

# Power Measurement Solutions

## NEW Universal USB Power Sensors



**MA24208A: 10 MHz to 8 GHz**  
**MA24218A: 10 MHz to 18 GHz**  
 -60 dBm to +20 dBm  
 (1 nW to 100 mW)  
 > 11,000 readings/s buffered  
 Max power: +30 dBm avg

## NEW Microwave CW USB Power Sensors



**MA24330A: 10 MHz to 33 GHz**  
**MA24340A: 10 MHz to 40 GHz**  
**MA24350A: 10 MHz to 50 GHz**  
 -70 dBm to +20 dBm  
 (1 nW to 100 mW)  
 > 5,600 readings/s buffered  
 Max power: +26 dBm avg

## True RMS USB Power Sensors



**MA24105A**  
 350 MHz to 4 GHz  
 Forward and Reverse  
 Measurements  
 +3 dBm to 51.76 dBm  
 (2 mW to 150 W)  
 Inline Peak Power Sensor



**MA24106A**  
 50 MHz to 6 GHz  
 -40 dBm to +23 dBm  
 (0.1  $\mu$ W to 200 mW)  
 USB Power Sensor



**MA24108A**  
 10 MHz to 8 GHz  
 -40 dBm to +20 dBm  
 (0.1  $\mu$ W to 100 mW)  
 Microwave USB Power Sensor



**MA24118A**  
 10 MHz to 18 GHz  
 -40 dBm to +20 dBm  
 (0.1  $\mu$ W to 100 mW)  
 Microwave USB Power Sensor



**MA24126A**  
 10 MHz to 26 GHz  
 -40 dBm to +20 dBm  
 (0.1  $\mu$ W to 100 mW)  
 Microwave USB Power Sensor

## Power Meters

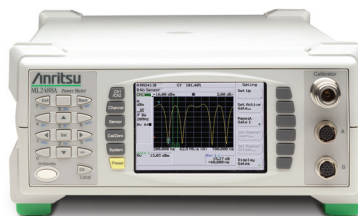


**ML2437A & ML2438A**  
 100 kHz to 65 GHz  
 Power Meters

### Recommended Sensors

**MA247xD**  
**MA244xD**  
**MA248xD**  
**MA2400xA**

## Wideband Peak Power Meters

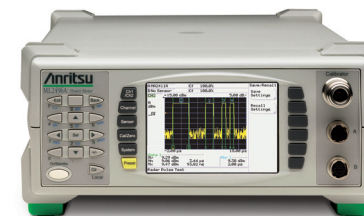


**ML2487B & ML2488B**  
 100 kHz to 65 GHz  
 Wideband Peak Power Meters

### Recommended Sensors

**MA249xA**  
**MA2411B**

## Pulse Power Meters



**ML2495A & ML2496A**  
 100 kHz to 65 GHz  
 Wideband Peak Power Meters

### Recommended Sensors

**MA249xA**  
**MA2411B**



## Power Measurement Solutions



	MA243xxA Series	MA242xxA Series	MA241xxA Series	MA24105A	MA2400xA Series	MA248xD Series	MA247xD Series	MA244xD Series	MA249xA Series	MA2411B
Description	USB	USB	USB	In-line USB	Thermal	Universal	Standard Diode	High Accuracy Diode	Wideband	Pulse
Measurements	Average Power (CW only)	Average Power (RMS)	Average Power (RMS)	Average Power (RMS)	Average (RMS)	Average Power (RMS)	Average Power	Average Power	Average (RMS), Peak	Average (RMS), Peak, Pulse
In-line Forward & Reverse Measurements				■						
<sup>(1)</sup> Frequency (GHz)	0.01 to 50	0.01 to 18	0.01 to 26	0.35 to 4	0.01 to 50	0.01 to 18	0.01 to 50	0.01 to 50	0.05 to 18	0.3 to 40
<sup>(1)</sup> Dynamic Range (dBm)	-70 to +20	-60 to +20	-40 to +20	+3 to +38, 51.76 peak	-30 to +20	-60 to +20	-70 to +20	-67 to +20	-60 to +20	-20 to +20
VBW	50 kHz			100 Hz (avg), 4 MHz peak			100 kHz	100 kHz	20 MHz	50 MHz
Average	■	■	■	■	■	■	■	■	■	■
Peak Power & CrestFactor									■	■
CCDF & PDF				CCDF MA24105A only					■	■
PAE Measurement									■	■
NIST Traceable Calibration	■	■	■	■	■	■	■	■	■	■
Applications	CW	CW, Pulse, Any Modulation	CW, Pulse, Any Modulation	CW, Pulse, Any Modulation	CW, Pulse, Any Modulation	CW, Pulse, Any Modulation	General Purpose, CW	General Purpose, CW	CW, Pulse, Any Modulation	Pulse Profiling, Any Modulation
Compatible Power Meters	PC with Windows 2000 or higher, Site Master, Cell Master, Spectrum Master, VNA Master, BTS Master	PC with Windows 2000 or higher, Site Master, Cell Master, Spectrum Master, VNA Master, BTS Master	PC with Windows 2000 or higher, Site Master, Cell Master, Spectrum Master, VNA Master, BTS Master	PC with Windows 2000 or higher, Site Master, Cell Master, Spectrum Master, VNA Master, BTS Master	ML24xxA/B	ML24xxA/B	ML24xxA/B	ML24xxA/B	ML248xA/B, ML249xA	ML248xA/B, ML249xA

**Note:** (1) Frequency and Dynamic Range depend upon the model number of the sensor.

## ML2490A Pulse Power Meter

100 kHz to 65 GHz

## ML2480B Wideband Power Meter

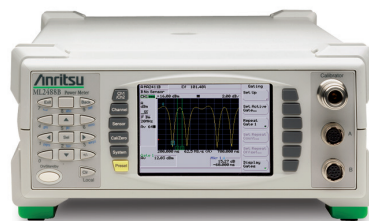
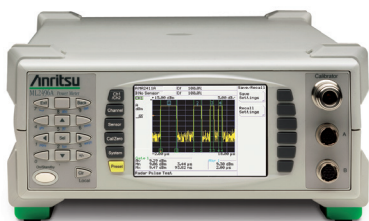
100 kHz to 65 GHz

## ML2430A CW Power Meter

100 kHz to 65 GHz

### Anritsu Power Meters and Power Sensors: Accurate, Fast, and Affordable

Anritsu offers the world's most comprehensive range of power meters. The ML2490A series has the performance required for narrow fast rising-edge pulse power measurements (e.g. radar), while the ML2480B series is suited for Wideband power measurements on signals such as W-CDMA, WiMAX, LTE, and WLAN. The ML2430A series of power meters are designed for CW applications, offering a combination of accuracy, speed, and flexibility in a low cost package.



### ML2490A Series

- > **High-Performance and Precision** – 65 MHz instrument bandwidth with 1 ns measurement resolution for precise rise-time measurements of radar signals or for measuring the latest 4G orthogonal frequency-division multiplexing (OFDM) signals.
- > **High-Speed Sampling** – Up to 1 Gs/s sample rate produces accurate profiles of radar, W-CDMA, WiMAX, LTE, WLAN, and other complex OFDM signals. Displays include peak, average, and crest factor of any input signal.
- > **Trigger** – Comprehensive capabilities offer precise triggering using internal or external sources. Continuous or single shot modes available.
- > **Measurement Gates and Markers** – Multiple gates and markers for measuring: peak power, multi-pulse power, signal droop, rise-time and fall-time, pulse width, and PRI.

### ML2480B Series

- > **20 MHz Instrument Bandwidth** – Designed for accurate peak and average power measurements on 3G (W-CDMA), 4G (WiMAX, LTE), and WLAN technologies.
- > **Continuous Wave (CW) Meter Mode** – High-accuracy and high dynamic range CW power measurements – the 50 MHz/1 GHz calibrator calibrates all Anritsu sensors. Frequency is automatically selected.
- > **Soft Keys** – Menu-driven operation simplifies test procedures.
- > **Preset** – Built-in measurement set-ups for widely available wireless systems such as GSM, W-CDMA, Bluetooth, WLAN, and other OFDM-based systems.

### ML2430A Series

- > **Fully Featured General Purpose Power Meter** – Ideal for CW applications, offering a combination of speed, accuracy, and flexibility in a low-cost package.
- > **Designed for Field Applications** – Portable, rugged, and splash-resistant chassis design handles the roughest field treatment. Add a front panel cover and soft case for further protection. There is also an optional NiMH battery, providing six hours continuous operation.
- > **Graphics Display** – Provides graphical display of pulsed power or TDMA signals, revealing individual time slots. Frame triggering allows the user to measure the average power across a time slot.
- > **PowerSuite** – PowerSuite is free software for the ML2430A series power meters. This software is used to continuously view measurement traces on the PC in real-time or to archive data and plots for future analysis. PowerSuite runs on a standard PC running Windows® 95 or higher via GPIB or RS232.

- > **External Video (ML2490A / ML2480B)** – Provides 1/4 VGA signal to external monitor (CRT and LCD).
- > **Ethernet Interface (ML2490A / ML2480B)** – 10/100BaseT LAN interface allows remote control direct from a PC or local/wide area network using dynamic (auto) or static IP assignment.
- > **PowerMax™** – PowerMax™ is free graphical user interface software for the ML2490B and ML2480A Power Meter series. PowerMax provides an enhanced visualization of the instrument display and simplified remote control of the instrument, allowing:
  - Continuous view of measurement traces in real time.
  - Multiple gates and marker readings displayed at a glance.
  - Archiving or printing of data and plots for future analysis.



#### Power Meter Models

ML2495A	Pulse Power Meter, Single Input
ML2496A	Pulse Power Meter, Dual Input
ML2487B	Wideband Power Meter, Single Input
ML2488B	Wideband Power Meter, Dual Input
ML2437A	CW Power Meter, Single Input
ML2438A	CW Power Meter, Dual Input

#### Power Sensors

MA2472D	Standard Diode Sensor	(10 MHz to 18 GHz, -70 dBm to 20 dBm)
MA2473D	Standard Diode Sensor	(10 MHz to 32 GHz, -70 dBm to 20 dBm)
MA2474D	Standard Diode Sensor	(10 MHz to 40 GHz, -70 dBm to 20 dBm)
MA2475D	Standard Diode Sensor	(10 MHz to 50 GHz, -70 dBm to 20 dBm)
MA2442D	High-Accuracy Diode Sensor	(10 MHz to 18 GHz, -67 dBm to 20 dBm)
MA2444D	High-Accuracy Diode Sensor	(10 MHz to 40 GHz, -67 dBm to 20 dBm)
MA2445D	High-Accuracy Diode Sensor	(10 MHz to 50 GHz, -67 dBm to 20 dBm)
MA2481D	Universal Sensor	(10 MHz to 6 GHz, -60 dBm to 20 dBm)
MA2482D	Universal Sensor	(10 MHz to 18 GHz, -60 dBm to 20 dBm)
MA2490A	Wideband Sensor	(50 MHz to 8 GHz, -60 dBm to 20 dBm)
MA2491A	Wideband Sensor	(50 MHz to 18 GHz, -60 dBm to 20 dBm)
MA2411B	Pulse Sensor)	(300 MHz to 40 GHz, -20 dBm to 20 dBm)
MA24002A	Thermal Sensor	(10 MHz to 18 GHz, -30 dBm to 20 dBm)
MA24004A	Thermal Sensor	(10 MHz to 40 GHz, -30 dBm to 20 dBm)
MA24005A	Thermal Sensor	(10 MHz to 50 GHz, -30 dBm to 20 dBm)

#### Key Specifications

Frequency	100 kHz to 65 GHz (sensor dependent)
Dynamic Range	-70 to +20 dBm (dependent on sensor, external coupler, or attenuator)
Video Bandwidth	100 kHz (ML2430A), 20 MHz (ML2480B), 65 MHz (ML2490A)
Channels	1 or 2 channels available in each series

#### General Specifications

Non-Volatile RAM Battery	Lithium (10 year life)
Battery Option	>6 hr usable with 3000 mAhr (NiMH) battery
DC Power Requirements	12 to 24 VDC, reverse protected to -40V Maximum input 30V
AC Power Requirements	90 to 250 VAC, 47 to 440 Hz, 40 VA Maximum
EMI, EMC, Safety	Complies with requirements for CE marking EN 61326, EN61010-1
Operating Temperature	0° to 50° C
Storage Temperature	-40° to 70° C
Moisture	Splash and rain resistant, 95% humidity non-condensing
Dimensions	213 mm W x 88 mm H x 390 mm D
Weight	3 kg (excluding battery option)
Warranty	3 year standard for all Power Meters, 1 year standard for all Power Sensors

#### Options

ML2430A Series	
ML2400A-01, ML2400A-03	Rack Mount-single unit, Rack Mount-side-by-side
ML2400A-05	Front Bail Handle
ML2400A-06, ML2400A-07	Rear Mount Input A on ML2437A. Rear Input A and Reference on ML2437A
ML2400A-08, ML2400A-09	Rear Mount Inputs A, B and Reference on ML2438A. Rear Mount Inputs A and B on ML2438A
2000-1603	NiMH Battery
2000-996-R, 2000-1534-R	Desktop Battery Charger with power supply, Desktop Battery Charger (For use in Japan only)
2000-1538-R	3 m Sensor Cable
2000-1539-R	5 m Sensor Cable
2000-1540-R	10 m Sensor Cable
2000-1541-R	30 m Sensor Cable
2000-1542-R	50 m Sensor Cable
2000-1543-R	100 m Sensor Cable
2000-1545	Bulkhead Adapter
ML2400A-98	Calibration to Z540, ISO Guide 25
ML2400A-99	Premium Calibration

Options 1 to 5 are mutually exclusive for any given ML2430A unit. Options 6, 7, 8, 9 are mutually exclusive for any given ML2430A unit.

#### ML2480B Series

ML2480B-001, ML2480B-003	Rear Mount, right (for ML248xB models). Rear Mount, right, dual (for ML248xB models)
ML2480B-005	Front Handle (for ML248xB models)
ML2480B-006, ML2480B-007	Rear A Input on ML2487A. Rear A Input and Reference on ML2487A
ML2480B-008, ML2480B-009	Rear A and B Inputs and Reference on ML2488A. Rear A and B Inputs on ML2488A
ML2480B-015	Factory-Fitted 50MHz and 1GHz Calibrator (required by MA2411B Sensor)
ML2480B-098	Calibration to Z540, ISO Guide 25
ML2480B-099	Premium Calibration

Options 1, 3, 5 are mutually exclusive for any given ML2480B/90A  
Options 6, 7, 8, 9 are mutually exclusive for any given ML2480B/90A

#### ML2490A Series

ML2400A-01, ML2400A-03	Rack Mount-single unit. Rack Mount-side-by-side
ML2400A-05	Front Bail Handle
ML2490A-06, ML2490A-07	Rear A Input on ML2495A. Rear Input A and Reference on ML2495A
ML2490A-08, ML2490A-09	Rear A and B Inputs and Reference on ML2496A. Rear A and B Inputs on ML2496A
ML2490A-98	Calibration to Z540, ISO Guide 25
ML2490A-99	Premium Calibration

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