8540C Series Universal Power Meter

The Giga-tronics 8540C Series Universal Power Meters combine accuracy, speed, range and measurement capabilities unavailable from any other power meter. Built-in features such as power sweep calibration and frequency calibration provide an unequalled degree of measurement accuracy. Only the 8540C Series

power meters have the speed and range to meet the throughput demands of high volume manufacturing.

And the meters can measure the CW, peak and true average power of the complex modulated signals used in EW, radar, and communications systems.

TESTING COMMUNICATIONS SYSTEMS

Only the Giga-tronics 8540C Series Universal Power Meters have the extensive measurement capabilities required for today's sophisticated communications applications.

TDMA

The 8540C can automatically measure the average power of pulse modulated signals or pulse signals that are amplitude modulated during the pulse 'on' period — such as TDMA (time division multiple access) signals.

And the exclusive burst start exclude and burst end

exclude capabilities of the 8540C allow you to exclude the beginning or end of a burst when measuring the average burst power. Masking the beginning or end of a burst signal, in order to exclude overshoot or other distortions, can be desirable or even required for certain types of measurements.

GSM, NADC AND PDC

The exclusive Time Gating feature of the 8540C lets you program a measurement start time and duration to measure the average power during a specific time slot of a burst signal. This is critical for accurately measuring the average power of GSM, NADC and



The Giga-tronics 8540C Series combines the speed, range, and capabilities needed to test today's sophisticated communications systems.

Giga-tronics 8540C Series Universal Power Meters

other formats that must control the power trajectory during a specified portion of the burst.

PHS

PHS (as well as DECT and CT-2) systems use a variation of the TDMA format. Instead of using different frequency channels for the forward and reverse link, these systems use a Time Domain Duplex (TDD) method at the same frequency.

The Time Gating feature of the 8540C can be used in all of the average power measurement modes to accurately measure the average power of the multiplexed time slots.

CDMA

The 8540C has the speed, accuracy and range to accurately measure the power level of CDMA (code division multiple access) signals for open-loop and closed-loop testing.

The wide dynamic range of the 8540C is ideal for openloop tests, which can require power verification over an 80 dB range. Because the 8540C can achieve fast measurement speeds over the GPIB bus, you can quickly measure power in I dB steps over the 48 dB range required for closed-loop tests. And no power meter is as accurate as the 8540C over the wide dynamic range needed for CDMA testing.

SPEED TO BURN

Fast responding diode sensors plus innovative digital signal processing deliver highspeed measurements.

Achieve 500 readings per second over GPIB. Or use our exclusive fast buffered mode to further reduce processor overhead and capture up to 4,000 readings per second in CW mode.

The 8540C also responds much faster to power level changes than meters using thermocouple sensors. This adds up to a huge reduction in test time and a significant increase in manufacturing throughput.

PEAK POWER MEASUREMENT

You can also measure the instantaneous peak power level of a pulse modulated signal just by changing sensors. Use the 'sample delay' function of the 8540C to set the desired measurement point on the waveform. An external oscilloscope can be used to view the pulse profile and corresponding measurement point.

The extensive measure-

ment capability of the 8540C is a result of the advanced meter architecture combined with a family of interchangeable sensors. The sensors provide different power measurement functions — CW, peak and modulated — over a wide dynamic range at fast measurement speeds.

Accuracy Audit

The Accuracy Audit table lists the significant uncertainties of an absolute power measurement. The accuracy of the 8540C combined with the 80301A sensor is compared to a typical thermocouple sensor/meter combination at +20 dBm, 0 dBm, and -30 dBm (the dynamic limit of the thermocouple sensor). The uncertainty comparison at -30 dBm illustrates the accuracy advantage of a wide dynamic sensor, even when the full 90 dB dynamic range is not utilized.

+20 dBm 8540C Typical	
+20 dBm 8540C Typical Frequency = 1 GHz; Source with Thermocou	inle
Match = 1.5:1 80301A Meter/Sens	
Instrumentation Uncertainty $\pm 5.2\%$ + 2.5% - 4.5	5%
Sensor Power Linearity (>8 GHz) ± 0% ± 0%	
Calibrator Uncertainty ± 1.2% ± 1.2%	
Calibrator/Sensor Mismatch ± 0.28% ± 0.23%	
Calibration Factor Uncertainty ± 1.04% ± 1.6%	
Zero Error ± 0.0000005% ± 0.00005%	
Noise ± 0.0000005% ± 0.00005%	
Mismatch (Sensor/Source) ± 2.25% ± 2.0%	
% Total Uncertainty ± 9.97% + 7.53 – 9.5	3%
dB Total Uncertainty ± 0.41 dB + 0.316 – 0.	4 dB
0 dBm 8540C Typical	
Frequency = 1 GHz; Source with Thermocou	
Match = 1.5:1 80301A Meter/Sens	sor
Instrumentation Uncertainty ± 0% ± 0.5%	
Sensor Power Linearity (>8 GHz) $\pm 0\%$ $\pm 0\%$	
Calibrator Uncertainty ± 1.2% ± 1.2%	
Calibrator/Sensor Mismatch ± 0.28% ± 0.23%	
Calibration Factor Uncertainty ± 1.04% ± 1.6%	
Zero Error ± 0.00005% ± 0.005%	
Noise ± 0.000005% ± 0.005%	
Mismatch (Sensor/Source) ± 2.25% ± 2.0%	
% Total Uncertainty ± 4.77% ± 5.54%	
dB Total Uncertainty ± 0.20 dB ± 0.23 dB	
-30 dBm 8540C Typical Frequency = 1 GHz; Source with Thermocou	unlo
Match = 1.5:1 80301A Meter/Sens	
Instrumentation Uncertainty $\pm 0.925\%$ $\pm 0.5\%$	301
Sensor Power Linearity (>8 GHz) $\pm 0\%$ $\pm 0\%$	
Calibrator Uncertainty $\pm 1.2\%$ $\pm 1.2\%$	
Calibrator/Sensor Mismatch ± 0.28% ± 0.23%	
Calibration Factor Uncertainty $\pm 1.04\%$ $\pm 1.6\%$	
Zero Error ± 0.005% ± 5%	
Noise $\pm 0.005\% \pm 5\%$	
Mismatch (Sensor/Source) $\pm 2.25\%$ $\pm 2.0\%$	
% Total Uncertainty ± 5.71% ± 15.53%	
dB Total Uncertainty ± 0.24 dB ± 0.63 dB	

Giga-tronics uses diode sensors exclusively to provide speed, range, capability and accuracy unavailable from any other power meter.

ACCURACY OVER A 90 dB RANGE

Giga-tronics has solved the challenge that previously limited the use of diode sensors to below -20 dBm — the 'square law' region by utilizing a built-in power sweep calibration system.

The power sweep calibrator uses a 50 MHz amplitude controlled oscillator to step from

-30 to +20 dBm in I dB increments. Each step is set using an internal thermistor — the standard for accuracy and traceability. You get thermistor accuracy, plus diode speed and dynamic range, for measuring signals accurately over a full 90 dB power range.

THE FASTEST CW MEASUREMENTS

Giga-tronics 80300A Series CW Power Sensors let you measure CW power from 10 MHz to 40 GHz at speeds up to 500 readings per second over GPIB.

Measure up to 90 dB with a single sensor, and select from a variety of high power sensors, up to 50 W.

PEAK POWER MEASUREMENTS

Attach a Giga-tronics 80350A Series Peak Power Sensor to an 8540C meter and directly measure the instantaneous peak power level of a pulse modulated signal.

Use the 'sample delay' function to set the desired measurement point on the waveform. An external scope can be used to view the profile and see the exact measurement point on the pulse.

TRUE AVERAGE POWER MEASUREMENTS

The Giga-tronics 80400A Series Modulated Power Sensors let you measure the true average power of amplitude modulated, burst modulated and other complex modulated signals — such as TDMA signals — at modulation bandwidths up to 40 kHz.

When greater bandwidth is needed — for formats such as CDMA and PHS — Giga-tronics 80600A Series Modulated Power Sensors provide bandwidth up to 1.5 MHz to measure the true average power of complex modulated signals.

Giga-tronics 80400A and 80600A Series Modulated Power Sensors can accurately and directly measure signals over a dynamic range up to 87 dB and at power levels up to 50 W.

BUILT-IN FREQUENCY RESPONSE CALIBRATION

Configuring the power meter for measurements is easy with calibration factors programmed into the sensor.

When the measurement frequency is entered, the meter automatically applies the correct calibration factor from the sensor EEPROM. And the meter automatically reads a new set of cal factors whenever a sensor is changed.

This avoids the chance of measurement error from using invalid calibration factors when you change sensors, or from forgetting to enter new calibration factors. You not only avoid measurement errors; you also save yourself test time.

Giga-tro	nics CW Power Sensor	Selection Guide						Page 4 of 6
	Frequency Range/ Power Range	Maximum Power	Power Linearity ⁴ (Frequency > 8 GHz)	RF Connector	Length	Diameter	Weight	VSWR
200 mW	CW Power Sensors							
80301A	10 MHz to 18 GHz	+23 dBm (200 mW)	_70 to _20 dBm: ±0.00 dB	Type N(m)	114.5 mm	32 mm	0.18 kg	1.12: 0.01 - 2 GHz
	-70 to +20 dBm		-20 to +20 dBm: ±0.05 dB/10 dB	50Ω	(4.5 in)	(1.25 in)	(0.4 lb)	1.22: 2 - 12.4 GHz
80302A	10 MHz to 18 GHz	+23 dBm (200 mW)	-70 to -20 dBm: ±0.00 dB	APC-7	114.5 mm	32 mm	0.18 kg	1.29: 12.4 - 18 GHz
	_70 to +20 dBm		_20 to +20 dBm: ±0.05 dB/10 dB	50Ω	(4.5 in)	(1.25 in)	(0.4 lb)	
80303A	10 MHz to 26.5 GHz	+23 dBm (200 mW)	-70 to -20 dBm: ±0.00 dB	Type K(m) 1	114.5 mm	32 mm	0.18 kg	1.12: 0.01 - 2 GHz
	-70 to +20 dBm		-20 to +20 dBm: ±0.1 dB/10 dB	50Ω	(4.5 in)	(1.25 in)	(0.4 lb)	1.22: 2 - 12.4 GHz
80304A	10 MHz to 40 GHz	+23 dBm (200 mW)	_70 to _20 dBm: ±0.00 dB	Type K(m) 1	114.5 mm	32 mm	0.18 kg	1.38: 12.4 - 18 GHz
	-70 to 0 dBm		-20 to 0 dBm: ±0.2 dB/10 dB	50Ω	(4.5 in)	(1.25 in)	(0.4 lb)	1.43: 18 - 26.5 GHz
								1.92: 26.5 - 40 GHz
	WR CW Power Sensors							
80310A	10 MHz to 18 GHz	+29 dBm (800 mW)	-64 to -14 dBm: ±0.00 dB	Type K(m) 1	127 mm	32 mm	0.23 kg	1.13: 0.01 - 2 GHz
	—64 to +26 dBm		-14 to +26 dBm: ±0.05 dB/10 dB	50Ω	(5.0 in)	(1.25 in)	(0.5 lb)	1.16: 2 - 12 GHz
80313A	10 MHz to 26.5 GHz	+29 dBm (800 mW)	_64 to _14 dBm: ±0.00 dB					1.23: 12 - 18 GHz
	-64 to +26 dBm		-14 to +26 dBm: ±0.1 dB/10 dB					1.29: 18 - 26.5 GHz
80314A	10 MHz to 40 GHz	+29 dBm (800 mW)	-64 to -14 dBm: ±0.00 dB					1.50: 26.5 - 40 GHz
	_64 to +6 dBm		_14 to +6dBm: ±0.2 dB/10 dB					
	Power Sensors							
80320A	10 MHz to 18 GHz	+30 dBm (1 W)	-60 to -10 dBm:±0.00 dB	Type K(m) 1	127 mm	32 mm	0.23 kg	1.11: 0.01 - 2 GHz
	_60 to +30 dBm		_10 to +30 dBm: ±0.05 dB/10 dB	50Ω	(5.0 in)	(1.25 in)	(0.5 lb)	1.12: 2 - 12 GHz
80323A	10 MHz to 26.5 GHz	+30 dBm (1 W)	-60 to -10 dBm: ±0.00 dB					1.18: 12 - 18 GHz
	–60 to +30 dBm		_10 to +30 dBm: ±0.1 dB/10 dB					1.22: 18 - 26.5 GHz
80324A	10 MHz to 40 GHz	+30 dBm (1 W)	_60 to _10 dBm: ±0.00 dB					1.36: 26.5 - 40 GHz
	-60 to +10 dBm		-10 to +10 dBm: ±0.2 dB/10 dB					
	Power Sensor ²							
80321A	10 MHz to 18 GHz	+37 dBm (5 W)	_50 to 0 dBm: ±0.00 dB	Type N(m)	150 mm	32 mm	0.23 kg	1.20: 0.01 - 6 GHz
	—50 to +37 dBm		0 to +37 dBm: ±0.05 dB/10 dB	50Ω	(5.9 in)	(1.25 in)	(0.5 lb)	1.25: 6 - 12.4 GHz
								1.35: 12.4 - 18 GHz
	V Power Sensor ³							
80322A	10 MHz to 18 GHz	+44 dBm (25 W)	_40 to +10 dBm: ±0.00 dB	Type N(m)	230 mm	104 mm	0.3 kg	1.20: 0.01 - 6 GHz
	-40 to +44 dBm		+10 to +44 dBm: ±0.05 dB/10 dB	50Ω	(9.0 in)	(4.1 in)	(0.6 lb)	1.30: 6 - 12.4 GHz
50 101 011								1.40: 12.4 - 18 GHz
	V Power Sensor ³	47 ID (50.)4/	10 / 10 ID 0 00 ID	T N/)	000	104	0.01	1.05.0.01.0.011
80325A	10 MHz to 18 GHz	+47 dBm (50 W)	_40 to +10 dBm: ±0.00 dB	Type N(m)	230 mm	104 mm	0.3 kg	1.25: 0.01 - 6 GHz
	_40 to +47 dBm		+10 to +47 dBm: ±0.05 dB/10 dB	50Ω	(9.0 in)	(4.1 in)	(0.6 lb)	1.35: 6 - 12.4 GHz
								1.45: 12.4 - 18 GHz

	Frequency Range/ Power Range	Maximum Power	Power Linearity ⁴ (Frequency > 8 GHz)	RF Connector	Length	Diameter	Weight	VSWR
200 mW	Peak Power Sensors							
80350A	45 MHz to 18 GHz	+23 dBm (200 mW)	-30 to -20 dBm: ±0.00 dB	Type N(m)	165 mm	37 mm	0.3 kg	1.12: 0.045 - 2 GHz
	–20 to +20 dBm, Peak	CW or Peak	-20 to +20 dBm: ±0.05 dB /10 dB	50Ω	(6.5 in)	(1.25 in)	(0.7 lb)	1.22: 2 - 12.4 GHz
	_30 to +20 dBm, CW							1.37: 12.4 - 18 GHz
80353A	45 MHz to 26.5 GHz	+23 dBm (200 mW)	-30 to -20 dBm: ±0.00 dB	Type K(m) 1	165 mm	37 mm	0.3 kg	1.50: 18 - 26.5 GHz
	-20 to +20 dBm, Peak	CW or Peak	-20 to +20 dBm: ±0.1 dB /10 dB	50Ω	(6.5 in)	(1.25 in)	(0.7 lb)	1.92: 26.5 - 40 GHz
	_30 to +20 dBm, CW	00 ID (000 11/)	00 - 00 10 - 0.00 10	- <i>1/()</i>)				
80354A	45 MHz to 40 GHz	+23 dBm (200 mW)	-30 to -20 dBm: ±0.00 dB	Type K(m) 1	165 mm	37 mm	0.3 kg	
	-20 to +0.0 dBm, Peak	CW or Peak	-20 to 0.0 dBm: ±0.2 dB /10 dB	50Ω	(6.5 in)	(1.25 in)	(0.7 lb)	
	_30 to +0.0 dBm, CW							
80351A	45 MHz to 18 GHz	CW: +37 dBm	-10 to +0 dBm; +0.00 dB	Type N(m)	200 mm	37 mm	0.3 kg	1.15: 0.045 - 4 GHz
00331A	0 to +40 dBm, Peak	(5 W Average)	+0 to +40 dBm: ±0.05 dB /10 dB	50Ω	(7.9 in)	(1.25 in)	(0.7 lb)	1.25: 4 - 12.4 GHz
	-10 to +37 dBm, CW	Peak: +43 dBm		3022	(7.5 m)	(1.25 11)	(0.7 10)	1.35: 12.4 - 18 GHz
25 W Pe	ak Power Sensor 6,7							1.55. 12.4 - 10 0112
80352A	45 MHz to 18 GHz	CW: +44 dBm	0.0 to +10 dBm: ±0.00 dB	Type N(m)	280 mm	104 mm	0.3 kg	1.20: 0.045 - 6 GHz
	+10 to +50 dBm, Peak	(25 W Average)	+10 to +50 dBm: ±0.05 dB /10 dB	50Ω	(11.0 in)	(4.1 in)	(0.7 lb)	1.30: 6 - 12.4 GHz
	0.0 to +44 dBm, CW	Peak: +53 dBm						1.40: 12.4 - 18 GHz
50 W Pe	ak Power Sensor 6,7							
80355A	45 MHz to 18 GHz	CW: +47 dBm	0.0 to +10 dBm: ±0.00 dB	Type N(m)	280 mm	104 mm	0.3 kg	1.25: 0.045 - 6 GHz
	+10 to +50 dBm, Peak	(50 W Average)	+10 to +50 dBm: ±0.05 dB /10 dB	50Ω	(11.0 in)	(4.1 in)	(0.7 lb)	1.35: 6 - 12.4 GHz
	0.0 to +47 dBm, CW	Peak: +53 dBm						1.45: 12.4 - 18 GHz

Giga-tro	nics Bridge Selection Guid	le						
Production	Frequency Range/ Power Range	Maximum Power	Power Linearity ⁴ (Frequency > 8 GHz)	Input	Test Port	Directivity	Weight	VSWR
80501	00 CW Return Loss Bridges 10 MHz to 18 GHz -35 to +20 dBm	+27 dBm (0.5 W)	-35 to +10 dBm: ±0.1 dB +10 to +20 dBm: ±0.1 dB ±0.005 dB/dB	Type N(f) 50Ω	Type N(f) 50Ω	38 dB	0.340 kg	< 1.17: 0.01 - 8 GHz < 1.27: 8 - 18 GHz
80502	10 MHz to 18 GHz 35 to +20 dBm	+27 dBm (0.5 W)	-35 to +10 dBm: ±0.1 dB +10 to +20 dBm: ±0.1 dB ±0.005 dB/dB	Type N(f) 50Ω	APC-7(f) 50Ω	40 dB	0.340 kg	< 1.13: 0.01 - 8 GHz < 1.22: 8 - 18 GHz
80503	10 MHz to 26.5 GHz 35 to +20 dBm	+27 dBm (0.5 W)	-35 to +10 dBm: ±0.1 dB +10 to +20 dBm: ±0.1 dB ±0.005 dB/dB	SMA(f) 50Ω	SMA(f) 50Ω	35 dB	0.340 kg	< 1.22: 0.01 - 18 GHz < 1.27: 18 - 26.5 GHz
80504	10 MHz to 40 GHz 35 to +20 dBm	+27 dBm (0.5 W)	35 to +10 dBm: ±0.1 dB +10 to +20 dBm: ±0.1 dB ±0.005 dB/dB	Type K(f) 50Ω	Type K(f) 50Ω	30 dB	0.198 kg	< 1.35: 0.01 - 26.5 GHz < 1.44: 26.5 - 40 GHz

¹ The K connector is electrically and mechanically compatible with the APC-3.5 and SMA connectors. Note: Use a Type N(m) to SMA(f) adapter (part no. 29835) for calibration of power sensors with Type K(m) connectors. ² Power coefficient equals <0.01 dB/Watt.³ Power coefficient equals <0.01 dB/Watt. ⁴ For frequencies above 8 GHz, add power linearity to system linearity.⁵ Power coefficient equals <0.01 dB/Watt (Average).⁴ Power coefficient equals <0.01 dB/Watt (Average).⁴ Power coefficient equals <0.01 dB/Watt (Average).⁵ Power coefficient equals <0.015 dB/Watt (Avera

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Giga-tron	Froquenes Densel	Movimum	Power Linearity 4						
	Frequency Range/ Power Range	Maximum Power	Power Linearity ⁴ (Frequency > 8 GHz)	RF Connector	Length	Diameter	Weight	VSWR	
200 mW M	Modulation Power Sei 10 MHz to 18 GHz	+23 dBm (200 mW)	-67 to -20 dBm: ±0.00 dB	Type N(m)	114.5 mm	32 mm	0.18 kg	1.12: 0.01 - 2 GF	
	-67 to +20 dBm		-20 to +20 dBm: ±0.05 dB/10 dB	50Ω	(4.5 in)	(1.25 in)	(0.4 lb)	1.22: 2 - 12.4 GH	
80402A	10 MHz to 18 GHz 67 to +20 dBm	+23 dBm (200 mW)	-67 to -20 dBm: ±0.00 dB -20 to +20 dBm: ±0.05 dB/10 dB	APC-7 50Ω				1.29: 12.4 - 18 G	
	VR Modulation Power 10 MHz to 18 GHz		-64 to -14 dBm: ±0.00 dB		107	22	0.00 km	1.13: 0.01 - 2 Gł	
80410A	10 MHz to 18 GHz _64 to +26 dBm	+29 dBm (800 mW)	64 to14 dBm: ±0.00 dB 14 to +26 dBm: ±0.05 dB/10 dB	Type K '(m) 50Ω	127 mm (5.0 in)	32 mm (1.25 in)	0.23 kg (0.5 lb)	1.13: 0.01 - 2 GF 1.16: 2 - 12 GHz 1.23: 12 - 18 GH	
1 W Mode 80420A	ulation Power Sensor 10 MHz to 18 GHz	+30 dBm (1 W)	_57 to_10 dBm: ±0.00 dB	Type K 1(m)	127 mm	32 mm	0.23 kg	1.11: 0.01 - 2 GF	
	57 to +30 dBm		$-57 \text{ to} -10 \text{ dBm} \pm 0.00 \text{ dB}$ -10 to +30 dBm: $\pm 0.05 \text{ dB}/10 \text{ dB}$	1996 K (III) 50Ω	(5.0 in)	(1.25 in)	0.23 kg (0.5 lb)	1.11: 0.01 - 2 GHz 1.12: 2 - 12 GHz 1.18: 12 - 18 GH	
5 W Mode 80421A	ulation Power Sensor 10 MHz to 18 GHz	2 +37 dBm (5 W)	-47 to 0 dBm: ±0.00 dB	Type N(m)	150 mm	32 mm	0.23 kg	1.20: 0.01 - 6 GH	
	_47 to +37 dBm		0 to +37 dBm: ±0.05 dB/10 dB	50Ω	(5.9 in)	(1.25 in)	(0.5 lb)	1.25: 6 - 12.4 GH 1.35: 12.4 - 18 G	
25 W Moo 80422A	dulation Power Senso 10 MHz to 18 GHz	+44 dBm (25 W)		Type N(m)	230 mm	104 mm	0.3 kg	1.20: 0.01 - 6 GH	
	_37 to +44 dBm	_	+10 to +44 dBm: ±0.05 dB/10 dB	50Ω	(9.0 in)	4.1 in)	(0.6 lb)	1.30: 6 - 12.4 GH 1.40: 12.4 - 18 G	
50 W Moo 80425A	dulation Power Senso 10 MHz to 18 GHz	+47 dBm (50 W)	_34 to +10 dBm: ±0.00 dB	Type N(m)	230 mm	104 mm	0.3 kg	1.25: 0.01 - 6 GH	
	34 to +47 dBm		+10 to +47 dBm: ±0.05 dB/10 dB	50Ω	(9.0 in)	(4.1 in)	(0.6 lb)	1.35: 6 - 12.4 GH 1.45: 12.4 - 18 G	
Giga-tron	ics Modulation Powe	er Sensor Selection G	tuide $(f_m \le 1.5 \text{ MHz})$						
200	Frequency Range/ Power Range	Maximum Power	Power Linearity ⁴ (Frequency > 8 GHz)	RF Connector	Length	Diameter	Weight	VSWR	
200 mW N 80601A	Modulation Power Sei 10 MHz to 18 GHz	+23 dBm (200 mW)	-67 to -20 dBm: ±0.00 dB	Type N(m)	137 mm	41 mm	0.23 kg	1.12: 0.01 - 2 GH	
5 W Pool	_67 to +20 dBm, CW		_20 to +20 dBm: ±0.05 dB/10 dB	50Ω	(5.39 in)	(1.62 in)	(0.5 lb)	1.22: 2 - 12.4 GH 1.29: 12.4 - 18 G	
80621A	10 MHz to 18 GHz	+37 dBm (5 W)	_47 to 0 dBm: ±0.00 dB	Type N(m)	175 mm	41 mm	0.28 kg	1.20: 0.01 - 6 GH	
			0 to +37 dBm: ±0.05 dB/10 dB	50Ω	(6.90 in)	(1.62 in)	(0.6 lb)	1.25: 6 - 12.4 GH	
	_47 to +37 dBm			0012	,,			1.35: 12.4 - 18 G	
0: A		Colortion Outle (f		5022	(····)			1.35: 12.4 - 18 G	
Giga-tron	ics True RMS Sensors		> 1.5 MHz)	3032				1.35: 12.4 - 18 G	
	ics True RMS Sensors Frequency Range/ Power Range	Maximum Power		RF Connector	Length	Diameter	Weight	1.35: 12.4 - 18 G VSWR	
True RMS 80330A	ics True RMS Sensors Frequency Range/ Power Range S Sensors (-30 dBm to 10 MHz to 18 GHz	Maximum Power	> 1.5 MHz) Power Linearity 4	RF Connector Type K(m) ¹	Length	32 mm	0.27 kg	VSWR 1.12: 0.01 - 12 G	
True RMS	iics True RMS Sensors Frequency Range/ Power Range S Sensors (-30 dBm to	Maximum Power +20 dBm)	> 1.5 MHz) Power Linearity ⁴ (Frequency > 8 GHz)	RF Connector	Length		-	VSWR 1.12: 0.01 - 12 G 1.15: 12 - 18 GH 1.18: 18 - 26.5 G	
True RMS 80330A 80333A 80333A 80334A	ites True RMS Sensors Frequency Range/ Power Range S Sensors (-30 dBm to 10 MHz to 18 GHz 10 MHz to 26.5 GHz 10 MHz to 40 GHz	Maximum Power +20 dBm) +33 dBm (2 W)	> 1.5 MHz) Power Linearity ⁴ (Frequency > 8 GHz)	RF Connector Type K(m) ¹	Length	32 mm	0.27 kg	VSWR	
True RMS 80330A 80333A 80333A 80334A	tics True RMS Sensors Frequency Range/ Power Range S Sensors (-30 dBm to 10 MHz to 18 GHz 10 MHz to 26.5 GHz	Maximum Power +20 dBm) +33 dBm (2 W)	> 1.5 MHz) Power Linearity ⁴ (Frequency > 8 GHz)	RF Connector Type K(m) ⁺ 50Ω	Length	32 mm	0.27 kg	VSWR 1.12: 0.01 - 12 G 1.15: 12 - 18 GH 1.18: 18 - 26.5 G	
True RMS 80330A 80333A 80334A Sensor M	ics True RMS Sensors Frequency Range/ Power Range S Sensors (-30 dBm to 10 MHz to 18 GHz 10 MHz to 26.5 GHz 10 MHz to 40 GHz Measurement Capabi	Maximum Power +20 dBm) +33 dBm (2 W) lities	> 1.5 MHz) Power Linearity ⁴ (Frequency > 8 GHz) -30 to +20 dBm: ±0.00 dB	RF Connector Type K(m) ¹ 50Ω Sensor Model	Length 152 mm (6.0 in)	32 mm	0.27 kg (0.6 lb)	VSWR 1.12: 0.01 - 12 G 1.15: 12 - 18 GH 1.18: 18 - 26.5 G	
True RMS 80330A 80333A 80333A 80334A	ics True RMS Sensors Frequency Range/ Power Range S Sensors (-30 dBm to 10 MHz to 18 GHz 10 MHz to 26.5 GHz 10 MHz to 40 GHz Measurement Capabi pe	Maximum Power +20 dBm) +33 dBm (2 W) lities	> 1.5 MHz) Power Linearity ⁴ (Frequency > 8 GHz)	RF Connector Type K(m) ¹ 50Ω Sensor Model 80401	Length 152 mm (6.0 in)	32 mm	0.27 kg	VSWR 1.12: 0.01 - 12 G 1.15: 12 - 18 GH 1.18: 18 - 26.5 G 1.29: 26.5 - 40 G	
True RMS 80330A 80333A 80334A Sensor M Signal Typ CW Powe Amplitude	tics True RMS Sensors Frequency Range/ Power Range S Sensors (-30 dBm to 10 MHz to 18 GHz 10 MHz to 26.5 GHz 10 MHz to 40 GHz Measurement Capabi pe er Level e Modulation	Maximum Power +20 dBm) +33 dBm (2 W) lities	> 1.5 MHz) Power Linearity 4 (Frequency > 8 GHz) -30 to +20 dBm: ±0.00 dB 80301A 80350A	$\begin{tabular}{lllllllllllllllllllllllllllllllllll$	Length 152 mm (6.0 in) 1A 0 +20 dBm 40 kHz,60 to	32 mm (1.25 in) +20 dBm	$\begin{array}{c} 0.27 \ \text{kg} \\ (0.6 \ \text{lb}) \end{array}$	VSWR 1.12: 0.01 - 12 G 1.15: 12 - 18 GH 1.18: 18 - 26.5 G 1.29: 26.5 - 40 G 0 dBm MHz, -55 to +20 G	
True RMS 80330A 80333A 80334A Sensor M Signal Typ CW Powe Amplitude	tics True RMS Sensors Frequency Range/ Power Range S Sensors (-30 dBm to 10 MHz to 26.5 GHz 10 MHz to 26.5 GHz 10 MHz to 40 GHz Measurement Capabi pe er Level e Modulation ver Range	Maximum Power +20 dBm) +33 dBm (2 W)	> 1.5 MHz) Power Linearity ⁴ (Frequency > 8 GHz) 30 to +20 dBm: ±0.00 dB 80301A 80350A -70 to +20 dBm -30 to 20 dB N/A N/A	RF Connector Type K(m) ' 50Ω Sensor Model 80400 im -67 t fm -67 t fm > 4	Length 152 mm (6.0 in) 1A 0 +20 dBm	32 mm (1.25 in) +20 dBm -20 dBm	$\begin{array}{c} 0.27 \text{ kg} \\ (0.6 \text{ lb}) \end{array}$	VSWR 1.12: 0.01 - 12 G 1.15: 12 - 18 GH 1.18: 18 - 26.5 G 1.29: 26.5 - 40 G 0 dBm MHz, -55 to +20 G MHz, -55 to -20 G	
True RMS 80330A 80333A 80334A Sensor M Signal Typ CW Powe Amplitude Rate, Pow Two-Tone	tics True RMS Sensors Frequency Range/ Power Range S Sensors (-30 dBm to 10 MHz to 26.5 GHz 10 MHz to 26.5 GHz 10 MHz to 40 GHz Measurement Capabi pe er Level e Modulation ver Range	Maximum Power +20 dBm) +33 dBm (2 W) lities Carriers	> 1.5 MHz) Power Linearity ⁴ (Frequency > 8 GHz) -30 to +20 dBm: ±0.00 dB 80301A 80350A -70 to +20 dBm -30 to 20 dB N/A N/A	$\begin{tabular}{ c c c c } \hline RF \ Connector \\ \hline Type \ K(m)^{+} \\ \hline 50 \Omega \\ \hline \\$	Length 152 mm (6.0 in) 1A 0 +20 dBm 40 kHz, -60 to 40 kHz, -60 to kHz, -60 to -20	32 mm (1.25 in) +20 dBm -20 dBm 20 dBm 20 dBm	$\begin{array}{c} 0.27 \text{ kg} \\ (0.6 \text{ lb}) \end{array}$	VSWR 1.12: 0.01 - 12 G 1.15: 12 - 18 GH 1.18: 18 - 26.5 G 1.29: 26.5 - 40 G 0 dBm MHz, -55 to +20 G	
True RMS 80330A 80333A 80334A Sensor M Signal Tyj CW Powe Amplitude Rate, Pow Two-Tone Maximum Pulse Mod	tics True RMS Sensors Frequency Range/ Power Range S Sensors (-30 dBm to 10 MHz to 18 GHz 10 MHz to 26.5 GHz 10 MHz to 40 GHz Measurement Capabi pe er Level e Modulation ver Range a Separation Between dulation	Maximum Power +20 dBm) +33 dBm (2 W) lities	> 1.5 MHz) Power Linearity 4 (Frequency > 8 GHz) -30 to +20 dBm: ±0.00 dB 80301A 80350A -70 to +20 dBm -30 to 20 dB N/A N/A N/A N/A N/A N/A	$\begin{tabular}{ c c c c c } \hline RF \ Connector \\ \hline Type \ K(m) & 1 \\ \hline $50\Omega & 1 \\ \hline $Sensor \ Model \\ \hline $8040' \\ \hline m & $-67t \\ $f_m $ \le 4$ \\ \hline $f_m $ \le 4$ \\ \hline $40 \\ $ > 40 \\ \hline $se \ Width $ > 200 \\ \hline \end{tabular}$	Length 152 mm (6.0 in) 152 mm (6.0 in) 154 152 mm 152 m	32 mm (1.25 in) +20 dBm -20 dBm 20 dBm 20 dBm 20 dBm	$\begin{array}{c} 0.27 \text{ kg} \\ (0.6 \text{ lb}) \end{array}$	VSWR 1.12: 0.01 - 12 G 1.15: 12 - 18 GH 1.18: 18 - 26.5 G 1.29: 26.5 - 40 G 0 dBm MHz, -55 to +20 dB Hz, -55 to +20 dB Hz, -55 to -20 dB s Pulse Width	
True RMS 80330A 80333A 80334A Sensor M Signal Tyj CW Powe Amplitude Rate, Pow Two-Tone Maximum Pulse Mod	tics True RMS Sensors Frequency Range/ Power Range S Sensors (-30 dBm to 10 MHz to 18 GHz 10 MHz to 26.5 GHz 10 MHz to 40 GHz Measurement Capabi pe er Level e Modulation ver Range a Separation Between	Maximum Power +20 dBm) +33 dBm (2 W) lities	> 1.5 MHz) Power Linearity ⁴ (Frequency > 8 GHz) -30 to +20 dBm: ±0.00 dB 80301A 80350A -70 to +20 dBm -30 to 20 dB N/A N/A	$\begin{tabular}{ c c c c c } \hline RF \ Connector \\ \hline Type \ K(m) & $$$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $	Length 152 mm (6.0 in) 14 15 mm (6.0 in) 15 15 15 15 15 15 15 15 15 15	32 mm (1.25 in) +20 dBm -20 dBm 20 dBm 20 dBm 20 dBm dth μs	$\begin{array}{c} 0.27 \ \text{kg} \\ (0.6 \ \text{lb}) \end{array}$	VSWR 1.12: 0.01 - 12 G 1.15: 12 - 18 GH 1.18: 18 - 26.5 G 1.29: 26.5 - 40 G 0 dBm MHz, -55 to +20 dB Hz, -55 to +20 dB Hz, -55 to -20 dB s Pulse Width MHz,> 300 µs	
True RMS 80330A 80333A 80334A Sensor M Signal Tyj CW Powe Amplitude Rate, Pow Two-Tone Maximum Pulse Mod	tics True RMS Sensors Frequency Range/ Power Range S Sensors (-30 dBm to 10 MHz to 18 GHz 10 MHz to 26.5 GHz 10 MHz to 40 GHz Measurement Capabi pe er Level e Modulation ver Range a Separation Between dulation	Maximum Power +20 dBm) +33 dBm (2 W) lities	> 1.5 MHz) Power Linearity ⁴ (Frequency > 8 GHz) -30 to +20 dBm: ±0.00 dB 80301A 80350A -70 to +20 dBm -30 to 20 dB N/A N/A N/A N/A N/A > 350 ns Pul	$\begin{tabular}{ c c c c c } \hline RF \ Connector \\ \hline Type \ K(m) & $$$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $	Length 152 mm (6.0 in) 152 mm (6.0 in) 154 152 mm 152 m	32 mm (1.25 in) - +20 dBm 20 dBm 20 dBm 20 dBm 20 dBm dth μs to +20 dBm	$\begin{array}{c} 0.27 \ \text{kg} \\ (0.6 \ \text{lb}) \end{array}$	VSWR 1.12: 0.01 - 12 G 1.15: 12 - 18 GH 1.18: 18 - 26.5 G 1.29: 26.5 - 40 G 0 dBm MHz, -55 to +20 dB Hz, -55 to +20 dB Hz, -55 to -20 dB s Pulse Width	
True RMS 80330A 80333A 80334A Sensor M Signal Tyj CW Powe Amplitude Rate, Pow Two-Tone Maximum Pulse Mod	tics True RMS Sensors Frequency Range/ Power Range S Sensors (-30 dBm to 10 MHz to 18 GHz 10 MHz to 26.5 GHz 10 MHz to 40 GHz Measurement Capabi pe er Level e Modulation ver Range a Separation Between dulation	Maximum Power +20 dBm) +33 dBm (2 W) lities	> 1.5 MHz) Power Linearity ⁴ (Frequency > 8 GHz) -30 to +20 dBm: ±0.00 dB 80301A 80350A -70 to +20 dBm -30 to 20 dB N/A N/A N/A N/A N/A > 350 ns Pul	$\begin{tabular}{ c c c c c } \hline RF \ Connector \\ \hline \hline Type \ K(m)^{+} \\ \hline 50 \Omega \\ \hline \hline \\ \hline$	Length 152 mm (6.0 in) 14 15 mm (6.0 in) 15 15 15 15 15 15 15 15 15 15	32 mm (1.25 in) -20 dBm -20 dBm 20 dBm 20 dBm 20 dBm dth μs to +20 dBm μs	$\begin{array}{c} 0.27 \ \text{kg} \\ (0.6 \ \text{lb}) \end{array}$	VSWR 1.12: 0.01 - 12 G 1.15: 12 - 18 GH 1.18: 18 - 26.5 G 1.29: 26.5 - 40 G 0 dBm MHz, -55 to +20 d MHz, -55 to +20 dB Hz, -55 to +20 dB Hz, -55 to -20 dB 3 Pulse Width MHz, 300 µs /idth; -35 to +20 d	
True RMS 80330A 80333A 80334A Sensor M Signal Typ CW Powe Amplitude Rate, Pow Two-Tone Maximum Pulse Moo Burst with	tics True RMS Sensors Frequency Range/ Power Range S Sensors (-30 dBm to 10 MHz to 18 GHz 10 MHz to 26.5 GHz 10 MHz to 40 GHz Measurement Capabi pe er Level e Modulation ver Range a Separation Between dulation	Maximum Power +20 dBm) +33 dBm (2 W) lities	> 1.5 MHz) Power Linearity ⁴ (Frequency > 8 GHz) -30 to +20 dBm: ±0.00 dB 80301A 80350A -70 to +20 dBm -30 to 20 dB N/A N/A N/A N/A N/A > 350 ns Pul	RF Connector Type K(m) ' 50Ω Sensor Model 80400 Sensor Model Sensor Model <th colspan<="" td=""><td>Length 152 mm (6.0 in) 152 mm (6.0 in) 14 152 mm 152 mm 152 mm 152 mm 154 mm</td><td>32 mm (1.25 in) +20 dBm -20 dBm 20 dBm 20 dBm dth μs to +20 dBm μs to -20 dBm dth μs to -20 dBm</td><td>$\begin{array}{c} 0.27 \text{ kg} \\ (0.6 \text{ lb}) \end{array} \\ \hline \\ 80601A \\ \hline \\ -67 \text{ to } 2 \\ \hline \\ f_m \leq 1.5 \\ \hline \\ f_m > 1.5 \\ \hline \\ 1.5 \\ Ml \\ > 300 \\ \mu s \\ \hline \\ f_m \leq 1.5 \\ Pulse \\ W \\ Pulse \\ W \\ F_m > 1.5 \\ Pulse \\ W \\ mpatible \\ with \\ tl \\ 29835) \\ for cal \\ \end{array}$</td><td>VSWR 1.12: 0.01 - 12 G 1.15: 12 - 18 GH 1.18: 18 - 26.5 G 1.29: 26.5 - 40 G 0 dBm MHz, -55 to +20 d MHz, -55 to +20 dB Hz, -55 to +20 dB Hz, -55 to -20 dB s Pulse Width MHz,> 300 µs /idth; -35 to +20 G Hz, >300 µs /idth; -35 to -20 G</td></th>	<td>Length 152 mm (6.0 in) 152 mm (6.0 in) 14 152 mm 152 mm 152 mm 152 mm 154 mm</td> <td>32 mm (1.25 in) +20 dBm -20 dBm 20 dBm 20 dBm dth μs to +20 dBm μs to -20 dBm dth μs to -20 dBm</td> <td>$\begin{array}{c} 0.27 \text{ kg} \\ (0.6 \text{ lb}) \end{array} \\ \hline \\ 80601A \\ \hline \\ -67 \text{ to } 2 \\ \hline \\ f_m \leq 1.5 \\ \hline \\ f_m > 1.5 \\ \hline \\ 1.5 \\ Ml \\ > 300 \\ \mu s \\ \hline \\ f_m \leq 1.5 \\ Pulse \\ W \\ Pulse \\ W \\ F_m > 1.5 \\ Pulse \\ W \\ mpatible \\ with \\ tl \\ 29835) \\ for cal \\ \end{array}$</td> <td>VSWR 1.12: 0.01 - 12 G 1.15: 12 - 18 GH 1.18: 18 - 26.5 G 1.29: 26.5 - 40 G 0 dBm MHz, -55 to +20 d MHz, -55 to +20 dB Hz, -55 to +20 dB Hz, -55 to -20 dB s Pulse Width MHz,> 300 µs /idth; -35 to +20 G Hz, >300 µs /idth; -35 to -20 G</td>	Length 152 mm (6.0 in) 152 mm (6.0 in) 14 152 mm 152 mm 152 mm 152 mm 154 mm	32 mm (1.25 in) +20 dBm -20 dBm 20 dBm 20 dBm dth μs to +20 dBm μs to -20 dBm dth μs to -20 dBm	$\begin{array}{c} 0.27 \text{ kg} \\ (0.6 \text{ lb}) \end{array} \\ \hline \\ 80601A \\ \hline \\ -67 \text{ to } 2 \\ \hline \\ f_m \leq 1.5 \\ \hline \\ f_m > 1.5 \\ \hline \\ 1.5 \\ Ml \\ > 300 \\ \mu s \\ \hline \\ f_m \leq 1.5 \\ Pulse \\ W \\ Pulse \\ W \\ F_m > 1.5 \\ Pulse \\ W \\ mpatible \\ with \\ tl \\ 29835) \\ for cal \\ \end{array}$	VSWR 1.12: 0.01 - 12 G 1.15: 12 - 18 GH 1.18: 18 - 26.5 G 1.29: 26.5 - 40 G 0 dBm MHz, -55 to +20 d MHz, -55 to +20 dB Hz, -55 to +20 dB Hz, -55 to -20 dB s Pulse Width MHz,> 300 µs /idth; -35 to +20 G Hz, >300 µs /idth; -35 to -20 G
True RMS 80330A 80333A 80334A Sensor M Signal Typ CW Powe Amplitude Rate, Pow Two-Tone Maximum Pulse Moo Burst with	tics True RMS Sensors Frequency Range/ Power Range S Sensors (-30 dBm to 10 MHz to 18 GHz 10 MHz to 26.5 GHz 10 MHz to 40 GHz Measurement Capabi pe er Level e Modulation ver Range en Separation Between idulation h Modulation alibration Factor Unce	Maximum Power +20 dBm) +33 dBm (2 W) lities Carriers	> 1.5 MHz) Power Linearity ⁴ (Frequency > 8 GHz) -30 to +20 dBm: ±0.00 dB 80301A 80350A -70 to +20 dBm -30 to 20 dB N/A N/A N/A N/A N/A > 350 ns Pul	$\begin{array}{c} \textbf{RF Connector} \\ \hline Type K(m) \\ 50\Omega \\ \hline \\ \textbf{Sensor Model} \\ \textbf{8040} \\ \hline \\ \textbf{Sensor Model} \\ \hline \hline \hline \hline \\ \textbf{Sensor Model} \\ \hline \hline \hline \hline \\ \textbf{Sensor Model} \\ \hline \hline \hline \hline \hline \hline \hline \hline \hline \\ \textbf{Sensor Model} \\ \hline $	Length 152 mm (6.0 in) 152 mm (6.0 in) 164 154 152 mm (6.0 in) 154 154 154 155 mm (6.0 in) 155 156 156 157 157 157 157 157 157 157 157	32 mm (1.25 in) 4 +20 dBm -20 dBm 20 dBm 20 dBm 20 dBm 4th μs to +20 dBm μs to +20 dBm μs to -20 dBm d mechanically cor a dapter (part no. efficient equals <c0 8 GHz, add power</c0 	$\begin{array}{c} 0.27 \text{ kg} \\ (0.6 \text{ lb}) \end{array} \\ \\ \hline \begin{array}{c} 80601A \\ \hline \\ -67 \text{ to } 2 \\ f_m \leq 1.5 \\ f_m > 1.5 \\ \leq 1.5 \text{ MI} \\ > 300 \ \mu \text{s} \\ f_m \leq 1.5 \\ \text{Pulse V} \\ f_m > 1.5 \\ \text{Pulse V} \\ f_m > 1.5 \\ \text{Pulse V} \\ \text{Mpatible with t} \\ 29835) \ \text{for cal} \\ 0.01 \ \text{dB/Vatt}^3 \\ 0.01 \ \text{dB/Vatt}^3 \\ \end{array}$	VSWR 1.12: 0.01 - 12 @ 1.15: 12 - 18 GH 1.18: 18 - 26.5 G 1.29: 26.5 - 40 @ 0 dBm MHz, -55 to +20 dB Hz, -35 to -20 dB MHz, -35 to -20 dB MHz, -35 to -20 dB MHz, -35 to -20 dB Hz, -35 to -20 d	
True RMS 80330A 80333A 80334A Sensor M Signal Typ CW Powe Amplitude Rate, Pow Two-Tone Maximum Pulse Moi Burst with Sensor Ca	tics True RMS Sensors Frequency Range/ Power Range S Sensors (-30 dBm to 10 MHz to 18 GHz 10 MHz to 26.5 GHz 10 MHz to 40 GHz Measurement Capabi pe er Level e Modulation ver Range en Separation Between idulation h Modulation alibration Factor Unce	Maximum Power +20 dBm) +33 dBm (2 W) lities Carriers	> 1.5 MHz) Power Linearity ⁴ (Frequency > 8 GHz) -30 to +20 dBm: ±0.00 dB 80301A 80350A -70 to +20 dBm -30 to 20 dB N/A N/A	$\begin{array}{c} \textbf{RF Connector} \\ \hline Type K(m) ^{1} \\ \hline 50\Omega \\ \hline \\ \textbf{Sensor Model} \\ \hline \\ \hline \\ \hline \\ \textbf{Sensor Model} \\ \hline \\ \hline \\ \hline \\ \hline \\ \textbf{Sensor Model} \\ \hline \\ $	Length 152 mm (6.0 in) 152 mm (6.0 in) 164 175 mm 175	32 mm (1.25 in) +20 dBm -20 dBm 20 dBm 20 dBm 20 dBm dth μs to +20 dBm μs to -20 dBm d mechanically con efficient equals <c 8 GHz, add power Power coefficient range is limited to</c 	$\begin{array}{c} 0.27 \text{ kg} \\ (0.6 \text{ lb}) \end{array} \\ \hline \\ 80601A \\ -67 \text{ to } 2 \\ \hline \\ f_m \leq 1.5 \\ f_m > 1.5 \\ \leq 1.5 \text{ MI} \\ > 300 \ \mu s \\ \hline \\ f_m \leq 1.5 \\ Pulse V \\ \hline \\ f_m > 1.5 \\ Pulse V \\ \hline \\ rulse V \\ 100 \\ dB/Vatt. ^1 \\ \hline \\ 100 \\ dB/Vatt. ^2 \\ equals < 0.015 \\ < 10\% \\ duty cy \\ equals < 0.015 \\ \hline \\ equals < 0.015 \\ \hline \\ equals < 0.015 \\ \hline \\ equals < 0.015 \\ \hline \\ equals < 0.015 \\ \hline \\ equals < 0.015 \\ \hline \\ equals < 0.015 \\ \hline \\ equals < 0.015 \\ \hline \\ equals < 0.015 \\ \hline \\ equals < 0.015 \\ \hline \\ equals < 0.015 \\ \hline \\ equals < 0.015 \\ \hline \\ equals < 0.015 \\ \hline \\ equals < 0.015 \\ \hline \\ equals < 0.015 \\ \hline \\ equals < 0.015 \\ \hline \\ equals < 0.015 \\ \hline \\ equals < 0.015 \\ \hline \\ equals < 0.015 \\ \hline \\ equals < 0.015 \\ \hline \\ equals < 0.015 \\ \hline \\ equals < 0.015 \\ \hline \\ equals < 0.015 \\ \hline \\ equals < 0.015 \\ \hline \\ equals < 0.015 \\ \hline \\ equals < 0.015 \\ \hline \\ equals < 0.015 \\ \hline \\ equals < 0.015 \\ \hline \\ equals < 0.015 \\ \hline \\ equals < 0.015 \\ \hline \\ equals < 0.015 \\ \hline \\ equals < 0.015 \\ \hline \\ equals < 0.015 \\ \hline \\ equals < 0.015 \\ \hline \\ equals < 0.015 \\ \hline \\ $	VSWR 1.12: 0.01 - 12 G 1.15: 12 - 18 GH 1.18: 18 - 26.5 G 1.29: 26.5 - 40 G MHz, -55 to +20 G MHz, -55 to -20 dB Hz, -55 to -20 dB x -300 µs //idth; -35 to +20 G MHz, > 300 µs //idth; -35 to -20 G he APC-3.5 and SMA ibration of power ser Power coefficient eq tem linearity. ³ Power Power coefficient eq tem linearity. ³ Power ABW-21 (Average). cle. ⁴ Square root of	
True RMS 80330A 80333A 80334A Sensor M Signal Typ CW Powe Amplitude Rate, Pow Two-Tone Maximum Pulse Moi Burst with Sensor Ca	tics True RMS Sensors Frequency Range/ Power Range S Sensors (-30 dBm to 10 MHz to 18 GHz 10 MHz to 26.5 GHz 10 MHz to 40 GHz Measurement Capabi pe er Level e Modulation ver Range en Separation Between idulation h Modulation alibration Factor Unce	Maximum Power +20 dBm) +33 dBm (2 W) lities Carriers	> 1.5 MHz) Power Linearity ⁴ (Frequency > 8 GHz) 30 to +20 dBm: ±0.00 dB 80301A 80350A -70 to +20 dBm -30 to 20 dB N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A	$\begin{array}{c} \textbf{RF Connector} \\ \hline Type K(m) ^{1} \\ \hline 50 \Omega \\ \hline \\ \textbf{Sensor Model} \\ \textbf{8040} \\ \hline \\ \textbf{Sensor Model} \\ \hline \hline \\ \textbf{Sensor Model} \\ \hline \\ \textbf{Sensor Model} \\ \hline \hline \hline \\ \hline \hline \hline \hline \\ \textbf{Sensor Model} \\ \hline \hline \hline \hline \hline \\ \textbf{Sensor Model} \\ \hline \hline \hline \hline \\ \textbf{Sensor Model} \\ \hline \hline \hline \hline \hline \hline \hline \hline \hline \\ \hline \hline \hline \hline \hline \hline \hline \hline $	Length 152 mm (6.0 in) 152 mm (6.0 in) 164 175 175 175 175 175 175 175 175	32 mm (1.25 in) 4 +20 dBm -20 dBm 20 dBm 20 dBm 20 dBm 20 dBm 4th μs to +20 dBm μs to -20 dBm dth μs to -20 dBm dth has to -20 dBm has to -	$\begin{array}{c} 0.27 \text{ kg} \\ (0.6 \text{ lb}) \end{array} \\ \hline \\ 80601A \\ \hline \\ -67 \text{ to } 2 \\ \hline \\ f_m \leq 1.5 \\ \hline \\ f_m > 1.5 \\ \hline \\ 1.5 \\ \text{Milse W} \\ \hline \\ f_m > 1.5 \\ \hline \\ \text{Pulse W} \\ \hline \\ f_m > 1.5 \\ \hline \\ \text{Pulse W} \\ \hline \\ \text{mpatible with till 29835) for call \\ 0.01 \ \text{dB/Watt.}^3 \\ \hline \\ \text{Inearity to sys} \\ \text{equals < 0.015 } \\ clow duty cy or numbers allow of the set of th$	VSWR 1.12: 0.01 - 12 G 1.15: 12 - 18 GH 1.18: 18 - 26.5 G 1.29: 26.5 - 40 G 0 dBm MHz, -55 to +20 dB Hz, -55 to +20 dB Hz, -55 to -20 dB s Pulse Width MHz, > 300 µs /idth; -35 to -20 d htz, -35 to +20 dB Hz, -35 to +20 dB hz, -55 to -20 dB hz, -35 to -20 dB hz, -	
True RMS 80330A 80333A 80334A Sensor M Signal Typ CW Powe Amplitude Rate, Pow Two-Tone Maximum Pulse Moi Burst with Sensor Ca	tics True RMS Sensors Frequency Range/ Power Range S Sensors (-30 dBm to 10 MHz to 18 GHz 10 MHz to 26.5 GHz 10 MHz to 40 GHz Measurement Capabi pe ar Level e Modulation ver Range an Separation Between rdulation h Modulation h Modulation alibration Factor Unce	Maximum Power +20 dBm) +33 dBm (2 W) lities Carriers	> 1.5 MHz) Power Linearity 4 (Frequency > 8 GHz) -30 to +20 dBm: ±0.00 dB 80301A 80350A -70 to +20 dBm -30 to 20 dB N/A N/A State 80321A ³ 80322A ³ 80322A ³	$\begin{array}{c} \textbf{RF Connector} \\ \hline Type K(m) ^{1} \\ \hline 50 \Omega \\ \hline \\ \textbf{Sensor Model} \\ \textbf{8040} \\ \hline \\ \textbf{Sensor Model} \\ \hline \hline \\ \textbf{Sensor Model} \\ \hline \\ \textbf{Sensor Model} \\ \hline \hline \hline \\ \hline \hline \hline \hline \\ \textbf{Sensor Model} \\ \hline \hline \hline \hline \hline \\ \textbf{Sensor Model} \\ \hline \hline \hline \hline \\ \textbf{Sensor Model} \\ \hline \hline \hline \hline \hline \hline \hline \hline \hline \\ \hline \hline \hline \hline \hline \hline \hline \hline $	Length 152 mm (6.0 in) 14 152 mm (6.0 in) 14 152 mm (6.0 in) 14 152 mm 152	32 mm (1.25 in) 4 +20 dBm -20 dBm 20 dBm 20 dBm 20 dBm 20 dBm 4th μs to +20 dBm μs to -20 dBm dth μs to -20 dBm dth has to -20 dBm has to -	$\begin{array}{c} 0.27 \text{ kg} \\ (0.6 \text{ lb}) \end{array} \\ \hline \\ 80601A \\ \hline \\ -67 \text{ to } 2 \\ \hline \\ f_m \leq 1.5 \\ \hline \\ f_m > 1.5 \\ \hline \\ 1.5 \\ \text{Milse W} \\ \hline \\ f_m > 1.5 \\ \hline \\ \text{Pulse W} \\ \hline \\ f_m > 1.5 \\ \hline \\ \text{Pulse W} \\ \hline \\ \text{mpatible with till 29835) for call \\ 0.01 \ \text{dB/Watt.}^3 \\ \hline \\ \text{linearity to sys} \\ \text{equals < 0.015 } \\ clow duty cy or numbers allow of the set of t$	VSWR 1.12: 0.01 - 12 G 1.15: 12 - 18 GH 1.18: 18 - 26.5 G 1.29: 26.5 - 40 G 0 dBm MHz, -55 to +20 dB Hz, -30 µs /idth; -35 to +20 d MHz, > 300 µs /idth; -35 to -20 d he APC-3.5 and SMA ibration of power ser Power coefficient eq tem linearity ⁵ Power is dB/Watt (Average). cle. ⁸ Square root of w for 3% repeatability	
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Specifications describe the instrument's warranted performance, and apply when using 80300A, 80400A, and 80600A Series sensors.

Typical performance, (shown in *italics*), is non-warranted.

METER

Frequency Range: 10 MHz to 40 GHz ¹⁰ Power Range: -70 dBm to +47 dBm (100 pW to 50 Watt) ¹⁰ Single Sensor Dynamic Range:¹⁰ CW Power Sensors: 90 dB Peak Power Sensors: 40 dB, Peak 50 dB, CW Modulation Power Sensors: 87 dB, CW 80 dB, MAP/PAP ¹¹ 60 dB, BAP ¹¹ Display Resolution: User selectable from

I dB to 0.001 dB in Log mode, and from I to 4 digits of display resolution in Linear mode.

Meter Functions

Measurement Modes (Sensors):

CW (80300A, 80350A, 80400A, 80600A, and Series) Peak (80350A Series)

MAP/PAP/BAP ¹¹ (80400A and 80600A Series) Averaging: User selectable, auto-averaging or manual from I-512 readings.

dB Rel and Offset: Power display can be offset by -99.999 to +99.999 dB to account for external loss/gain.

Configuration Storage Registers:

Allows up to 20 front panel setups.

Power Measurements and Display

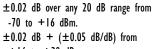
Configurations: Any two of the following channel configurations, simultaneously: A, B, A/B, B/A, A-B, B-A, DLYA, DLYB

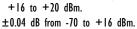
ACCURACY

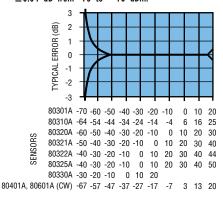
Calibrator:Power Sweep calibration signal to dynamically linearize the sensors (Type N connector). Frequency: 50 MHz, nominal

0.0 dBm Accuracy: ±1.2% worst case for one year, over temperature range of 5° to 35°C. **VSWR:** <1.05 (Return Loss >33 dB)

Instrumentation, Relative to 0 dBm:







Input, (dBm)

Graph shows linearity plus worst case zero set and noise versus input power

Temperature Coefficient of

Linearity: <0.3%/°C temperature change following Power Sweep calibration. 24 hour warm-up required. Zeroing Accuracy: (CW)

Zero Set: $^{12} < \pm 50 \text{ pW}$, $< \pm 100 \text{ pW}$ with 80400A and 80600A Series Modulation Power Sensors.

Zero Drift: $^{12} \le \pm 100 \text{ pW}$ during I hour Noise: $\le \pm 50 \text{ pW}$, $\le \pm 100 \text{ pW}$ with 80400A

and 80600A Series Modulation Power Sensors. $\leq \pm 200 \text{ pW}$ with 80700A Series Sensors,

measureable over any 1 minute interval 3 standard deviations.

REMOTE INPUTS/OUTPUTS

V Prop F Input (BNC): Used to correct power readings for sensor frequency response using source VpropF output.¹³

Analog Output (BNC): Provides an output voltage of 0 to 10V for Channels I and 2 in either Lin or Log units.¹³ Does not operate in Swift or Buffered modes. Blanking Output (BNC): TTL High during power meter zero. Can be used to shut off signal generator RF output during sensor zero.

Trigger Input (BNC): TTL trigger input signal for Swift and Fast Buffered modes.

GPIB Interface: IEEE-488 and IEC-625 remote programming

RS232 Interface: Programmable serial interface, DB-9 connector

GENERAL SPECIFICATIONS

Temperature Range:

Operating: 0° to 50°C (+32° to +122°F) **Storage:** -40°C to 70°C (-40° to +158°F)

Power Requirements:

100/120/220/240V ±10%,

48 to 440 Hz, 25VA typical

Physical Characteristics:

Dimensions: 215 mm (8.4 in) wide, 89 mm (3.5 in) high, 368 mm (14.5 in) deep **Weight:** 4.55 kg (10lbs)

ORDERING INFORMATION

POWER METERS

854IC	Single Input Universal Power Meter
	(includes I sensor cable)
8542C	Dual Input Universal Power Meter
	(includes 2 sensor cables)

ACCESSORIES

One manual, one power cord, detachable sensor cables.

POWER METER OPTIONS

- 01 Rack mount kit
- 02 Add 256K buffer for Fast Buffered Mode Power Readings Stores up to 128,000 readings
- 03 8541C Rear Panel Sensor and Calibrator Connections
- 04 8542C Rear Panel Sensor and Calibrator Connections
- 05 Soft Carry Case
- 06 Second Analog Output, -10V to +10 V
- 07 Side Mounted Carrying Handle
- 08 Transit Case, (Includes Soft Carry Case)
- 09 Dual Rack Mount Kit (with assembly instructions)
- 10 Dual Rack Mount Kit (factory assembled)
- 11 Time Gating



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¹⁰ Depending on sensor used. ¹¹ MAP (Modulated Average Power), PAP (Pulse Average Power), BAP (Burst Average Power). ¹² Specified performance applies with maximum averaging and 24 hour warm-up at constant temperature. ¹³ Operates in Normal Mode only.

Specifications subject to change without notice

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GT-152-A