GSP-8000 Series

8.0GHz/3.8GHzfl.8GHz Spectrum Analyzer

FEATURES

- Frequency Range
  GSP-8800: 9kHz - 8.0GHz
  GSP-8380: 9kHz - 3.8GHz
  GSP-8180: 9kHz - I.8GHz
- RBW: 1Hz - 1 MHz in 1-3-5-10 steps
- VBW: I0Hz - 3MHz in 1-3-5-10 steps
- Phase Noise: -104 dBc/Hz
- Sensitivity: -l 60dBm/Hz Typical
  @PreAmp On
- Built-in AM/FM Demodulation
- Built-in Time Spec Function
- Measurement Function: ACPR/OCBW/CHPW, NdB BW, Pass-Fail, Freq. Counter, Noise Marker
- Built-in 20dB Preamplifier
- Communication Interface: LAN, USB Host/Device
- Display: 10.4" XGA Output (1024 '768)
- Options: Tracking Generator, EMI Filter

GW INSTEK
Simply Reliable

The GSP-8000 Series, brand new general spectrum analyzers from GW Instek, features three frequency ranges, namely 8.0GHz, 3.8GHz and 1.8GHz. The series is suitable for teaching research, R&D verification, and the test requirements of radio frequency products during production and development stages. The series provides 1Hz ~ 1MHz resolution bandwidth (RBW), 10Hz ~ 3MHz video bandwidth (VBW), -104dBc/Hz phase noise, a 20dB preamplifier, and the lowest noise floor of -160dBm/Hz (typical).

With respect to measurement applications, GSP-8000 Series has built-in Time Spec function, AM/FM signal demodulation function, channel test (Channel Power Measurement) function, Pass-Mail function, etc. The Time Spec function can simultaneously observe and display the correlation between power, frequency and time. ACPR/OCBW/CHPW tests can be used to test adjacent channels, power occupation bandwidth ratio, and channel power. The Pass-Fail function can be used to determine whether the signal is within the set range. Users can use these functions to conduct a wide range of measurement applications.

GSP-8000 Series utilizes a 10.4-inch TFT LCD large-size screen with XGA (1024*768) resolution to allow an easy observation of test signals. For communication interface, GSP-8000 Series provides two interfaces: USB and LAN. Through the USB Host, users can quickly retrieve the files stored after measurements, while USB Device and LAN interface allow users to control the instrument through dedicated PC software, or use the corresponding command set to design the required program.

GSP-8000 Series provides EMI filter option. Customers can be activated through the corresponding software authorization (Soft-Key), which greatly improves usage efficiency.

PANEL INTRODUCTION

CE USB LAN PC Software

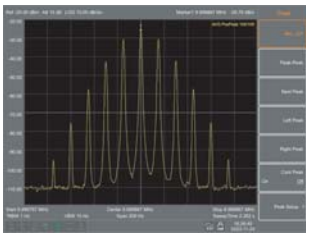
1. TFT LCD
2. F1~F7 Menu Soft Keys
3. Function Keys
4. Numeric Keypad, Knob, Unit Keys
5. RF Input
6. TG Output
7. Earphone
8. USB Host
9. Power Key
10. AC Power Input (On the Side)
11. LAN Interface
12. USB Device Interface
13. REF. In/Out Interface
14. Trig-in Interface
15. Anti-theft Hole

A. BROAD TEST AND MEASUREMENT RANGE

Model		Competitor	
GSP-8800	8.0GHz	Rigol DSA875	7.5GHz
		Siglent SSA3075X-Plus	7.5GHz
GSP-8380	3.8GHz	Rigol DSA832E	3.2GHz
		Siglent SSA3032X	3.2GHz
GSP-8180	1.8GHz	Rigol DSA815	1.5GHz
		Rigol RSA3015E	1.5GHz

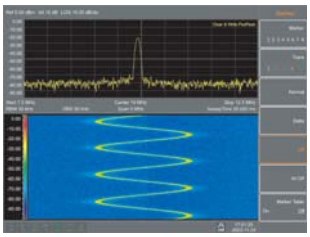
Whether it is a 1.8GHz, a 3.8GHz or an 8.0GHz model, the test and measurement bandwidth is wider than that of competitors at the same category.

B. RICH ANALYTICAL BANDWIDTH



GSP-8000 provides RBW from 1Hz to 1MHz, and provides 1-3-5-10 Sequence stages, allowing users to observe the signal in more detail.

C. TIME SPEC



This function can simultaneously view and display the relationship between power, frequency and time, and can track changes in frequency and power over time.

D. TRACE & DETECTOR

GSP-8000 provides five traces of different colors, among which Trace1 is displayed in yellow, Trace 2 is fuchsia, Trace 3 is azure, Trace 4 is orange, and Trace 5 is green. Users can collocate the required Detector for test and measurement.The Detector function provides Pos Peak, Neg Peak, Sample, Normal, Voltage Avg, RMS Avg and Quasi-Peak functions. The Quasi-Peak function can only be used after the EMI option is turned on.

E. PEAK SEARCH & MARKER FUNCTION

In addition to the functions related to Max Peak, the Peak Search function provides a new settable search for Min Peak. Users can set whether to search for Max Peak or Min Peak.

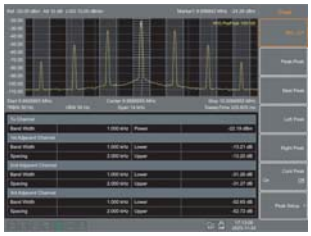
GSP-8000 provides up to 8 Markers for simultaneous display, and Markers can be assigned to different Traces. It also provides three application functions: N-dB, Marker Noise and Frequency Counter.1kHz, 100Hz, 10Hz and the most accurate resolution of 1Hz.

* N-dB: N-dB: It can measure the bandwidth when the left and right sides of the Marker value decrease by N-dB respectively.

* Marker Noise: Marker Noise: The current Marker frequency reading can be converted into the dBm/Hz absolute power reading at 1Hz RBW.

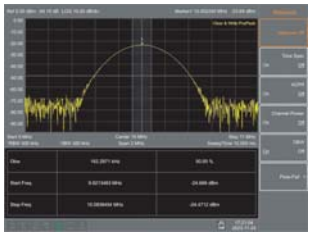
* Frequency Counter: Frequency Counter: Users can set the counter to 1kHz, 100Hz, 10Hz and the most accurate resolution of 1Hz.

F. ACPR, OCBW, CHPW



ACPR

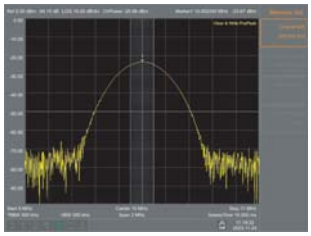
Adjacent Channel Power Ratio (ACPR) measurement can check the power of the signal and adjacent channels, which helps to understand the power value between channels. The ACPR function can set up to three groups of adjacent channel tests.



OCBW

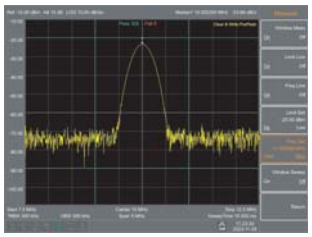
Occupied Bandwidth (OCBW) measurement can simultaneously display the occupied bandwidth, channel power and power spectrum density.

Channel Power (OCBW) is used to measure the power strength of a signal in a user-defined channel.



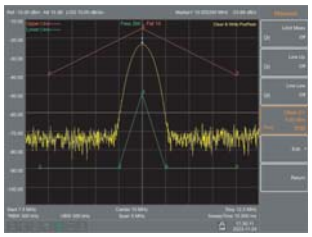
CHPW

G. LIMIT LINE



Windows Measure

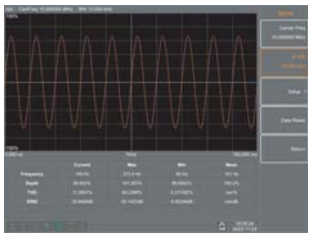
Provides two Limit Line measurement functions, namely Windows Measure and Limit Measure. Determine whether



Limit Measure

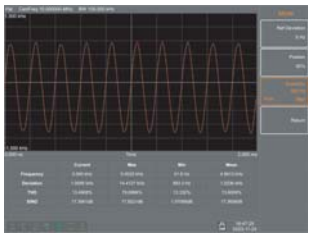
the measured signal is qualified through the set conditions.

H. AM AND FM SIGNAL DEMODULATION



AM Analysis

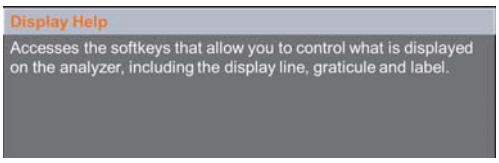
AM/FM signal analysis measurement parameters, such as amplitude modulation depth (Depth) or frequency deviation



FM Analysis

(Deviation), distortion (THD) and signal-to-noise and distortion ratio (SINAD), and supports demodulated audio source output.

I. HELP FUNCTION



When the Help function is turned on, users can learn about the introduction or usage of each key or function, speeding up the user's understanding and familiarity with the functions.

J. LARGE SCREEN

Provides a large 10.4" TFT LCD with a resolution of 1024*768 (XGA), making it easier for users to observe the details of waveforms.

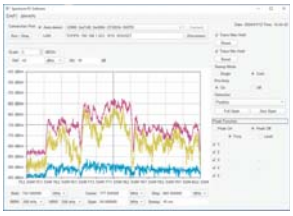
K. ICON STATUS

There are two areas in the icon status. The area in the lower left corner is mainly for the function settings of the instrument, while the area at the lower right corner is the usage of the communication interface, allowing users to easily understand the status and results of the instrument.

L. COMMUNICATION INTERFACE

Provides USB Host and LAN interfaces, and supports the command set that complies with the IEEE488.2 commands to facilitate users in the control of the instrument.

M. DEDICATED PC SOFTWARE



GSP-8000 has dedicated PC software that can be controlled directly through the computer's USB or LAN interface.

In addition to basic Span, Amplitude, BW settings, the PC software also provides more commonly used functions such as Max/Min Trace, Detector and Peak On/Off.

SPECIFICATIONS

Mode	GSP-8180	GSP-8380	GSP-8800
FREQUENCY			
FREQUENCY			
Range	9 kHz ~ 1.8 GHz	9 kHz ~ 3.8 GHz	9 kHz ~ 8.0 GHz
Resolution	1 Hz		
FREQUENCY SPAN			
Frequency Range	0 Hz, 100 Hz to max. frequency of instrument		
Span Uncertainty	±span / (sweep points-1)		
INTERNAL FREQUENCY REFERENCE			
Frequency Range	10.000000 MHz		
Reference Frequency Accuracy	±[(days from last calibrate × freq aging rate) + temperature stability + initial accuracy]		
Temperature Stability	<1ppm, 15°C ~ 35°C		
Aging Rate	<1ppm/year		
Initial Accuracy	< 1ppm		
SSB PHASE NOISE			
Offset From Carrier	fc = 1 GHz, RBW = 1 kHz, VBW = 1kHz, 20°C ~ 30°C, average ≥ 40		
10 kHz	< -104 dBc/Hz		
100 kHz	< -106 dBc/Hz, Typical		
1 MHz	< -115 dBc/Hz, Typical		
BANDWIDTH			
Resolution Bandwidth	1Hz to 1MHz (1-3-5-10 steps by sequence) ; EMI Filter(6dB): 200Hz, 9kHz, 120kHz, 1MHz (Optional)		
RBW Uncertainty	< 5%, Typical, RBW ≤ 1 MHz		
Resolution Filter Shape Factor (60 dB: 3	< 5: 1, Typical, digital and close to Gaussian shape		
Video Bandwidth (VBW)	10 Hz ~ 3 MHz		
AMPLITUDE			
AMPLITUDE AND LEVEL			
Amplitude Measurement Range	DANL ~ +10 dBm / 100 kHz ~ 1 MHz, Preamp Off	DANL ~ +10 dBm / 100 kHz ~ 1 MHz, Preamp Off	DANL ~ +10 dBm / 100 kHz ~ 10 MHz, Preamp Off
	DANL ~ +20 dBm / 1 MHz ~ 1.8 GHz, Preamp Off	DANL ~ +20 dBm / 1 MHz ~ 3.8 GHz, Preamp Off	DANL ~ +20 dBm / 10 MHz ~ 8 GHz, Preamp Off
Reference Level	-80 dBm ~ +30 dBm, 0.01dB by step		
Preamp	20 dB, 100 kHz ~ Max. Frequency Range		
Input Attenuation	0 ~ 40 dB, in 1 dB step		
Max Input DC Voltage	50 VDC		
Max Continuous Power	+30dBm, Average continuous power		
Displayed Average Noise Level (DANL)			
Preamp Off	Input Attenuation = 0 dB, ref. level ≥ -60dBm, trace average ≥ 40, RBW normalizes to 1Hz, DETECTOR = SAMPLE, RBW = 100Hz, VBW = 100Hz		
	9 kHz ~ 1MHz / <-95 dBm (typical), <-88dBm	9 kHz ~ 1MHz / <-95 dBm (typical), <-88dBm	9 kHz ~ 1MHz / -95dBm (typical), <-88 dBm
	1 MHz ~ 1 GHz / <-140dBm (typical), <-130 dBm	1 MHz ~ 1 GHz / <-140dBm (typical), <-130 dBm	1 MHz ~ 500MHz / -140dBm (typical), <-130 dBm
	1 GHz ~ 1.8 GHz / <-138dBm (typical), <-128 dBm	1 GHz ~ 3.8 GHz / <-138dBm (typical), <-128 dBm	500MHz ~ 3GHz / -138dBm (typical), <-128 dBm
			3GHz ~ 6GHz / -134dBm (typical), <-124 dBm
			6GHz ~ 8GHz / -129dBm (typical), <-119dBm
Preamp On	Input Attenuation = 0 dB, ref. level ≥ -60dBm, trace average ≥ 40, RBW normalizes to 1Hz, DETECTOR = SAMPLE, RBW = 100Hz, VBW = 100Hz		
	100 kHz ~ 1MHz / <-135 dBm (typical), <-128dBm	100 kHz ~ 1MHz / <-135 dBm (typical), <-128dBm	100 kHz ~ 1MHz / -135dBm (typical), <-128 dBm
	1 MHz ~ 1 GHz / <-160dBm (typical), <-150 dBm	1 MHz ~ 1 GHz / <-160dBm (typical), <-150 dBm	1 MHz ~ 500MHz / -160dBm (typical), <-150 dBm
	1 GHz ~ 1.8 GHz / <-160dBm (typical), <-150 dBm	1 GHz ~ 3.8 GHz / <-160dBm (typical), <-150 dBm	500MHz ~ 3GHz / -160dBm (typical), <-150 dBm
			3GHz ~ 6GHz / -154dBm (typical), <144 dBm
			6GHz ~ 8GHz / -149dBm (typical), <-139dBm
FREQUENCY RESPONSE			
Filter Bandwidth	20°C to 30°C, 30% to 70% relative humidity, input attenuation = 10 dB, reference frequency = 50 MHz, SPAN = 200KHz, RBW = 10KHz, VBW = 10KHz		
Preamp Off, fc ≥100 kHz	±0.8 dB, 100K ~ Max. Frequency Range		
Preamp On, fc ≥1MHz	±0.9 dB, 100K ~ Max. Frequency Range		
UNCERTAINTY AND ACCURACY			
RBW Switch Uncertainty	Reference: 10 kHz RBW at Frequency Center is 50 MHz ; ±0.2 dB, Log resolution		
Input Attenuation Uncertainty	20°C ~30°C, fc = 50 MHz, Preamplifier Off, 10 dB RF attenuation, RBW = 10K ; 1 ~ 40 dB ±0.5 dB		
Absolute Amplitude Uncertainty	20°C to 30°C, fc = 50 MHz, Span = 200 kHz, RBW = 10 kHz, VBW=10 kHz, peak detector, 10 dB RF attenuation, average ≥ 20, 2db/div, 95% confidence level		
Preamp Off	±0.4 dB, input signal level -20 dBm		
Preamp On	±0.5 dB, input signal level -40 dBm		
Uncertainty	20°C to 30°C, fc ≥ 1MHz, signal input range 0 ~ -50dBm, Ref Level range 0 ~ -50dBm, 10 dB RF attenuation, RBW = 1kHz, VBW = 1kHz, Preamp Off		
	±1.5 dB(typical)		
VSWR	<1.5, Nominal, Input 10 dB RF attenuation, 1MHz ~ 1.8GHz / 3.8GHz		<1.8, Nominal, Input 20 dB RF attenuation, 1MHz ~ 8GHz
DISTORTION AND SPURIOUS RESPONSE			
Second Harmonic Distortion	fc ≥ 50 MHz, Preamp off, signal input -20 dBm, 0 dB RF attenuation, 20°C ~ 30°C ; -65 dBc		
Third-order Intermodulation	fc ≥ 50 MHz, Input double tone level -20 dBm, frequency interval 100 kHz, input attenuation 0 dB, preamplifier off, 20°C ~ 30°C ; +10 dBm		
1 dB Gain Compression	Nominal, fc ≥ 50 MHz, 0 dB RF attenuation, Preamp off, 20°C ~ 30°C ; > -2 dBm		
Residual Response	Connect 50 Ω load at input port, 0 dB input attenuation, 20°C to 30°C, average ≥ 40, RBW = 300Hz, VBW = 3kHz, SPAN = 2M		
	<-85 dBm, from 1 MHz ~ Max. Frequency Range		
Input Related Spurious	<-60 dBc, -30 dBm signal at input mixer, 20°C ~ 30°C		
SWEEP			
Sweep Time			
Range	10 ms ~ 3000 s, None-zero Span ; 1 ms ~ 3000 s, Zero Span		
Sweep Mode	Continuous; Single		
TRACKING GENERATOR (OPTION 01)			
Tracking Generator Output			
Frequency Range	100 kHz ~ Max. Frequency Range		
Output Power Level Range	-40 dBm ~ 0 dBm		
Output Power Level Resolution	1 dB		
Output Flatness	± 3 dB		
Maximum Safe Reverse Level	Average total power: +30 dBm, DC : ±50 VDC		
Impedance	50 Ω, Nominal		
Connector	N Type Female		
FREQUENCY COUNTER			
Frequency Counter			
Resolution	1Hz, 10Hz, 100Hz, 1kHz		
Accuracy	±(frequency indication × frequency reference accuracy) + counter resolution		
INPUTS AND OUTPUTS			
RF Input			
Impedance	50 Ω, Nominal		
Connector	N Type Female		
Reference Input			
Connector	BNC Female		
10MHz Reference Amplitude	0 dBm to +10 dBm		
Trigger Input			
Impedance	1 kΩ		
10MHz Reference Amplitude	BNC Female		
USB			
USB Host	Connector: A Plug, Protocol: USB 2.0 (Host End)		
USB Device	Connector: B Plug, Protocol: 2.0 Version		
GENERAL			
Display	10.4" TFT LCD, Resolution: 1024*768, Color: 65,536 colors		
Remote Control	USB Device: B Plug, supports USB TMC ; LAN TCP/IP Interface : RJ-45, supports 10Base-T/100Base-Tx		
Mass Memory	Internal Memory: 256M Bytes		
Temperature	Operating Temperature: 0 °C to 40°C ; Storage Temperature: -20°C to 70°C		
Relative Humidity	0℃ to 30℃: ≤ 95% ; 30℃ to 40℃: ≤ 75%		
Power Consumption	28W		
Dimensions & Weight	421(W) x 221(H) x 115(D) mm; Approx. 5.0 kg (without package)		
AC Power Socket	100V ~ 240V, 50/60Hz		

The specifications apply when the function generator is powered on for at least 30 minutes under +20℃~+30℃.

Specifications subject to change without notice. GSP-8000_E_GD1BH

ORDERING INFORMATION

GSP-8800	**8.0GHz Spectrum Analyzer**
GSP-8800(TG)	**8.0GHz Spectrum Analyzer with TG**
GSP-8380(TG)	**3.8GHz Spectrum Analyzer with TG**
GSP-8180(TG)	**1.8GHz Spectrum Analyzer with TG**

ACCESSORIES

Power Cord, Safety Guide, USB Cable

OPTIONAL ACCESSORIES

GSP-8800E1	EMI Activation Option for GSP-8800
GSP-8380E1	EMI Activation Option for GSP-8380
GSP-8180E1	EMI Activation Option for GSP-8180

ADP-001	N(M)-BNC(F) Adapter
ADP-002	N(M)-SMA(F) Adapter
GTL-301	N(M)-N(M) RF Cable
GTL-303	SMA(M)-SMA(M) RF Cable