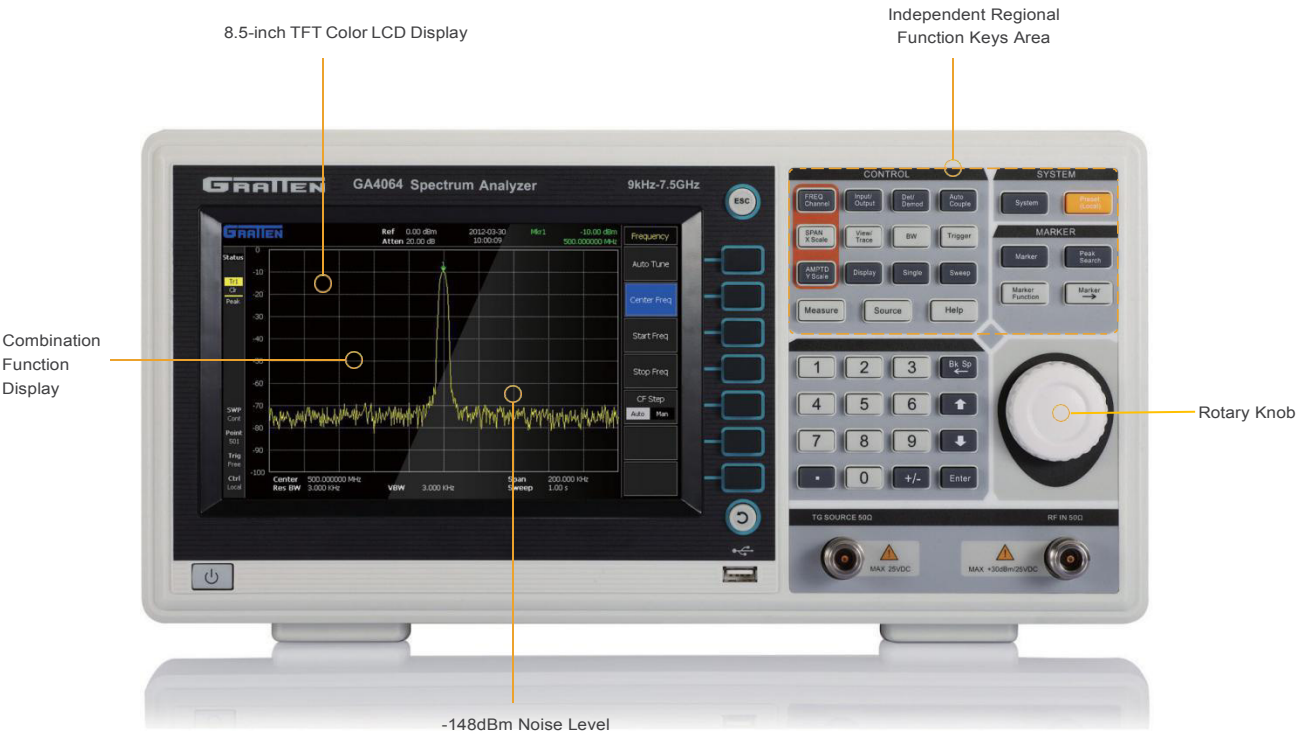
GA40XX Series Digital Spectrum Analyzer



Summary

GA40XX series is a small size, light weight, cost-effective portable spectrum analyzer to meet your all the RF application demands. It has easy-to key board layout and high-definition TFT color LCD display; display contains the appropriate settings and alerts. It includes the standard USB, LAN and RS232 communication interface, virtual terminal display and control and remote network access. The spectrum analyzer can be widely applied in many fields of science education, enterprise research and development and industrial production

Main features

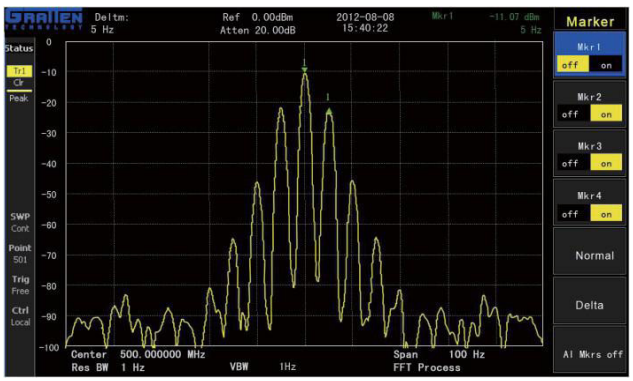
- Frequency range: 9KHz-1.5GHz/3GHz/7.5GHz
- Displayed average noise level (DANL): <-160 dBm (typical value)
- Phase Noise : -95dBc/Hz(Offset 10KHz)
- Full amplitude accuracy: <1.0 dB.
- Minimum resolution bandwidth (RBW): 1Hz
- Standard Preamplifier
- Tracking generator (optional)
- AM/FM demodulation measurement (optional)
- Extensive measurement capabilities and a variety of automatic setting functions

Technical Parameters

Model	GA4062A	GA4033	GA4063	GA4064
Frequency Range	9kHz~1.5GHz	9kHz~3GHz	9kHz~3GHz	9kHz~7.5GHz
Aging Rate	±0.1ppm /year			
Frequency Readout Accuracy with Marker	Marker Resolution: (frequency span)/(sweep points-1)			
	Uncertainty:±(frequency indication × frequency reference uncertainty + 1%×span + 10%×resolution bandwidth + marker resolution +1Hz (3Hz GA4064))			
Sweep Time	Range: 10 ms ~ 3000 s (SPAN>100Hz) Sweep mode: continuous, single Trigger source: Free run, Line trigger, external trigger			
Counter	Max resolution：1Hz			
Frequency Span Range	0Hz(Zero Span), 100Hz~Max frequency；Resolution：1Hz			
SSB Phase Noise	< -100dBc/Hz@10kHz	< -90dBc/Hz@10kHz	< -95dBc/Hz@10kHz ①	
Resolution Bandwidth (RBW)	1Hz~3MHz			
-3dB Bandwidth	Resolution filter shape factor: < 5 : 1			
Measurement Range	+30 dBm to displayed average noise level(DANL)			
Max Safe Input Level	+30dBm (1W)，DC:50V ②			
Displayed Average Noise Level (DANL)	≤-148dBm, -160dBm(Typical value)	≤-128dBm, -140dBm(Typical value)	≤-148dBm, -160dBm(Typical value)	
Level Measurement	Scale unit：dBm, dBmV, dBμV, dBμV/m, μV, mV, V, mW, W			
	Detectors: Positive peak, Negative peak, Sample, Normal			
	Level measurement error: ± (0.6dB+frequency response), frequency response ±1dB；±dB (Typical value)(±2dB 3GHz - 7.5GHz)			
Reference Level	Setting range: -110dBm ~ +30dBm			
Spurious Response	Second harmonic distortion< -70 dB③, Third order inter modulation distortion < -70dBc ④, Inherent residual response < -88dBm (Typical value) ⑤			
RF Input	N-Type female；50Ω nominal；VSWR: 1.5:1 < 2.0 (3GHz~7.5GHz)(10dB attenuation)			
External Interface	USB、LAN、RS232 or VGA			
Auto Measurement Functions	Phase noise, Adjacent channel power, Occupied bandwidth, Third order inter modulation distortion, Pass/Fail, Standing wave ratio			
Display	9 inch TFT LCD	8.5 inch TFT LCD		
Language	English Simplified Chinese Russian			
Power Requirements	Adaptor voltage: 100V ~ 240V; Rate: 50/60/400Hz			
	Power consumption ≤40W	Power consumption ≤35W		Power consumption ≤70W
Size	Weight: ≤7 kg; Dimensions: 410mm×210mm×136mm			
Optional Specifications				
Tracking Generator	Frequency range: 5MHz(available to 9kHz) ~ Max frequency value			
	Output level: 0 ~ -20dBm (GA4062A，GA4064)；0 ~ -25dBm (GA4063, GA4033)			
	output flatness:±3dB(GA4062A，GA4063, GA4033); ±5dB (GA4064) ⑥			
	Connector and impedance: N-Type female；50Ω(nominal value)			
AM/FM Demodulation Measurement	AM Demodulation	Demodulation Frequency: 20Hz~20kHz		
		Demodulation Freq error≦±4Hz(modulation freq ≦1kHz); ≦±0.2% (modulation freq > 1kHz)		
		Demodulation Depth: 5%~95%; AM modulation error: ±4%nominal (modulation freq < 10kHz)		
	FM Demodulation	Demodulation Freq: 20Hz~50kHz (modulation freq ≦500Hz)		
		Demodulation Freq error: ≦±4Hz (nominal modulation freq ≦1kHz; ≦±0.2% nominal value (modulation freq > 1kHz)		
		Freq Offset：20Hz~100kHz (modulation freq ≦500Hz); 0.2%×modulation freq ~ 100kHz (modulation freq > 500Hz)		
		Demodulation Freq error: < ±5%(modulation freq ≦1kHz); < ±4%(modulation freq > 1kHz)		
	PM Demodulation	Freq range: 20Hz~20kHz ; Phase deviation range: 0~10Rad		
		Demodulation Freq error: ≦±4Hz(modulation freq ≦1kHz); ≦±0.2%(modulation freq > 1kHz)		
		Phase deviation error: < ±0.04Rad (Nominal value Phase deviation < 1Rad); < ±4%(Nominal value, Phase deviation ≧ 1Rad)		
	SINAD	Measurement Range: 0~60dB Precision: ±1.5dB Nominal value		

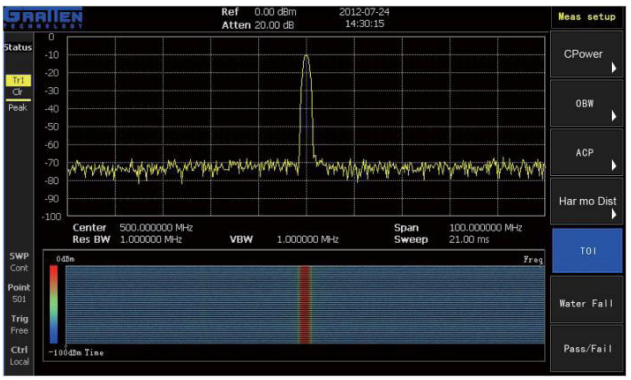
*Note Test condition: ① fc=500MHz,RBW=100Hz,VBW=1Hz ② Input attenuator set≥20 dB ③ The mixer level-40dBm, frequency: 1~1500MHz ④ Frequency space of two-frequency signal is more than 1MHz, The mixer level -30dBm ⑤ Input terminal connect 50Ω load, ATT:0dB ⑥ 50MHz, 0dBm for reference. "Nominal value" is calculate the expected performance based on theory, it does not ensure all of the product performance.

Advanced Measurement Functions



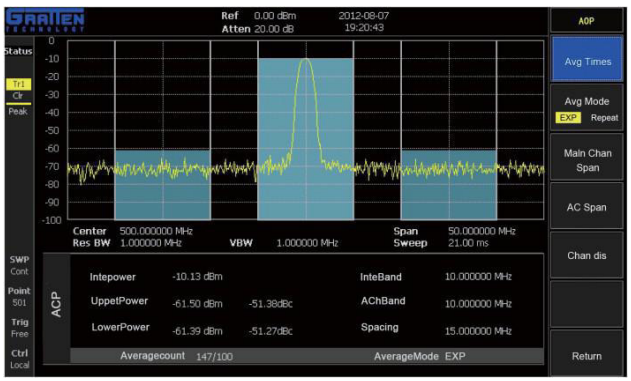
Distinguish similar nearby signal at RBW1Hz

It is easy to distinguish two similar nearby signals by using intermediate Frequency filter with smaller bandwidth.



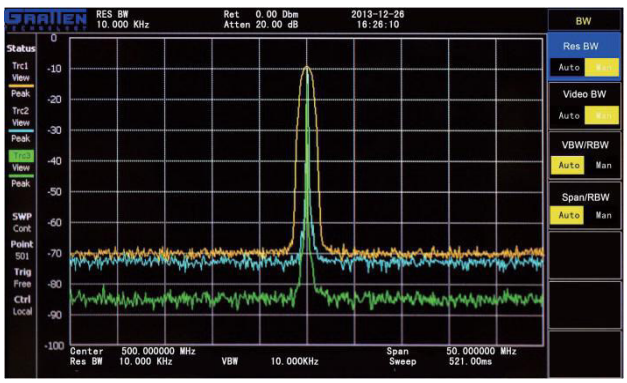
Waterfall plot display

It can intuitively see the distribution of spectrum power.



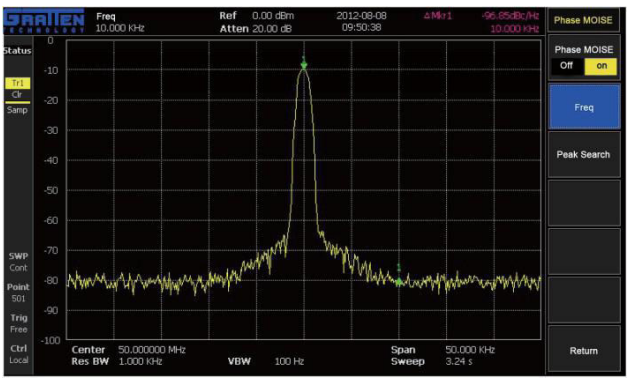
Adjacent Channel Power

In communication test, it convenient to observe the disturbance state of adjacent channel power



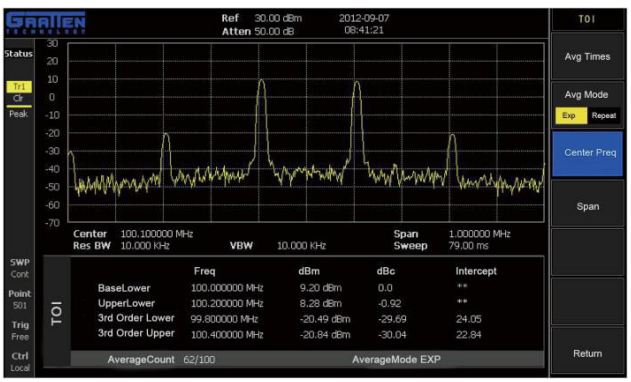
Three simultaneous trace display at RBW1M/100K/10K

Different colors of trace represent the different test state after change resolution bandwidth.



Phase noise measurement display

It can automatically measure the signal phase noise by use of low phase noise source.



Third order inter modulation distortion

It is convenient to directly measure the inter modulation interference of two RF signals.

GA148X Series RF Signal Generators

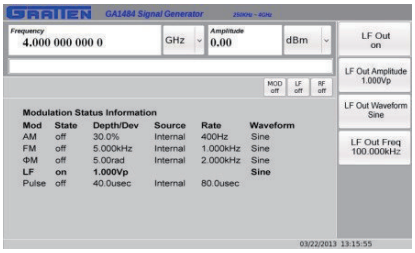
Summary

GA148X series is a cost-effective signal generator, with ergonomic keyboard layout, 7-inch TFT color LCD display, simple and clear interface style, standard LAN, USB and GPIB a variety of communication interfaces. Can be widely used in radio, communications, radar and its automatic test system, also applies to components, components, receivers and other electronic products production, testing, measurement and research and development areas.

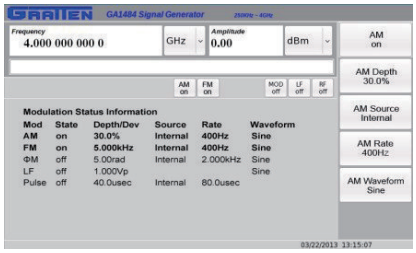
Main features

- Frequency upto 3GHz/4GHz with resolution 0.1Hz
- Simple and efficient operation interface military level stability
- Excellent phase noise: <-115dBc/Hz@20kHz
- Wide output power range: -127~+13dB (Available-136dBm)
- Rich modulation system: AM, FM, PM and pulse modulation
- Convenient and flexible scan output: the frequency, the amplitude of a variety of scanning output combination
- Economical and practical low-frequency function source: sine wave, square wave, triangular wave, sawtooth wave and so on

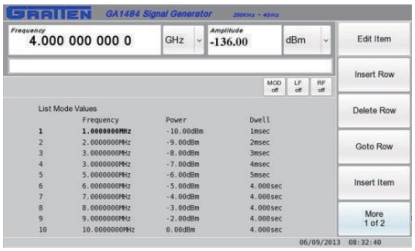
Advanced measurement functions



Low frequency function source LF OUT



FM/ AM Combined Modulation

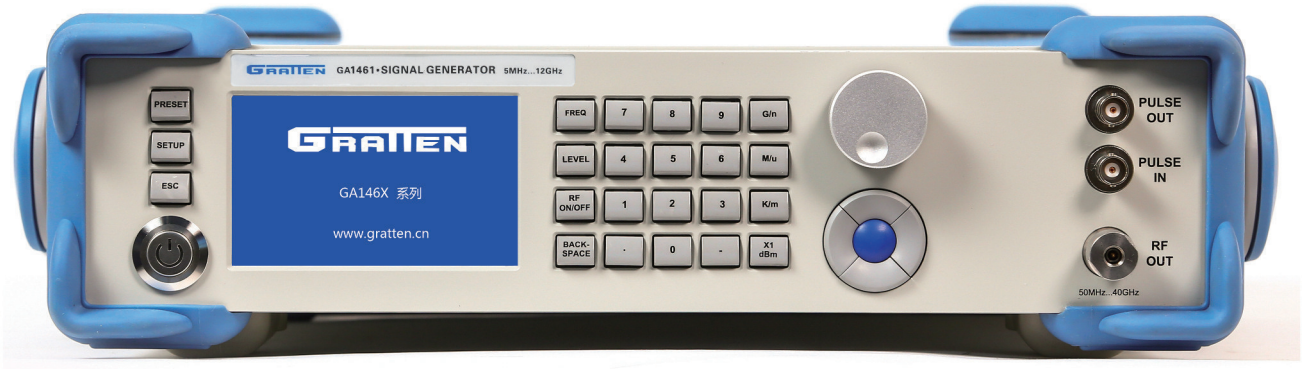


Combined List SWEEP Output

Technical Parameters

Model	GA1483	GA1484B	GA1484C	GA1484A	Test environment
Frequency features					
Frequency range	250kHz~3GHz	250kHz~4GHz			
Resolution	0.1Hz				
Internal Time Base	Frequency:10MHz; Aging rate≤±1ppm/year; Output amplitude≥0.35Vrms				
	Accuracy:≤±0.1ppm			≤±1ppm	
External reference input	Frequency: 10MHz; Output amplitude: 0.5~2Vrms; Connector: BNC female, 50Ω				
Output features					
Amplitude range	-127 ~ +13dBm		-15 ~ +17dBm	-110 ~ +13dBm	
Resolution	0.01dB				
Accuracy	≤±1dB (≥-120 dBm); ≤±1.8dB (≥-127dBm)			≤±1dB	ALC ON; 20~30℃
SSB Phase Noise	≤-115dBc/Hz			≤-105dBc/Hz	Carrier frequency: 1GHz Offset: 20KHz
Residual FM	≤ 10Hz peak			≤ 30Hz peak	Carrier frequency: 1GHz Bandwidth: 0.3KHz-3KHz
Harmonics	≤-30dBc				Output power: ≤0dBm
Non-harmonics	≤-50dBc				Deviation from the carrier frequency ≥ 20kHz
Output interface	Standing wave ratio ≤ 1.8; impedance: 50Ω (nominal value); N-type female				
Modulation features					
AM Modulation	Modulation frequency: 20 Hz ~ 20 kHz; amplitude modulation 0 ~ 100%				Output power ≤ 6dBm
	Amplitude error ≤ ± (set value × 5% + 0.2%); amplitude modulation distortion <2%				Modulation frequency 1kHz depth = 50
FM Modulation	Modulation frequency: 20Hz ~ 80kHz; frequency offset range of 20 Hz ~ 100 kHz				
	Frequency deviation error: ≤ ± (set value × 5% + 0.2%) FM distortion <1%				Modulation frequency 1kHz Frequency deviation = 50kHz
PM Modulation	Modulation frequency: 0.3 ~ 20 kHz; Phase deviation: 0 ~ 10rad (<10 kHz) 0 ~ 5rad (≤20kHz)				
	Phase error: ± (set value × 5% + 0.2rad); phase distortion 1.5%				Modulation frequency 1kHz; phase deviation = 5rad
Pulse modulation	Rise / fall time: ≤ 60ns; on / off ratio ≥60 dB				
	Pulse period: 1us ~ 2s; pulse width 400ns ~ 1s				
External modulation characteristics (specified input level, 1Vp-p)					
3dB input bandwidth	AM、FM: 20Hz~20kHz; PM:300Hz~20kHz				
Pulse input	Level: ≥ 1.5VPP; cycle 10us ~ 1s				
Rear panel input and output characteristics					
Trigger input	Waveform: sine wave, square wave; input level ≥ 2.5VPP				
Trigger output	Wave: Pulse wave				
Scan output	Waveform: sawtooth wave; output level: 1 ~ 3.5V				
Pulse output	Waveform: the same as the modulation pulse; output level: low level ≤ 0.8V, high level ≥ 2.4V				
Low frequency function source characteristics					
Frequency and waveform type	20Hz ~ 100kHz(Sine wave, triangular wave, sawtooth wave)				
	20Hz~20kHz (Square wave); 50ms~20us (Pulse wave)				
Output characteristics	Output amplitude: 0 ~ 3VP-P; amplitude error: ≤ 5%; harmonic distortion: ≤ 70dBc				Freq=1kHz Sine wave; U=1Vp-p
General features					
Interface	Standard LAN, USB and GPIB interface				
Display	7.0 inch TFT, 800 x 480 pixels				
Power	Voltage: 100V~240V (50/60Hz); Frequency: (47.5~52.5)Hz; Power consumption: ≤ 50W				
Size/Weight	Size:426mm×133mm×450mm (W*H*D); Weight: ≤10kg				
Working temperature range	0℃~+40℃	-10℃~+50℃	0℃~+40℃		
Storage Temperature Range	-40℃~+70℃				

GA146X Series Microwave Signal Generators



Summary

GA146X Microwave Signal generator, Used the Aglie variable frequency technology, Output frequency up to 40GHz, Operation more flexible, have a higher price performance.
Can be widely used in communications, radar and its automatic test system, Applicable to components, components, receivers and other electronic products in the field of production testing.

Main features

- Stylish and lightweight design, convenient and flexible interface
- High cost performance, suitable for different user requirement
- Extremely high frequency stability, aging rate <± 8 × 10^{-10} / day
- High-quality spectral performance, phase noise: -119dBc / Hz @ 10kHz
- Convenient and flexible scan output: the frequency, the amplitude of a variety of scanning output combination

Technical Parameters

Model		GA1461	GA1462	GA1464	Test environment
Frequency feature					
Frequency Range		5MHz - 12GHz	5MHz - 24GHz	5MHz - 40GHz	
Resolution		1Hz (Nominal value)			
Frequency switch speed		≤20ms (Nominal value)			
Internal time base	Frequency	10MHz			
	Accuracy	<±0.1ppm (Nominal value)			
	Aging Rate	< ±8×10^{-10}/ days or after 30 days <±3×10^{-8} / years (Nominal value)			
	Output Amplitude	10dBm (Nominal value), 50Ω load			
	Temperature effect	<±1×10^{-8} , -20 to +70℃ (Nominal value)			
External reference input	Frequency	10MHz			
	Amplitude	5dBm±2dB (Nominal value)			
	Impendence	50Ω (Nominal value)			
	Waveform	Sine wave or Square wave			

Technical Parameters (contd..)

Model		GA1461	GA1462	GA1464	Test environment
Amplitude Features					
Amplitude switching speed		Use step attenuator ≤20ms (nominal value); No use step attenuator ≤2ms (nominal value)			
Amplitude Range	≤2GHz	-110~+25dBm		-110~+25dBm	The technical and indicators are under the temperature between 15℃~35℃, the indicators in the absence of harmonic options
	≤12GHz	-110~+20dBm		-110~+20dBm	
	≤24GHz			-110~+20dBm	
	≤40GHz			-110~+15dBm	
Resolution		0.1dB(Nominal Value)			
Absolute accuracy	≥-20 dBm	±0.8dB (f≤2GHz); ±1.3dB (f≤40GHz)			
	≥-75dBm	±1dB (f≤2GHz); ±1.5dB (f≤40GHz)			
	<-75 dBm	±2dB (f≤24GHz); ±2.2dB (f≤40GHz)			
Standing wave	≤2GHz	<1.4			ATT=10dB
	≤24GHz	<1.5			
	≤40GHz	<1.6			
Spectral Features					
Phase noise (SSB)dBc/Hz		100Hz	1kHz	10kHz	100kHz	1MHz	10MHz	At room temperature, the output power Rate measured at 0dBm
	100MHz	<-100	-107	-115	-127	-143	-150	
	250MHz	<-100	-107	-115	-127	-143	-150	
	500MHz	<-100	-107	-115	-128	-143	-150	
	1GHz	<-100	-112	-119	-124	-131	-150	
	10GHz	<-85	-107	-113	-112	-115	-133	
	20GHz	<-78	-101	-108	-106	-108	-128	
	40GHz	<-72	-96	-102	-100	-102	-122	
Harmonic		P=10dBm			
	70~200MHz	<-40dBc			
	0.2~2GHz	<-50dBc			
	2~20GHz	<-50dBc			
Non-harmonic	1MHz~2GHz	<-80dBc			> 1MHz offset; non-harmonic related to power supply line; <-60dBc, measured in t he range of 1MHz to 40GHz
	≤12GHz	<-70dBc			
	≤24GHz	<-65dBc			
	≤40GHz	<-60dBc			
Modulation Features（Pulse modulation option）					
Pulse modulation	Breaking ratio	>60dB (Typical Value)			
	Minimum pulse width	100ns (Typical Value)			
	Minimum period	200ns (Typical Value)			
External pulse input	Minimum impedance	DC coupling, High impedance			
	Level logic	3.3V-CMOS			
Internal pulse generator option GASG	Square wave rate	0.1Hz~5MHz (Nominal value)			
	Pulse period	200ns~10s (Rated value)			
	Pulse width	100ns~10s (Nominal Value)			
	Resolution	20ns			
	Adjustable trigger delay	5ns~10s			
	Level logic	3.3V-CMOS			
General Features					
Interface		LAN (100 Base T); RS232			
Power		198~242V (AC), 48~62Hz;70W Peak, 60W Mean			
Working temperature		0~55 ℃			
Storage temperature		-40~70 ℃			
Working and Storage Altitude		Up to 15,000 feet (or 4,600 m)			
Weight		Net Weight: ≤8Kg			
Size		H x W x D: 88mm×370mm×460mm			

GA362X Series Vector Network Analyzer

Summary

GA3623 Vector Network Analyzer is combined by a high-precision synthesized signal source with latest technology, narrow-band receiver, high-speed embedded computers and the Windows operating system. Its feature has high measurement accuracy, fast measurement speed and strong measurement adaptability. Windows user interface is more user-friendly and suitable for mass production of RF components and equipment and measurement applications in manufacturing with a very high performance-low cost factor. It's mainly used in the field of wireless communication, television broadcast, education, scientific research and other RF applications. It can make a full range of measurement for S-parameter, Amplitude Frequency characteristics, Reflective characteristics, Phase characteristics and Delay characteristics of passive and active device.

Main features

- 2/4 Port Test: Can test multi port, greatly improve the test efficiency
- Windows 7 Operating System interface
- 10.4 inches TFT color LCD screen, with touch screen, show clear, simple and quick operation
- More than 100 independent measurement channels: can test in more than 100different incentive measure conditions
- Various scanning mode: linear sweep, logarithm scanning, subsection scanning, power scanning
- Powerful analyze PASS/FAIL function: Limit test, surge limit test, bandwidth limit test function
- Time-domain analysis function: Can show the response in time domain
- Unique calibration method: 4 ports SOLT calibration
- Instrument Use interface: Chinese or English
- External Interface: USB, LAN, RS232, VGA, GPIB port(option)

GA3628 Calibration kit

Option: 2E4J	N-50J Calibration Kit(Open, Short, Load, Adapter)
Option: 2E4K	N-50K Calibration Kit(Open, Short, Load, Adapter)
Option: 2E7J	SMA-50J Calibration Kit(Open, Short, Load, Adapter)
Option: 2E7K	SMA-50K Calibration Kit(Open, Short, Load, Adapter)

GA3623 Calibration kit

Option: 1E4J	N-50J Calibration Kit(Open, Short, Load, Adapter)
Option: 1E4K	N-50K Calibration Kit(Open, Short, Load, Adapter)
Option: 1E5J	N-75J Calibration Kit(Open, Short, Load, Adapter)
Option: 1E5K	N-75K Calibration Kit(Open, Short, Load, Adapter)
Option: 1E6J	F-75J Calibration Kit(Open, Short, Load, Adapter)
Option: 1E6K	F-75K Calibration Kit(Open, Short, Load, Adapter)
Option: 1E7J	SMA-50J Calibration Kit(Open, Short, Load, Adapter)
Option: 1E7K	SMA-50K Calibration Kit(Open, Short, Load, Adapter)

SMA-50J Calibration Kit

N-50J Calibration Kit

Technical Parameters

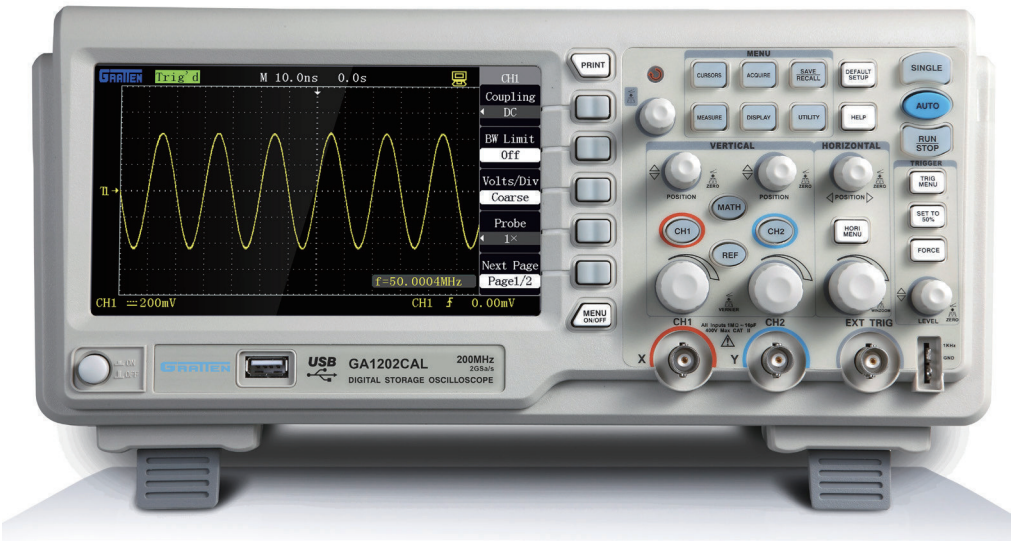
Model	GA3628				GA3623	
Test Port Output(Source)						
Frequency Range	100kHz~8.5GHz				300kHz~3GHz	
Frequency Resolution	1Hz				1Hz	
Frequency Accuracy	±5ppm (23℃±5℃)				±5ppm (23℃±5℃)	
Level Accuracy	±0.65dB (50MHz, 0dBm)				±0.8dB (50MHz, 0dBm)	
	±1.0dB (relative 50MHz, 0dBm)				±1.0dB (relative 50MHz, 0dBm)	
Level Linear(0dBm)	±0.75dB (range in-20dBm~max output level)				±0.75dB (-5dBm~+10dBm)	
Output Level Range	100kHz~5GHz	5~6GHz	6~7GHz	7~8.5GHz	-45dBm~+10dBm	
	-55~+10dBm	-55~+9dBm	-55~+8dBm	-55~+7dBm		
Level Resolution	0.05dB				0.05dB	
Harmonics (2 or 3 times)	<-25dBc (Freq ≤2GHz; range in+5dBm , typical value)				-25dBc(+5dBm, typical value)	
	<-20dBc (Freq≤8.5GHz; range in +5dBm , typical value)					
Non Harmonics Spurious	<-30dBc(Freq≤8.5GHz; +5dBm, typical value)				-30dBc(+5dBm, typical value)	
Test Port Input						
Max Input Level	100k~5GHz	5~6GHz	6~7GHz	7~8.5GHz	+10dBm	
	+10dBm	+9dBm	+8dBm	+7dBm		
Input Damage Level	+26dBm; ±35VDC				+20dBm; ±30VDC	
Crosstalk	1~10MHz	10M~3GHz	3~6GHz	6~8.5GHz	1MHz~3GHz	
	-110dB	-120dB	-110dB	-95dB	-110dB	
Test Port Input (Noise curve)						
Test Condition — Max input level	+10dBm	+10dBm		+7dBm		
Test Condition — Frequency Range	100k~10MHz	10M~4.38GHz		4.38~8.5GHz		
Test Condition — IF Bandwidth	3KHz	70KHz		70KHz		
Noise Curve (Amplitude)	0.003dBrms	0.004dBrms		0.006dBrms		
Noise Curve (Phase)	0.020°rms	0.035°rms		0.050°rms		
System performance after calibration						
System Dynamic Range[1]						
Test Condition — Frequency Range	100k~10MHz	10M~6GHz		6~8.5GHz	1M~1.5GHz	1.5~3GHz
Test Condition — IF Bandwidth	10Hz/3kHz	10Hz/3kHz		10Hz/3kHz	10Hz/3kHz	10Hz/3kHz
System Dynamic Range	102/82dB	115/98dB		97/92dB	110/90dB	110/90dB

Mark 1: Test port system dynamic range means the difference between test port rms of background noise and max output power of source. Effective dynamic range must consider the uncertainty and disturbance signal of measurement.

Orientation Index						
Frequency	100kHz~10MHz	10MHz~3GHz	3~6GHz	6~8.5GHz	1MHz~1.5GHz	1.5MHz~3GHz
Directivity	46	43	37	35	48	44
Source Matching	41	40	36	35	41	35
Load Matching	45	43	37	34	48	44
Transmission Track	±0.041	±0.039	±0.068	±0.136	±0.011	±0.021
Reflection Track	±0.040	±0.040	±0.060	±0.070	±0.015	±0.029

Note: IF Bandwidth=10Hz; Environment Temperature is 23℃±5℃, deviation is Less 1℃ than calibration temp. 2 ports calibration. Need isolation calibration. N type calibration kit.

GA1000 Series Digital Storage Oscilloscope

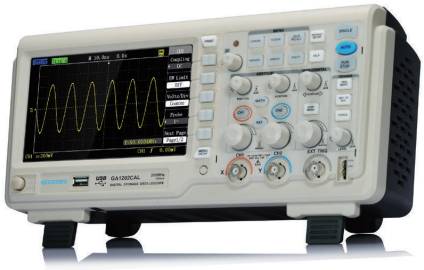


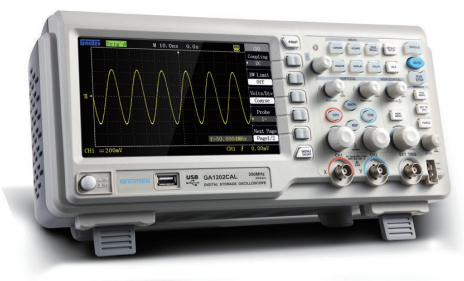
Summary

GA1000 Series is a two channels, 1GSa/s、2GSa/s sampling rate digital storage oscilloscope. It has easy-to-keyboard layout and high-definition 7-inchTFT color LCD display, providing clear and more stable waveform display; supporting picture copy function. With top performance, powerful function and competitive price, the digital oscilloscope can be widely applied in many fields of science education, enterprises research and development and industrial production.

Main features

- 2 analog channels, Max 200MHz bandwidth, 40Kpts memory depth, 1Gsa/s sampling rate
- Various trigger functions: Edge, Pulse, Video, slope and Alternation
- 32 kinds of automatic measurement and manual cursor tracking measurement functions
- Pass/fall function
- Flexible waveform recording and playback function
- Standard configuration port: USB Device, USB Host, RS232
- Various kinds of language interface display
- Support storage of USB flash disk and upgrading system software by USB. Support PC connection for remote communication





Technical Parameters

GA1000CAL/CAM Series

Model	GA1062CAL (GA1072CAM)	GA1102CAL (GA1112CAM)	GA1202CAL (GA1202CAM)
Bandwidth	60MHz (70MHz)	100MHz (110MHz)	200MHz
Real-time Sampling Rate	1Gsa/s		
Storage Depth	40Kpts； 2Mpts（only CAM Series）		
Rise Time	＜5.8ns	＜3.5ns	＜1.7ns
Input Impedance	1MΩ±2%‖16±3pF		1MΩ±2%‖20±3pF 50Ω 5vrms
Time Base	5ns-50s/div (step-by-step 1-2-5)	5ns-50s/div (step-by-step 1-2-5)	2ns-50s/div (step-by-step 1-2-5)
Vertical Sensitivity	2mV-10V/div (step-by-step 1-2-5)(CAL)；2mV-5V/div (step-by-step 1-2-5)(CAM)		

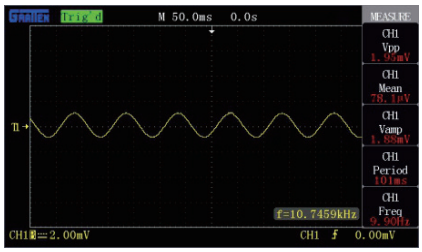
GA1000CEL/CEM Series

Model	GA1112CEL (GA1112CEM)	GA1202CEL (GA1202CEM)	GA1302CEL (GA1302CEM)
Bandwidth	110MHz	200MHz	300MHz
Real-time Sampling Rate	2Gsa/s		
Storage Depth	40K (only CEL Series)、2M (only CEM Series)		
Rise Time	＜3.5ns	＜1.7ns	
Input Impedance	1MΩ±2%‖16±3pF		1MΩ±2%‖20±3pF 50Ω 5vrms
Time Base	2ns-50s/div (step-by-step 1-2-5)	1ns-50s/div (step-by-step 1-2-5)	1ns-50s/div (step-by-step 1-2-5)
Vertical Sensitivity	2mV-5V/div (step-by-step 1-2-5)		

GA1000DAL/DEL Series

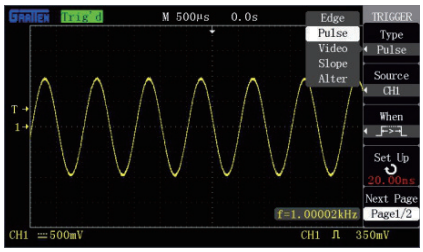
Model	GA1072DAL	GA1102DAL	GA1202DAL/DEL	GA1302DEL
Bandwidth	70MHz	110MHz	200MHz	300MHz
Real-time Sampling Rate	1Gsa/s (only DAL Series)； 2Gsa/s (only DEL Series)			
Storage Depth	40Kpts			
Rise Time	＜5.8ns	＜3.5ns	＜1.7ns	
Input Impedance	1MΩ±2%‖16±3pF		1MΩ±2%‖20±3pF 50Ω 5vrms	
Time Base	2ns-50s/div	2ns/div-50s/div (1-2-5)(Only DAL Series) 1ns/div-50s/div (1-2-5)(Only DEL Series)		
Vertical Sensitivity	2mV-10V/div (step-by-step 1-2-5)		2mV-5V/div (step-by-step 1-2-5)	
Vertical Resolution	8 bits			
Channels	2			
Trigger Signal Source	CH1, CH2, EXT, EXT/5, AC LINE			
Trigger mode	Edge、Pulse、Video、Slope、Alternate			
Arithmetical operation	+, −, ×, ÷, FFT			
Digital Filtering	High pass、Low pass、Band elimination、Band pass			
Max Input Voltage	400V （DC+AC peak, 1MΩinput impedance）			
Internal Storage	2 groups of reference waveform，20 groups of setups，16 groups of waveform			
External Storage	Save and recall waveform from USB flash drive, Setups, CSV and bitmap files are supported			
Display Language	Simplified Chinese, Traditional Chinese, English, French, German, Korean, Italian, Spanish, Portuguese, Russian			
Port	USB Host, USB Device, RS-232, Pass/Fail out			
Display	TFT 7-inch (178mm)LCD			
	800 (horizontal)pixels × 480 (vertical)pixels			
Power Voltage	100~240V (AC), 45~440Hz, 30VA Max			

Features



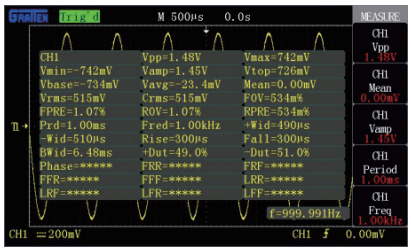
Small signal capture

Better noise function with excellent performance, accurately captures even the faint signal giving you the confidence in testing.



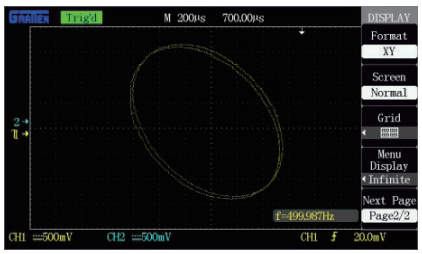
Advanced trigger settings

Various triggering options are available to capture any signal of interest with Edge, slope, video, pulse, width, alternating triggering modes. This gives you flexible observation, analysis signal types, saving the cost of testing.



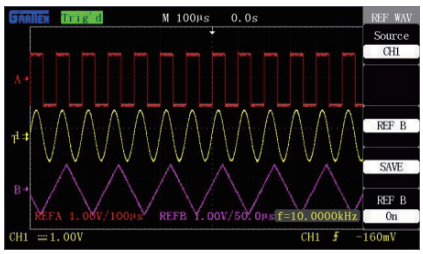
Automatic measurement function

The full featured acquisition model and 32 automatic measurement functions help user to measure captured waveform parameters more accurately. Auto measure function can eliminate user error consumedly, and users will measure parameters what they need faster and more accurately using it.



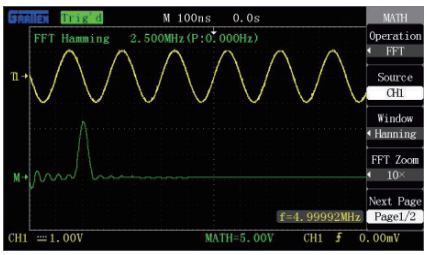
XY mode display

Use XY format to analyze phase. In this mode the data is displayed as dots.



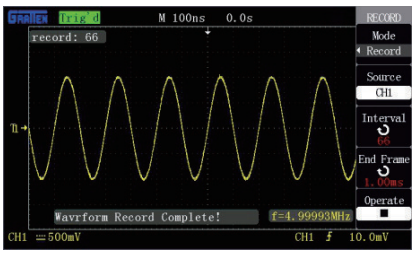
Reference waveform storage

Two reference waveforms can be stored into the internal memory and can be opened simultaneously, thus showing the sample and reference waveforms in comparison.



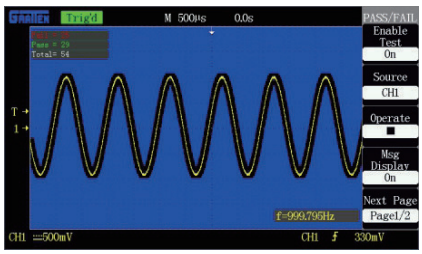
FFT split-screen display

FFT waveform and its Channel waveform can display on split screen at the same time. In split display mode, the screen is divided is divided into two parts and each part is divided eight divides in vertical direction. User can observe and analyze two waveforms simultaneously making it more clearer and convenient.



Waveform recording/playback

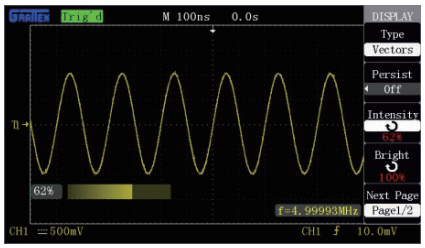
Wavefomr recorder can record input waveform form CH1 and CH2, with maximum recod length of 1000 frames. This record behaviour can also be activated by the pass/fail test output which makes this function specially useful to capture abnormal signals in long term without keeping an eye watching it.



Pass/Fail

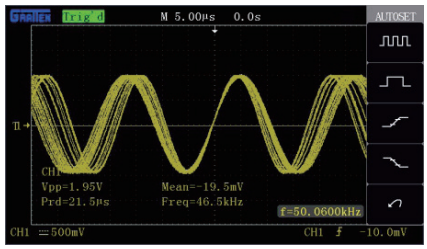
Users may use the Pass/Fail function to carry on the product test. Through a series of setups, the oscilloscope can output the test result automatically which enhanced the product production efficiency greatly.

User-friendly Design



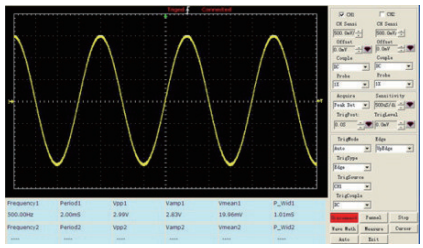
A waveform adjustable brightness

Waveform brightness adjustable to clearly observe the waveforms. The screen displays parameter value and the waveforms are visible clearly and form a broad range of viewing angle.



Signal persistence view

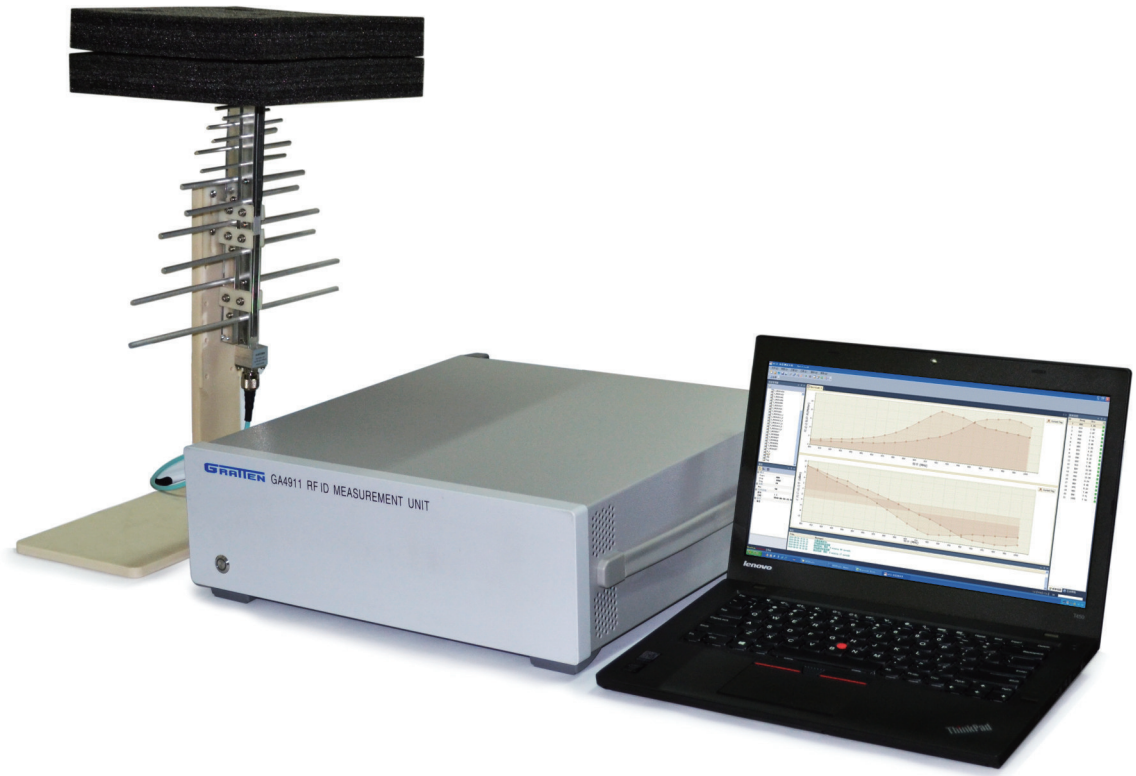
Display the signal path of the frequency. When acquisitions are stopped, the screen may show data from many acquisitions or the last acquisition. The past acquisition can be displayed based on 4 different time based options of (1-2-5-infinite).



PC software

Easy to use PC control software is the easiest and convenient way to remotely capture and analyzer the waveform data. This software can be compatible RS-232 and USB Device to communicate between the computer and the oscilloscope useful for remote operation. It can automatically refresh realtime waveform data, provide waveforms sampling data, read storage and printing functions.

GA4911 RFID Measurement Unit



Summary

RFID tag tester provides ultra-high frequency RFID users, multi-function ISO / IEC18000-6C (EPC Class1 Gen2) ultra-high frequency electronic tag test solution; the instrument test speed, cost-effective; particularly suitable for RFID tag production, Integrated use of small and medium enterprises

The operator can use the instrument in the field, for electronic tag performance test; instrument volume is small, the installation is simple;

Label manufacturers, label research and development units, academic research units can use the instrument, the antenna design, design verification, production testing; system integrators can also use the instrument to help system erection and troubleshooting, electronic tag selection and paste With the way.

Main features

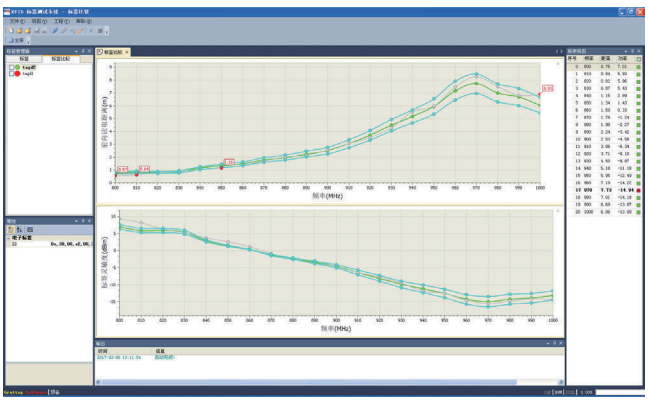
- Can be customized and expanded based on your different needs of the software. Can also change the Communication instruction set, custom API interface, Batch test software, online testing software
- Interface: 10 / 100MHz Ethernet communication interface
- Communication instruction set: to provide a full range of SCPI instructions
- Supporting Protocol: ISO 18000-6C
- Frequency can be expanded 700～1500MHz
- Automated test software with hardware dongle to protect your software's specificity and data privacy

Technical Parameters

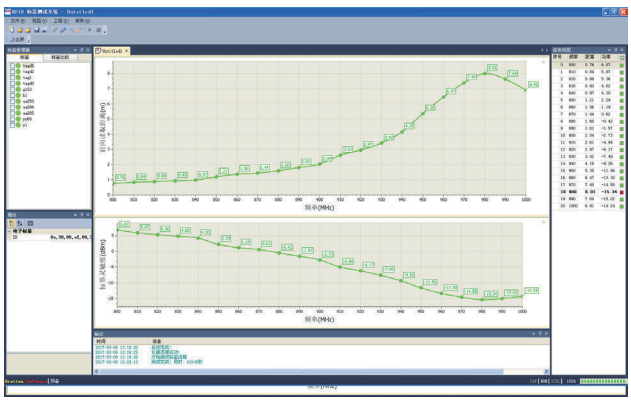
Frequency range	Standard sweep range	800~1000MHz
	Broadband sweep range	700~1200MHz
	Scalable sweep range	700~1500MHz
Maximum output power	700~1000MHz	0~28dBm
	1000 ~1200MHz	0~26dBm
Receiver sensitivity		-70dBm
Interface		Support 10/100M Ethernet
Weight		＜9kg
Size		435×460×150cm
Power		110~240V (AC)，50-60Hz

Sensitivity measurement of the critical point

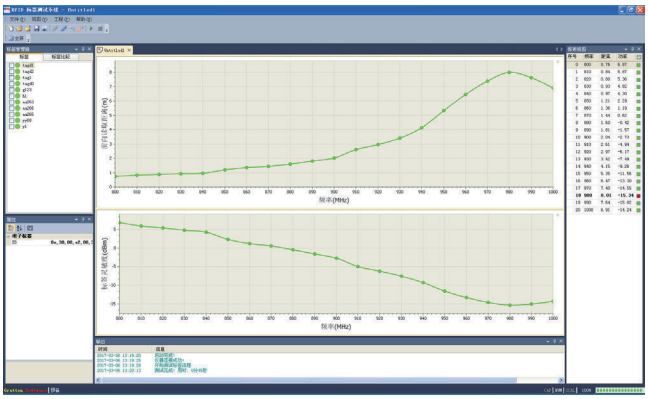
- Sensitivity threshold test, is in our automatic test software according to your needs in the band (or select the standard band we provide), first set the scanning frequency range, scan step after the start measurement.
- The system will measure the minimum starting power of the tag at each step frequency point (the lowest response power of the active tag), and the test results in the relationship between the sensitivity and frequency of the tag.
- The label design engineer can use this actual measurement result to compare with the estimated value, and then can quickly know the label performance and the estimated value of the deviation; to decide whether to take this design and correction program.
- Measurement results can be expressed as: (X axis) corresponding to the test frequency point, (Y axis) were the label theory read distance and the label forward power.



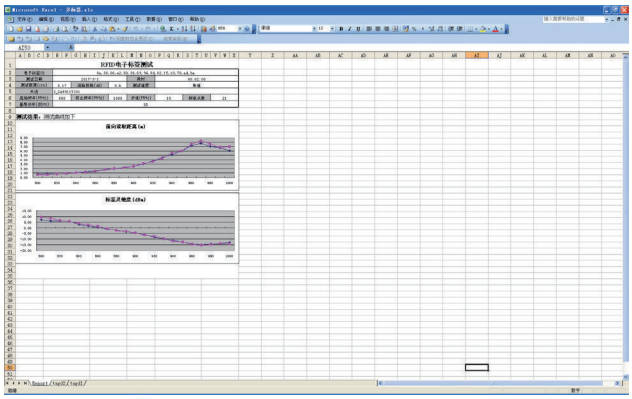
Tag comparision



The value is displayed on the curve



Test interface

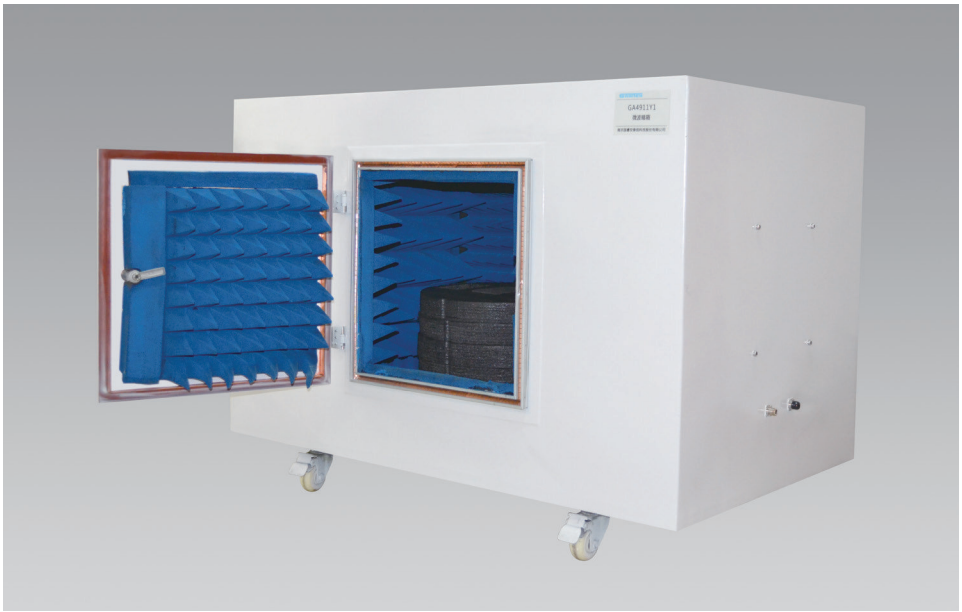


Multi-label EXCEL report

Option

- RFID Microwave Anechoic Chamber (GA4911Y1)

  Note: To ensure the test accuracy, isolated environmental impact, we recommend matching this option



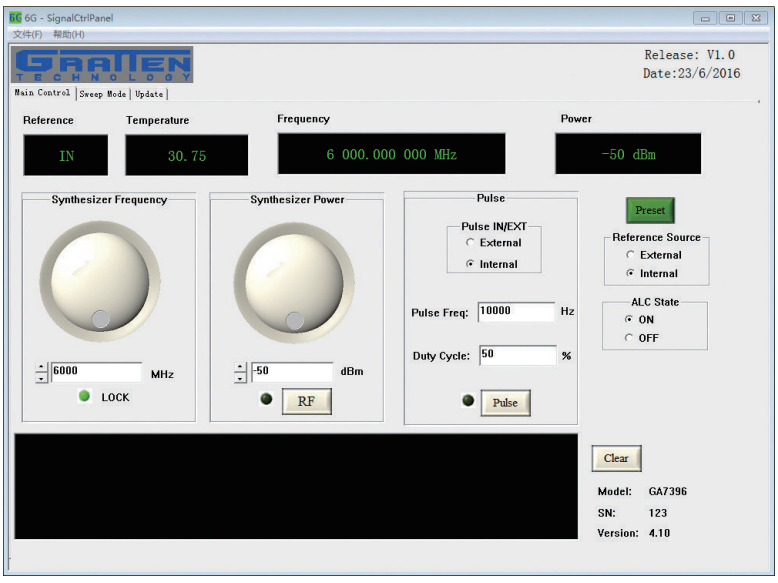
GA7396 Signal Generator Module

Summary

Modular instrument, in the technical performance, more flexible, economical and convenient; more able to adapt to the measurement technology and measuring instruments requirements; can be widely used in radio, communications, radar and its automatic test system, also applies to components, receivers and other electronic products production test areas.

Main features

- High cost performance
- Simple and quick operation interface
- USB interface control
- Frequency, amplitude scan function
- Excellent SSB <-90dBc / Hz @ 1kHz
  SSB <-102dBc / Hz @ 1kHz
  (Carrier frequency 6GHz, 0dBm)



Technical Parameters

Frequency features			Test environment
Frequency Range		10MHz~6GHz	
Resolution		6Hz	
Internal reference vibration Oscillator	Frequency	100MHz	
	Aging Rate	≤±1ppm/year	
	Temperature	＜±0.5ppm (0~50℃)	
External reference input	Frequency	10MHz	
	Level	0.5~2Vrms	
	Impendence	50Ω（Nominal Value，SMA connector）	
Internal reference output	Frequency	10MHz	
	Level	-1±3dBm	
	Impendence	50Ω（Nominal Value，SMA connector）	
Amplitude Features			**Test environment**
Power		-50~+13dBm	
Resolution		0.01dB	
Error		＜±0.8dB	20℃~30℃，ALC ON
		＜±1.5dB	20℃~30℃，ALC OFF
Impendence		50Ω（Nominal Value，SMA female connector）	
Phase noise		≤1.8	
Spectral purity			**Test environment**
Harmonic		＜-35dBc	＜0dBm@4GHz
Non-harmonic		＜-45dBc	except subharmonic
Noise sideband		≤-85dBc/Hz（Typical Value -90dBc/Hz）	Carrier frequency 6GHz@1 kHz
Power switching speed		＜50ms	ALC ON，Frequency amplitude switched at same time
		＜20ms	ALC ON，Frequency unchanged, amplitude switching
		＜8ms	ALC OFF，Frequency amplitude switched at same time
		＜8ms	ALC OFF，Frequency unchanged, amplitude switching
Pulse modulation Features			**Test environment**
Breaking ratio		＞60dB	
Rise / fall time		＜60ns	
Pulse period		1us~2 s	
Pulse Width		100ns~1 s	
Time resolution		20ns	
General features			**Test environment**
Interface		USB, SPI	
Power Voltage		12V (DC)	
Power Consumption		＜18W	

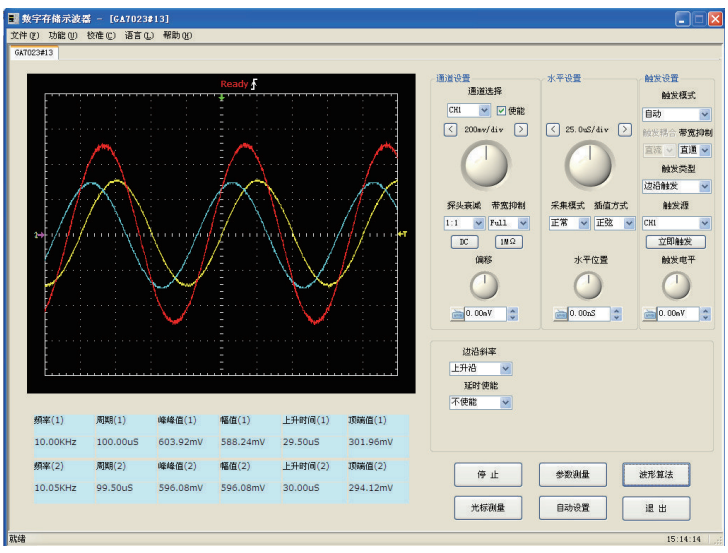
GA70XX Series PXI Modular Oscilloscopes

Summary

Compared to traditional instruments, PXI module bus instrument, the use of PXI platform versatility and flexibility; in the formation and change the instrument testing function, technical performance, more flexible, economical and convenient; more adaptable to measurement technology and measuring instruments Requirements; particularly suitable for a variety of parameters in the field of testing the formation of test systems; such as: defense technology, communications systems, industrial production lines and so on.

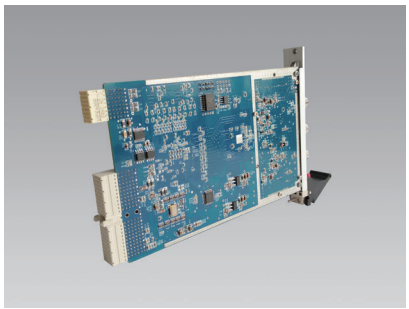
Main features

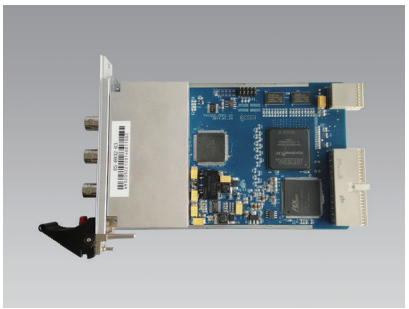
- High-speed PXI bus structure
- Rich triggering function
- Super signal capture capability
- Wide storage depth
- Quickly on a variety of signals for collection, analysis
- High-speed automatic calculation of a variety of waveform parameters



Technical parameters

Model	GA7021	GA7023	GA7025	GA70210
Bandwidth	100MHz	300MHz	500MHz	1000MHz
Real-time Sample rate	2GSa/s		5GSa/s	
Channel	Dual channels			
Storage Depth	4M point/ Dual channel		256Mpoint/Channel	
Input impendence	1MΩ±3%//20pF±5pF		50Ω±3%	
Time base range	2ns/div～100s/div（1-2.5-5 step）		1ns/div～10s/div（1-2.5-5 step）	
Vertical sensitive	5mV/div～5V/div（1-2-5 step）		10mV/div～500 mV/div（1-2-5 step）	
Accuracy	±（5% full range +1pixel）			
Vertical resolution	8bits			
Trigger	A, B；outside trigger；inside trigger/5；PXI back panel			
Trigger mode	Edge, number, pulse width, immediate trigger			
Measurement and analysis functions	Frequency, Period, Maximum, Minimum, Peak-to-peak, Amplitude, Rms, Average, Rise time, Fall time, Top value, Bottom value, Positive pulse width, Negative pulse width, Duty cycle			
PCI Interface	Compliant with PICMG 2.0, R3.0; 32-bit, 33MHz PCI interface; Compatible with 3.3V / 5V PCI I / O level			
Software support	Drivers for Windows 7 / XP / 2000; PnP for Windows 7 / XP / 2000; Support LabWindows CVI / Labview / Microsoft VC ++ and other development tools; Provide PXI PnP driver;			
Working temperature	-10℃～50℃			
Storage temperature	-40℃～70℃			
Size	PXI 3U/1 Slot			





AP-FLYER Sp. z o.o.
ul. Trakt Lubelski 336, 04-667 Warszawa
tel.: 22 613 0487
e-mail: info@ap-flyer.pl
www.ap-flyer.pl