GSP-9330

CE | USB | LXI | RS-232 | GPIB | PC Software

TESTS MUST BE FAST!

GSP-9330, a high test speed spectrum analyzer with 3.25 GHz, provides the fastest 204 µs sweep speed. Users, via high speed sweep time, can easily handle and analyze modulation signals. The keys to handling modulated signals are fast sweep time and signal demodulation functions. In addition to the analog AM/FM demodulation and analysis function, GSP-9330 also provides digital signal ASK/FSK, and 2FSK demodulation and analysis capabilities. Nowadays, EMC issues are very crucial to product's design processes. Therefore, GSP-9330 has incorporated the EMC pretest solution to facilitate EMC tests. The simple and easy EMC pretest procedures from GSP-9330 can tremendously shorten users' product launch timebline.

Fastest Sweep Speed Up to 204 µs

For measuring signals, speed is one of the specifications to be considered. Perhaps, it is the most important specification. GSP-9330 provides sweep speed up to 204 µs. Users, via high speed sweep time, can easily capture transient signals such as frequency/amplitude modulation signals, Blue tooth frequency hopping signals, tuned oscillator or other interfering signals under ISM Band.

Modulation Signal Analysis and Processing

The keys to handling modulated signals are fast sweep time and signal demodulation function. In addition to the analog AM/FM demodulation and analysis function, GSP-9330 also provides ASK/FSK digital signal demodulation capability. For the widely-utilized, low-cost and low power consumption 2FSK modulation signals, GSP-9330 also provides the complete test and analysis function to address the requirements.

EMC Pretest Solution

GSP-9330 can meet customers' EMC pretest requirements on the product development and verification stages. Users can detect and resolve problems at the early product development stage that can save time and money for product development and verification fee. As a result, users can expedite the process of products launch. GSP-9330 has the built-in EMI dedicated 200/9k/120k/1MHz filter, 20 dB low noise amplifier and Quasi-Peak/Average detection mode to conduct radiation and conduction tests after collocating with the probe set. GKT-008, the radiation test probe set, provides a complete near field test probe set to simplify the complex measurement procedures and to simulate 3m/10m far field tests from the labs. Using GKT-008 can greatly save engineers' debugging time and the money for going back and forth to the labs. GKT-008 can collocate with the Tracking Generator function of GSP-9330 to conduct EMS pretests. For conduction tests, GKT-008 can collocate with LISN and AC Power Source to conduct electromagnetic conduction tests. If users concern EUT's large voltage variation or complexity, applying a Transient Limiter will make test equipment safer.

FEATURES

MAIN FEATURES

- Frequency Range : 9 kHz ~ 3.25 GHz
- Fastest sweep speed up to 204 µs
- Support modulation signal analysis
  - 2FSK digital signal analysis
  - ASK/FSK digital signals demodulation and analysis
  - AM/FM analog signals demodulation and analysis
- Complete EMC pretest solution
  - EMI Detect mode: Quasi-Peak, Average
  - EMI Filter(-6dB): 200 Hz, 9 kHz, 120 kHz, 1MHz
  - Dedicated EMC function key

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

FEATURES FOR PRODUCTION LINE APPLICATIONS

- Frequency stability of 0.025 ppm allows GSP-9330 to be stable quickly after powered up
- Users can set up automatic wake-up time to save time from manually setting
- The sequence function exempts users from writing programs
- The limit line function determines whether the tested signal passes the test

USER FRIENDLY DESIGN

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

VARIOUS INTERFACE

- Support USB Host, RS-232, LXI C (LAN Base), GPIB (option)
- Support USB Device, MicroSD to save files

SOFTWARE AND DRIVER

- SpectrumShot PC Software - EMC/Remote Control Mode
- IVI Driver (It needs NI VISA)

VARIOUS AUGMENTING OPTIONS

- Tracking Generator analyzes scalar network analysis and P1dB point measurements
- Battery module and dedicated carrying case are ideal for Open Site operations
- GKT-008 near field probe set conducts EMI Pretest GLN-5040A/APS-7100E conducts EMI Conduction tests

RELATED PRODUCTS INFORMATION :

GKT-008 Near Field Probe

GLN-5040A LISN

APS-7100E AC Power Source

GPL-5010 Transient Limiter

CUSTOMERS

- **Consumer Electronics**
- **Service and Maintenance**
- **Universities, Graduate Schools**
- **Military Industries**
- **Automotive Electronics**
- **Telecom and communications Industries**
- **Distributors for RF-Instruments Instrument leasing Companies**

APPLICATIONS

- **For the Quick Check and Analysis of Spectral Characteristic**
- **EMI Pre-compliance Testing**
- **Analyze ASK, FSK, 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**

SPECIFICATIONS

FREQUENCY

FREQUENCY

Range	9 kHz ~ 3.25 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 ~ 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 ~ 3.25 GHz	
Resolution	1 Hz	
Accuracy	± frequency resolution	RBW : Auto

PHASE NOISE

Offset from Carrier		Fc=1GHz;RBW=1kHz,VBW=10Hz;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 ~ 1 MHz in 1-3-10 sequence 200 Hz, 9 kHz, 120 kHz, 1MHz	-3dB bandwidth -6dB bandwidth
Accuracy	± 8%, RBW = 1MHz ; ± 5%, RBW < 1MHz	Nominal
Shape Factor	<4.5 : 1	Normal Bandwidth ratio: -60dB:-3dB

VIDEO BANDWIDTH (VBW) FILTER

Filter Bandwidth	1 Hz ~ 1 MHz in 1-3-10 sequence	-3dB bandwidth

AMPLITUDE

AMPLITUDE RANGE

Measurement Range	100 kHz ~ 1 MHz	Displayed Average Noise Level(DANL)to 18 dBm
	1 MHz ~ 10 MHz	DANL to 21 dBm
	10 MHz ~ 3.25 GHz	DANL to 30 dBm

ATTENUATOR

Input Attenuator Range	0 ~ 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)

Preamp off	0 dB attenuation; RF Input is terminated with a 50Ω load. RBW 10 Hz; VBW 10 Hz; span 500 Hz; reference level = - 60 dBm; trace average≥40	
9 kHz~100 kHz	< -93 dBm	Nominal
100 kHz~1 MHz	< -90 dBm - 3 x (f/100 kHz) dB	Nominal
1 MHz~10 MHz	< -122 dBm	Nominal
2.7 ~ 3.25 GHz	< -116 dBm	Nominal
Preamp on	0 dB attenuation; RF Input is terminated with a 50Ω load. RBW 10 Hz; VBW 10 Hz; span 500 Hz; reference level = - 60 dBm; trace average≥40	
100 kHz~1 MHz	< -108 dBm - 3 x (f/100 kHz) dB	Nominal
1 MHz~10 MHz	< -142 dBm	Nominal
10 MHz~3.25 GHz	< -142 dBm + 3 x (f/1 GHz) dB	Nominal

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),	
Trace Functions	Quasi-Peak(EMI),Average(EMI),Clear & Write,Max/Min Hold, View, Blank, Average	

ABSOLUTE AMPLITUDE ACCURACY

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 ~ 30°C	
100 kHz ~ 2.0 GHz	± 0.5 dB	
2GHz ~ 3.25 GHz	± 0.7 dB	
Preamp On	Attenuation: 0 dB; Reference: 160 MHz; 20 ~ 30°C	
1 MHz ~ 2 GHz	± 0.6 dB	
2 GHz ~ 3.25 GHz	± 0.8 dB	

ATTENUATION SWITCHING UNCERTAINTY

Attenuator Setting	0 ~ 50 dB in 1 dB step	
Uncertainty	± 0.25 dB	Reference : 160 MHz, 10dB attenuation

RBW FILTER SWITCHING UNCERTAINTY

1 Hz ~ 1 MHz	± 0.25 dB	Reference : 10 kHz RBW

LEVEL MEASUREMENT UNCERTAINTY

Overall Amplitude Accuracy	± 1.5 dB	20 ~ 30°C; frequency > 1 MHz; Signal input 0 ~ -50 dBm; Reference level 0 ~ -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 ~ 3.25 GHz
Input Related Spurious	< -60 dBc	Input signal level -30 dBm, Att. Mode, Att=0dB; 20-30°C
Residual Response (Inherent)	<-90 dBm	Input terminated; 0 dB attenuation; Preamp off

SPECIFICATIONS

SWEEP		
SWEEP TIME		
Range	204 µs ~ 1000 s 50 µs ~ 1000 s	Span > 0 Hz Span = 0 Hz; Min resolution=10µs
Sweep Mode	Continuous; Single	
Trigger Source	Free run; Video; External	
Trigger Slope	Positive or negative edge	
RF PREAMPLIFIER		
Frequency Range	1 MHz ~ 3.25 GHz	
Gain	18 dB	Nominal (installed as standard)
FRONT PANEL INPUT/OUTPUT		
RF INPUT		
Connector Type	N-type female	
Impedance	50Ω	Nominal
VSWR	<1.6 :1	300 kHz ~ 3.25 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	Support Full/High/Low speed
MICRO SD SOCKET		
Protocol	SD 1.1	
Support Cards	Micro SD, Micro SDHC	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	50Ω	
REFERENCE INPUT		
Connector Type	BNC female	
Input Reference Frequency	10 MHz	
Input Amplitude	-5 dBm ~ +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	50Ω	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	
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 ~ 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 ~ + 45 °C	Operating
	-20 °C ~ + 70 °C	Storage
Dimensions & Weight	350(W) x 210(H) x 100(D) mm, Approx. 4.5kg 13.8(W) x 8.3(H) x 3.9(D) inch, Approx. 9.9lb	Inc. all options (Basic + TG + GPIB + Battery)
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 ~ 3.25 GHz	
Output Power	-50 dBm ~ 0 dBm in 0.5 dB steps	
Connector Type	N-type female	
Output VSWR	< 1.6 : 1	50Ω Nominal 300 kHz ~ 3 GHz, source attenuation ≥ 12 dB

Note : The specifications apply when the GSP-9330 is powered on for at least 60 minutes to warm-up to a temperature of 20 ℃ to 30 ℃, unless specified otherwise.

Specifications subject to change without notice. GSP-9330BGD1DH

ORDERING INFORMATION

GSP-9330 3.25 GHz Spectrum Analyzer

EMC Pretest Solution :

GKT-008	EMI Near Field Probe Set
GLN-5040A	Line Impedance Stabilization Network
APS-7100E	AC Power Source
GPL-5010	Transient Limiter

ACCESSORIES :

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

OPTIONS

GSP-93T1 Tracking Generator (Factory installed option)
Option 02 Battery Pack
GSP-93G1 GPIB Interface (Factory installed option)

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)