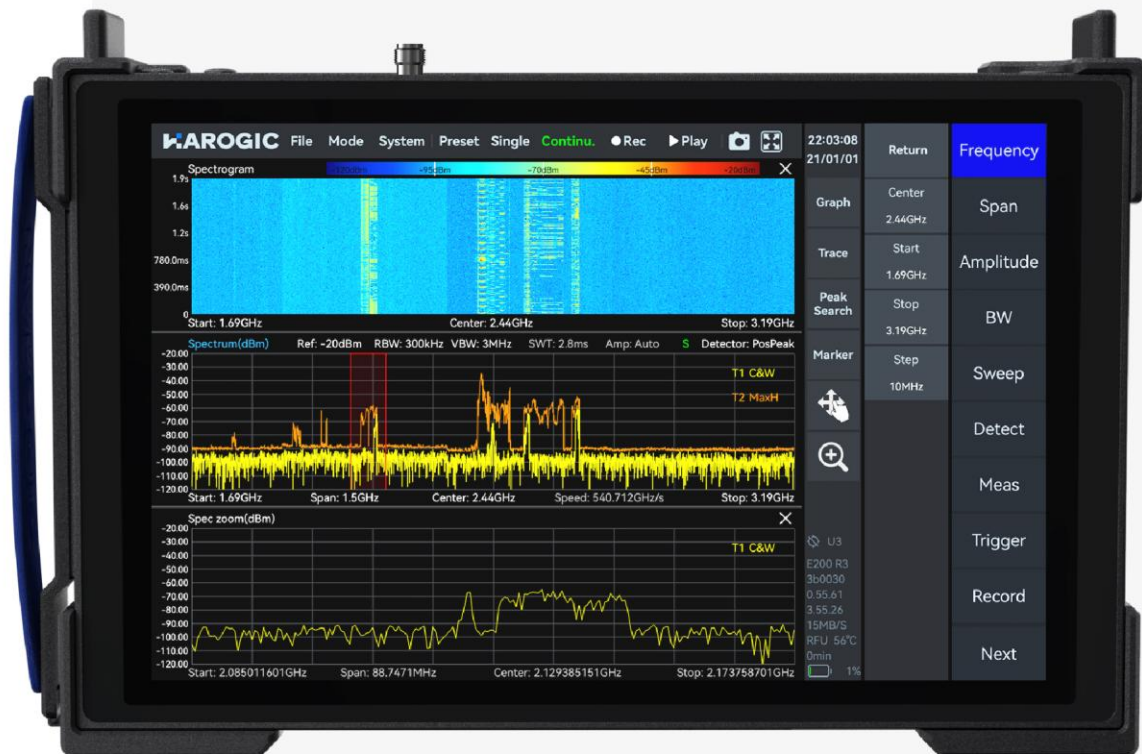




Handheld/Benchtop REAL-TIME SPECTRUM ANALYZER

PXE-90/200 Z
9.5/20 GHz



PXE-90/200 Z OVERVIEW

Key facts

Windows11 operating system

1.19 kg lightweight, 8.8-inch multi touchscreen

Frequency range: 9 kHz - 9.5/20 GHz

1 GHz DANL: -166 dBm/Hz

1 GHz phase noise: -99.7 dBc/Hz@10 kHz

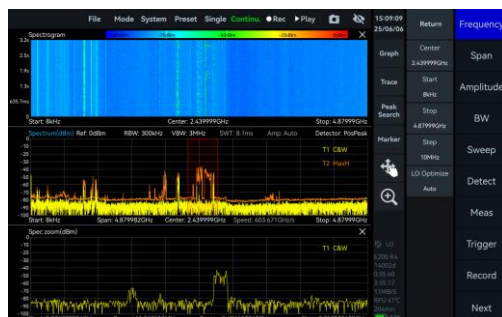
Analysis bandwidth: up to 100 MHz

CPU: high performance AMD Z1 Extreme

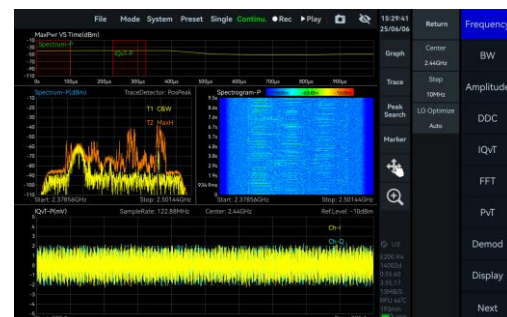
16 GB RAM and 512 GB SSD

Applications

Standard spectrum sweep



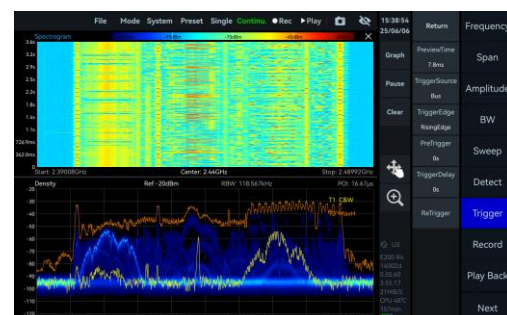
IQ streaming and analysis



Power vs time measurement

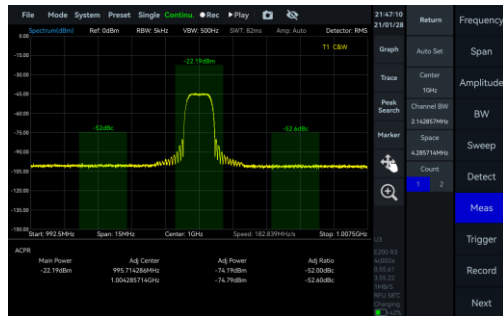


Real-time analysis



Applications

Channel power/ACPR



Phase noise



Frequency tracking



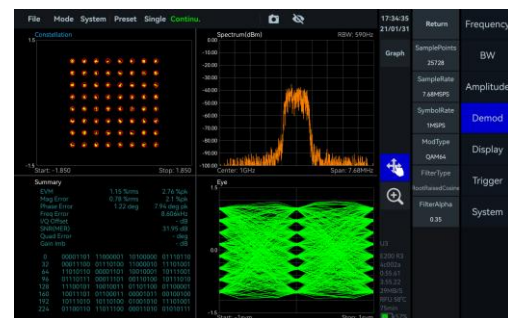
Pulse signal measure



AM/FM demodulation



Basic digital demodulation



Specifications*(Preview)

FREQUENCY

Frequency range	PXE-90 Z	PXE-200 Z
	9 kHz - 9.5 GHz	9 kHz - 20 GHz
Reference clock	Internal or external	
Frequency accuracy	TCXO (std.)	<1 ppm, manual correction is available
	OCXO (opt01)	<1 ppm, manual correction is available
Aging and temperature stability	TCXO (std.)	<1 ppm/year, <1 ppm
	OCXO (opt01)	<1 ppm/year, <0.15 ppm

SPECTRUM PURITY

SSB phase noise (dBc/Hz)				
Carrier frequency	PXE-90 Z		PXE-200 Z	
	1 GHz	9.5 GHz	1 GHz	20 GHz
1 kHz	-95.2	-91.5	-91.2	-80.6
10 kHz	-101.6	-98.5	-99.7	-90.6
100 kHz	-100.6	-99.7	-101.1	-96.2
1 MHz	-120.9	-116.2	-121.6	-111.5
Residual response (dBm)				
Spur reject = bypass				
RBW = 1 kHz				
PosPeak detector				
Reference level (R.L.)	PXE-90 Z		PXE-200 Z	
	0 dBm	-50 dBm	0 dBm	-50 dBm
9 kHz - 1 GHz	-83	-120	-90	-120
1 GHz - 3 GHz	-83	-120	-80	-120
3 GHz - 9.5/20 GHz	-90	-130	-90	-120
Image rejection				
Image rejection	PXE-90 Z		PXE-200 Z	
	>90 dBc (typ.)		>90 dBc (typ.)	
9 kHz - 3 GHz	>90 dBc (typ.)		>90 dBc (typ.)	
3 GHz - 9.5 GHz	>90 dBc (typ.), spur reject = enhanced; >60 dBc (typ.), spur reject = bypass		>90 dBc (typ.)	
9.5 GHz - 20 GHz	-		>90 dBc (typ.), spur reject = enhanced; >60 dBc (typ.), spur reject = bypass	

IF rejection	>90 dBc (typ.) for spur reject = enhanced; >80 dBc (typ.) for spur reject = bypass
Local oscillator related spurious	<-65 dBc Center frequency $\pm (N/M) * 125$ MHz, N, M = 1, 2, 3, 4, 5...

IIP3 / IIP2 (dBm)				
	PXE-90 Z		PXE-200 Z	
Carrier frequency	1 GHz	9.5 GHz	1 GHz	20 GHz
R.L. = 20 dBm	46.1/83.2	40.5/92.8	45.5/82.6	35.3/93.6
R.L. = 0 dBm	26.7/85.0	19.2/90.3	25.5/81.1	21.0/89.0
R.L. = -20 dBm	10.5/82.2	2.0/49.3	7.9/81.5	-4.5/55.3

AMPLITUDE

Max. input power (CW)	23 dBm	50 MHz - 9.5/20 GHz and the preamplifier is off
	10 dBm	9 kHz - 50 MHz or preamplifier is on
Max. DC voltage	± 10 VDC	
Display range	DANL - 23 dBm (typ.)	
Amplitude accuracy	9 kHz - 9.5 GHz	± 2.0 dB
	9.5 GHz - 20 GHz	± 3.0 dB
IF in-band flatness	± 2.0 dB	
Reference level (R.L.)	-50 dBm - 23 dBm (typ.)	
RF preamplifiers	Automatically turn on or forcibly turn off	
VSWR	<2.0:1	
90 MHz to Max.Freq.		

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

	PXE-90 Z		PXE-200 Z	
Reference level	-20 dBm	-50 dBm	-20 dBm	-50 dBm
9 kHz	-143.0	-152.4	-143.6	-152.6
100 kHz - 90 MHz	-152.0	-159.2	-151.8	-160.0
90 MHz - 3.0 GHz	-146.0	-167.5	-149.7	-166.3
3.0 GHz - 9.5 GHz	-153.6	-167.0	-151.4	-157.5
9.5 GHz - 20 GHz	-	-	-156.1	-160.6

STANDARD SPECTRUM ANALYSIS

Detector	PosPeak, NegPeak, Sample, Average, RMS, MaxPower
RBW	1 Hz - 10 MHz
VBW	1 Hz - 10 MHz
Data chart	SASudio4 software provides spectrum, spectrogram, and historical trace
Measurements	Channel power, OBW, X dB bandwidth, Adjacent channel power ratio, IM3

Sweep speed	PXE-90 Z	PXE-200 Z
RBW $\geq$ 1 MHz FPGA spur reject = bypass	about 1.0 THz/s	about 1.1 THz/s
RBW = 250 kHz FPGA spur reject = standard	about 591.8 GHz/s	about 596.3 GHz/s
RBW = 50 kHz FPGA spur reject = bypass	about 214.4 GHz/s	about 210.5 GHz/s
RBW = 1 kHz CPU spur reject = bypass	about 2.9 GHz/s	about 2.5 GHz/s

IQ RECORDING

Burst recording bandwidth	Maximum: 100 MHz The built-in memory depth is 128 Mbytes
Continuous recording bandwidth	Maximum: 50 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, 32, 64, 128, 256, 512, 1024, 2048, 4096
External trigger response	Maximum response frequency 500 times/s

DETECTION ANALYSIS

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= $10^9 \text{ ns}/(N * D * 8 \text{ ns})$; POI = $N * D * 8 \text{ ns}$ 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		
Window function	B-Nuttall, Flat-top, LowSideLobe		
RBW	14.73 MHz - 3.59 kHz (Flat-top) 7.81 MHz - 1.90 kHz (B-Nuttall) 13 grades for each window type		
Amplitude resolution	0.75 dB		

GENERAL

Input and output		
Power	USB PD (100W)	
Data interface	USB3.0 Type-C * 1, microSD card slot * 1	
	PXE-90 Z	PXE-200 Z
RF input	SMA (F), Input impedance 50 Ω	2.92mm (F), Input impedance 50 Ω
External reference clock input	MMCX (F), amplitude ≥ 1.5 Vpp, input impedance is about 330 Ω	
Reference clock output	Integrated in MUXIO, 3.3 V CMOS, programmable on/off	
External trigger input	Integrated in MUXIO, 3.3 V CMOS, input: high impedance	
Trigger output	Integrated in MUXIO, 3.3 V CMOS	
External antenna input	MMXC (F)	
Display	IPS LCD 2560 * 1600, 8.8-inch multi-touch screen	
SSD storage	512 GB	
Power consumption	25 - 45 W (typ.)	
Size (D * W * H)	222 mm * 147 mm * 42 mm	
Weight	1.19 kg	

GNSS synchronization	GNSS (only support external antenna)	±100 ns
Operating temperature (ambient)	0 - 50 °C	
Storage temperature (ambient)	0 - 70 °C	
Operating Relative Humidity	0 -40 °C	5 – 75%
	>40 °C	5 – 45%
Packaging and accessories	spectrum analyzer* 1, power adapter * 1, power cable * 1, calibration certificate*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
34	External omnidirectional antenna, 400-8000MHz, Gain<2dBi	accessory
71	Basic digital demodulation	software
72	Pulse detection	software



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