Data Sheet

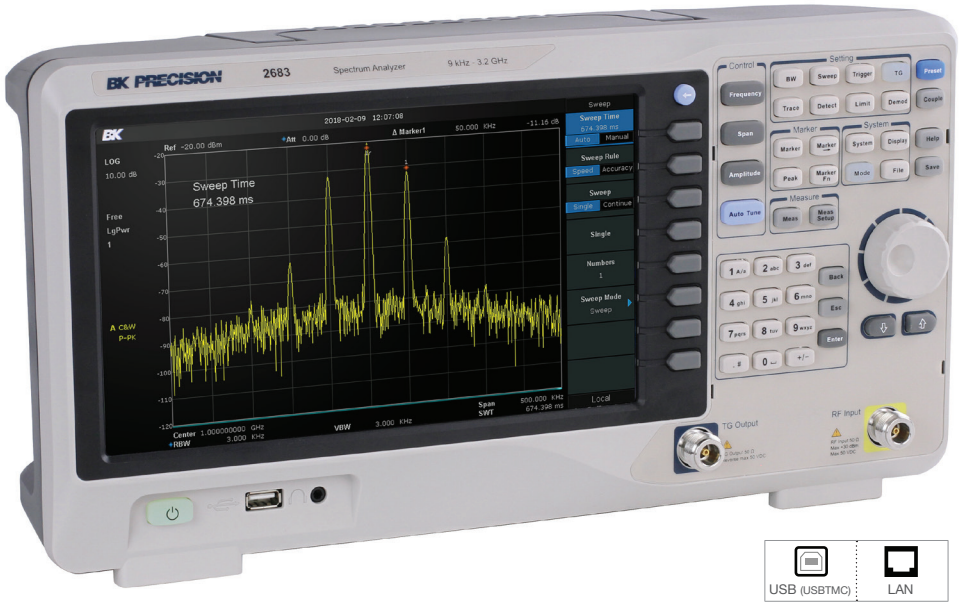
Spectrum Analyzers
2680 Series

Features & benefits

- Frequency range: 9 kHz to 2.1 or 3.2 GHz
- High Sensitivity -161 dBm/Hz displayed average noise level (DANL)
- Low phase noise of -98 dBc/Hz @ 10 kHz offset
- Low level uncertainty of ±0.7 dB
- 1 Hz minimum resolution bandwidth (RBW)
- Preamplifier and tracking generator standard on all models
- 10.1" wide-screen 1024 x 600 color display
- LAN and USBTMC connectivity
- USB host port to store and recall waveform data, setups, and screen captures

Options

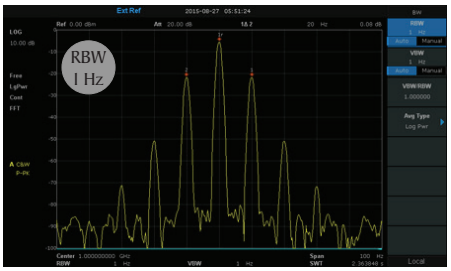
- Reflection measurement
- EMI pre-compliance



The 2680 Series of spectrum analyzers delivers performance and functionality in a lightweight, compact design, suitable for lab and field use. The large 10.1" wide-screen color display allows the user to visualize the waveform and make precision measurements such as third order intercept, occupied bandwidth, 2D and 3D spectrum monitor.

The 2680 Series provides a standard pre-amplifier and tracking generator in both the 2.1 and 3.1 GHz models. The series also includes 1 Hz minimum RBW and advanced measurements, which make these analyzers perfect for applications in 2 way radio, site surveying, EMI pre-compliance, characterizing the frequency response of RF devices and more.

1 Hz minimum resolution bandwidth (RBW)



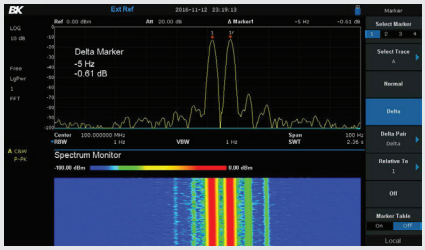
Low resolution bandwidth helps differentiate between adjacent signals

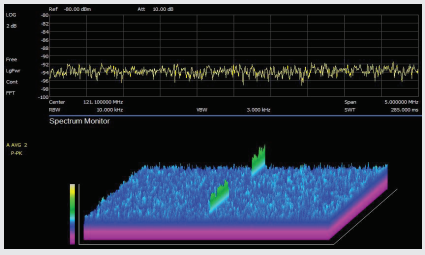
Models	2682	2683
Frequency Range	9 kHz to 2.1 GHz	9 kHz to 3.2 GHz
Tracking Generator	√	√
Preamplifier	√	√
Advanced Measurements	√	√

Standard

Advanced measurements

- Channel Power
- Adjacent Channel Power
- Occupied Bandwidth
- Total Power
- Third-Order-Intercept
- 2D and 3D Spectrum Monitor

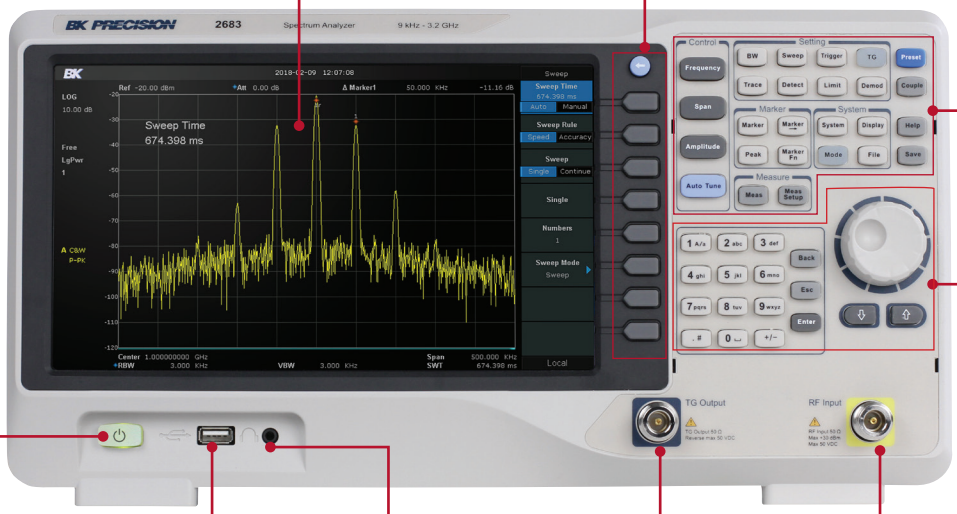




Front panel

LCD display
10.1 inch TFT high resolution color display to view critical detail in the spectrum

Menu control keys
Provide quick access to the most common functions in the current mode



Function keys
Setup measurement modes and activate context based help for each key which also includes SCPI information where applicable

Control keys
Use the rotary knob, arrow keys or alpha numeric keys to adjust values

Power switch

USB host port
Store or recall analyzer settings and save screen captures

Earphone jack
Listen to demodulated AM or FM signals

Tracking generator output
For gain/loss, antenna, and cable measurements. Standard on all models

RF input

Side & rear panel

Remote interface
USB and LAN connections

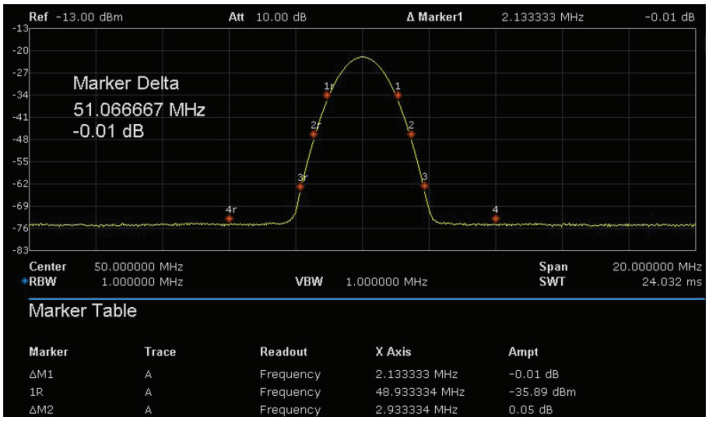
10 MHz REF input/ output
Synchronize multiple instruments

Kensington security slot
Secure your spectrum analyzer and prevent theft

Trigger input
External TTL signal to initiate sweep

Operation highlights

Delta markers

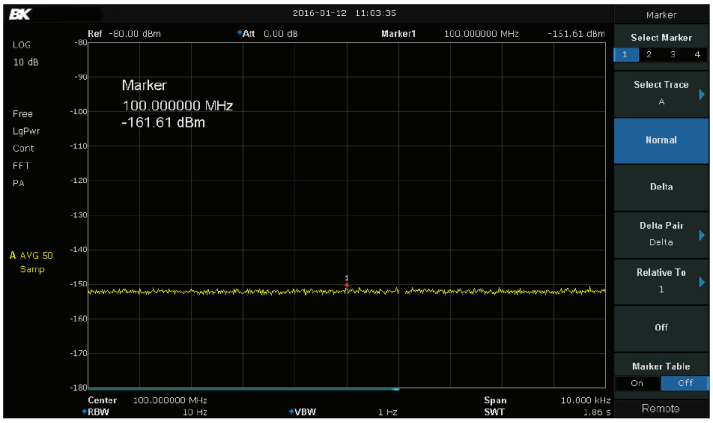


Powerful delta markers can be used to select amplitude, span, stop, start or center frequency, measure noise level, amplitude or frequency.

Four independent traces and markers

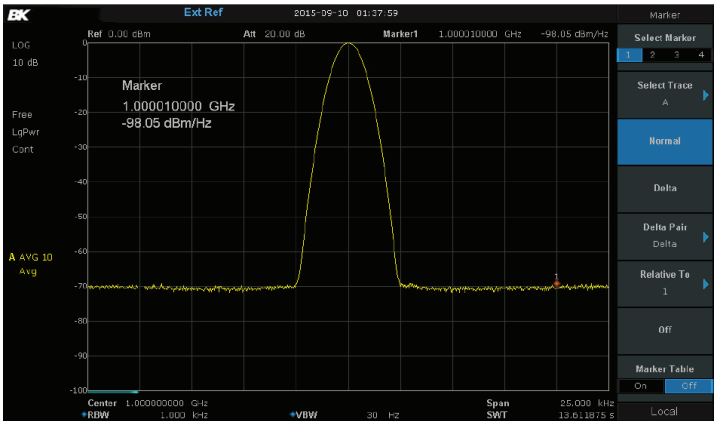
Capture snapshots, continuously update the maximum or minimum value, and perform math on all 4 individually colored traces.

Low displayed average noise level (DANL)



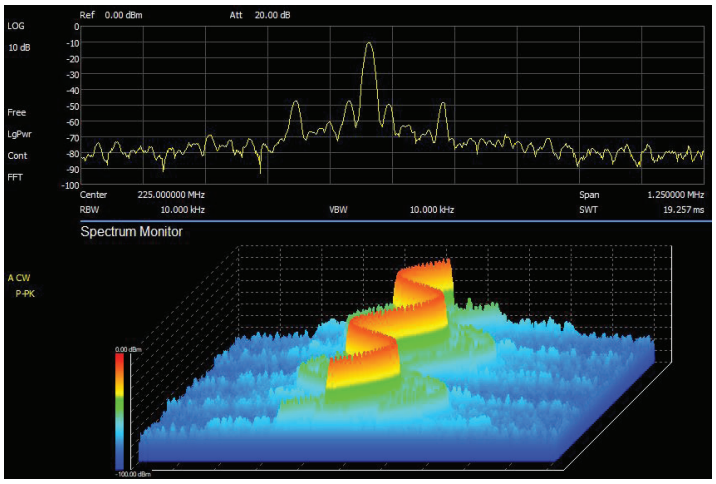
Take advantage of the preamp and -161 dBm DANL to measure low level signals accurately.

Low phase noise for accurate measurements



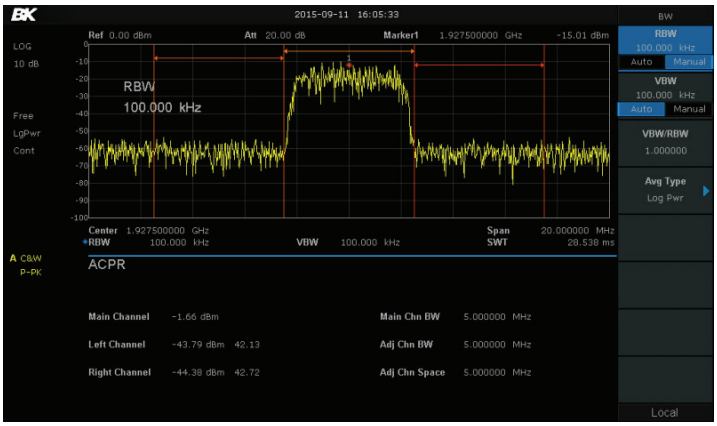
Phase noise -98 dBc/Hz@ 1 GHz, offset 10 kHz.

Spectrum monitor



The 2D and 3D spectrum monitor features are standard on the 2.1 GHz and 3.2 GHz models. The 3D spectrum monitor can be displayed using the provided PC software, while the 2D is viewable on the spectrum analyzer screen and in the PC software. This feature shows how the frequency content of a signal changes over time by representing the power intensity with a color gradient.

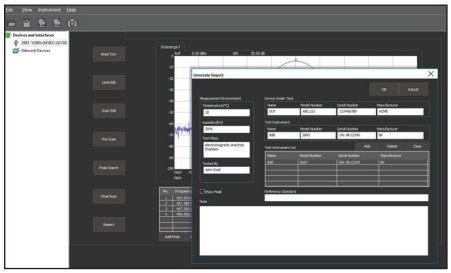
Adjacent channel power ratio (ACPR)



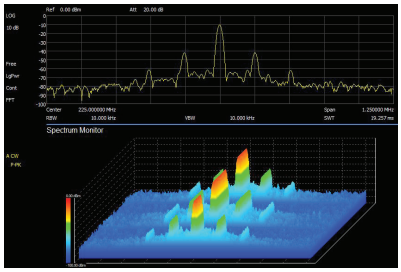
In today's crowded spectrum, ACPR measurements are critical to ensure compliance with regulations. The 2680 series displays the main channel power, left and right channel power as well as bandwidth for each channel on screen for ease of determining the total power being transmitted and the spectrum being used.

PC software

Expand control of the spectrum analyzer with front panel emulation. Create, load or save user defined limit and correction files, save screen captures and store readings from the included software.



Generate test reports

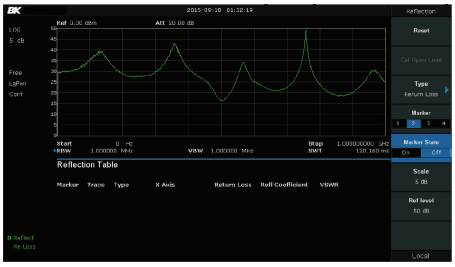


Use 3D spectrum monitoring with the PC software.

Options

Reflection measurement option

This option enables VSWR, reflection coefficient, and return loss measurements for tuning and determining the efficiency of antennas, filters, or RF transmission modules.

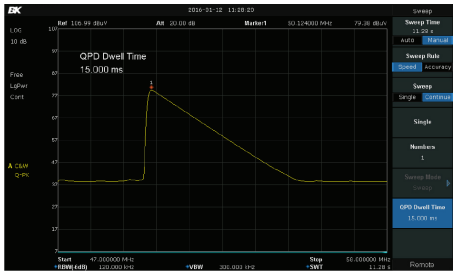


Visualize return loss, reflection coefficient, and VSWR of your DUT.

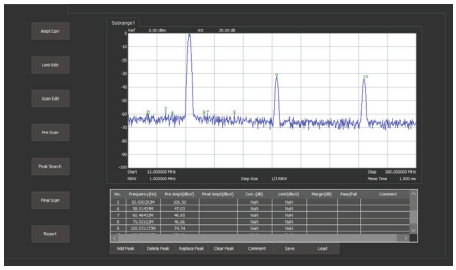
Reflection bridge

EMI pre-compliance option

This option enables the instrument's EMI measurement function which includes pre-defined bandwidth set points of 200 Hz, 9 kHz and 120 kHz, a -6dB EMI filter, and the quasi-peak detector as specified by CISPR 16-1.



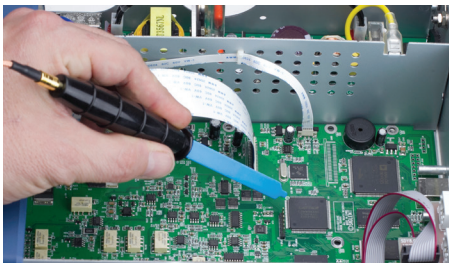
Quasi-peak detection with dwell time helps identify non-compliant emissions.



Use the provided EMI software (available for download at www.bkprecision.com) to configure the spectrum analyzer, perform prescan, peak search, final scan and generate reports of your pre-compliance tests.

Near field probe kit

The RF energy radiating from a device can be detected and measured with near field probes and the spectrum analyzer. The wide band amplifier can be connected between the probe and the 2680 Series to increase the dynamic range of the measurement system. The probes can also be used to test RF immunity by inducing signal into the circuit.



Use near field probes to help track down emissions.

Magnetic (H) and electric (E) near field probes with 40 dB pre-amplifier

Buy now, upgrade later

Install the licenses at any time or try before you buy with the 30 day trial license on each instrument. Installation is quick and easily done within the spectrum analyzer menu. To purchase a license key, please fill out the license request form which can be found on the 2680 Series accessory page on our website www.bkprecision.com.

Order information for instrument options

Order number	Description
EMI2680	License key, activates EMI measurements with Quasi-peak
RFL2680	License key, activates reflection measurements
RB2680	Reflection bridge with adapters
PR262	1 electric and 3 magnetic field probes with amplifier and SMA cable

Specifications

Specifications are valid under the following conditions: The instrument is within the calibration period, has been stored between 0 and 50°C for at least 2 hours prior to use, and has been powered on and warmed up for at least 40 minutes. The specifications include the measurement uncertainty, unless otherwise noted.

Specifications: All products are guaranteed to meet published specifications when operating temperatures from 5 to 45°C, unless otherwise noted.

Typical: Performance deemed typical implies that 80 percent of the measurement results will meet the typical published performance with a 95th percentile confidence level at room temperature (approximately 25°C). Typical performance is not warranted and does not include measurement uncertainty.

Nominal: The expected performance or design attribute.

Series	2682	2683
Frequency characteristics		
Frequency Range	9 kHz to 2.1 GHz	9 kHz to 3.2 GHz
Frequency Resolution	1 Hz	
Frequency Span	0 Hz, 100 Hz to 2.1 or 3.2 GHz	
Frequency Span Accuracy	±Span / (number of sweep points -1)	
Internal reference source		
Reference Frequency	10 MHz	
Initial Calibration Accuracy	<1 ppm	
Temperature Stability	<1 ppm/year, 0 °C to +50 °C	
Frequency Aging Rate	<0.5 ppm/first year, 3.0 ppm/20 year	
Frequency Reference Accuracy	±[(time since last adjustment × frequency aging rate) + temperature stability + calibration accuracy]	
Marker		
Marker Resolution	Span / (number of sweep points -1)	
Marker Uncertainty	± [frequency indication x frequency reference uncertainty + 1% x span + 10% x resolution bandwidth + marker resolution]	
Frequency Counter Resolution	1 Hz	
Frequency Counter Uncertainty	± [frequency indication x frequency reference accuracy + counter resolution]	
Bandwidths		
Resolution Bandwidth (-3 dB)	1 Hz to 1 MHz, in 1-3-10 sequence	
Resolution Filter Shape Factor	<4.8:1 (60 dB: 3 dB), Gaussian-like	
RBW Uncertainty	<5%	
Video Bandwidth (-3 dB)	1 Hz to 3 MHz, in 1-3-10 sequence	
VBW Uncertainty	<5%	
Amplitude and level		
Measurement Range (preamplifier off)	DANL to +10 dBm, 100 kHz to 1 MHz DANL to +20 dBm,1 MHz to 3.2 GHz	
Reference Level	-100 dBm to +30 dBm, 1 dB steps	
Preamplifier	20 dB (nom.), 9 kHz to 3.2 GHz	
Input Attenuation	0 to 51 dB, 1 dB steps	
Maximum Input DC Voltage	±50 Vdc	
Maximum Average RF Power	30 dBm, 3 minutes, fc >equal to 10 MHz, attenuation >20 dBm, preamplifier off	
Maximum Damage Level	33 dBm, fc >equal 10 MHz, attenuation >20 dBm, preamplifier off	

Displayed average noise level (DANL)			
	20 °C to 30 °C ,attenuation = 0 dB, sample detector, trace average >50		
		RBW=10 Hz	**Normalization to 1 Hz**
Preamp Off	9 kHz to 100 kHz	-100 dBm (nom.)	-100 dBm (nom.)
	100 kHz to 1 MHz	-97 dBm, -101 dBm (typ.)	-107 dBm, -111 dBm (typ.)
	1 MHz to 10 MHz	-122 dBm, -126 dBm (typ.)	-132 dBm, -136 dBm (typ.)
	10 MHz to 200 MHz	-127 dBm, -131 dBm (typ.)	-137 dBm, -141 dBm (typ.)
	200 MHz to 2.1 GHz	-125 dBm, -129 dBm (typ.)	-135 dBm, -139 dBm (typ.)
	2.1 GHz to 3.2 GHz	-116 dBm, -122 dBm (typ.)	-126 dBm, -132 dBm (typ.)
Preamp On	9 kHz to 100 kHz	-107 dBm (nom.)	-117 dBm (nom.)
	100 kHz to 1 MHz	-122 dBm, -127 dBm (typ.)	-132 dBm, -137 dBm (typ.)
	1 MHz to 10 MHz	-138 dBm, -144 dBm (typ.	-148 dBm, -154 dBm (typ.)
	10 MHz to 200 MHz	-146 dBm, -151 dBm (typ.)	-156 dBm, -161 dBm (typ.)
	200 MHz to 2.1 GHz	-145 dBm, -148 dBm (typ.)	-155 dBm, -158 dBm (typ.)
	2.1 GHz to 3.2 GHz	-135 dBm, -139 dBm (typ.)	-145 dBm, -149 dBm (typ.)

Phase noise	
Carrier Offset	fc=1 GHz, 20 ºC ~30 ºC
10 kHz	<-95 dBc/Hz, <-98 dBc/Hz (typ.)
100 kHz	<-96 dBc/Hz, <-97 dBc/Hz (typ.)
1 MHz	<-115 dBc/Hz , <-117 dBc/Hz (typ.)
Level display	
Logarithmic Level Axis	10 dB to 100 dB
Linear Level Axis	0 to reference level
Units of Level Axis	dBm, dBmV, dBµV, dBµA , V, W
Number of Display Points	751
Number of Traces	4
Trace Detectors	Positive-Peak, Negative-Peak, Sample, Normal, Average (Voltage/RMS/Video), Quasi-Peak (with EMI option)
Trace Functions	Clear Write, Max Hold, Min Hold, View, Blank, Average

Specifications (continued)

Frequency response		
Preamplifier	Off	±0.8 dB, ±0.4 dB typ.
	On	±0.9 dB, ±0.5 dB typ.
Error and accuracy		
Resolution Bandwidth Switching Uncertainty		1 Hz RBW Logarithmic resolution ±0.2 dB, Linear resolution ±0.01, nom.
Input Attenuation Switching Uncertainty		20 °C to 30 °C, fc = 50 MHz, preamp off, Relative to 20 dB, 1 to 51 dB attenuation ±0.5 dB
Absolute Amplitude Accuracy		Preamplifier off: ±0.4 dB, input signal -20 dBm Preamplifier off: ±0.5 dB, input signal -40 dBm
Total Amplitude Accuracy		±0.7 dB 20 °C to 30 °C , Fc>100 kHz, input signal -50 dBm to 0 dBm, RBW = 1 kHz, VBW = 1 kHz, peak detector, attenuation = 20 dB,preamp off, 95th percentile reliability
RF Input VSWR		<1.5 nom. Input attenuation 10 dB, 1 MHz to 3.2 GHz
Distortion and spurious responses		
Second Harmonic Distortion		-65 dBc fc ≥50 MHz, Mixer Level -30 dBm, attenuation = 0 dB, preamp off, 20 °C to 30 °C
Third-Order Intercept		+10 dBm fc ≥50 MHz, two -20 dBm tones at input mixer spaced by 100 kHz, attenuation = 0 dB, preamp off, 20 °C to 30 °C
1 dB Gain Compression		>-5 dBm, nom. fc ≥50 MHz, attenuation = 0 dB, preamp off, 20 °C to 30 °C
Residual Response		<-90 dBm, typ. input terminated = 50 Ω,attenuation = 0 dB, 20 °C to 30 °C
Input Related Spurious		<-65 dBc Mixer level = -30 dBm, 20 °C to 30 °C
Sweep and trigger		
Sweep Time		1 ms to 3000 s
Sweep Accuracy		Accuracy, Speed
Sweep Mode		Sweep, FFT
Sweep Rule		Single, Continuous
Trigger Source		Free, Video, External
External Trigger		5 V TTL level, 1 kΩ, BNC-female, rising edge/falling edge

Tracking generator		
Frequency Range	100 kHz to 2.1 GHz	100 kHz to 3.2 GHz
Output Level	-20 dBm to 0 dBm	
Output Level Resolution	1 dB	
Output Flatness	±3 dB	
Output Maximum Reserve Level	Mean power: 30 dBm, DC: ±50 Vdc	
EMI Pre-compliance option (EMI2680)		
Resolution Bandwidth (6 dB)	200 Hz, 9 kHz, 120 kHz	
Detector	Quasi-peak (following CISPR 16-1-1)	
Dwell Time	0 µs to 10 s	
Reflection measurement option (RFL2680)		
Measurements	VSWR, Return loss, Reflect coefficient	
RF and 10 MHz input/output		
Front panel RF input	50 Ω, N-female	
Front panel TG output	50 Ω, N-female	
10 MHz reference output	10 MHz, >0 dBm, 50 Ω, BNC-female	
10 MHz reference input	10 MHz, -5 dBm to +10 dBm, 50 Ω, BNC-female	
General		
AC Input	100 V - 240 V, 50 Hz/60 Hz/400 Hz AC	
Display	TFT LCD, 1024 × 600 (waveform area 751 × 501), 10.1"	
I/O Interface	USB host (type A) USB 2.0 USB device (type B) USB 2.0 LAN 10/100 Base T, RJ45	
Temperature	Operating: 0 °C to 50 °C Storage: -20 °C to 70 °C	
Humidity	0 °C to 30 °C , ≤95% RH 30 °C to 50 °C , ≤75% RH	
Safety	EN 61010-1:2010, Low Voltage Directive (LVD) 2014/35/EU	
Electromagnetic Compatibility	EN 61326-1:2013, EMC Directive 2014/30/EU	
Dimensions (W x H x D)	15.47" x 8.15" x 4.59" (393 mm x 207 mm x 116.5 mm)	
Weight	10.1 lb (4.60 kg)	
Warranty	3 years	
Included Accessories	Power cord, certificate of calibration	
Optional Accessories	EMC Near-field probes (PR262), reflection bridge (RB2680)	

OCEAN CHIPS
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Поставка электронных компонентов

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- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
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- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
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- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

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AVIC JONHON

«JONHON» (основан в 1970 г.)

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Телефон: 8 (812) 309-75-97 (многоканальный)
Факс: 8 (812) 320-03-32
Электронная почта: ocean@oceanchips.ru
Web: http://oceanchips.ru/
Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А