GW Instek GSP-9300B Spectrum Analyzer

New Product Introduction

This document allows GW Instek's partners
to quickly grasp product's main features, FAB and ordering information.

GW INSTEK
Simply Reliable

Practical, Affordable and Never Careless

GSP-9300B is a 3GHz spectrum analyzer to meet basic RF measurement requirements. It provides the frequency stability of 0.025ppm; the aging rate of 1ppm/year; a built-in preamplifier; the base noise of -149dBm/Hz, and more than 20 measurement applications, including AM/FM modulation signal analysis, signal channel analysis, and CATV parameter test. While collocating with TG option, GSP-9300B can conduct frequency response or power linearity tests for components.

For monitoring signals, GSP-9300B provides Topographic display mode, which is capable of distinguishing continuous or random signals by using color temperature. Spectrogram mode provides a time axis on spectrum display that allows users to observe signal variations based upon the reference of time. Split window mode allows different parameter settings for each display window. Additionally, GSP-9300B also provides user-friendly user interfaces such as display mode, help, multi-languages, and fast data logging, etc. Interfaces and software include USB/RS-232/LXI/MicroSD/GPIB (option)/DVI output and dedicated PC software IVI Driver.

GSP-9300B, with its unique features, including auto wake-Up, sequence function, and limit line testing, is specially designed to meet the requirements of production lines. The patent design of heat conduction allows GSP-9300B to substantially reduce the warm-up time so as to expedite production processes. Options include tracking generator, carrying bag, battery module, EMI antenna set and rack accessories. The compact design of GSP-9300B satisfies either field testing or the integration of automatic testing systems.

To sum up, GSP-9300B is a stable, light and all-purpose test equipment, which is the most ideal choice for the educational market, production line, and general signal monitoring applications, etc. Most important, the pricing of GSP-9300B is beyond your imagination and it is the number one choice for users with budget considerations.

Frequency Stability: 0.025ppm	Wireless communications applications are nowadays ubiquitous. Signals in the limited spectrum are getting very crowded. Therefore, the demands of signal efficiency and frequency stability are higher and stricter. To meet high precision measurement requirements, GSP-9300B provides the frequency stability of 0.025ppm and the aging rate of 1ppm/year, which only appear in high-end T&M equipment.
Built-in Preamplifier	Engineers often face the challenge of measuring small RF signals during product development stage. GSP-9300B's built-in preamplifier provides the base noise of -149dBm. When collocating with the built-in EMI filter and the dedicated EMI near field probe, GSP-9300B can conduct EMI tests and debugging.
More than 20 measurement applications	GSP-9300B provides rich signal processing functions, including AM/FM modulation signal analysis, signal channel analysis, and CATV parameter test, characteristic test on signal stability, and frequency response or power linearity tests for components to substantially bring up the measurement convenience. Most competitors in the same class only offer a few test functions, and the standard built-in functions of GSP-9300B are options for competitors.

Features

Main features
- **Frequency stability of 0.025 ppm**
- **Built-in Pre-amplifier**
- **Applicable to tests and analysis for various signals**

Applicable to tests and analysis for various signals
- Signal channel analysis provides Channel Power, OCBW, ACPR, N-dB bandwidth, SEM
- CATV parameter tests focus on CNR, CSO, and CTB parameters
- Signal source's stability characteristics can be tested via Phase Noise and Phase Jitter
- Component's or system's linearity test can be confirmed by TOI and P1dB functions
- Other measurement applications include Harmonic, Frequency Counter, Time Domain Power, and Gated Sweep

Graphic processing of signal monitor
- Spectrogram traces changes of frequency and power vs. time
- Topographic uses color shade to show the probability distribution of signal appearance
- Split-Window allows independent observation and settings for spectrum with different frequency bandwidths

Stability System
- Frequency stability of 0.025 ppm
- 1ppm/year aging rate
- Intelligent temperature control technology

User Friendly Design
- Built-in Definition Help
- Status Icons
- Support five languages (English, Simplified Chinese, Traditional Chinese, Japanese, and Russian)
- Quick save function

Various interface
- Support USB Host, RS-232, LXI C (LAN Base), GPIB (option)
- Support USB Device, MicroSD to save files
- Ideal for TV Output's DVI interface

Software and driver
- SpectrumShot PC Software
- IVI Driver (It needs NI VISA)

Customers and Applications

Customers	Applications
· Consumer Electronics · Service and Maintenance · Universities, Graduate Schools · Military Industries · Automotive Electronics · Telecom and communications Industries · Instrument leasing companies · TV, media operator	· For the quick check and analysis of spectral characteristic · Analyze AM, FM signal characteristics · Monitor Satellite uplink signals from Satellite Uplink Truck · Test systems that require a very compact instrument · Measure the frequency response of cable, attenuator, filter and amplifier

Panel Introduction
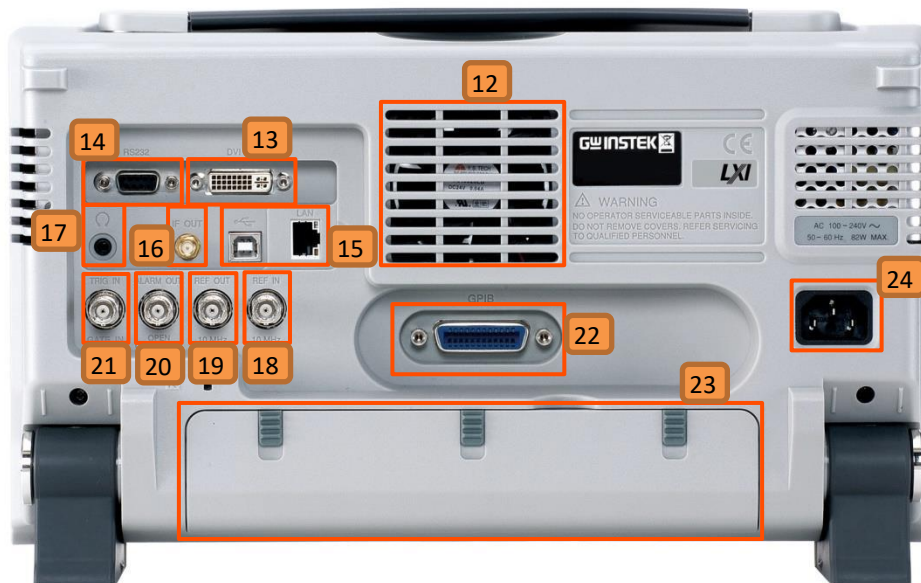
1. LCD Display	9. +7V DC Power Supply	17. 3.5mm Headphone Jack
2. F1~F6 Modifier keys	10. Tracking Generator Output	18. REF Input
3. Function Keys	11. USB-A, Micro SD Port	19. REF Output
4. Power Key	12. Fan	20. Alarm Output / Open Collector
5. Scroll Wheel, Arrow Keys	13. DVI-I Port	21. Trigger Input / Gate Input Port
6. Enter, BK SP, Preset & Quick Save Keys	14. RS-232 Port	22. GPIB Port (optional)
7. Numeric Keys	15. USB-B, LAN Port	23. Battery Cover / Optional Battery Pack
8. RF Input Terminal	16. IF Output	24. Power Socket

Important Information of Product Ordering

Key Dates for Product Announcement
1. Global Market Announcement (Jan 5, 2017)
2. Order Queue Open (Dec 6, 2016)
3. Deliveries will take 4-8 weeks after receiving orders.

Service Policy
- **One (1) year warranty.** GSP-9300B Spectrum Analyzer carries a standard warranty for 1 year.
- **Service Support- GSP-9300B spectrum analyzer is a high-frequency and high-accuracy test and measurement instrument. To maintain the measurement accuracy, this product must be recalibrated after maintenance. Maintenance is only conducted by authorized distributors via PCB module swapping and calibration.**

- **The service manual clearly elaborates the required equipment, procedures, and maintenance instruction for certified maintenance units to carry out PCB swapping so as to assist distributors in providing customers with quick after-sales services and maintenance.**

- **Marcom Material and Service Manual download through Website**.
Good Will Instrument continues to provide after sales support through its website. The most updated version of service manual and Marcom material of GSP-9300B spectrum analyzer will be posted on the distributor zone of GW Instek's website at http://www.gwinstek.com

Ordering Information
GSP-9300B, 3 GHz Spectrum Analyzer

Standard Accessories
Power Cord, Certificate of Calibration,
CD-ROM (with Quick Start Guide, User Manual, Programming Manual, SpectrumShot Software, SpectrumShot Guide & IVI Driver)

Options
Option 01, Tracking Generator
Option 02, Battery Pack
Option 03, GPIB Interface

Optional Accessories
GSC-009, Soft Carrying Case
GRA-415, Rack Adapter Panel

Free Download
SpectrumShot PC Software for Windows System (available on GW Instek website)
IVI Driver Supports LabVIEW/LabWindows/CVI Programming (available on NI website)

Detailed Product Information

Detailed Descriptions for Features

## Signal Verification, Test and Analysis

AM/FM Signal Demodulation & Analysis

AM/FM Signal Analysis measures parameters including AM depth, frequency deviation, modulation rate, carrier power, carrier frequency offset and SINAD.

The GSP-9300B has a convenient AM/FM demodulation function to tune into AM or FM broadcast signals and listen to the demodulated signals.
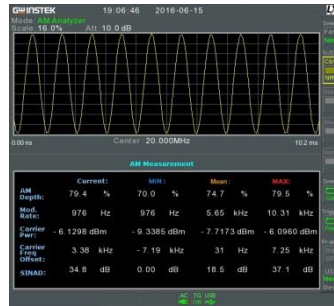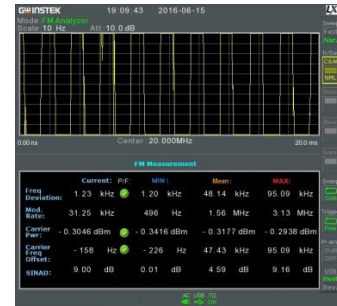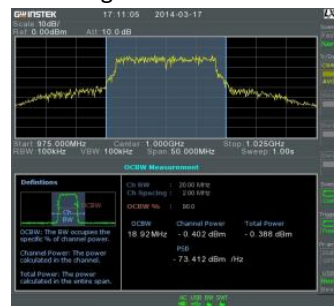

AM   FM

Channel Power Measurement - ACPR/OCBW

The ACPR measurement can examine the leakage status that is conducive to identifying interference source.

The OCBW measurement can simultaneously display OCBW, channel power and PSD. OCBW's unit is shown by percentage. A measurement area containing bandwidth will be shown when OCBW is in use.
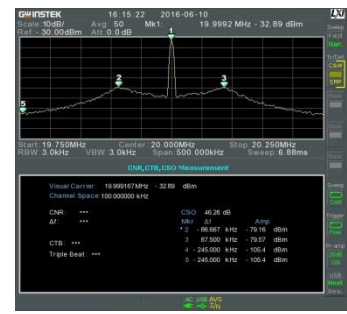

OCBW   **ACPR**

Spectrum Emission Mask

GSP-9300B has the built-in SEM settings of 3GPP, WLAN 802.11b/g/n, Wimax 802.16 and self-defined communications system. SEM supports the Pass/Fail test function and lists frequency range for surpassing each out-of-channel limit. An alarm signal will be triggered if any measurement results that are not matched with SEM.
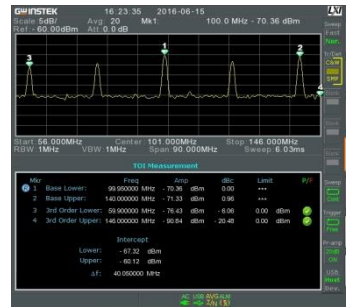
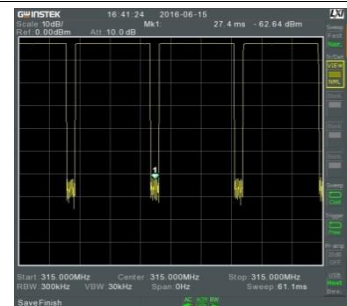|	
CATV System Parameter Tests - CNR/CSO/CTB	The built-in CNR/CSO/CTB functions of GSP-9300B are ideal for measuring performance of CATV amplifier and system.
TOI (Third Order Intercept)	Users can measure the linearity of non-linear systems and components such as receiver, low-noise amplifier and mixer by TOI which automatically tests effective carrier and measures inter-modulation sidebands.
Harmonic	Harmonic can easily measure the amplitude of fundamental frequency and as high as ten orders of harmonic frequency. This function can also measure amplitude (dBc) which is the ratio of harmonic and corresponding fundamental carrier. Total harmonic distortion (THD) can also be calculated by this function. The best harmonic information can be obtained by adjusting RBW.
Time Domain Power	Users can go to zero span setting and open marker to observe burst signals when measuring burst signal in time domain is required.
Phase Jitter	The Phase Jitter function can rapidly measure phase noise produced by RF signal source's and oscillator's carrier deviation. This function can directly convert signal jitter to phase (rad) and time (ns).
Marker Noise	The marker noise function calculates the average noise level over a bandwidth of 1Hz, referenced from the marker position.
Gated Sweep	Radar or TDMA communications systems, via intermittently turning on/off output power, control transmission signals. In order to monitor the power spectrum during the transmission process, the Gated Sweep function can initiate measurement only when signals appear. This function is ideal for measuring burst signals such as GSM or WLAN.
Frequency Counter	The frequency counter function is used to make accurate frequency measurements up to 1 Hz resolution.

Spectrogram, Topographic, and Split-Window

Spectrogram can simultaneously display power, frequency, and time. Frequency and power variation according to time changes can also be tracked. Especially, the intermittently appeared signals can be identified. Users, by using Spectrogram, can analyze the stability of signal versus time or identify the intermittently appeared interference signals in the communications system. Users can use two markers to find out the relation of power to frequency and time.
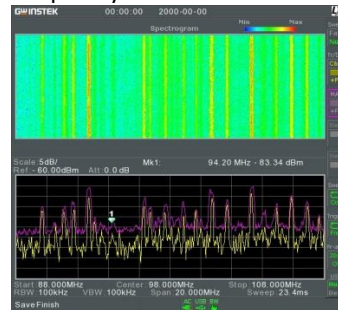
Observe FM signals by Spectrogram

Topographic uses color shade to show the probability distribution of signal appearance. This function allows users to directly understand the process of signal variation according to time changes that is beneficial to observe intermittent feeble signals or electromagnetic interference signals. Users can use two makers to find out the relation of power to frequency and percentage.
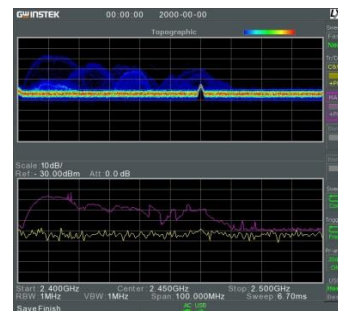
Observe WiFi signals by Topographic

Split-Window allows two independent observations that are very convenient for monitoring two different frequency bandwidths.
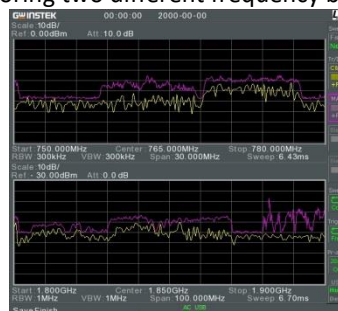
Observe 4G LTE signals by Split-Window display

Production line applications

Shorten Warm-Up Time

GSP-9300B utilizes the patented design of high efficient heat dissipation and feedback temperature control. After the instrument is turned on, the internal instrument can rapidly maintain a stable temperature so as to provide accurate amplitude measurement and deliver the frequency measurement with 0.025 ppm frequency stability.

Wake-Up Clock

Users can set up automatic wake-up time for each day of the week. By so doing, the purpose of GSP-9300B pre wake-up can be achieved. Pre wake-up is ideal for the lower temperature environment to conduct tests in the preset time.

Sequence Function

The sequence function allows users to edit a sequence formulated by a series of steps directly from the instrument. Pause and delay can be inserted in the sequence to observe the test results. There are five sets of sequence for selection. Each sequence allows editing of 20 steps. Different sequence can be interactive and support each other. This function provides automatic editing without using the PC that is very convenient for assembly lines in which execute routine test procedures.
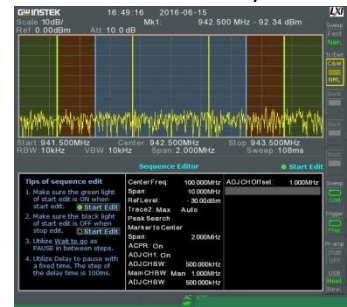
Limit Line Function

The limit line function, based upon the preset criteria of passing the test, can be used to directly determine whether the DUT passes the test. Test result not only can be shown on the LCD screen, but also an alarm signal output indication from the rear panel which is done by connecting a speaker or light device to show the test result.
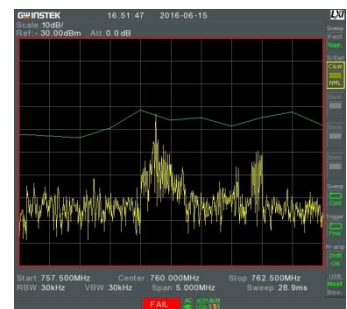
User Friendly Design

Status Icons

Status Icons show the interface status, power status, alarm status and etc of GSP-9300B. Users can easily understand the setting status and test results of the instrument.

Definition Help

The built-in Definition Help function allows users to immediately understand the parameters of Channel Power, OCBW, ACPR, SEM, Phase Jitter, N-dB Bandwidth & P1dB items so as to save time on reading user manual.
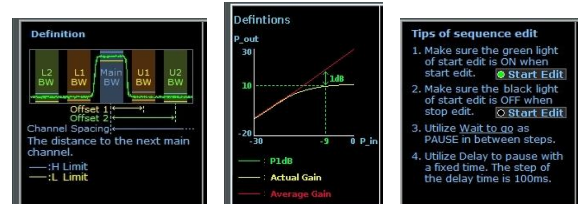
Communications Interface & Software Support

Various Interface

Provide USB Host, RS-232, LXI C(LAN), and GPIB(option) instrument control interface. Supported programs comply with IEEE488.2.

File Storage and Video Output

Provide USB Device, MicroSD interface for file storage. Quick Save function is also available for users to quickly retrieve display. Support DVI with 800*600 resolutions.

DVI Interface	**USB Device/MicroSD**

PC Software - SpectrumShot

Users can use the external software SpectrumShot to remote control and waveform data recording for long periods of time.

Under Get Trace mode, users can record the waveform data for long periods of time. It can be applied to spectrum monitoring for detecting any abnormal radio signals. The software will send out e-mail to inform users if any abnormal situation occurs.
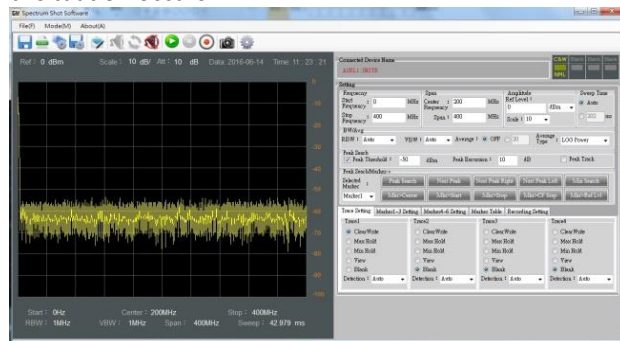
Under the Remote Control mode, users can monitor wireless interference signals or observe signals for long periods of time.
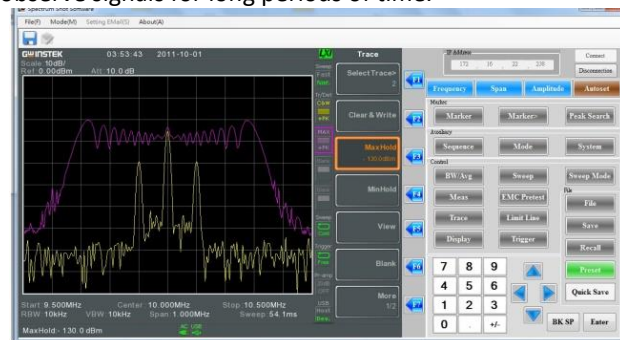
IVI Driver & LabVIEW Support

IVI Driver Supports LabView & LabWindows/CVI Programming. It is available on NI website.

Various Augmenting Options

Tracking Generator

TG option provides 0 to -50 dBm synchronized sweep output, conducts scalar network analysis (S11. S21) function as well as P1dB.

Scalar Network Analysis

The built-in tracking generator can swiftly and easily measure frequency response of cable loss, filter bandwidth, amplifier gain, mixer conversion loss, etc. The N-dB Bandwidth function measures 3dB bandwidth of Bandpass filter. SWR bridge should be connected with tracking generator to measure the return loss of antenna or filter.
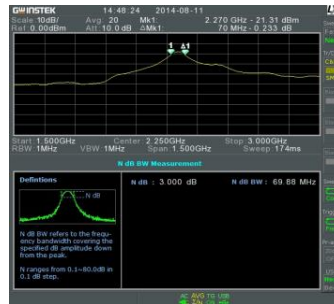
3dB frequency bandwidth   Reflection loss
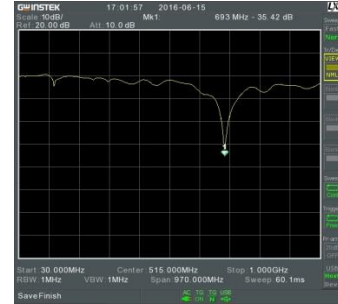
P1dB Point Measurement

All active components have linear dynamic range for power output. Once output power reaches the maximum level, active component will enter the non-linear saturated area of P1dB point and cease amplifying signal intensity as well as produce harmonic distortion. It is very useful for P1dB point measurement in active components such as low noise amplifier, mixer and active filter.

Battery Pack & Soft Carrying Case

Compact and light-weighted (4 kg) GSP-9300B can be powered by battery making it suitable for outdoor operations. Optional GSP-9300B battery pack (opt.02) has a battery life of two hours.

Optional soft carrying case (GSC-009) provides convenience and protection to the instrument. GSP-9300B is equipped with 8.4 inches 800x600 pixels LCD display which yields clearer display results for outdoor operations.

Product Comparison

Compared with the previous generations - GSP-9330 vs. GSP-9300B vs. GSP-9300

The following chart shows the comparison among the three products.

	GSP-9330	GSP-9300B	GSP-9300
Frequency Range	9kHz ~ 3.25GHz	9kHz ~ 3GHz	9kHz ~ 3GHz
Frequency Stability	0.025 ppm, 1ppm/year		
RBW Range	1Hz~1MHz in 1-3-10 sequence, 200Hz, 9kHz, 120kHz, 1MHz for EMI Filter		
VBW Range	1Hz~1MHz in 1-3-10 sequence		
Phase Noise	-88dBc/Hz @1GHz, 10kHz offset		
Noise Floor	-139dBm @1GHz, 10Hz RBW, per-amp on		
Measurement Range	-150dBm ~ +30dBm @Pre-amp on		
Overload Protection	+30dBm, ±50VDC		
Input Attenuator	0 ~ 50dB, in 1 dB steps		
Pre-amplifier	Built-in 18dB internal		
Measurement Function	SEM, ACPR, OCBW, CHPW, N-dB BW, Phase Jitter, Demod. Analyzer, Harmonic, TOI, CNR, CSO, CTB, P1dB	Demod only has AM/FM Others the same with GSP-9330	SEM, ACPR, OCBW, CHPW, N-dB BW, Phase Jitter, Demod. Analyzer, Harmonic, TOI, CNR, CSO, CTB, P1dB
EMI Operation	Detector: Peak+, QP, Avg Professional EMI Key	Detector: Peak+ (No EMI key)	Detector: Peak+ Professional EMI Key
Display Modes	Spectrogram, Topographic, Split-Window		
Other functions	Sequence, Limit Line, Correction Table		
Display	8.4" TFT LCD with SVGA		
Tracking Generator	100kHz ~ 3.25GHz (optional)	100kHz ~ 3GHz (optional)	100kHz ~ 3GHz (optional)
Demodulator	V, with AM/FM/ASK/FSK analysis	Only AM / FM	V, with AM/FM/ASK/FSK analysis
Interface	USB, RS-232, GPIB(Opt), Lan, MicroSD		

Comparison with major competitors

	GSP-9330	GSP-9300B	Rigol DSA832E
Frequency Range	9kHz ~ 3.25 GHz	9 kHz ~ 3 GHz	9 kHz ~ 3.2 GHz
Frequency Stability	0.025 ppm, 1 ppm/year		1 ppm, 2 ppm/year
RBW Range	1 Hz~1 MHz in 1-3-10 sequence 200 Hz, 9 kHz, 120 kHz, 1 MHz for EMI Filter	1Hz~1MHz in 1-3-10 sequence 200Hz, 9kHz, 120kHz, 1MHz for EMI Filter	10 Hz~1 MHz in 1-3-10 sequence 200 Hz, 9 kHz, 120 kHz for EMI Filter (Option, No 1MHz)
VBW Range	1 Hz~1 MHz in 1-3-10 sequence		1 Hz to 3 MHz, in 1-3-10 sequence
Phase Noise	-88 dBc/Hz @1 GHz, 10 kHz offset		-90 dBc/Hz @1 GHz, 10 kHz offset
Noise Floor	-139 dBm @1GHz, 10 Hz RBW, per-amp on		-145 dBm @1GHz, 10 Hz RBW, per-amp on
Measurement Range	-150 dBm ~ +30 dBm @Pre-amp on		-150 dBm ~ +20 dBm @Pre-amp on
Overload Protection	+30 dBm, ±50VDC		+30 dBm, ±50VDC
Pre-amplifier	Built-in 18 dB internal standard		17dB internal (Option)
Measurement Function	SEM, ACPR, OCBW, CHPW, N-dB BW, Phase Jitter, Demod. Analyzer, Harmonic, TOI, CNR, CSO, CTB, P1dB, TDP	SEM, ACPR, OCBW, CHPW, N-dB BW, Phase Jitter, Demod. Analyzer, Harmonic, TOI, CNR, CSO, CTB, P1dB, TDP	Harmonic, TOI, CNR, ACPR, OCBW, CHPW, SEM, TDP (All are Options)
Display Modes	Spectrogram, Topographic, Split-Window		X
Other Function	Sequence, Limit Line, Correction Table		Limit Line (Option)
Display	8.4" TFT LCD with SVGA		8" TFT LCD with WVGA
Tracking Generator	100 kHz ~ 3.25 GHz (optional) 0 ~ -50 dBm	100 kHz ~ 3 GHz (optional) 0 ~ -50 dBm	100 kHz ~ 3 GHz (optional) 0 ~ -20dBm
Demodulator	V, with AM/FM/ASK/FSK analysis	Only AM / FM	X
Interface	USB, RS-232, GPIB(Opt), Lan, MicroSD	USB, RS-232, GPIB(Opt), Lan, MicroSD	USB, Lan, GPIB(Opt, use USB Adapter)

Specifications

(The specifications apply when the GSP-9300B is powered on for at least 30 minutes to warm-up to a temperature of 20 ℃ to 30 ℃, unless specified otherwise.)

Frequency			
Frequency	Range	9 kHz to 3 GHz	
	Resolution	1 Hz	
Frequency Reference	Accuracy	±(period since last adjustment X aging rate) + stability over temperature + supply voltage stability	
	Aging Rate	±1 ppm max.	1 year after last adjustment
	Frequency Stability over Temperature	±0.025 ppm	0 to 50 °C
	Supply Voltage Stability	±0.02 ppm	
Frequency Readout Accuracy	Start, Stop, Center, Marker	±(marker frequency indication X frequency reference accuracy + 10% x RBW + frequency resolution)	
	Trace points	Max 601 points, min 6 points	
Marker Frequency Counter	Resolution	1 Hz, 10 Hz, 100 Hz, 1 kHz	
	Accuracy	±(marker frequency indication X frequency reference accuracy + counter resolution)	RBW/Span >=0.02 ; Mkr level to DNL>30 dB
Frequency Span	Range	0 Hz (zero span), 100 Hz to 3 GHz	
	Resolution	1 Hz	
	Accuracy	± frequency resolution1	RBW: Auto;
Phase Noise	Offset from Carrier		Fc =1 GHz; RBW = 1 kHz, VBW = 10 Hz; Average ≥ 40
	10 kHz	<-88 dBc/Hz	Typical
	100 kHz	<-95 dBc/Hz	Typical
	1 MHz	<-113 dBc/Hz	Typical
Resolution Bandwidth (RBW) Filter	Filter Bandwidth	1 Hz to 1 MHz in 1-3-10 sequence	-3dB bandwidth
		200 Hz, 9 kHz, 120 kHz, 1MHz	-6dB bandwidth
	Accuracy	± 8%, RBW = 1MHz	Nominal
		± 5%, RBW < 1MHz	Nominal
	Shape Factor	< 4.5:1	Normal Bandwidth ratio: -60dB:-3dB
Video Bandwidth (VBW) Filter	Filter Bandwidth	1 Hz to 1 MHz in 1-3-10 sequence	-3dB bandwidth
Amplitude			
Amplitude Range	Measurement Range	100 kHz to 1 MHz	Displayed Average Noise Level (DANL) to 18 dBm
		1 MHz to 10 MHz	DANL to 21 dBm
		10 MHz to 3 GHz	DANL to 30 dBm
Attenuator	Input Attenuator Range	0 to 50 dB, in 1 dB step	Auto or manual setup
Maximum Safe Input Level	Average Total Power	≤ +33 dBm	Input attenuator ≥10 dB
	DC Voltage	± 50 V	
1 dB Gain Compression	Total Power at 1st Mixer	> 0 dBm	Typical;Fc ≥ 50 MHz; preamp. off
	Total Power at the Preamp	> -22 dBm	Typical;Fc ≥ 50 MHz; preamp. on
		mixer power level (dBm)= input power (dBm)-attenuation (dB)	
Displayed Average Noise Level (DANL)	Preamp off	0 dB attenuation; RF Input is terminated with a 50Ω load. RBW 10 Hz; VBW 10 Hz; span 500 Hz; reference level = -60dBm; trace average ≥ 40	
	9 kHz to 100 kHz	< -93 dBm	Nominal
	100 kHz to 1 MHz	< -90 dBm - 3 x (f/100 kHz) dB	
	1 MHz to 2.7 GHz	< -122 dBm	
	2.7 GHz to 3 GHz	< -116 dBm	
	Preamp on	0 dB attenuation; RF Input is terminated with a 50Ω load ; RBW 10 Hz; VBW 10Hz; span 500 Hz; reference level = -60dBm; trace average ≥ 40	
	100 kHz to 1 MHz	< -108 dBm - 3 x (f/100 kHz) dB	Nominal
	1 MHz to 10 MHz	< -142 dBm	
	10 MHz to 3 GHz	< -142 dBm + 3 x (f/1 GHz) dB	
Level Display Range	Scales	Log, Linear	
	Units	dBm, dBmV, dBuV, V, W	
	Marker Level Readout	0.01 dB	Log scale
		0.01 % of reference level	Linear scale
	Level Display Modes	Trace, Topographic, Spectrogram	Single / split Windows
	Number of Traces	4	
	Detector	Positive-peak, negative-peak, sample, normal, RMS(not Video)	Can be setup for each trace separately
	Trace Functions	Clear & Write, Max/Min Hold, View, Blank, Average	
Absolute Amplitude	Absolute Point	Center=160 MHz ; RBW 10 kHz; VBW 1 kHz; span 100 kHz; log scale; 1 dB/div; peak	

Accuracy		detector; 23°C±1°C; Signal at Reference Level	
	Preamp off	± 0.3 dB	Ref level 0 dBm; 10 dB RF attenuation
	Preamp on	± 0.4 dB	Ref level -30 dBm; 0 dB RF attenuation
Frequency Response	Preamp off	Attenuation: 10 dB; Reference: 160 MHz; 20 to 30°C	
	100 kHz to 2.0 GHz	± 0.5 dB	
	2GHz to 3 GHz	± 0.7 dB	
	Preamp on	Attenuation: 0 dB; Reference: 160 MHz; 20 to 30°C	
	1 MHz to 2 GHz	± 0.6 dB	
	2 GHz to 3 GHz	± 0.8 dB	
Attenuation Switching Uncertainty	Attenuator setting	0 to 50 dB in 1 dB step	
	Uncertainty	± 0.25 dB	reference: 160 MHz, 10dB attenuation
RBW Filter Switching Uncertainty	1 Hz to 1 MHz	± 0.25 dB	reference : 10 kHz RBW
Level Measurement Uncertainty	Overall Amplitude Accuracy	± 1.5 dB	20 to 30°C; frequency > 1 MHz; Signal input 0 to -50 dBm; Reference level 0 to -50 dBm; Input attenuation 10 dB; RBW 1 kHz; VBW 1 kHz; after cal; Preamp Off
		± 0.5 dB	Typical
Spurious Response	Second Harmonic Intercept		Preamp off; signal input -30dBm; 0 dB attenuation
		+35 dBm	Typical; 10 MHz < fc < 775 MHz
		+60 dBm	Typical; 775 MHz ≤ fc < 1.625 GHz
	Third-order Intercept		Preamp off; signal input -30dBm; 0 dB attenuation
		> 1dBm	300 MHz to 3 GHz
	Input Related Spurious	< -60 dBc	Input signal level -30 dBm, Att. Mode, Att=0dB; 20-30ºC
	Residual Response (inherent)	<-90 dBm	Input terminated; 0 dB attenuation; Preamp off
Sweep			
Sweep Time	Range	204 us to 1000 s	Span > 0 Hz
		50 us to 1000 s	Span = 0 Hz; Min Resolution = 10 us
	Sweep Mode	Continuous; Single	
	Trigger Source	Free run; Video; External	
	Trigger Slope	Positive or negative edge	
RF Preamplifier			
	Frequency Range	1 MHz to 3 GHz	
	Gain	18 dB	Nominal
			(installed as standard)
Front Panel Input/Output			
RF Input	Connector Type	N-type female	
	Impedance	50 ohm	Nominal
	VSWR	<1.6 :1	300 kHz to 3 GHz; Input attenuator ≥ 10 dB
Power for Option	Connector Type	SMB male	
	Voltage/Current	DC +7V / 500 mA max	With short-circuit protection
USB Host	Connector Type	A plug	
	Protocol	Version 2.0	Supports Full/High/Low speed
MicroSD Socket	Protocol	SD 1.1	
	Supported Cards	microSD, microSDHC	Up to 32GB capacity
Rear Panel Input/Output			
Reference Output	Connector Type	BNC female	
	Output Frequency	10 MHz	Nominal
	Output Amplitude	3.3V CMOS	
	Output Impedance	50 ohm	
Reference Input	Connector Type	BNC female	
	Input Reference Frequency	10 MHz	
	Input Amplitude	-5 dBm to +10 dBm	
	Frequency Lock Range	Within ± 5 ppm of the input reference frequency	
Alarm Output	Connector Type	BNC female	Open-collector
Trigger Input/ Gated Sweep Input	Connector Type	BNC female	
	Input Amplitude	3.3V CMOS	
	Switch	Auto selection by function	
LAN TCP/IP Interface	Connector Type	RJ-45	
	Base	10Base-T; 100Base-Tx; Auto-MDIX	
USB Device	Connector Type	B plug	For remote control only; supports USB

			TMC
	Protocol	Version 2.0	Supports Full/High/Low speed
IF Output	Connector Type	SMA female	
	Impedance	50 ohm	Nominal
	IF Frequency	886 MHz	Nominal
	Output level	-25 dBm	10 dB attenuation; RF input: 0 dBm @ 1 GHz
Earphone Output	Connector Type	3.5mm stereo jack, wired for mono operation	
Video Output	Connector Type	DVI-I (integrated analog and digital) , Single Link. Compatible with VGA or HDMI standard through adapter	
RS232 Interface	Connector Type	D-sub 9-pin female	Tx,Rx,RTS,CTS
GPIB Interface (Optional)	Connector Type	IEEE-488 bus connector	
AC Power Input	Power Source	AC 100 V to 240 V, 50 / 60 Hz Auto range selection	
Battery Pack (Optional)	Battery pack	6 cells, Li-Ion rechargeable, 3S2P	With UN38.3 Certification
	Voltage	DC 10.8 V	
	Capacity	5200 mAh / 56Wh	
General			
	Internal Data storage	16 MB nominal	
	Power Consumption	<65 W	
	Warm-up Time	< 30 minutes	
	Temperature Range	+5 °C to +45 °C	Operating
		-20 °C to + 70 °C	Storage
	Weight	4.5 kg (9.9 lb)	Inc. all options (Basic+TG+GPIB+Battery)
	Dimensions	210 x 350 x 100 (mm)	Approximately
		8.3 x 13.8 x 3.9 (in)	
Tracking Generator (Optional)			
	Frequency Range	100 kHz to 3 GHz	
	Output Power	-50 dBm to 0 dBm in 0.5 dB steps	
	Absolute Accuracy	± 0.5 dB	@160 MHz, -10 dBm, Source attenuation 10 dB, 20 to 30°C
	Output Flatness	Referenced to 160 MHz, -10 dBm	
		100 kHz to 2 GHz	± 1.5 dB
		2 GHz to 3 GHz	± 2 dB
	Output Level Switching Uncertainty	± 0.8 dB	Referenced to -10 dBm
	Harmonics	< -30 dBc	Typical, output level = -10 dBm
	Reverse Power	+30 dBm max.	
	Connector type	N-type female	
	Impedance	50 ohm	Nominal
	Output VSWR	< 1.6:1	300 kHz to 3 GHz, source attenuation ≥ 12 dB

Please do not hesitate to contact us if you have any queries on the announcement, or product information of the GSP-9300B Spectrum Analyzer.

Sincerely yours,

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