

- Frekvencia tartomány: 9kHz ~ 3.25GHz
- Frekvencia stabilitás: 0.025ppm és 1ppm öregedés
- RBW: 1Hz ~ 1MHz (3dB), 6dB EMI Filter: 200Hz, 9kHz, 120kHz, 1MHz
- Legyorsabb sweep sebesség: 204us
- Érzékenység: -149 dBm/Hz (előerősítővel)
- Beépített AM/FM demoduláció és analízis
- Beépített P1dB pont, Harmonic, Channel Power, N-dB sávzélesség, OCBW, ACPR, SEM, TOI, CNR, CTB, CSO, zaj-marker üzemmódok
- Beépített frekvenciamérő, Time Domain Power, kapuzott Sweep
- Beépített előerősítő, 50dB osztó, és szekvencia funkció
- Beépített EMC pretest funkció, Quasi-Peak/Average EMI detektálási mód
- Beépített 2FSK analízis, AM/FM/ASK/FSK demoduláció és analízis
- Beépített Spectrogram, topografikus és kettős-kijelzésű üzemmód
- Távvezérlés EMI mérő szoftver és SpectrumShot
- Távvezérlő interfész: LAN, USB, RS-232
- Opciók: tracking Generátor, GPIB interfész, telep egység



GSP-9330, a high test speed spectrum analyzer with 3.25 GHz, provides the fastest 204 μ s 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

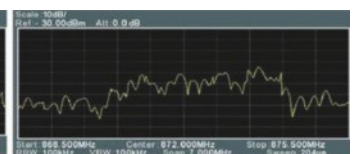
A. FAST SIGNAL SWEEP

For spectrum analyzer, speed is the most important specification. GSP-9330 provides sweep speed up to 204 μ s. 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



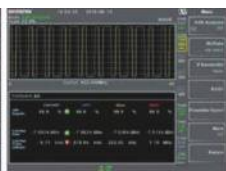
B. MODULATED SIGNAL ANALYSIS

2FSK Signal Analysis



2FSK

ASK/FSK Signal Demodulation & Analysis



FSK



ASK

AM/FM Signal Demodulation & Analysis



FM



AM

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.

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	1 year after last adjustment 0 ~ 50 °C
Aging Rate	± 1 ppm max.	
Frequency Stability Over Temperature	± 0.025 ppm	
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 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	≤ +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 Typical ; Fc ≥ 50 MHz; preamp. on Mixer power level (dBm) = input power (dBm) – attenuation (dB)
Total Power at the Preamp	> -22 dBm	
DISPLAYED AVERAGE NOISE LEVEL (DANL)		
Preamp off	0 dB attenuation; RF Input is terminated with a 50 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 50 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	Log scale Linear scale Single/Split Windows
Units	dBm, dBmV, dBuV, V, W	
Marker Level Readout	0.01 dB 0.01 % of reference level	
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), Clear & Write, Max/Min Hold, View, Blank, Average	
Trace Functions		

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 100 kHz ~ 2.0 GHz 2GHz ~ 3.25 GHz	Attenuation : 10 dB; Reference: 160 MHz; 20 ~ 30°C ± 0.5 dB ± 0.7 dB	
Preamp On 1 MHz ~ 2 GHz 2 GHz ~ 3.25 GHz	Attenuation: 0 dB; Reference: 160 MHz; 20 ~ 30°C ± 0.6 dB ± 0.8 dB	

ATTENUATION SWITCHING UNCERTAINTY

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

RBW FILTER SWITCHING UNCERTAINTY

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

Overall Amplitude Accuracy	± 1.5 dB ± 0.5 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 Typical
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SPURIOUS RESPONSE

Second Harmonic Intercept	+35 dBm +60 dBm	Preamp off; signal input -30dBm; 0 dB attenuation Typical; 10 MHz < fc < 775 MHz Typical; 775 MHz ≤ fc < 1.625 GHz
Third-order Intercept	> 1dBm < -60 dBc <-90 dBm	Preamp off; signal input -30dBm; 0 dB attenuation 300 MHz ~ 3.25 GHz Input signal level -30 dBm, Att. Mode, Att=0dB; 20-30°C Input terminated; 0 dB attenuation; Preamp off

SWEEP

SWEEP TIME

Range	204 s ~ 1000 s 50 μs ~ 1000 s	Span > 0 Hz Span = 0 Hz; Min resolution=10 μ
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	Nominal (installed as standard)
Gain	18 dB	

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
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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 Impedance IF Frequency Output Level	SMA female 50 Ω 886 MHz -25 dBm	Nominal Nominal 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 Voltage Capacity	6 cells, Li-Ion rechargeable, 3S2P DC 10.8 V 5200 mAh/56Wh	With UN38.3 Certification
GENERAL		
Internal Data Storage Power Consumption Warm-up Time Temperature Range	16 MB nominal < 65 W < 30 minutes +5 °C ~ + 45 °C -20 °C ~ + 70 °C	Operating Storage Inc. all options (Basic + TG + GPIB + Battery)
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	
TRACKING GENERATOR (OPTIONAL)		
Frequency Range Output Power Absolute Accuracy Output Flatness	100 kHz ~ 3.25 GHz -50 dBm ~ 0 dBm in 0.5 dB steps ± 0.5 dB Referenced ~ 160 MHz, -10 dBm	@160 MHz, -10 dBm, Source attenuation 10 dB, 20 ~ 30°C
Output Level Switching Uncertainty Harmonics Reverse Power Connector Type Impedance Output VSWR	100 kHz ~ 2 GHz 2 GHz ~ 3.25 GHz ± 0.8 dB < -30 dBc +30 dBm max. N-type female 50 < 1.6:1	± 1.5 dB ± 2 dB Referenced to -10 dBm Typical, output level = -10 dBm Nominal 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.03 GPIB Interface
Opt.02 Battery Pack	
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
			