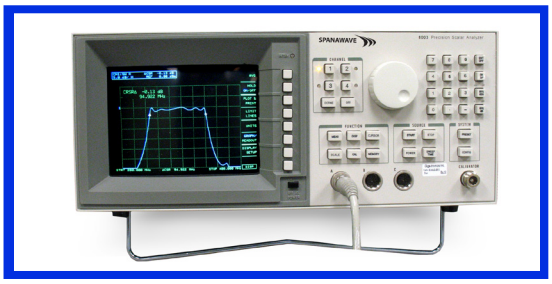
SPANAWAVE

TEST & MEASUREMENT PRODUCT CATALOG

Previously Giga-tronics Inc. Product Lines

RF Power Meters

RF Power Sensors



Scalar Network Analyzers

Power Amplifiers

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Universal Power Meters

8540C Series Power Meter

The 8540C series contains built-in features such as power sweep and frequency calibration factors to provide a high degree of measurement accuracy. The series has the speed and range to meet the throughput demands of high-volume manufacturing and can measure the CW, peak and true average power of the complex modulated signals used in EW, radar and communication systems.

8541C	Single Channel Universal Power Meter; Frequency Range: 100 kHz to 40 GHz [1]
8542C	Dual Channel Universal Power Meter; Frequency Range: 100 kHz to 40 GHz [1]

8650B Series Power Meter

The 8650B series can measure the CW, peak and average power of TDMA, GSM, and CDMA signals. CW measurement speeds over GPIB are more than 1,750 readings per second and modulated measurement speeds are more than 300 readings per second.

The meters include many time saving features such as automatic time gate setting, direct crest factor measurement, and statistical power measurement analysis.

8651B	Single Channel Universal Power Meter; Frequency Range: 100 kHz to 50 GHz [1]
8652B	Dual Channel Universal Power Meter; Frequency Range: 100 kHz to 50 GHz [1]

VXIBus Universal Power Meter

The 58542 model provides fast CW measurements with readings exceeding 150 readings per second over GPIB and an exclusive Burst Mode capturing more than 5,000 readings per second.

The VXIBus Power Meter also lets you measure pulsed RF signals simply by using a Spanawave Peak Power Sensor, while a detector output connector from the sensor lets you display the waveform on a scope screen and, via computer control, move the marker to make exact power measurements at any point on the waveform.

58542	Frequency Range: 100 kHz to 40 GHz [1]

[1] Depending on sensor used

The CW Power Measurement Sensor group can measure CW power from 100 kHz [2] to 50 GHz at more than 17,500 readings per second over GPIB and measure up to 90 dB with a single sensor. This sensor group also provides the option to select from a variety of high power sensors up to 50 W.

80301A [2]	Frequency: 10 MHz to 18 GHz; Power: -70 dBm to +20 dBm; Connector: N(m) 50 Ω
80302A [2]	Frequency: 10 MHz to 18 GHz; Power: -70 dBm to +20 dBm; Connector: APC-7 50 Ω
80303A	Frequency: 10 MHz to 26.5 GHz; Power: -70 dBm to +20 dBm; Connector: K(m) 50 Ω
80304A	Frequency: 10 MHz to 40 GHz; Power: -70 dBm to 0 dBm; Connector: K(m) 50 Ω
80310A [2]	Frequency: 10 MHz to 18 GHz; Power: -64 dBm to +26 dBm; Connector: K(m) 50 Ω Low VSWR
80313A	Frequency: 10 MHz to 26.5 GHz; Power: -64 dBm to +26 dBm; Connector: K(m) 50 Ω Low VSWR
80314A	Frequency: 10 MHz to 40 GHz; Power: -64 dBm to +6 dBm; Connector: K(m) 50 Ω Low VSWR
80320A [2]	Frequency: 10 MHz to 18 GHz; Power: -60 dBm to +30 dBm (1W); Connector: K(m) 50 Ω
80321A [2]	Frequency: 10 MHz to 18 GHz; Power: -50 dBm to +37 dBm (5W); Connector: N(m) 50 Ω
80322A [2]	Frequency: 10 MHz to 18 GHz; Power: -40 dBm to +44 dBm (25W); Connector: N(m) 50 Ω
80323A	Frequency: 10 MHz to 26.5 GHz; Power: -60 dBm to +30 dBm (1W); Connector: K(m) 50 Ω
80324A	Frequency: 10 MHz to 40 GHz; Power: -60 dBm to +10 dBm; Connector: K(m) 50 Ω
80325A [2]	Frequency: 10 MHz to 18 GHz; Power: -40 dBm to +47 dBm (50W); Connector: N(m) 50 Ω
80330A [2]	Frequency: 10 MHz to 18 GHz; Power: -30 dBm to +20 dBm; Connector: K(m) 50 Ω True RMS
80333A	Frequency: 10 MHz to 26.5 GHz; Power: -30 dBm to +20 dBm; Connector: K(m) 50 Ω True RMS
80334A	Frequency: 10 MHz to 40 GHz; Power: -30 dBm to +20 dBm; Connector: K(m) 50 Ω True RMS
80340A [2]	Frequency: 50 MHz to 18 GHz; Power: -20 dBm to +20 dBm (trigger)/-30 dBm to +20 dBm (free run); Connector: N(m) 50 Ω
80343A	Frequency: 50 MHz to 26.5 GHz; Power: -20 dBm to +20 dBm (trigger)/-30 dBm to +20 dBm (free run); Connector: K(m) 50 Ω
80344A	Frequency: 50 MHz to 40 GHz; Power: -20 dBm to +20 dBm (trigger)/-30 dBm to +20 dBm (free run); Connector: K(m) 50 Ω
81305A [3]	Frequency: 10 MHz to 50 GHz; Power: -50 to +20 dBm; Connector: 2.4 mm (m) 50 Ω

[2] Available with Option 10
[3] Requires 8650B (Option 12)

Available Items	Description
21067-001	Trigger/Detector Cable for 8034XA Series 2.0 Meters (6 Feet)
Option 10	100 kHz to 18 GHz Operation (for 18 GHz sensors only)

80400A Series

The 80400A series Modulated Power Sensors let you measure the average power of amplitude modulated, burst modulated and other complex modulated signals, such as TDMA signals at bandwidths up to 40 kHz.

80401A	Frequency: 10 MHz to 18 GHz; Power: -67 dBm to +20 dBm; Connector: N(m) 50 Ω
80402A	Frequency: 10 MHz to 18 GHz; Power: -67 dBm to +20 dBm; Connector: APC-7(f) 50 Ω
80410A	Frequency: 10 MHz to 18 GHz; Power: -64 dBm to +26 dBm; Connector: K(m) 50 Ω, Low VSWR
80420A	Frequency: 10 MHz to 18 GHz; Power: -57 dBm to +30 dBm (1W); Connector: K(m) 50 Ω
80421A	Frequency: 10 MHz to 18 GHz; Power: -47 dBm to +37 dBm (5W); Connector: N(m) 50 Ω
80422A	Frequency: 10 MHz to 18 GHz; Power: -37 dBm to +44 dBm (25W); Connector: N(m) 50 Ω
80425A	Frequency: 10 MHz to 18 GHz; Power: -34 dBm to +47 dBm (50W); Connector: N(m) 50 Ω

80600A Series

The 80600A series Modulated Power Sensors provide bandwidths up to 1.5 MHz to measure the peak and average power of CDMA signals.

80601A	Frequency: 10 MHz to 18 GHz; Power: -67 dBm to +20 dBm; Connector: N(m) 50 Ω
80621A	Frequency: 10 MHz to 18 GHz; Power: -47 dBm to +37 dBm (5W); Connector: N(m) 50 Ω

80701A Model

The 80701A Modulated Power Sensor provides system bandwidth up to 10 MHz to measure the peak and average power of wide band, third-generation CDMA signals over an 80 dB range.

80701A [4]	Frequency: 50 MHz to 18 GHz CW / 250 MHz to 18 GHz Modulation; Power: -64 dBm to +20 dBm CW / -60 dBm to +20 dBm Modulation; Connector: N(m) 50 Ω

[4] Requires 8650B (Option 12)

Peak Power Measurement

The 80350A series can 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 also be used to view the profile and see the exact measurement point on the pulse.

80350A	Frequency: 45 MHz to 18 GHz; Power: -20 dBm to +20 dBm Peak / -30 dBm to +20 dBm CW; Connector: N(m) 50 Ω
80351A	Frequency: 45 MHz to 18 GHz; Power: 0 dBm to +40 dBm Peak / -10 dBm to +37 dBm (5W) CW; Connector: N(m) 50 Ω
80352A	Frequency: 45 MHz to 18 GHz; Power: +10 dBm to +50 dBm Peak / 0 dBm to +44 dBm (25W) CW; Connector: N(m) 50 Ω
80353A	Frequency: 45 MHz to 26.5 GHz; Power: -20 dBm to +20 dBm Peak / -30 dBm to +20 dBm CW; Connector: K(m) 50 Ω
80354A	Frequency: 45 MHz to 40 GHz; Power: -20 dBm to 0 dBm Peak / -30 dBm to 0 dBm CW; Connector: K(m) 50 Ω
80355A	Frequency: 45 MHz to 18 GHz; Power: +10 dBm to +50 dBm Peak / 0 dBm to +47 dBm (50W) CW; Connector: N(m) 50 Ω

USB Power Sensors

The GT-8550B series USB Power Sensors offer easy-to-use, high-performance RF and microwave power measurement. High dynamic range and high accuracy make these sensors ideal for testing in wireless communication applications, defense EW Systems, manufacturing test installation, field installation, and maintenance applications.

GT-8551B	Frequency: 100 MHz to 8 GHz; Power: -60 dBm to +20 dBm; Average, Peak (Pulse); Connector: N(m)
GT-8552B	Frequency: 100 MHz to 8 GHz; Power: -60 dBm to +20 dBm; Average, Peak (Pulse), Pulse Profile; Connector: N(m)
GT-8553B	Frequency: 10 MHz to 18 GHz; Power: -50 dBm to +20 dBm; True-RMS Average; Connector: N(m)
GT-8554B	Frequency: 10 MHz to 26.5 GHz; Power: -50 dBm to +20 dBm; True-RMS Average; Connector: SMA(m)
GT-8555B	Frequency: 100 MHz to 20 GHz; Power: -40 dBm to +20 dBm; Average, Peak (Pulse), Pulse Profile; Connector: SMA(m)

		POWER METER MODELS			
SENSOR MODELS		8650B	8650A	8540C	58542 VXI
50 GHz CW	81305A	X			
Modulation	80701A	X	X		
Modulation	80600A	X	X	X	
Modulation	80400A	X	X	X	
Peak Power	80350A	X	X	X	X
CW	80300A	X	X	X	X

Power Sensor Cable Length Reference Guide

The 8540C, 8650B and 58542 Power Meters come with the standard 1.5 M (5 ft) power sensor cable (1 per channel), PN 20954-001. Longer power sensor cables are available for applications requiring additional cable length.

Power Sensor Cable	Description
20954-001	1.5 M (5 FT) Power Sensor Cable
20954-002	3.0 M (10 FT) Power Sensor Cable
20954-003	7.6 M (25 FT) Power Sensor Cable
20954-004	15 M (50 FT) Power Sensor Cable
21564-001	1 M (3 FT) Bulkhead Cable Assembly
21564-002	4.5 M (15 FT) Bulkhead Cable Assembly

8540C Power Meter / Power Sensor Cable Application

Power Sensor	Available Power Sensor Cable			
	20954-001	20954-002	20954-003	20954-004
803xx CW	X	X	X	X
8035x Peak	X	X	X	
804xx Mod	X	X	X	X
806xx Mod	X	X	X	

8650B Power Meter / Power Sensor Cable Application

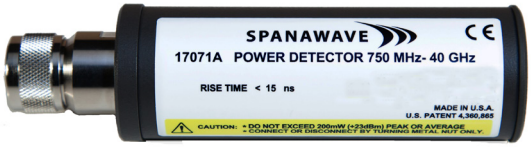
Power Sensor	Available Power Sensor Cable		
	20954-001	20954-002	20954-003
803xx CW	X	X	X
8035x Peak	X	X	X
804xx Mod	X	X	X
806xx Mod	X	X	
80701A Mod	X	X	
81305A CW	X	X	

Peak Power Meters

The 8500A series combines CW power measurement with the ability to make precise peak power measurements at any point on a pulsed waveform. This dual, built-in capability lets you make CW measurements and analyze pulsed waveforms with a single instrument.

8501A	Single Channel Peak Power Meter; Frequency: 30 MHz to 40 GHz [5]
8502A	Dual Channel Peak Power Meter; Frequency: 30 MHz to 40 GHz [5]

Standard Peak Power Sensors



The Standard Peak Power Sensors are used with the 8500A series Power Meters. These interchangeable high-speed diode sensors cover the frequency range from 30 MHz to 40 GHz and can measure single shot or repetitive pulses as narrow as 15 ns.

16934A	Frequency: 30 MHz to 18.5 GHz; Power: -20 dBm to +20 dBm Peak / -40 dBm to +20 dBm CW; RF Connector: N(m) 50 Ω
16935A	Frequency: 30 MHz to 18.5 GHz; Power: -20 dBm to +20 dBm Peak / -40 dBm to +20 dBm CW; RF Connector: APC-7 50 Ω
16936A	Frequency: 750 MHz to 18.5 GHz; Power: -20 dBm to +20 dBm Peak / -40 dBm to +20 dBm CW; RF Connector: N(m) 50 Ω
16937A	Frequency: 750 MHz to 18.5 GHz; Power: -20 dBm to +20 dBm Peak / -40 dBm to +20 dBm CW; RF Connector: APC-7 50 Ω
17071A	Frequency: 750 MHz to 40 GHz; Power: -20 dBm to +20 dBm Peak / -40 dBm to +20 dBm CW; RF Connector: Type K(m) 50 Ω
17266A	Frequency: 750 MHz to 26.5 GHz; Power: -20 dBm to +20 dBm Peak / -40 dBm to +20 dBm CW; RF Connector: Type K(m) 50 Ω
17267A	Frequency: 30 MHz to 26.5 GHz; Power: -20 dBm to +20 dBm Peak / -40 dBm to +20 dBm CW; RF Connector: Type K(m) 50 Ω

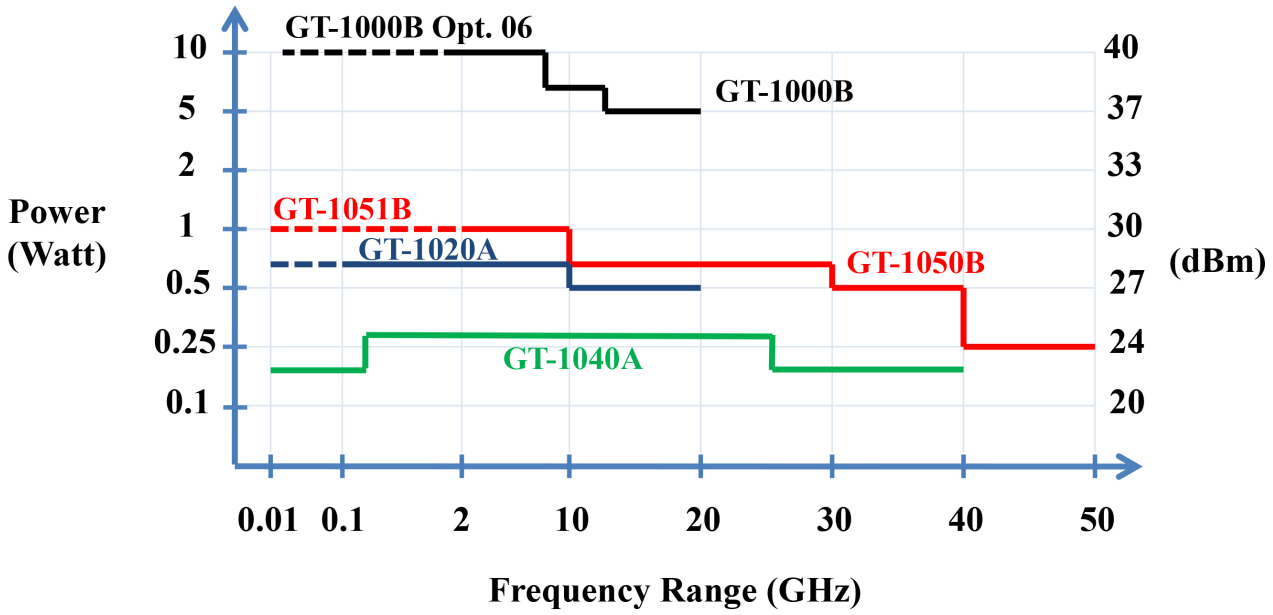
Power Sensor Cable	Description
16956-001 [6]	1.5 M (5 FT) Power Sensor Cable
16956-002	3.0 M (10 FT) Power Sensor Cable

[5] Depending on sensor used
[6] Standard power meter accessory (1 per channel)

The GT-1000X series Microwave Power Amplifiers deliver outstanding performance at an exceptional value. These ultra-broadband amplifiers have excellent pulse performance and modulated signal fidelity, making them ideal for testing in wireless communications, defense EW and radar testing, and general purpose microwave laboratory applications.

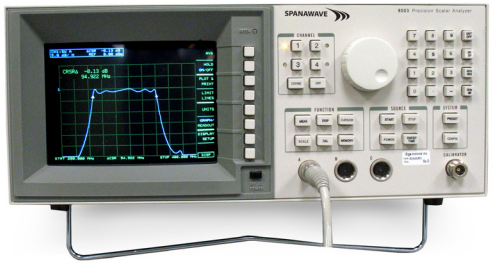
These amplifiers supply you with the power to overcome cable and switching losses, and to drive higher power mixers, detectors and very high power amplifiers.

GT-1000B	Frequency: 2 GHz to 20 GHz ; 10 Watts
GT-1000B Opt. 06	Frequency: 100 MHz to 18 GHz ; 7 Watts
GT-1020A	Frequency : 100 MHz to 20 GHz ; 1/2 Watt
GT-1040A	Frequency: 10 MHz to 40 GHz ; 1/4 Watt
GT-1050B	Frequency: 2 GHz to 50 GHz ; 1/4 Watt
GT-1051B	Frequency: 10 MHz to 50 GHz ; 1/4 Watt



Power versus frequency for the GT-1000B (2 GHz to 20 GHz), GT-1000B/06 (100 MHz to 18 GHz), GT-1020A (100 MHz to 20 GHz), GT-1040A (10 MHz to 40 GHz), GT-1050B (2 GHz to 50 GHz), and GT-1051B (10 MHz to 50 GHz)

Scalar Network Analyzer



The 8003 Precision Scalar Network Analyzer combines a 90 dB wide dynamic range with the accuracy and linearity of a power meter in a single instrument.

Measure active and passive components with power meter accuracy from 10 MHz to 40 GHz. AC and DC detection is available with equal accuracy on the 3 inputs. The precision CW return loss bridges and 80300A series Power Sensors are compatible with this model.

8003	Frequency: 10 MHz to 40 GHz; Power: -70 dBm to +30 dBm; Dynamic Range: 90 dBm [9]

Available Accessories	Description
80501	Directional Bridge 10 MHz to 18 GHz, N(f)
80502	Directional Bridge 10 MHz to 18 GHz, APC-7
80503B	Directional Bridge 10 MHz to 26.5 GHz, 3.5mm (f)
80504	Directional Bridge 10 MHz to 40 GHz, K(f)
21044	18 GHz Attenuator Calibration Kit
21049B	26.5 GHz Attenuator Calibration Kit
21003	BNC/GPIB Cable Kit

Calibration Kits available. See page 9.
Test Port Extension Cables available. See page 10.

[9] Depending on sensor used

OSLT Calibration Kits

The Network Analyzer Calibration Kits with open, short, load, and thru (OSLT) provide the RF components needed to enable stable and accurate error correct measurements. Calibration of a network analyzer using Spanawave's Network Analyzer Calibration Kits allow for precise measurements.

The Calibration Kits offer broad test equipment coverage for use with the 8003 Scalar Network Analyzer as well as being compatible with most network analyzers produced by other manufacturers. Spanawave calibration kits yield complete calibrations, as it takes into consideration the three major sources of systematic error correction by one port calibration at both ports.

PART NO.	DESCRIPTION	GENDER	FREQUENCY
CK518A	Type- N (m) 50 Ω	Male	18 GHz
CK519A	Type- N (f) 50 Ω	Female	18 GHz
CK054D	Type- N(m)/(f) 50 Ω	Male/Female	18 GHz
CK520A	Type- 3.5mm (m) 50 Ω	Male	26.5 GHz
CK521A	Type- 3.5mm (f) 50 Ω	Female	26.5 GHz
CK052D	Type- 3.5mm (m)/(f) 50 Ω	Male/Female	26.5 GHz
CK561A	Type- 2.92mm (f)	Female	40 GHz
CK562A	Type- 2.92mm (m)	Male	40 GHz
CK056K02	Type- 2.92mm (m)/(f)	Male/Female	40 GHz
CK563A	Type- 2.4mm (f)	Female	50 GHz
CK564A	Type- 2.4mm (m)	Male	50 GHz
CK056D	Type- 2.4mm (m)/(f)	Male/Female	50 GHz
CK058F	Type- 1.85mm (f)	Female	70 GHz
CK058M	Type- 1.85mm (m)	Male	70 GHz
CK058E	Type- 1.85mm (m)/(f)	Male / Female	70 GHz

Test Port Extension Cables

Test Port Extension Cables are the perfect alternative to over-priced models from other manufacturers. These test cables provide the utmost precision in vector measurements in the lab and during calibrations. Besides the electrical performance, these VNA cables are rugged and feature a lightweight armor to insure consistent performance over time. A wide variety of connectors are available including the precision "NMD" or "port ruggedized" connectors, which mate directly to the VNA port. Custom lengths and configurations are available.

PART NO.	MAX. FREQ. (GHz)	LENGTH in. (cm)	TEST PORT CONNECTOR	DUT CONNECTOR
C5131C-FLEX	26.5	32 (81)	3.5mm (f) NMD	3.5mm (f)
C5131D-FLEX (Set of 2)	26.5	21 (53)	3.5mm (f) NMD	3.5mm (f)
	26.5	21 (53)	3.5mm (f) NMD	3.5mm (m)
C5131E	26.5	38 (96.5)	3.5mm (f) NMD	3.5mm (f)
C5131F (Set of 2)	26.5	24.5 (62.2)	3.5mm (f) NMD	3.5mm (f)
	26.5	24.5 (62.2)	3.5mm (f) NMD	3.5mm (m)
C5131G-FLEX	26.5	21 (53)	3.5mm (f) NMD	3.5mm (m)
C5131H	26.5	24.5 (62.2)	3.5mm (f) NMD	3.5mm (m)
C5133C-FLEX	50	32 (81)	2.4mm (f) NMD	2.4mm (f)
C5133D-FLEX (Set of 2)	50	21 (53)	2.4mm (f) NMD	2.4mm (f)
	50	21 (53)	2.4mm (f) NMD	2.4mm (m)
C5133E	50	38 (97)	2.4mm (f) NMD	2.4mm (f)
C5133F (Set of 2)	50	25 (63)	2.4mm (f) NMD	2.4mm (f)
	50	25 (63)	2.4mm (f) NMD	2.4mm (m)
C5133G-FLEX	50	21 (53)	2.4mm (f) NMD	2.4mm (m)
C5133H	50	25 (63)	2.4mm (f) NMD	2.4mm (m)
C4697E	67	38 (96.5)	1.85mm (f) NMD	1.85mm (f)
C4697F (Set of 2)	67	24 (62)	1.85mm (f) NMD	1.85mm (f)
	67	24 (62)	1.85mm (f) NMD	1.85mm (m)

About Us

SPANAWAVE

Spanawave Corporation was founded in 2002 with the mission of becoming a leading provider of RF and Microwave solutions for the Test and Measurement needs of Military, Aerospace, Telecom, Industrial and Scientific Research organizations. Spanawave's product line is comprised of a wide array of Test & Measurement Equipment, Microwave Components, Assemblies, Transceivers, and Test Fixtures covering from DC to 50 GHz.

With the acquisition of Giga-tronics' Test and Measurement product line, Spanawave now manufactures the entire line of the renowned, best-in-class, Giga-tronics Microwave Power Amplifiers, Power Meters, Power Sensors and Network Measurement equipment, extending its Test and Measurement capability.

Headquartered in Roseville, CA and with manufacturing facilities in San Ramon, CA, Spanawave is ISO 9001 certified. We are committed to continued investment in R&D to expand and further advance the technological capabilities of all our product lines.

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LIBERTY TEST EQUIPMENT

Liberty Test Equipment is the exclusive worldwide distributor for the Spanawave Test and Measurement Equipment Product Lines. These models are available for sale, rent and lease at off-the-shelf speed delivery time, diminishing equipment lead times for most items. Instantaneous quotes are also available online.

Liberty Test Equipment is a quality source for buying, renting and leasing new and refurbished electronic test equipment. Our 100% customer satisfaction guarantee and our commitment to product selection, competitive prices and dedicated customer service distinguishes our business from others. With more than 5,000 products available, Liberty Test Equipment offers test equipment for a variety of applications. Oscilloscopes, spectrum and network analyzers, generators, meters, counters, power supplies, equipment racks, wireless/optical test equipment and other items are available. Liberty Test Equipment was founded in 2002 and is located in Roseville, California.

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