











Electronic  
Measuring  
Instruments

Digest

2018

Since 1895

	<b>1 OPTICAL MEASURING INSTRUMENTS.....</b>	<b>p.2</b>
	<b>2 BIT ERROR RATE TESTERS (BERT)/OSCILLOSCOPES.....</b>	<b>p.4</b>
	<b>3 IP/NETWORK MEASURING INSTRUMENTS.....</b>	<b>p.6</b>
	<b>4 MOBILE/WIRELESS COMMUNICATION MEASURING INSTRUMENTS .....</b>	<b>p.7</b>
	<b>5 SIGNAL ANALYZERS/SPECTRUM ANALYZERS .....</b>	<b>p.11</b>
	<b>6 VECTOR NETWORK ANALYZERS.....</b>	<b>p.14</b>
	<b>7 SIGNAL GENERATORS.....</b>	<b>p.17</b>
	<b>8 RF MICROWAVE MEASURING INSTRUMENTS .....</b>	<b>p.18</b>

## Network Master Pro

**Mainframe MT1000A**

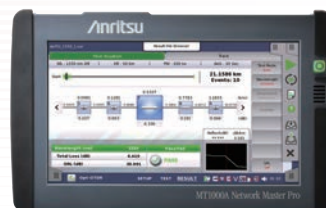
**OTDR Module MU100020A/MU100021A/MU100022A**

1310/1550 nm SMF, 1310/1550/850/1300 nm SMF/MMF, 1310/1550/1625 nm SMF

### Mobile Network I&M

- All-in-one OTDR, light source, optical power meter (standard), visible light source (option)
- CPRI/OBSAI measurement with simultaneously installed 10G (MU100010A)/100G (MU100011A) Multirate Module
- Optical connector inspection with IEC 61300-3-35 pass/fail
- Graphical summary and pass/fail evaluation using Fiber Visualizer function
- Intuitive touch-screen operation

The OTDR module lineup includes the MU100021A for OTDR measurements of both SM and MM fibers in high demand by the mobile network I&M, plus the MU100020A/MU100022A for OTDR measurements of SM fiber used by PON networks and long-range measurements in Core/Metro networks.



## Network Master™

**Mainframe MT9090A**

**μOTDR Module™ MU909014/MU909015**

1310/1490/1550 nm plus filtered 1650 nm or 1625 nm

### Field Optical Testing Redefined

- High-performance OTDR in a pocket-size package with unique battery operation
- Tri-wavelength OTDR for both installation and maintenance  
1310/1490/1550 nm plus filtered 1650 nm or 1625 nm
- Built-in PON power meter, loss test set and light source function
- "Fiber Visualizer" mode simplifies operation, no OTDR knowledge needed
- Bluetooth, Wi-Fi and Ethernet connectivity

The MU909014/15 series μOTDR Module for the MT9090A Network Master platform from Anritsu finally addresses this need by providing all of the features and performance required for installation and maintenance of optical fibers in a compact, modular test set. The MT9090A represents an unmatched level of value and ease of use, while not compromising performance. Data sampling of five centimeters, dead zones of less than 0.8-meter and dynamic range up to 38 dB ensure accurate and complete fiber evaluation of any network type – premise to access, metro to core...including PON-based FTTx networks featuring up to a 1 × 64 split.



## Network Master™

**Mainframe MT9090A**

**Optical Channel Analyzer Module MU909020A**

### Testing of CWDM Access Network

- Dedicated tool for installation, commissioning, and troubleshooting of CWDM networks
- Fast and accurate overview of all CWDM channels and channel drifts over time

The MU909020A provides an overview of the power levels and wavelengths of all 18 CWDM channels at a glance, with easy comparison to pass and fail indicators.



## ACCESS Master™

FiberVisualizer

MT9083 series 850/1300 nm (MM), 1310/1490/1550/1625/1650 nm (SM)

### All-in-One Solution for Optical Fiber Construction and Maintenance of Access, FTTx, LAN, and Metro Networks

- High resolution and high dynamic range ensure thorough and complete fiber evaluation
- Test up to four wavelengths with a single unit - single mode, multimode or both
- "Fiber Visualizer" mode simplifies operation, no OTDR knowledge needed

Anritsu is pleased to announce the enhanced MT9083A2/B2/C2 models. The MT9083 features a 7-inch wide-screen TFT-LCD display for use both indoors and outdoors, enhanced battery operation time (up to 12 hours), increased operating temperature range (-10° to +50°C) and new short-cut function keys.



## Optical Loss Tester/Light Source/Optical Power Meter

CMA5 series 850/1300 nm (MM), 1310/1490/1550/1625 nm (SM)

### For Optical Fiber Installation and Maintenance

- Built-in light source and power meter (Optical Loss Tester)
- Two wavelengths at one port (Light Source)
- Level measurement up to +23 dBm (Optical Power Meter)

The compact and durable design of the CMA5 series make these instruments the ideal combination of light source and optical power meter for measuring optical power when installing and servicing optical fiber cables.



## Video Inspection Probe

Autofocus Video Inspection Probe G0382A

Video Inspection Probe G0306B

### Optical Connector End Face Inspection

- Fully automated one-button operation (G0382A)
- Supported pass/fail analysis with the IEC61300-3-35 standard
- Wide range of adaptors available

The Video Inspection Probe (VIP) application for Anritsu field testing platforms gives operators a safe, easy way to analyze and document connector conditions.



## Optical Spectrum Analyzer

MS9740A 600 nm to 1750 nm

### Reduces Measurement Time and Improves Production Efficiency

- Measurement of passive optical devices in <0.2 s (5 nm) reduces total analysis time
- Dedicated applications for evaluating active optical devices
- Excellent cost performance
- Dynamic range performance ≤58 dB (0.4 nm from peak wavelength)
- 30 pm minimum resolution
- Lightweight, 50% less power consumption

The MS9740A offers excellent cost performance by shortening inspection times using efficient analysis applications to reduce the cost of manufacturing active optical devices.



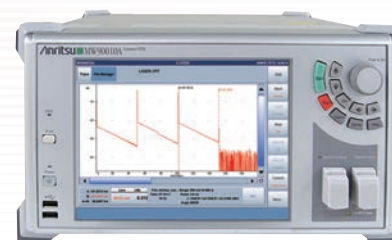
## Coherent OTDR

MW90010A

### Measures Submarine Cables up to 12,000 km Long

- Fault detection with 10 m distance resolution
- Compact and lightweight all-in-one design for on-site portability  
320 (W) × 177 (H) × 451 (D) mm, <17 kg
- Simple and easy touch-panel operation for easy first-time use by any operator
- Wide dynamic range supporting fault detection and troubleshooting of submarine cables with repeaters at 80 km or longer intervals

The MW90010A is a measuring instrument for detecting faults in ultra-long optical submarine cables of up to 12,000 km including multiple repeaters (EDFAs).



1



OPTICAL MEASURING INSTRUMENTS

## Signal Quality Analyzer-R



MP1900A

**Support 400 GbE and PCIe Gen4/5.**

**All-in-One Support for Evaluating Next-Generation NRZ/PAM4 Network Interfaces and High-Speed Serial Buses**

- All-in-one support for both high-speed Ethernet and PCI Express interface tests
- Signal Integrity Evaluation
- Receiver tests are supported by the built-in Protocol Awareness PCIe Link Training and LTSSM analysis functions
- High Waveform Quality and High Sensitivity

The MP1900A is a high-performance BERT with excellent expandability for supporting Physical layer evaluations of these high-speed interfaces. The all-in-one design is ideal for early stage R&D evaluations of all interfaces covering ext-generation Ethernet networks to bus interconnects.



## Signal Quality Analyzer



MP1800A series 0.1 Gbit/s to 32 Gbit/s, 8 Gbit/s to 64.2 Gbit/s

**Compact, High-performance BER Test Equipment Supports Bit Rates from 0.1 Gbit/s to 32.1 Gbit/s and 8 Gbit/s to 64.2 Gbit/s**

- Evaluates 100GbE optical modules, 32G FC, InfiniBand EDR, 100G DP-QPSK, PAM signals, PCI Express, USB 3.0/3.1 and Thunderbolt signal.
- Measures jitter, crosstalk, skew, and emphasis effect required by multilane, high-speed interconnects market using PPG synchronization function.
- Evaluates EML by direct driving using 3.5 Vp-p high-amplitude waveforms and adjustable cross-point functions.

The MP1800A series offers the ideal solution for PHY layer evaluation of optical modules and high-speed devices at speeds from 0.1 Gbit/s to 32.1 Gbit/s. The modular slot design makes it easy to configure a flexible test system just by selecting modules and options matching the application. Moreover, combined use with a 64 Gbit/s MUX/DEMUX supports Bit Error Rate (BER) evaluations up to 64.2 Gbit/s.



## 56 G/64 Gbit/s MUX/DEMUX

MP1861A/MP1862A 8 Gbit/s to 56.2 Gbit/s, 64.2 Gbit/s

**Ultra-Wideband BERT Support Devices and Optical Modules of New 400GbE and CEI-56G Standards**

- Wideband bit rate up to 64.2 Gbit/s
- Supports jitter tolerance tests of new high-speed devices
- Compact remote head

The MP1861A and the MP1862A are Bit Error Rate (BER) testers expand 32 Gbit/s 2ch PPG/ED to 64.2 Gbit/s. Linking the MP1861A and MP1862A with the MP1800A with installed 32G PPG/ED supports generation of up to 4-channel synchronous data signals at 64G with high expandability. High bit rate, excellent signal quality and jitter generation function of MP1861A and MP1862A support signal integrity evaluations of next-generation interfaces such as 400GbE, CEI-56G, InfiniBand HDR.



## 4Tap Emphasis

MP1825B 1 Gbit/s to 14.1 Gbit/s, 1 Gbit/s to 32.1 Gbit/s

**Characteristics Evaluation for Serial Interface with Pre-emphasis Signals**

- Pre-emphasis up to 4 taps
- Supports two bit rate ranges: 14.1 Gbit/s and 32.1 Gbit/s
- Jitter transparent
- Compact remote head

The MP1825B is a 4 taps pre-emphasis converter for bit rates up to 32.1 Gbit/s; it supports easy changes to the pre-emphasis waveform amplitude, offset, amplitude of each tap, etc., for effective evaluation of the characteristics of high-speed interfaces such as PCIe, USB, and backplane Ethernet requiring pre-emphasis signals, as well as InfiniBand 26G-IB-EDR, CEI-28G-VSR, 32G FC, etc., in the 30 Gbit/s band.

The passage of signals through printed-circuit board (PCB) wiring causes signal level attenuation and quality degradation, resulting in a closed eye diagram. The MP1825B enables emphasis with fast Tr/Tf and contribute precision measurement of high speed interconnect.





## MP2110A

### For 25G/100G Multi-channel Optical Module/Device R&D and Manufacturing

- All-in-one max. 4ch 28.2 Gbit/s BERT + max. 2ch optical sampling oscilloscope
- Captures 1 million samples in about 5 seconds
- Integrated BERT and sampling oscilloscope reduce instrument capital costs
- Measures optical signals attenuated by peripherals such as optical switches

With a built-in BERT (for Bit Error Rate measurements) and a sampling oscilloscope (for Eye pattern analysis) the All-in-one MP2110A is optimized for manufacturing 100 GbE and 25 GbE optical modules. The MP2110A will improve optical module production efficiency and reduce manufacturing costs.



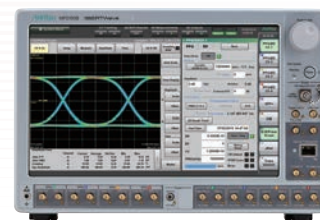
# BERTWave™

## MP2100B

### For 10G/40G Multi-channel Optical Module/Device R&D and Manufacturing

- All-in-one BER and Eye-pattern analysis
- Built-in 1ch to 4 ch 12.5 Gbit/s BERT
- High-speed mask tests
- Jitter 1 ps high-quality PPG and 10 mVp-p high-sensitivity ED

The all-in-one MP2100B has a built-in BER tester and sampling oscilloscope for running simultaneous BER tests and eye pattern analyses required for developing and manufacturing modules. The number of BERT channels can be expanded to four, all supporting simultaneous BER measurements. Additionally, the high sampling speed reduces the eye pattern measurement time. Multi-channel optical modules, such as QSFP+, can be measured more efficiently using the MP2100B.



## Network Master Pro



Network Master Pro



**Mainframe** MT1000A

**10G Multirate Module** MU100010A

**100G Multirate Module** MU100011A

**All-in-One Transport Tester for Metro and Backhaul Network Installation and Maintenance**

- Supports testing from 1.5 Mbps to 100 Gbps
- Remote operation
- Remote control (scripting)
- Compact, lightweight design for maximum field portability

The modular design of the Network Master Pro MT1000A platform makes it easy to support I&M for different network configurations. Combining it with the MU100010A offers the necessary functions for I&M of networks at speeds from 1.5 Mbps to 10 Gbps. Combining with the MU100011A, it supports more interface standards than any other handheld transport tester on the market such as CFP4/QSFP28, QSFP+, SFP28 (25GbE), SFP+SFP and RJ45.



## Network Master Pro



Network Master Pro



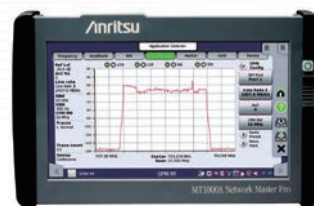
**Mainframe** MT1000A

**CPRI RF Module** MU100040B

**The MU100040B CPRI RF module for the MT1000A provides added versatility to our new Front Haul testing platform**

- Displays LTE spectrum of ALU/Nokia, Ericsson and Huawei CPRI radios
- Fast update rate to capture intermittent interferers
- Spectrum pan and zoom for detailed analysis of interferers/Spectrogram display captures and holds data for intermittent interferers
- 2 SFP slots for simultaneous uplink and downlink testing
- Modular design for use with MT1000A OTDR and 10G/100G transport test modules

The MU100040B for the MT1000A adds CPRI RF measurements to Anritsu's transport and fiber test platform. The modular design of the MT1000A means that it can be configured just for CPRI measurements or combined with the 10G/100G transport module and OTDR module to create the most comprehensive and versatile fiber and transport tester available.



## Network Master Flex



Network Master Flex

**MT1100A** 1.5 Mbps to 100 Gbps

**All-in-One Transport Tester for 100G Core/Metro Network R&D and Manufacturing**

- Supports testing from 1.5 Mbps to 100 Gbps
- Up to 4 ports at all rates
- Remote operation
- Remote control (scripting)
- Modular platform ensuring maximum return on investment

The all-in-one MT1100A supports all the latest communications network technologies. Selecting and installing up to two modules from a range of three module options supports all-in-one R&D and manufacturing tests of network and transport equipment operating at bit rates from 1.5 Mbps to 100 Gbps.



## Network Master™



Network Master

**Mainframe** MT9090A

**Gigabit Ethernet Module** MU909060A1/A2/A3

**Handheld Gigabit Ethernet Tester**

- Lightweight and compact unit (approx. 800 g)
- Testing time reduced by the "Test Automator" creating a series of tests with pass/fail
- Automated ITU-T Y.1564 and RFC 2544 testing including bidirectional path analysis service
- Disruption time measurement ideal for testing VoIP and IPTV applications top talkers, network attacks and finding the route course of an issue by "Channel Stats"

The portable and easy-to-use MU909060A offers versatile measurement functions supports deployments and maintenances of Carrier Class Ethernet and LTE mobile backhaul networks.



## Signalling Tester/Rapid Test Designer (RTD)

MD8430A/MX786201A

**Powerful Support for Developing LTE/LTE-Advanced/LTE-Advanced Pro Chipsets and Mobile UEs**  
**GUI for Creating 4G/3G/2G Test Cases**

- Supports LTE-Advanced FDD/TDD Carrier Aggregation (CA) 2CCs, 3CCs and 4CCs and 5CCs
- One MD8430A supports CA handover, 4 × 4 MIMO and 8 × 4 MIMO
- Supports full-digital fading test
- Supports DL 1 Gbps (PHY: 1.2 Gbps), UL 225 Mbps throughput test
- Optimized investment from first R&D to protocol conformance testing
- Full development and analysis toolset cuts L1, L2 and L3 scenario development time and costs
- Supports UMTS Release 10, HSPA Evolution, GSM/GPRS/EGPRS
- Easy to create, and execute test cases. Easy network parameter management

The MD8430A is a key LTE-Advanced Pro base station simulator for developing LTE-Advanced Pro-compliant chipsets and mobile devices. Using its extensive experience in 3G markets, Anritsu has developed the MD8430A as a powerful LTE-Advanced Pro R&D test solution to help developers bring LTE/LTE-Advanced/LTE-Advanced Pro UEs to market as fast as possible. The MX786201A is a GUI tool for creating and executing test cases based on 3GPP, including LTE/LTE-Advanced/LTE-Advanced Pro, W-CDMA/HSPA, GSM handover tests, that runs on the MD8430A/MD8480C. AT&T, Verizon, TMO USA specify this equipment for UE acceptance tests.



## Signalling Tester

MD8475A 350 MHz to 3.6 GHz, 2TX/2RX MD8475B 350 MHz to 6 GHz, 8TX/4RX

**For General Wireless Device Application Tests**

- Scenario-less test environment
- Supports most mobile communications technologies from LTE-Advanced to legacy (2G/3G)
- Built-in IMS server enables to test VoLTE
- Supports LTE-Advanced throughput test using build-in IP Traffic Generator (MD8475B only)
- Function test of the smartphone such as RCS or WLAN offload
- Supports automotive emergency call system (eCall, ERA-GLONASS), enables to verify the communication quality of in-vehicle module and device
- Automated continuous 24/7 testing using SmartStudio Manager

The all-in-one MD8475A/MD8475B supports the full range of smartphone and wireless device tests; when used in combination with SmartStudio, it handles all the complex functions and application tests required by manufacturers and vendors.

*SmartStudio*



MD8475A



MD8475B

## Simple Conformance Test System

ME7800L

**Simple configuration conformance test system supporting RF/RRM and Protocol testing by 1 platform**

- Support LTE RF/RRM and Protocol conformance testing
- Support IoT testing (Cat-M1, NB-IoT)
- GCF and PTCRB validated conformance test system
- Measurement functions for supporting R&D
- Superior measurement reproducibility and stability
- Support for Regional Frequency Bands

Simple Conformance Test System ME7800L is the ideal system for introducing RF and Protocol Conformance tests of 3GPP-compliant LTE mobile terminals and IoT devices.



## LTE-Advanced Mobile Device Test Platform

ME7834LA

**GCF/PTCRB, and Carrier Approved Test System for LTE-A Mobile Protocol Testing**

- No. 1 GCF and PTCRB approved test cases
- Initial setup and training support
- High test efficiency with reliable automation and easy GUI
- Carrier approved test platform
- Support LTE-A by Single Rack

The ME7834LA supports quick and easy 3GPP TS 36.523, TS 34.229, TS 34.123 and TS 51.010 protocol conformance tests of 3G/4G mobile systems as well as carrier acceptance testing for AT&T, Verizon, T-Mobile USA, docomo, KDDI, SoftBank, TD-LTE NS-IOT and SK telecom.





## LTE-Advanced RF Conformance Test System

ME7873LA

**RF/RRM Conformance Test System Supporting W-CDMA, LTE/LTE-A/LTE-A Pro by 1 platform**

- Industry-first test case validation
- Test system realizing superior measurement reproducibility and stability
- Measurement functions for efficient R&D
- Multiple hardware configurations tailored to measurement requirements
  - TRX/Performance/RRM
- Tunable filtering supports multiple bands with no hardware upgrade
- Inter-RAT handover capability
  - LTE to GSM/UMTS/CDMA2000/TD-SCDMA
- Support LTE-Advanced Pro, such as LAA and Cat-M/NB-IoT, Joint CA up to 4CA, 4 × 4 MIMO, and HPUE testing

ME7873LA is the world's first PTCRB-validated RF test platform for 3DL CA (September 2015). And the number of Approved TCs is Most in the market (As of December 2017).



## Radio Communication Analyzer

MT8821C 30 MHz to 3.8 GHz/6.0 GHz

**All-in-One Integrated Wireless Tester for LTE-Advanced DL CA 4CC 4 × 4 MIMO (1.6 Gbps) and DL CA 6 CC 2 × 2 MIMO (1.2 Gbps) Measurements**

- Supports multiple communications technologies from 2G, 3G to LTE-Advanced, IoT
- Easy-to-use GUI for 3GPP RF TRX tests. In addition, operation is made easy just by choosing item numbers using the automatic test tool
- Supports VoLTE tests with built-in IMS server
- Upgradable from MT8820C. Compatible functions, performance and remote commands

The MT8821C is a measuring instrument for mobile terminal developers; it is the successor to Anritsu's popular MT8820C used by mobile terminal and chipset vendors worldwide. As well as inheriting MT8820C technologies and know-how, the MT8821C adds support for new functions, including DL CA 6 CC, LTE-U/LAA, DL 256QAM, UL CA, UL 64QAM, and LTE Cat-M1/NB-IoT. As well as supporting RF measurements, the MT8821C also supports other R&D tests ranging from RF calibration, inspection, and performance tests. Additionally, it supports a full range of evaluation functions for developing smartphones and communications module hardware with OTA and SAR test solutions customized by each vendor.



## Vector Signal Generator

MG3710A 100 kHz to 2.7 GHz/4 GHz/6 GHz

**Supports the Evaluation of Wireless Communications Evolving into the 4G**

- RF modulation bandwidth 160 MHz\*/120 MHz
- Pre-installed key waveform patterns
- Waveform addition function
  - Adds and outputs two signals, such as wanted signal + interference signal or wanted signal + AWGN
- One unit supports two RF outputs max., Ideal for multi-system evaluations
- Supports BER test function

\*: When using MX370111A/MX370111A-002

The MG3710A supports various digital modulation signals, such as LTE/LTE-Advanced, WiMAX, GSM/GPRS/EDGE, W-CDMA/HSPA/HSPA Evolution, TD-SCDMA, Digital Broadcast (ISDB-T, DVB-T/H, CMMB), GPS, *Bluetooth*, and WLAN for major communication systems. It is ideal for tests of base stations, mobile terminals and devices.



## Signal Analyzer

MS2690A/MS2691A/MS2692A 50 Hz to 6 GHz/13.5 GHz/26.5 GHz

MS2850A 9 kHz to 32 GHz/44.5 GHz

MS2830A 9 kHz to 3.6 GHz/6 GHz/13.5 GHz

**Supports All Key Communications Systems**

- Analysis bandwidth: 1 GHz max. (MS2850A)  
125 MHz max. (MS2690A/MS2691A/MS2692A/MS2830A)
- Versatile built-in measurement functions: Adjacent channel leakage power, Occupied bandwidth, Spectrum emission mask, Spurious emission, Frequency counter, etc
- Measurement software options supporting modulation analysis: 5G, LTE/LTE-Advanced, W-CDMA/HSPA/HSPA Evolution, TD-SCDMA, GSM/EDGE/EDGE Evolution, CDMA2000/1xEV-DO, WLAN, ISDB-Tsb/ISDB-T, FM/θM/AM
- Vector Signal Generator option supporting modulation signal output (MS2690A/MS2691A/MS2692A/MS2830A)

The MS2690A/MS2691A/MS2692A/MS2850A/MS2830A have all the versatile built-in measurement functions needed for evaluating Tx characteristics. Parameter setting is easy using pre-installed templates for each measurement standard. Installing measurement options displaying numerical and graphical results supports modulation analysis of key communications systems. Various modulation signals are output by the built-in waveform patterns of the Vector Signal Generator option for the MS2690A/MS2691A/MS2692A/MS2830A. The IQproducer software makes it easy to generate and edit standards-based waveforms, such as LTE.



MS2850A



## Wireless Connectivity Test Set

MT8862A 2.4 GHz to 2.5 GHz, 5 GHz to 6 GHz

### Ideal for RF TRx Tests of WLAN Devices

- Network Mode Support  
No need to control chipset and use test firmware  
Measurement under Realistic Operation Conditions
- Wide Connectivity Support  
Connections are supported in the IEEE802.11a/b/g/n/ac AP and STA modes. Additionally, supporting securities
- Intuitive GUI  
GUI on web browser
- Built-in IP Data Ports  
Ethernet ports for IP data are built-in and IP continuity tests



Anritsu's Wireless Connectivity Test Set is ideal for measuring the RF TRx characteristics at design and manufacturing inspection of WLAN devices. It has a built-in Network Mode for measuring the performance of the WLAN DUT under realistic operation conditions to play a key role in quality evaluation and improvement.

## Universal Wireless Test Set

MT8870A 10 MHz to 3.8 GHz/6 GHz

### Designed to Maximize Production Throughput of Smartphones and Wireless Modules

- All-in-one platform accommodating 4 test modules
- Simultaneous measurement of 4 devices and parallel measurement of multiple wireless communications systems in one device
- 160 MHz measurement bandwidth as standard
- Support multiple wireless standards  
LTE/LTE-Advanced, W-CDMA/HSPA, TD-SCDMA, GSM/EDGE, CDMA2000/1xEV-DO, WLAN 802.11a/b/g/n/p (V2X)/ac, Bluetooth v5.0, ZigBee, Z-Wave, FM/RDS, GPS/Galileo/GLONASS/BeiDou, DVB-H, ISDB-T/ISDB-Tmm
- Built-in audio analyzer and audio generator



The MT8870A is a test instrument from Anritsu that has been specifically designed for high volume manufacturing test of cellular and connectivity wireless system. The MT8870A instrument mainframe can contain up to four TRX Test modules MU887000A/01A. Each module has an integrated Vector Signal Generator (VSG) and Vector Signal Analyzer (VSA) to perform DUT transmitter and receiver RF tests.

## Bluetooth Test Set

MT8852B

### Corresponds to the latest core specification version Bluetooth 5

- Measurements performed as defined in the Bluetooth RF test specification
- Supports 2 Mbps Low Energy (2LE) and Bluetooth Long Range (BLR) added with Bluetooth 5
- Qualified by Bluetooth SIG for RF measurements

The MT8852B is the market leading RF measuring instrument for design proving and production test of a wide range of products that integrate Bluetooth technology, including; phones, headsets, computers, audio-visual and gaming products as well as modules. In production, a single key press initiates a measurement script that tests a device.





## Cell Master™

MT8212E/MT8213E Cable & Antenna Analyzer: 2 MHz to 4 GHz/6 GHz, Spectrum Analyzer: 9 kHz to 4 GHz/6 GHz

### Compact Base Station Analyzer

- 30 analyzers in one
- Cable and antenna analyzer: 2 MHz to 4 GHz/6 GHz
- Return loss, Cable loss, VSWR, Distance-to-Fault
- Spectrum analyzer: 9 kHz to 4 GHz/6 GHz
- Interference analyzer with interference mapping, GPS

This optimal combination of base station test capabilities in one handheld device eliminates the need for several independent test instruments, thereby reducing the number of tools the user must carry and learn to operate. Whether it's sweeping cables, making power measurements, finding interference, troubleshooting base station signal quality, or verifying backhaul performance, the MT8212E/MT8213E are the ideal all-in-one instrument to help keep your network up and running.



## BTS Master™

MT8220T Cable & Antenna Analyzer: 400 MHz to 6 GHz, Spectrum Analyzer: 150 kHz to 7.1 GHz, Power Meter: 10 MHz to 7.1 GHz

### High-performance Handheld Base Station Analyzer

- 2-port cable and antenna analyzer: 400 MHz to 6 GHz
- Spectrum analyzer: 150 kHz to 7.1 GHz
- Power meter: 10 MHz to 7.1 GHz
- GPS receiver with antenna

The MT8220T is Anritsu's third generation high-performance handheld base station analyzer that has been specifically developed to advance the support for 4G wireless networks as well as installed 2G, 3G and WiMAX networks. The MT8220T provides 20 MHz bandwidth modulation quality for LTE eNodeB testing and is equipped with a high-contrast, touch-screen display and backlit key panel making it simple to use in both bright sunlight and dim conditions.



## PIM Master™

MW82119B

### Battery-operated, High Power Portable, Passive Intermodulation Analyzer with Cable & Antenna Analyzer

- Passive intermodulation (PIM) analyzer
- PIM vs. Time, Swept PIM, Distance-to-PIM, Noise floor
- Battery operated: >3 hour
- 20 to 46 dBm (0.1 Watt to 40 Watt)
- Field-proven design: Rugged, compact, daylight viewable display

The MW82119B is a 40 Watt, battery-operated PIM analyzer featuring Site Master™ line sweep capability. With the Site Master option included, the MW82119B is able to fully certify cable and antenna system performance, measuring PIM, Distance-to-PIM, Return Loss, VSWR, Cable Loss and Distance-to-Fault with a single test instrument. MW82119B includes a large, outdoor viewable display and intuitive user interface that is optimized for field conditions. MW82119B's rugged design and enhanced portability enables both PIM and line sweep testing at the "top-of-the-tower," helping operators to achieve maximize RF performance from their LTE Remote Radio Head (RRH) installations.



## Signal Analyzer



MS2850A series (MS2850A-047/046) 9 kHz to 32 GHz/44.5 GHz

### Wideband signal analysis using excellent dynamic range and flatness

- Excellent Flatness Performance  
Amplitude flatness:  $\pm 1.2$  dB (nom.), Phase flatness:  $5^\circ$  p-p (nom.)  
Center Frequency: 28 GHz, at Center Frequency  $\pm 500$  MHz
- Wide Dynamic Range  
Better than 140 dB@28 GHz  
The difference between the ADC clipping level and DANL
- Analysis Bandwidth: 255 MHz (Standard), 510 MHz (Option), 1 GHz (Option)
- Support high performance waveguide mixer (50 GHz to 90 GHz) or harmonic mixer (up to 325 GHz)
- Measurement applications (options): Modulation Analysis (5G, LTE, LTE-Advanced, W-CDMA, TD-SCDMA, GSM, Vector Modulation, etc.), Phase Noise, Noise Figure, Noise Floor Reduction, etc.



The MS2850A-047/046 is a spectrum analyzer/signal analyzer with a maximum analysis bandwidth of 1 GHz and excellent flatness performance. With this performance, the MS2850A supports high-accuracy amplitude and phase measurements for each signal in wideband next-generation communications systems, such as 5G mobile and satellite. In addition to signal analysis, 1 GHz analysis bandwidth can be utilized as a digitizer application that monitors multiple frequencies in satellite communication. The large amounts of digitized data captured can be transferred to an external PC 100 times faster than conventional method by External Interface for High Speed Data Transfer PCIe/USB3.0 MS2850A-053/054 option.

## Signal Analyzer



MS2840A series (MS2840A-040/041) 9 kHz to 3.6 GHz/6 GHz

### Top Class Phase Noise Performance at Middle-Price Range

- Phase Noise:  $-140$  dBc/Hz@150 MHz, 10 kHz offset (MS2840A-066, meas.)  
 $-138$  dBc/Hz@1 GHz, 10 kHz offset (MS2840A-066, meas.)  
 $-123$  dBc/Hz@1 GHz, 10 kHz offset (Std.)
- Analysis Bandwidth: 31.25 MHz (Std.), 125 MHz max. (Option)
- Measurement applications (Options): Phase Noise, Noise Figure, Vector and Analog Modulation Analysis, Noise Floor Reduction, Built-in Vector/Analog Signal Generator, BER



MS2840A-041

Installing the MS2840A-066 option in the MS2840A-040/041 supports excellent phase noise performance exceeding that of high-end models. It offers high cost-performance in fields including development and manufacturing of narrowband wireless equipment and oscillators with built-in wireless, as well as wireless fundamental research. Additionally, it is ideal for substitute replacement of first-generation and earlier legacy high-end models. It has a built-in signal analyzer function with a wide 31.25 MHz analysis bandwidth using FFT technology for versatile analyses in both the time and frequency domains, etc. Moreover, installing the internal vector signal generator and analog signal generator options provides all-in-one support for TRx measurements of wireless equipment.

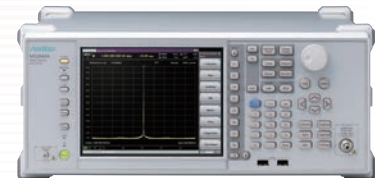
## Signal Analyzer



MS2840A series (MS2840A-044/046) 9 kHz to 26.5 GHz/44.5 GHz

### Excellent Phase Noise Performance Using New Synthesizer Design

- Phase Noise:  $-123$  dBc/Hz@1 GHz, 10 kHz offset  
 $-100$  dBc/Hz@79 GHz, 10 kHz offset (with high performance waveguide mixer, meas.)
- Support high performance waveguide mixer (50 GHz to 90 GHz) or harmonic mixer (up to 325 GHz)
- Analysis Bandwidth: 31.25 MHz (Std.), 125 MHz max. (Option)
- Measurement applications (Options): Phase Noise, Noise Figure, Vector and Analog Modulation Analysis, Noise Floor Reduction, BER



MS2840A-046

The MS2840A-044/046 is a spectrum analyzer offering top-class phase noise performance in a middle-price-range model. This excellent phase noise performance supports measurement of wideband transmitters, such as VHF and UHF LMR/PMR, where the measurement instrument performance is key to measurement of close-in spurious, as well as measurement of microwave wireless backhaul, satellite, radar, etc. Connection to two available high-performance waveguide mixers covers both V-band (50 GHz to 75 GHz) and E-band (60 GHz to 90 GHz) measurements with the highest phase noise performance.

## Signal Analyzer

MS2830A series (MS2830A-040/041/043) 9 kHz to 3.6 GHz/6 GHz/13.5 GHz

**Supports TRx evaluations of various wireless equipment plus spurious measurements of narrowband wireless equipment**

- Total level accuracy:  $\pm 0.3$  dB (typ.) (300 kHz to 4 GHz)
- SSB phase noise:  $-109$  dBc/Hz@500 MHz, 1 kHz offset\*  
 $-118$  dBc/Hz@500 MHz, 10 kHz offset\*  
 $-133$  dBc/Hz@500 MHz, 100 kHz offset\*  
 \*: Requires Low Phase Noise Performance MS2830A-066

### Measurement applications (options):

Modulation Analysis (LTE/LTE-Advanced, Analog Modulation, Vector Modulation, etc.), Noise Figure, Built-in Audio Analyzer, Built-in Vector/Analog Signal Generator, BER, Internal Signal Generator Control Function, etc.

With support for various measurements, the high cost-performance of the MS2830A series makes it ideal for various applications. As well as TRx tests of different wireless equipment including digital and analog LMR/PMR/Transceiver Modules, and cellular and WLAN, it also supports spurious measurements of narrowband wireless equipment typified by LMR/PMR. And the built-in Noise Figure (NF) measurement function plus the Internal Signal Generator Control Function (for evaluating filter and amplifier transmission characteristics) expand the application range even further. Finally, Anritsu's unique Capture & Playback Function can regenerate wireless equipment Tx signals.



MS2830A-041

## Signal Analyzer

MS2830A Microwave series (MS2830A-044/045) 9 kHz to 26.5 GHz/43 GHz

**For the Development & Manufacturing of the Millimeter-Wave Wireless Transmitters. Spectrum Analyzer + Signal Analyzer**

- Total level accuracy:  $\pm 0.3$  dB (typ.) (300 kHz to 4 GHz)
- Dynamic range\*: 159 dB@25 GHz \*: (TOI-DANL)  
 TOI:  $+13$  dBm@25 GHz  
 DANL:  $-146$  dBm/Hz@25 GHz
- SSB phase noise:  $-115$  dBc/Hz@500 MHz, 100 kHz offset
- Measurement applications (options):  
 Modulation Analysis (LTE/LTE-Advanced, Vector Modulation, etc.), Noise Figure, BER, etc.



MS2830A-045

The MS2830A-044/045 spectrum analyzer has an upper frequency limit of 26.5 GHz/43 GHz, which can be extended to 325 GHz using the high-performance waveguide mixer and external mixer. It can be customized to support various measurement applications.

- Confirming microwave signal frequency, phase, amplitude, instantaneous spectrum fluctuations, etc., in signal analyzer mode
- Measuring weak signals at microwave preamplifiers
- Measuring true spurious of increasingly wideband mm-Wave communications equipment using high IF (1.875 GHz) and high-performance waveguide mixer

## Signal Analyzer

MS2690A/MS2691A/MS2692A 50 Hz to 6 GHz/13.5 GHz/26.5 GHz

**Signal analyzer with excellent fundamental performance for resolving wireless signal issues**

- Frequency coverage up to 6 GHz/13.5 GHz/26.5 GHz
- Total level accuracy:  $\pm 0.3$  dB (typ.)
- Dynamic range: 177 dB, TOI:  $\geq +22$  dBm, DANL:  $-155$  dBm/Hz
- Signal Analyzer
  - Analysis bandwidth: 31.25 MHz (standard), 62.5 MHz/125 MHz (option)
  - Modulation analysis software: LTE/LTE-Advanced, WLAN (802.11a/b/g/n/j/p/ac), etc.
  - Capture and Playback function
- Vector Signal Generator
  - Level accuracy:  $\pm 0.3$  dB (typ.)
  - BER function, Internal AWGN generator



The MS269xA has the excellent total level accuracy, dynamic range and performance of a high-end spectrum analyzer.

Not only can it capture wideband signals but FFT technology supports multifunction signal analyses in both the time and frequency domains. Moreover, the built-in signal generator function outputs both continuous wave (CW) and modulated signals for use as a reference signal source.

## High Performance Waveguide Mixer

MA2806A/MA2808A 50 GHz to 75 GHz/60 GHz to 90 GHz

**Spectrum Analysis of Increasingly Wideband mm-Wave Transmitters**

- Easy set-up with one coaxial cable connection to MS2850A/MS2840A/MS2830A signal analyzer
- Wide dynamic range using excellent minimum Rx sensitivity and P1dB performance
- High IF and PS Function (patent pending) eliminating Image response effects at wideband signal measurement
- High phase noise performance of  $-100$  dBc/Hz@79 GHz with 10 kHz offset (meas.) at connection with MS2840A
- Easy loading of conversion loss data from accessory USB memory stick into signal analyzer for reflection in the measurement values

The MA2806A/MA2808A is a high-performance waveguide mixer for connection to the MS2850A, MS2840A-044/046 and MS2830A-044/045. With high dynamic range performance, it is ideal for evaluating the true spurious of increasingly wideband mm-Wave transmitters. Moreover, when used with the high IF (1.875 GHz) of the signal analyzer, it not only supports image-response-free measurements, but can also be used for spectrum mask measurements of wideband signals, such as wireless backhaul and automobile radar, over a wide measurement span. Using the newly developed, patentpending, PS Function, supports measurements without image responses up to a measurement span of 7.5 GHz.



MA2808A



# Spectrum Master™ Ultraportable Spectrum Analyzer



MS2760A

## The Future of Performance and Affordability

- mmWave capabilities for 5G, wireless backhaul, 802.11ad, satcom, and more
- Ultraportable form factor enables measurements right at the device under test
- Measure: channel power, adjacent channel power, occupied bandwidth
- Patented NLTL technology provides >100 dB dynamic range
- -127 dBm DANL to 110 GHz
- Up to 6 traces, 3 trace detectors, and 12 markers
- Dynamic Range: >103 dB from 6.15 GHz up to 70 GHz

Our Spectrum Master – Ultraportable Spectrum Analyzer MS2760A utilizes Anritsu's patented ShockLine non-linear transmission line (NLTL) technology, the MS2760A shatters the cost, size, and performance barriers associated with traditional large form factor instruments to more efficiently advance technology development. It is truly pocket-sized, but big on performance with industry leading dynamic range, sweep speed, and amplitude accuracy.



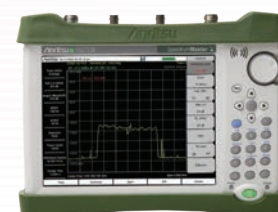
## Spectrum Master™

MS2711E/MS2712E/MS2713E 9 kHz to 3 GHz/4 GHz/6 GHz

### Compact Handheld Spectrum Analyzer

- Spectrum analyzer: 9 kHz to 6 GHz
- Interference analyzer with interference mapping
- High accuracy power meter, 2-port transmission measurements (MS2712E/MS2713E only)
- Coverage mapping, Channel scanner, GPS, AM/FM/PM analyzer (No coverage mapping for MS2711E)
- 3GPP, 3GPP2, WiMAX, ISDB-T, DVB-T/H signal analyzers (MS2712E/MS2713E only)
- Tracking generator: 500 kHz to 4 GHz

Regulatory requirements are growing. You're under increasing pressure to cut costs. And improving system uptime is always a top priority. The MS271xE helps you do all of this and more. Whether you are performing complex interference analysis or assessing signal quality, the MS271xE delivers the ease of use, rich functionality, and best-in-class price/performance you've come to expect from Anritsu. Designed to handle the most punishing field conditions, the MS271xE allows you to monitor, locate, identify, and analyze a broad range of cellular, 2G/3G/4G, land mobile radio, Wi-Fi, and broadcast signals. With a rich array of configuration options, the multifunctional MS271xE eliminates the need for you to learn and carry multiple instruments when locating and identifying signals over wide frequency ranges.



MS2711E

## Spectrum Master™

MS2720T 9 kHz to 9 GHz/13 GHz/20 GHz/32 GHz/43 GHz

### High-performance Handheld Spectrum Analyzer

- Frequency coverage: 9 kHz to 43 GHz
- Broadband preamplifiers over the whole frequency range for increased sensitivity approx. 17 dB
- Three sweep modes: Improved sweep speed, up to 100 times faster
- Resolution and video bandwidths from 1 Hz to 10 MHz
- New triggering choices, including hysteresis, hold-off, and delay
- More zero-span capabilities including 10 MHz RBW & VBW
- Enhanced spectrum analyzer touch-screen GUI, including large marker display choice
- Choice of display options for readability: normal, black on white, night vision, color on white, or high contrast
- On-screen interference mapping as part of the interference analysis option

Anritsu's latest generation of handheld spectrum analyzers is the MS2720T. This represents the company's highest performance handheld spectrum analyzer. Exciting new features and options bring more value and speed to the user.



## Remote Spectrum Monitor

MS27101A/MS27102A/MS27103A 9 kHz to 6 GHz

### For Remote RF Signal Monitoring

- Frequency coverage: 9 kHz to 6 GHz
- Sweep speed up to 24 GHz/s
- Integrated web server to view, control and conduct measurements via web browser
- Watchdog timer to insure long-term stability for remotely deployed monitors
- Low spurious levels for accurate signal discovery
- 20 MHz instantaneous FFT bandwidth

Our three models of remote spectrum monitoring products are designed to both mitigate interference problems and to identify illegal or unlicensed signal activity. The MS27101A is housed in a 1/2 rack enclosure with 1U height, designed exclusively for indoor applications. MS27102A is an IP67 rated device which operates outdoors, with the ability to be mounted on poles or walls (using the included mounting bracket). The MS27103A is a multi-port spectrum monitor (12 RF In ports or optionally 24 RF In ports) which is ideal for cellular, DAS and other applications requiring the use of multiple antennas.



MS27101A



MS27102A



MS27103A

## ShockLine™ 1-Port VNA

MS46121B series 40 MHz to 4 GHz/150 kHz to 6 GHz

**Ideal for Testing Multiple 1-port Devices in Parallel for Improved Test Productivity and Throughput**

- 1-port VNA with frequency options from 150 kHz to 6 GHz
- External PC control enables control of multiple MS46121B in parallel for excellent multisite throughput
- Very compact package allows for direct connection to the DUT
- Scalar transmission measurements in a (1-to-1) or (1-to-n) configuration
- No onboard data storage eliminates the need for data purging in secure applications
- Standard bandpass time domain with time gating grants easier and faster fault identification
- A common GUI interface within the ShockLine family reduces switching costs between models

The MS46121B is a series of two PC-controlled 1-port ShockLine Vector Network Analyzers with frequency ranges of 40 MHz to 4 GHz and 150 kHz to 6 GHz. The MS46121B provides performance and accuracy for your 1-port measurements in a low cost and space saving solution that is small enough to directly connect to the device under test. All the members of the MS46121B are aimed at RF and microwave applications in manufacturing, engineering and education. The two MS46121B options both come with 100 ms/point sweep speeds and a measurement accuracy of  $\pm 0.5$  dB ( $-6$  dB offset, typ.), making them suitable for your passive device test applications.



## ShockLine™ Compact VNA

MS46122B series 1 MHz to 8 GHz/20 GHz/43.5 GHz

**Low-cost Series of 1U High, 2-port Compact Vector Network Analyzers**

- World's first series of compact VNAs to 43.5 GHz for cost-effective measurements
- PC control takes advantage of external computer processing power and functionality
- Compact 1U high package for efficient use of bench and rack space
- No onboard data storage eliminates the need for data purging in secure applications
- Time domain with time gating option grants easier and faster fault identification

The MS46122B is a series of three PC-controlled Compact ShockLine Vector Network Analyzers with a frequency range from 1 MHz to 8 GHz/20 GHz/43.5 GHz. The series benefits from patented ShockLine VNA-on-chip technology, which simplifies the internal VNA architecture at high frequencies, reduces instrument cost, and enhances accuracy and measurement repeatability.



## ShockLine™ Economy VNA

MS46322B series 1 MHz to 8 GHz/20 GHz/43.5 GHz

**Low-cost Series of 2U High, 2-port Economy Vector Network Analyzers**

- Ideal for testing RF and microwave devices
- Fast sweep speed and wide dynamic range minimize test times and maximize throughput
- Excellent corrected directivity allows for less measurement uncertainty
- Time domain with time gating option grants easier and faster fault identification
- The LAN interface for remote control is more robust than USB and faster than GPIB
- A common GUI and SCPI interface within the ShockLine family
- USB ports allow for easy connection to user-provided monitor, keyboard, and mouse
- The small 2U packages allows for the efficient use of rack space

The MS46322B is a series of Economy ShockLine Vector Network Analyzers with frequency range from 1 MHz to 8, 20 and 43.5 GHz. It is based on patented ShockLine VNA-on-chip technology, which simplifies the internal VNA architecture at high frequencies, reduces instrument cost, and enhances accuracy and measurement repeatability.



## ShockLine™ 2-Port and 4-Port Performance VNAs

MS46522B/MS46524B series 50 kHz to 8.5 GHz/20 GHz/43.5 GHz (55 GHz to 92 GHz)

**High-performance, 3U High, 2-port and 4-port VNA Available in a 50 kHz to 43.5 GHz Frequency Range**

- High output power allows measurement of high attenuation devices (MS46522B)
- Industry leading dynamic range enables measurement of very low reflection artifacts
- Excellent corrected directivity minimizes measurement uncertainty
- SmartCal™ automatic calibration unit reduces calibration and setup time
- Time domain with time gating option grants easier and faster fault identification
- Modern LAN interface for remote control is faster than GPIB
- A common GUI and SCPI interface within the ShockLine family
- E-band VNA
  - Extended frequency range covering E-band and major parts of V-band
  - Full-assembled test system eliminates setup errors and increases reliability
  - Tethered modules connect directly to the DUT increasing measurement stability
- Simple signal integrity testing of passive multi-port and differential devices
- The compact 3U high chassis allows for the efficient use of rack space

The MS46522B/MS46524B is a series of 2 and 4-port Performance ShockLine Vector Network Analyzers. Delivering an unprecedented level of value and performance, including best-in-class dynamic range, the Performance series lowers cost-of-test and speeds time to market in numerous testing applications up to 92 GHz. These applications include designing and manufacturing mobile network equipment, mobile devices, automotive cables, high-speed data interconnects and system integration components.



MS46522B



MS46524B



## VectorStar™ Microwave VNA

MS4640B 10 MHz to 20 GHz/40 GHz/70 GHz

### Premium Family of RF to Microwave and Millimeter-wave Vector Network Analyzers

- Broadest frequency span from a single coaxial test port covering 10 MHz to 70 GHz in a single instrument and 70 kHz to 145 GHz in the broadband configuration. Extendable to 1.1 THz
- IMDView™ software coupled with the internal combiner option offers the ability to switch from S-parameters to IMD measurements in a single connection
- Highest performance pulse measurements — PulseView™ offers 2.5 ns pulse resolution with 100 dB dynamic range
- 4-port single-ended or balanced measurements using DifferentialView™ analysis
- Superior dynamic range: up to 142 dB



The VectorStar™ family is Anritsu's premium VNA line, providing the highest overall performance on a modern platform. The MS4640B offers the broadest coverage in a single instrument, 70 kHz to 70 GHz. The additional two decades at the low-end are even more impressive than the guaranteed 70 GHz coverage on the high-end.

## VectorStar™ Broadband VNA

ME7838A/A4/E/D series 70 kHz to 110 GHz/145 GHz

### High-performance, Broadband Network Analysis Solutions

- The ME7838A or E version can easily be upgraded to 145 GHz
- All versions may be configured to include banded mm-wave modules up to 1.1 THz
- Industry-best calibration and measurement stability: 0.1 dB vs. 0.6 dB over 24 hours
- All versions support the 3744x-Rx receiver for noise figure measurements to 125 GHz
- Compact, lightweight mm-wave modules (0.6 lb. vs. 7+ lbs. and 1/50 the volume) offer low cost installation on smaller probe stations

The ME7838 series system provides high-performance in a compact mm-wave module with industry-best calibration stability. While other broadband systems continue to provide raw performance with negative directivity in critical frequency bands, the ME7838 series is the only broadband system with positive raw directivity in all bands. The result is better calibration stability and better measurement stability with significantly longer time between calibrations for accurate measurements and improved productivity. The ME7838D takes high-performance broadband measurements to a new level with the addition of the mm-wave module MA25300A. The MA25300A adds the next waveguide band and combines it with the Anritsu developed 0.8 mm coaxial connector offering the world's first broadband VNA operating beyond the limits of W-band in a single sweep.



ME7838A

## VNA Master™

MS202xC/MS203xC series 5 kHz to 6 GHz/15 GHz/20 GHz

### The Ultimate Handheld Vector Network + Spectrum Analyzer for Cable, Antenna and Signal Analysis Anytime, Anywhere

VNA Master (MS202xC/MS203xC)

- True 2-path 2-port fully-reversing VNA
- Ultra-fast 350  $\mu$ s/data point sweep speed
- 12-term error correction algorithm
- Vector voltmeter and time domain option
- User-defined quad display for viewing all 4 S-parameters

Spectrum Analyzer: 9 kHz to 9 GHz/15 GHz/20 GHz (MS203xC)

- Detectors: Peak, Negative, Sample, Quasi-peak, and True-RMS
- Markers: 6, each with a delta marker, or 1 reference with 6 deltas
- Built-in pre-selector for eliminating spurious in displays

The MS202xC/MS203xC series offers the industry's first 12-term error correction algorithm in a handheld VNA. With a typical measurement speed of 350  $\mu$ s/point, it is ideally suited for tuning filters in the field where multiple S-parameters often interact during tuning. Using a 3-receiver architecture, the MS202xC/MS203xC can measure and display all 2-port S-parameters at once with a one-time connection to the DUT. It specifically addresses complex cable and antenna measurement needs in the field with accurate, vector corrected 2-port magnitude, phase, and Distance-to-Fault measurements.



MS2026C

## Site Master™

S331P Compact handheld cable & antenna analyzer: 150kHz to 6.0 GHz

### Ultraportable Cable & Antenna Analyzer Featuring Classic and Advanced Modes

- Smallest, lightest, and fastest Site Master™
- Direct connection to DUTs eliminating the need for phase stable cables
- Powered through USB interface (No battery required)
- Rugged and reliable
- Impact, dust and splash resistant
- Compatible with Anritsu Software tools including easyTest™ and Skybridge™ Tools

The S331P is an ultraportable version of the industry-leading Site Master Series of Cable and Antenna Analyzers. It is the smallest, lightest, fastest, and most cost effective instrument in the Site Master family. No battery is required, since the USB port of Windows 7, 8 & 10 tablet devices, laptops or desktop PCs power it. Available with two frequency ranges starting from 150 kHz up to 4 GHz and 150 kHz to 6 GHz, it is the only small headless Site Master product capable of measurements down to 150 kHz for low frequency radio communications applications and up to 6 GHz for higher frequency applications like LTE-U in the 5 GHz unlicensed spectrum.





## Site Master™

S331L 2 MHz to 4 GHz, Power Meter: 50 MHz to 4 GHz

### Handheld Cable & Antenna Analyzer Featuring Classic and Advanced Modes

- 2 MHz to 4 GHz handheld cable and antenna analyzer, impact, dust, and splash resistant
- More than 8 hours of continuous battery operation
- Standard built-in InstaCal™ module and power meter
- FlexCal™ maintains calibration with frequency changes
- Familiar S331D-like classic mode and S331E-like advanced mode
- Built-in one button help function
- 800 × 480 7-inch TFT touch-screen display and multiple USB ports

The S331L is an all-inclusive 1-port cable and antenna analyzer covering the 2 MHz to 4 GHz range, with a built-in InstaCal module and a built-in power meter. Standard measurements include: return loss, VSWR, cable loss, smith chart (50Ω/75Ω selectable), 1-port phase, distance-to-fault, return loss, distance-to-fault VSWR, RF power (50 MHz to 4GHz), and VIP mode, optical connector inspection with IEC 61300-3-35 based pass/fail standard (requires USB video inspection probe G0306A, sold separately).



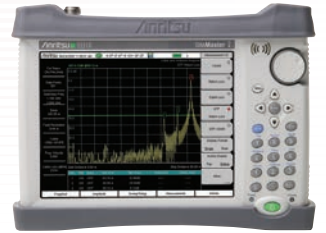
## Site Master™

S331E/S332E/S361E/S362E 2 MHz to 4 GHz/6 GHz, Spectrum Analyzer: 9 kHz to 4 GHz/6 GHz, Cable and Antenna Analyzer: 9 kHz to 4 GHz/6 GHz

### Compact Handheld Cable and Antenna Analyzers with Spectrum Analyzer

- Cable and Antenna Analyzer: 2 MHz to 4 GHz
- Return Loss, VSWR, Cable Loss, Distance-To-Fault, Smith Chart, 1-Port Phase
- Field-proven design: Four-hour battery life, rugged, compact, lightweight, daylight viewable display
- USB connectivity, built-in touch screen keyboard
- Intuitive menu-driven touch screen user interface
- Standard three-year warranty (battery one-year warranty)

The Site Master is the preferred cable and antenna analyzer of wireless service providers, contractors and installers. It is the most integrated cable and antenna analyzer in the world. Our compact handheld cable and antenna analyzer with spectrum analyzer is a sleek, compact instrument that's less than 6 lbs.



S331E

## LMR Master™

S412E 500 kHz to 1.6 GHz/6 GHz, Spectrum Analyzer: 9 kHz to 1.6 GHz

### Land Mobile Radio Modulation Analyzer and Signal Generator, Vector Network Analyzer, Spectrum Analyzer

- Cable and antenna analyzer: 500 kHz to 1.6 GHz, optional to 6 GHz
- Return loss, VSWR, Insertion loss,  $S_{11}/S_{21}$ , DTF
- Spectrum analyzer: 9 kHz to 1.6 GHz, optional to 6 GHz
- NBFM signal analyzer with coverage mapping
- LMR signal analyzers with coverage mapping: P25, P25 phase 2, NXDN, DMR, PTC, TETRA
- Broadband signal analyzers: LTE, WiMAX
- Interference analyzer with interference mapping and support for Handheld InterferenceHunter MA2700A

The S412E is the ideal instrument for Land Mobile Radio (LMR), Professional Mobile Radio (PMR) technicians and engineers engaged in field testing the RF performance of NBFM, P25, P25 Phase 2 (TDMA), NXDN, ETSI DMR, MotoTRBO, ETSI TETRA, and LTE for commercial, public safety, maritime, and critical infrastructure radio systems. In addition the S412E offers support for USA class 1 railway Positive Train Control systems.



## Microwave Site Master™

S820E 1 MHz to 8 GHz/14 GHz/20 GHz/30 GHz/40 GHz

### Cable & Antenna Analyzer

- Frequency range: 1 MHz to 8, 14, 20, 30, 40 GHz
- VNA mode (option) offers fully reversing 4S-parameter measurement capabilities
- VVM mode (option) with standard A/B and B/A ratio capability
- 110 dB of dynamic range from 20 MHz to 40 GHz
- 650 μs/data point for fast field measurements
- Advanced and classic mode GUI (i.e. S810D/S820D)
- Coaxial and waveguide measurement supported

The S820E is the world's most advanced Site Master ever developed. Available Vector Network Analyzer (VNA) and Vector Voltmeter (VVM) options allow users to easily expand the S820E's versatility at any time. VNA mode provides fully reversing sweep, 4S-parameter simultaneous measurement capabilities with user configurable quad display. Generates standard industry compatible format s2p files. s2p files can be imported into Anritsu benchtop VNA's (VectorStar and ShockLine) for ease of comparison between field and lab measurements.





## RF/Microwave Signal Generator

MG3690C series 0.1 Hz to 70 GHz/500 GHz

### The Ideal Microwave Signal Generators

- Industry best broad frequency coverage
- Industry best phase noise
- Industry best pulse modulation
- Fast switching speed
- Full analog modulation
- High output power
- Highly configurable
- Highly reliable

The MG3690C series of broadband signal generators covers audio, HF, VHF, UHF, RF and microwave frequencies from 0.1 Hz to 70 GHz in single coaxial output and up to 500 GHz or beyond, with external multipliers. In addition, it is easy to operate either through intuitive front panel controls or remotely via GPIB or Ethernet connectivity. Thus, the MG3690C series is an ideal signal source for both RF and microwave requirements, fully configurable for simple to high-performance applications.



## Vector Signal Generator

MG3710A 100 kHz to 2.7 GHz/4 GHz/6 GHz

### Multi-band, Multi-system, Multi-channel Cut Costs for New Wireless Tests

- RF modulation bandwidth 160 MHz\*/120 MHz
- ACLR: -71 dBc (W-CDMA, TestModel1, 64DPCH, 2 GHz)
- SSB phase noise: <-131 dBc/Hz (typ.) (1 GHz, 20 kHz offset, CW)
- Pre-installed key waveform patterns
- Waveform addition function:
  - Adds and outputs two signals, such as wanted signal + interference signal or wanted signal + AWGN
- One unit supports two RF outputs max. Ideal for multi-system evaluations.
- Supports BER test function

\*: When using MX370111A/MX370111A-002

The MG3710A is a Vector Signal Generator with 6 GHz upper frequency limit and 160 MHz\*/120 MHz wide RF modulation baseband generator. The excellent signal generator ACLR and SSB phase noise reduces the effect on wideband and narrow-band measurements to improve test margins and yields. It outputs various wireless systems signals such as LTE, WLAN and narrowband communications.



## Analog Signal Generator

MG3740A 100 kHz to 2.7 GHz/4 GHz/6 GHz

### Versatile Modulation Functions, Excellent Expandability

- Built-in AM/FM/øM/Pulse modulation function (standard)
- Additional analog modulation input (option)
  - AM + FM, AM + øM, Internal 1 + Internal 2, Internal + External
- \*: FM + øM does not support.
- Dual RF Outputs (option)
  - One unit supports two RF outputs (1st RF/2nd RF) max.
- Narrowband digital modulation function (option)
  - RF modulation bandwidth: 2 MHz
- BER test function (option), Input bit rate: 100 bps to 40 Mbps
- USB power sensors (sold separately)

The MG3740A has excellent RF specifications, including SSB phase noise, output level, etc., and versatile modulation functions (AM/FM/øM/Pulse). Moreover, the MG3740A supports additional analog modulation by external signal input, dual RF outputs, narrowband digital modulation function for private mobile radio (PMR), BER test function and USB power sensors.



## Wideband Peak Power Meter

ML2480B/ML2490A series 100 kHz to 65 GHz

### World's most comprehensive range of power meters

- Ideal for measuring radar and communication signals like WiMAX, W-CDMA, WLAN, GSM etc.
- CW and average power measurements as low as -60 dBm
- 20 MHz video bandwidth
- Sampling rate of 64 MS/s with ML2480B and ML2490A series power meters

The ML2480B and ML2490A series are designed for use with the Wideband Peak Power Sensors MA249xA. These power meters and sensors provide peak, crest factor, average power, rise time, fall time, maximum power, minimum power and statistical data of wideband signals.



## Power Meter

ML2437A/ML2438A

### For Measuring Wide Dynamic Range Power

- Speed accuracy and flexibility in a low cost package
- Portable, rugged, and splash resistant
- Optional Ni-MH battery, providing six hours continuous operation
- Measure and transfer a high speed burst of 200 data points using profile operating mode with sampling rates of 35k per second
- With 99.9% emulation of older meters, the ML2430A series improves ATE system productivity. Typical test system speed improvement is 2 to 10 times faster system speed
- Single input (ML2437A), Dual input (ML2438A)

The ML2437A/ML2438A 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. This meter includes graphics display capability as a standard feature. The ruggedized housing and optional high-capacity Ni-MH battery bring laboratory quality accuracy to field service applications.



## Inline Peak Power Sensor

MA24105A 350 MHz to 4 GHz

### A Standalone, Compact, and Highly Accurate Bi-directional Inline Peak Power Sensor

- Broad frequency range: 350 MHz to 4 GHz
- Covers all major cellular and communication bands, such as GSM/EDGE, CDMA/EV-DO, W-CDMA/HSDPA, WiMAX and TD-SCDMA
- Forward and reverse measurements
- Widest dynamic range inline power sensor in its class
- True-RMS measurements to 150 W
- Standalone, Low cost, Plug and Play device

The MA24105A is designed to take accurate average power measurements over 2 mW to 150 W, from 350 MHz to 4 GHz. The sensor employs a "dual path" architecture that enables True-RMS measurements over the entire frequency and dynamic range allowing users to measure CW, multi-tone and digitally modulated signals such as GSM/EDGE, CDMA/EV-DO, W-CDMA/HSDPA, WiMAX, and TD-SCDMA. The forward direction path also includes a 4 MHz bandwidth channel that has peak and comparator/integrator circuits that add measurement functions such as PEP power, crest factor, CCDF, and burst average power. Another detection circuit on the reverse direction adds reverse power measurement capabilities including reverse power, reflection coefficient, return-loss, and SWR. The presence of a micro-controller along with signal conditioning circuitry, ADC, and power supply in the sensor makes it a complete miniature power meter.



## USB Power Sensor

MA24106A True-RMS, 50 MHz to 6 GHz

### Handy, Highly Accurate and Reliable USB Sensor for RF Power Measurement

- True-RMS measurements over 63 dB dynamic range enables accurate CW and modulated power measurements
- Ready for use in a wide variety of applications, including installation and maintenance of base stations, testing of 3G and 4G devices, cell phones and general purpose RF devices
- High damage power levels and ESD protection circuitry showcases ruggedness and reliability
- Low power consumption (100 mA, typ.) extends laptop battery life
- Worldwide calibration and service centers ensure reduced downtime and local support

The MA24106A is a USB power sensor that eliminates the need of a traditional power meter. It is a highly accurate, standalone instrument that communicates with a PC via USB. The power measurement capability of MA24106A is intended to mimic that of a traditional thermal (thermo-electric) power sensor with a wider dynamic range.



## Microwave USB Power Sensor

MA24108A/MA24118A/MA24126A 10 MHz to 8 GHz/18 GHz/26 GHz

### Low-cost, Compact, and Highly Accurate Power Sensors for RF and Microwave Applications

- Broad frequency range: 10 MHz to 8 GHz (MA24108A)/18 GHz (MA24118A)/26 GHz (MA24126A)
- True-RMS measurements
- NIST traceable calibration
- Built-in internal and external trigger (only used with PC)
- High power handling (+33 dBm)
- 1 mW calibration need eliminated
- Silicone protective covering for additional field durability



The MA24108A/MA24118A/MA24126A are designed to provide accurate average power measurements from 10 MHz to 8 GHz/18 GHz/26 GHz over 60 dB of dynamic range. These sensors employ a "dual path" architecture that provides (similar to thermal sensor) True-RMS measurements over the entire frequency and dynamic range, enabling users to make highly accurate average power measurements for CW, multi-tone, and digitally modulated signal up to 26 GHz. The sensors have internal and external triggering capability that facilitates individual slot power measurements of TDMA waveforms as well as burst power measurements of periodic and non-periodic waveforms.

## Microwave Universal USB Power Sensor

MA24208A/MA24218A 10 MHz to 8 GHz/18 GHz

### Low-cost, Compact, and Highly Accurate Power Sensors for RF and Microwave Applications

- Frequency range: 10 MHz to 8 GHz (MA24208A)/18 GHz (MA24218A)
- Power measurement range: -60 to +20 dBm
- True-RMS measurements – modulation independent
- Fast measurement speed: >1,600 readings/s continuous, >11,000 readings/s buffered
- Able to accept high power levels before being damaged: +30 dBm (CW), +34 dBm (peak <10  $\mu$ s)
- No zero required
- NIST traceable calibrations (MA24218A)



The MA24208A and MA24218A are designed to provide fast, accurate average power measurements from 10 MHz to 8 GHz/18 GHz over 80 dB of dynamic range. These sensors employ a patented "triple path" architecture that provides True-RMS measurements (similar to thermal sensors) over the entire frequency and dynamic range, enabling users to make highly accurate average power measurements for CW, multi-tone, and digitally modulated signal up to 18 GHz. These sensors employ high-performance digital processing that enables best-in-class measurements speeds, including >1,600 continuous power readings/s continuous and >11,000 buffered readings/s.



## • United States

### **Anritsu Company**

450 Century Parkway, Suite 150, Allen,  
TX 75013-8062, U.S.A.  
Toll Free: +1-800-267-4878  
Fax: +1-408-201-1855

## • 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 Eletronica Ltda.**

Praça Amadeu Amaral, 27 - 1 Andar  
01327-010 - Bela Vista - Sao Paulo - SP  
Brazil  
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

## • United Kingdom

### **Anritsu EMEA Ltd.**

200 Capability Green, Luton, Bedfordshire, LU1 3LU, U.K.  
Phone: +44-1582-433200  
Fax: +44-1582-731303

## • France

### **Anritsu S.A.**

12 avenue du Québec, Bâtiment Iris 1- Silic 612,  
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: +49-89-442308-0  
Fax: +49-89-442308-55

## • Italy

### **Anritsu S.r.l.**

Via Elio Vittorini 129, 00144 Roma, Italy  
Phone: +39-6-509-9711  
Fax: +39-6-502-2425

## • Sweden

### **Anritsu AB**

Kistagången 20B, 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**

Torveporten 2, 2500 Valby, 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.  
Moscow, 125009, Russia  
Phone: +7-495-363-1694  
Fax: +7-495-935-8962

## • Spain

### **Anritsu EMEA Ltd.**

#### **Representation Office in Spain**

Edificio Cuzco IV, Po. de la Castellana, 141, Pta. 5  
28046, Madrid, Spain  
Phone: +34-915-726-761  
Fax: +34-915-726-621

## • United Arab Emirates

### **Anritsu EMEA Ltd.**

#### **Dubai Liaison Office**

902, Aurora Tower,  
P O Box: 500311 - Dubai Internet City  
Dubai, United Arab Emirates  
Phone: +971-4-3758479  
Fax: +971-4-4249036

## • India

### **Anritsu India Private Limited**

2nd & 3rd Floor, #837/1, Binnamangla 1st Stage,  
Indiranagar, 100ft Road, Bangalore - 560038, India  
Phone: +91-80-4058-1300  
Fax: +91-80-4058-1301

## • Singapore

### **Anritsu Pte. Ltd.**

11 Chang Charn Road, #04-01, Shriro House  
Singapore 159640  
Phone: +65-6282-2400  
Fax: +65-6282-2533

## • P.R. China (Shanghai)

### **Anritsu (China) Co., Ltd.**

Room 2701-2705, Tower A,  
New Caohejing International Business Center  
No. 391 Gui Ping Road Shanghai, 200233, P.R. China  
Phone: +86-21-6237-0898  
Fax: +86-21-6237-0899

## • P.R. China (Hong Kong)

### **Anritsu Company Ltd.**

Unit 1006-7, 10/F., 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

## • Japan

### **Anritsu Corporation**

8-5, Tamura-cho, Atsugi-shi, Kanagawa, 243-0016 Japan  
Phone: +81-46-296-6509  
Fax: +81-46-225-8352

## • Korea

### **Anritsu Corporation, Ltd.**

5FL, 235 Pangyoeyeok-ro, Bundang-gu, Seongnam-si,  
Gyeonggi-do, 13494 Korea  
Phone: +82-31-696-7750  
Fax: +82-31-696-7751

## • Australia

### **Anritsu Pty. Ltd.**

Unit 20, 21-35 Ricketts Road,  
Mount Waverley, Victoria 3149, 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