9.5 GHz Network Node Real-Time Spectrum Analyzer

Distribution in the UK & Ireland

Lambda

www.lambdaphoto.co.uk

NXE-90

Product Brochure V1.3

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- 9 kHz-9.5 GHz real-time spectrum analyzer
- Superheterodyne digital receiver architecture, 14 segments pre-selected filter
- 9 kHz-9.5 GHz typical image suppression>90 dB, typical IF rejection>90 dB
- 100 MHz analysis bandwidth with adjustable sampling rate, 330.9 GHz/sec sweep speed
- FPGA based digital signal processing
- Weight 660 grams, 167×117×28 mm, power consumption: 13-16 W
- 1000M/100M Ethernet interface
- Build-in multimode GNSS
- Providing 1PPS, latitude and longitude information and timestamp
- Highly compatible API interfaces and SAStudio4 GUI
- Remote master of ARM and x86 processor are supported
- Linux and Windows are supported
- Operating temperatures range from -20 ℃ /-40 ℃ to 65 ℃ (option)
- Built-in OCXO (option) or GNSS disciplined OCXO (option)
- Built-in 4G data module (option)

HAROGIC

NXE-90 Technical Specifications * (typical value)

Indicator test basis **Hardware Version: R2** API: 0.50.1 FPGA: 0.50.0 MCU: 0.50.2 SAS4: 4.50.40

Frequency				
Frequency Range	9 kHz~9.5 GHz			
Initial Frequency Accuracy	<1 ppm, Supporting program manual correction			
Reference Clock	Internal or external, program-controlled switching Internal TCXO aging<1 ppm/year, temperature drift<1 ppm			
Spectrum Purity				
SSB Phase Noise	dBc/Hz			
Carrier Frequency	1GHz	3GHz	6GHz	9GHz
1 kHz	-95.2	-96.6	-93.9	-91.5
10 kHz	-101.6	-102.6	-101.6	-98.5
100 kHz	-100.6	-103.9	-103.2	-99.7
1 MHz	-120.9	-121.8	-120.3	-116.2
10 MHz	-134.2	-133.5	-134.2	-131.4
Residual Response Spurious rejection off dBm RBW =1 kHz Positive Peak Detector	Frequency Range	R.L.=0 dBm	R.L.=-20 dBm	R.L.=-50 dBm
	9kHz~1.0GHz	< -83	< -110	< -120
	1.0GHz~3.0GHz	< -83	< -92	< -120
	3.0GHz~9.5GHz	< -90	< -100	< -130
Image Frequency Suppression	100kHz~3.0GHz	>90 dBc (spurious rejection off), >90 dBc (spurious rejection on)		
	3.0GHz~9.5GHz	>60 dBc (spurious rejection off), >90 dBc (spurious rejection on)		
IF rejection (R.L.=0 dB)	>90 dBc (spurious rejection on), >80 dBc (spurious rejection off)			
Local Oscillator Related Spurious	<-65 dBc (Offset Center Frequency +/- (N/M)*125MHz, N/M = 1,2,3,4,5…)			
Input Related Spurious	<-75 dBc (spurious rejection on), <-50 dBc (spurious rejection off)			
Linearity				
IIP3 (dBm) 2MHz interval, -6dBFs/Tone	1 GHz	3 GHz	9 GHz	
R.L.= 20 dBm	48.1	45.1	40.5	
R.L.= 0 dBm	26.7	23.5	21.2	
R.L.= -20 dBm	5.1	2.6	-0.9	
R.L.= -50 dBm	-21.2	-22.6	-22.9	
Signal Processing				
Analysis Bandwidth	Maximum 100 MHz, Decimate Factor:1			
IQ Data	122.88 MSPS, supporting 120 MSPS-125 MSPS program adjustable, 1 Hz step Decimate factor: 1,2,4,8,16,32,64,128,256,512,1024,2048,4096 supported (FPGA),			
Storage Depth	The built-in memory depth is 128 Mbytes			
	Supports continuous and uninterrupted storage when the data generation rate is less than the bus bandwidth, and the storage depth is only limited by the hard disk capacity			
External Trigger Response	Maximum response frequency 500 times/sec			
Analog IF Output	Supporting 307.2 MHz +/-50 MHz			
Amplitude				
Maximum safe input power	23 dBm	50 MHz~9.5 GHz and the preamplifier off (R.L. ≥ 0 dBm)		

(CW)	10 dBm	100 kHz~50 MHz or preamplifier on (R.L. <0 dBm)		
Maximum DC Voltage	+/-12 VDC			
Display Range	DANL~23 dBm			
Amplitude Accuracy	+/- 2.0 dB			
IF in-band spectrum ripple	+/- 2.0 dB (100 MHz analog IF bandwidth)			
Reference level （R.L.）	-50 dBm~23 dBm			
RF Preamplifiers	Converting bands (frequency ≥ 50 MHz) are equipped with preamplifier that can be set as automatically turn on or forcibly turn off			
Display Average Noise Level (DANL) dBm/Hz RBW=10kHz RMS detector	Frequency Range	R.L.= 0 dBm (IFGainGrade = 2)	R.L.=-20 dBm (IFGainGrade = 2)	R.L.=-50 dBm (IFGainGrade = 2)
	9kHz	-90.1	-105.7	-115.6
	1MHz~100MHz	-134.2	-146.3	-150.9
	100MHz~3.0GHz	-131.0	-145.7	-165.1
	3.0GHz~6.0GHz	-136.2	-150.2	-164.6
	6.0GHz~9.5GHz	-135.4	-148.9	-157.4
Standard Spectrum Analysis				
Detector	Positive peak, Negative peak, Sampling, Average, RMS, Max Power			
RBW	0.1 Hz~10 MHz			
VBW	0.1 Hz~10 MHz			
Trace Function	Sample, Positive Peak, Negative Peak, Local average, Maximum hold, Minimum hold, Average			
Data Chart	SAStudio4 software provides regular spectrum, waterfall chart, and historical trace			
Measurements	Phase noise, Channel power, Occupied bandwidth, X dB bandwidth, Adjacent channel suppression, IM3			
Sweep speed - Standard Spectrum Analysis	325.2 GHz/s	FPGA	RBW≥1 MHz, B-Nuttal window, spurious rejection: Bypass	
	156.4 GHz/s	FPGA	RBW=250 kHz, B-Nuttal window, spurious rejection: Standard	
	67.8 GHz/s	FPGA	RBW=30 kHz, B-Nuttal window, spurious rejection: Bypass	
	2.7 GHz/s	CPU	RBW=1 kHz, B-Nuttal window, spurious rejection: Bypass	
Detection Analysis/Zero Span				
Highest Time Resolution	8 ns			
Maximum Analysis Bandwidth	100 MHz			
Trace Detection	Positive peak, Negative peak, Sampling, Average, RMS, Max Power			
Real Time Spectrum Analysis				
FFT Analysis	Variable point FFT engine implemented by FPGA. frame rate compression and trace detection are supported. There is strictly no gap and overlap between FFT frames.			
	FFT refresh rate=10 ^ 9 ns/(N * D * 8 ns); POI = 2*N*D*8ns N is the number of FFT points (2048,1024,512,256,128,64,32), and D is the decimate factor (1, 2, 4, 8...)			
	Typical Settings	FFT Refresh Rate	POI	
	N = 2048， D = 1	61,035 times /second	32.768 us	
	N = 32， D = 1	3,906,250 times /second	0.512us	
Amplitude Resolution	100 MHz			
Window Function	B-Nuttall, FlatTop			
RBW	14.73 MHz-3.59 kHz (Flattop window); 7.81 MHz~1.90 kHz（B-Nuttall）； 13 grades for each window type			

Amplitude Resolution	0.75dB	
General		
Input And Output	Power Supply	Type-C (1) PD (QC3.0) 12V2A or 9V2A
	Data	RJ45 1000Mbps x1, 100Mbps x1
	RF input	SMA (F), Input impedance 50 Ω
	External reference clock input	MMCX (F)(1), amplitude≥1.5Vpp, input impedance 330 Ω
	External reference clock output	Integrated in MUXIO, 3.3V CMOS, programmable on/off
	External trigger input	MMCX (F)(2), 3.3V CMOS, input: high impedance
	External trigger output	MMCX (F)(3), 3.3V CMOS
	Analog IF Output	MMCX (F)(4), maximum output power -25dBm, output impedance 50 Ω
	GNSS antenna	MMCX (F)(5)
	4G module antenna	MMCX (F)(6)
	General USB2.0	Type-C (2)
Power consumption	Peak: 16 W, typical: 13 W	
Operating Temperature (ambient temperature /device core temperature)	0~50 ºC/0~70 ºC (Standard temperature class)	
	-20~65 ºC/-20~85 ºC (Extended Temperature Class Option) (plastic enclosure and fan not included)	
	-40~65 ºC/-40~85 ºC (Wide Temperature Class Option) (plastic enclosure and fan not included)	
Storage Temperature (ambient temperature)	-20~70 ºC (Standard temperature class)	
	-40~85 ºC (Extended temperature class and wide temperature options) (plastic enclosure and fan not included)	
Size and weight	Size: 167 x117x28 mm, weight:660 g (Including protective case and structural fittings, including connector length)	
Packaging and Accessories	Flash drive * 1, power adapter * 1, USB cable*1	

*The typical values of the indicators are applicable for the following conditions: (1) Start up and warm up for 20 minutes; (2) Ambient temperature 25 ℃ (core temperature 50 ℃); (3) standard spectrum sweep Spurious rejection on; (4) 100 MHz analysis bandwidth and IFGainGrade=2; (5) The user shall provide the necessary heat dissipation conditions to ensure that the ambient temperature and the core temperature of the equipment are within the rated range at the same time.

Code name	Option	Explanation
01	Built-in OCXO reference clock (hardware opt.)	Providing a reference clock with better stability than the standard configuration, with a temperature drift of<0.15 ppm, increasing the overall power consumption by 0.8 W.
05	Build-in GNSS disciplined OCXO reference clock (hardware opt.)	Providing GNSS disciplined reference clock and 1PPS, increasing the overall power consumption by 1.1W.
06	Build-in premium GNSS (hardware opt.)	Providing improved positioning and timing capabilities.
09	Build in 4G data module (hardware opt.)	Provides the physical connection to the 4G network
20	Extended temperature class (hardware opt.)	- 20~65 ℃/- 20~85 ℃(Extended temperature class opt.)
21	Wide temperature class (hardware opt.)	- 40~65 ℃/- 40~85 ℃(Wide temperature class opt.)