SSG5000X Series RF Signal Generator

Datasheet

EN03B

SIGLENT TECHNOLOGIES CO.,LTD

SSG5040X
SSG5060X
SSG5040X-V
SSG5060X-V

General Description

SIGLENT'S SSG5000X series of signal generators can generate analog and vector signals, and have a frequency range of 9 kHz to 4 GHz/6 GHz. They feature the industry-leading performance in phase noise, spectral purity, bandwidth, EVM, output power. The internal IQ modulation generator and waveform playback function make it easy to create even the most complex signal types. They also cover the most important RF band for digital wireless communications and include standard waveform files. The SIGLENT SSG5000X are powerful and cost effective sources that are ideal for R&D, education, and manufacturing.

Features and Benefits

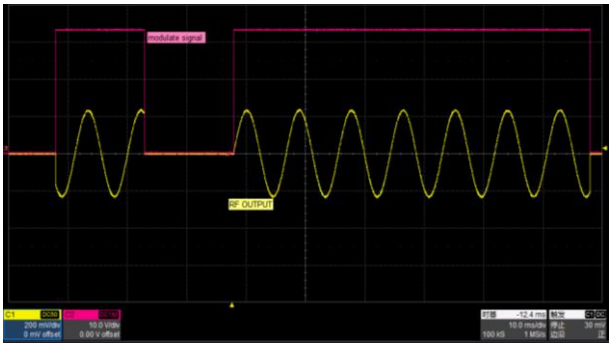
- Frequency up to 4 GHz/ 6 GHz
- 0.001Hz frequency setting resolution
- Maximum output power up to +26 dBm (typ.)
- Phase Noise: -120 dBc/ Hz @ 1 GHz, 20 kHz offset (typ.)
- User programmable flatness correction
- Provides AM, FM, PM analog modulation with internal, external or Int + Ext source
- Single pulse, double pulse and pulse train generator (option)
- Internal IQ modulation with 150 MHz modulation bandwidth with perfect in-factory calibration
- Built - in digital communication standard waveform samples such as 5G-NR,LTE, WCDMA, WLAN, Blue - Tooth, CDMA
- Internal Custom mode generate common IQ signals such as QAM, FSK, ASK, MSK
- Analog differential I/Q outputs
- External analog I/Q input
- USB - power meter measurement
- 5 inch TFT capacitive touch screen, mouse and keyboard supported
- Web browser remote control on PC and mobile terminals
- Standard interface includes USB Host, USB Device (USB TMC), LAN (VXI-11, Socket, Telnet). Optional interface: GPIB

Model and Main index

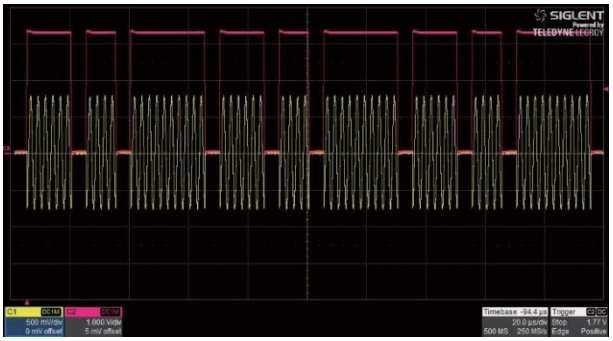
Model	SSG5040X	SSG5060X	SSG5040X-V	SSG5060X-V
Frequency Range	CW MODE 9 kHz - 4 GHz	CW MODE 9 kHz - 6 GHz	CW MODE 9 kHz - 4 GHz	CW MODE 9 kHz - 6 GHz
			IQ MODE 10 MHz - 4 GHz	IQ MODE 10 MHz - 6 GHz
Frequency Resolution	0.001 Hz			
Amplitude Resolution	0.01 dB			
Phase noise	-120 dBc/Hz @1 GHz, offset 20 kHz (typ.)			
Display	5 inch capacitance touch screen, RGB (800*480)			

Design Features

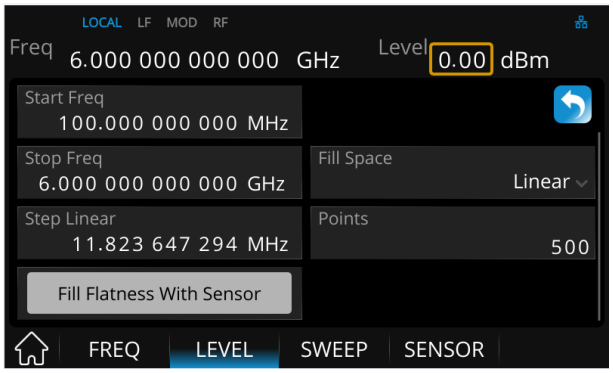
Double pulse modulation

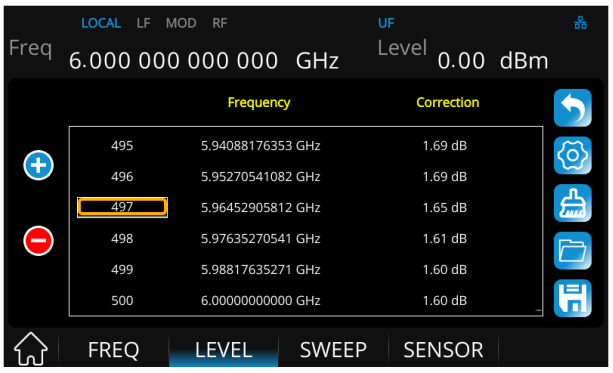


Pulse train generator

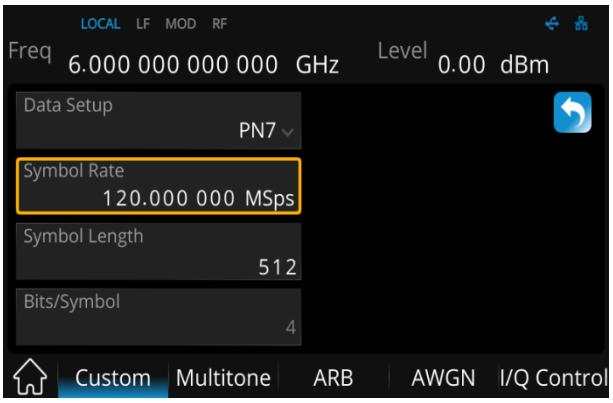


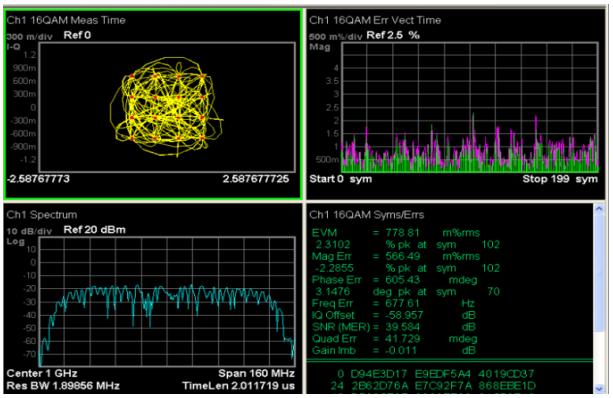
Use an external USB power sensor to compensate cable losses



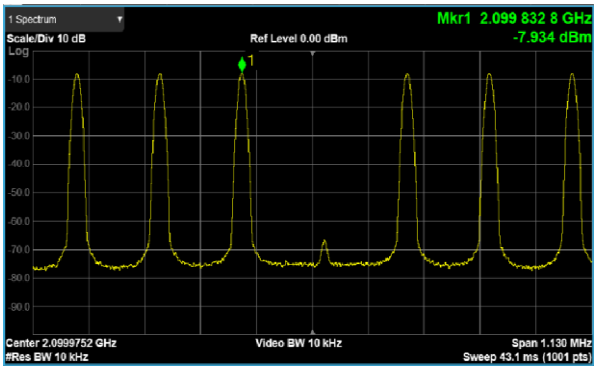


Custom mode can generate IQ modulated signals such as QAM, PSK, ASK, FSK, sample rate up to 120 Msps

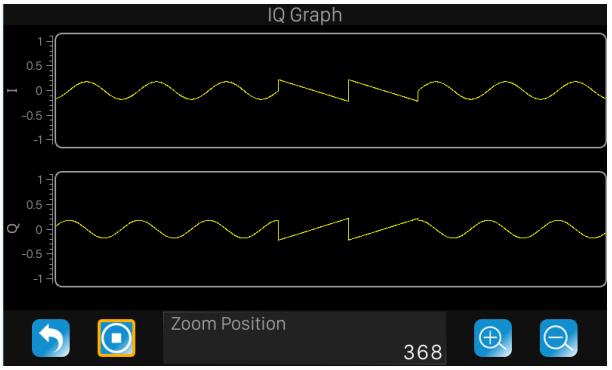




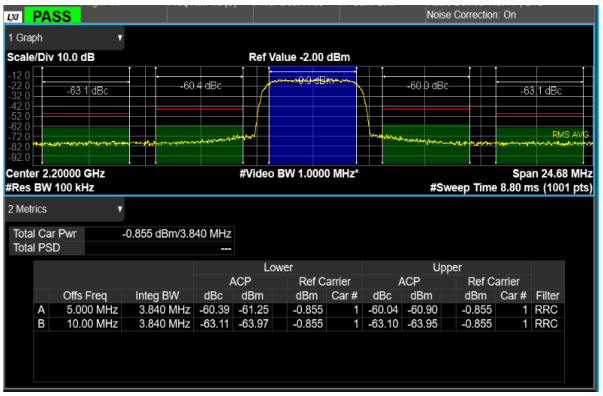
Multi - tone mode to output multi-tone signal



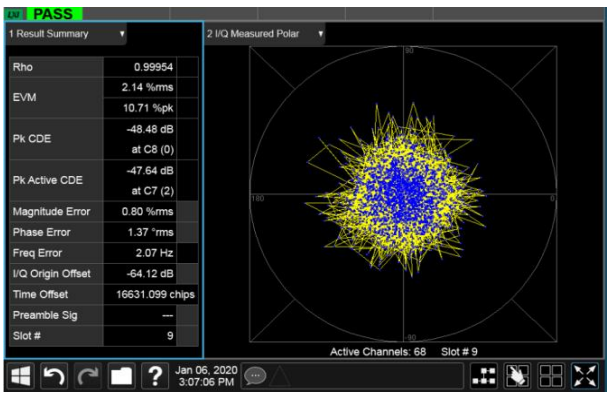
ARB mode to build and replay waveform sequences



ARB mode to play back digital communication standard waveform files

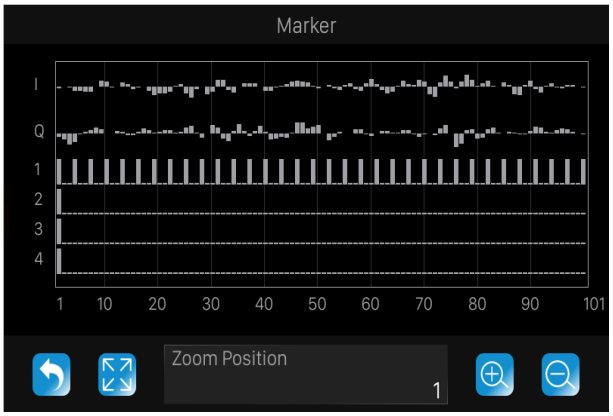


3GPP WCDMA TM1 - 64DPCH ACPR

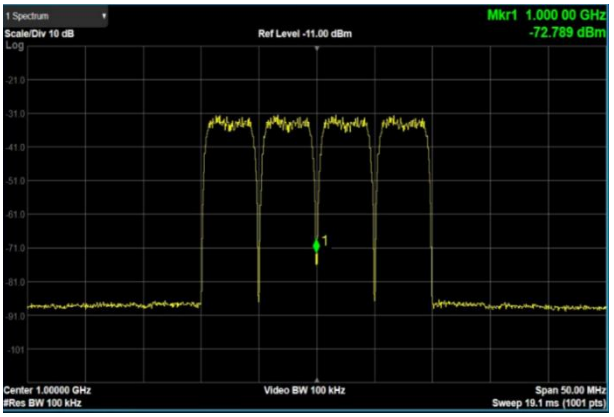


3GPP WCDMA TM1 - 64DPCH EVM

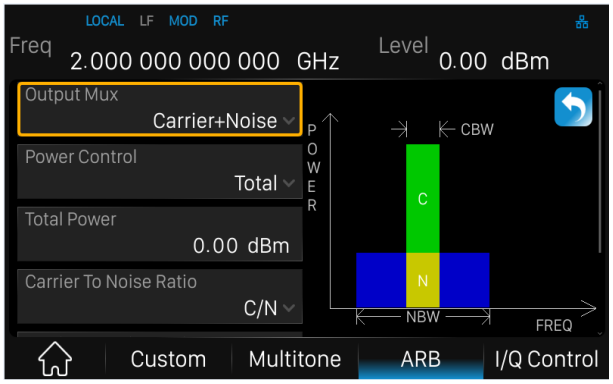
ARB mode can be used to marker label symbols of the waveform files and simultaneously output a pulse from the IQ_Event interface. Perfect for synchronize another device

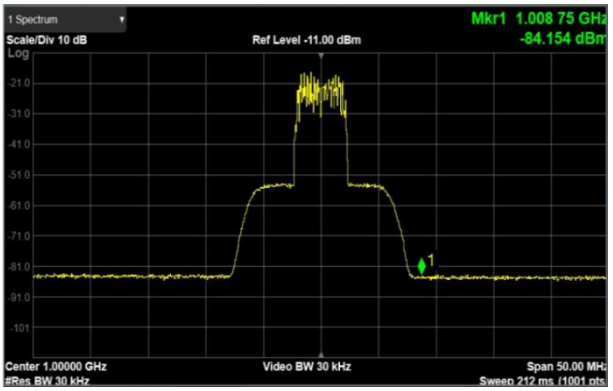


ARB mode to generate multi-carrier signals

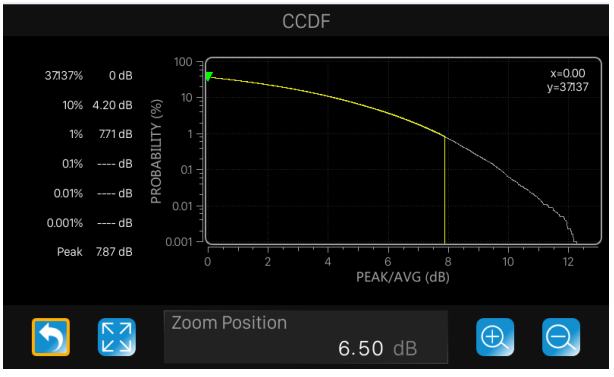


ARB mode to add real time AWGN to digital IQ signals for receiver performance tests





ARB mode to clip the signal of the peak power and display the CCDF (Complementary Cumulative Distribution Function)



SPECIFICATIONS

Specifications are valid under the following condition: The instrument is within the calibration period, has been stored between 0 and 50℃ for at least 2 hours prior to use, and has been powered on and warmed up for at least 40 minutes. The specifications include the measurement uncertainty, unless otherwise noted.

Specifications: All products are guaranteed to meet published specifications when operating temperatures from 5 to 45℃, unless otherwise noted.

Typical (typ.): Performance deemed typical implies that 80 percent of the measurement results will meet the typical published performance with a 95th percentile confidence level at room temperature (approximately 20 ℃). Typical performance is not warranted and does not include measurement uncertainty.

Nominal (nom.): This value indicates the expected mean or average performance, or an attribute whose performance is by design, such as the 50 Ohm connector.

Frequency characteristics		
Frequency		
Frequency range	SSG5040X	CW MODE 9 kHz - 4 GHz
	SSG5060X	CW MODE 9 kHz - 6 GHz
	SSG5040X-V	CW MODE 9 kHz - 4 GHz IQ MODE 10 MHz - 4 GHz
	SSG5060X-V	CW MODE 9 kHz - 6 GHz IQ MODE 10 MHz - 6 GHz
Frequency resolution	0.001 Hz	
Setting time	<5 ms (typ.) , ALC ON <10 ms (typ.) , ALC OFF (S&H)	
Resolution of phase offset setting	0.1°	
Frequency Band [1]		
Band	Frequency range	N
1	9 kHz ≤ f ≤ 1 MHz	0.25
2	1 MHz < f ≤ 250 MHz	0.5
3	250 MHz < f ≤ 500 MHz	0.125

4	500 MHz < f < 1000 MHz	0.25
5	1000 MHz ≤ f < 2000 MHz	0.5
6	2000 MHz ≤ f ≤ 4000 MHz	1
7	4000 MHz < f ≤ 6000 MHz	2
[1] N is a factor used to help define certain specifications within the document		
Frequency Reference		
Reference frequency	10.000000 MHz	Option 10M_OCXO_L
Initial calibration accuracy	< 0.2 ppm	± 100 ppb
Temperature stability	< 1 ppm / year, 0℃ ~ 50℃	± 1 ppb, 0 ℃ ~ 50 ℃
Frequency aging rate	< 0.5 ppm / first year, 3.0 ppm / 20 years	50 ppb / 1 year
Frequency sweep		
Sweep type	Frequency step (linear or logarithmic step) arbitrary list	
Sweep range	Full frequency range	
Sweep shape	Triangle, saw-tooth	
Sweep mode	Single, continuous	
Step spacing	Linear, logarithmic	
Number of points	Step sweep	2 - 65535
	List sweep	2 - 500
Dwell time range	10 ms - 100 s	
Dwell time setting resolution	0.1 ms	
Trigger source	Auto, keyboard, external connector, bus	
Trig slope	Positive, negative when trigger source is external	

Level characteristics

ALC modes

The SSG5000X series offer three ALC modes:

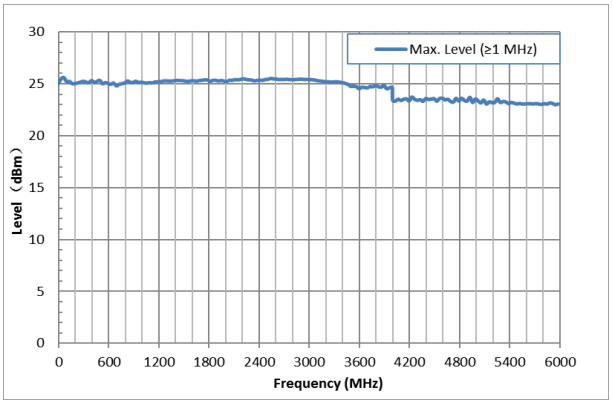
ALC STATE AUTO : The best suited ALC mode is set automatically.

ALC STATE ON : The level control loop is closed. This mode is suitable for CW, FM and PM.

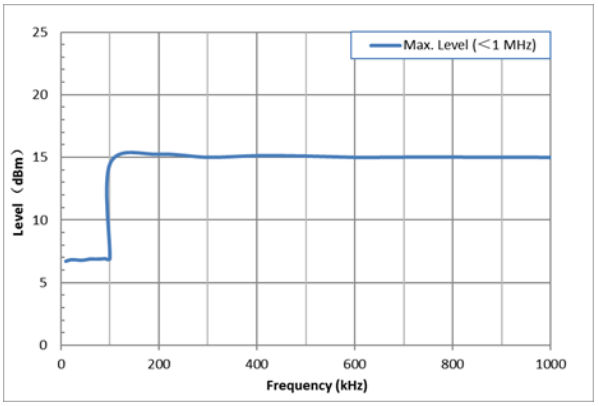
ALC STATE SAMPLE & HOLD (S&H) : At every frequency and level change, the level control loop is closed about 3 ms and the level control voltage is sampled. The level control voltage is the clamped. This mode is used internally while in ALC state AUTO for pulse modulation, AM modulation and IQ mode.

Level characteristics				
Level setting				
Level setting range	9 kHz ≤ f < 100 kHz	-110 dBm to + 7 dBm		
	100 kHz ≤ f < 1 MHz	-110 dBm to + 15 dBm		
	1 MHz ≤ f ≤ 4 GHz	-140 dBm to + 26 dBm		
	4 GHz < f ≤ 6 GHz	-130 dBm to + 24 dBm		
Resolution of setting	0.01 dB			
Level of performance range				
9 kHz ≤ f < 100 kHz		-110 dBm to + 4 dBm		
100 kHz ≤ f < 1 MHz		-110 dBm to + 13 dBm		
1 MHz ≤ f ≤ 4 GHz		-130 dBm to + 20 dBm		
4 GHz < f ≤ 6 GHz		-120 dBm to + 20 dBm		
Level error (ALC on, temperature is 20 ℃ ~30 ℃)				
	Max performance power to -40 dBm	-40 dBm to -90 dBm	-90 dBm to -110 dBm	-110 dBm to -120 dBm
9 kHz ≤ f < 100 kHz	≤ 0.9 dB ≤ 0.7 dB (typ.)	≤0.9 dB ≤0.7 dB (typ.)	≤1.1 dB	
100 kHz ≤ f ≤ 4 GHz	≤ 0.7 dB ≤ 0.5 dB (typ.)	≤ 0.7 dB ≤ 0.5 dB (typ.)	≤1.1 dB ≤0.7 dB (typ.)	≤ 1.6 dB
4 GHz < f ≤ 6 GHz	≤ 0.7 dB ≤ 0.5 dB (typ.)	≤ 0.7 dB ≤ 0.5 dB (typ.)	≤ 1.1 dB ≤ 0.7 dB (typ.)	≤ 2 dB
Additional level error	ALC State Off (S&H)	< 0.2 dB		
VSWR				
Level ≤ 0 dBm, ALC State ON				

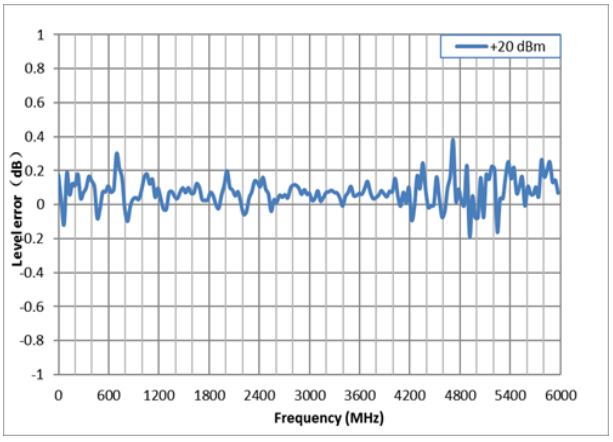
VSWR	1 MHz ≤ f ≤ 6 GHz	≤ 1.8 (nom.)	
Level setting			
Level setting time	Level deviation < 0.1 dB from final value, with GUI update stopped, temperature range from 20 ℃ - 30 ℃		< 5 ms
	ALC state ON		< 5 ms
	ALC state S&H		< 10 ms
Reverse power			
Maximum permissible DC voltage	50 V		
Maximum reverse input power	1 MHz ≤ f ≤ 6 GHz		+ 30 dBm
Level step sweep			
Sweep type	Amplitude step (linear or logarithmic step), arbitrary list		
	Full specified level range		
Sweep shape	Triangle, saw-tooth		
Sweep range	The device output range		
Trigger mode	Free run, single		
Step spacing	Linear		
Sweep points	Step sweep		2 - 65535
	List sweep		1 - 500
Dwell time setting range	10 ms - 100 s		
Dwell time setting resolution	0.1 ms		
Trigger source	Auto, keyboard, external connector, bus		
Trigger Slope	Positive, negative		



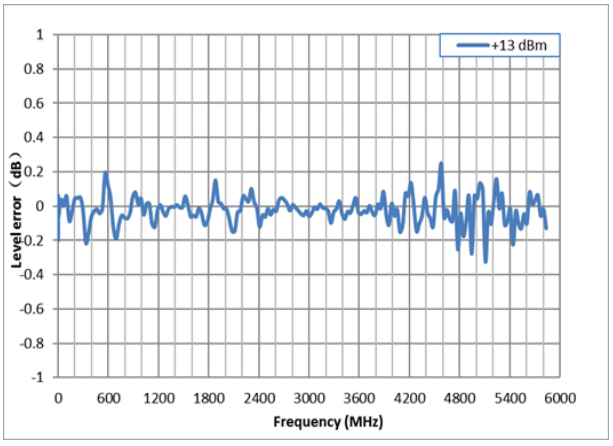
Maximum output power versus frequency, f ≥ 1 MHz



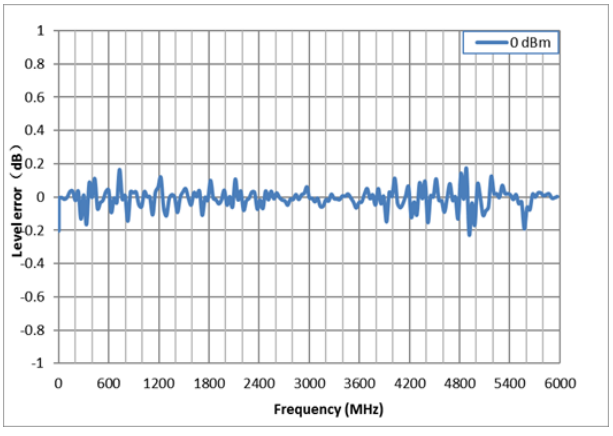
Maximum output power versus frequency, f < 1 MHz



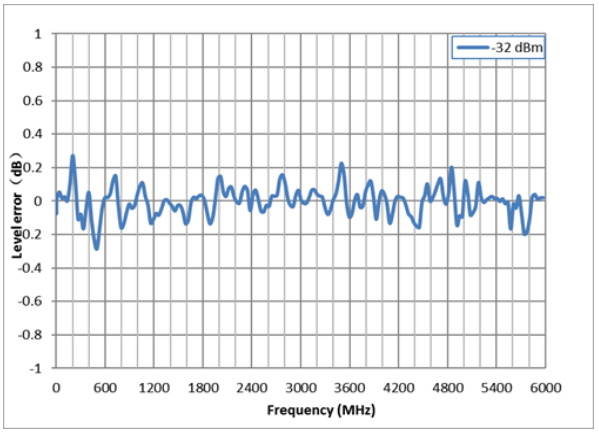
Measured level error versus frequency, Level = +20 dBm



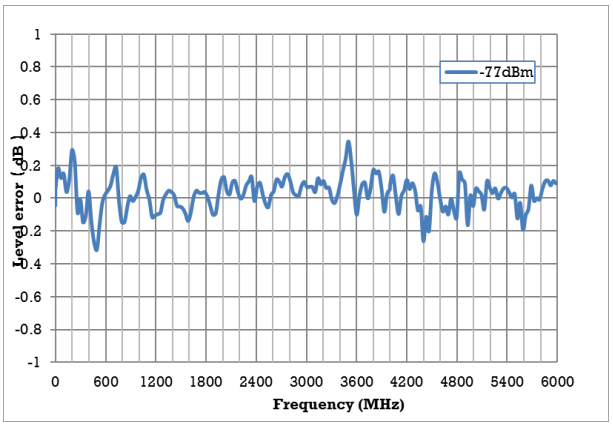
Measured level error versus frequency, Level = +13 dBm



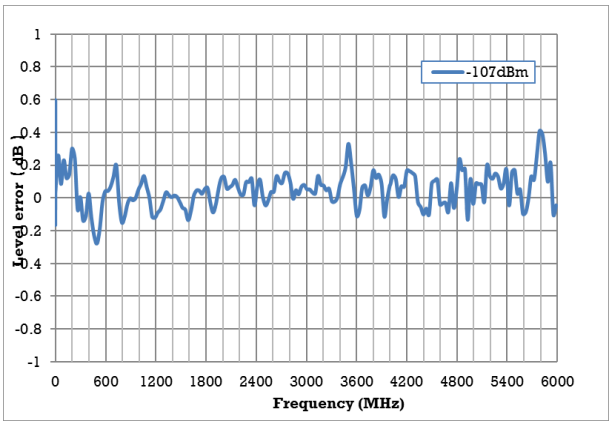
Measured level error versus frequency, Level = 0 dBm



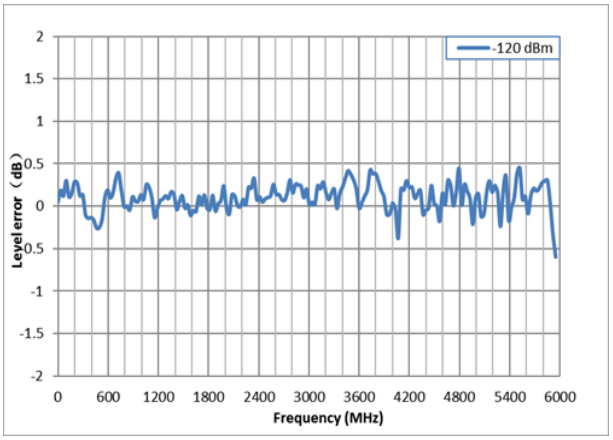
Measured level error versus frequency, Level = -32 dBm



Measured level error versus frequency, Level = -77 dBm



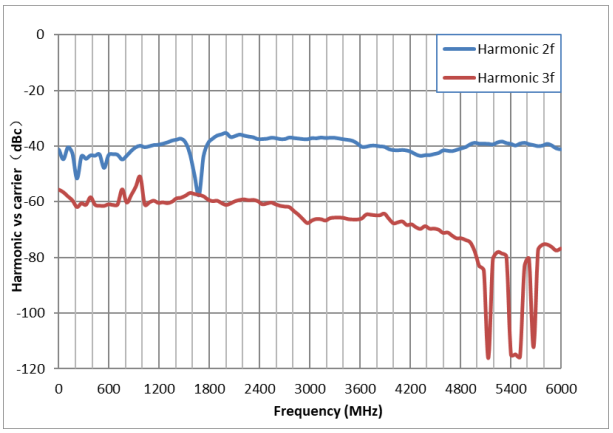
Measured level error versus frequency, Level = -107 dBm



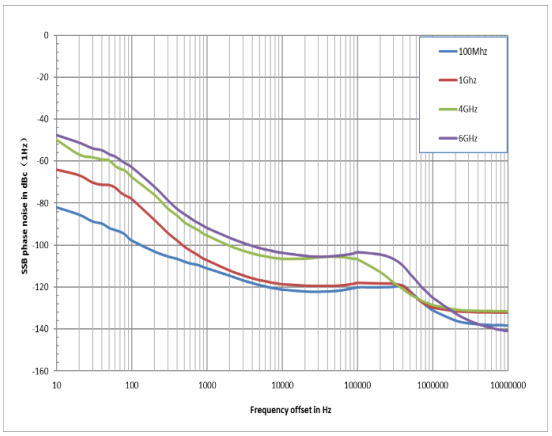
Measured level error versus frequency, Level = -120 dBm

Spectral purity		
Harmonics	CW mod, 1 MHz < f ≤ 6 GHz, Level < +13 dBm	< -30 dBc
Sub harmonics	CW mod, 1 MHz < f ≤ 6 GHz, offset > 10 kHz Level ≤ +13 dBm	< -55 dBc
Non-harmonics	CW mod, offset > 10 kHz, Level ≤ +13 dBm 1 MHz < f ≤ 4 GHz	< -65 dBc
	CW mod, offset > 10 kHz, Level ≤ +13 dBm 4 GHz < f ≤ 6 GHz	< -60 dBc(typ.)
SSB Phase noise	CW mod, offset = 20 kHz, 1 Hz measure bandwidth	
	f = 100 MHz	< -122 dBc/Hz (typ.)

	f = 1 GHz	< -120 dBc/Hz (typ.)
	f = 4 GHz	< -106 dBc/Hz (typ.)
	f = 6 GHz	< -105 dBc/Hz (typ.)



Measured harmonics versus carrier frequency at level ≤ +13 dBm



Measured phase noise

Internal modulation generator (LF)		
Waveforms	Sine wave, square wave, saw-tooth, triangle, DC	
Frequency range	Sine wave	0.1 Hz - 1 MHz [2]
	Square wave, triangle, saw-tooth	0.1 Hz - 20 kHz
Resolution of frequency setting	0.01 Hz	
Frequency error	Similar with RF source	
Frequency response	Sine wave < 0.3 dB	
Level Offset	Setting range	$\min\ (2.5\mathrm{V}-\frac{1}{2}\mathrm{LEVEL},\ 2\mathrm{V})$
	Offset resolution	0.01 V
Output voltage range [3]	Vp at connector	1 mVpp - 3 Vpp
	Resolution of amplitude setting	1 mv
Output impedance	50 Ω (nom.)	

[2] When use modulation and LF simultaneously, the LF frequency range and wave type will be restricted.

[3] The connector's load is 50 Ω.

LF frequency sweep	
Operating mode	Digital sweep in discrete steps
Step spacing	Linear, logarithmic
Sweep shape	Saw - tooth, triangle
Sweep direction	Up, down
Sweep range	0.01 Hz - 1 MHz
Trigger mode	Auto, keyboard, external connector, bus
Trigger slope	Positive, negative
Dwell time setting range	1 ms - 500 s
Dwell time setting resolution	0.1 ms

Analog modulation					
	Simultaneous modulation				
	Amplitude modulation	Frequency modulation	Phase modulation	Pulse modulation	IQ modulation
Amplitude modulation		●	●	(●)	●
Frequency modulation	●		×	●	●
Phase modulation	●	×		●	●
Pulse modulation	(●)	●	●		(●)
IQ modulation	●	●	●	(●)	
●=compatible, ×=incompatible, (●) =compatible limitations; NO specification Applies to AM distortion. In IQ mode, if open the RF Blank function in the marker utility, you cannot use the pulse modulation.					

Amplitude modulation			
Modulation source		Internal, external, internal + external	
AM depth setting range		0% ~ 100%	
Resolution of setting		0.1%	
AM depth error	f-mod = 1 kHz, m < 80%, Level = 0dBm		< 4% of setting+1%
AM distortion	f-mod = 1 m < 30%, level=0 dBm		< 3% (typ.)

Modulation frequency	m < 80%, 10 Hz-100 kHz	< 3 dB (nom.)

Frequency modulation		
Modulation source	Internal, external, internal + external	
Maximum deviation	N*1 MHz (typ.)	
Resolution	0.1% of set deviation or 1 Hz, whichever is larger	
FM deviation error	Fmod = 1 kHz, internal	< (2% of setting + 20 Hz)
FM distortion	Fmod = 1kHz, deviation = N*1 MHz	< 0.5% (nom.)
Modulation frequency response	10 Hz - 100 kHz	< 3 dB (nom.)
Phase modulation		
Modulation source	Internal, external, internal + external	
Maximum deviation	N*5 rad	
Resolution	0.1% of set deviation or 0.01 rad, whichever is larger	
ΦM deviation error	Fmod = 1 kHz, internal, Deviation ≤ N*5 rad	< (2 % of setting + 0.05 rad)
ΦM distortion	Fmod = 1 kHz, Deviation ≤ N*5 rad	< 0.5 % (nom.)
Modulation frequency response	10 Hz - 100 kHz	< 3 dB (nom.)
Pulse modulation		
Modulation source	Internal, external	
On/off ration	1 MHz < f < 4 GHz	> 70 dBc
	4 GHz < f ≤ 6 GHz	> 65 dBc（typ.）
Rise / fall time (10 % / 90 %)	10 % to 90 % of RF amplitude	< 15 ns
Pulse repetition time	Setting range	40 ns - 300 s
Pulse generator		
Pulse modes	Single pulse, double pulse	
Pulse source	Internal, external	
Pulse polarity	Normal, inverse	
Pulse period	Setting range	40 ns - 300 s
	Resolution of setting	10 ns

Pulse width	Retting range	20 ns - 300 s
	Resolution of setting	10 ns
Double pulse Delay	Setting range	20 ns - 300 s
	Resolution of setting	10 ns
#2 Width	Setting range	20 ns - 300 s
	Resolution of setting	10 ns
Trigger modes	Auto, keyboard, external trigger, external gate trigger, bus	
Trig polarity	Normal, inverse (used in external gate trigger mode)	
Trigger Slope	Positive, negative (used in external trigger mode)	
External trigger delay	140 ns - 300 s	
External trigger delay resolution of setting	10 ns	
Pulse train generator (SSG5000X-PT)		
Number of pulses	1 - 2047	
Number of repetitions per pulse	1 - 65535	
Pulse on time and off time setting range	20 ns - 300 s	
Pulse on time and off time setting resolution	10 ns	

Vector Modulation Specification

IQ modulation external inputs			
Bandwidth	Base Band I or Q < 100 MHz, nominal RF(I+Q) < 200 MHz, nominal		
Full scale input drive (I+Q)	$\sqrt{I^2+Q^2}=0.5Vrms$ 50 Ω		
Internal I/Q baseband generator adjustment			
I/Q offset	± 50 %		
I/Q gain	± 4 dB		
Quadrature angle adjustment	± 10°		
I/Q output			
Impedance	50 Ω nominal per output		
	100 Ω difference output		
Maximum voltage per output	0.5 V peak-to-peak with sine wave		
Bandwidth(I , Q)	Baseband (I or Q) 37.5 MHz, nominal Baseband (I or Q) 75 MHz, nominal (option SSG5000XV-B150)		
Amplitude flatness	± 0.3 dB, measured with channel corrections optimized for I/Q output		
Differential mode I or Q offset	± 3 V into 50 Ω		
Common mode I/Q offset	± 1.5 V into 50 Ω		
Internal Baseband generator			
Sample rate	100 Hz to 120 MHz 100 Hz to 240 MHz (option SSG5000XV_B150)		
RF bandwidth(I+Q)	75 MHz, nominal 150 MHz, nominal (option SSG5000XV_B150)		
Frequency offset range	± 60 MHz		
Arbitrary waveform memory	Max playback capacity	200 MSa	
	Max storage capacity include markers	4 G Bytes	
Waveform segments	Segment length	200 Sa-200 MSa	
Waveform sequences	Max. number of segments / sequences	1024	
	Max. number of repetitions	65535	
Triggers	Types	Continuous, single, gated, segment advance	

	Source	Trigger key, external, bus（GPIB, LAN, USB）	
	Modes	Continuous	Free run, trigger and run, reset and run
		Single	NO retrigger, buffered trigger, restart on trigger
		Gated	Negative polarity or positive polarity
		Segment advanced	Single or continuous
Trigger latency	83 ns + 8 sample clock period, nominal 83 ns + 0.8 us + 8 sample clock period, nominal		
Trigger accuracy	10 ns		
Markers	Marker polarity	Negative, positive	
	Number of Markers	4	
	RF blanking/ Burst On/ Off ratio	> 70 dBc(typ.)	
AWGN (Additive White Gaussian Noise)			
Type	Real time		
Modes of operation	Standalone, or digitally added to signal played by arbitrary waveform		
Bandwidth	1Hz - 75 MHz 1Hz - 150 MHz (option SSG5000XV-B150)		
Carrier to noise ratio	±100 dB		
Carrier-to-noise formats	C/N, Eb/N0		
Custom digital modulation mode			
Modulation type	PSK	BPSK, QPSK, 8PSK, DBPSK, DQPSK, 8PSK, OQPSK, PI/4-DQPSK, PI/8-D8PSK	
	QAM	16QAM ,32QAM ,64QAM ,128QAM ,256QAM ,512QAM	
	MFSK	2FSK ,4FSK ,8FSK ,16FSK, MSK	
	ASK	2ASK,4ASK,8ASK,16ASK	
User			
Symbol Rate	60 Msps 120 Msps (option SSG5000XV-B150)		
Multi-tone			
Number of tones	1 to 40, with selectable on/off state per tone		
Frequency spacing	100 Hz to 120 MHz		
Phase (per tone)	Fixed		

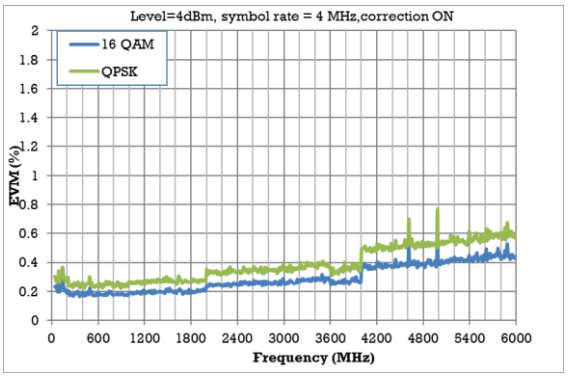
3GPP WCDMA distortion performance			
Power level ≤ 4 dBm			
Offset	Configuration	Frequency	spec
Adjacent (5MHz)	1DPCH, 1 carrier	1800 to 2200 MHz	-60 dBc （nom.）
Adjacent (10MHz)			-62 dBc （nom.）
Adjacent (5MHz)	Test mode 1 with 64 DPCH , 1 carrier	1800 to 2200 MHz	-60 dBc （nom.）
Adjacent (10MHz)			-62 dBc （nom.）
3GPP LTE-FDD distortion performance			
Offset	Configuration	Frequency	Level ≤ 4 dBm
Adjacent (10MHz)	10 MHz E - TM1.1 QPSK	1800 to 2200 MHz	-56 dBc (nom.)
Adjacent (20MHz)			-60 dBc (nom.)

GSM/EDGE output RF spectrum				
			GSM	EDGE
Offset	Configuration	Frequency	Power level ≤ 4 dBm	
200 kHz	1 normal timeslot burst	800 to 900 MHz 1800 to 1900 MHz	-35 dBc (nom.)	-35 dBc (nom.)
400 kHz			-40 dBc (nom.)	-40 dBc (nom.)
600 kHz			-68 dBc (nom.)	-68 dBc (nom.)
800 kHz			-78 dBc (nom.)	-78 dBc (nom.)
1200 kHz			-80 dBc (nom.)	-80 dBc (nom.)
3GPP2 CDMA2000 distortion performance				
Offset	Configuration	Frequency	Power level ≤ 4 dBm	
885kHz to 1.98 MHz	9 channel forward link	800 to 900 MHz	-64 dBc (nom.)	
> 1.98 to 4.0 MHz			-82 dBc (nom.)	
> 4.0 to 10 MHz			-82 dBc (nom.)	

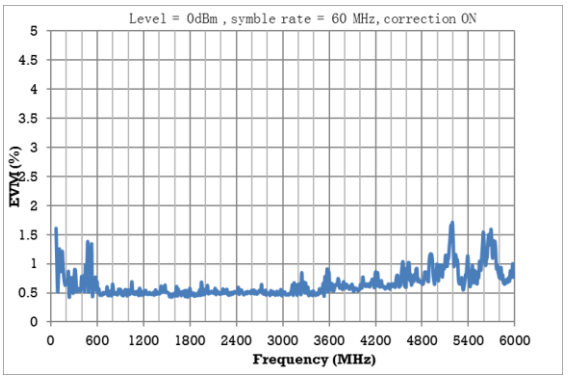
EVM performance					
Format	W-CDMA	LTE FDD	GSM	EDGE	CDM2000
Modulation type	QPSK	64 QAM	GMSK (burst)	3 pi/ 8PSK (burst)	QPSK
Modulation rate	3.84 Mcps	10 MHz BW	270.833 ksps	70.833 Ksps	1.2288 Mcps

Channel configuration	1 DPCH	E - TM 3.1	1 timeslot	1 timeslot	Pilot channel
Frequency	1800 to 2200 MHz	1800 to 2200 MHz	800 to 900 MHz 1800 to 1900 MHz	800 to 900 MHz 1800 to 1900 MHz	800 to 900 MHz 1800 to 1900 MHz
EVM power level	≤ 4 dBm				
EVM	< 1.2 % (nom.)	< 0.5 % (nom.)	< 1.3 % (nom.)	< 1.3 % (nom.)	< 1 % (nom.)

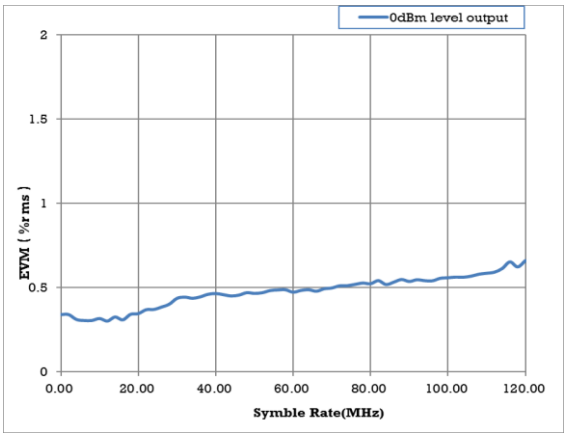
EVM performance		
Format	QPSK	16 QAM
Modulation type	QPSK	16 QAM
Modulation rate	5 Msps (root-Nyquist filter α=0.25)	
Frequency	100M ≤f≤ 6 GHz	≤ 6 GHz
power level	≤ 4 dBm	
EVM	< 1.5 %	< 1.5 %



Measured EVM performance vs carrier frequency@ symbol rate=5 MHz



Measured EVM performance vs carrier frequency@ symbol rate=60 MHz, QPSK



Measured EVM performance vs symbol rate @2.2 GHz, QPSK

Connectors

Front panel connectors		
RF output	Impedance	50 Ω
	Connector	N female
Modulation generator output (LF)	Impedance	50 Ω
	Connector	BNC female
Rear panel connectors		
TRIG IN/ OUT	Impedance	100 kΩ
	Connector	BNC female
	Active trigger voltage	5 V TTL
EXT MOD INPUT	Impedance	High impedance
	Connector	BNC female
PULSE IN/ OUT	Impedance	Input: High impedance Output: 50 Ω
	Connector	BNC
	Input / output voltage	CMOS 3.3 V
10 MHz IN	Impedance	50 Ω
	Connector	BNC-female
	Input power range	-5 dBm ~ +10 dBm
10 MHz OUT	Impedance	50 Ω
	Connector	BNC-female

	Input power range	> 0 dBm
SIGNAL VALID	Impedance	50 Ω
	Connector	BNC-female
	Output voltage range	CMOS 3.3 V
I INPUT	Impedance	20 kΩ
	Connector	BNC-female
Q INPUT	Impedance	20 kΩ
	Connector	BNC-female
I + output	Impedance	50 Ω
	Connector	BNC-female
I - output	Impedance	50 Ω
	Connector	BNC-female
Q + output	Impedance	50 Ω
	Connector	BNC-female
Q - output	Impedance	50 Ω
	Connector	BNC-female
PATTERN_TRIG	Impedance	High impedance
	Connector	BNC-female
	Input voltage range	CMOS 3.3V
IQ_ EVENT	Impedance	50 Ω
	Connector	BNC-female
	Output voltage range	CMOS 3.3V
Communication Interface		
USB host	USB-A 2.0	
USB device	USB-B 2.0	
LAN	LAN (VXI-11, 10/100Base, RJ-45)	

General Specification	
Display	TFT LCD, RGB (800*480), 5inch capacitive touch screen
Storage	Internal (Flash) 4 G Byte, external (USB storage device)
Source	Input voltage range (AC) 100 V~240 V (±10%) AC frequency Supply 100 V to 240 V, 50/60 Hz; Supply 100 V to 120 V, 400 Hz Power consumption 75 W with all Function working

Temperature	Working temperature 0 ℃ to 50 ℃, Storage temperature -20 ℃ to 70 ℃
Humidity	0 ℃ to 30 ℃, ≤ 95 % relative humidity; 30 ℃ to 50 ℃, ≤ 75 % relative humidity
Dimensions	W×H×D=338×113×369 mm
Altitude	Operating: less than 3 km
Weight without package	Contain IQ modulator board 5.3 kg
Electromagnetic Compatibility and Safety	
EN 61326-1:2013/	Class A
EN 61000-3-2: 2014	
EN 61000-3-3: 2013	Plt: 0.65 Pst: 1.00; dmax: 4.00 % dc: 3.00 %; dtLim: 3.30 % dt > Lim: 500 ms
IEC 61000-4-2: 2008	AD ± 8.0 kV，CD ± 4.0 kV
IEC 61000-4-3: 2006 + A1: 2007 + A2: 2010	80 MHz to 1000 MHz: 10 V/m ; 1.4 GHz to 2.0 GHz: 3 V/m ; 2.0 GHz to 2.7 GHz:1 V/m
IEC 61000-4-4: 2004 + A1: 2010	AC Line: ± 2100 kV
IEC 61000-4-5: 2005	Line to Line: 1.0 kV , Line to Earth: 2.0 kV
IEC 61000-4-6: 2008	0.15-80 MHz: 3V 1 kHz 80% AM
IEC 61000-4-8: 2009	30 A/m , 50/ 60 Hz
IEC 61000-4-11: 2004	Voltage Dips: 0%/0.5P ; 40%/10P ; 70%/25P; Short Interruptions Test Level%UT: 0%/ 250P
Safety	
IEC 61010-1:2010/ EN 61010-1:2010	
Canada: CAN/ CSA-C22.2 No.61010-1:2012	
RoHS	
2011/65/EU	

Ordering Information

Product Description	SSG5000X Signal Generator	Order Number
Product code	Analog Signal Generator 9 kHz ~ 4 GHz	SSG5040X
	Analog Signal Generator 9 kHz ~ 6 GHz	SSG5060X
	Vector Signal Generator 10 MHz ~ 4 GHz	SSG5040X-V

	Vector Signal Generator 10 MHz ~ 6 GHz	SSG5060X-V
Standard configurations	Quick start, an USB cable, calibration certificate, power cord	
Option	Pulse train generator	SSG5000X-PT
	Rack mount kit	SSG-RMK
	USB-GPIB adapter	USB-GPIB
	Upgrade 4 GHz to 6 GHz	SSG5000X_F60
	Upgrade IQ bandwidth from 75 MHz to 150 MHz	SSG5000XV_B150
	Precision Frequency Reference	10M_OCXO_L [1]
	Generate IOT waveform at device	SSG5000XV-IOT
	SigIQPro for Bluetooth waveform playback license[2]	SigIQPro-BT
	SigIQPro for IOT waveform playback license	SigIQPro-IOT
	SigIQPro for OFDM waveform playback license	SigIQPro-OFDM

[1] Assembled and calibrated in factory only

[2] See the SigIQPro User Manual for details

About SIGLENT

SIGLENT is an international high-tech company, concentrating on R&D, sales, production and services of electronic test & measurement instruments.

SIGLENT first began developing digital oscilloscopes independently in 2002. After more than a decade of continuous development, SIGLENT has extended its product line to include digital oscilloscopes, isolated handheld oscilloscopes, function/arbitrary waveform generators, RF/MW signal generators, spectrum analyzers, vector network analyzers, digital multimeters, DC power supplies, electronic loads and other general purpose test instrumentation. Since its first oscilloscope was launched in 2005, SIGLENT has become the fastest growing manufacturer of digital oscilloscopes. We firmly believe that today SIGLENT is the best value in electronic test & measurement.

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