NX Series

PRODUCT DATASHEET

NETWORKED REAL-TIME SPECTRUM ANALYZER

NXM SERIES
6.3/8.5 GHz

V1.5 25/09/01

AROGIC

NXM SERIES OVERVIEW

Key facts

Frequency range: 9 kHz - 6.3/8.5 GHz

1 GHz DANL: -163 dBm/Hz

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

Analysis bandwidth: up to 100 MHz

1000M/100M Ethernet interface

Highly compatible API interface

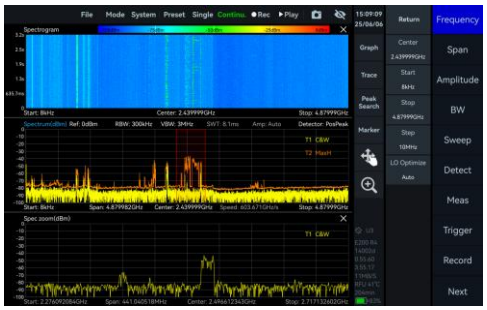
Windows 11/10/8/7 (x86, x64, AArch64) are supported

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

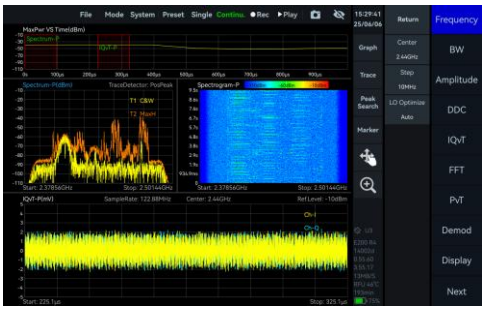
Ubuntu 24.04/22.04/20.04/18.04 (x64, AArch64) are supported

Applications

Standard spectrum sweep



IQ streaming and analysis



Power vs time analysis

Real-time analysis

Specifications*

FREQUENCY

Frequency range	**NXM-60**	**NXM-80**
	9 kHz - 6.3 GHz	9 kHz - 8.5 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)

	NXM-60		NXM-80	
Carrier frequency	1 GHz	6.3 GHz	1 GHz	8.5 GHz
1 kHz	-107.5	-92.7	-110.3	-93.5
10 kHz	-114.2	-99.7	-120.0	-100.5
100 kHz	-112.5	-98.6	-120.1	-100.8
1 MHz	-132.8	-120.1	-131.4	-116.9

Residual response (dBm)
Spur reject = enhanced
RBW =1 kHz
PosPeak detector

	NXM-60		NXM-80	
Reference level (R.L.)	0 dBm	-50 dBm	0 dBm	-50 dBm
100 kHz - 100 MHz	-101	-123	-99	-122
100 MHz - 6.3 GHz	-87	-116	-88	-119
6.3 GHz - 8.5 GHz	-	-	-84	-113

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 ± (N/M)*125 MHz, N, M = 1, 2, 3, 4, 5…

IIP3 / IIP2 (dBm)

	NXM-60		NXM-80	
Carrier frequency	1 GHz	6.3 GHz	1 GHz	8.5 GHz
R.L. = 20 dBm	51.0/84.9	43.4/65.9	49.6/87.5	41.0/57.4
R.L. = 0 dBm	40.1/85.1	25.3/94.6	35.6/84.3	25.5/44.8
R.L. = -20 dBm	10.0/66.4	4.7/17.7	11.5/67.4	2.4/34.2

AMPLITUDE

Max. input power (CW)	23 dBm	30 MHz - 6.3/8.5 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 30 MHz to Max.Freq.	R.L. = 10 dBm	<1.7:1
	R.L.= 0 dBm	<2.0:1
	R.L.= -40 dBm	<2.5:1

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

	NXM-60		NXM-80	
Reference level	-20 dBm	-50 dBm	-20 dBm	-50 dBm
9 kHz - 1 MHz	-135.9	-148.5	-141.4	-151.7
1 MHz - 30 MHz	-140.7	-162.8	-154.2	-161.6
30 MHz - 3.0 GHz	-152.1	-163.9	-150.8	-167.1
3.0 GHz – 6.3 GHz	-151.3	-162.0	-155.6	-164.7
6.3 GHz – 8.5 GHz	-	-	-144.0	-157.2

STANDARD SPECTRUM ANALYSIS

Detector	PosPeak, NegPeak, Sample, Average, RMS, MaxPower
RBW	0.1 Hz - 10 MHz
VBW	0.1 Hz - 10 MHz
Data chart	SAStudio4 software provides spectrum, spectrogram, and historical trace
Measurements	Channel power, OBW, XdB bandwidth, Adjacent channel power ratio, IM3

Sweep speed	NXM-60	NXM-80
RBW = 250 kHz FPGA Spur Reject = Standard	about 178.4 GHz/s	about 176.2 GHz/s
RBW = 250 kHz FPGA Spur Reject = enhanced	about 88.7 GHz/s	about 89.1 GHz/s
RBW = 50 kHz FPGA Spur Reject = enhanced	about 44.4 GHz/s	about 44.4 GHz/s
RBW = 1 kHz CPU Spur Reject = enhanced	about 818.3 MHz/s	about 807.7 MHz/s

IQ RECORDING

Burst recording bandwidth	Maximum: 100 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: 125 MSPS decimate factor: 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2048, 4096
External trigger response	Maximum response frequency 500 times/s

DETECTION ANAYLSYS

Lowest time resolution	8 ns
Max. analysis bandwidth	100 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 ns/(N * D * 8 ns); POI = N * D * 8 ns N for FFT points (2048, 1024, 512, 256, 128, 64, 32) D for decimate factor (1, 2, 4, 8...)		
	Typical settings	FFT refresh rate	POI
	N = 2048, D = 1	61,035 times/s	16.384 us
	N = 32, D = 1	3,906,250 times/s	0.256 us
Max. analysis bandwidth	100 MHz		
RBW	14.73 MHz - 3.59 kHz (Flat-top) 7.81 MHz - 1.90 kHz (B-Nuttall) 13 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 200mVpp
Data	RJ45, 1000 Mbps * 1, 100 Mbps * 1
RF input	SMA (F), input impedance 50 Ω
RF output	SMA (F), output impedance 50 Ω
External reference clock input	MCX (F), amplitude ≥ 1.5 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	13 - 16 W
Size (D * W * H)	167 * 117 * 28 mm

Weight	643 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
Operating Relative Humidity	0 -40 °C	5 – 75%
	>40 °C	5 – 45%
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) Standard 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 modulation analysis	software
72	Pulse signal measurement	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	30 MHz-6.3 GHz	<2.0:1
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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