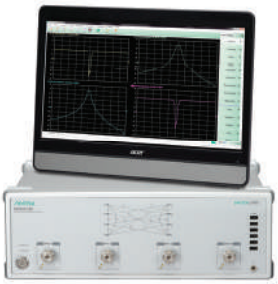
Anritsu Advancing beyond

Anritsu's RF and Microwave Test and Measurement Solutions

Field Master Pro™
MS2090A



ShockLine™ Vector Network Analyzer
MS46xxxB

ShockLine™
ME7869A

Field Master™
MS2080A

Remote Spectrum Monitor
MS27103A

Rubidium™ Signal Generator
MG36221A

USB Power Sensors
MA24xxA

Field Master™
MS2070A

VectorStar™
MS4640B Vector Network Analyzer

Power Meter
ML2437xA

Site Master™
MS2085A

Power Master™
MA245xxA

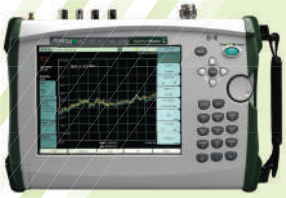
Spectrum Master
Ultraportable
MS276xA

Site Master™
S331P

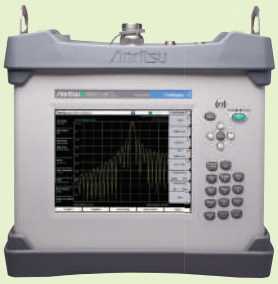
EcoSyn™ Lite
MG36021A

LMR Master™
S412E

Microwave Site Master™
S820E



Spectrum Master™
MS2720T



PIM Master™
MW82119B

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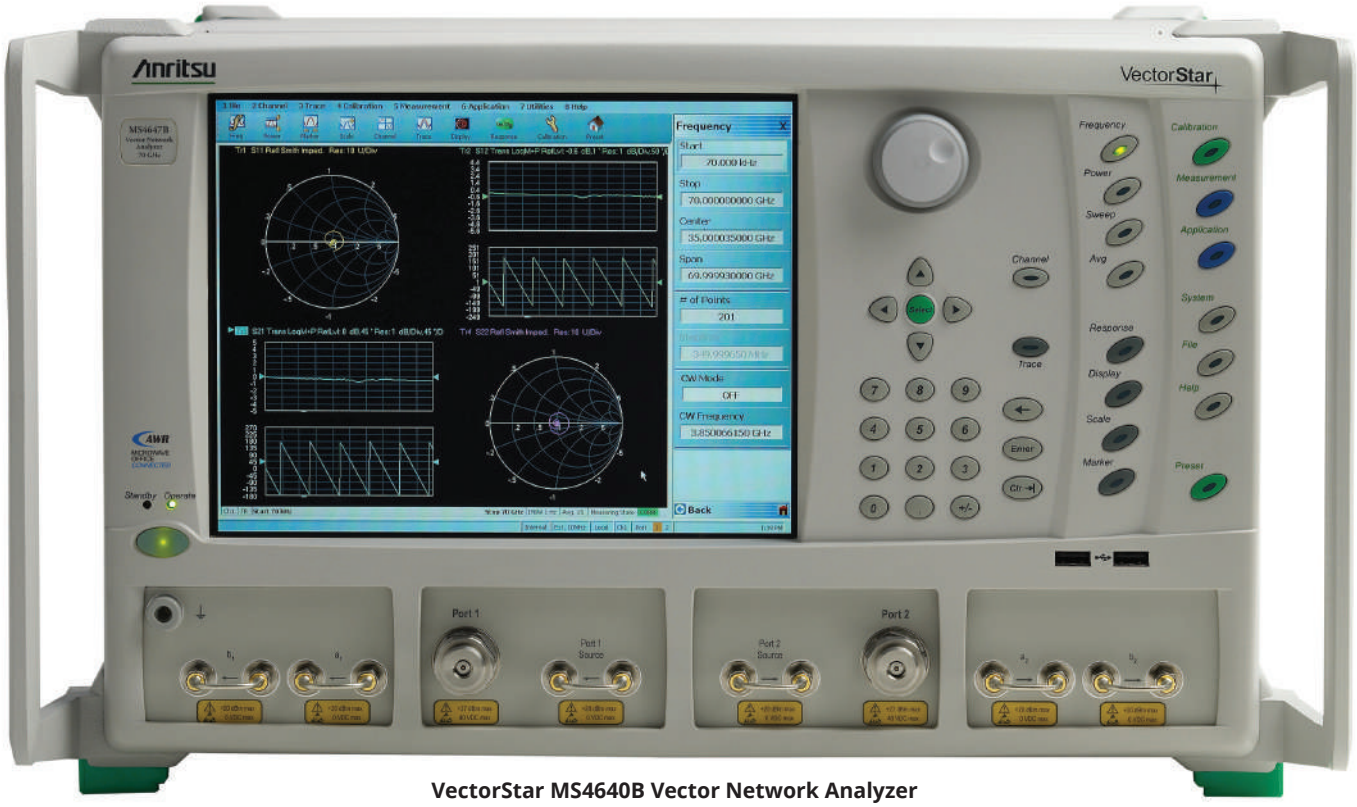
VectorStar®



VectorStar MS4640B Vector Network Analyzer

The versatility to completely characterize microwave components and systems

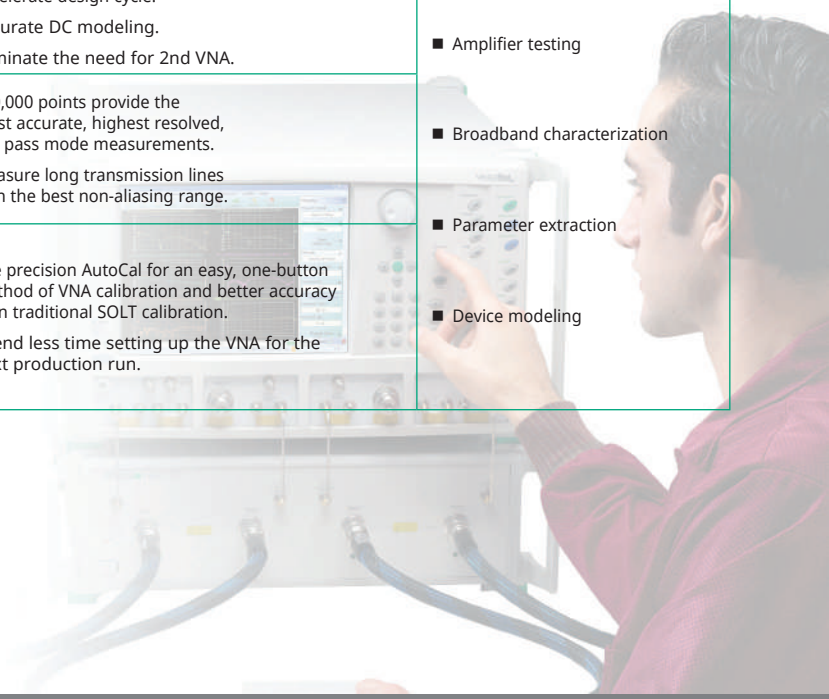
Vector**Star Vector Network Analyzers**

Anritsu VNAs encompass a wide range of high-performance component test tools designed to address the growing needs of microwave, satellite, defense, broadband communication, and optoelectronic components markets. Choose the VectorStar family of VNAs for the ideal solution of advanced performance, accuracy, and reliability for measuring any active or passive device or system — from characterization and designing to manufacturing and verification.

PulseView™, when combined with the innovative IF digitizing option, offers industry-leading 2.5 ns pulse resolution and 100 dB dynamic range with no compromises or trade-offs due to varying duty cycles. PulseView provides real-time display of pulse measurements while dynamically modifying pulse parameters for immediate design validation.

Vector Network Analyzers

Vector Network Analyzer	Features	Benefits	Applications
VectorStar Family Microwave and mmWave VNA **ME7838x 70 kHz to 110/125/145/220 GHz**	Broadest frequency span from a single coaxial test port covering 70 kHz to 70 GHz in a single instrument and 70 kHz to 110/125/145/220 GHz in the broadband configuration. Extendable. Extendable to 1.1 THz.	■ Obtain the most thorough and accurate broadband device characterization. ■ Eliminate time consuming concatenation process across the RF, microwave/mm-wave bands. ■ Decrease test instrument expenses by eliminating the need for a 2nd RF VNA. ■ Reduce the risk of DC extrapolation errors in your device modeling.	■ Radar ■ Antenna measurements
	Industry-leading pulse measurement performance	■ Eliminate trade-offs and limitations of older pulse measurement methods. ■ Industry leading 2.5 ns measurement resolution allows users to get a true view of their device performance and see behavior they may have been missing.	■ Device characterization ■ Microwave and millimeter-wave (mmWave) component test
	Fast swept synthesized measurement speed < 20 µsec per point	■ Increase manufacturing revenue by increasing throughput. ■ Quickly and easily spot the most hard to find failures and reduce the risk of shipping defective products.	■ On-wafer
MS4642B 70 kHz/10 MHz to 20 GHz	Superior dynamic range — up to 140 dB	■ Accurately measure medium and high loss devices. ■ Catch all potential filter feed-throughs in out-of-band regions.	■ Waveguide S-parameters
	High compression point — up to 15 dBm at 70 GHz	■ Eliminate the need for additional attenuators. ■ Improve calibration and measurement accuracy.	■ R&D and production environments
MS4644B 70 kHz/10 MHz to 40 GHz	Best test port characteristic — up to 50 dB directivity, source match, load match	■ Reduce measurement uncertainty. ■ Reduce measurement guard bands. ■ Improve productivity. ■ Optimum precision in R&D.	■ Mixer measurements including automatic de-embedded measurements with absolute phase and group delay
MS4647B 70 kHz/10 MHz to 70 GHz	Highest point resolution — 100,000 points	■ Zoom in on narrow band responses without re-calibration.	■ Embed/De-embed applications
	Best device modeling data	■ Accelerate design cycle. ■ Accurate DC modeling. ■ Eliminate the need for 2nd VNA.	■ Amplifier testing
ME7848A Opto-Electronic Network Analyzer ■ **O/E, E/O, O/O, and E/E device measurements** ■ **Operation in the 850, 1310, and 1550 nm wavelengths**	Best time domain analysis	■ 100,000 points provide the most accurate, highest resolved, low pass mode measurements. ■ Measure long transmission lines with the best non-aliasing range.	■ Broadband characterization ■ Parameter extraction
	Most convenient automatic calibration system with best accuracy	■ Use precision AutoCal for an easy, one-button method of VNA calibration and better accuracy than traditional SOLT calibration. ■ Spend less time setting up the VNA for the next production run.	■ Device modeling



SHOCKLINE™

ShockLine Vector Network Analyzer Family

ShockLine Vector Network Analyzers

The ShockLine family of vector network analyzers (VNAs) eliminates the need to buy expensive instruments for simple S-parameter measurements. ShockLine family employs multiple architectures that reduce manufacturing costs, enhance calibration stability, and minimize measurement uncertainty. For passive and simple linear active device testing, ShockLine VNAs deliver high-performance to 92 GHz at a substantially lower price. These VNAs integrate easily into test systems due to their small size and remote control programmability. They support SCPI command programming and software drivers for the most common programming environments. The whole family shares a powerful graphical user interface for manual testing of devices. The ShockLine VNA family consists of six different series.

The ShockLine MS46121B is a series of externally PC-controlled 1-port USB VNAs offered in a frequency range of 150 kHz to 6 GHz. The ShockLine MS46121B provides 1-port vector and optional 2-port scalar measurements in a low-cost, space-saving solution that is small enough to connect directly to the device under test (DUT).

Another member of the ShockLine family is the MS46131A. These are modular 1-port VNAs controlled via USB with frequency ranges from 1 MHz to 8/20/43.5 GHz. Target applications include 5G 28 GHz and 39 GHz antenna testing, cable and signal integrity applications and material measurements.

Like the ShockLine MS46121B and MS46131A, the ShockLine MS46122B is controlled from an external PC. It is a series of compact, 2-port VNAs with a frequency range from 1 MHz to 8/20/43.5 GHz aimed at testing passive devices in engineering, manufacturing, and cost-sensitive education applications.

The ShockLine MS46322B solution is a series of economy VNAs with frequency ranges from 1 MHz to 8/20/43.5 GHz. Packaged in a small 2U chassis with an embedded computer, it shares the same specifications and target applications as the ShockLine MS46122B series.

The ShockLine MS46522B 2-port and MS46524B 4-port performance VNAs deliver an unprecedented level of value and performance for passive and simple linear active applications. With power sweep and multiple source capabilities, and options including bias tees, and advanced time domain software, these solutions can address a wide variety of applications including verification and manufacturing of mobile network equipment, mobile devices, automotive cables, high-speed data interconnects, and system integration components.

ShockLine Vector Network Analyzers	Frequency	Key Features
MS46121B-006	150 kHz to 6 GHz	■ Excellent corrected directivity allows for less measurement uncertainty, and smaller guard bands in production ■ Fast sweep speed and wide dynamic range minimizes test times and maximize throughput in automated test applications ■ Time domain with time gating option grants easier and faster fault identification in broadband devices ■ A common software interface within the ShockLine VNA family reduces switching costs instrument models ■ 3-year standard warranty ■ 2- and 4-port SmartCal and 36585K AutoCal support simple and fast automatic calibrations on all ShockLine VNAs ■ Ideal for testing RF and microwave devices
MS46131A-010 MS46131A-020 MS46131A-043	1 MHz to 8 GHz 1 MHz to 20 GHz 1 MHz to 43.5 GHz	
MS46122B-010 MS46122B-020 MS46122B-043	1 MHz to 8 GHz 1 MHz to 20 GHz 1 MHz to 43.5 GHz	
MS46322B-010 MS46322B-020 MS46322B-043	1 MHz to 8 GHz 1 MHz to 20 GHz 1 MHz to 43.5 GHz	
MS46522B-010 MS46522B-020 MS46522B-043 MS46522B-082 MS46522B-083	50 kHz to 8.5 GHz 50 kHz to 20 GHz 50 kHz to 43.5 GHz 55 GHz to 92 GHz 55 GHz to 92 GHz	
MS46524B-010 MS46524B-020 MS46524B-043	50 kHz to 8.5 GHz 50 kHz to 20 GHz 50 kHz to 43.5 GHz	

Vector Network Analyzers

PhaseLync™ Enabled 2-port Distributed VNA ShockLine™ ME7869A

Key Features and Benefits

- World's first distributed VNA capable of making vector corrected, 2-port S-parameter measurements from 1 MHz to 8/20/43.5 GHz for long distance measurements to 20/50/100 meters.
- Resolves issues caused by long, lossy, and phase & magnitude unstable RF coaxial cables for antenna measurements in large chambers, outdoor antenna test ranges (OATS), and large vehicle cable insertion loss/DTF measurements.
- Excellent dynamic range of ~100 dB to 43.5 GHz at the VNA ports (direct connection to antennas).
- Easy to install and operate. No need for expensive benchtop VNAs for applications requiring longer distance measurements such as antenna measurements in anechoic chambers, cable fault detection in large vehicle testing, and shielding effectiveness of large aircrafts, etc.
- The central control module provides power and phase synchronization to the two VNA heads using patented PhaseLync technology for accurate and precise S-parameter measurements.
- Start with a one port VNA, upgrade to two ports with several distance options up to 100 meters.

Applications

- Long Cable Insertion-loss Testing
- Antenna Measurements
  - 1-port Antenna Measurements (resonant frequency, return loss) – FR1/FR2/FR3, Satellite, and many more
  - 2-port Antenna Measurements (gain, radiation pattern, group delay, etc.)
- 4-port Reflection Measurements (ME7868A system)
- Over-the-Air (OTA) Applications
  - Chamber Installations and Calibration
  - Large Vehicle RF Shielding and Propagation Testing
- System and Path-loss Characterization
- General S-parameters and Time Domain Measurements
- Secure External Computer Control Through Direct USB Connection

Rubidium™ MG362x1A

Pushing output power, signal purity, and frequency stability to new levels

Synthesized Signal Generators

The Rubidium MG362x1A signal generator product line is designed to deliver outstanding signal purity, frequency stability and best in class output power across a broad frequency range of 9 kHz to 70 GHz. With a user friendly touch screen, availability of industry standard interfaces and drivers for remote programming, Rubidium offers exceptional overall utility and value to users.

The Rubidium MG362x1A standard phase noise outperforms competition by a substantial margin. Two additional tiers of phase noise performance on top of the standard phase noise performance are offered as options.

- The low phase noise option delivers improved close in phase noise along with better frequency stability
- The ultra-low phase noise option provides improved phase noise at higher offsets.

For CW only applications between 2 GHz to 20 GHz, Rubidium provides an even lower phase noise than the ultra-low phase noise option, allowing for another 3 dB improvement on a separate RF output port at the back panel. The low noise RF/microwave signal generator Rubidium MG362x1A offers atomic clock frequency stability with an internal rubidium frequency reference option. The Rubidium MG362x1A delivers best in class output power enabling users to make non-linear measurements without need for external amplification to overcome cable losses at high frequencies.
The Rubidium MG362x1A is housed in a 3U chassis with a 7-inch touch screen on the front panel and traditional keypad/dial interface. The Rubidium MG362x1A offers a high degree of configurability through a wide range of options to achieve optimum cost to function tradeoffs for the customers.

Key Features

- Exceptionally low single sideband SSB phase noise of –136 dBc/Hz (typical) and –140 dBc/Hz (measured) at 10 GHz and 10 kHz offset
- High output power with low spurious eliminates need for external power amplification
- Very low harmonic of < –58 dBc and spurious < –63 dBc
- Atomic clock frequency stability of < 8x10–12 Allan deviation (over 100 sec), aging rate < 1x10–9 per year, with T&M grade phase noise
- Extended millimeter-Wave (mmWave) frequency coverage up to 1.1 THz with external multipliers
- Wide range of interfaces for remote control such as 6 × USB 3.0, 1 × 10/100/1000 Ethernet, 1 × GPIB
- Industry standard IVI.NET and IVI-C drivers and SCPI support for remote instrument control
- Easy to navigate GUI that supports a new 7-inch touch screen and traditional front panel keypad/dial
- Pulsed radar signal simulation with comprehensive narrow pulse generation capability

Synthesized Signal Generators

EcoSyn Lite MG36021A

Compact Microwave Frequency Synthesizer Module for Use as an LO, System Clock, and other Embedded Applications

Synthesized Signal Generators

Anritsu's EcoSyn Lite MG36021A is a 10 MHz to 20 GHz CW Microwave frequency synthesizer module in a compact form factor of 4 in x 4 in x 0.8 in. It features outstanding phase noise, ultra-fast switching speed and high output power. EcoSyn Lite has USB and SPI interfaces for remote control and is powered using a +12 VDC source. It supports standard SCPI and QuickSyn™ native commands which make developing scripts to remotely control and automate very easy and user friendly.

Instrument Class Phase Noise in Module Form Factor

EcoSyn Lite features best in class phase noise performance that even compares favorably with some of the bench top signal generators. Along with superior non-harmonic spurious of –60 dBc, EcoSyn Lite RF output a very low jitter and can be used as a clock source for Gbit ADC/DAC testing and in high speed optical systems.

EcoSyn Lite's low phase noise both at close in and far off offsets and its robust output power of +18 dBm @ 20 GHz makes it ideal for use as LO for up/down converters in RF/microwave transceivers. These transceivers increasingly use complex and high order modulation signals which require LOs with very low phase noise for up/down conversion options to achieve optimum cost to function tradeoffs for the customers.

Key Features

- Frequency Coverage of 10 MHz to 20 GHz
- Instrument grade phase noise performance
- Very fine frequency resolution
- Built in 10 MHz OCXO reference as well as external reference input
- Robust output power
- Amplitude Control
- Supports Frequency Step and List sweep modes

Power Measurements

ML243XA Power Meter

MA24507A Power Master

Control Your Sensor with the PowerXpert™ Software Application

Microwave USB Power Sensors

Increase Your Handheld Power Accuracy

You can depend on Anritsu for your power measurement solution

Traditional Power Meters and Sensors

The ML2437A/38A Power Meter combines the advantages of thermal meter accuracy, diode meter speed, and peak power meter display graphics. The result is a single instrument that samples at more than 35K per second and achieves 90 dB dynamic range with a single sensor. Rugged poly-carbonate chassis design handles drop shocks and rough field treatment. No vent holes are present, thus the meter is splash resistant. ML2437A has one input and ML2438A has two inputs.

Power Meter	Frequency	VBW	Dynamic Range	Channels
ML2437A/ML2438A Power Meter (optional battery operation)	10 MHz to 70 GHz*	100 kHz	–70 dBm to +20 dBm*	1 or 2
Traditional Power Sensor	*Sensor dependent – Go to www.anritsu.com for a complete list of 15 sensors from which to chose!			

USB Power Sensors

Anritsu USB power sensors eliminate the need for a traditional power meter. These highly accurate, standalone instruments communicate with a PC via USB or with the Anritsu handheld instruments (equipped with Option 19). Most sensors measure true RMS power, so they are ideal for measuring CW, modulated RF waveforms (ex. 3G, 4G, and OFDM signals), and multi-tone signals. They are ruggedized for field use with an industry-leading of up to +33 dBm damage level. Furthermore, the MA24507A Power Master is the world's first frequency selective power analyzer. It provides frequency specific numeric measurements of channel power or CW peak power.

USB Power Sensor	Frequency	Measurement Mode	Dynamic Range
MA24103A Inline Peak Power Sensor	25 MHz to 1 GHz	True-RMS and Peak (4 MHz VBW)	+3 dBm to +38 dBm, +51 dBm peak
MA24105A Inline Peak Power Sensor	350 MHz to 4 GHz	True-RMS and Peak (4 MHz VBW)	+3 dBm to +38 dBm, +51 dBm peak
MA24106A USB Power Sensor	50 MHz to 6 GHz	True-RMS: Enables accurate average power measurements regardless of modulation type.	–40 dBm to +23 dBm
MA24118A Microwave USB Power Sensor	10 MHz to 18 GHz		–40 dBm to +20 dBm
MA24126A Microwave USB Power Sensor	10 MHz to 26 GHz		
MA24208A Microwave Universal USB Power Sensor	10 MHz to 8 GHz	True-RMS: Enables accurate, modulation independent measurements with fast measurement speeds and a wide dynamic range.	–60 dBm to +20 dBm
MA24218A Microwave Universal USB Power Sensor	10 MHz to 18 GHz		
MA24330A, MA24340A, MA24350A Microwave CW USB Power Sensor	10 MHz to 33, 40, or 50 GHz	CW only: Enables accurate CW power measurements with fast measurement speed and wide dynamic range	–70 dBm to +20 dBm
MA24507A/MA24510A mmWave Power Analyzer	9 kHz to 70 GHz, or 110 GHz	Frequency selective measurements of channel power or CW peak power with wide dynamic range	–90 dBm to +10 dBm (in CW)
MA244xxA USB Peak Power Sensors	50 MHz to 40 GHz	Peak, Pulse, Crest Factor, Statistical, CCDF, Automatic Pulse measurements with 195 MHz VBW and 3ns rise time	–50 dBm to +20 dBm

Handheld Cable and Antenna Analyzers

Don't let their size fool you. These rugged, lightweight, and easy-to-use instruments deliver powerful, field-tested, lab-approved reliability and accuracy to the palm of your hand — and to wherever there's microwave or communication systems issues.

Site Master S820E

Site Master S331P

Need greater power accuracy?

Site Master

The Site Master S820E handheld 40 GHz microwave cable & antenna analyzer is for field installation, troubleshooting, and maintenance of coaxial and waveguide systems. Designed from the ground up to provide cutting-edge performance, the internal architecture is a four receiver, fully reversing, 2-port cable and antenna analyzer providing high-resolution distance-to-fault measurements. Optional VNA and vector voltmeter (VVM) modes further extend the instrument's powerful capabilities. With unprecedented dynamic range of 110 dB to 40 GHz and compliance for use in explosive atmospheres makes it ideal for maintenance of aircraft and naval vessels.

Built on a trusted history of quality, expertise, and performance, the Site Master S33xE series is the leading compact cable and antenna analyzer with spectrum analyzer and 2-port options that provides coverage from 2 MHz up to 6 GHz. This portable and rugged solution has a variety of configuration options that make it the preferred solution by contractors, installers, and wireless service providers. Because of the Site Master series multi-functional capabilities and options, it eliminates the need for you to carry and learn multiple instruments.

The Site Master S331L is the highest value in a rugged, handheld cable and antenna analyzer. The Site Master S331L is optimized for field conditions, is easy-to-use, and has efficient sweep management capabilities. The Site Master S331L delivers an entire workday of battery operating time, the most ever offered in a handheld cable and antenna analyzer. For applications such as broadcast TV/FM, paging, cellular, GPS, PCS/GSM, LTE, HSPA/UMTS, WLAN, and WiMAX, the Site Master delivers accurate, repeatable measurements.

The Site Master S331P is the smallest, lightest, fastest, and most cost effective instrument in the Site Master family. It is the only small, headless Site Master product capable of measurements down to 150 kHz for low-frequency radio communications applications and to 6 GHz for higher frequency applications like LTE-U in the 5 GHz unlicensed spectrum. With internal support from Anritsu's new Field Master series instruments, it's the most integrated cable and antenna analyzer in the world.

Model	Frequency	Measurements	
S820E	1 MHz to 40 GHz	■ VSWR ■ Cable loss ■ Return loss ■ Phase ■ Smith chart	■ Distance-to-fault ■ High-accuracy RF power (USB sensor required) ■ 2-Port transmission ■ 2-Port transmission (external sensor required)) ■ 2-Port cable loss (external sensor required)
S331L (built-in InstaCal™ and power meter)	2 MHz to 4 GHz 50 MHz to 4 GHz (power meter)	■ VSWR ■ Cable loss (1-port) ■ Return loss	■ Distance-to-fault return loss ■ Distance-to-fault VSWR ■ RF power (50 MHz to 4 GHz)
S331P	150 kHz to 4 or 6 GHz	■ VSWR ■ Cable loss (1-port) ■ Return loss	■ Distance-to-fault return loss ■ Distance-to-fault VSWR
S332E	2 MHz to 4 GHz cable and antenna analyzer 9 kHz to 4 GHz spectrum analyzer	■ Return loss ■ VSWR ■ Cable loss ■ Distance-to-fault ■ Adjacent channel power ratio ■ Channel power ■ Field strength	■ Interference analyzer ■ Occupied bandwidth ■ Transmission measurement ■ Coverage mapping ■ PIM Hunting
S362E	2 MHz to 6 GHz cable and antenna analyzer 9 kHz to 6 GHz spectrum analyzer		

Handheld Cable and Antenna Analyzers

Site Master™
MS2085A

Need greater power accuracy?

The performance you need with the measurements you demand in a field-portable cable and antenna analyzer/spectrum analyzer

Site Master – Cable and Antenna Analyzer

In 1995, Anritsu launched the world's first field portable cable and antenna analyzer in response to the explosion in installations of base stations to support the global mobile phone industry. The Site Master quickly established itself as the essential instrument for field engineers building cellular networks. Since that first model launch, Anritsu has continuously enhanced and developed the Site Master to meet the requirements of a wide range of cellular, LMR, broadcast, and defense transmitter systems.

Today, Anritsu introduces the latest version of the Site Master, building on over 30 years experience in the market. The Site Master MS2089A has the accuracy, reliability and functionality you expect from Anritsu with new features including ReadyCal and faster sweeps to enhance your productivity in the field.

RF cable runs continue to be an integral part of radio communication base stations, from long runs on broadcast transmitter towers to short jumper cables on cellular base stations. With the large-scale deployment of Distributed Antennas Systems (DAS) in areas of high user density, the scale of RF cable installations continue to expand. Their exposure to weather and hostile environments mean cable runs represent the greatest single point of failure or system degradation in modern radio networks.

Whether performing a new site installation or maintaining an established site, the Site Master MS2089A provides the ultimate instrument for validating or fault finding RF cable and antenna installations.

Key Features

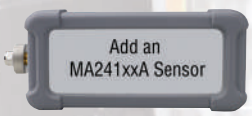
- Calibration Type: ReadyCal, InstaCal and Mechanical Cal (OSL)
- Supported Measurements:
  Return Loss (RL), VSWR
  Distance-to-Fault (RL, VSWR)
  Transmission Measurements:
  USB Sensor
  Transmission (1-Port Reflection)
- Certified Line Sweeping Training
- Anritsu Remote and Report Tools (ARRT)
- Display: Single or Horizontal Split Measurement
- Built-in PDF Report Generator
- Sweep Speed: 350 µs/data point, fast sweep rate, typical
- Battery Life: Up to 9 hours*

** Refer to the Technical Data Sheet for full specifications.*

Land Mobile Radio Spectrum Analyzer

LMR Master S412E

Need greater power accuracy?



Delivering benchtop performance in a handset instrument

LMR Master

Anritsu's LMR Master S412E is the ideal instrument for field technicians and engineers tasked with testing the system performance of narrowband LMR/PMR voice and LTE broadband systems for public safety and critical infrastructure. It combines a high-performance receiver/spectrum analyzer, vector network analyzer, internal power meter, and a vector signal generator — making it the ultimate LMR field analyzer. The LMR Master S412E is now available with TETRA analyzer and is the only handheld instrument capable of performing TETRA base station receiver sensitivity measurements.

Deploying P25 Phase 2 systems isn't done in a nice comfortable workshop. It's done at the toughest sites under demanding conditions — places where a benchtop service monitor wasn't designed to go. Anritsu's LMR Master is the leading handheld P25 Phase 2 signal analyzer designed for crowded high RF sites.

Along with the TETRA and P25 Phase 2 systems, the LMR Master S412E enables field testing and coverage mapping of these LMR standards: analog FM, P25 (FDMA Phase 1 and TDMA Phase 2), NXDN™, dPMR, DMR (MotoTRBO), PTC ITCR, PTC ACSES, fixed and mobile WiMAX, and FirstNet LTE. Up a tower, on a roof, on a mountain — LMR Master S412E goes where you do.

Model	Frequency	Measurements	
S412E Cable and antenna, spectrum, land mobile radio analyzer with signal generator	500 kHz to 1.6 GHz cable and antenna analyzer 100 kHz to 1.6 GHz spectrum analyzer Optional extension to 6 GHz	■ Signal analyzers with coverage mapping: TETRA / NBFM / P25 / P25 Phase 2 / NXDN / dPMR / DMR (MotoTRBO) / PTC ITCR, PTC ACSES / FDD & TDD LTE ■ Return loss ■ VSWR ■ Cable loss ■ Distance-to-fault ■ Adjacent channel power ratio	■ Channel power ■ Field strength ■ Interference analyzer ■ Occupied bandwidth ■ Transmission measurement ■ Coverage mapping ■ PIM Hunting

Handheld Spectrum Analyzers

Field Master Pro MS2090A

Site Master S331P Ultraportable Cable and Antenna Analyzer

Need greater power accuracy?

No limits. No gaps. No misses.

Field Master Pro MS2090A

Delivering the highest levels of performance available in a handheld RF spectrum analyzer, the Field Master Pro MS2090A gives field engineers and technicians unparalleled measurement accuracy previously reserved for only benchtop instruments. Integrated and continuous frequency coverage from 9 kHz to 54 GHz provides the ability to view the RF spectrum and measure all transmissions in order to avoid interference and guarantee performance meets the latest 5G test challenges while maintaining support for a full range of wireless technologies in use today. The built-in real-time spectrum analyzer (RTSA) provides the ultimate signal analysis and interference capture tool. RTSA spans of 20 MHz (standard) to 110 MHz (optional) provide capability for cellular interference monitoring to full ISM band signal analysis. A displayed average noise level (DANL) of –164 dBm and third order intercept (TOI) of +20 dBm (typical) make measurements like spectrum clearing, radio alignment, harmonic, and distortion even more accurate than previously possible. Maximize transmitter power and spurious testing with 100 MHz modulation bandwidth, best-in-class phase noise performance, and ±0.5 dB typical amplitude accuracy.

Features and Options

- 9 kHz to 9/14/20/26.5/32/43.5/54 GHz
- Demodulation of 5G NR and LTE FDD/TDD signals
- Full span swept-tuned spectrum analyzer including a spectrogram display
- Integrated channel power and occupied bandwidth measurements
- Built-in adjacent channel power (ACP) measurement
- Up to 110 MHz analysis bandwidth
- Real-time spectrum analyzer (RTSA)
- EMF measurements
- Full bandwidth IQ capture and streaming
- High-resolution, capacitive touch screen and modern Pulse Analyzer option user interface

- Ideal for:
  - Network interference hunting and spectrum clearing
  - Broadcast transmitter analysis
  - Microwave radio links
  - Satellite system monitoring
  - 5G NR base station measurements
  - 5G coverage mapping

Handheld Spectrum Analyzer

Field Master MS2080A

Field Master MS2070A

Site Master S331P Ultraportable Cable and Antenna Analyzer (with MS2080A)

Need greater power accuracy?

Better. Faster. Smarter.

Field Master MS2080A

With class-leading performance and enhanced with a smarter, more intuitive GUI and a plethora of essential software options and accessories, the Field Master brings unrivaled features and value.

Packed with an incredible mix of options and innovation, the Field Master is the instrument of choice for field technicians and engineers. In addition to being IP52, the Field Master includes a brilliant 10.1-inch, high resolution multi-touch screen and built-in RF input protection up to 5W. This ruggedized instrument does not compromise between raw performance and battery life. The Field Master can deliver over three hours of field use with its built-in battery or over six hours when combined with an extended battery.

Field Master MS2070A

The MS2070A from Anritsu offers an unrivaled combination of performance and features for standard spectrum analysis to 3 GHz. It builds on Anritsu's experience of developing handheld instruments that delivers in both field and laboratory environments. The large 10.1-inch high resolution multi-touch screen presents results and instrument configuration in a clear and easy to use style. At under 4 kg weight, with the integrated battery typically providing three hours of operation all in a convenient soft carry case, it is ideal for measurements in the field. Key applications include HF, VHF, UHF transmitter measurements, interference hunting, EMI/EMC pre-compliance testing and PIM hunting.

Model	Frequency	DANL	Key Features	
MS2070A	9 kHz to 3 GHz	< –160 dBm with Optional preamp	• Built-in Channel Power, Occupied Bandwidth, Adjacent Channel Power, and Spectral Emission Mask • 20 MHz analysis bandwidth	• Optional Wi-Fi Connectivity • Ideal for: - Interference Hunting - Coverage Mapping
MS2080A	• 9 kHz to 4 GHz (Option 0704) • 9 kHz to 6 GHz (Option 0706)	< –160 dBm with preamp	• Built-in Channel Power, Occupied Bandwidth, Adjacent Channel Power, and Spectral Emission Mask • Demodulation of 5G FR1 and LTE FDD/TDD signals • Up to 40 MHz analysis bandwidth	• Real-time spectrum analyzer (RTSA) • Optional cable and antenna analyzer measurements with S331P • Ideal for: - Interference Hunting - Coverage Mapping - 5G/LTE base station measurement

Handheld Spectrum Analyzer

Spectrum Master MS2720T

Need greater power accuracy?

Take advantage of a large selection of options to handle a wider range of applications at a reasonable cost

Spectrum Master

Superior performance. Advanced capabilities. Affordable pricing. The Anritsu Spectrum Master family of spectrum analyzers delivers high frequency/level accuracies and a broad set of smart, intuitive features — including built-in, one-button measurements.

As the de facto industry standard, the Spectrum Master series provides ultimate measurement flexibility in a lightweight, rugged package for field environments and mobile applications. With frequencies ranging from 9 kHz to 20 GHz, the Spectrum Master is ideal for such applications as: spectrum clearing and monitoring, interference hunting and mitigation, and general purpose measurements on transmitting devices. Additional options provide demodulation analysis for several 3GPP and 3GPP2 standards, IQ Capture capability, Isotropic EMF measurements, Coverage Mapping, Channel Scanner, and PIM Hunting.

Model	Frequency	RBW	DANL @ 1 GHz, preamp on	Key Features
MS2720T	9 kHz to 9 GHz 9 kHz to 13 GHz 9 kHz to 20 GHz (Usable to 0 Hz)	1 Hz to 10 MHz	– 163 dBm in 1 Hz RBW, 9 GHz model (typ) – 164 dBm in 1 Hz RBW, > 9 GHz model (typ)	▪ Measurements: occupied bandwidth, channel power, ACPR, C/I, emission mask, field Strength, coverage mapping, channel scanner, GPS ▪ 3G and 4G measurement options for LTE, CDMA, W-CDMA, WiMAX, GSM, and TD-SCDMA ▪ Interference analyzer: spectrogram, signal strength, RSSI, mapping ▪ IQ Capture Option ▪ AM/FM/PM analysis ▪ Tracking generator: output Level of –40 dBm to 0 dBm with a resolution of 0.1 dB (which is our Lock-in Specification)

Handheld Vector Network Analyers

PIM Master MW82119B

Need greater power accuracy?

PIM Master

Anritsu Company introduces the first battery-operated, high-power passive intermodulation (PIM) testing solution for the major wireless standards in use around the world. PIM is a form of interference generated by passive components that are normally thought of as linear, such as connectors, cable assemblies, filters, and antennas. However, when subject to high RF power levels found in cellular systems, these devices can generate spurious signals that increase the receiver noise floor and reduce site performance.

The PIM Master MW82119B accurately measures PIM performance by injecting two CW test tones into the antenna feed network and recording the magnitude of the 3rd, 5th, or 7th order intermodulation products falling in the receive band of the system. The PIM Master MW82119B is able to perform the following measurements, enabling test technicians to quickly find and eliminate PIM problems found at the cell site:

- PIM versus time
- Swept PIM
- Noise floor
- Distance-to-PIM (DTP)

Model	Frequency Options	Other Options
PIM Master MW82119B passive intermodulation analyzer (must be ordered with one frequency option)	MW82119B-0600 LTE 600 w/1900 MHz MW82119B-0700 LTE 700 MW82119B-0701 APT 700 MW82119B-0800 LTE 800 MW82119B-0850 Cellular 850 MW82119B-0900 E-GSM 900 MW82119B-0902 E-GSM 900 W/IM2 MW82119B-0180 DCS 1800 MW82119B-0194 PCS/AWS 1900/2100 MW82119B-0210 UMTS 2100 MW82119B-0260 LTE 2600	MW82119B-0019 High-accuracy power meter (requires USB power sensor) MW82119B-0031 GPS receiver (requires GPS antenna) MW82119B-0331 Site Master cable and antenna analyzer MW82119B-0098 Standard calibration to ISO 17025 and/or Z540.1 MW82119B-0099 Premium calibration to ISO 17025 and/or Z540.1 plus test data

Ultra Portable Spectrum Analyzer

World's first ultraportable mmWave spectrum analyzer up to 170 GHz. The future of performance and affordability.

Spectrum Master MS276xA Ultraportable mmWave Spectrum Analyzer Family

MS2760A – 9 kHz up to 170 GHz
MS2762A – 6 GHz to 170 GHz

Utilizing Anritsu's patented nonlinear transmission line (NLTL) technology, the Spectrum Master MS2760A and MS2762A ultraportable spectrum analyzer products deliver the best-in-class price/performance ratio unmatched by traditional benchtop instruments. This enables you to more efficiently advance your technology development and reduce your time to market. The Spectrum Master MS276xA series are pocket-sized, yet big on performance with leading dynamic range, sweep speed, and amplitude accuracy. The ultraportable size of these instruments enables a direct connection to almost any DUT, eliminating the need for lossy, expensive cables.

The 145 GHz and 170 GHz models are the world's first handheld millimeter-wave spectrum analyzers to provide broadband, continuous coverage to 170 GHz. They are perfect for advanced millimeter-wave applications like radio astronomy, automotive radar, antenna beam pattern testing, and more, while enabling research and development in the entire D band spectrum. The Spectrum Master MS2760A and MS2762A are USB-powered and controlled from a Windows-based PC, laptop, or tablet, making them uniquely flexible for use in the lab, on the manufacturing floor, or even in the field.

The Spectrum Master MS2760A models provide full broadband coverage from 9 kHz to 170 GHz with excellent dynamic range and DANL performance. The Spectrum Master MS2762A models provide superior dynamic range and DANL performance than the Spectrum Master MS2760A models, for the most demanding sensitivity requirements, with frequency coverage starting at 6 GHz and a top frequency range of 170 GHz.

Spectrum Analyzer Highlights

- Measure: Channel Power, Adjacent Channel Power, Occupied Bandwidth
- Spectrum and Spectrogram Displays
- Up to Six Spectrum Traces and Spectrogram Cursors, Three Trace Detectors, 12 Markers
- Dynamic Range: > 108 dB, typical at 70 GHz (MS2762A)
- DANL: as low as –142 dBm (MS2762A, 6 to 40 GHz typical)
- Resolution Bandwidth (RBW): 1 Hz to 3 MHz
- External 10 MHz Frequency Reference
- External TTL Trigger Input

Precision Components / RF Power Indicator

Precision Components, Precision Measurements

Technicians rely on Anritsu for industry-leading design and production of precision microwave components.

- Precision coaxial connector systems to 110 GHz
- High-directivity SWR auto testers and bridges
- Precision terminations and air lines
- Precision step attenuators
- Precision bias tees
- Precision coaxial and waveguide to coax adapters
- RF detectors
- Precision fixed attenuators
- Precision power dividers and splitters
- Broadband microwave limiters

RF Power Indicator MA25100A

RF Power Indicator

The MA25100A RF Power Indicator is always on and always ready. Its self-contained battery can last for years with normal use and is field-replaceable. A “self-test” button lights both indicators (red and yellow) if internal circuits and battery are functioning.

- Use the MA25100A RF Power Indicator to determine if a connector is “live” with RF power that could damage sensitive measuring equipment from 400 MHz to 4000 MHz
- Mate the MA25100A to the connector in question and it will indicate the presence of high-level RF: Yellow LED if RF > +17 dBm (50 mW) or Red LED if RF > +27 dBm (500 mW)
- The MA25100A can withstand RF power levels up to +50 dBm (100 W) from a 50 Ω source. The MA25100A has a very high VSWR and should not be used as a 50 Ω termination

Anritsu Advancing beyond

Specifications are subject to change without notice.

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