



## XSA1000TG Series Spectrum Analyzer

- + Frequency Range from 9 kHz up to 7.5 GHz
- + -160dBm Displayed Average Noise Level
- + Phase Noise -98dBc/Hz @1Gz and offset at 10KHz
- + Total Amplitude Accuracy < 1.5dB
- + 10Hz Minimum Resolution Bandwidth (RBW)

### + Performance Specifications

Model	XSA1015 ( TG )	XSA1032(TG)	XSA1036(TG)	XSA1075(TG)
<b>Frequency</b>				
Range	9kHz-1.5 GHz	9kHz-3.2 GHz	9kHz-3.6 GHz	9kHz-7.5 GHz
Resolution	1Hz			
<b>Frequency span</b>				
Range	0 Hz , 100 Hz to maximum frequency of device			
Accuracy	$\pm \text{span} / (\text{swept points} - 1)$			
<b>Internal reference</b>				
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 ( 15°C to 35°C )			<1ppm ( 15°C to 35°C )
Aging rate	<1ppm/year			
<b>Readout</b>				
Marker frequency resolution	$\text{span} / (\text{the number of swept points} - 1)$			
Uncertainty	$\pm (\text{freq indication} \times \text{freq reference uncertainty} + 1\% \times \text{span} + 10\% \times \text{resolution bandwidth} + \text{Marker Frequency Resolution} )$			
<b>Frequency counter</b>				

Resolution	1 Hz , 10 Hz , 100 Hz , 1 kHz
Accuracy	$\pm$ ( marker freq $\times$ freq reference uncertainty + 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 , 0.01dBm steps	
Preamplifier	20 dB , nominal	
Input attenuator range	0~40 dB , 1 dB steps	0~50 dB , 1 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 -140dBm ( nominated )
	10 MHz~1GHz -140dBm ( nominated )
	XSA1015TG:1GHz~1.5 GHz -138 dBm( nominated ) XSA1032TG:1GHz~3.2GHz -138 dBm( nominated ) XSA1036TG:1GHz~3.6 GHz -138 dBm( nominated )
	XSA1075TG:1GHz~3.6GHz -138dBm( nominated ) ; 4GHz~5GHz,-133dBm( nominated ) 5GHz~6GHz,-128dBm( nominated ) ; 6GHz~7GHz-123dBm( nominated ) ; 7GHz~7.5GHz,-118dBm( nominated )
Preamp on	1 MHz~10 MHz -160dBm ( nominated )
	10 MHz~1GHz -160dBm ( nominated )
	XSA1015TG: 1GHz~1.5 GHz -158 dBm( nominated ) XSA1032TG: 1GHz~3.2 GHz -158 dBm( nominated )

	XSA1036TG: 1GHz~3.6 GHz -158 dBm( nominated )	
	XSA1075TG: 1GHz~4GHz -158dBm( nominated );4GHz~5GHz -153dBm( nominated )	
	5GHz~6GHz -148dBm( nominated );6GHz~7GHz -143dBm( nominated )	
	7GHz~7.5GHz -138dBm( nominated )	
<b>Phase noise</b>	20 °C ~30 °C , fc=1 GHz	
Phase noise	<-82 dBc/Hz @10 kHz offset	<-98 dBc/Hz @10 kHz offset
	<-100 dBc/Hz @100 kHz offset	
	<-110 dBc/Hz @1 MHz offset	
<b>Level display range</b>		
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	
<b>Frequency response</b>		
	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 ;	
<b>Accuracy</b>		
Input Attenuation Switching Uncertainty	20°C ~30°C , fc=50 MHz , Preamplifier Off , 20dB RF attenuation , input signal 1~40 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	input 20 dB , 1 MHz~7.5GHz

	<1.5 , nominal
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### 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
	-65dbc
Third-order intermodulation	$f_c \geq 50 \text{ MHz}$
	+2 dBm (NSA1015/NSA1032/NSA1036)
	+10dBm(NSA1075)
1 dB Gain Compression	$f_c \geq 50 \text{ MHz}$ , 0 dB RF attenuation , Preamp off , 20 °C to 30 °C
	+2 dBm, nominal
Residual response	connect 50 $\Omega$ load at input port , 0 dB input attenuation , 20 °C to 30 °C
	<-85dBm , nominated
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

### Tracking generator

Output frequency range	100 kHz~1.5 GHz	100 kHz~3.2 GHz	100 kHz~3.6 GHz ( Tracking generator ) 35 MHz~3.6 GHz ( Tracking generator )	100 kHz~7.5 GHz ( Tracking generator )
Output power level range	-30 dBm~0 dBm ,	-40 dBm~0 dBm ,		
Output power level resolution	1dB			
Output flatness	+/-3 dB			
Maximum safe reverse level	Average total power : +30 dBm , DC : $\pm 50 \text{ VDC}$			

### Inputs and Outputs

Front panel RF input connector	50 $\Omega$ , N-type female
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Front panel track generator output	50 $\Omega$ , N-type female
10 M reference input	50 $\Omega$ , N-type female
Communication port	USB HOST, USB DEVICE, LAN, earphone port, REF and VGA

#### General technical specification

Display	TFT LCD , 10.4 inches
Weight (without package)	About 5 kg
Dimension (W x H x D)	421 x 221 x 115 (mm)
Working temperature	0~40 °C
Storage temperature	-20 °C to +60 °C
Power	100V~240V 50/60Hz

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