

GSP-730 Affordable 3GHz Spectrum Analyzer

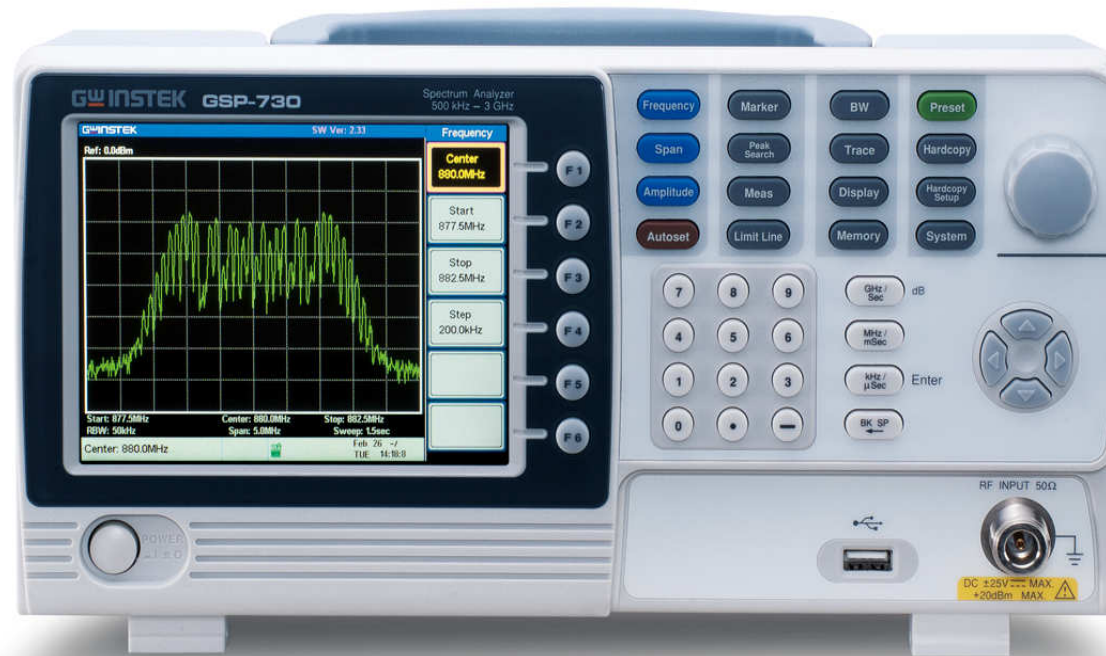
GW INSTEK

Made to Measure

GOOD WILL INSTRUMENT CO., LTD.

GSP-730

Front Side



GSP-730 3GHz Spectrum Analyzer

GSP-730

Rear Side



GSP-730 3GHz Spectrum Analyzer

GSP-730 Key Features

- Frequency Range: 150kHz ~ 3GHz
- Autoset function
- Noise Level : -100dBm
- RBW Range: 30kHz, 100kHz, 300kHz, 1MHz for standard
- ACPR/CHPW/OCBW/N-dB Measurement Function
- Build-in Limit Line Function
- 5 Markers
- Split Window Function
- Icon State Show
- 3 Traces in different colors
- Support Interface: USB Device / Host, RS-232
- 5.6" TFT LCD with VGA Output

GWInstek Spectrum Analyzer Product Line

Price

Performance



GSP-730

GSP-930

Product Position of GSP-730

1. Benchmark the affordable 3GHz Spectrum Analyzer in the Educational and Basic Industrial markets
2. Create market demands for the affordable 3GHz Spectrum Analyzer
3. Price positioned at around US\$1000

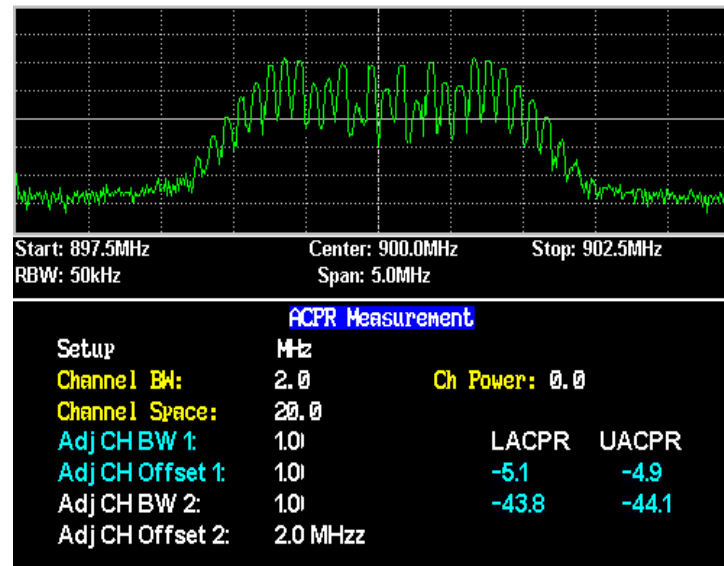
Autoset Function

- Autoset function automatically captures RF signal and configures the optimal display setting just in one step.



Power Measurements

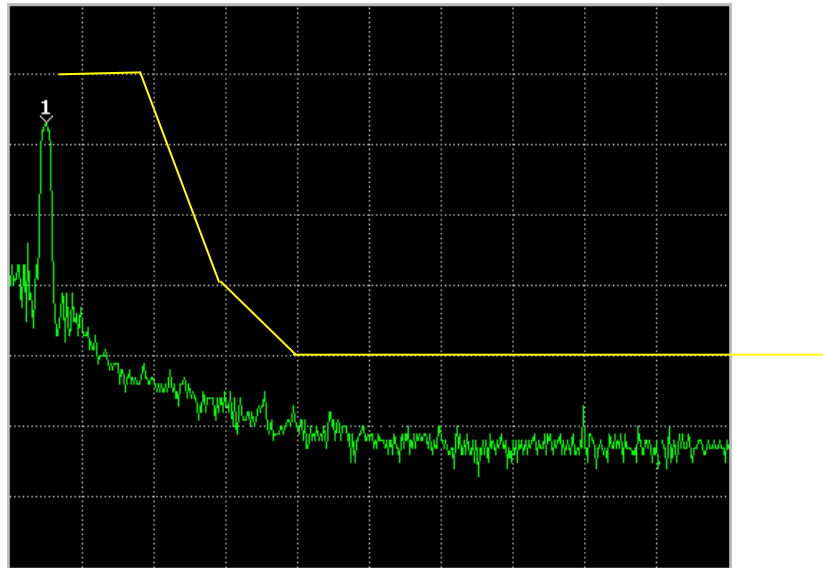
- GSP-730 provides various power measurement functions: ACPR, OCBW, and Channel Power, and N-dB bandwidth measurements.



ACPR Measurements

Pass/Fail Judgment

- The Pass/Fail judgment function provides convenience for quick inspections over repetitive measurements.



Pass/Fail Judgment

Marker Function

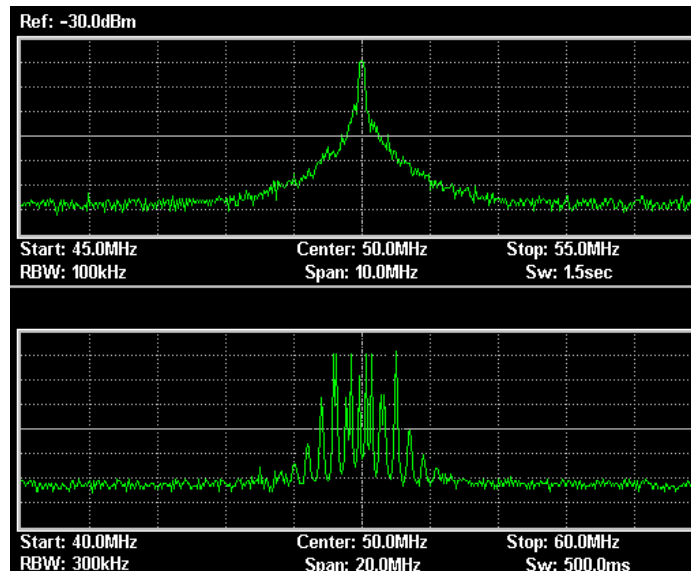
- 5 pairs of flexible and all-around markers can easily find and observe the signal peaks and track them or measure the delta readings between defined pairs.



Market Function

Split Windows Display in Live Mode

- The Split-Window enables the dual measurements with dual displays of a signal under two different setting environments.



Split Window

Convenient Interfaces

- The USB host supports the ubiquitous flash drive for various transactions.
- The USB device and RS-232 get access to a PC for remote control purposes.
- The VGA output terminal can be used for showing GSP-730 screen display on an external device.



USB host

USB device
RS-232
VGA Output

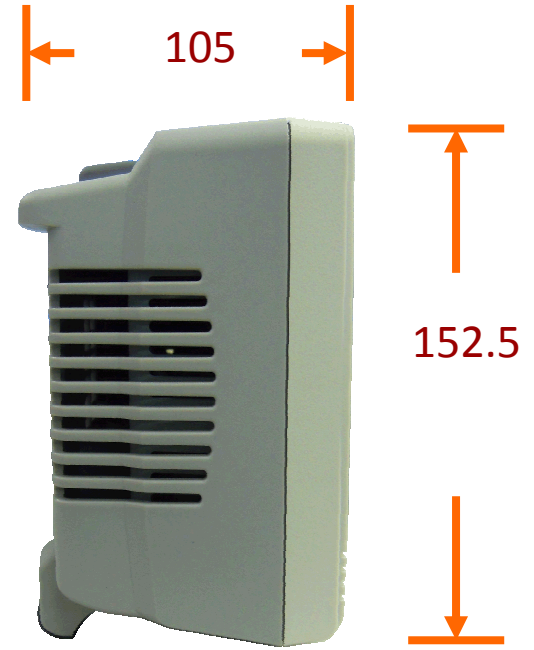
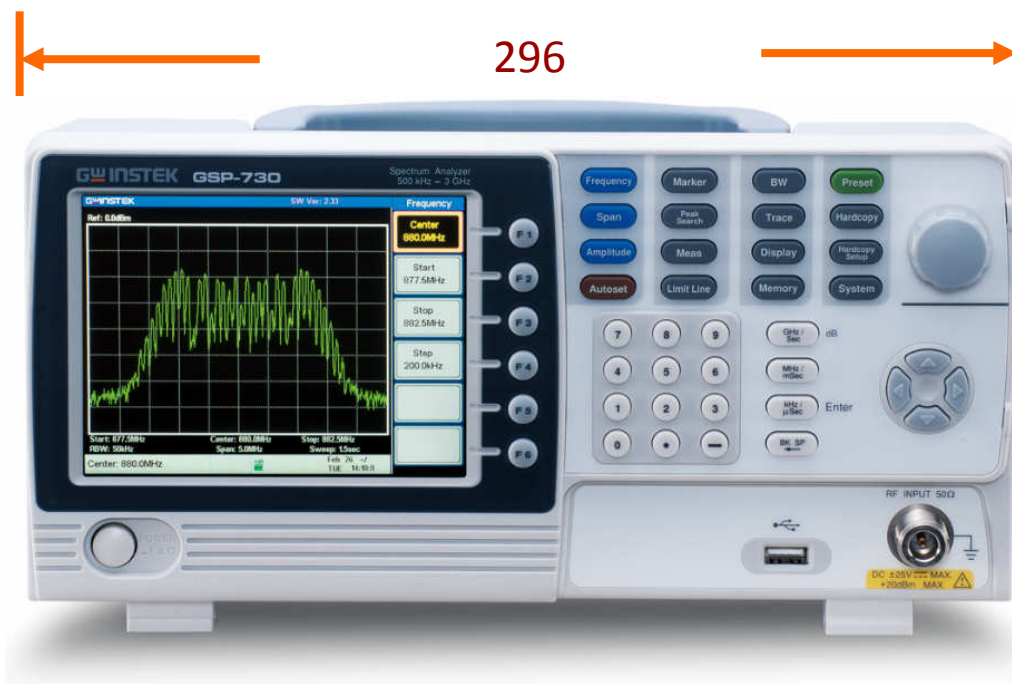


Free PC Software

- Through RS-232 or USB connection, the PC software transfers the measurement data from GSP-730 to a PC.



GSP-730 Weight and Size



2.2 kg

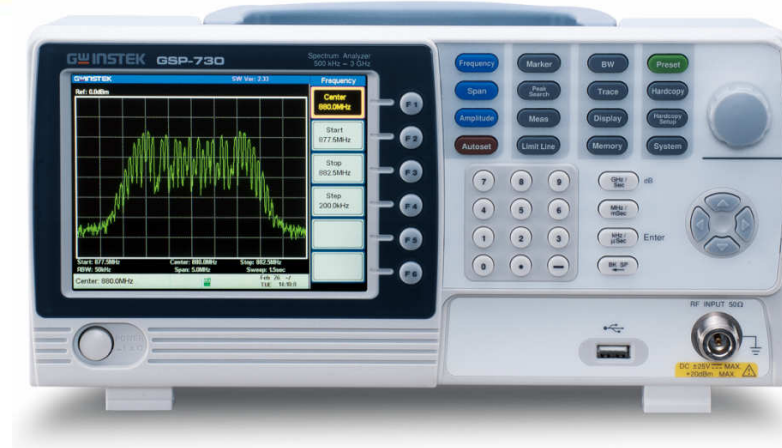
Unit: mm

GSP-730 Display & Interface

- 5.6" Color LCD with RGB resolution (640 x 480)

- Plenty of meas. functions

- Main-stream external memory devices: USB memory stick



- VGA D-sub 15

- RS-232 D-sub 9

- USB B plug



GRF-1300 Training Kit



GRF-1300 RF & Communication Trainer

GRF-1300 Training Kit

Features:

- Sine Wave: 0.1~3MHz , Square Wave and Triangle Wave: 0.1~1MHz
- RF Frequency: 880~920MHz
- AM Modulation & FM Modulation
- 5 on/off switches and 5 test points to simulate 8 failure conditions for trouble-shooting study
- USB Interface to provide remote control on:
 - IDN
 - RF Frequency
 - AF Frequency
 - AF Waveform Selection
 - B1~B5 On/Off Control

RF & Communication Training Program



GSP-730 with GRF-1300 for Teaching

GSP-730 + GRF-1300 Training Kit + Textbook

- GSP-730 + GRF-1300 + Textbook as a turn-key solution for RF & communication educational market
- An easy- start system to facilitate teacher's study. Both student's book band teacher's book (optional) are available
- PC Software allows the remote control of GSP-730 and GRF-1300, and transfers the GSP-730 screen image to PC and external image display device, such as a projector, for teaching presentation.

GRF-1300

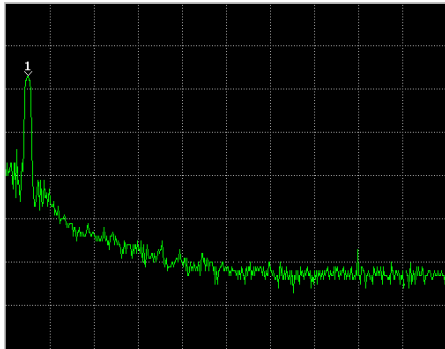


Textbook Contents

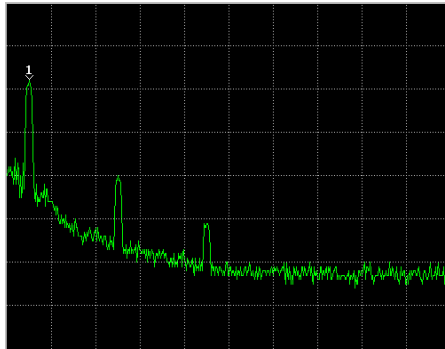
Section	Title	Content
1	GRF-1300 Introduction	Overview
2	Freq. Domain & Time Domain Basics	Fundamental Theories
3	Spectrum Analyzer	Fundamental Theories
4	Spectrum Analyzer Features and Operations	Experiment: Understanding RF Measurements of Frequency, Amplitude and Markers and the utilization of USB Save/Recall function
5	Harmonic Measurements	Experiment: Harmonic Measurements over Sine, Triangle and Square Waves
6	AM Signal Analysis	Experiment: AM Measurements
7	FM Signal Analysis	Experiment: FM Measurements
8	Failure Diagnosis and Measurements	Experiment: Diagnosis over simulated failure conditions
9	Appendix	Most commonly used RF formulas

Experiment Example: Base Band & RF Measurements

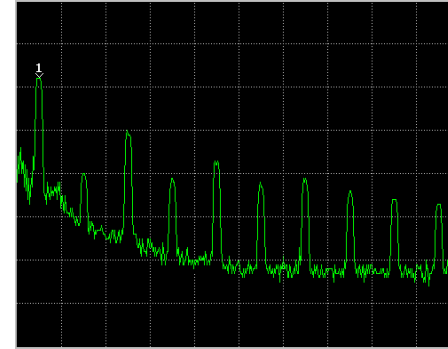
- Base Band Harmonic



sinewave, 2MHz
2MHz

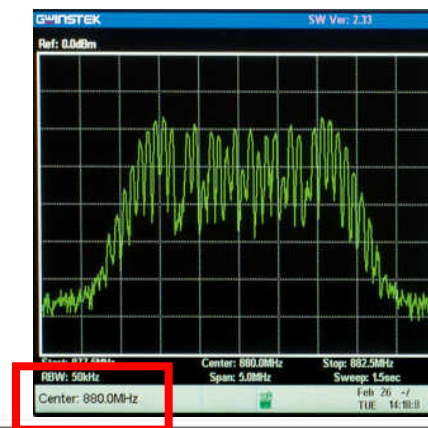
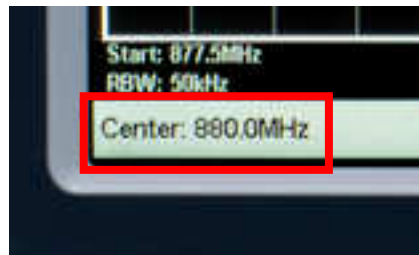


triangle wave, 2MHz



square wave,

- FM Carrier with RF Signal



Experiment Example: FM Signal Measurements

Experiment Intent:

- FM (Frequency Modulation) is a most commonly used modulation method in the communication applications. It is essential for students to know the modulation theory and the characteristics of a FM modulated signal, which has the advantages of higher susceptibility against interference, higher power efficiency, and higher signal fidelity, compared with AM modulated signal. The experiment also gives a lesson for students to learn the PLL (phase lock loop) theory of a FM circuitry, which is applied in the GRF-1300 training kit.

Experiment Contents:

1. Understanding the operation theory of FM
2. The characteristics measurements of a FM Modulated Signal using a Spectrum Analyzer

Experiment Example: FM Signal Measurements

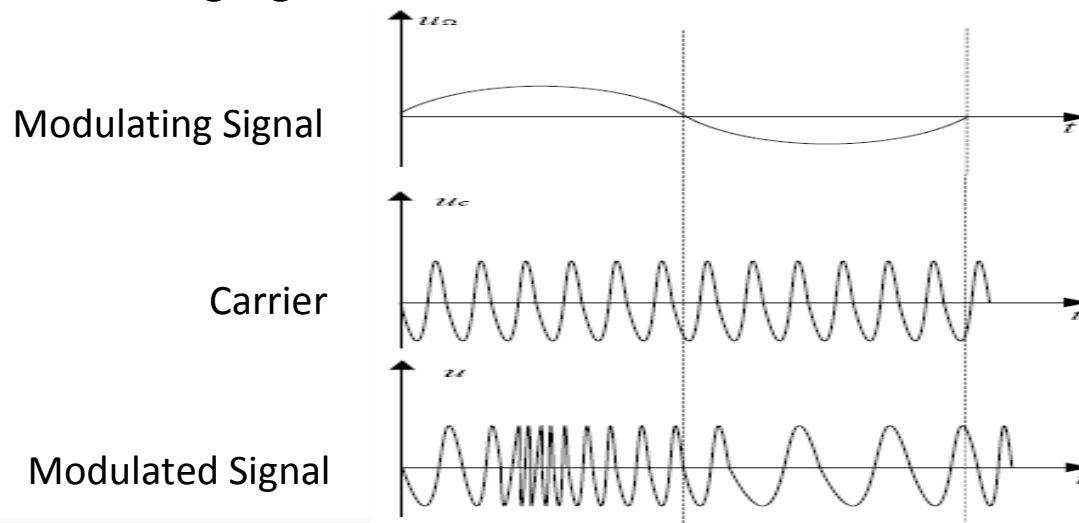
Experiment Theory:

- The formula of a FM signal is normally stated as

$$\begin{aligned}
 u(t) &= U_{cm} \cos[\omega_c t + k_f \int_0^t u_m(t) dt + \phi_0] \\
 &= U_{cm} \cos[\omega_c t + k_f \int_0^t U_{\Omega m} \cos \Omega t dt + \phi_0] \\
 &= \underbrace{U_{cm} \cos[\omega_c t]}_{\text{Carrier}} + \underbrace{\frac{k_f U_{\Omega m}}{\Omega} \sin(\Omega t)}_{\text{Modulating Signal}} + \phi_0
 \end{aligned}$$

Carrier — — Modulating Signal

The frequency of modulated signal varies following the amplitude change of modulating signal is shown as follows:



Experiment Example: FM Signal Measurements

Experiment Procedures:

1. Turn on the power of GRF-1300 and GSP-730

2. GRF-1300 setting:

Under the default condition, set the Base Band output level in the maximum position

Connect Base Band output terminal with FM input terminal using a RF cable

Connect RF/FM output terminal with the RF input of GSP-730 using a RF cable

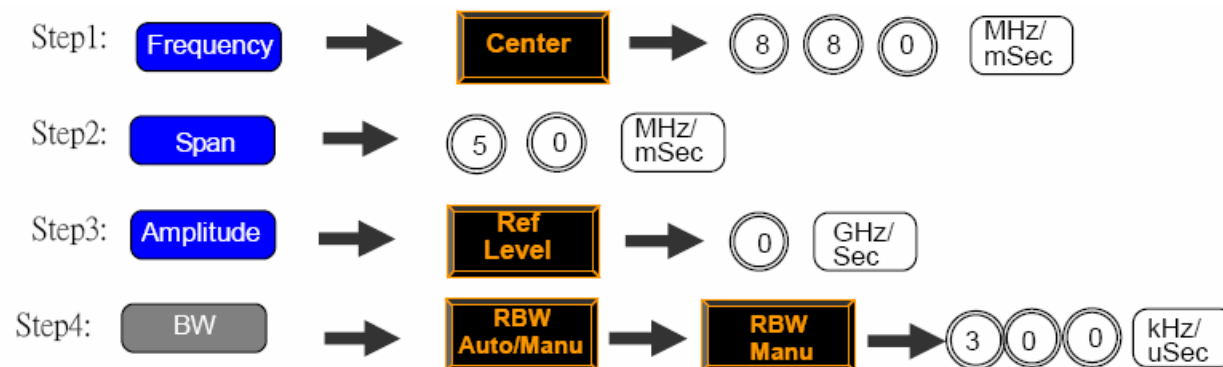
3. GSP-730 setting:

Center Frequency: 880MHz

Span: 50MHz

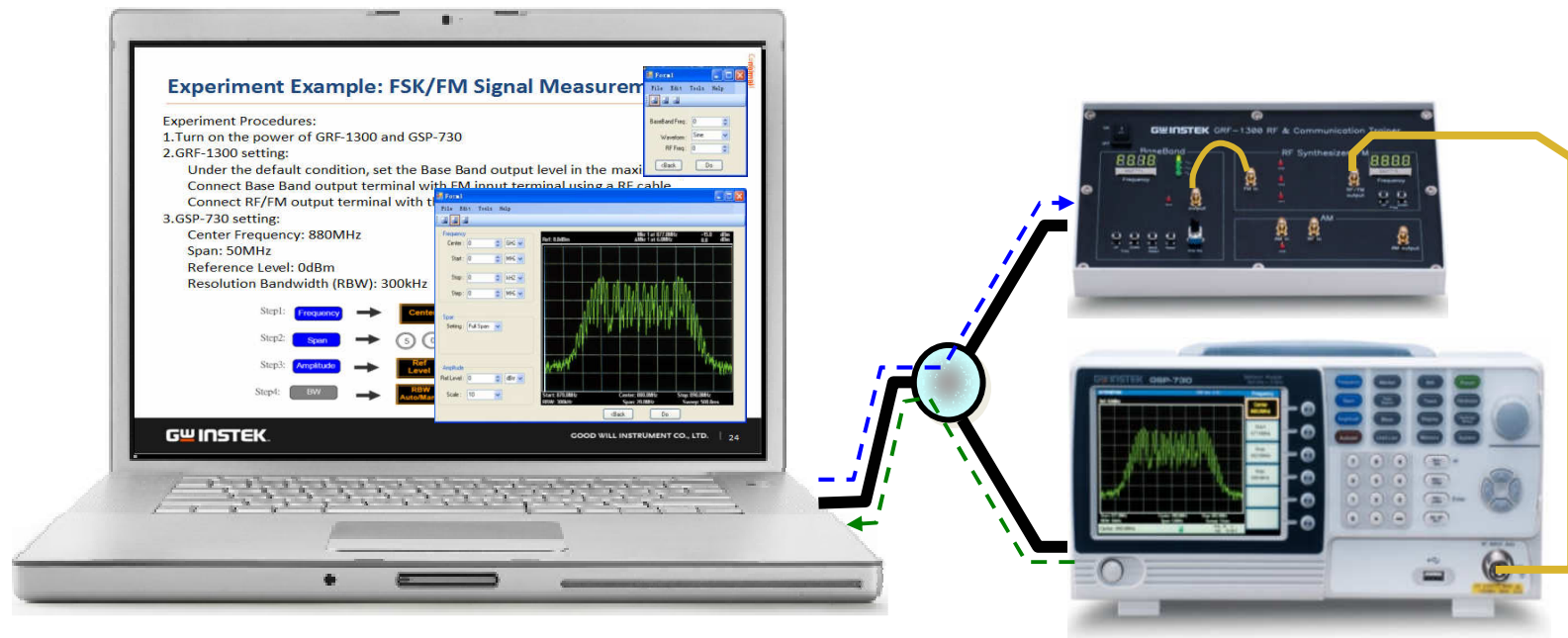
Reference Level: 0dBm

Resolution Bandwidth (RBW): 300kHz



Fully-electronic RF training system

- In the class, the teacher can give the lecture with e-material and at the same time use a PC to control both GRF-1300 Training Kit and GSP-730 Spectrum Analyzer to show the test result display on the screen of a projector. This is a fully-electronic system for the RF training class.



Features and Benefits

Item	Feature	Benefit
1	GSP730 frequency range is up to 3GHz which covers the cell phone (900, 1900MHz), wireless LAN(802.11b/g), ISM (2.45GHz)	The majority of commercial application frequency bands have been covered. This budget investment will establish the firm ground for the path to Telecom base.
2	GRF-1300 offers sufficient curriculums of base band, RF signal, AM and FM measurements.	The RF experiments can get rid of build-radio-box from now on. A real and modern RF signal and modulation source is just in front of student's face.
3	Fully-electronic RF training system	Efficient and friendly teaching material ease teacher's burden from preparation.
4	Turn-key solution for RF and Communication courses.	A modern RF and communication Lab with experiment classes are ready to go immediately.
5	GSP730 operations are designed to be similar to professional spectrum analyzers.	Unlike the other low cost spectrum analyzers, GSP730 provides the same functions of professional spectrum analyzers. After the graduation, students can easily handle the equipment of their jobs.
6	The affordable price	Establishing an RF & communication lab with only DSO cost is achievable now.