

SSA3000X Series Spectrum Analyzer



DataSheet-2020.02



SSA3032X

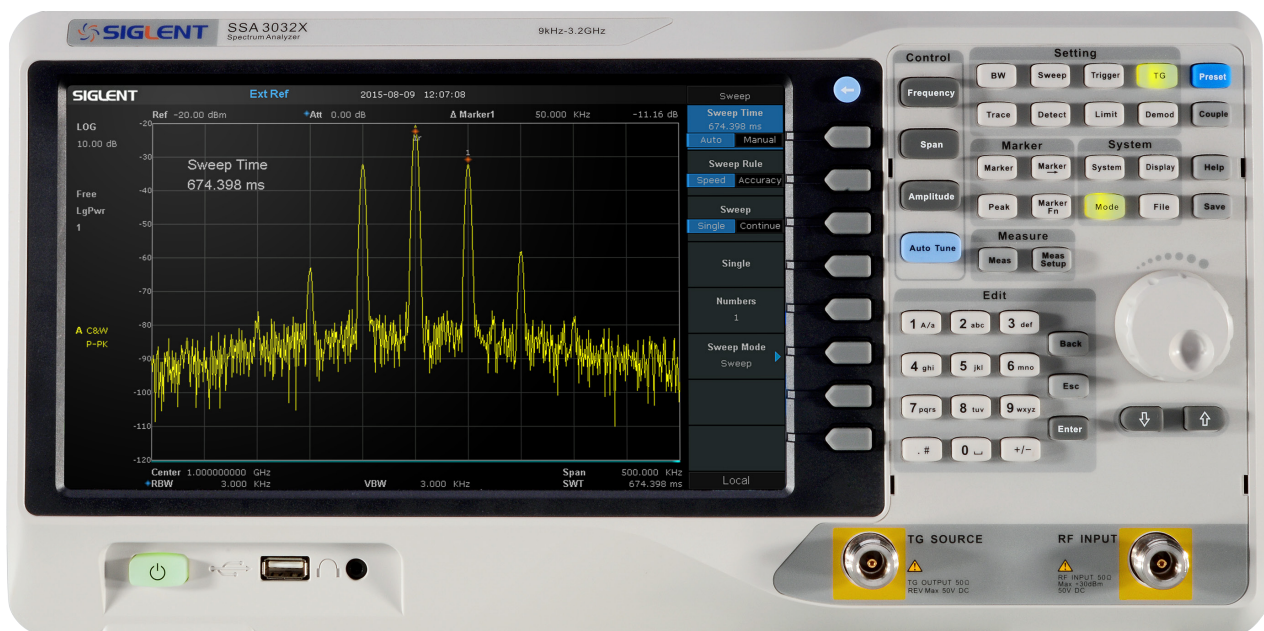
SSA3021X

General Description

Siglent's SSA3000X series of spectrum analyzers have a frequency range of 9 kHz to 2.1 GHz / 3.2 GHz. With their light weight, small size, and friendly user interface, the SSA3000X offer a bright easy to read display, powerful and reliable automatic measurements, and plenty of powerful features. Applications include broadcast monitoring/evaluation, site surveying, EMI pre-compliance, research and development, education, production, and maintenance.

Features and Benefits

- 📡 All-Digital IF Technology
- 📡 Frequency Range from 9 kHz up to 3.2 GHz
- 📡 -161 dBm/Hz Displayed Average Noise Level (Typ.)
- 📡 -98 dBc/Hz @10 kHz Offset Phase Noise (1 GHz, Typ.)
- 📡 Total Amplitude Accuracy < 0.7 dB
- 📡 1 Hz Minimum Resolution Bandwidth (RBW)
- 📡 Standard Preamplifier
- 📡 Up to 3.2 GHz Tracking Generator Kit (Opt.)
- 📡 Reflection Measurement Kit (Opt.)
- 📡 Advanced Measurement Kit (Opt.)
- 📡 EMI Pre-compliance Test Kit (Opt.)
- 📡 10.1 Inch WVGA (1024x600) Display



Model and Main index

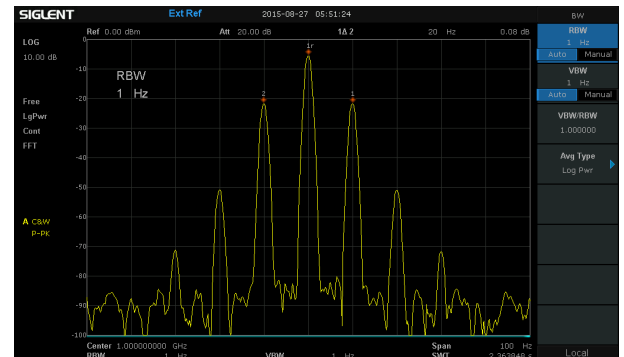
Model	SSA3032X	SSA3021X
Frequency Range	9 kHz~3.2 GHz	9 kHz~2.1 GHz
Resolution Bandwidth	1 Hz~1 MHz, in 1-3-10 sequence	1 Hz~1 MHz, in 1-3-10 sequence
Displayed Average Noise Level	-161 dBm/Hz, Normalize to 1 Hz (typ.)	-161 dBm/Hz, Normalize to 1 Hz (typ.)
Phase Noise	< -98 dBc/Hz@1 GHz, 10 kHz offset	< -98 dBc/Hz@1 GHz, 10 kHz offset
Amplitude Precision	< 0.7 dB	< 0.7 dB

Design features

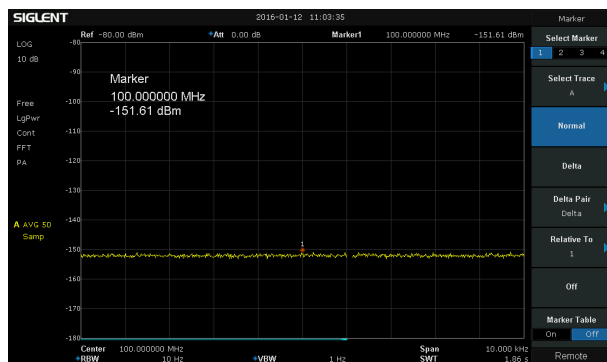
Easy to operate, Support four independent traces and cursors



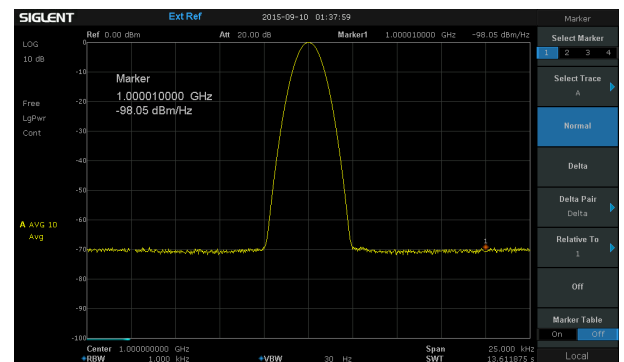
1 Hz Minimum Resolution Bandwidth (RBW)



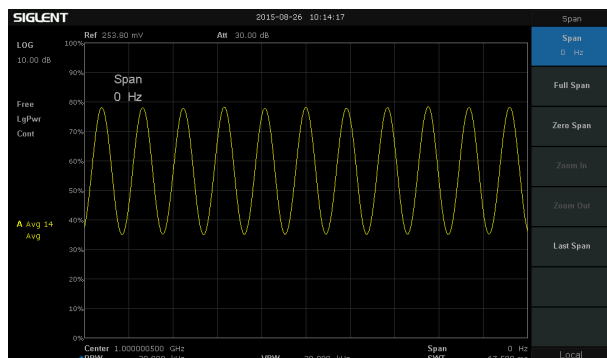
-151 dBm Displayed Average Noise Level (RBW=10 Hz)



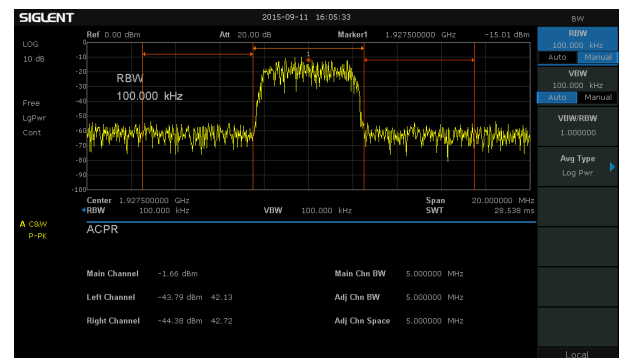
Phase noise -98 dBc/Hz@ 1 GHz, offset 10 kHz



Zero span and demodulation capabilities



Advanced measurement kit (AMK-SSA3000X) includes on-screen ACPR measurements



Amplitude Characteristic

Amplitude and Level

Measurement range	DANL to +10 dBm, 100 kHz~1 MHz, preamplifier off DANL to +20 dBm, 1 MHz~3.2 GHz, preamplifier off
Reference level	-100 dBm to +30 dBm, 1 dB steps
Preamplifier	20 dB (nom.), 9 kHz~3.2 GHz
Input attenuation	0~51 dB, 1 dB steps
Maximum input DC voltage	+/- 50 V _{DC}
Maximum average RF power	30 dBm, 3 minutes, f _c ≥10 MHz, attenuation >20 dBm, preamp off
Maximum damage level	33 dBm, f _c ≥10 MHz, attenuation >20 dBm, preamp off

Displayed Average Noise Level (DANL)

	20 °C ~30 °C ,attenuation = 0 dB, sample detector, trace average >50		
		RBW=10 Hz	Normalization to 1 Hz
Preamp off	9 kHz~100 kHz	-100 dBm (nom.)	-110 dBm (nom.)
	100 kHz ~1 MHz	-97 dBm, -101 dBm (typ.)	-107 dBm,-111 dBm (typ.)
	1 MHz~10 MHz	-122 dBm, -126 dBm (typ.)	-132 dBm,-136 dBm (typ.)
	10 MHz~200 MHz	-127 dBm,-131 dBm (typ.)	-137 dBm,-141 dBm (typ.)
	200 MHz~2.1 GHz	-122 dBm, -126 dBm (typ.)	-132 dBm,-136 dBm (typ.)
	2.1 GHz~3.2 GHz	-116 dBm, -122 dBm (typ.)	-126 dBm,-132 dBm (typ.)
Preamp on	9 kHz~100 kHz	-107 dBm (nom.)	-117 dBm (nom.)
	100 kHz ~1 MHz	-122 dBm, -127 dBm (typ.)	-132 dBm,-137 dBm (typ.)
	1 MHz~10 MHz	-138 dBm, -144 dBm (typ.)	-148 dBm,-154 dBm (typ.)
	10 MHz~200 MHz	-146 dBm, -151 dBm (typ.)	-156 dBm,-161 dBm (typ.)
	200 MHz~2.1 GHz	-140 dBm, -143 dBm (typ.)	-150 dBm,-153 dBm (typ.)
	2.1 GHz~3.2 GHz	-135 dBm, -139 dBm (typ.)	-145 dBm,-149 dBm (typ.)

Phase Noise

	20 °C ~30 °C ,f _c =1 GHz
Phase noise	<-95 dBc/Hz @10 kHz offset, <-98 dBc/Hz (typ.) <-96 dBc/Hz @100 kHz offset,<-97 dBc/Hz (typ.) <-115 dBc/Hz @1 MHz offset, <-117 dBc/Hz (typ.)

Level Display

Logarithmic level axis	10 dB to 200 dB
Linear level axis	0 to reference level
Units of level axis	dBm, dBmV, dBμV, dBμA, V, W
Number of display points	751
Number of traces	4
Trace detectors	Positive-peak, Negative-peak, Sample, Normal, Average (Voltage/RMS/Video) , Quasi-peak (with EMI option)
Trace functions	Clear write, Max Hold, Min Hold, View, Blank, Average

Frequency Response

	20 °C to 30 °C , 30% to 70% relative humidity, attenuation = 20 dB, reference frequency 50 MHz
Preamp off	±0.8 dB, ±0.4 dB, (typ.)
Preamp on	±0.9 dB, ±0.5 dB, (typ.)

Error and Accuracy

Resolution bandwidth switching uncertainty	10 kHz RBW Logarithmic resolution ±0.2 dB, linear resolution ±0.01, nominal
Input attenuation switching uncertainty	20 °C to 30 °C , f _c = 50 MHz, preamp off, Relative to 20 dB, 1 to 51 dB attenuation ±0.5 dB
Absolute amplitude accuracy	20 °C to 30 °C , f _c = 50 MHz, RBW = 1 kHz, VBW = 1 kHz, peak detector, attenuation = 20 dB, 95th percentile reliability
	preamp off ±0.4 dB, input signal -20 dBm preamp on ±0.5 dB, input signal -40 dBm
Total amplitude accuracy	20 °C to 30 °C , F _c >100 kHz, input signal -50 dBm~0 dBm, RBW = 1 kHz, VBW = 1 kHz, peak detector, attenuation = 20 dB, preamp off, 95th percentile reliability ± 0.7 dB
RF input VSWR	input attenuation 10 dB, 1 MHz~3.2 GHz <1.5, nom

Amplitude Characteristic

Distortion and Spurious Responses

Second harmonic distortion	fc≥50 MHz, mixer level -30dBm, attenuation = 0 dB, preamp off, 20 °C to 30 °C , typ. -65 dBc
Third-order intercept	fc≥50 MHz, two -20 dBm tones at input mixer spaced by 100 kHz, attenuation = 0 dB, preamp off, 20 °C to 30 °C , typ. +10 dBm
1dB Gain Compression	fc≥50 MHz, attenuation = 0 dB, preamp off, 20 °C to 30 °C , nom. >-5 dBm
Residual response	input terminated = 50 Ω,attenuation = 0 dB, 20 °C to 30 °C , typ. <-90 dBm
Input related spurious	Mixer level = -30 dBm, 20 °C to 30 °C <-65 dBc

Sweep and Trigger

Sweep time	1 ms to 3000 s	
Sweep accuracy	Accuracy, Speed	
Sweep mode	Sweep	FFT
	RBW=30 Hz~1 MHz	RBW=1 Hz~10 kHz
Sweep rule	Single, Continuous	
Trigger source	Free, Video, External	
External trigger	5 V TTL level, rising edge/falling edge	

Tracking Generator (Option)

	SSA3032X	SSA3021X
Frequency range	100 kHz~3.2 GHz	100 kHz~2.1 GHz
RBW	30 Hz~1 MHz, only sweep mode	
Output level	-20 dBm~0 dBm	
Output level resolution	1 dB	
Output flatness	+/-3 dB	
Output maximum reverse level	Mean power:30 dBm,DC: ±50 V _{DC}	

EMI Receiver Measurement (Option)

Resolution bandwidth (6 dB)	200 Hz,9 kHz,120 kHz
Detector	Quasi-peak (following CISPR 16-1-1)
Dwell time	0 us~10 s
PC Application Software	EasySpectrum EMI pre-compliance test Software

Reflection Measurement (Option)

Function	VSWR, Return loss, Reflect coefficient
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Advanced Measurement (Option)

Function	Channel power, Adjacent channel power ratio, Time domain power, Occupied bandwidth, Third-order intercept, Spectrum monitor
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External input and external output

Front panel RF input	50 Ω , N-female
Front panel TG output	50 Ω , N-female
10 MHz reference output	10 MHz, >0 dBm, 50 Ω , BNC-female
10 MHz reference input	10 MHz, -5 dBm~+10 dBm, 50 Ω , BNC-female
External Trigger input	1 k Ω , 5 V TTL , BNC-female

Communication Interface

USB Host	USB-A 2.0 +
USB Device	USB-B 2.0
LAN	LAN (VXI11), 10/100 Base, RJ-45

General Specification

Display	TFT LCD, 1024×600(waveform area 751×501), 10.1 inch
Storage	Internal (Flash) 256 MByte, External (USB storage device) 32 GByte
Source	Input voltage range (AC) 100 V~240 V, AC frequency supply 45 Hz~440 Hz, Power consumption 30 W
Temperature	Working temperature 0 °C to 50 °C , Storage temperature -20 °C to 70 °C
Humidity	0 °C to 30 °C , ≤95% Relative humidity; 30 °C to 50 °C , ≤75% Relative humidity
Dimensions	393 mm×207 mm×116.5 mm (W×H×D)
Weight	Contain tracking generator 4.60 kg (10.1 lb)

Electromagnetic Compatibility and Safety

EMC	EN 61326-1:2013
Electrical safety	EN 61010-1:2010

SSA3000X Series Spectrum Analyzer



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, function/arbitrary waveform generators, RF generators, digital multimeters, DC power supplies, spectrum analyzers, vector network analyzers, isolated handheld oscilloscopes, electronic load and other general purpose test instrumentation. Since its first oscilloscope, the ADS7000 series, 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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