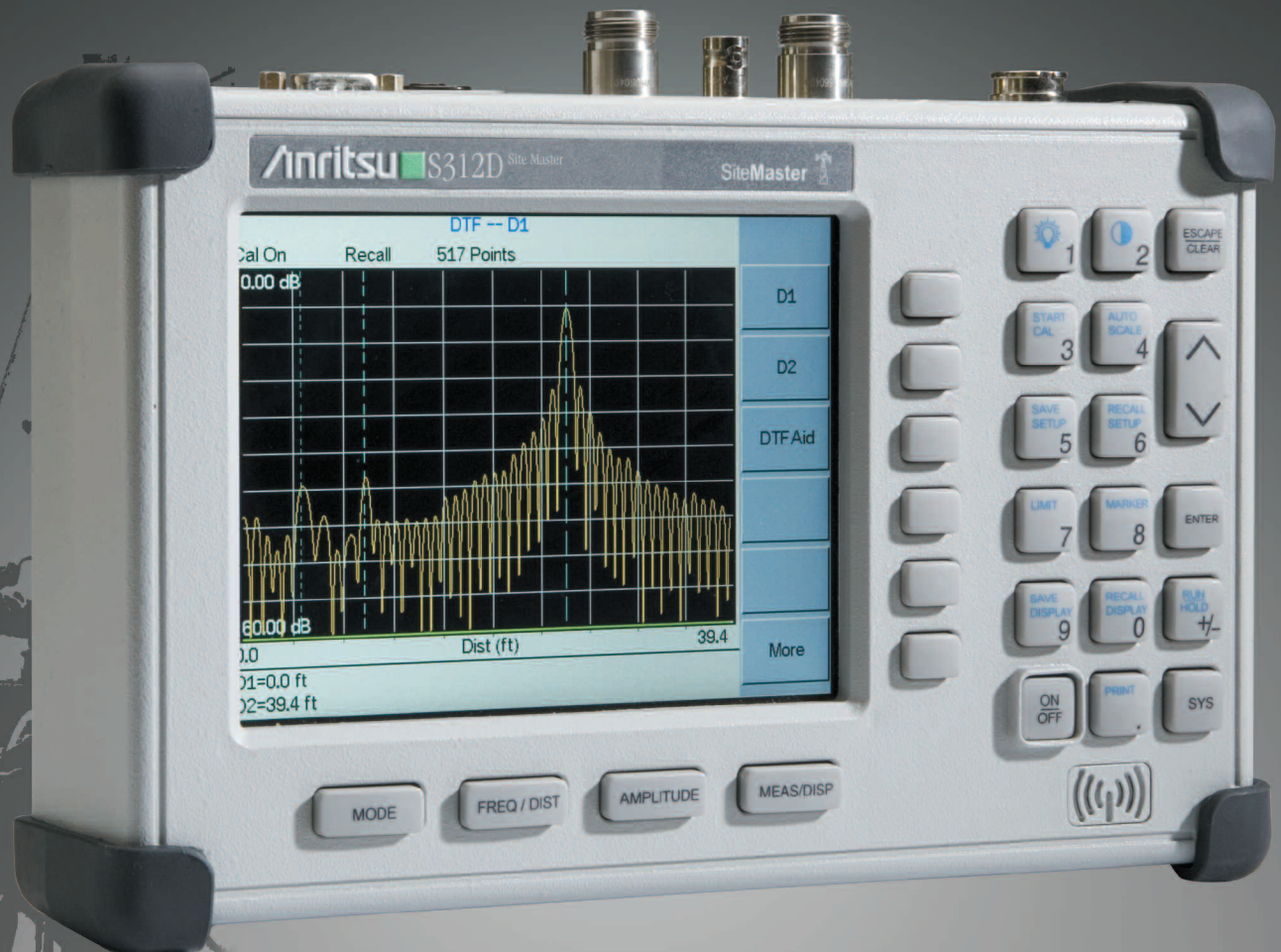


# Site Master<sup>TM</sup> S311D/S312D

Cable and Antenna Analyzer, 2 MHz to 1600 MHz  
Spectrum Analyzer, 100 kHz to 1600 MHz



# Site Master™ is the perfect instrument for Land Mobile Radio and Public Safety system applications.

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Anritsu's S311D/S312D Site Master is the latest addition to the successful Site Master cable and antenna analyzer series. It builds upon Anritsu's expertise in developing accurate, portable, rugged, and easy-to-use field instruments with a rich set of features aimed at simplifying life for field use.

The Site Master is the perfect instrument for Land Mobile Radio (LMR) and Public Safety system technicians testing the RF performance of P25 and TETRA radios in the VHF/UHF, 700 MHz and 800 MHz bands. With its 2 MHz frequency coverage, the Site Master works well for defense applications in the HF band. The S31xD is also ideal for broadcast and cellular applications.

The high performance 1600 MHz cable and antenna analyzer can be used to sweep cables and antennas at the frequency of operation using the Return Loss and VSWR measurements. The Distance-To-Fault (DTF) measurement can easily spot poor connections, contamination, damaged cables, water penetration, and bad antennas. 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.

The S312D combines the high performance cable and antenna analyzer with a fully functional spectrum analyzer. The -135 dBm noise floor is needed to find low level interfering signals which can interfere with LMR and SMR systems. The Interference analyzer provides helpful tools to aid in diagnosing and tracking interference. The S312D can be equipped with a cable and antenna analyzer, spectrum analyzer, interference analyzer, channel scanner, Received Signal Strength Indicator (RSSI), AM/FM demodulation, and RF power meter.

## Rugged and Reliable

Because the Site Master was designed specifically for field environments, it can easily withstand the day-to-day punishments of field use. The instrument is almost impervious to the bumps and bangs typically encountered by portable field equipment.

## Easy-to-Use

The menu driven user interface is intuitive and easy to use and requires little or no training time. A standard high resolution TFT color display provides visibility in broad day light. A full range of markers enable the user to make accurate measurements. Limit lines simplify measurements allowing users to create quick and simple pass/fail tests.

## Take it anywhere

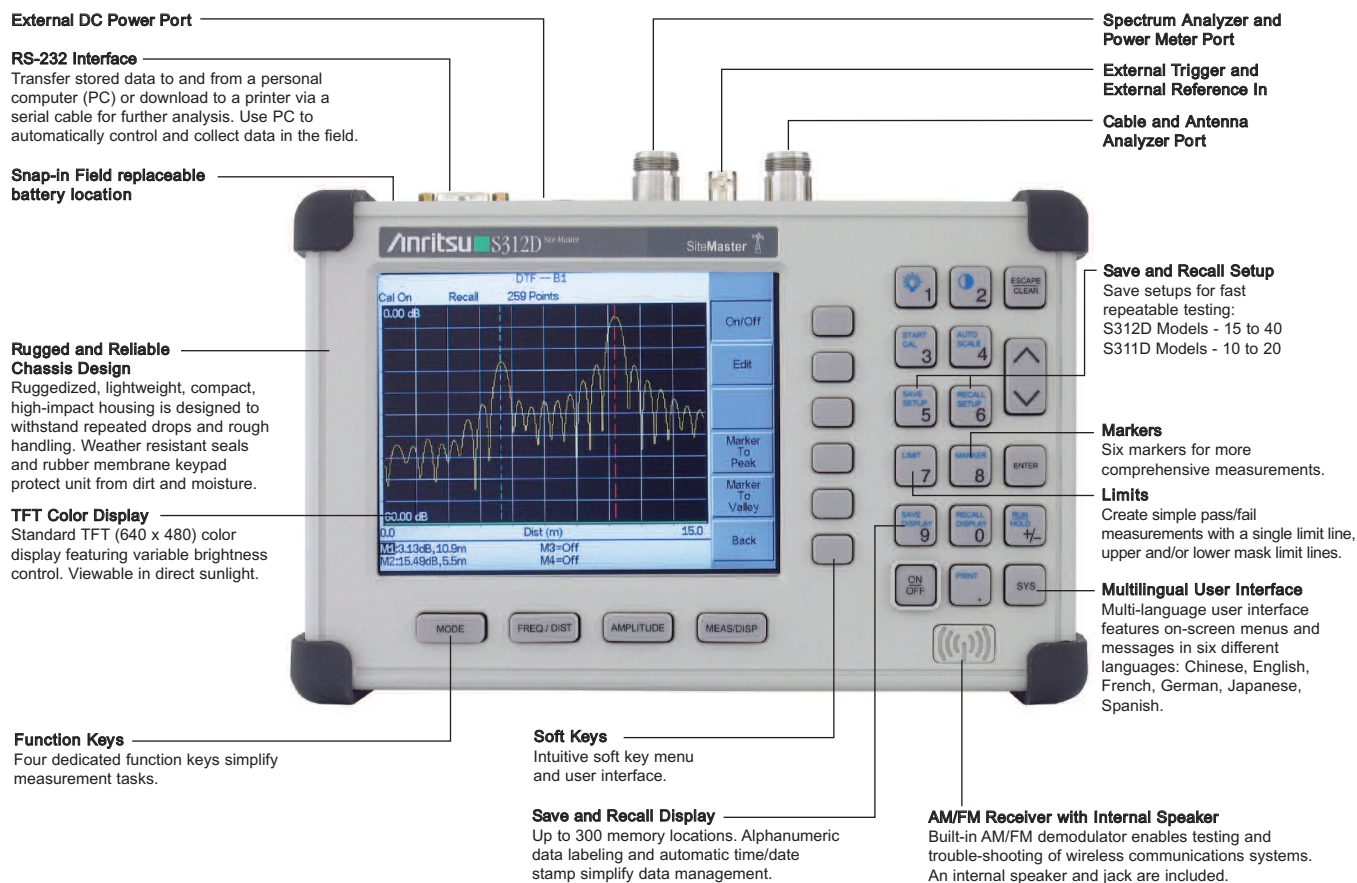
Weighing less than 5 lbs (2.3 kg) with its rechargeable NiMH battery, the S311D/S312D moves effortlessly from ground installations to anywhere where critical measurements are needed. Sophisticated charging circuits optimize the life of the battery. Replacing the battery in the field takes no time at all and requires no tools.

## Six built-in Languages

The Site Master is equipped with local language support in English, Chinese, Japanese, French, German, and Spanish.



# The Site Master is a multi-function field solution



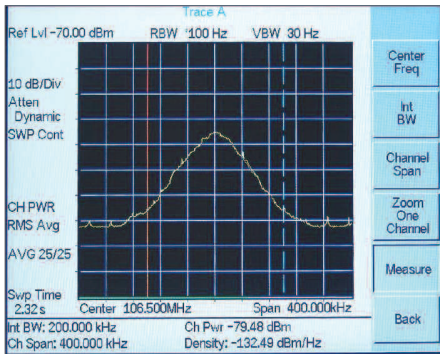
Function	Benefits
Cable and Antenna Analyzer (S311D/S312D)	Characterize cable and antenna systems, and pinpoint location of faults.
Spectrum Analyzer (S312D)	Easily locate, identify and record various signals with high accuracy
Interference Analyzer (312D)	Take advantage of the -135 dBm noise floor to track low level interference with the Spectrogram display and the Received Signal Strength Indicator (RSSI).
AM/FM Demodulator (S312D)	Built-in demodulator for AM, narrow band FM, wide band FM, and SSB allows technician to listen to and identify interfering signals.
Transmission Measurement (S312D)	Characterize and adjust filters, combiners, and duplexers.
Channel Scanner (S312D)	Measure frequency, bandwidth and power of multiple transmitted signals.
CW Signal Generator (S312D)	CW source to test low noise amplifiers.
High Accuracy Power Meter (S311D/S312D)	Use a high performance sensor to measure RF power of CW and modulated signals with better than 0.16 dB accuracy. Eliminates the need for a separate watt meter.
Power Meter (S311D/S312D)	Make RF power measurements without an external detector.
GPS Receiver (S311D/S312D)	Provides location (latitude, longitude, altitude) and UTC time information.
Bias Tee (S312D)	Bias the amplifier using the internal bias tee. Eliminates the need for external supplies.
2 MHz Low Frequency Option (S311D/S312D)	Extend the lower frequency range of the cable and antenna analyzer to 2 MHz to cover the HF band.



# High Performance Cable & Antenna Analyzer and Spectrum Analyzer

## Spectrum Analysis (S312D)

The S312D integrated Spectrum Analyzer provides the ultimate in measurement flexibility for field measurements. The Site Master has dedicated routines for critical smart measurements including: Channel Power, Carrier-To-Interference, occupied bandwidth, interference analysis, adjacent channel power (ACPR), and AM/FM demodulation. These are increasingly critical measurements for today's wireless communication systems. The excellent noise floor in the S312D is crucial for tracking low level interference.



### Channel Power

The channel power measurement in the S312D provides great flexibility for measuring the rms channel power of P25 and TETRA signals. This smart measurement allows you to change the RBW/VBW, detection method, frequency range, attenuator, and preamp settings and much more.

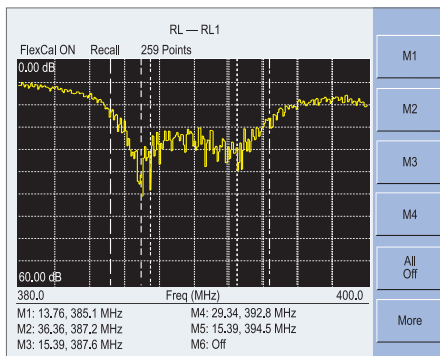
### AM/FM/SSB Demodulator

A built-in demodulator for AM, narrowband FM, wideband, FM and single sideband (USB or LSB) allow a technician to easily identify interfering signals.

## Cable and Antenna Analysis – (S311D/S312D)

The cable and antenna analyzer in the Site Master is designed to provide field users with key measurements to sweep cables and antenna systems. The Site Master uses the superior Frequency Domain Reflectometry (FDR) approach for its Return Loss/VSWR, Cable Loss, and Distance-To-Fault measurement.

The Site Master has the sensitivity to identify poor connections, damaged cables, water penetration, and bad antennas. It is also equipped with a special RF immunity protection that allows you to make accurate measurements even in RF rich environments.



### Return Loss / VSWR

Return Loss and VSWR measurements ensure conformance to system specifications.

### Cable Loss

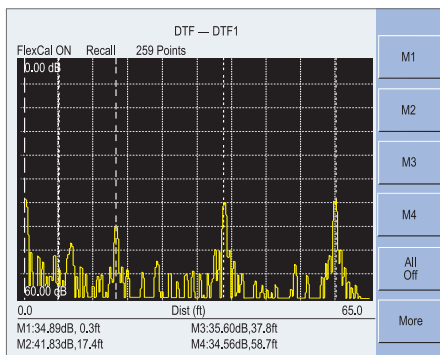
The cable loss measurement measures the level of insertion loss within the cable feed line system. The Site Master automatically computes the average cable loss value over the measured frequency range.

### Distance-To-Fault (DTF)

Although a return loss test can tell user the magnitude of signal reflections, it cannot tell the precise location of a cable defect. The DTF measurement provides the clearest indication of trouble areas as it tells us both the magnitude of signal reflection and the location of the signal anomaly.

### 2 MHz Frequency Extension (Option 2, S311D/S312D)

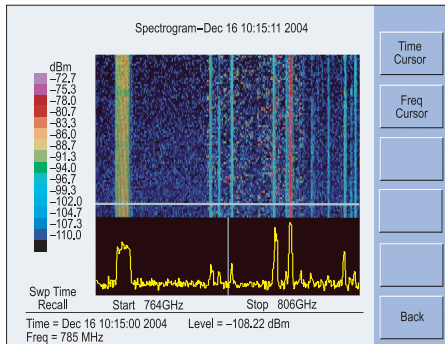
The standard cable and antenna analyzer spans from 25 MHz to 1600 MHz. The lower frequency range can optionally extend to 2 MHz and provide Return Loss/VWSR, Cable Loss, and DTF measurements from 2 MHz to 1600 MHz.



# The Site Master offers a wide range of options

## Bias Tee (Option 10A, S312D)

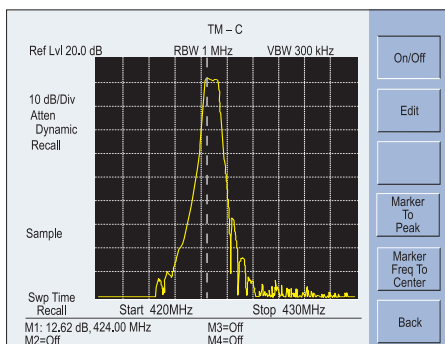
The optional (+12 to +24V) bias tee is integrated into the Site Master and is designed for applications where both DC and RF signals must be applied to a device under test.



## Interference Analyzer (Option 25, S312D)

The interference analyzer option displays interference in four different ways: Spectrogram, RSSI, Signal Strength, Signal ID.

The Spectrogram is a three dimensional display of frequency, power, and time of the spectrum activity. The RSSI feature is useful to observe the signal strength at a single frequency over time (seven days).



## Transmission Measurement (Option 21, S312D)

The transmission measurement option coupled with the excellent dynamic range allows users to view and adjust the RF performance of critical RF devices including filters, duplexers, transmitter combiners, receiver multi-couplers and tower top amplifiers.

## CW Signal (Option 28, S312D)

The CW signal generator provides a CW signal source to test low noise amplifiers, repeaters, and receivers. The external attenuator can be varied from 0 to 90 dB in 1 dB steps. The display shows the output power and the frequency. This feature can be operated simultaneously with the power monitor option.

## GPS Receiver (Option 31, S311D/S312D)

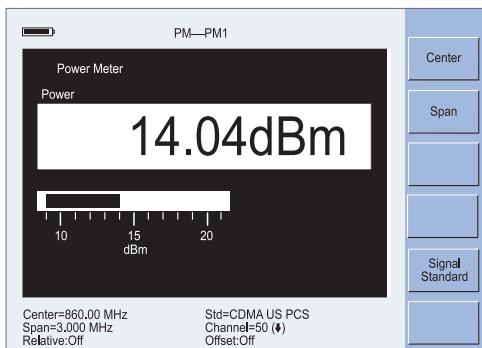
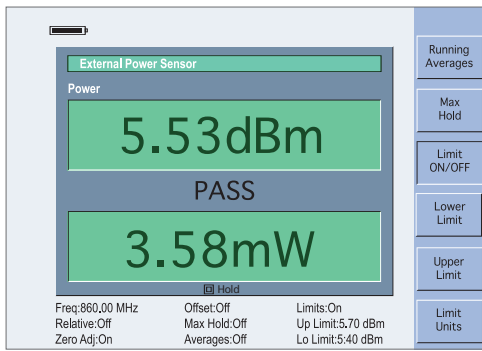
Built-in GPS provides location information (latitude, longitude, and altitude) and Universal Time (UT) information. Site Master can stamp each trace with location information to check if the measurements are taken at the right location. Site Master stores the GPS location information until the unit is turned off. This stored location information can be used to stamp traces taken indoors at the same cell site location. The GPS option is offered with a magnet mount antenna with a 15-foot (~ 5 m) cable to mount on the car or other useful surface.



# RF Power Measurements for a variety of applications

## High Accuracy Power Meter (Option 19, S311D/S312D)

Anritsu's PSN50 sensor makes high accuracy power measurements from 50 MHz to 6 GHz. The sensor provides true RMS measurements from -30 to +20 dBm and provides accurate measurements for CW and digitally modulated standards such as P25, TETRA, DIMRS, and IDRA. Power is displayed in both dBm and Watts. Upper and lower limits can be set for Pass/Fail measurements.

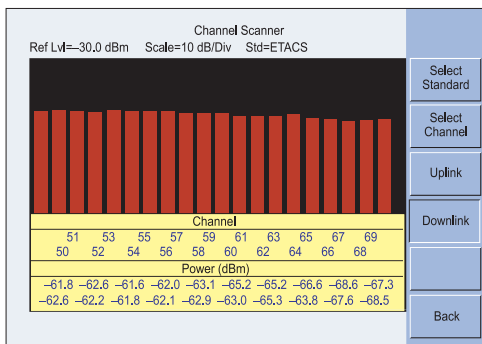


## Power Meter (Option 29, S312D)

The power meter performs accurate transmitter power meter measurements from 3 MHz to 1600 MHz. The Spectrum Analyzer is used to measure channel power. No external sensor or detector is required. This option is ideal for channelized power measurements as it eliminates the need for external filters.

## Power Monitor (Option 5, S311D/S312D)

The optional Power Monitor features precision, high return loss (low SWR) detectors ideal for broadband CW power monitoring. A wide range of detectors is available with upper frequency ranges from 3 GHz to 50 GHz. Display formats include absolute power (dBm or Watts) and relative power (dBr or %). Built-in Auto-Averaging automatically reduces the effects of noise while zeroing control allows optimum measurement accuracy at low power levels.

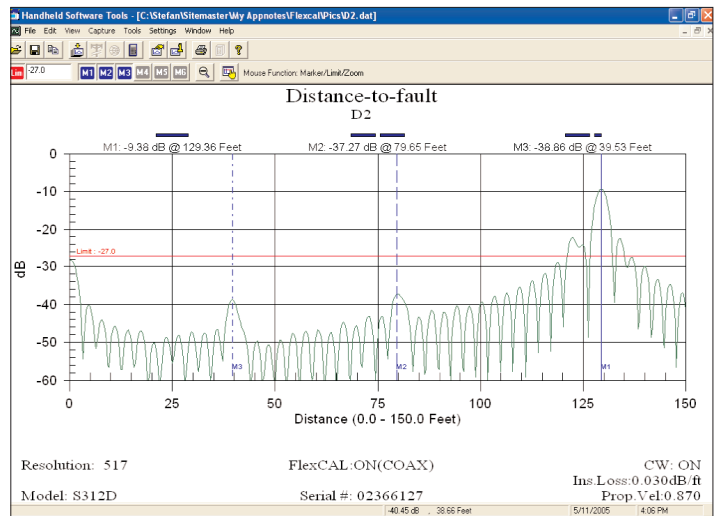


## Channel Scanner (Option 27, S312D)

The channel scanner option gives the user another convenient way to view power by measuring multiple transmitted signals. The focus of the measurements made with this option is on channelized communication systems such as land mobile systems and maritime communication. The span and step size are adjustable and up to 20 channels can be viewed simultaneously.

# Handheld Software Tools™

Although Site Master features built-in analytical and reporting functions, users can also download measurement data to a PC for additional analysis or report generation. Site Master's user friendly Software Tools is a Windows® program designed specifically for cable and antenna analysis and will run on any computer with Windows 95/98/NT4/2000/ME/XP test data can be analyzed and compared to historical performance.



- Up to 300 Site Master trace memory locations can be downloaded with a single menu selection.
- Build historical records with an unlimited number of traces in one document.
- Familiar Windows® 95/98/NT4/2000/ME/XP interface simplifies data analysis and report generation.
- Intelligent drag and drop automatically converts traces to a common scale and speeds fault identification.
- Supports long file names for easy measurement data identification.





# Specifications

## Cable and Antenna Analyzer

**Frequency Range:** 25 MHz to 1.6 GHz

**Frequency Accuracy:**  $\leq \pm 75$  ppm at +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:**  $\leq 3.5$  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 directivity after calibration

### Distance-to-Fault:

**Vertical Range:** Return Loss: 0.00 to 60.00 dB  
VSWR 1.00 to 65.00

**Horizontal Range:** 0 to (# of data pts – 1) x Resolution to a maximum of 1197 m (3929 ft), # of data pts = 130, 259 or 517

### Horizontal Resolution

**(Rectangular Windowing):** Resolution (meter) =  $(1.5 \times 10^6) \times (V_p) / \Delta F$   
Where  $V_p$  is the cable's relative propagation velocity and where  $\Delta F$  is the stop frequency minus the start frequency (in Hz).

## 2 MHz Frequency Extension (Option 2)

### Cable and Antenna Analyzer

**Frequency Range:** 2 MHz to 1600 MHz

(All other specs remain the same as standard S31xD)

## Spectrum Analyzer (S312D)

### Frequency:

**Frequency Range:** 100 kHz to 1.6 GHz (tunable to 9 kHz)

**Frequency Reference**  
**(Internal Timebase) Aging:**  $\pm 1$  ppm/yr  
Accuracy:  $\pm 2$  ppm

**Frequency Span:** 10 Hz to 1.59 GHz in 1, 2, and 5 step selections  
in auto mode, plus zero span

**Sweep Time:**  $\leq 1.1$  sec full span  
 $\leq 50$   $\mu$ sec to 20 sec selectable in zero span

**Resolution Bandwidth (–3 dB):** 100 Hz to 1 MHz in 1-3 sequence  $\pm 5\%$  Accuracy

**Video Bandwidth (–3 dB):** 3 Hz to 1 MHz in 1-3 sequence  
 $\pm 5\%$  Accuracy typical

**SSB Phase Noise (1 GHz) at 30 kHz Offset:**  $\leq -75$  dBc/Hz

**Spurious Responses Input Related:**  $\leq -45$  dBc

**Spurious Residual Responses:**  $\leq -90$  dBm,  $\leq 10$  MHz  
 $\leq -80$  dBm, <10 MHz  
(10 kHz RBW, pre-amp on)

### Amplitude:

**Total Level Accuracy:**  $\pm 1$  dB typical ( $\pm 1.5$  dBm max),  $\leq 10$  MHz to 3 GHz  
 $\pm 2$  dB typical, <10 MHz for input signal levels  
 $\geq -60$  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:**  $\leq -135$  dBm,  $\geq 10$  MHz (preamp on)  
 $\leq -115$  dBm, <10 MHz (preamp on) for input terminated, 0 dB attenuation, RMS detection, 100 Hz RBW

**Dynamic Range:** >65 dB, typical

**Display Range:** 1 to 15 dB/division, in 1 dB steps,  
10 divisions displayed

**Scale Units:** dBm, dBV, dBmV, dBmV, V, W

**RF Input VSWR:** (with  $\geq 20$  dB atten.), 1.5:1 typical, (10 MHz to 1.6 GHz)

## Power Monitor (Option 5)

**Detector Range:** –80 to +80 dBm (10 pW to 100 kW)

**Measurement Range:** –50 to +16 dBm (10 nW to 40 mW)

**Offset Range:** 0 to +60 dB

**Resolution:** 0.1 dB, 0.1 W

**Accuracy:**  $\pm 1$  dB

## Bias Tee (Option 10A, S312D)

**Voltage:** +12 V to +24 V (variable in 1 V steps)

**Power:** 6 W steady state

**Current:** 6 W/Voltage (V)

## High Accuracy Power Meter PSN50 (Option 19)

### Sensor:

**Measurement Range:** –30 to +20 dBm

**Frequency Range:** 50 MHz to 6 GHz

**Input Connector:** Type N, male, 50  $\Omega$

**Max Input without Damage:** +33 dBm,  $\pm 25$  VDC

**Input Return Loss:** 50 MHz to 2 GHz:  $\geq 26$  dB  
2 GHz to 6 GHz:  $\geq 20$  dB

### Accuracy:

**Total RSS Measurement Uncertainty (0 to 50C):**  $\pm 0.16$  dB\*

**Noise:** 20 nW max

**Zero Set:** 20 nW

**Zero Drift:** 10 nW max\*\*

**Sensor Linearity:**  $\pm 0.13$  dB max

**Instrumentation Accuracy:** 0.00 dB

**Sensor Cal Factor Uncertainty:**  $\pm 0.06$  dB

**Temperature Compression:**  $\pm 0.06$  dB max

**Continuous Digital Modulation Uncertainty:** +0.06 dB (+17 to +20 dBm)

\*Excludes mismatch errors.

Excludes noise, zero set, zero drift for levels <–20 dBm.

Excludes digital modulation uncertainty between +17 and +20 dBm.

\*\*After 30 minute warm-up

### System:

**Measurement Resolution:** 0.01 dB

**Offset Range:**  $\pm 60$  dB

### Power Requirements:

**Supply Voltage:** 8 to 18 Vdc

**Supply Current:** <100 mA

## Transmission Measurement (Option 21, S312D)

**Frequency Range:** 25 MHz to 1.6 GHz

**Frequency Resolution:** 10 Hz

**Output Power Level:** –10 dBm typical

**Dynamic Range:** 80 dB, 25 MHz to 2 GHz  
60 dB, >2 GHz to 3 GHz

**Output Impedance:** 50  $\Omega$

## Channel Scanner (Option 27, S312D)

**Frequency Range:** 100 kHz to 1.6 GHz

**Frequency Accuracy:**  $\pm 10$  Hz + Time base error, 99% confidence level

**Measurement Range:** +20 dBm to –100 dBm

**Channel Power:**  $\pm 1$  dB typical ( $\pm 1.5$  dB max)

**Adjacent Channel Power Accuracy:**  $\pm 0.75$  dBc



# Specifications

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## Power Meter (Option 29, S312D)

**Frequency Range:** 3 MHz to 1.6 GHz

**Measurement Range:** -80 dBm to +20 dBm (+80 dBm with 60 dB external attenuator)

**Display Range:** -80 dBm to +80 dBm

**Offset Range:** 0 to +60 dB

**Accuracy\*\*\*:**  $\pm 1$  dB typical ( $\pm 1.5$  dB max), >2 GHz to 3 GHz  
 $\pm 2$  dB typical, 3 MHz to <10 MHz

**VSWR:** 1.5:1 typical ( $P_{in}$  >-30 dBm, 10 MHz to 1.6 GHz)

**Maximum Power:** +20 dBm (0.1 W) without external attenuator

\*\*\* (Excludes Input VSWR)

## GPS (Option 31)

GPS Location Indicator

Latitude, Longitude, and Altitude on Display

Latitude, Longitude, and Altitude with trace storage

ESF (Extended Superframe)

## General

**Language Support:** Chinese, English, French, German, Japanese, Spanish

**Internal Trace Memory:** 300 traces

## Setup Configuration:

**S311D:** 10 to 20 setups (VNA-10, High Accuracy Power Meter-5, Power Monitor-5)

**S312D:** 15 to 40 setups (VNA-10, SPA/Transmission Measurement- 5,  
Power Meter- 5, High Accuracy Power Meter- 5,  
Interference Analyzer-5, Channel Scanner-5, )

**Display:** TFT color LCD with adjustable backlight

## Inputs and Outputs Ports:

**RF Out:** Type N, female, 50  $\Omega$

**Maximum Input without Damage:** +23 dBm,  $\pm 50$  VDC

**RF In:** Type N, female, 50  $\Omega$

**Maximum Input without Damage:** +43 dBm (peak),  $\pm 50$  VDC

**Ext. Trig In:** BNC, female (5 V TTL) (S312D models only)

**Ext. Freq Ref In (2 to 20 MHz):** Shared BNC, female, 50  $\Omega$ , (-15 dBm to +10 dBm)  
(S312D models 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 (Recommend the battery be stored  
separately between 0 °C and +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, 3A 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

S311D	Cable and Antenna Analyzer (25 MHz to 1.6 GHz)
S312D	Cable and Antenna Analyzer (25 MHz to 1.6 GHz) Spectrum Analyzer (100 kHz to 1.6 GHz)

## Options

S311D-002	2 MHz Frequency Extension
S312D-002	2 MHz Frequency Extension
S311D-005	Power Monitor - requires external detector
S312D-005	Power Monitor - requires external detector
S312D-010A	+12 to +24 V Variable (1 V steps) Bias Tee
S311D-019	High Accuracy Power Meter (PSN50 sensor not included)
S312D-019	High Accuracy Power Meter (PSN50 sensor not included)
S312D-021	Transmission Measurement
S312D-025	Interference Analyzer - directional antenna not included
S312D-027	Channel Scanner
S312D-028	CW Signal Generator - requires CW Signal Generator Kit
S312D-029	Power Meter - does not require external detector
S311D-031	GPS Receiver for location information. Includes GPS antenna
S312D-031	GPS Receiver for location information. Includes GPS antenna

## Standard Accessories

10580-00185	S311D/S312D Site Master User's Guide
2300-347	Anritsu Handheld Software Tools CDROM
48258	Soft Carrying Case
633-27	Rechargeable Battery, NiMH
40-168	AC-DC Adapter with Power Cord
551-1691-R	USB to RS232 Adapter Cable
806-141	Automotive Cigarette Lighter/12 Volt DC Adapter
800-441	Serial Interface Cable One Year Warranty

## Optional Accessories

1N50C	Limiters, N(m) to N(f), 50 Ω, 10 MHz to 18 GHz
65701	Offset Cal Kit consisting of one each: 3-1010-119, 10 dB Attenuator, DC to 6 GHz 2W 3-806-151, 4 GHz Cable, 18 in. (46 cm) Magnet mount GPS antenna with 15 ft. cable
2000-1410	CW Signal Generator Kit with variable step attenuator
61534	USB to RS-232 adapter cable
551-1691-R	Soft Carrying Case
48258	Transit Case
760-243-R	Rechargeable Battery, NiMH
633-27	Battery Charger, NiMH, with Universal Power Supply
2000-1029	AC/DC Adapter
40-168	Detector Extender Cable, 7.6 m (25 ft.)
800-109	Detector Extender Cable, 30.5 m (100 ft.)
800-111	Serial Interface Cable
800-141	Automotive Cigarette Lighter/12 Volts DC Adapter
806-141	Software Tools
2300-347	

## Calibration Components

ICN50	InstaCal™ Calibration Module, 25 MHz to 4.0 GHz, N(m), 50 Ω N(m) to N(f)
22N50	Open/Short, DC to 18 GHz, N(m), 50 Ω
22NF50	Open/Short, DC to 18 GHz, N(f), 50 Ω
SM/PL-1	Precision Load, DC to 6 GHz, 42 dB, N(m), 50 Ω
SM/PLNF-1	Precision Load, DC to 6 GHz, 42 dB, N(f), 50 Ω
OSLN50-1	Precision Open/Short/Load, DC to 6 GHz, 42 dB, 50 Ω, N(m)
OSLN50LF-1	Precision Open/Short/Load, DC to 6 GHz, 42dB, 50 Ω, N(m)

2000-767	Precision Open/Short/Load, DC to 4 GHz, 7/16 DIN(m), 50 Ω
2000-768	Precision Open/Short/Load, DC to 4 GHz, 7/16 DIN(m), 50 Ω
22N75	Open/Short, DC to 3 GHz, N(m) 75 Ω
22NF75	Open/Short, DC to 3 GHz, N(m) 75 Ω
26N75A	Precision Termination, DC to 3 GHz, N(m) 75 Ω
26NF75A	Precision Termination, DC to 3 GHz, N(f) 75 Ω
12N50-75B	Matching Pad, DC to 3 GHz, 50 Ω to 75 Ω to 50 Ω

## Adapters

34NN50A	Precision Adapter, N(m)-N(m), DC to 18 GHz, 50 Ω
34NFN50	Precision Adapter, N(f)-N(f), DC to 18 GHz, 50 Ω
1091-26	Adapter, N(m) to SMA(m), DC to 18 GHz, 50 Ω
1091-27	Adapter, N(m) to SMA(f), DC to 18 GHz, 50 Ω
1091-80	Adapter, N(f) to SMA(m), DC to 18 GHz, 50 Ω
1091-81	Adapter, N(f) to SMA(f), DC to 18 GHz, 50 Ω
1091-172	Adapter, N(m) to BNC(f), DC to 1.3 GHz, 50 Ω
510-90	Adapter, 7/16 DIN(f) to N(m), DC to 7.5 GHz, 50 Ω
510-91	Adapter, 7/16 DIN(f) to N(f), DC to 7.5 GHz, 50 Ω
510-92	Adapter, 7/16 DIN(m) to N(m), DC to 7.5 GHz, 50 Ω
510-93	Adapter, 7/16 DIN(m) to N(f), DC to 7.5 GHz, 50 Ω
510-96	Adapter, 7/16 DIN(m) to 7/16 DIN(m), DC to 7.5 GHz, 50 Ω
510-97	Adapter, 7/16 DIN(f) to 7/16 DIN(f), DC to 7.5 GHz, 50 Ω

## Test Port Cable Armored

15NN50-1.5C	Test Port Cable Armored, 1.5 meters, N(m) to N(m), 6 GHz, 50 Ω
15NN50-3.0C	Test Port Cable Armored, 3.0 meters, N(m) to N(m), 6 GHz, 50 Ω
15NN50-5.0C	Test Port Cable Armored, 5.0 meters, N(m) to N(m), 6 GHz, 50 Ω
15NNF50-1.5C	Test Port Cable Armored, 1.5 meters, N(m) to N(f), 6 GHz, 50 Ω
15NNF50-3.0C	Test Port Cable Armored, 3.0 meters, N(m) to N(f), 6 GHz, 50 Ω
15NNF50-5.0C	Test Port Cable Armored, 5.0 meters, N(m) to N(f), 6 GHz, 50 Ω
15ND50-1.5C	Test Port Cable Armored, 1.5 meters, N(m) to 7/16 DIN(m), 6 GHz, 50 Ω
15NDF50-1.5C	Test Port Cable Armored, 5.0 meters, N(m) to 7/16 DIN(f), 6 GHz, 50 Ω

## Portable Antennas

2000-1035	SMA(m), 846 to 941 MHz, 50 Ω
2000-1200	SMA(m), 806 to 869 MHz, 50 Ω
2000-1473	SMA(m), 870 to 960 MHz, 50 Ω

## Directional Antennas

2000-1411	Portable Yagi Antenna, 10 dBd, N(f), 822 to 900 MHz
2000-1412	Portable Yagi Antenna, 10 dBd, N(f), 885 to 975 MHz

## Attenuators

42N50-20	Attenuator, 20 dB, 5 Watt, DC to 18 GHz, N(m) to N(f)
42N50A-30	Attenuator, 30 dB, 50 Watt, DC to 18 GHz, N(m) to N(f)
1010-121	Attenuator, 40 dB, 100 Watt, DC to 18 GHz, N(m) to N(f)
3-1010-122	Attenuator, 20 dB, 5 Watt, DC to 12.4 GHz, N(m) to N(f)
3-1010-123	Attenuator, 30 dB, 50 Watt, DC to 8.5 GHz, N(m) to N(f)
3-1010-124	Attenuator, 40 dB, 100 Watt, DC to 8.5 GHz, N(m) to N(f)

# Ordering Information

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## Band Pass Filters

1030-109	Filter, Bandpass, 836.5 MHz Ctr Freq, 25.8 MHz BW, N(m) to SMA(f), 50 $\Omega$
1030-110	Filter, Bandpass, 897.5 MHz Ctr Freq, 35 MHz BW, N(m) to SMA(f) 50 $\Omega$

## High Accuracy Power Meter Accessories

PSN50	High Accuracy Power Sensor, 50 MHz to 6 GHz
40-168	AC-DC Adapter
800-441	Serial Interface Cable
3-1010-122	Attenuator (fixed), 20 dB, 5 Watt, DC to 12.4 GHz, N(m) to N(f)
3-1010-123	Attenuator (Bi-directional), 30 dB, 50 Watt, DC to 8.5 GHz, N(m) to N(f)
3-1010-124	Attenuator (Uni-directional), 40 dB, 100 Watt, DC to 8.5 GHz, N(m) to N(f)
65701	3 GHz Offset Cal Kit consisting of one each: 3-1010-119, 10 dB Attenuator, DC to 6 GHz, 2 W 3-806-151, 4 GHz Cable, 18 in. (46 cm)

## Power Monitor Detectors

5400-71N50	0.0001 to 3 GHz, N(m), 50 $\Omega$
5400-71N75	0.001 to 3 GHz, N(m), 75 $\Omega$
560-7N50B	0.01 to 20 GHz, N(m), 50 $\Omega$
560-7S50B	0.01 to 20 GHz, WSMA(m), 50 $\Omega$
560-7K50	0.01 to 40 GHz, K(m), 50 $\Omega$
560-7VA50	0.01 to 50 GHz, V(m), 50 $\Omega$

## 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.
2000-1216	Black Print Cartridge
2000-1217	Rechargeable Battery for DeskJet Printer, Model 450
2000-1218	Power Cable (U.K.) for DeskJet Printer
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
2000-753	Null Modem Serial-to-Parallel Centronics Converter Cable

## Product Literature

10580-00185	S311D/S312D Site Master's User's Guide
10580-00186	S311D/S312D Site Master Programming Guide





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