# FAST, WHAT ELSE!

New Measurement Experience, Fastest Speed of 204 µs.

# 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

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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
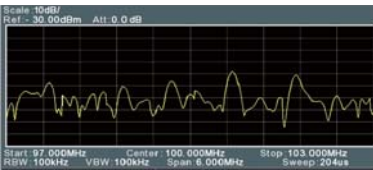
Taiwan 3G Telecom Signals
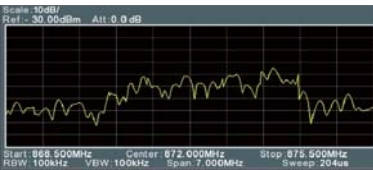
## B. MODULATED SIGNAL ANALYSIS

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.

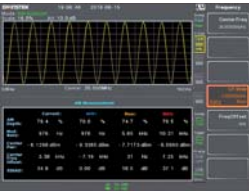2FSK Signal Analysis

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**
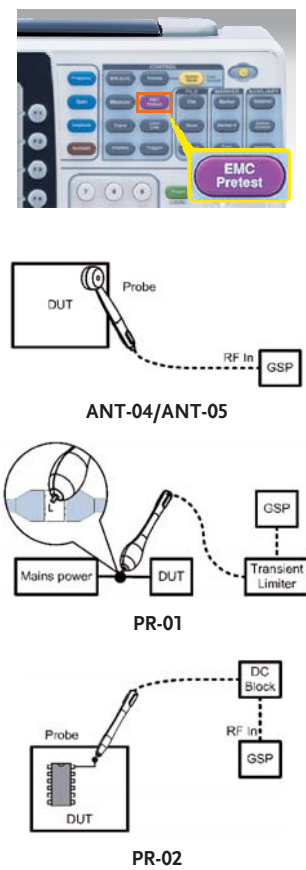
| EMC Pretest Instruments Provided by GW Instek Are as Follows : | | |
|---|---|---|
| GSP-9330 | Spectrum Analyzer | Built-in complete EMC pretest solution |
| GKT-008 | EMI Near Field Probe Set | Provide probe set for near field signals, including ANT-04/ANT-05  field sensor PR-01  AC high voltage 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.
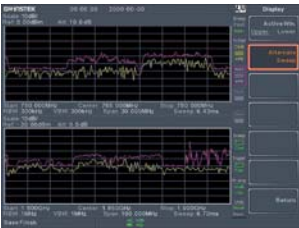
**Observe FM Signals by Spectrogram**

**Observe WiFi Signals by Topographic**
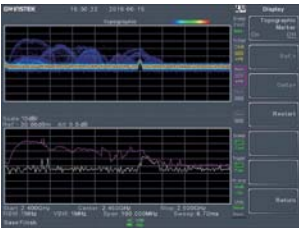
**Observe 4G LTE Signals by Split-Window Display**

## 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 75$\Omega$. 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.
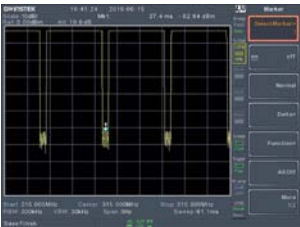


**Phase Jitter**

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.
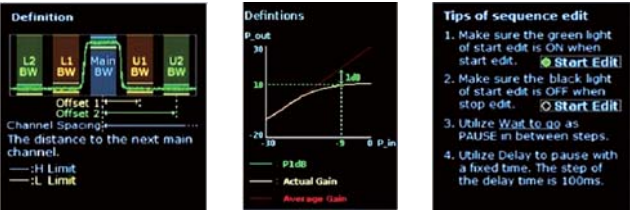
## H. COMMUNICATIONS INTERFACE

**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**

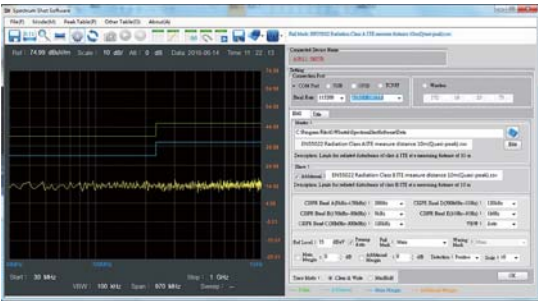TG option provides 0 to -50 dBm synchronized sweep output, conducts scalar network analysis (S11. S21) function as well as P1dB.



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

## 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 | -3dB bandwidth |
|---|---|---|
| | 200 Hz, 9 kHz, 120 kHz, 1MHz | -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), 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 | 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

| | | |
|---|---|---|
| | ± 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 |
| Overall Amplitude Accuracy | | |
| | ± 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.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