



XSA1000 Series Spectrum Analyzer

- + Frequency Range from 9 kHz up to 1.5 GHz
- + 150dBm Displayed Average Noise Level
- + Phase Noise -85dBc/Hz @1Gz and offset at 10KHz
- + Total Amplitude Accuracy <1.5dB
- + 10Hz Minimum Resolution Bandwidth (RBW)
- + EMI Pre-compliance Test Kit
- + Up to 1.5 GHz Tracking Generator Kit (Opt.)
- + 10.4 inches display

+ Performance Specifications

Model: XSA1015TG

Frequency Specification

Frequency

Range	9kHz - 1.5 GHz
Resolution	1Hz

Frequency span

Range	0 Hz, 100 Hz to maximum frequency of device
Accuracy	$\pm \text{span} / (\text{swept points} - 1)$

Internal reference

Reference frequency	10.000000 MHz
Reference frequency accuracy	$\pm [(\text{days from last calibrate} \times \text{freq aging rate}) + \text{temperature stability} + \text{initial accuracy}]$
Temperature stability	<2.5ppm
Aging rate	<1ppm/year

Readout

Marker frequency resolution	$\text{span} / (\text{the number of sweep points} - 1)$
Uncertainty	$\pm (\text{freq indication} \times \text{freq reference uncertainty} + 1\% \times \text{span} + 10\% \times \text{resolution bandwidth} + \text{Marker Frequency Resolution})$

Frequency counter

Resolution	1 Hz, 10 Hz, 100 Hz, 1 kHz
Accuracy	$\pm (\text{marker freq} \times \text{freq reference uncertainty} + \text{counter resolution})$

Bandwidth

Resolution bandwidth (-3 dB)	10Hz to 500kHz (in 1 to 10 sequence), 1MHz, 3MHz
Resolution filter shape factor	<5 : 1 nominal (Digital implement, similar to Gauss Pattern)
Accuracy	<5% nominal
Video bandwidth (-3 dB)	10Hz to 3MHz

Amplitude Specification

Amplitude and electric level

Amplitude measurement range	DANL to +20 dBm, close the preamplifier
Reference electric level	-80 dBm to +30 dBm, 0.1dBm steps
Preamplifier	20 dB, nominal, 9 kHz~1.5 GHz
Input attenuator range	0~39 dB, 3 dB steps
Max input DC voltage	50 VDC
Max continuous power	30dBm, average continuous power

Displayed average noise level (DANL)

	Input attenuation 0 dB, 1Hz resolution bandwidth
Preamp off	1 MHz~10 MHz -130dBm (typical)
	10 MHz~1GHz -130dBm (typical)
	1GHz~1.5 GHz -128 dBm (typical)
Preamp on	1 MHz~10 MHz -150dBm (typical)
	10 MHz~1GHz -150dBm (typical)
	1GHz~1.5 GHz -148 dBm (typical)

Phase noise

	20 °C ~30 °C , fc=1 GHz
Phase noise	<-85 dBc/Hz @10 kHz offset
	<-100 dBc/Hz @100 kHz offset
	<-110 dBc/Hz @1 MHz offset

Level display range

Log scale coordinate	1dB ~255dB
Linear scale coordinate	0 to reference level
level unit	dBm, dBuW, dBpW, dBmV, dBuV, W,V
Points	201~1001
Number of traces	5
Detectors	Positive-peak, negative-peak, sample, normal, RMS
Trace functions	Clear write, Max Hold, Min Hold, View, Blank, Average

Frequency response

	20°C ~30°C, 30%~70% relative humidity, 20 dB input attenuation, reference 50 MHz
Preamp off	±0.8 dB ;
Preamp on	±0.9 dB ;

Accuracy

Input Attenuation Switching Uncertainty	20°C - 30°C, fc=50 MHz, Preamplifier Off, 20dB RF attenuation, input signal 0~39 dB ±0.5 dB
Absolute Amplitude Uncertainty	20°C - 30°C, fc=50 MHz, RBW=1 kHz, VBW=1 kHz, peak detector, 20 dB RF attenuation, Preamplifier Off ±0.4 dB, input signal= -20dBm Preamplifier On ±0.5 dB, input signal= -40dBm

Uncertainty	input signal range 0dbm~-50dbm
	±1.5 dB
VSWR	input 10 dB RF attenuation, 1 MHz~1.5GHz
	<1.5, nominal
Distortion and spurious response	
Second harmonic distortion	$f_c \geq 50 \text{ MHz}$, Preamp off, signal input -30 dBm, 0 dB RF attenuation, 20 °C to 30 °C
	-60dbc
Third-order intermodulation	$f_c \geq 50 \text{ MHz}$
	+13 dBm
1 dB Gain Compression	$f_c \geq 50 \text{ MHz}$, 0 dB RF attenuation, Preamp off, 20 °C to 30 °C
	+7 dBm, nominal
Residual response	connect 50 Ω load at input port, 0 dB input attenuation, 20 °C to 30 °C
	<-85dBm, typical
Input related spurious	-30 dBm signal at input mixer, 20 °C to 30 °C
	<-60 dBc
Sweep time and triggering	
Span range	$100\text{Hz} \leq \text{SPAN} \leq 3\text{GHz}$ 10ms to 3000s zero sweep width 1ms to 3000s
Mode	Continue, single
Trigger	Free run, video, external
Tracking generator	
Output frequency range	100 kHz~1.5 GHz
Output power level range	-30 dBm~0 dBm ,
Output power level resolution	1DB
Output flatness	+/-3 dB
Maximum safe reverse level	Average total power : 30 dBm, DC : ±50 VDC
Inputs and Outputs	
Front panel RF input connector	50 Ω , N-type female
Front panel track generator output	50 Ω , N-type female
10 M reference input	50 Ω , N-type female
Communication port	USB HOST, USB DEVICE, LAN, earphone port, and VGA
General technical specification	
Display	TFT LCD, 10.4 inches
Weight	5 kg
Working temperature	0~40 °C
Storage temperature	-20 °C to +60 °C
Power	100V~240V 50/60Hz