Compatibility: Meets European Community requirements for CE marking
Safety: Conforms to EN 61010-1 for Class 1 portable equipment
Temperature:
Operating: –10°C to 55°C, humidity 85% or less
Non-operating: –51°C to +71°C (recommended battery to store separately between 0°C to +40°C for any prolonged non-operating storage period)
Environmental: MIL-PRF-28800F Class 2
Power Supply:
External DC Input: +12.5 to +15 volt dc, 1350 mA max
Internal: NiMH battery: 10.8 volts, 1800 mAH
Dimensions:
Size (w x h x d): 25.4 cm x 17.8 cm x 6.1 cm (10.0 in x 7.0 in x 2.4 in)
Weight: <2.28 kg (<5 lbs) includes battery

Ordering Information

Basic Models

S331D Cable and Antenna Analyzer (25 MHz to 4.0 GHz) with built-in DTF

S332D Cable and Antenna Analyzer (25 MHz to 4.0 GHz), with built-in DTF, Spectrum Analyzer (100 kHz to 3.0 GHz)

Standard Accessories Include

User's Guide
Soft Carrying Case
AC-DC Adapter with Power Cord
Automotive Cigarette Lighter/12 Volt DC Adapter
One Year Warranty
Handheld Software Tools CDROM containing Fault Location (DTF) and Smith Chart
Serial Interface Cable
Rechargeable Battery, NiMH

Options

Option 3 Color LCD Display
Option 29 Power Meter (does not require external detector)
Option 50 T1/E1 Analyzer (S331D only)

Optional Accessories

1N50C	Limiter, N(m) to N(f), 50Ω, 10 MHz to 18 GHz
42N50-20	Attenuator, 20 dB, 5 watt, DC to 18 GHz, N(m)-N(f)
42N50A-30	Attenuator, 30 dB, 50 watt, DC to 18 GHz, N(m)-N(f)
ICN50	InstaCal™ Calibration Module, 2 MHz to 4.0 GHz, N(m), 50Ω
22N50	Open/Short, DC to 18 GHz, N(m), 50Ω
22NF50	Open/Short, DC to 18 GHz, N(f), 50Ω
SM/PL	Precision Load, DC to 4 GHz, 42 dB, N(m), 50Ω
SM/PLNF	Precision Load, DC to 4 GHz, 42 dB, N(f), 50Ω
OSLN50LF	Precision Open/Short/Load, DC to 4 GHz, 42 dB, 50Ω, N(m)
OSLNF50LF	Precision Open/Short/Load, DC to 4 GHz, 42 dB, 50Ω, N(f)
2000-767	Precision Open/Short/Load, DC to 4 GHz, 7/16 DIN(m), 50Ω
2000-768	Precision Open/Short/Load, DC to 4 GHz, 7/16 DIN(f), 50Ω
15NN50-1.5C	Test Port Cable Armored, 1.5 meters, N(m)-N(m), 6 GHz, 50Ω
15NN50-3.0C	Test Port Cable Armored, 3.0 meters, N(m)-N(m), 6 GHz, 50Ω
15NN50-5.0C	Test Port Cable Armored, 5.0 meters, N(m)-N(m), 6 GHz, 50Ω
15NNF50-1.5C	Test Port Cable Armored, 1.5 meters, N(m)-N(f), 6 GHz, 50Ω
15NNF50-3.0C	Test Port Cable Armored, 3.0 meters, N(m)-N(f), 6 GHz, 50Ω
15NNF50-5.0C	Test Port Cable Armored, 5.0 meters, N(m)-N(f), 6 GHz, 50Ω
15ND50-1.5C	Test Port Cable Armored, 1.5 meters, N(m)-7/16 DIN(m), 6 GHz, 50Ω
15NDF50-1.5C	Test Port Cable Armored, 1.5 meters, N(m)-7/16 DIN(f), 6 GHz, 50Ω
34NN50A	Precision Adapter, N(m)-N(m), DC to 18 GHz, 50Ω
34NFNF50	Precision Adapter, N(f)-N(f), DC to 18 GHz, 50Ω
1091-26	Adapter, N(m)-SMA(m), DC to 18 GHz, 50Ω
1091-27	Adapter, N(m)-SMA(f), DC to 18 GHz, 50Ω
1091-80	Adapter, N(f)-SMA(m), DC to 18 GHz, 50Ω
1091-81	Adapter, N(f)-SMA(f), DC to 18 GHz, 50Ω
1091-172	Adapter, N(m)-BNC(f), DC to 1.3 GHz, 50Ω
510-90	Adapter, 7/16 DIN(f)-N(m), DC to 7.5 GHz, 50Ω
510-91	Adapter, 7/16 DIN(f)-N(f), DC to 7.5 GHz, 50Ω
510-92	Adapter, 7/16 DIN(m)-N(m), DC to 7.5 GHz, 50Ω
510-93	Adapter, 7/16 DIN(m)-N(f), DC to 7.5 GHz, 50Ω
510-96	Adapter, 7/16 DIN(m)-7/16 DIN(m), DC to 7.5 GHz, 50Ω
510-97	Adapter, 7/16 DIN(f)-7/16 DIN(f), DC to 7.5 GHz, 50Ω
2000-1030	Portable Antenna, SMA (m), 1.71 to 1.88 GHz, 50Ω
2000-1031	Portable Antenna, SMA (m), 1.85 to 1.99 GHz, 50Ω
2000-1032	Portable Antenna, SMA (m), 2.4 to 2.5 GHz, 50Ω
2000-1200	Portable Antenna, SMA (m), 806-869 MHz, 50Ω
2000-1035	Portable Antenna, SMA (m), 896-941 MHz, 50Ω
1030-86	Band Pass Filter, 806-869 MHz, 1.7 dB loss, N(m) to SMA(f), 50Ω
1030-87	Band Pass Filter, 902-960 MHz, 1.7 dB loss, N(m) to SMA(f), 50Ω
1030-88	Band Pass Filter, 1.85-1.99 GHz, 1.8 dB loss, N(m) to SMA(f), 50Ω
1030-89	Band Pass Filter, 2.4-2.5 GHz, 1.4 dB loss, N(m) to SMA(f), 50Ω
806-16	Bantam Plug to Bantam Plug
806-116	Bantam Plug to BNC
806-117	Bantam "Y" Plug to RJ48
551-1691	USB to RS232 adapter cable
48258	Soft Carrying Case
760-229	Transit Case
633-27	Rechargeable Battery, NiMH
2000-1029	Battery Charger, NiMH, w/ Universal Power Supply
40-163	AC/DC Adapter
806-62	Automotive Cigarette Lighter/12 Volts DC Adapter
800-441	Serial Interface Cable
2300-347	Software Tools
10580-00079	Site Master S331D/S332D User's Guide
10580-00100	Site Master S331D/S332D Programming Manual
10580-00101	Site Master S331D Maintenance Manual
10580-00102	Site Master S332D Maintenance Manual

Printers

2000-1214	HP DeskJet Printer, Model 450: Includes printer cable, 2000-1216 black print cartridge and U.S. power cord. Also includes 2000-753 serial-to-parallel Centronics converter cable and 1091-310 Centronics-to DB25 adapter. Rechargeable battery is optional and is not included.
2000-753	Null Modem Serial-to-Parallel Centronics Converter Cable
1091-310	Adapter 36-pin Centronics female-to-DB25 female
2000-1216	Black Print Cartridge
2000-663	Power Cable (Europe) for DeskJet Printer
2000-664	Power Cable (Australia) for DeskJet Printer
2000-667	Power Cable (S. Africa) for DeskJet Printer
2000-1217	Rechargeable Battery for DeskJet Printer, Model 450
2000-1218	Power Cable (U.K.) for DeskJet Printer

SALES CENTERS:
United States (800) ANRITSU
Canada (800) ANRITSU
South America 55 (21) 2527-6922
Europe 44 (0) 1582-433433
Japan 81 (46) 223-1111
Asia-Pacific (65) 6282-2400

Microwave Measurements Division
490 Jarvis Drive, Morgan Hill, CA 95037-2809
http://www.us.anritsu.com

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