XSA1000P Series Spectrum Analyzer Specifications

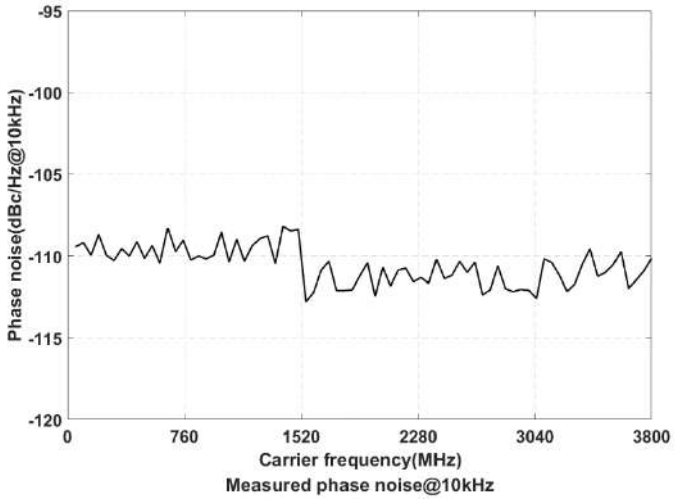
All technical specifications are guaranteed when the following conditions are met, unless otherwise stated:

- The instrument has been preheated for 30 minutes before use.
- The instrument is in the calibration cycle and has been self-calibrated.

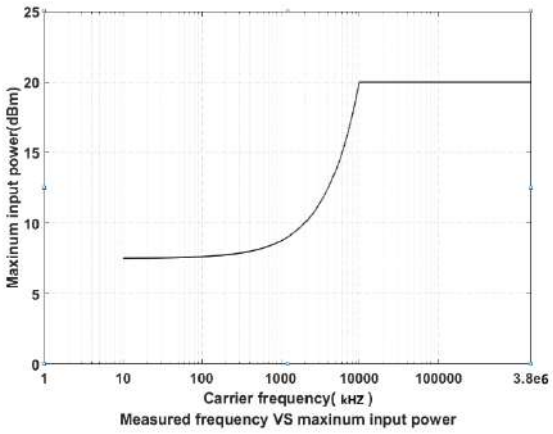
"Typical" and "nominal" for this product are defined as follows

- Typical: Refers to the performance of the product under certain conditions.
- Nominal: Refers to the approximate value under product application process.

Frequency		
Frequency Range	XSA1015P（TG）	9.000 kHz to 1.500000000 GHz
	XSA1036P（TG）	9.000 kHz to 3.600000000 GHz
	XSA1075P（TG）	9.000 kHz to 7.500000000 GHz
Frequency Resolution	1 Hz	
Internal Reference Frequency		
Reference Frequency	10 MHz	
Reference Frequency Accuracy	±[(days since last calibrate × freq aging rate) + temperature stability + initial accuracy]	
Initial calibration accuracy	<1 ppm	
Temperature stability	0℃ to 50℃, reference to 25℃ < 0.5 ppm	
Aging rate	<1 ppm/year	
Frequency Readout Accuracy		
Marker frequency resolution	span / (number of sweep points - 1)	
Marker frequency uncertainty	±(frequency indication × reference frequency accuracy + 1% × span + 10% × resolution bandwidth + marker frequency resolution)	
Frequency Counter		
Resolution	1 Hz, 10 Hz, 100 Hz, 1 kHz	
Uncertainty	±(frequency indication × reference frequency accuracy + counter resolution)	
Frequency Span		
Range	0 Hz, 100 Hz to maximum frequency of instrument	
Uncertainty	± span / (number of sweep points - 1)	
SSB Phase Noise (20℃ to 30℃,fc=1 GHz)		
Carrier Offset	10 kHz	< -106 dBc/Hz (typical)
	100 kHz	< -104 dBc/Hz (typical)
	1 MHz	< -115dBc/Hz (typical)



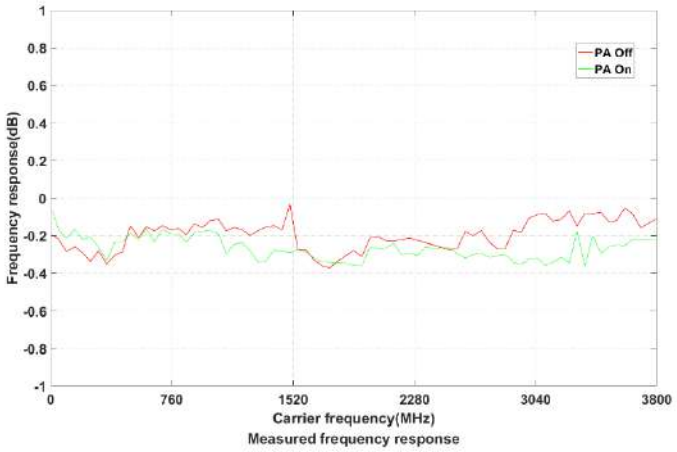
Residual FM (20℃ to 30℃, RBW = VBW = 1 kHz)		
Residual FM	< 50 Hz (nominal)	
Bandwidth		
Resolution Bandwidth(-3dB)	1 Hz to 1 MHz (1-3-5-10 steps by sequence)	
RBW accuracy	< 5%, typical	
Resolution Filter Shape Factor (60 dB : 3 dB)	< 5 typical	
Video Bandwidth (-3 dB)	10 Hz to 3 MHz(1-3-5-10 steps by sequence)	
Resolution bandwidth (-6 dB) (EMI)	200 Hz, 9 kHz, 120 kHz, 1 MHz	
Amplitude		
Amplitude measurement range	XSA1015P（TG）	DANL to +10 dBm, 100 kHz to 10MHz, Preamp Off DANL to +20 dBm, 10 MHz to 1.5 GHz, Preamp Off
	XSA1036P（TG）	DANL to +10 dBm, 100 kHz to 10MHz, Preamp Off DANL to +20 dBm, 10 MHz to 3.6 GHz, Preamp Off
	XSA1075P（TG）	DANL to +10 dBm, 100 kHz to 10MHz, Preamp Off DANL to +20 dBm, 10 MHz to 7.5 GHz, Preamp Off
Max Input Level		
Input DC Voltage	50 V	
Continuous power	Attenuator =40dB +20dBm（100 mW）	
Max. damage level	+30 dBm（1 W）	



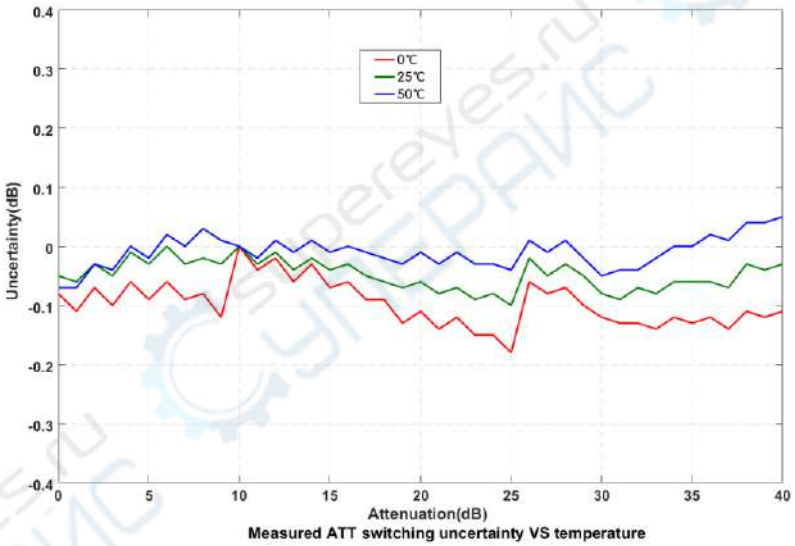
Display Average Noise Level (attenuation = 0 dB, RBW = VBW = 100 Hz, sample detector, trace average ≥ 50, 20℃ to 30℃, input impendence = 50 Ω)			
Preamp Off	XSA1015P（TG）	9 kHz to 1 MHz	-95 dBm (Typical), <-88 dBm
		1 MHz to 500 MHz	-140 dBm (Typical), <-130dBm
		500 MHz to 1.5 GHz	-138 dBm (Typical), <-128dBm
	XSA1036P（TG）	9 kHz to 1 MHz	-95 dBm (Typical), <-88 dBm
		1 MHz to 500 MHz	-140 dBm (Typical), <-130dBm
		500 MHz to 3.6 GHz	-138 dBm (Typical), <-128dBm
	XSA1075P（TG）	9 kHz to 1 MHz	-95 dBm (Typical), <-88 dBm
		1 MHz to 500 MHz	-140 dBm (Typical), <-130dBm
		500 MHz to 3.6 GHz	-138 dBm (Typical), <-128dBm
		3.6 GHz to 6 GHz	-134 dBm (Typical), <-124dBm
		6 GHz to 7.5 GHz	-129 dBm (Typical), <-119dBm
Preamp On	XSA1015P（TG）	100 kHz to 1 MHz	-135 dBm (Typical), <-128 dBm
		1 MHz to 500 MHz	-160 dBm (Typical), <-150 dBm
		500 MHz to 1.5 GHz	-158 dBm (Typical), <-148 dBm
	XSA1036P（TG）	100 kHz to 1 MHz	-135 dBm (Typical), <-128 dBm
		1 MHz to 500 MHz	-160 dBm (Typical), <-150 dBm
		500 MHz to 3.6 GHz	-158 dBm (Typical), <-148 dBm
	XSA1075P（TG）	100 kHz to 1 MHz	-135 dBm (Typical), <-128 dBm
		1 MHz to 500 MHz	-160 dBm (Typical), <-150 dBm
		500 MHz to 3.6 GHz	-158 dBm (Typical), <-148 dBm
		3.6 GHz to 6 GHz	-154 dBm (Typical), <-144 dBm
		6 GHz to 7.5 GHz	-149 dBm (Typical), <-139 dBm

Level Display	
Logarithmic level axis	0.01 dB to 1000 dB
Linear level axis	0 to reference level
Number of display points	801
Number of traces	8
Trace detectors	positive-peak, negative-peak, normal, sample, RMS, voltage average
	quasi-peak
Trace functions	clear write, max hold, min hold, average, view, blank, trace math
Units of level axis	dBm, dBμW, dBpW, dBmV, dBμV, W, V
Frequency response (20℃ to 30℃, input attenuation=10 dB, reference frequency=50 MHz)	

Preamp Off (fc≥9K)	±0.7 dB
Preamp On (fc≥50 MHz)	±1.0 dB



Input Attenuation Switching Uncertainty	
Setting range	0 dB to 40 dB, in 1 dB step
Switching uncertainty	fc = 50 MHz, relative to 10 dB, 20℃ to 30℃
	＜0.5 dB



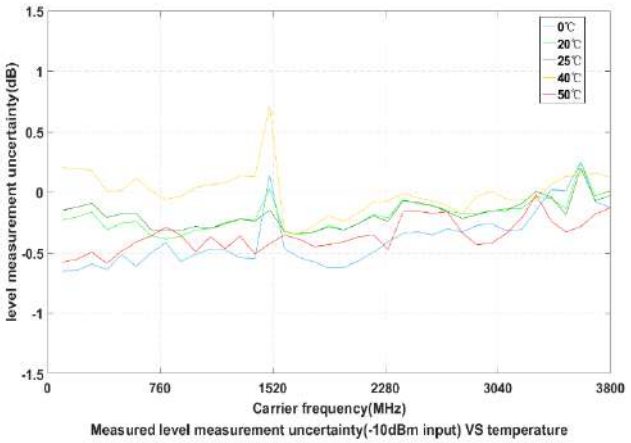
Absolute Amplitude Uncertainty	
Uncertainty	fc = 50 MHz, peak detector, preamplifier off, attenuation = 10 dB, input signal level = -10dBm, 20℃ to 30℃
	＜0.4 dB

RBW Switching Uncertainty	
Uncertainty	relative to 10 kHz RBW
	＜0.1 dB

Reference Level		
Range		-80 dBm to +30 dBm, in 1 dB step
Resolution	log scale	0.01 dB
	linear scale	4 digits

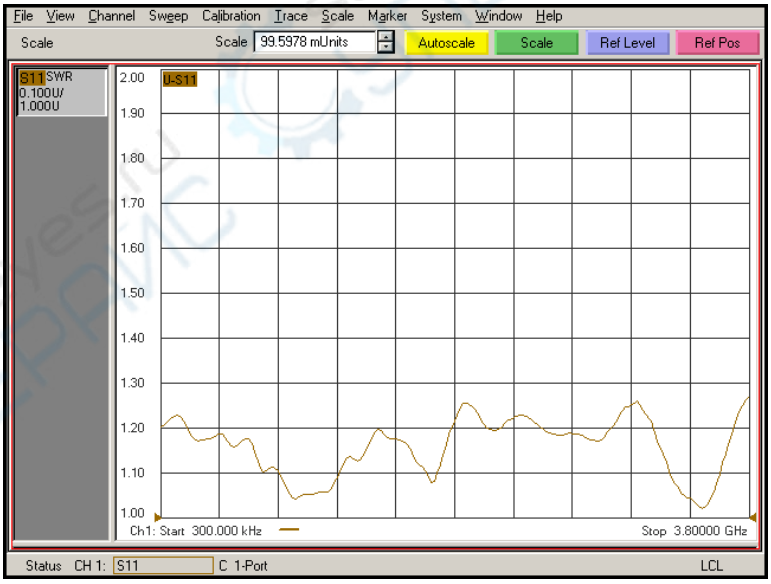
Preamplifier
input signal range 0 dBm to -50 dBm

Gain	XSA1015P（TG）	100 kHz to 1.5 GHz	20 dB (nominal)
	XSA1036P（TG）	100 kHz to 3.6 GHz	
	XSA1075P（TG）	100 kHz to 7.5 GHz	
Level Measurement Uncertainty (95% confidence level, S/N > 20 dB, RBW = VBW = 1 kHz, preamplifier off, attenuation = 10 dB, -50 dBm < input level ≤ 0 dBm, fc > 10 MHz, 20℃ to 30℃)			
Level Measurement Uncertainty	＜0.7 dB		

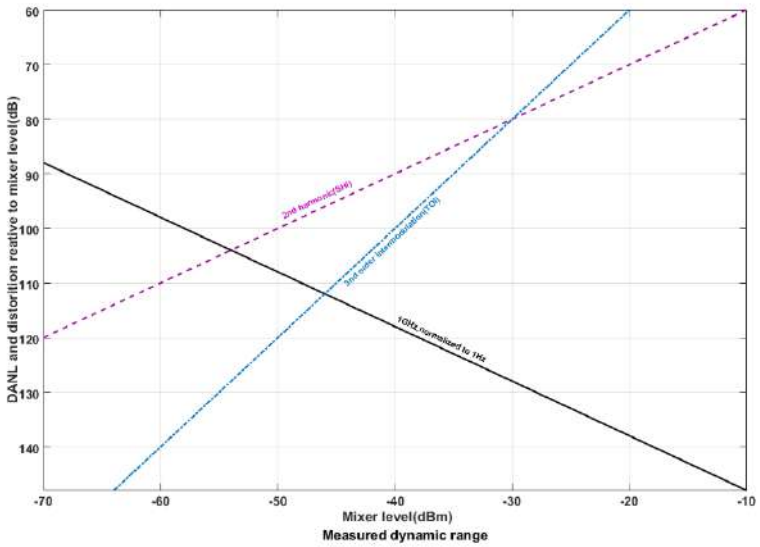


Measured level measurement uncertainty(-10dBm input) VS temperature

RF Input VSWR (attenuation ≥ 10 dB)			
VSWR	XSA1015P（TG）	300 kHz to 1.5 GHz	＜1.8 (nominal)
	XSA1036P（TG）	300 kHz to 3.6 GHz	
	XSA1075P（TG）	300 kHz to 7.5 GHz	



Distortion	
Second harmonic distortion	fc ≥ 50 MHz, Preamp off, signal input -20 dBm, attenuation = 10 dB
	＞+45 dBc
Third-order intermodulation	fc ≥ 50 MHz, two -20 dBm tones at input mixer spaced by 200 kHz, attenuation = 0 dB
	＞+14 dBm
1 dB Gain Compression	
1dB compression of input	fc ≥ 50 MHz, 0 dB RF attenuation

mixer (P1dB)	>-2 dBm, nominal	
		
Spurious Response		
Residual response	connect 50 Ω load at input port, 0 dB input attenuation, 20℃ to 30℃	
	<-90 dBm, typical	
Intermediate frequency	＜ -60 dBc	
System related sidebands	referenced to local oscillators, referenced to A/D conversion, referenced to subharmonic of first LO, referenced to harmonic of first LO	
	＜ -60 dBc	
Input related spurious	-30 dBm signal at input mixer	
	<-80 dBc	
Sweep		
Sweep Time	Span≥10 Hz	10 ms to 3000 s
	Zero Span	33.33 us to 3000 s
Sweep time uncertainty	span ≥ 100 Hz: 5% (nominal) zero span (sweep time setting value > 1 ms): 5% (nominal)	
Sweep Mode	Continuous, Single	
Trigger		
Trigger source	free run, video, external	
External trigger level	5 V TTL level	
Tracking Generator (Option)		
Tracking Generator Output		
Frequency Range	XSA1015P（TG）	100 kHz to 1.5 GHz
	XSA1036P（TG）	100 kHz to 3.6 GHz
	XSA1075P（TG）	100 kHz to 7.5 GHz
Output power level range	-40 dBm to 0 dBm	
Output power level resolution	1 dB	
Output flatness	relative to 50 MHz ±3 dB(nominal)	
Tracking generator spurious	Harmonic	-20 dBc (Tracking generator output power = -10 dBm)

	spurious	
	Non-harmonic	-20 dBc(Tracking generator output power = -10 dBm)
Tracking generator to input terminal isolation	-60 dB (Tracking generator output power = 0 dBm)	

V1.0.0