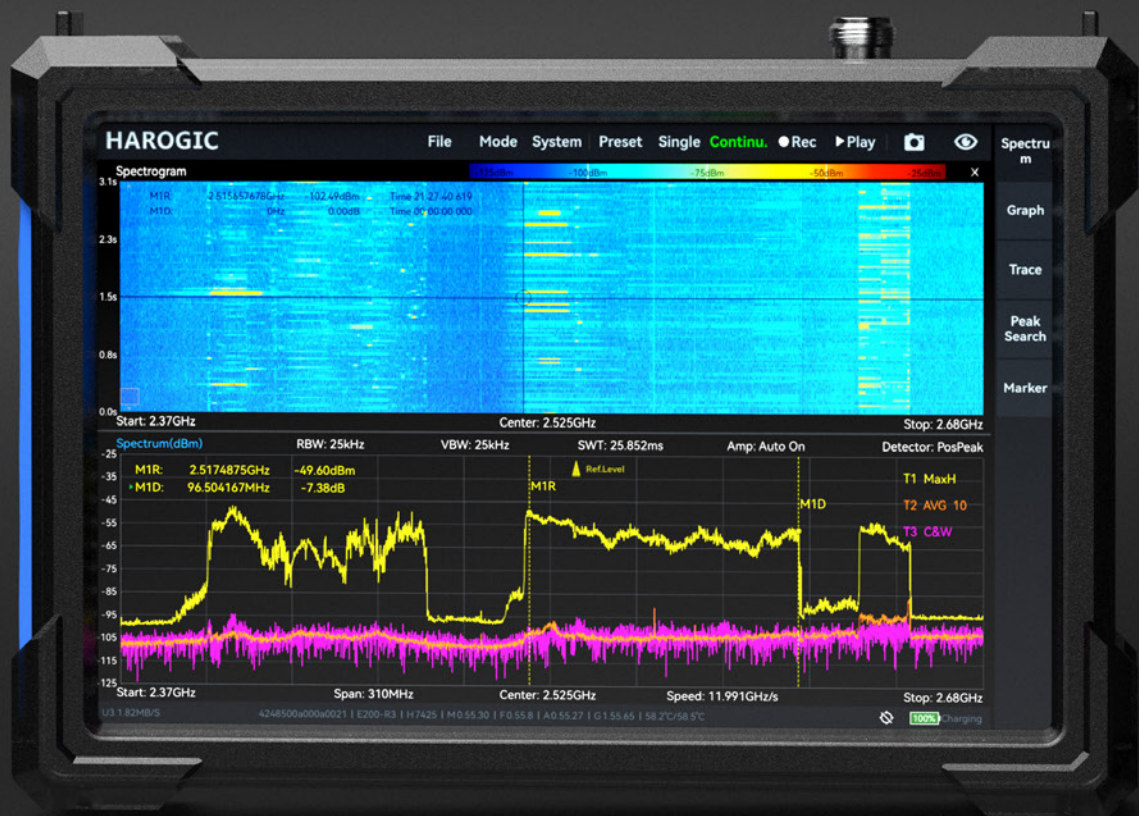
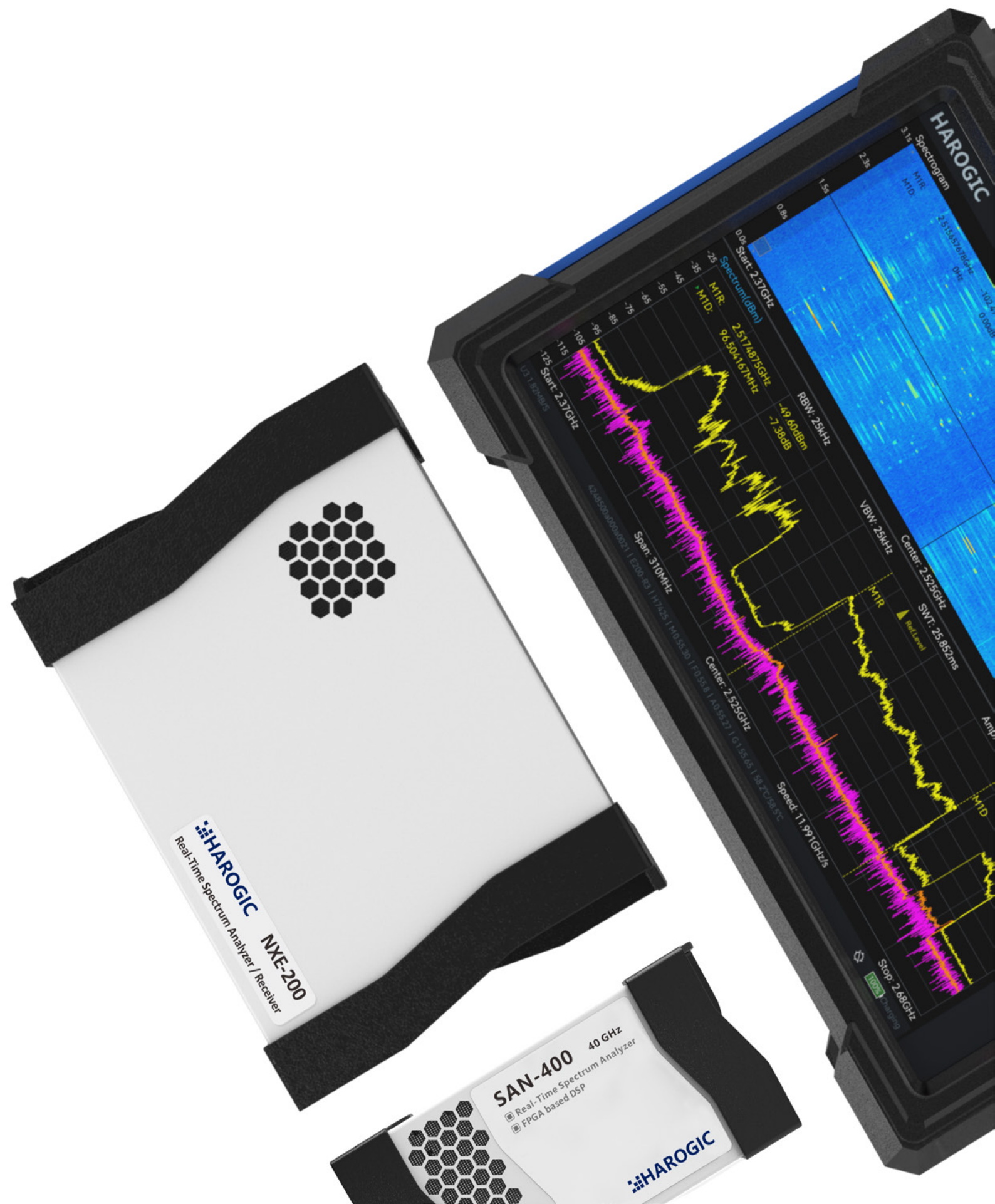


REAL-TIME SPECTRUM ANALYZER

EXTEND YOUR RF BOUNDARIES



Extend your RF boundaries



Product portfolio



PX series Handheld Real-time Spectrum Analyzer

- Light as 1.5 kg with 10.1-inch touchscreen
- Frequency range up to 40 GHz
- Built-in FPGA for real-time spectrum analysis
- Chanel power, ACPR, OBW, Phase noise and more (std.)



SA series USB Real-time Spectrum Analyzer

- Frequency range up to 40 GHz
- Analysis bandwidth up to 100 MHz
- Sweep speed over 1 THz/s
- Module light as 300 grams



NX series 1 GbE-connected Real-time Spectrum Analyzer

- 1 GbE-connected for long distance communication
- Frequency range up to 40 GHz
- Compatible with Windows and Linux
- Built-in GNSS (std.)

PX series overview



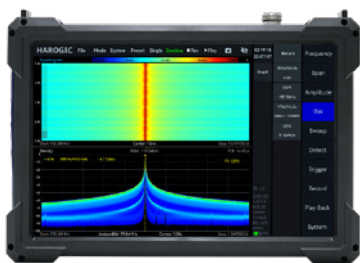
Classical model PXE-90

- Frequency range from 9 kHz to 9.5 GHz
- 1 GHz DANL: -165 dBm/Hz (typ.)
- 1 GHz phase noise: -101 dBc/Hz@10 kHz (typ.)
- Bandwidth: 100 MHz
- 3 hours battery time (typ.)
- Chanel power, ACPR, OBW, Phase noise and more (std.)



Most popular model PXE-200

- Frequency range from 9 kHz to 20 GHz
- 1 GHz DANL: -168 dBm/Hz (typ.)
- 1 GHz phase noise: -100 dBc/Hz@10 kHz (typ.)
- Bandwidth: 100 MHz
- Light as 1.5 kg with 10.1-inch touchscreen
- 3 hours battery time (typ.)



High Frequency model PXN-400

- Superheterodyne architecture (SHR) design
- Frequency range from 9 kHz to 40 GHz
- 1 GHz DANL: -161 dBm/Hz (typ.)
- 1 GHz phase noise: -107 dBc/Hz@10 kHz (typ.)
- Bandwidth: 100 MHz
- 1.5 kg weight with 10.1-inch touchscreen

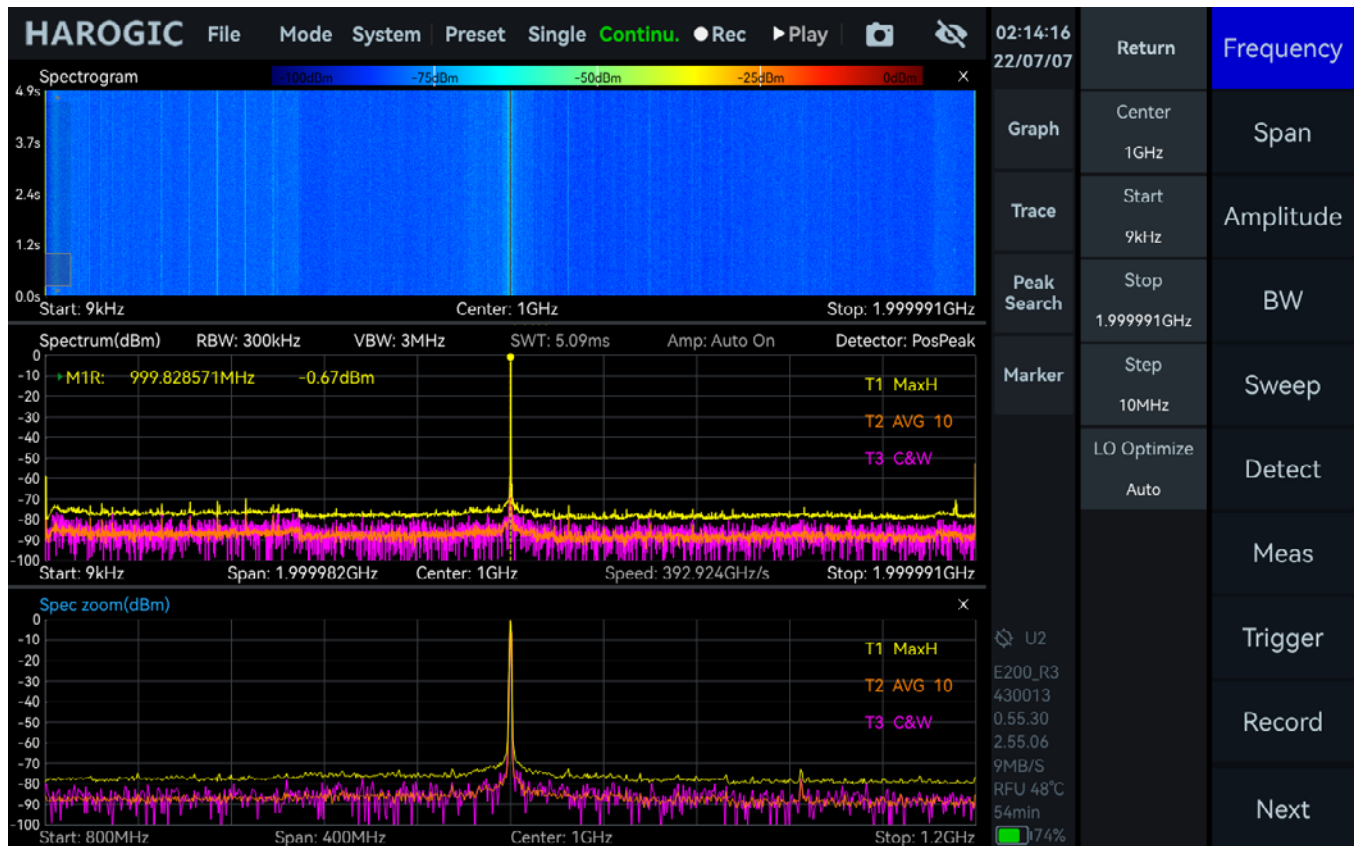
Parameter comparison

Model	PXE-90	PXE-200	PXN-400
Frequency	9 kHz-9.5 GHz	9 kHz-20.0 GHz	9 kHz-40.0 GHz
Architecture	SHR	SHR	SHR
Preselect filters	14	19	11
Analysis bandwidth	100	100	100
Phase noise 1 GHz (10 kHz offset,dBc/Hz)	-101	-100	-107
Touchscreen	10.1 inches		
Weight(kg)	1.5		
Battery life (typ.)	3 h		

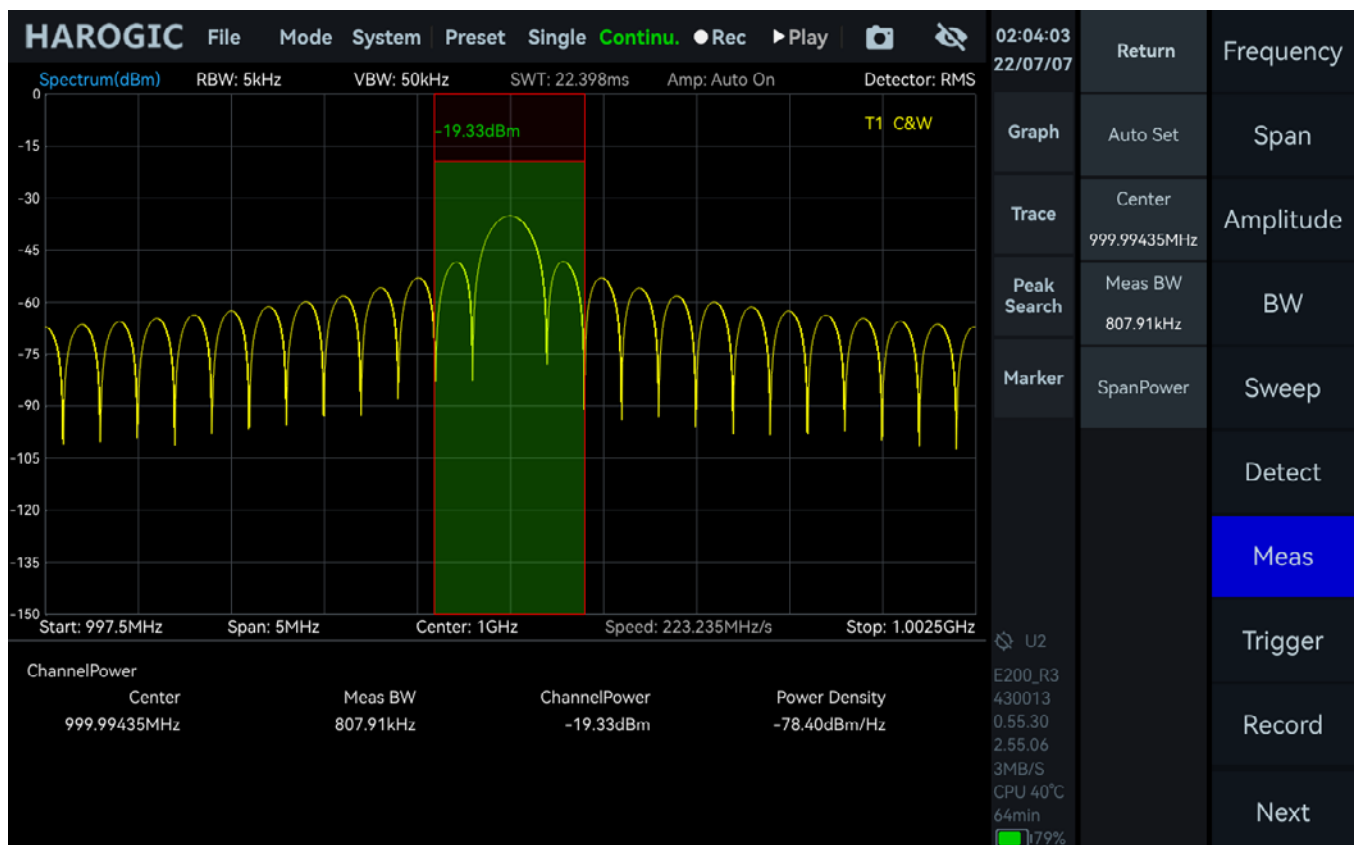
Measurement application

Up to 40 GHz

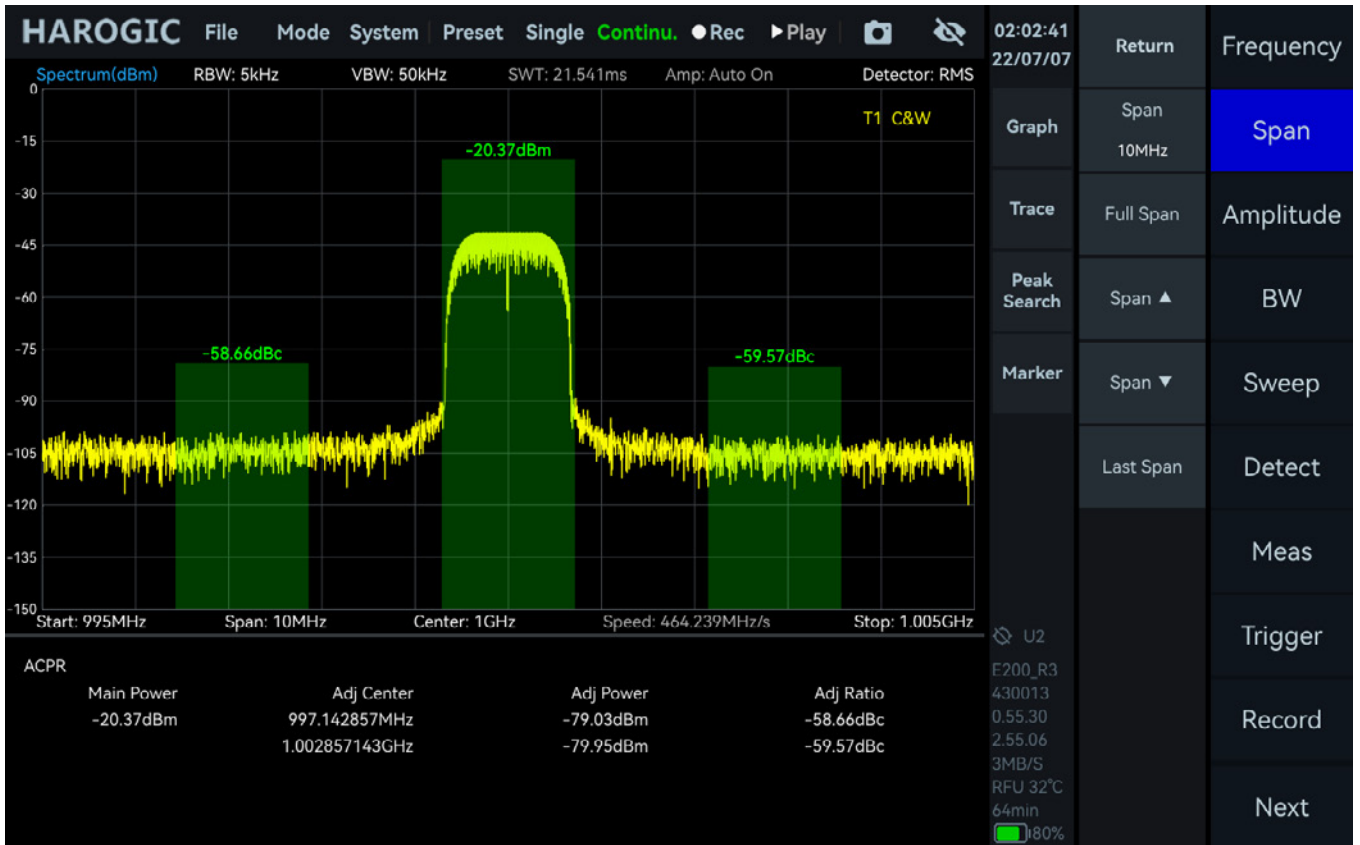
Spectrum/IQ data observation



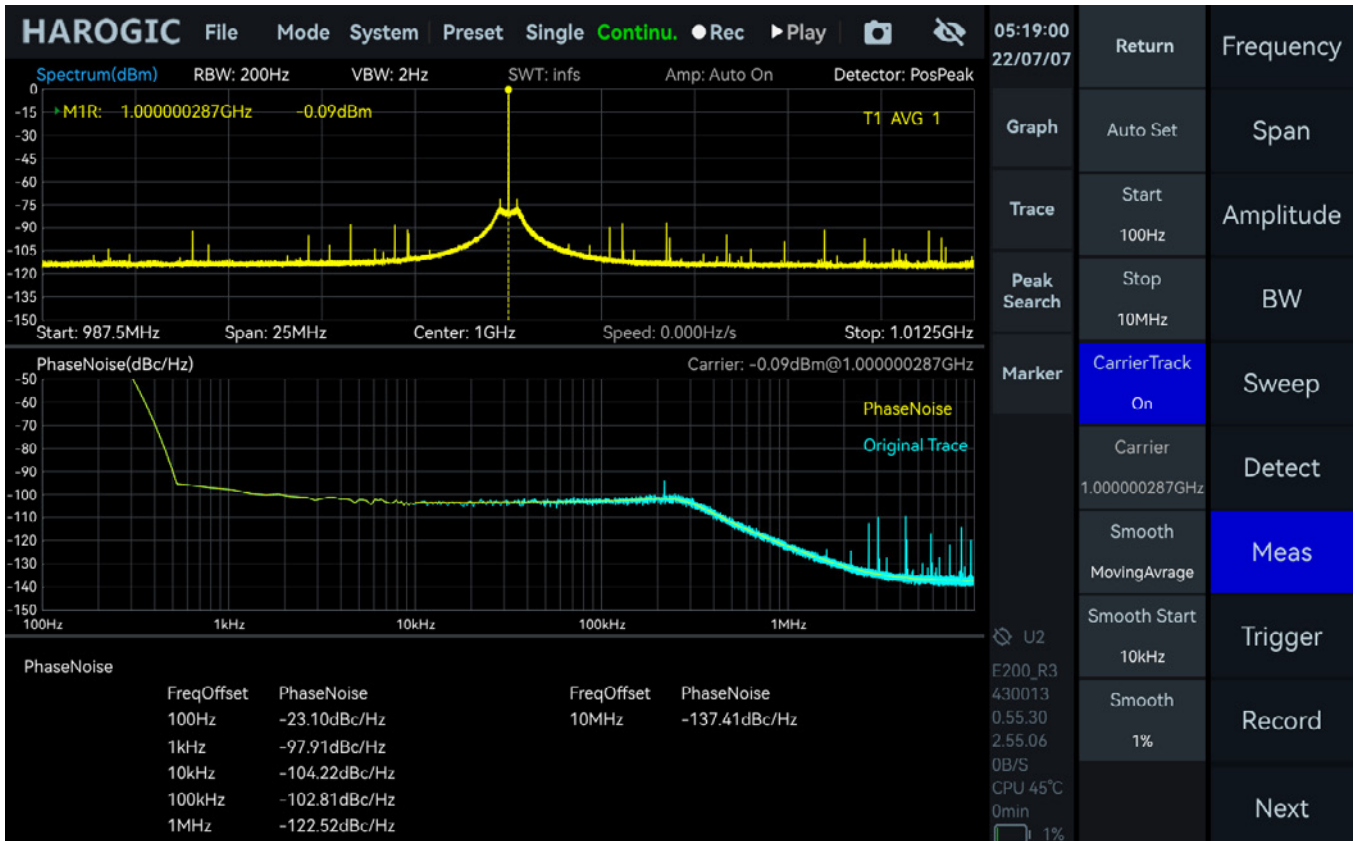
Channel power



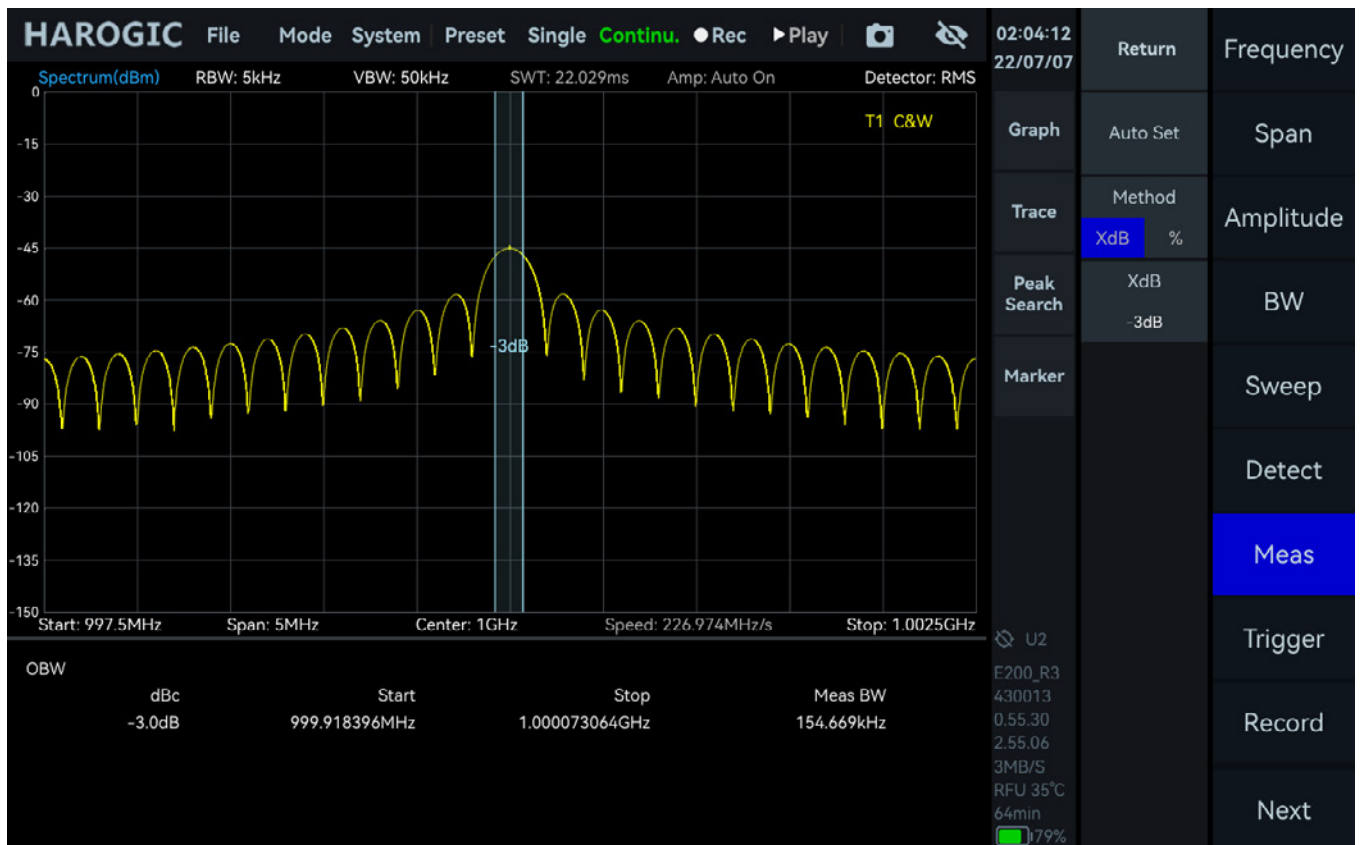
Adjacent channel power ratio (ACPR)



Phase noise



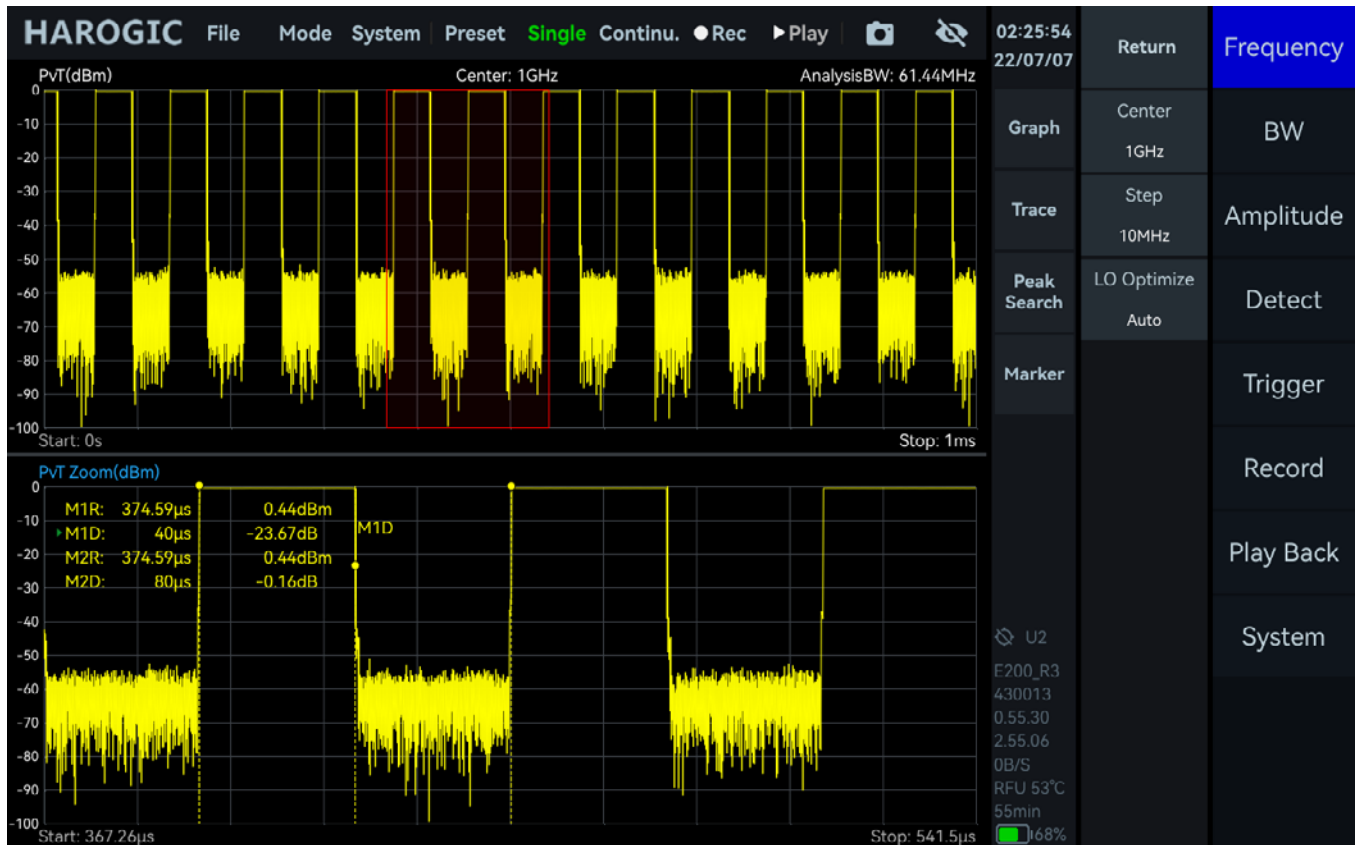
Occupied bandwidth (OBW)



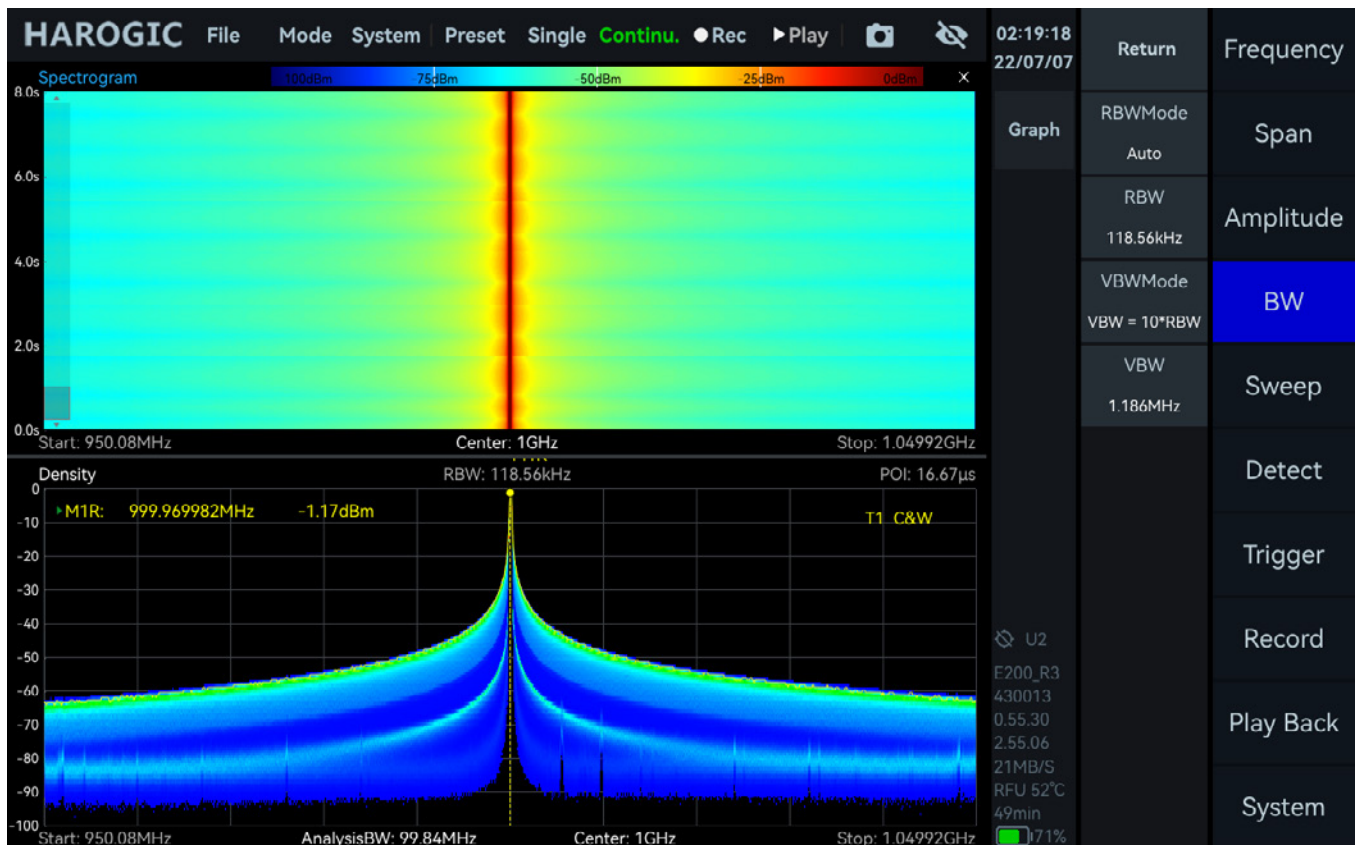
AM/FM demodulation



Pulse signal analysis



Real-time spectrum analysis



SA series overview



Most popular model SAM-60 M3

SAM-60 M3 covers frequency range from 9 kHz to 6.3 GHz and bandwidth up to 100 MHz, which is the most popular model among SA series. Under unique RF design, its core module is only 168 grams and volume as small as a mobile phone, easy to be deployed on many types of RF embedded system.



Classical model SAE-200

SAE-200 covers frequency range from 9 kHz to 20 GHz, bandwidth up to 100 MHz with a weight of only 195 grams. It is equipped with the built-in FPGA, which highly decreases the requirement of CPU for PC. The sweep speed of SAE-200 is over 1.0 THz/s (RBW \geq 300 kHz) to spot burst signals.



Cost effective model SAN-400

SAN-400 covers frequency range from 9 kHz to 40 GHz, bandwidth up to 100 MHz with a weight of only 185 grams. The release of SAN-400 breaks the inherent impression of RF engineer that high frequency means hugely expensive. 40 GHz with all free software SASstudio4 and open API now costs you less than 10,000 USD, extending your RF boundaries.

Parameter comparison

Model	SAM-60 M3	SAM-80	SAE-90	SAE-200	SAN-400
Frequency	9 kHz-6.3 GHz	9 kHz-8.5 GHz	9 kHz-9.5 GHz	9 kHz-20.0 GHz	9 kHz-40.0 GHz
Sweep speed (GHz/s)	300	300	1200	1200	400
Architecture	Low IF	Low IF	SHR	SHR	SHR
Preselect filters	8	8	14	19	11
Analysis bandwidth	100	100	100	100	100
Phase noise 1 GHz (10 kHz dBc/Hz), dBc/Hz	-114	-120	-101	-100	-107
Weight (g)	168	168	188	195	185
Size (mm)	142×54×16	142×54×16	118×60×15	118×60×15	125×60×17

SAM-60 M3

USB Real-time Spectrum Analyzer



- Frequency range: 9 kHz~6.3 GHz
- 100 kHz-6.3 GHz analog signal generator (option)
- 100 MHz analysis bandwidth, 300 GHz/sec spectrum sweep speed
- FPGA based digital signal processing
- 1 GHz Phase noise: -114 dBc/Hz @10 kHz
- 1 GHz DANL: -168 dBm/Hz
- Weight: 168 grams (core module), size:142 mm×54 mm×16 mm
- power consumption: 8-11 W
- Highly compatible API interfaces and SASstudio4 GUI
- Remote master ARM and x86 processors are supported
- Linux and Windows operating systems are supported
- Operating temperatures range from -20 °C/-40 °C to 65 °C (option)

SAM-60 M3 Technical Specifications * (typical value)

Indicator test basis Hardware Version: R5 API: 0.55.12 FPGA: 0.55.2 MCU: 0.55.9 SAS4: 1.55.57

Frequency

Frequency Range	9 kHz~6.3 GHz
Initial Frequency Accuracy	<1 ppm, supporting program manual correction
Reference Clock	Internal or external, program-controlled switching. Internal 10 MHz TCXO aging<1 ppm/year, temperature drift<1 ppm; built-in OCXO (option), temperature drift<0.15 ppm

Spectrum Purity

SSB Phase Noise	dBc/Hz			
Carrier Frequency	500 MHz	1 GHz	3 GHz	6 GHz
1 kHz	-112.8	-107.5	-99.3	-93.1
10 kHz	-120.6	-114.2	-103.6	-101.2
100 kHz	-120.1	-112.5	-101.8	-99.3
1 MHz	-134.1	-132.8	-127.7	-122.7
Residual Response	Frequency Range	R.L.=0 dBm	R.L.=-20 dBm	R.L.=-50 dBm
Spurious rejection on dBm, RBW =1 kHz, positive peak detector	100kHz~100MHz	-90	-104	-132
	100MHz~6.3GHz	-90	-103	-111
Residual Response	100kHz~100MHz	-79	-97	-120
Spurious rejection off	100MHz~6.3GHz	-90	-103	-111

Image Frequency Suppression >90 dBc (spurious rejection on, typical value), >35 dBc (spurious rejection off, typical value)

LO Related Spurious <-65 dBc (Offset Center Frequency +/- (N/M)*125MHz, N/M = 1,2,3,4,5...)

Signal Processing

Analysis Bandwidth	Maximum 100 MHz, Decimate Factor:1
IQ Data	125MSPS, 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
External Trigger Response	Maximum response frequency 500 times/sec
Analog IF Output	Not available

Amplitude

Maximum safe input power (CW)	26 dBm	30 MHz~6.3 GHz and the preamplifier off (R.L. ≥ 0 dBm)
	10 dBm	100 kHz~30 MHz or preamplifier on (R.L. <0 dBm)
Maximum DC Voltage	±15 VDC	
Display Range	DANL~26 dBm	
Amplitude Accuracy	±1.5 dB	
IF in-band spectrum ripple	±1.75 dB (100 MHz analog IF bandwidth)	
Reference level (R.L.)	-50 dBm~23 dBm	

RF Preamplifiers Converting bands (frequency ≥ 30MHz) are equipped with preamplifier that can be set as automatically turn on or forcibly turn off

Signal generator (option)

Frequency range	100 kHz~6.3 GHz, 10 Hz for each step				
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				
Harmonic wave	100 kHz~30 MHz	30 MHz~1.6 GHz	1.6 GHz~3 GHz	3 GHz~3.2 GHz	3 GHz~6.3 GHz
Second harmonic	<-10 dBc	<-10 dBc	<-20 dBc	<-20 dBc	<-20 dBc
Third harmonic and above	<-10 dBc	<-10 dBc	<-20 dBc	<-20 dBc	<-20 dBc

SAE-200

USB Real-time Spectrum Analyzer



- Frequency range: 9 kHz~20 GHz
- 100 MHz analysis bandwidth, 1200 GHz/sec spectrum sweep speed
- FPGA based digital signal processing
- 1 GHz phase noise: -100 dBc/Hz @10 kHz
- 1GHz DANL: -165 dBm/Hz
- Weight:195 grams (core module), size: 118 mm×60 mm×15 mm
- power consumption: 10-14 W
- Highly compatible API interfaces and SASstudio4 GUI
- Remote master ARM and x86 processors are supported
- Linux and Windows operating systems are supported
- Operating temperatures range from -20 °C/-40 °C to 65 °C (option)

SAE-200 Technical Specifications * (typical value)					
Indicator test basis	Hardware Version: R3	API: 0.50.1	FPGA: 0.50.0	MCU: 0.50.2	SAS4: 1.50.40
Frequency					
Frequency Range	9 kHz~20 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; Internal OCXO (option), temperature drift<0.15 ppm				
Spectrum Purity					
SSB Phase Noise	dBc/Hz				
Carrier Frequency	1 GHz	3 GHz	10 GHz	19.9 GHz	
1 kHz	-91.2	-90.0	-86.1	-80.6	
10 kHz	-99.7	-100.9	-92.5	-90.6	
100 kHz	-101.1	-104.2	-94.4	-96.2	
1 MHz	-121.6	-123.4	-112.1	-111.5	
10 MHz	-134.4	-134.2	-131.9	-129.2	
	Frequency Range	R.L.=0 dBm	R.L.=-20 dBm	R.L.=-50 dBm	
Residual Response	9 kHz~1.0 GHz	< -90	< -100	< -120	
Spurious rejection off dBm, RBW =1 kHz	1.0 GHz~3.0 GHz	< -80	< -100	< -120	
Positive Peak Detector	3.0 GHz~9.0 GHz	< -90	< -100	< -120	
	9.0 GHz~20 GHz	< -90	< -100	< -120	
Image Frequency Suppression	9 kHz~9 GHz	>90 dBc (spurious rejection off), >90 dBc (spurious rejection on)			
	9 GHz~20 GHz	>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)				
LO 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)	1 GHz	3 GHz	10 GHz	19.9 GHz	
R.L.= 20 dBm	45.5	47.3	43.6	35.3	
R.L.= 0 dBm	27.5	27.2	23.2	21.0	
R.L.= -20 dBm	4.7	7.5	-8.9	-3.0	
Signal Processing					
Analysis Bandwidth	Maximum 100 MHz (IF analog BW set as 1) or 40 MHz (IF analog BW set as 2), 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 (CW)	23 dBm	30 MHz~20 GHz and the preamplifier off (R.L. ≥ 0 dBm)			
	10 dBm	100 kHz~30 MHz or preamplifier on (R.L. <0 dBm)			
Maximum DC Voltage	±12 VDC				
Display Range	DANL~23 dBm				

SAN-400

USB Real-time Spectrum Analyzer



- Frequency range: 9 kHz~40 GHz
- 100 MHz analysis bandwidth, 400 GHz/sec spectrum sweep speed
- FPGA based digital signal processing
- 1 GHz phase noise: -107 dBc/Hz @10 kHz
- 1 GHz DANL: -161 dBm/Hz
- Weight: 188 grams (core module), size: 125 mm×60 mm×17 mm
- Power consumption: 10-14 W
- Highly compatible API interfaces and SASstudio4 GUI
- Remote master ARM and x86 processors are supported
- Linux and Windows operating systems are supported
- Operating temperatures range from -20 °C/-40 °C to 65 °C(option)
- Built-in OCXO (option), temperature drifting≤0.15 ppm
- USB 3.0/2.0 Type-C interface

SAN-400 Technical Specifications * (typical value)						
Indicator test basis	Hardware Version: R2	API: 0.55.30	FPGA: 0.55.8	MCU: 0.55.30	SAS4: 1.55.42	
Frequency						
Frequency Range	9 kHz~40 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; Internal OCXO (option), temperature drift<0.15 ppm					
Spectrum Purity						
SSB Phase Noise	dBc/Hz					
Carrier Frequency	1 GHz	3 GHz	10 GHz	20 GHz	40 GHz	
1 kHz	-99.0	-96.1	-91.4	-85.6	-78.4	
10 kHz	-107.5	-105.0	-99.5	-94.6	-85.7	
100 kHz	-107.7	-105.6	-99.6	-94.9	-85.1	
1 MHz	-122.7	-122.2	-115.7	-111.4	-100.8	
10MHz	-132.1	-131.3	-130.5	-126.6	-122.8	
Residual Response Spurious rejection off dBm, RBW =1 kHz Positive Peak Detector	Frequency Range	R.L.=0 dBm		R.L.=-20 dBm		
			Spurious rejection off	Spurious rejection on	Spurious rejection off	Spurious rejection on
		9 kHz~10 GHz	-72	-72	-93	-93
		10 GHz~20 GHz	-91	-94	-109	-113
		20 GHz~30 GHz	-85	-90	-104	-107
	30 GHz~40 GHz	-89	-92	-107	-110	
Image Frequency Suppression (Spurious rejection on)	90 MHz - 33 GHz, > 90 dBc; 33 GHz to 40 GHz, >58 dBc.					
IF rejection (Spurious rejection off)	> 90 dBc, while for 8.2 GHz~21.75 GHz, > 68 dBc.					
IF rejection (Spurious rejection on)	> 90 dBc					
Local Oscillator Related Spurious	<-65 dBc (Offset Center Frequency +/- (N/M)*125 MHz, N,M = 1,2,3,4,5...)					
Input Related Spurious (Spurious rejection on)	<-60 dBc; refer to technical characteristics for details					
Signal Processing						
Analysis Bandwidth	Maximum 100 MHz					
IQ Data	122.88 MSPS, supporting 120 MSPS-125 MSPS program adjustable, 1 Hz step 1,2,4,8,16, 32,64,128,256,512,1024,2048,4096 supported.					
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 (CW)	23 dBm		88 MHz~40 GHz			
	10 dBm		100 kHz~88 MHz			
Maximum DC Voltage	+/-12 VDC					
Display Range	DANL~23 dBm					

NX series overview



Most popular model NXM-60

- 9 kHz–6.3 GHz real-time spectrum analyzer
- Integrated 100 kHz–6.3 GHz analog signal generator (opt.)
- 100 MHz analysis bandwidth, 78 GHz/sec spectrum sweep speed
- 1000M/100M Ethernet interface
- Weight 660 grams, size 167 × 117 × 28 mm, power consumption: 14 W



Classical model NXE-200

- 9 kHz–20 GHz real-time spectrum analyzer
- SHR architecture, 19 segments pre-selected filter
- 100 MHz analysis bandwidth, 320.2 GHz/sec sweep speed
- Weight 660 grams, size 167×117×28 mm, power consumption: 13–16 W
- Highly compatible API interfaces and SASStudio4 GUI



Cost effective model NXN-400

- 9 kHz–40 GHz real-time spectrum analyzer
- 100 MHz analysis bandwidth, 400 GHz/sec sweep speed
- 40 GHz/10 GHz phase noise: -85/-100 dBc/Hz@10 kHz
- 40 GHz/10 GHz DANL = -147/-158 dBm/Hz
- Weight 660 grams, size 167×117×28 mm, power consumption: 18 W

Parameter comparison

Model	NXM-60	NXM-80	NXE-90	NXE-200	NXN-400
Frequency	9 kHz–6.3 GHz	9 kHz–8.5 GHz	9 kHz–9.5 GHz	9 kHz–20.0 GHz	9 kHz–40.0 GHz
Sweep speed (GHz/s)	78	163	330	330	300
Architecture	Low IF	Low IF	SHR	SHR	SHR
Preselest filters	8	8	14	19	11
Analysis bandwidth	100	100	100	100	100
Phase noise 1 GHz (10 kHz offset , dBc/Hz)	-114	-120	-101	-100	-107
Weight (g)	660				
Size (mm)	167×117×28				

HAROGIC

Distribution in the UK & Ireland



**Characterisation,
Measurement &
Analysis**

Lambda Photometrics Limited
Lambda House Batford Mill
Harpenden Herts AL5 5BZ
United Kingdom
E: info@lambdaphoto.co.uk
W: www.lambdaphoto.co.uk
T: +44 (0)1582 764334
F: +44 (0)1582 712084