



## GSP-730/GRF-1300A/ USG-LF44

### FEATURES

#### GSP-730 Spectrum Analyzer

- Frequency Range : 150kHz ~ 3GHz
- Autoset Function
- Noise level :  $\leq -100\text{dBm}$
- RBW Range : 30kHz, 100kHz, 300kHz, 1MHz
- ACP/CHP/OCBW Measurement
- 3 Traces in Different Colors
- Split Window Function
- Limit Line Function
- Remote Control Software
- Presentation Material for Training Courses
- Support Interface : USB Device/Host, RS-232C
- 5.6" TFT LCD with VGA Output

#### GRF-1300A RF and Communication Trainer

- Waveform Support :  
Sine Wave : 0.1 ~ 3MHz  
Square Wave : 0.1 ~ 3MHz  
Triangle Wave : 0.1 ~ 3MHz
- RF Frequency : 870 ~ 920MHz
- AM Modulation & FM Modulation
- 5 On/Off Switches and 5 Test Points to Simulate 8 Failure Conditions for Learning Outcome Test
- USB Interface to Provide Remote Control
- Mixer & 2.4GHz Band Pass Filter

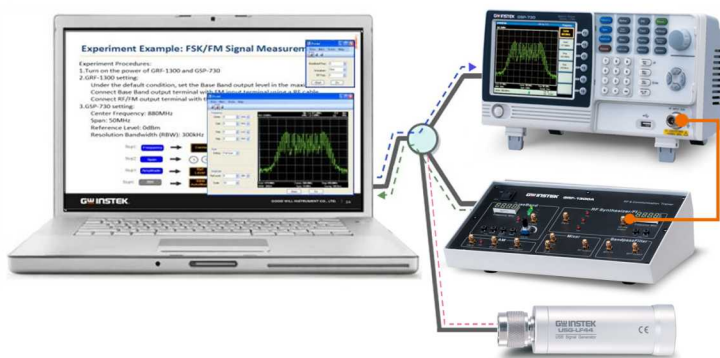
#### USG-LF44 RF Signal Generator

- Frequency Range : 34.5MHz ~ 4400MHz
- Output Power Range : -30dBm ~ 0dBm
- Continuous Wave Signal Without any Modulation
- Support Fixed Frequency, Frequency Sweep, Frequency Hopping & Power Sweep Mode
- -107dBc/Hz Phase Noise@100kHz Offset
- Frequency Resolution : 10kHz
- PC USB Interface Powered and Controlled
- External PC Software Support Different Operating System

## Turn-key Solution for RF and Communication Experiment Courses

GW Instek GSP-730 is a 3 GHz Spectrum Analyzer developed mainly to fulfill the demands of RF Communications education. Budget constraint and inadequate teaching tools are normally the two hurdles for schools to provide high-quality courses for RF communications experiments. GSP-730, a spectrum analyzer of full functions, combines with the GRF-1300A training kit to provide customer an economical turn-key solution for 3GHz RF and Communications Experiment Courses.

Properly connect GSP-730 Spectrum Analyzer, GRF-1300A RF and Communications Trainer, USG-LF44 RF Signal Generator and a PC to perform ongoing experiments while the lecture is being given. Using a PC, teacher can present teaching material with Power Point slides and simultaneously control GSP-730, GRF-1300A and USG-LF44 to perform experiments and get spectrum displays parameter readings on the PC screen. GSP-730, GRF-1300A and USG-LF44 easily transfer the current teaching materials including the PowerPoint slides, textbook and the remote control software into electronic-teaching system.



### Fully-electronic RF Training System

The combination of GSP-730, GRF-1300A and USG-LF44 forms a fundamental training system for RF communications and telecommunications classes in the universities, colleges, vocational schools and the training center in military as well as the private companies. Instead of the tremendous cost of the installation of new training system, the conjunction of GSP-730, GRF-1300A and USG-LF44 provides an economical solution to eliminate two obstacles, budget constraint and insufficiency of teaching tools.

### APPLICATIONS

- Education, Training
- Fourier Theory Investigation
- Motherboard Circuit Measurement
- Scalar Network Analyzer
- Wireless Communication Signal Measurements
  - GSM, 3G, 4G Mobile Phone
  - Bluetooth, Zigbee, Wi-Fi
  - AM/FM Modulation
- Remote Controller Maintenance

## SPECIFICATIONS

GSP-730																															
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<b>DIMENSIONS &amp; WEIGHT</b>	296(L) x 153(W) x 105(H) mm / 11.6(L) x 6(W) x 4.1(H) in, Approx. 2.2kg / 4.9lb																														
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<b>MIXER + MODULATION</b>	$\geq -60$ dBm																														
<b>BANDPASS FILTER</b>	<table border="1"> <tr> <td><b>Frequency Centre: 2.4GHz</b></td> <td>Bandwidth: <math>\pm 20</math>MHz</td> </tr> </table>	<b>Frequency Centre: 2.4GHz</b>	Bandwidth: $\pm 20$ MHz																												
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<b>DIMENSIONS &amp; WEIGHT</b>	165(W) x 155(H) x 90(D)mm, Approx. 1.2kg																														

## ORDERING INFORMATION

<b>GSP-730</b>	3GHz Spectrum Analyzer
<b>GRF-1300/1300A</b>	RF and Communications Trainer
<b>USG-LF44</b>	RF Signal Generator
<b>ADP-003</b>	N type to SMA Adapter

## ACCESSORIES

<b>GSP-730</b>	Quick Start Manual x1, CD-ROM with User Manual x1, Power Cord x1
<b>GRF-1300/1300A</b>	Experiment text book of student version, Power point file and remote control software CD, GRF-1300 : RF cable x 3, Antenna x 1/ GRF-1300A : RF cable x 6, Antenna x 2, N to SMA adaptor connector x 1, Power cord x 1
<b>USG-LF44</b>	USB cable x1, CD-ROM with USG software, Primary RF Software and User Manual x1

## OPTION

<b>GBK-001</b>	GRF-1300 Experiment text book of teacher version
<b>GBK-002</b>	GRF-1300A Experiment text book of teacher version

## FREE DOWNLOAD

<b>PC Software</b>	Primary RF, Remote Control Software, USG Java program
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## SPECIFICATIONS

MODEL	USG-LF44	USG-0103	USG-0818	USG-2030	USG-3044
FREQUENCY RANGE	34.5 MHz ~ 4.4 GHz	100 MHz ~ 300 MHz	800 MHz ~ 1.8 GHz	2.0 GHz ~ 3.0 GHz	3.0 GHz ~ 4.4 GHz
OUTPUT POWER	-30 dBm ~ 0 dBm, in 1 dB steps				
INTERNAL REFERENCE FREQUENCY	25 MHz, aging $\pm 1$ ppm at first year				
FREQUENCY ACCURACY (0 dBm Output Level)	$\pm 100$ Hz at 100MHz	$\pm 100$ Hz at 100MHz	$\pm 800$ Hz at 800MHz	$\pm 2$ kHz at 2GHz	$\pm 3$ kHz at 3GHz
FREQUENCY RESOLUTION	10 kHz				
OUTPUT ISOLATION	$\leq -75$ dBc, Output Control On/Off				
MODE CONTROL	Fixed Frequency / Single Sweep / CW Sweep / Hopping / Power Sweep				
STEP DWELL	$\leq 1000$ ms in 1 ms steps				
FREQUENCY OFFSET	-50 kHz ~ 50 kHz in 10 kHz steps				
OUTPUT FLATNESS (0 dBm Output Level)	-1 dBm ~ 3.5 dBm, typical	-1 dBm ~ -2 dBm, typical	-1 dBm ~ -0.5 dBm, typical	-1 dBm ~ -0.5 dBm, typical	-1 dBm ~ 3.5 dBm, typical
PHASE NOISE Carrier Frequency at 10kHz Offset Frequency  at 100kHz Offset Frequency	fc = 1.0 GHz < -97 dBc/Hz, typical -100 dBc/Hz < -107 dBc/Hz, typical -110 dBc/Hz	fc = 200 MHz < -100 dBc/Hz, typical -110 dBc/Hz, typical	fc = 1.3 GHz < -97 dBc/Hz, typical -102 dBc/Hz, typical	fc = 1.5 GHz < -93 dBc/Hz, typical -100 dBc/Hz, typical	fc = 3.7 GHz < -88 dBc/Hz, typical -94 dBc/Hz, typical
2ND HARMONICS (0 dB Attenuation)	$\leq -15$ dBc, typical 34.5 MHz ~ 2.0 GHz $\leq -10$ dBc, typical 2.0 GHz ~ 3.0 GHz $\leq -25$ dBc, typical 3.0 GHz ~ 4.4 GHz	$\leq -45$ dBc, typical > 100 MHz	$\leq -25$ dBc, typical > 800 MHz	$\leq -30$ dBc, typical 2.0 GHz ~ 3.0 GHz	$\leq -25$ dBc, typical 3.0 GHz ~ 4.4 GHz
3rd HARMONICS (0 dB Attenuation)	$\leq -5$ dBc, typical 34.5 MHz ~ 2 GHz $\leq -20$ dBc, typical 2.0 GHz ~ 3.0 GHz $\leq -40$ dBc, typical 3.0 GHz ~ 4.4 GHz	$\leq -7$ dBc typical $\leq 150$ MHz $\leq -35$ dBc, typical > 150 MHz	$\leq -25$ dBc, typical $\leq 900$ MHz $\leq -35$ dBc, typical > 900 MHz	$\leq -55$ dBc, typical 2.0 GHz ~ 3.0 GHz	$\leq -40$ dBc, typical 3.0 GHz ~ 4.4 GHz
SPURIOUS RELATED TO RESOLUTION SETTINGS	$\leq -30$ dBc, typical, Resolution < 1MHz $\leq -65$ dBc, typical, Resolution $\geq 1$ MHz				
SPURIOUS RELATED TO THE FUNDAMENTAL OUTPUT	$\leq -60$ dBc, typical	$\leq -60$ dBc, typical	$\leq -65$ dBc, typical	$\leq -65$ dBc, typical	$\leq -65$ dBc, typical
SUPPORTED OS	Windows/Linux/Mac/Android				
INTERFACE	USB 2.0				
USB CONNECTOR TYPE	Mini B				
SUPPLY VOLTAGE	5V nominal				
CURRENT CONSUMPTION	200 mA				
RF CONNECTOR TYPE	N-type male				
IMPEDANCE	50 $\Omega$ nominal				
OUTPUT VSWR	< 1.5 : 1, Output Level @ -30 dBm				
MAXIMUM PERMISSIBLE DC VOLTAGE	$\pm 25$ V				
MAXIMUM REVERSE POWER	+30dBm (1W)				
ELECTROMAGNETIC COMPATIBILITY	EN 55011 class A, EN 61326-1 (industrial environment), EN 61326-2-1, EN 61000-4-2, EN 61000-4-3 EN 61000-4-11				
DIMENSIONS & WEIGHT	30(W) x 103(H) x 30(D)mm; Approx. 100g				

Specifications subject to change without notice. USGGD1DH

Global Headquarters

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Korea Subsidiary

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# GW INSTEK

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