GSP-9330

3.25 GHz Spectrum Analyzer

FEATURES

- Frequency Range : 9kHz ~ 3.25GHz
- 0.025ppm Frequency Stability and 1ppm Aging Rate
- RBW : 1Hz ~ 1MHz (3dB), 6dB EMI Filter : 200Hz, 9kHz, 120kHz, 1MHz
- Fastest Sweep Time : 204µs
- Sensitivity : -149dBm/Hz (@PreAmp on)
- Built-in Preamplifier, 50dB Attenuator, and Sequence Function
- Built-in EMC Pretest Function
- Built-in 2FSK Analysis, AM/FM/ASK/FSK Demodulation & Analysis
- Built-in P1dB Point, Harmonic, Channel Power, N-dB Bandwidth, OCBW, ACPR, SEM, TOI, CNR, CTB, CSO, Noise Marker, Frequency Counter, Time Domain Power, Gated Sweep
- Built-in Spectrogram, Topographic and Split-window Display Modes
- Remote Control EMI Measurement Software : SpectrumShot
- Remote Control Interface : LAN, USB, RS-232
- Options : Tracking Generator, GPIB Interface, Battery Pack

GW INSTEK
Simply Reliable

DISTRIBUTOR :

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TESTS MUST BE FAST!

GSP-9330 (9kHz ~ 3.25GHz)

CE | USB | LXI | DVI Output | RS-232 | GPIB | PC Software | Micro SD/SDHC

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 timeline.

CUSTOMERS

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

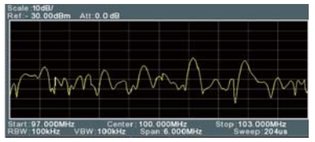
APPLICATIONS

- 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

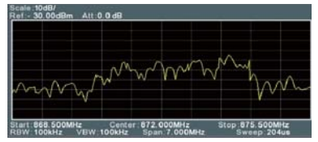
A. FAST SIGNAL SWEEP

For spectrum analyzer, speed is the most important specification. GSP-9330 provides sweep speed up to 204 µs. Users, via high speed sweep time, can identify and analyze various fast or transient signals such as frequency/amplitude modulation signals, Bluetooth frequency hopping signals, tuned oscillator or other interfering signals under ISM Band.

FM Signal Monitoring



Taiwan 3G Telecom Signals



B. MODULATED SIGNAL ANALYSIS

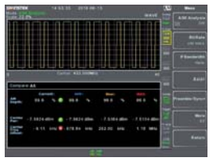
2FSK modulation, for its features of low design cost and low electricity consumption, is widely used by RF communications applications with low power and low data transmission speed characteristics. Nowadays, 2FSK modulation technology has been applied in various products and systems such as consumer electronics, automotive electronics, RFID, auto reading electricity meter, and industrial control devices, etc. 2FSK signal analysis measures parameters including carrier power, FSK frequency deviation, carrier frequency, and carrier frequency offset. Users can set the criterion in frequency deviation and carrier offset for fast test result determination.

RFID and optical communications systems often use Amplitude Shift Keying (ASK). Applications such as wireless telephone, paging systems, and RFID, etc. utilize Frequency Shift Keying (FSK). ASK/FSK demodulation and analysis measures parameters including AM depth, frequency deviation, carrier power, carrier frequency offset, symbol, and waveform. Users can set AM depth, frequency deviation, carrier power and carrier offset for Pass/Fail testing result. Data message is provided to determined preamble & sync function.

AM/FM Signal Analysis measures parameters including AM depth, frequency deviation, modulation rate, carrier power, carrier frequency offset and SINAD. Users can set the criterion in AM depth, frequency deviation, carrier power and carrier offset for fast test result determination. The GSP-9330 has a convenient AM/FM demodulation function to tune into AM or FM broadcast signals and listen to the demodulated signals.

2FSK Signal Analysis | **ASK/FSK Signal Demodulation & Analysis**

2FSK



FSK

ASK

AM/FM Signal Demodulation & Analysis

FM

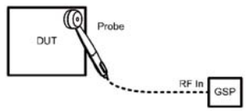
AM

C. EMC PRETEST SOLUTION

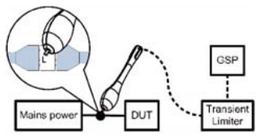
GSP-9330 has the built-in EMI dedicated 200/9k/120k/1MHz filter, 20dB low noise amplifier and Quasi-Peak/Average detection mode to conduct radiation and conduction tests after collocating with the probe set.

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 tests.

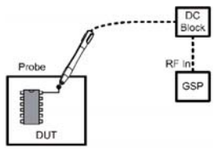
For conduction tests, GSP-9330 can collocate with LISN and Isolation Transformer to conduct electromagnetic conduction tests. If users concern EUT's large voltage variation or complexity, applying a Transient Limiter will make test equipment safer.



ANT-04/ANT-05



PR-01



PR-02

EMC Pretest Instruments Provided by GW Instek Are as Follows :		
GSP-9330	Spectrum Analyzer	Built-in complete EMC pretest solution
GKT-008	EMI Near Field Probe Set	Provide probe set for near field signals, including ANT-04/ANT-05 field sensor PR-01 AC high voltage probe PR-02 Source contact probe
GLN-5040A	LISN	LISN required by EMI conduction tests and it meets CISPR16-1-2:2006 regulations
GIT-5060	Isolation Transformer	Different mains have different current leakages that will cause systems to have short circuit Isolation transformer prevents short circuit by isolating current loop
GPL-5010	Transient Limiter	Transient Limiter will make test equipment safer if EUT has large voltage variation or complexity

For more detailed information about EMC Pretest Solution, please visit "DETAILED EMC PRETEST SOULTION" documents.

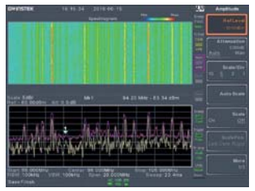
D. GRAPHIC PROCESSING OF SIGNAL MONITORING

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.

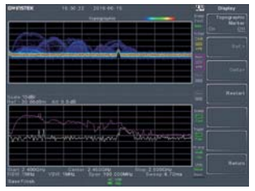
Topographic uses color shade to show the probability distribution of signal appearance. This function allows users to directly understand the process of signal variation according to time changes that is beneficial to observe intermittent feeble signals or electromagnetic interference signals. Users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

Split-Window allows two independent observations that are very convenient for monitoring two different frequency bandwidths.

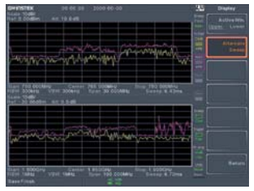
Observe FM Signals by Spectrogram



Observe WiFi Signals by Topographic



Observe 4G LTE Signals by Split-Window Display



E. SIGNAL VERIFICATION, TEST AND ANALYSIS

Channel Power Measurement

Telecommunications and broadcasting service carriers will encounter distorted signals caused by adjacent channels' inter-modulation while transmitting modulated signals using communications channels. If the distorted signals are too large the communications quality of adjacent channels will be affected. 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.

ACPR

OCBW

Spectrum Emission Mask

SEM measures out-of-channel emission which is defined by corresponding in-channel power. Users can set main channel's parameters, out-of-channel range, and limit line, etc.
GSP-9330 has the built-in SEM settings of 3 GPP, 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.

SEM

CATV System Parameter Tests

The built-in CNR/CSO/CTB functions of GSP-9330 are ideal for measuring performance of CATV amplifier and system.

Note: General CATV is 75Ω. For GSP-9330, a 50 ~ 75 ohm adapter is needed.

CNR/CSO/CTB

TOI (Third Order Intercept)

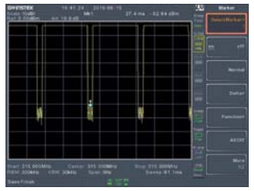
Users can measure the linearity of non-linear systems and components such as receiver, low-noise amplifier and mixer by TOI which automatically tests effective carrier and measures inter-modulation sidebands.

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.

F. PRODUCTION LINE APPLICATIONS

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.

Shorten Warm-Up Time

GSP-9330 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-9330 pre wake-up can be achieved. Pre wake-up is ideal for the lower temperature environment to conduct tests in the preset time.

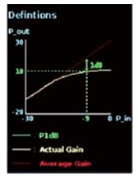
G. USER FRIENDLY DESIGN

Status Icons

Status Icons show the interface status, power status, alarm status and etc of GSP-9330. 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.



H. COMMUNICATIONS INTERFACE

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 x 600 resolutions.

DVI Interface

USB Device/MicroSD

I. SOFTWARE SUPPORT

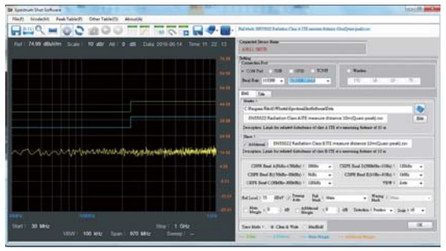
PC Software - SpectrumShot

Users can use the external software Spectrum Shot for EMI pretest report management and assessment, remote control and waveform data recording for long periods of time.

Under the EMI Pre-test Mode, users can select the required CISPR EMI regulation for conduction and radiation measurement.

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.

J. 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-9330 can be powered by battery making it suitable for outdoor operations. Optional GSP-9330 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-9330 is equipped with 8.4 inches 800 x 600 pixels LCD display which yields clearer display results for outdoor operations.

PANEL INTRODUCTION

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

SPECIFICATIONS

FREQUENCY		
FREQUENCY		
Range **Resolution**	9 kHz ~ 3.25 GHz 1 Hz	
FREQUENCY REFERENCE		
Accuracy **Aging Rate** **Frequency Stability Over Temperature** **Supply Voltage Stability**	±(period since last adjustment x aging rate) + stability over temperature + supply voltage stability ± 1 ppm max. ± 0.025 ppm ± 0.02 ppm	 1 year after last adjustment 0 ~ 50 °C
FREQUENCY READOUT ACCURACY		
Start, Stop, Center, Marker **Trace Points**	±(marker frequency indication x frequency reference accuracy + 10% x RBW + frequency resolution) Max. 601 points, Min. 6 points	
MARKER FREQUENCY COUNTER		
Resolution **Accuracy**	1 Hz, 10 Hz, 100 Hz, 1 kHz ±(marker frequency indication X frequency reference accuracy + counter resolution)	 RBW/Span >=0.02 ; Mkr level to DNL>30 dB
FREQUENCY SPAN		
Range **Resolution** **Accuracy**	0 Hz (zero span), 100 Hz ~ 3.25 GHz 1 Hz ± frequency resolution	 RBW : Auto
PHASE NOISE		
Offset from Carrier **10 kHz** **100 kHz** **1 MHz**	 < -88 dBc/Hz < -95 dBc/Hz < -113 dBc/Hz	Fc=1GHz;RBW=1kHz,VBW=10Hz;Average≥40 Typical Typical Typical
RESOLUTION BANDWIDTH (RBW) FILTER		
Filter Bandwidth **Accuracy** **Shape Factor**	1 Hz ~ 1 MHz in 1-3-10 sequence 200 Hz, 9 kHz, 120 kHz, 1MHz ± 8%, RBW = 1MHz ; ± 5%, RBW < 1MHz <4.5 : 1	-3dB bandwidth -6dB bandwidth Nominal 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 1 MHz ~ 10 MHz 10 MHz ~ 3.25 GHz	Displayed Average Noise Level(DANL)to 18 dBm DANL to 21 dBm 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 **DC Voltage**	≤ +33 dBm ± 50 V	Input attenuator ≥10 dB
1 dB GAIN COMPRESSION		
Total Power at 1st Mixer **Total Power at the Preamp**	> 0 dBm > -22 dBm	Typical ; Fc≥ 50 MHz; preamp. off 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 **100 kHz~1 MHz** **1 MHz~10 MHz** **2.7 ~ 3.25 GHz**	< -93 dBm < -90 dBm - 3 x (f/100 kHz) dB < -122 dBm < -116 dBm	Nominal Nominal Nominal 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 **1 MHz~10 MHz** **10 MHz~3.25 GHz**	< -108 dBm - 3 x (f/100 kHz) dB < -142 dBm < -142 dBm + 3 x (f/1 GHz) dB	Nominal Nominal Nominal
LEVEL DISPLAY RANGE		
Scales **Units** **Marker Level Readout** **Level Display Modes** **Number of Traces** **Detector** **Trace Functions**	Log, Linear dBm, dBmV, dBuV, V, W 0.01 dB 0.01 % of reference level Trace, Topographic, Spectrogram 4 Positive-peak, negative-peak, sample, normal, RMS(not Video), Quasi-Peak(EMI), Average(EMI), Clear & Write, Max/Min Hold, View, Blank, Average	 Log scale Linear scale Single/Split Windows

SPECIFICATIONS

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±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 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
SWEEP		
SWEEP TIME		
Range	204 µs ~ 1000 s	Span > 0 Hz
	50 µs ~ 1000 s	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	50 Ω	
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

SPECIFICATIONS

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	
VIDEO OUTPUT		
Connector Type	DVI-I (integrated analog and digital), Single Link. Compatible with VGA or HDMI standard through adapter	
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	Inc. all options (Basic + TG + GPIB + Battery)
	13.8(W) x 8.3(H) x 3.9(D) inch, Approx. 9.9lb	
TRACKING GENERATOR (OPTIONAL)		
Frequency Range	100 kHz ~ 3.25 GHz	
Output Power	-50 dBm ~ 0 dBm in 0.5 dB steps	
Absolute Accuracy	± 0.5 dB	@160 MHz, -10 dBm, Source attenuation 10 dB, 20 ~ 30°C
Output Flatness	Referenced ~ 160 MHz, -10 dBm	
	100 kHz ~ 2 GHz	± 1.5 dB
	2 GHz ~ 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 ~ 3.25 GHz, source attenuation ≥12 dB

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

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
GIT-5060	Isolation Transformer
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

Opt.01 Tracking Generator
Opt.02 Battery Pack
Opt.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)

Related Products Information :

GKT-008 Near Field Probe

GLA-5040A LISN

GIT-5060 Isolation Transformer

GPL-5010 Pulse Limiter