

SPECIFICATIONS		
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 °C 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	601 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 resolution *1	RBW : Auto
PHASE NOISE		
Offset From Carrier	Fc = 1 GHz; RBW = 1 kHz, VBW = 10 Hz; Average ≥ 40	
10 kHz	< -88 dBc/Hz	Typical *2
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 200 Hz, 9 kHz, 120 kHz, 1MHz	-3 dB bandwidth -6 dB bandwidth
Accuracy	± 8 %, RBW = 1 MHz; ± 5 %, RBW < 1 MHz	Nominal *3
Shape Factor	< 4.5 : 1	Normal Bandwidth ratio: -60 dB : -3 dB
VIDEO BANDWIDTH (VBW) FILTER		
Filter Bandwidth	1 Hz to 1 MHz in 1-3-10 sequence	-3 dB bandwidth
[1] Frequency Resolution = Span/(Trace points - 1) [2] Typical specifications in this datasheet mean that the performance can be exhibited in 80 % of the units with a 95 % confidence level over the temperature range 20 °C to 30 °C. They are not covered by the product warranty. [3] Nominal values indicate expected performance. They are not covered by the product warranty.		
AMPLITUDE		
AMPLITUDE RANGE		
Measurement Range	100 kHz to 1 MHz 1 MHz to 10 MHz 10 MHz to 3 GHz	DANL to 18 dBm DANL to 21 dBm DANL to 30 dBm
ATTENUATOR		
Input Attenuator Range	0 dB to 50 dB, in 1 dB steps	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) *4		
Preamp Off	0 dB attenuation; RF Input is terminated with a 50 Ω load. RBW 10 Hz; VBW 10 Hz; span 500 Hz; reference level = -60 dBm; trace average ≥ 40	
9 kHz to 100 kHz	< -93 dBm	Nominal
100 kHz to 1 MHz	< -90 dBm - 3 x (f/100 kHz) dB	Nominal
1 MHz to 2.7 GHz	< -122 dBm	Nominal
2.7 GHz to 3 GHz	< -116 dBm	Nominal
Preamp on	0 dB attenuation; RF Input is terminated with a 50 Ω load. RBW 10 Hz; VBW 10 Hz; span 500 Hz; reference level = -60 dBm; trace average ≥ 40	
100 kHz to 1 MHz	< -108 dBm - 3 x (f/100 kHz) dB	Nominal
1 MHz to 10 MHz	< -142 dBm	Nominal
10 MHz to 3 GHz	< -142 dBm + 3 x (f/1 GHz) dB	Nominal
[4] DANL spec excludes spurious response.		
LEVEL DISPLAY RANGE		
Scales	Log, Linear	
Units	dBm, dBmV, dBuV, V, W	
Marker Level Readout	0.01 dB 0.01 % of reference level	Log scale Linear scale Single/Split Windows
Level Display Modes	Trace, Topographic, Spectrogram	
Number of Traces	4	
Detector	Positive-peak, negative-peak, sample, normal, RMS(not Video), Quasi-Peak(EMI), Average(EMI)	Can be setup for each trace separately
Trace Functions	Clear & Write, Max/Min Hold, View, Blank, Average	
Absolute Point	Center = 160 MHz ; RBW 10 kHz; VBW 1 kHz; span 100 kHz; log scale; 1 dB/div; peak detector; 23 °C ± 5 °C; Signal at Reference Level	
Preamp Off	± 0.5 dB	Ref level 0 dBm; 10 dB RF attenuation
Preamp On	± 0.6 dB	Ref level 0 dBm; -30 dB RF attenuation
FREQUENCY RESPONSE		
Preamp Off	Attenuation : 10 dB; Reference: 160 MHz; 20 °C to 30 °C	
100 kHz to 2.0 GHz	± 0.5 dB	
2 GHz to 3 GHz	± 0.7 dB	

Preamp On 1 MHz to 2 GHz 2 GHz to 3 GHz	Attenuation: 0 dB; Reference: 160 MHz; 20 °C to 30 °C	
	± 0.6 dB	
	± 0.8 dB	
ATTENUATION SWITCHING UNCERTAINTY		
Attenuator Setting Uncertainty	0 dB to 50 dB in 1 dB step	
	± 0.25 dB	Reference : 160 MHz, 10 dB 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 °C to 30 °C; frequency > 1 MHz; Signal input 0 dBm to -50 dBm; Reference level 0 dBm 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 -30 dBm; 0 dB attenuation	
	+35 dBm +60 dBm	Typical; 10 MHz < fc < 775 MHz Typical; 775 MHz ≤ fc < 1.625 GHz
Third-order Intercept	Preamp off; signal input -30 dBm; 0 dB attenuation	
Input Related Spurious	> 1 dBm < -60 dBc	300 MHz to 3 GHz Input signal level -30 dBm, Att. Mode, Att = 0 dB; 20 °C to 30 °C
	< -90 dBm	Input terminated; 0 dB attenuation; Preamp off
Residual Response (Inherent)		
SWEEP		
SWEEP TIME		
Range	204 μs to 1000 s 50 μs to 1000 s	Span > 0 Hz Span = 0 Hz; Min resolution=10 μs
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 Ω	Nominal
VSWR	< 1.6 :1	300 kHz to 3 GHz ; Input attenuator 10 dB
POWER FOR OPTION		
Connector Type	SMB male	
Voltage/Current	DC + 7 V/ 500 mA max	With short-circuit protection
USB HOST		
Connector Type	A plug	
Protocol	Version 2.0	Support Full/High/Low speed
MICROSD SOCKET		
Protocol	SD 1.1	
Support Cards	MicroSD, MicroSDHC	Up to 32 GB capacity
REAR PANEL INPUT/OUTPUT		
REFERENCE OUTPUT		
Connector Type	BNC female	
Output Frequency	10 MHz	Nominal
Output Amplitude	3.3 V CMOS	
Output Impedance	50 Ω	
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	3.3 V CMOS	
Switch	Auto selection by function	
LAN TCP/IP INTERFACE		
Connector Type	RJ-45	
Base	10 Base-T; 100 Base-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 Ω	Nominal
IF Frequency	886 MHz	Nominal
Output Level	-25 dBm	10 dB attenuation; RF input : 0 dBm @ 1 GHz
EARPHONE OUTPUT		
Connector Type	3.5 mm stereo jack, wired for mono operation	
RS-232C 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 Hz or 60 Hz	Auto range selection
GENERAL		
Internal Data Storage	16 MB nominal	

Power Consumption	< 65 W	Operating Storage Inc. all options (Basic + TG + GPIB)
Warm-up Time	< 30 minutes	
Temperature Range	+5 °C to + 45 °C -20 °C to + 70 °C	
Dimensions & Weight	350(W) x 210(H) x 100(D) mm, Approx. 4.5 kg 13.8(W) x 8.3(H) x 3.9(D) inch, Approx. 9.9 lb	
Calibration Cycle	The recommended calibration cycle is one year; calibration services are available through GW Instek’s authorized calibration services.	
TRACKING GENERATOR (OPTIONAL)		
Frequency Range	100 kHz to 3 GHz	@160 MHz, -10 dBm, Source attenuation 10 dB, 20 °C to 30 °C ± 1.5 dB ± 2 dB Referenced to -10 dBm Typical, output level = -10 dBm Nominal 300 kHz to 3 GHz, source attenuation ≥ 12 dB
Output Power	-50 dBm to 0 dBm in 0.5 dB steps	
Absolute Accuracy	± 0.5 dB	
Output Flatness	Referenced to 160 MHz, -10 dBm 100 kHz to 2 GHz 2 GHz to 3 GHz	
Output Level Switching Uncertainty	± 0.8 dB	
Harmonics	< -30 dBc	
Reverse Power	+30 dBm max.	
ConnectorType	N-type female	
Impedance	50 Ω	
Output VSWR	< 1.6 : 1	
[5] The minimum RBW filter is 10 kHz when the TG output is ON.		

Note : The specifications apply when the GSP-9300B is powered on for at least 60 minutes to warm-up to a temperature of 20 °C to 30 °C, unless specified otherwise.

ORDERING INFORMATION	
GSP-9300B	3 GHz Spectrum Aalyzer
ACCESSORIES :	
Power Cord x 1	
OPTION	
GSP-93T1	Tracking Generator (Factory installed option)
GSP-93G1	GPIB Interface (Factory installed option)
OPTIONAL ACCESSORIES	
GSC-009	Soft Carrying Case
GSP-93G1	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)	