GSP-930

3GHz Advanced Spectrum Analyzer

FEATURES

- Frequency Range: 9kHz ~ 3GHz
- High Frequency Stability: 25ppb (0.025ppm)
- RBW: 10Hz ~ 10kHz in 1-3 Steps, 10kHz ~ 1MHz in 10% Adjustable Steps
- Phase Noise: -88dBc/Hz @1GHz, 10kHz Offset
- Built-in Measurement Functions: Channel Power, N-dB Bandwidth, OCBW, ACPR, SEM, TOI, CNR, CTB, CSO
- Built-in Spectrogram and Topographic Display Modes
- Gate Sweep Function
- 1Hz Resolution Marker Counter
- AM/FM Demodulation and Analysis
- 886MHz IF Output for User's Extended Applications
- Various Interface: USB Host/Device, RS-232C, LXI, Micro SD, GPIB(Optional)
- DVI-I Output for External Digital Display
- Built-in Preamplifier, 50dB Attenuator, and Sequence Function
- Optional 6GHz RF Power Sensor, Tracking Generator, Battery Back

GW INSTEK
Simply Reliable

3GHz Advanced Spectrum Analyzer

GSP-930

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

GSP-930 is a 3GHz Spectrum Analyzer designed upon a new generation platform. The high stability, large screen display, light weight and compact size of GSP-930 benchmark a new standard for 3GHz spectrum analyzer in the market. Its advanced features, Spectrogram and Topography, greatly expand the application range and elevate the importance of a spectrum analyzer in the role as the irreplaceable RF analysis instrument.

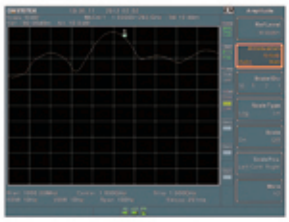
GSP-930 provides a high frequency-stability of 25ppb (0.025ppm) and a very low noise floor of -142dBm (Pre-amplifier on) as the high sensibility measurement base. The flexible selection among 58 RBW ranges along with Spectrogram and Topographic features enable GSP-930 to capture and display transient, drifting and hopping signals in detail. The mixture of frequency domain information and time domain information facilitates the tracing of RF signal variations over time. Other remarkable features like Spectrum Emission Mask (SEM), Power Measurements, AM/FM Analysis and TOI/CNR/CSO/CTB measurements, make GSP-930 a useful instrument right fit into a broad range of applications.

The user friendly design of GSP-930 helps reduce user's stress and anxiety in using a high-tech instrument. To help user easily get access to the regulations and definitions of the measurement terms under current operation, the built-in On-Screen-Help provides definition description on the screen to guide user through measurement processes without checking into documents. The widely used Icons on the display clearly indicate the current setting and operation status of the product, allowing user to handle the measurement scenario all at a glance. The wake-up clock automatically turns on the power of GSP-930 at user's pre-set time, which can be used to warm up the instrument in advance before the measurements are made to ensure the accuracy of measurement results. The Pass/Fail Limit function allows user to perform repetitive Go/No-Go measurements by template inspection instead of time-consuming value reading. The Sequence function provides an easy programming feature for user to edit and run measurement routines on GSP-930 screen without the need of a PC.

GSP-930 is equipped with various interfaces, including LXI, USB, RS-232C and GPIB (optional). The IVI driver is available for the remote control software development by means of LabVIEW or LabWindows/CVI. A Micro SD socket and a USB Host interface enable the memory size expansion for mass data storage. An IF output (886MHz) is provided as the intermediate frequency signal of RF input for users to develop their own applications. Carrying abundant communication interfaces, user-friendly operation, large screen display, light weight, compact size, and battery power operation(1), GSP-930 is developed upon a high-tech platform to provide ultimate customer benefits.

Remark (1): Battery pack is optional.

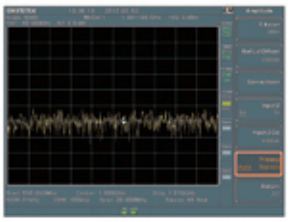
A. HIGH STABILITY OF FREQUENCY AND AMPLITUDE MEASUREMENTS



Marker Frequency Counter

GSP-930 carries a very high frequency-stability of 25ppb over temperature variation, superior to the 1ppm frequency stability of most spectrum analyzers available in the market. The high efficiency heat dissipation design and the temperature-controlled ventilation fan maintain a stable-temperature environment for GSP-930 circuitry operation, which contributes to the high accuracy of amplitude measurements in all time and greatly shortens the warm-up period at power on. To best utilize the advantage of high frequency-stability, GSP-930 features a Marker Frequency Counter function, which enables the high accuracy frequency measurements up to 1Hz resolution.

B. WIDE DYNAMIC RANGE



Built-in Pre-Amp

GSP-930 carries an extremely low noise floor of -142dBm when the built-in Pre-amplifier is on, and -122dBm when the Pre-amplifier is off (2). With -142dBm noise floor and maximum input power up to +30dBm, GSP-930 provides a very wide measurement range, which makes the measurement of very small signal possible.

Remark (2) : Under "Auto On" mode, the preamplifier will be turned on automatically when the reference level is set at lower than -30dBm. Under "Bypass" mode, the preamplifier will be off in all time.

C. MORE RBW RANGE SELECTIONS

RBW	RBW	RBW	RBW	RBW
1M	300 k	100 k	30 k	10 k
910 k	260 k	91 k	26 k	3 k
830 k	240 k	83 k	24 k	1 k
750 k	220 k	75 k	22 k	300
680 k	200 k	68 k	20 k	100
620 k	180 k	62 k	18 k	30
570 k	160 k	57 k	16 k	10
510 k	150 k	51 k	15 k	
470 k	140 k	47 k	14 k	120 k
420 k	120 k	42 k	12 k	9 k
390 k	110 k	39 k	11 k	200
350 k		35 k		
320 k		32 k		Total: 58

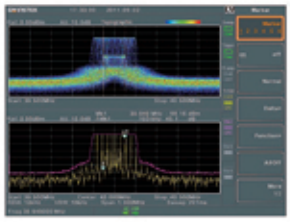
FIR
FFT
EMI

The RBW Range in GSP-930

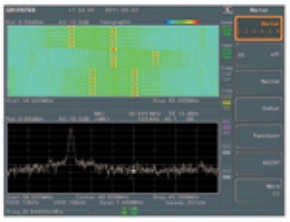
Adopting an advanced digital filter design, GSP-930 is able to provide 58 resolution bandwidth (RBW) selections. The RBW is selectable in 1-3 step increase from 10Hz to 3kHz, and in 10% step increase from 10kHz to 1MHz. The wide selection of RBW is able to maintain a consistent measurement result of filter shape, and enable the best accommodation between RBW and sweep speed to gain ultimate measurement accuracy.

GSP-930 also provides RBW selections of 200Hz, 9kHz and 120kHz for EMI standard compliance. A unique analog to digital conversion design is used to achieve high-resolution amplitude measurements within full dynamic range. With high-resolution A to D conversion, GSP-930 greatly reduces the uncertainty and increases the accuracy of small signal measurements.

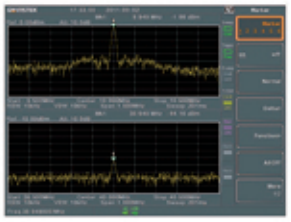
D. ADVANCED TOPOGRAPHIC AND SPECTROGRAM DISPLAY MODES



Topographic (top) display distinguishes two signals overlapping on the same frequency spectrum



Spectrogram (top) display shows a FSK signal



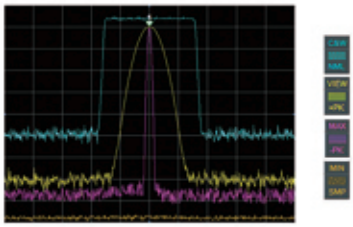
Spilt Windows display. 10MHz signal (top) and its 4th harmonic (bottom)

The conventional Spectrum Analyzer is not able to effectively measure transient signals or hopping signals due to the continuous update of current spectrum display. GSP-930, carrying Topographic technology, displays signals in various colors depending on the occurrence counts of each individual signal. This allows user to clearly distinguish transient signal, drifting signal and hopping signal from the entire spectrum of consistent input signals. The Topographic mode is especially useful to detect the transient interference signal in the telecommunication system, or to clearly display the transient behaviors of various types of telecommunication modulations like FSK, CCK and OFDM.

GSP-930 provides a powerful Spectrogram feature to simultaneously acquire Frequency Domain information and Time Domain information with dual-window display. Under Spectrogram mode, the X axis shows a line of frequency spectrum with different colors to represent different power levels of various-frequency signals, and the Y axis shows the time progress with current spectrum to always appear on the top of the display and with previous spectrums to roll down toward the bottom. The simultaneous provision of frequency domain information and time domain information makes Spectrum Analyzer a powerful instrument in most of the RF signal analysis applications.

In addition to Topographic and Spectrogram display modes, the split window feature can also perform dual frequency band measurements under Spectrum mode. With upper display window and lower display window to show separate measurement results under separate settings, GSP-930 is very useful for harmonic signals measurements or far-off frequency signals measurements.

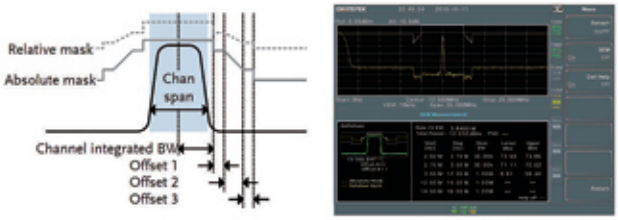
E. FOUR TRACES WITH INDEPENDENT DETECTOR MODE



Four traces with different display types and separate detector modes

GSP-930 is able to display four measurement traces under four measurement modes, including Normal Trace, Max Hold, Min Hold and View, at the same time. The four measurement traces can also accommodate measurement results under various detecting modes, including PK+, PK-, Normal, Sample and Average.

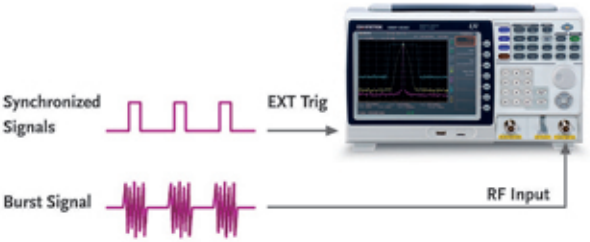
F. SEM MEASUREMENT

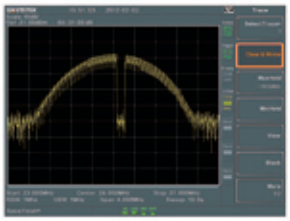


Spectrum Emission Mask

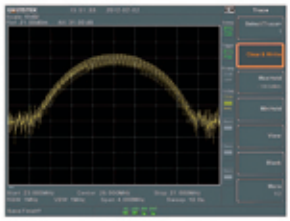
GSP-930 includes Spectrum Emission Mask (SEM) measurement as a standard feature for RF emission power measurements of telecommunication systems. SEM is used to regulate the maximum power emission of a system during signal transmission as to avoid cross -over interference imposed on other systems in the neighboring transmission channels. GSP-930 has a variety of built-in SEM masks to comply with telecom standards, including 3GPP, 802.11b, 802.11g, 802.11n and 802.16. User can also create his/her SEM according to own definition.

G. GATE SWEEP





Gate Sweep Function Off



Gate Sweep Function On

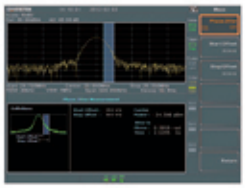
In some of telecom systems, like Rader system and TDMA system, the signal transmission is done through periodical power emission applying TD (Time Division) technology. As the periodical power emission doesn't occur synchronously with the sweep time of spectrum analyzer, the TD signal measurement becomes a challenging task to the users. GSP-930, carrying Gate Sweep function, is able to do gated measurement over a complete time slot of periodically emitted signal. With external trigger signal input, GSP-930 is able to perform TD signal measurements perfectly.

H. POWER MEASUREMENTS

ACPR Measurement

OCBW Measurement

N-dB Measurement

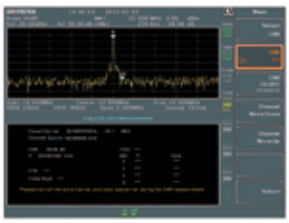


Phase Jitter Measurement

TOI Measurement

GSP-930 provides various Power Analysis functions for telecom channel measurements, including ACPR, OCBW, Phase Jitter and N-dB. With the display of channel bands in various color codes, and the split windows to show spectrum trace and measurement results simultaneously, GSP-930 is a very useful and convenient instrument for power analysis of telecom systems. The measurement function of Third Order Inter-modulation(TOI), caused by the nonlinearity characteristic of device or system, is also included to measure the inter-modulation distortion of two-tone signal.

I. CATV MEASUREMENTS



CNR Measurement

CSO/CTB Measurement

To check the performance of CATV systems, GSP-930 has built-in functions for CNR, CSO and CTB measurements. Carrier to Noise Ratio (CNR) is the indication figure of transmission quality. Composite

Second Order (CSO) measurement calculates the power difference between video carrier and composite second order beat. Composite Triple Beat (CTB) measurement calculates the power difference between video carrier and composite triple beat.

J. AM/FM DEMODULATION AND ANALYSIS

AM Demoduation

FM Demoduation

GSP-930 has enhanced AM/FM functions to do various parameter measurements such as AM Modulation Depth, FM Modulation Deviation, Carrier Power, Carrier Frequency Offset and SINAD etc. GSP-930 also provides listening feature for AM/FM demodulation analysis, allowing user to tune into AM or FM broadcasting and listen to the demodulated base band signals using ear phone jack.

K. CORRECTION TABLE

Correction Table

To compensate the frequency characteristics of test apparatus and increase measurement accuracy, GSP-930 provides a Correction Table for user to fill in correction factors, which correct the measurement results based on the frequency characteristics of the test fixtures.

L. USER-FRIENDLY DESIGN

On-Screen-Help and the Example of Correction Table

The built-in On-Screen-Help provides definition descriptions of test terminologies on the GSP-930 screen to guide user through measurement processes without checking into documents. The test terminologies carrying On-Screen-Help include:

1. The parameters of SEM, ACPR, Channel Power, OCBW, Phase Jitter and N-dB
2. The definitions of criteria of Pass/Fail test
3. The tips of Sequence editing

M. LIMIT LINE AND PASS/FAIL TEST

Trace Data to Limit Line & Marker Data to Limit Line

The Limit Line function of GSP-930 sets the upper limit or the lower limit for amplitude measurements, and provides user with a quick view of Go/NoGo inspection without the need to get trace readings. Three methods are available for Limit Line editing. The point-by-point data entry, the Trace Data to Limit Line Data conversion, which creates limit line by setting the offset values of existing trace pattern, and the Marker Data to Limit Line Data conversion, which uses markers to create limit line. An open-collector alarm output is available at the rear panel, which allows user to connect an external alarm for sound or other indications of Go/No-Go test result.

N. ICON SYMBOLS FOR STATUS INDICATION

Icon Symbols

The widely use of Icon symbols on the GSP-930 display allows user to see setting status and measurement results at a glance. This provides user with an easy view to handle the test scenario of GSP-930 all the time.

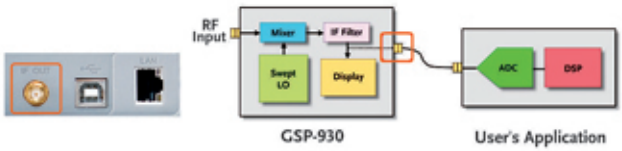
O. WAKE-UP CLOCK FOR POWER-ON TIME SETTING

Sequence Provides an Easy Programming Feature

The built-in wake-up clock enables the time pre-setting of GSP-930 power-on. This allows the setting of a prior warm-up time of the product at user's convenience, and enables accurate measurements according to the working schedule without waiting.

The Sequence function provides an easy programming feature for user to edit and run measurement routines on the GSP-930 screen without the need of a PC. GSP-930 can accommodate 5 Sequences of test routines with each Sequence routine to include up to 20 test steps. The multiple Sequences can also be chained freely to form a flexible test program like ATE test software.

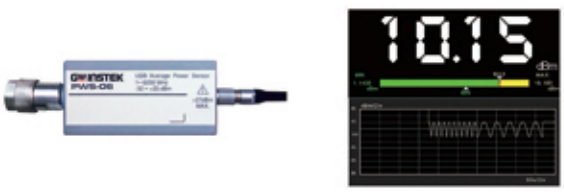
P. COMPREHENSIVE INTERFACES



IF Output

GSP-930 provides standard LXI interface for LAN applications. Besides LXI, GSP-930 is equipped with various interfaces, including USB, RS-232C and GPIB (optional). A Micro SD slot and a USB Host interface, supporting NTFS/VFAT/FAT32/FAT16 formats, enable the memory size expansion for mass data storage. An IF output (886MHz) is provided as the intermediate frequency or the base band of RF input signal for users to develop further applications. The DVI-I interface, compatible with VGA/HDMI interface communication, offers the benefit to transfer the GSP-930 screen image to the external display equipment for remote image applications.

Q. OPTIONS



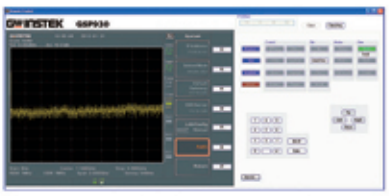
PWS-06 RF Power Sensor and Power Meter Mode on GSP-930

The optional PWS-06 RF Power Sensor provides Average Power measurement function for RF signals. The Power Sensor carries the specifications of ±0.15dB accuracy, 1MHz to 6.2GHz frequency range and -32dBm to +20dBm power measurement range. PSW-06 is powered by the USB port on GSP-930, and displays measurement results on the GSP-930 screen under Power Meter mode.

The Tracking Generator is available as an option of GSP-930 to meet the requirements of frequency response measurements of RF components or modules.

As a portable instrument, GSP-930 uses a Li-ion battery pack, which complies with UN38.3 standard, for battery power operation.

R. SOFTWARE AND DRIVER SUPPORT



A PC software is available with GSP-930 to support PC communication tasks through USB, RS-232C or GPIB ports. The user can acquire trace data from GSP-930 or store its display image on the PC, as the most popular applications. The acquired trace data can be saved as a text file for further analysis. The remote control of the instrument and the LAN/LXI applications can be done through this PC software as well. Besides this PC software, an IVI Driver is supported with GSP-930 to enable LabVIEW and LabWindows/CVI programming.

S. OUTDOOR USAGE

Slim Size

The compact size, light weight (4kg) and battery power operation of GSP-930 make it an ideal instrument for outdoor applications. The 8.4"

Battery Module

8.4" SVGA TFT LCD

large TFT LCD display provides a SVGA resolution of 800 *600, allowing high precision measurements with 601 data points for each trace display.

PANEL INTRODUCTION

1. LCD Display
2. Function Keys
3. Main Keys
4. Control Keys
5. File Keys
6. Power Key
7. Marker Keys
8. State Keys
9. Scroll Wheel
10. Arrow Keys
11. Numeric, Enter and BK SP Keys
12. RF Input Terminal
13. DC Power supply
14. Tracking Generator Output
15. USB A, Micro SD Socket
16. RS-232C Port
17. DVI-I Port
18. IF Output
19. USB-B, LAN Port
20. Trigger Input/Gate Input Port
21. Alarm Output/Open Collector
22. REF Output
23. REF Input
24. Fan
25. GPIB Port (Optional)
26. Battery Cover/Optional Battery Pack
27. Power Socket

SPECIFICATIONS

FREQUENCY

FREQUENCY

Range	9 kHz ~ 3.0 GHz	
Resolution	1 Hz	

FREQUENCY REFERENCE

Accuracy	± (period since last adjustment x aging rate) + stability over temperature + supply voltage stability	
Aging Rage	± 2 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*1	
Sweep Points	601	Span = 0
	6 ~ 601	Span = 0

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 GHz	
Resolution	1 Hz	
Accuracy	± frequency resolution *1	

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	10 Hz ~ 3 kHz in 1-3-10 sequence	-3dB bandwidth subtotal: 6 filters
	10 kHz ~ 1 MHz, increment in 10% step	-3dB bandwidth; min. RBW = 10 kHz@zero span, subtotal: 49 filters
	200 Hz, 9 kHz, 120 kHz	-6dB bandwidth
Accuracy	± 8%, RBW≥750 kHz	Nominal *3
	± 5%, RBW < 750 kHz	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

*1 Frequency Resolution = Span/(Sweep 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 ~ 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 ~ 1 MHz	Displayed Average Noise Level (DANL) to 18 dBm
	1 MHz ~ 10 MHz	DANL to 21 dBm
	10 MHz ~ 3 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; RBW 10 Hz; VBW 10 Hz; span 500 Hz; reference level = -60dBm; 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
10 MHz ~ 3 GHz	< -122 dBm	Nominal
Preamp On	0 dB attenuation; RBW 10 Hz; VBW 10Hz; span 500 Hz; reference level = -60dBm; 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 GHz	< -145 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)	Can be setup for each traces separately
Trace Functions	Clear & Write, Max/Min Hold, View, Blank, Average	

NOTE: The specifications apply when the GSP-930 is powered on for at least 30 minutes to warm-up to a temperature of 20°C to 30°C, unless specified otherwise.

3GHz Advanced Spectrum Analyzer

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; 20 ~ 30°C; signal 0 dBm	
Preamp Off	± 0.3 dB	Ref level 5 dBm; 10 dB RF attenuation
Preamp On	± 0.4 dB	Ref level 5 dBm; 0 dB RF attenuation
FREQUENCY RESPONSE		
Preamp Off	Attenuation: 10 dB; Reference: 160 MHz; 20 ~ 30°C	
100 kHz ~ 3.0 GHz	± 0.5 dB	
2.0 GHz ~ 3.0 GHz	± 0.7 dB	
Preamp On	Attenuation: 10 dB; Reference: 160 MHz; 20 ~ 30°C	
1 MHz ~ 3.0 GHz	± 0.6 dB	
2.0 GHz ~ 3.0 GHz	± 0.8 dB	
ATTENUATION SWITCHING UNCERTAINTY		
Attenuator Setting	0 to 50 dB in 1 dB steps	
Uncertainty	± 0.15 dB	Reference : 160 MHz, 10dB attenuation
RBW FILTER SWITCHING UNCERTAINTY		
10 Hz ~ 1 MHz	± 0.15 dB	Reference : 10 kHz RBW
LEVEL MEASUREMENT UNCERTAINTY		
Overall Amplitude Accuracy	± 1.5 dB	20~30°C; frequency>1MHz; signal input 0~-50dBm; reference level 0~-50dBm; Input attenuation 10dB; RBW 1kHz; 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 < 1.5 GHz
Third-order Intercept	Preamp off; signal input -30dBm; 0 dB attenuation	
	> 1dBm	300 MHz ~ 3 GHz
Input Related Spurious	< -60 dBc	Signal level -30 dBm at 1st mixer; 20 ~ 30°C
Residual Response (Inherent)	< -90 dBm	Input terminated; 0 dB attenuation; Preamp off
SWEEP		
SWEEP TIME		
Range	22 ms ~ 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 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 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
REFERENCE INPUT/OUTPUT		
REFERENCE OUTPUT		
Connector Type	BNC female	
Output Frequency	10 MHz	
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 speed

SPECIFICATIONS

IF OUTPUT		
Connector Type	SMA female	
Impedance	50	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 (OPT.)		
Connector Type	IEEE-488 bus connector	
AC POWER INPUT		
Power Source	AC 100 V ~ 240 V, 50/60 Hz	Auto range selection
BATTERY PACK (OPT.)		
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 213 (H) x 105.7(D) mm, Approx. 4.5kg	Inc. all options (Basic + TG + GPIB + Battery)
	13.8(W) x 8.3 (H) x 3.9(D) ince, Approx. 9.9lb	
TRACKING GENERATOR (OPTIONAL)		
Frequency Range	100 kHz ~ 3 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 ~ 10 MHz	± 1 dB
	10 MHz ~ 3 GHz	± 1 dB
Output Level Switching Uncertainty	± 0.8 dB	Referenced ~ -10 dBm
Harmonics	< -30 dBc	Typical, output level = -10 dBm
Reverse Power	+30 dBm max.	
Connector Type	N-type female	
Impedance	50Ω	Nominal
Output VSWR	< 1.6 : 1	300 kHz ~ 3 GHz, source attenuation ≥12 dB
RF POWER SENSOR (OPTIONAL)		
Type	Average power sensor	Model: PWS-06
Interface to Meter	USB cable to GSP-930 Front-Panel USB Host	
Connector Type	N-type male, 50 ohm nominal	
Input VSWR	1.1 : 1	Typical
	1.3 : 1	Max
Input Frequency	1 ~ 6200 MHz	
Sensing Level	-32 ~ +20 dBm	
Max. Input Damage Power	> 27 dBm	
Power Measurement Uncertainty @25 °C	-30 dBm ~ +5 dBm: 1 MHz ~ 3GHz: ±0.10 dB typical	± 0.30 dB max.
	3 GHz ~ 6 GHz: ±0.15 dB typical	± 0.30 dB max.
	+5 dBm ~ +12 dBm: 1 MHz ~ 3GHz: ±0.15 dB typical	± 0.30 dB max.
	3 GHz ~ 6 GHz: ±0.15 dB typical	± 0.30 dB max.
	+12 dBm ~ +20 dBm: 1 MHz ~ 3GHz: ±0.20 dB typical	± 0.40 dB max.
	3 GHz ~ 6 GHz: ±0.20 dB typical	± 0.40 dB max.
Power Measurement Uncertainty @0 ~ 25 °C	-30 dBm ~ +5 dBm: 1 MHz ~ 3GHz: ±0.25 dB typical	
	3 GHz ~ 6 GHz: ±0.25 dB typical	
	+5 dBm ~ +12 dBm: 1 MHz ~ 3GHz: ±0.20 dB typical	
	3 GHz ~ 6 GHz: ±0.20 dB typical	
	+12 dBm ~ +20 dBm: 1 MHz ~ 3GHz: ±0.35 dB typical	
	3 GHz ~ 6 GHz: ±0.30 dB typical	
Linearity @25 °C	±3 %	
Measurement Speed	100 ms for Low Noise Mode	Typical
	30 ms for Fast Mode	

ORDERING INFORMATION

GSP-930 3GHz Advanced Spectrum Analyzer

ACCESSORIES

Quick Start Manual x 1
User Manual CD x 1
Power Cord x 1

OPTION

Opt. 01 Tracking Generator Opt. 02 Battery Pack Opt. 03 GPIB Interface

OPTIONAL ACCESSORIES

PWS-06 USB Power Sensor
GSC-009 Soft Carrying Case
GRA-415 Rack Adapter Panel

FREE DOWNLOAD

PC Software, Remote monitor software
IVI Driver, supports LabVIEW and LabWindows/CVI programming

DISTRIBUTOR :

SP-9300 GD1BH

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