GSP-9330

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

TESTS MUST BE FAST!

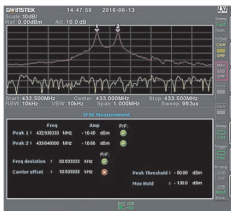
GSP-9330, a high test speed spectrum analyzer with 3.25 GHz, provides the fastest 204 μs sweep speed. Users, via high speed sweep time, can easily handle and analyze modulation signals. The keys to handling modulated signals are fast sweep time and signal demodulation functions. In addition to the analog 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.

GW INSTEK
Simply Reliable

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
- 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 to 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 °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 3.25 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	-3 dB bandwidth
	200 Hz, 9 kHz, 120 kHz, 1MHz	-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 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	DANL to 18 dBm
	1 MHz to 10 MHz	DANL to 21 dBm
	10 MHz to 3.25 GHz	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 3.25 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 3.25 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	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), Quasi-Peak(EMI), Average(EMI)	Can be setup for each trace separately
Trace Functions	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 °C to 30 °C	
100 kHz to 2.0 GHz	± 0.5 dB	
2 GHz to 3.25 GHz	± 0.7 dB	
Preamp On	Attenuation: 0 dB; Reference: 160 MHz; 20 °C to 30 °C	
1 MHz to 2 GHz	± 0.6 dB	
2 GHz to 3.25 GHz	± 0.8 dB	

SPECIFICATIONS

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 -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	
	> 1 dBm	300 MHz to 3.25 GHz
Input Related Spurious	< -60 dBc	Input signal level -30 dBm, Att. Mode, Att = 0 dB; 20 °C to 30 °C
Residual Response (Inherent)	< -90 dBm	Input terminated; 0 dB attenuation; Preamp off
SWEEP		
SWEEP TIME		
Range	204 µs to 1000 s	Span > 0 Hz
	50 µs to 1000 s	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 3.25 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 3.25 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	3.5mm 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 to 240 V, 50 Hz or 60 Hz	Auto range selection

SPECIFICATIONS

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
Dimensions & Weight	350(W) x 210(H) x 100(D) mm, Approx. 4.5kg	Inc. all options (Basic + TG + GPIB)
	13.8(W) x 8.3(H) x 3.9(D) inch, Approx. 9.9lb	
Calibration Cycle	The recommended calibration cycle is one year; calibration services are available through GW Instek's authorized calibration services.	
TRACKING GENERATOR (OPTIONAL) *5		
Frequency Range	100 kHz to 3.25 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 °C to 30 °C
Output Flatness	Referenced to 160 MHz, -10 dBm	
	100 kHz to 2 GHz	± 1.5 dB
	2 GHz to 3.25 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.	
ConnectorType	N-type female	
Impedance	50 Ω	Nominal
Output VSWR	< 1.6 : 1	300 kHz to 3.25 GHz, source attenuation ≥ 12 dB

[5] The minimum RBW filter is 10kHz when the TG output is ON.

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

Specifications subject to change without notice. GSP-9330BGD2DH

ORDERING INFORMATION

GSP-9330	3.25 GHz Spectrum Aalyzer	
EMC Pretest Solution	**GKT-008**	EMI Near Field Probe Set
	GLN-5040A	Line Impedance Stabilization Network
	APS-7100E	1 kVA AC Power Source
	GPL-5010	Transient Limiter

GLN-5040A

APS-7100E

GPL-5010

ACCESSORIES :
Power Cord

OPTION

GSP-93T1	Tracking Generator (Factory installed option)
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)

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