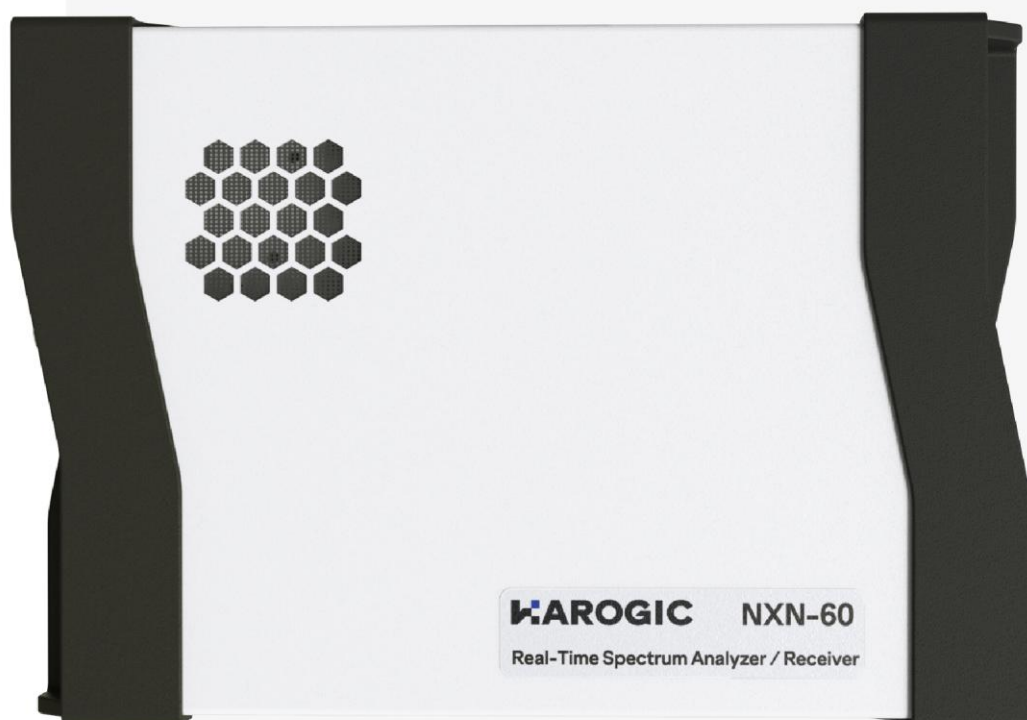




NETWORKED REAL-TIME SPECTRUM ANALYZER

NXN SERIES
4.5/6.3 GHz

Key facts

Frequency range: 9 kHz - 4.5/6.3 GHz

1 GHz DANL: -163 dBm/Hz

1 GHz phase noise: -110 dBc/Hz@10 kHz

Analysis bandwidth: up to 25 MHz

1000M/100M Ethernet interface

Highly compatible API interface

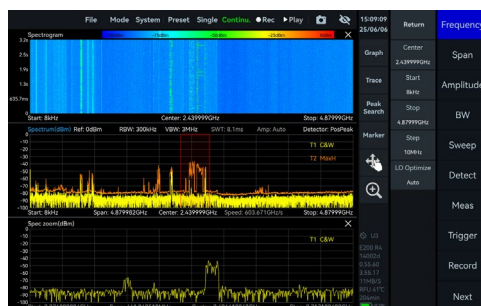
Windows 11/10/8/7 (x86, x64, AArch64) are supported

Debian 12/11/10 (x64, AArch64) are supported

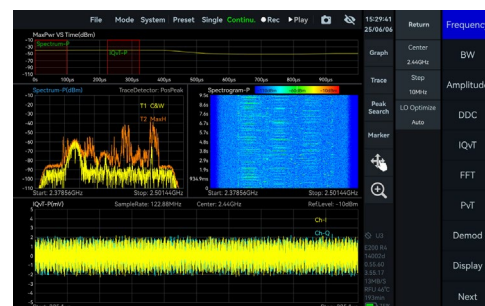
Ubuntu 24.04/22.04/20.04/18.04 (x64, AArch64) are supported

Applications

Standard spectrum sweep



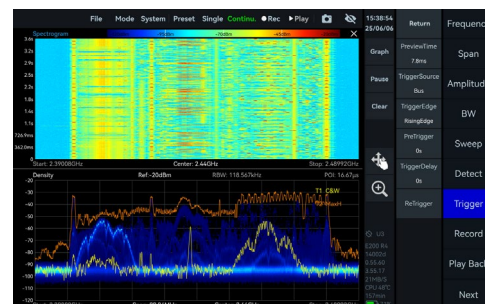
IQ streaming and analysis



Power vs time analysis



Real-time analysis



Specifications*

FREQUENCY

Frequency range	NXN-45	NXN-60
	9 kHz - 4.5 GHz	9 kHz - 6.3 GHz
Reference clock	Internal or external	
Frequency accuracy	TCXO (std.)	<1 ppm, manual correction is available
	OCXO (opt01)	<1 ppm, manual correction is available
	Int. GNSS disciplined OCXO (opt06)	<0.05 ppm, when locked to GNSS
Aging and temperature stability	TCXO (std.)	<1 ppm/year, <1 ppm
	OCXO (opt01)	<1 ppm/year, <0.15 ppm
	Int. GNSS disciplined OCXO (opt06)	<1 ppm/year, <0.05 ppm

SPECTRUM PURITY

SSB phase noise (dBc/Hz)				
	NXN-45		NXN-60	
Carrier frequency	1 GHz	4.5 GHz	1 GHz	6.3 GHz
1 kHz	-103.4	-93.5	-105.2	-91.2
10 kHz	-111.3	-100.3	-110.4	-99.3
100 kHz	-109.3	-98.5	-110.5	-97.4
1 MHz	-129.5	-121.9	-130.1	-119.9
Residual response (dBm)				
Spur reject = enhanced				
RBW = 1 kHz				
PosPeak detector				
	NXN-45		NXN-60	
Reference level (R.L.)	0 dBm	-50 dBm	0 dBm	-50 dBm
100 kHz - 100 MHz	-85	-110	-90	-110
100 MHz - 4.5 GHz	-85	-110	-90	-110
4.5 GHz - 6.3 GHz	-	-	-90	-110
Image rejection				
	> 90 dBc(typ.) for spur reject = enhanced			
	> 35 dBc (typ.) for spur reject = bypass			
IF rejection				
	Low IF architecture			

Local oscillator related spurious	<-65 dBc			
	Center frequency $\pm (N/M) * 125$ MHz, N, M = 1, 2, 3, 4, 5...			

IIP3 / IIP2 (dBm)				
	NXN-45		NXN-60	
Carrier frequency	1 GHz	4.5 GHz	1 GHz	6.3 GHz
R.L. = 20 dBm	47.4/85.8	45.6/98.0	46.6/86.0	42.9/109.5
R.L. = 0 dBm	35.1/85.5	26.1/91.6	29.6/85.8	24.6/98.5
R.L. = -20 dBm	10.0/66.3	6.9/19.4	10.5/67.3	3.9/17.1

AMPLITUDE

Max. input power (CW)	23 dBm	30 MHz - 4.5/6.3 GHz and the preamplifier is off	
	10 dBm	9 kHz - 30 MHz or preamplifier is on	
Max. DC voltage	± 10 VDC		
Display range	DANL-23 dB		
Amplitude accuracy	± 2.0 dB		
IF in-band flatness	± 2.0 dB		
Reference level (R.L.)	-50 dBm - 23 dBm		
RF preamplifiers	Automatically turn on or forcibly turn off		
VSWR	R.L. = 10 dBm	<1.7:1	
30 MHz to Max.Freq.	R.L. = 0 dBm	<2.0:1	
	R.L. = -40 dBm	<2.5:1	

Display average noise level
(DANL) (dBm/Hz)
RBW=1 kHz

	NXN-45		NXN-60	
Reference level	-20 dBm	-50 dBm	-20 dBm	-50 dBm
9 kHz - 1 MHz	-134.6	-150.3	-136.4	-147.9
1 MHz - 30 MHz	-140.2	-162.6	-139.7	-162.3
30 MHz - 3.0 GHz	-153.2	-163.5	-152.7	-164.8
3.0 GHz - 4.5 GHz	-155.2	-162.7	-157.1	-163.5
4.5 GHz - 6.3 GHz	-	-	-151.9	-160.4

STANDARD SPECTRUM ANALYSIS

Detector	PosPeak, NegPeak, Sample, Average, RMS, MaxPower
RBW	0.1 Hz - 2.5 MHz
VBW	0.1 Hz - 10 MHz
Data chart	SASudio4 software provides spectrum, spectrogram, and historical trace
Measurements	Channel power, OBW, XdB bandwidth, Adjacent channel power ratio, IM3

Sweep speed	NXN-45	NXN-60
RBW = 250 kHz FPGA Spur Reject = Standard	about 69.2 GHz/s	about 131.6 GHz/s
RBW = 250 kHz FPGA Spur Reject = Enhanced	about 35.5 GHz/s	about 63.1 GHz/s
RBW = 50 kHz FPGA Spur Reject = Enhanced	about 23.5 GHz/s	about 32.8 GHz/s
RBW = 1 kHz CPU Spur Reject = Enhanced	about 787.7 MHz/s	about 778.6 MHz/s

IQ RECORDING

	NXN-45	NXN-60
Burst Recording bandwidth	Maximum: 6.25 MHz	Maximum: 25 MHz
	The built-in memory depth is 128 Mbytes	
Continuous Recording bandwidth	Maximum: 6.25 MHz	
	Limited by the bandwidth of USB interface and hard disk. The storage depth is limited by the hard disk capacity	
IQ sample rate	Maximum: 7.8125 MSPS decimate factor: 1, 2, 4, 8, 16, 32, 64, 128, 256 supported (FPGA)	Maximum: 31.25 MSPS decimate factor: 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024 supported (FPGA)
External trigger response	Maximum response frequency 500 times/s	

DETECTION ANALYSIS

	NXN-45	NXN-60
Lowest time resolution	128 ns	32 ns
Max. analysis bandwidth	6.25 MHz	25 MHz
Detector	PosPeak, NegPeak, Sample, Average, RMS, MaxPower	

REAL TIME SPECTRUM ANALYSIS

FFT analysis

FFT engine is implemented in FPGA. Frame compression and trace detection are supported. No missing samples between FFT frames

FFT frame update rate = $10^9 \text{ ns} / (N * D * \text{highest Time Resolution})$

POI = $N * D * \text{highest Time Resolution}$

N for FFT points (2048, 1024, 512, 256, 128, 64, 32)

D for decimate factor (1, 2, 4, 8...)

POI / FFT Refresh Rate	NXN-45	NXN-60
N = 2048, D = 1	262.144 us / 3,814 times/s	65.536 us / 15,258 times/s
N = 32, D = 1	4.096 us / 244,140 times/s	1.024 us / 976,562 times/s
Max. analysis bandwidth	6.25 MHz	25 MHz
RBW	920 kHz - 3.59 kHz (Flat-top) 488 kHz - 1.90 kHz (B-Nuttall) 9 grades for each window type	3.68 MHz - 3.59 kHz (Flat-top) 1.95 MHz - 1.90 kHz (B-Nuttall) 11 grades for each window type
Window function	B-Nuttall, Flat-top, LowSideLobe	
Amplitude resolution	0.75 dB	

GENERAL

Input and output

Power	Type-C, power supply dedicated port, please provide 12V2A peak power supply capacity Allowable voltage range 9 - 12 V, ripple less than 200mVp
Data	RJ45 1000 Mbps * 1, 100 Mbps * 1
RF input	SMA (F), Input impedance 50 Ω
RF output	SMA (F), Input impedance 50 Ω
External reference clock input	MCX (F), amplitude $\geq 1.5 \text{ Vpp}$, input impedance is about 330 Ω
Reference clock output	Unavailable
External trigger input	MMCX (F), 3.3V CMOS, input: high impedance

Trigger output	MMCX (F), 3.3 V CMOS	
Analog IF output	Unavailable	
GNSS antenna	MMCX (F)	
General USB2.0	Type-C	
Power consumption	12 - 14 W	
Size (D * W * H) and weight	167 * 117 * 28 mm and about 652 g	
GNSS synchronization	Internal GNSS	±100 ns
	Internal GNSS (opt05)	±75 ns
	Internal GNSS (opt06)	±50 ns
System requirements	Windows 11/10/8/7	x86, x64, AArch64
	Debian 12/11/10	x64, AArch64
	Ubuntu 24.04/22.04/20.04/18.04	x64, AArch64
Operating temperature (ambient)	T0 class (std.)	0 - 50 °C
	T1 class (opt40)	-20 - 65 °C
Storage temperature (ambient)	T0 class (std.)	-20 - 70 °C
	T1 class (opt40)	-40 - 85 °C
Packaging and accessories	Flash disk * 1, USB cable * 1, Power adapter * 1	

*Specification applies under the following conditions:

- (1) Start up and warm up for 10 minutes
- (2) Ambient temperature 25 °C (core temperature 50 °C)
- (3) Stand spectrum analysis mode-spurious rejection enhance on.
- (4) Necessary heat dissipation is provided to ensure the ambient and core temperature within the rated range at the same time
- (5) Sweep speed and display average noise level test conditions: MCU:0.55.57,FPGA:0.55.22,API:0.55.61

OPTIONS

Code		
01	Built-in OCXO reference clock	built-in hardware
02	Built-in signal generator	built-in hardware
05	Internal high precision GNSS	built-in hardware
06	Build-in GNSS disciplined OCXO reference clock	built-in hardware
34	External omnidirectional antenna, 400-8000MHz, Gain<2dBi	accessory
40	T1 temperature class	built-in hardware
71	Basic digital demodulation	software
72	Pulse detection	software

BUILT-IN SIGNAL GENERATOR (opt02)

Frequency range	100 kHz - 6.3 GHz, step 10 Hz	
Power range	-50 dBm - 0 dBm, 0.25 dB for each step	
VSWR	<2.0:1	30 MHz - 6.3 GHz
Non-harmonic spurs	<-50 dBc	

Harmonics

Frequency range	Second harmonic	Third harmonic and above
100 kHz - 30 MHz	<-10 dBc	<-10 dBc
30 MHz - 1.6 GHz	<-10 dBc	<-10 dBc
1.6 GHz - 3 GHz	<-20 dBc	<-20 dBc
3 GHz - 3.2 GHz	<-20 dBc	<-20 dBc
3.2 GHz - 6.3 GHz	<-20 dBc	<-20 dBc

Leakage to receiver

100 kHz - 30 MHz	>90 dBc
30 MHz - 3 GHz	>80 dBc
3 GHz - 6.3 GHz	>70 dBc



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