

Anritsu envision : ensure

Microwave Peak USB Power Sensors

Low Cost, Compact, and Highly Accurate Peak
Power Sensors for RF and Microwave Applications

MA24406A

Peak, 50 MHz to 6 GHz

MA24218A

Peak, 50 MHz to 18 GHz

MA24440A

Peak, 50 MHz to 40 GHz

MA24419A

Peak, 50 MHz to 18 GHz

MA24441A

Peak, 50 MHz to 40 GHz



Introduction

The MA244xxA Series of Microwave Peak Power Sensors are designed to provide accurate, peak power measurements from 50 MHz to 6 GHz, 18 GHz, and 40 GHz with up to 80 dB of dynamic range and 195 MHz of video bandwidth. The sensors employ a parallel processing methodology that performs the multi-step process of RF power measurement at incredible, unmatched speeds. While conventional power meters and USB sensors perform steps serially, resulting in long re-arm times and missed data, Anritsu sensors capture, display, and measure every pulse, glitch, and detail with virtually no gaps in data and zero latency.

Features and Benefits

- 6 GHz, 18 GHz, and 40 GHz RF Power Sensors
- Up to 195 MHz video bandwidth with 3 ns rise time
- 100,000 measurements per second
- 10 GS/s effective sample rate
- 100 MS/s continuous sample rate
- Crest factor and statistical measurements (e.g. CCDF)
- Synchronized multi-channel measurements
- Microwave Peak Power Analyzer advanced measurement and analysis software



MA244xxA Microwave Peak Power Sensors

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Definitions

	All specifications and characteristics apply under the following conditions, unless otherwise stated:
Warm-Up Time	60 minutes
Operating Temperature Range	0 °C to 50 °C
Characteristic Performance	Characteristic specifications are not tested and are not warranted.
Calibration Cycle	Anritsu recommended calibration interval is 12 months.
	All specifications subject to change without notice. For the most current data sheet, please visit the Anritsu web site: www.anritsu.com

Frequency Range

Model	MA24406A	MA24418A	MA24419A	MA24440A	MA24441A
Frequency Range	50 MHz to 6 GHz	50 MHz to 18 GHz	50 MHz to 18 GHz	50 MHz to 40 GHz	50 MHz to 40 GHz

Power Measurement

Dynamic Range

Model	MA24406A	MA24418A	MA24419A	MA24440A	MA24441A
Average	-60 to +20 dBm	-34 to +20 dBm	-50 to +20 dBm	-34 to +20 dBm	-50 to +20 dBm
Pulse	-50 to +20 dBm	-24 to +20 dBm	-40 to +20 dBm	-24 to +20 dBm	-40 to +20 dBm

VSWR (max)

Model	MA24406A	MA24418A	MA24419A	MA24440A	MA24441A
(GHz)	1.25 (0.05 to 6)	1.15 (0.05 to 2.0) 1.28 (2.0 to 16) 1.34 (16 to 18)	1.15 (0.5 to 2.0) 1.20 (2.0 to 6.0) 1.28 (6.0 to 16) 1.34 (16 to 18)	1.25 (0.05 to 4.0) 1.65 (4.0 to 38) 2.00 (38 to 40)	1.25 (0.05 to 4.0) 1.65 (4.0 to 38) 2.00 (38 to 40)

Damage Level

RF Port Input	+23 dBm, ±10.0 VDC (+30 dBm peak for 1 µs), minimum
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Response

Model	MA24406A	MA24418A	MA24419A	MA24440A	MA24441A
Single Channel Rise Time (fast/std)	3 ns/<10 µs	5 ns/<10 µs	<100 ns/<10 µs	5 ns/<10 µs	<100 ns/<10 µs
Video Bandwidth (fast/std)	195 MHz/350 kHz	70 MHz/350 kHz	6 MHz/350 kHz	70 MHz/350 kHz	6 MHz/350 kHz
Single Shot Bandwidth	35 MHz	35 MHz	6 MHz	35 MHz	6 MHz
Sampling Rate	100 MS/s, characteristic				
Effective Sampling Rate	10 GS/s, characteristic				

Triggering

Source	Continuous, Internal, External TTL, Crossover (from another sensor)
Arm Type	Continuous, Single, Trigger Holdoff, Frame (gap) Holdoff

Internal Trigger

Model	MA24406A	MA24418A	MA24419A	MA24440A	MA24441A
Dynamic Range	-38 to +20 dBm	-10 to +20 dBm	-27 to +20 dBm	-10 to +20 dBm	-27 to +20 dBm
Min Pulse Width (fast/std)	10 ns/3 µs	10 ns/3 µs	200 ns/3 µs	10 ns/3 µs	200 ns/3 µs
Slope	Positive or Negative				
Trigger Holdoff	100 ns to 1 s with 10 ns resolution				

External Trigger

External Trigger Input	SMB (female)
Impedance	10 kΩ
Type	TTL
Slope	Positive or Negative
High Level Input Voltage	2.4 V min, 5.5 V max
Low Level Input Voltage	-0.1 V min, 0.7 V max
Latency	< 10 ns (Latency is defined as the time delay between the defined edge of the applied trigger and the sensor switching into the triggered state.)
Trigger Pulse Width	10 ns min
Trigger Repetition Period	20 ns min
Trigger Hold Off	100 ns to 1 s with 10 ns resolution

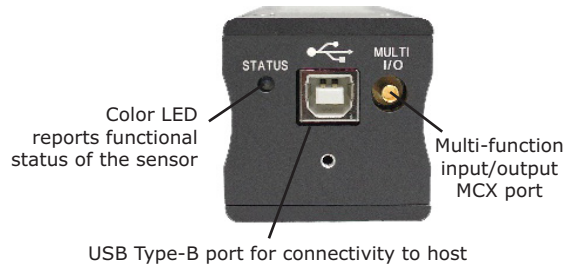
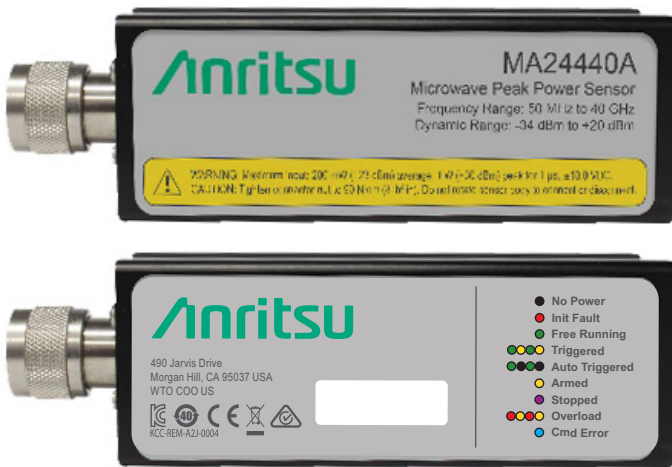
Peak Power Analyzer

PC Requirements

Processor	1.3 GHz or higher recommended
RAM	512 MB (1 GB or more recommended)
Operating System	Microsoft® Windows® 10 Microsoft® Windows® 8 (32-bit and 64-bit) Microsoft® Windows® 7 (32-bit and 64-bit) Microsoft® Windows® Vista (32-bit and 64-bit)
Hard-Disk Free Space	Min 1.0 GB free space to install and run
Display Resolution	800x600 (1280x1024 or higher recommended)
Interface	USB 2.0 high speed

General

RF Connector	N male (MA24406A, MA24418A, MA24119A) 2.92 mm male (MA24440A, MA24441A)
Interface to Host	USB 2.0 high speed
Size	145 mm x 43 mm x 43 mm, excluding N connector
Weight	363 g (0.8 lb)
Warranty	1 year



Environmental Requirements

Operating Temperature Range	0 °C to 55 °C	Tests were performed per MIL-28800F (Class3).
Storage Temperature Range	-40 °C to +70 °C	
Relative Humidity (non-condensing)	45 % at 50 °C	
	75 % at 40 °C	
	95 % at 30 °C	
Altitude	3048 m operational max	
Shock	30 g half-sine, 11 ms duration	
Vibration	Sinusoidal: 5 Hz to 55 Hz, 3 g max	
	Random: 10 Hz to 500 Hz, 2.34 g rms Power Spectral Density: 0.01 g2/Hz	

Regulatory Compliance

European Union	EMC Directive 2014/30/EU, EN 61326:2013 CISPR 11/EN 55011:2019+A1:2010 Class A Equipment IEC/EN 61000-4-2/3/4/6 Low Voltage Directive 2014/35/EU EN 61010-1:2010 RoHS Directive 2015/863/EU
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Ordering Information

Available Models

MA24406A	50 MHz to 6 GHz
MA24418A	50 MHz to 18 GHz
MA24419A	50 MHz to 18 GHz
MA24440A	50 MHz to 40 GHz
MA24441A	50 MHz to 40 GHz

Included Accessories

11410-00976	Information Card
806-390-R	0.9 m BNC (m) to SMB (m) cable
806-389-R	0.9 m SMB (m) to SMB (m) cable
806-391-R	1.8 m USB A (m) to USB B (m) cable

Optional Accessories

Attenuators

3-1010-122	Attenuator, DC to 12.4 GHz, 20 dB, 5 W, N(m) to N(f), 50 Ω
3-1010-123	Attenuator, DC to 8.5 GHz, 30 dB, 50 W, N(m) to N(f), 50 Ω
3-1010-124	Attenuator, DC to 8.5 GHz, 40 dB, 100 W, N(f) to N(m), 50 Ω
42N50-20	Attenuator, DC to 18 GHz, 20 dB, 5 W, N(m) to N(f), 50 Ω
42N50A-30	Attenuator, DC to 18 GHz, 30 dB, 50 W, N(m) to N(f), 50 Ω
43KB-3	Fixed Attenuator, 3 dB, DC to 26.5 GHz, K(m) to K(f), 50 Ω
43KB-6	Fixed Attenuator, 6 dB, DC to 26.5 GHz, K(m) to K(f), 50 Ω
43KB-10	Fixed Attenuator, 10 dB, DC to 26.5 GHz, K(m) to K(f), 50 Ω
43KB-20	Fixed Attenuator, 20 dB, DC to 26.5 GHz, K(m) to K(f), 50 Ω
43KC-3	Fixed Attenuator, 3 dB, DC to 40 GHz, K(m) to K(f), 50 Ω
43KC-6	Fixed Attenuator, 6 dB, DC to 40 GHz, K(m) to K(f), 50 Ω
43KC-10	Fixed Attenuator, 10 dB, DC to 40 GHz, K(m) to K(f), 50 Ω
43KC-20	Fixed Attenuator, 20 dB, DC to 40 GHz, K(m) to K(f), 50 Ω
41KB-3	Precision Fixed Attenuator, 3 dB, DC to 26.5 GHz, K(m) to K(f), 50 Ω
41KB-6	Precision Fixed Attenuator, 6 dB, DC to 26.5 GHz, K(m) to K(f), 50 Ω
41KB-10	Precision Fixed Attenuator, 10 dB, DC to 26.5 GHz, K(m) to K(f), 50 Ω
41KB-20	Precision Fixed Attenuator, 20 dB, DC to 26.5 GHz, K(m) to K(f), 50 Ω
41KC-3	Precision Fixed Attenuator, 3 dB, DC to 40 GHz, K(m) to K(f), 50 Ω
41KC-6	Precision Fixed Attenuator, 6 dB, DC to 40 GHz, K(m) to K(f), 50 Ω
41KC-10	Precision Fixed Attenuator, 10 dB, DC to 40 GHz, K(m) to K(f), 50 Ω
41KC-20	Precision Fixed Attenuator, 20 dB, DC to 40 GHz, K(m) to K(f), 50 Ω

Coaxial Adapters

510-90-R	Adapter, DC to 3.3 GHz, N(m) to 7/16 DIN(f), 50 Ω
510-91-R	Adapter, DC to 3.3 GHz, N(f) to 7/16 DIN(f), 50 Ω
510-92-R	Adapter, DC to 3.3 GHz, N(m) to 7/16 DIN(m), 50 Ω
510-93-R	Adapter, DC to 3.3 GHz, N(f) to 7/16 DIN(m), 50 Ω
1091-26-R	Adapter, DC to 18 GHz, N(m) to SMA(m), 50 Ω
1091-27-R	Adapter, DC to 18 GHz, N(m) to SMA(f), 50 Ω
1091-80-R	Adapter, DC to 18 GHz, N(f) to SMA(m), 50 Ω
1091-81-R	Adapter, DC to 18 GHz, N(f) to SMA(f), 50 Ω
34AN50	Precision Adapter, DC to 18 GHz, GPC-7 to N(m), 50 Ω
34ANF50	Precision Adapter, DC to 18 GHz, GPC-7 to N(f), 50 Ω
34NFK50	Precision Adapter, DC to 18 GHz, N(f) to K(m), 50 Ω
34NFKF50	Precision Adapter, DC to 18 GHz, N(m) to K(f), 50 Ω
34NK50	Precision Adapter, DC to 18 GHz, N(m) to K(m), 50 Ω
34NKF50	Precision Adapter, DC to 18 GHz, N(m) to K(f), 50 Ω
33NFN50B	Calibration Grade Adapter, DC to 18 GHz, N(f) to N(f), 50 Ω
33NFN50B	Calibration Grade Adapter, DC to 18 GHz, N(m) to N(f), 50 Ω
33NN50B	Calibration Grade Adapter, DC to 18 GHz, N(m) to N(m), 50 Ω

Training at Anritsu

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