YSA-N400 SERIES
REAL-TIME SPECTRUM ANALYZER

At a Glance

The YSA-N400 Series is XGY's compact networked real-time spectrum analyzer/receiver that offer sexcellent RF performance and cost efficiency in a miniaturized form factor suitable for eas yintegration.

Boasting an ultra-wide frequency range from 9 kHz up to 40 GHz, a remarkable Displayed Average Noise Level (DANL) as low as -161 dBm/Hz, and a real-time analysis bandwidth of 100 MHz, the YSA-N400 guarantees precise and comprehensive signal detection across vast spectrums.

It is perfect for various applications including automated test systems, remote spectrum monitoring, space-constrained integration projects, and cost-effective millimeter-wave analysis.

Key Facts

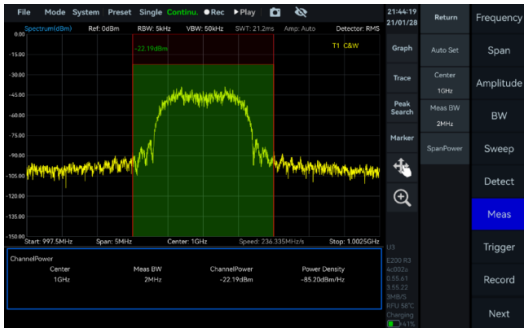
High performance

- Frequency range: 9 kHz to 40 GHz
- 1 GHz DANL: -161 dBm/Hz
- 1 GHz PN: -107 dBc/Hz@10kHz
- Analysis Bandwidth: up to 100 MHz

Advanced Analysis

- 1000M/100M Ethernet Interface
- Highly Compatible API Interface
- Linux and Windows Supported

Application Software Operation Overview



Standard Spectrum Analysis

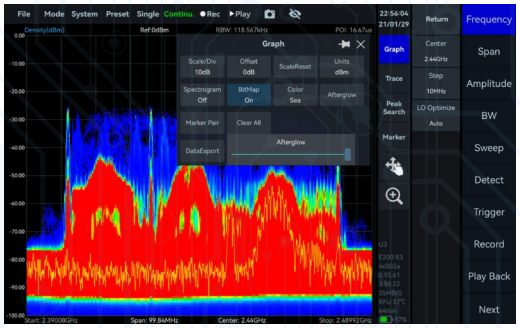
- Panoramic sweep and zoom
- Trace-based signal analysis
- Spectrogram (Waterfall) display
- Channel Power, OBW, ACPR
- IP3/IM3 measurement
- Signal recording capability

IQ Streaming

- Fixed LO IQ capture
- Time-domain signal recording
- IQ waveform & Spectrogram
- Power-time display
- AM/FM & Audio analysis
- Multi-channel DDC

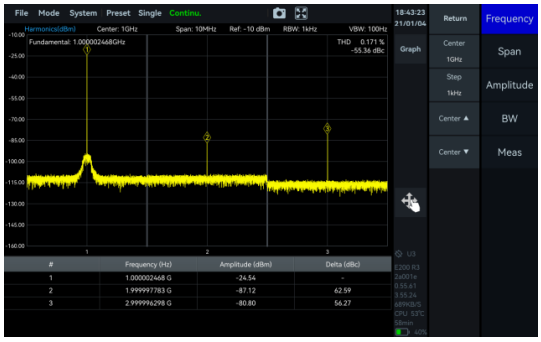
Power Detection Mode

- Fixed LO configuration
- Time-power analysis
- Power-time waveform & zoom
- Data recording & playback
- Pulse detection (optional)



Real-Time Analysis Mode

- Fixed LO IQ capture
- Transient & burst analysis
- Spectrum probability density
- Real-time spectrogram
- Real-time record & playback

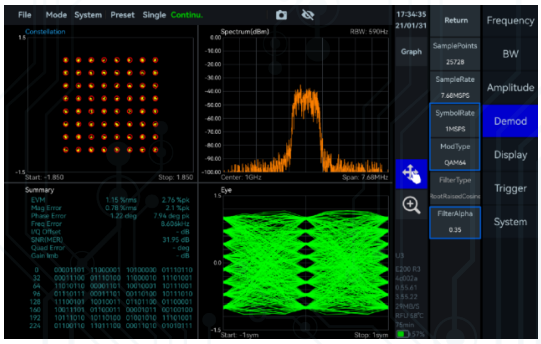


Harmonics

- Fundamental frequency analysis
- Harmonic distortion evaluation
- Non-linear characterization
- Harmonic spectrum diagram
- Detailed measurement table

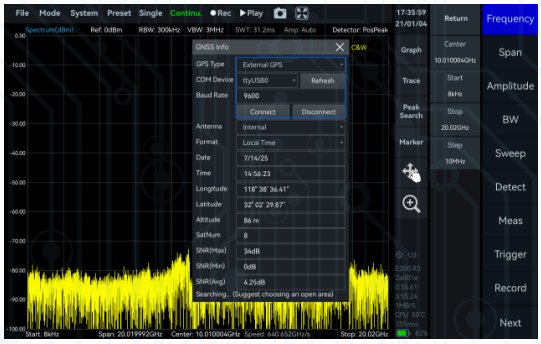
Phase Noise Measurement Mode

- Automated measurement
- High-precision SSB spectrum
- Detailed data tables
- Phase stability evaluation
- Noise density analysis



Digital Demodulation Mode (Opt)

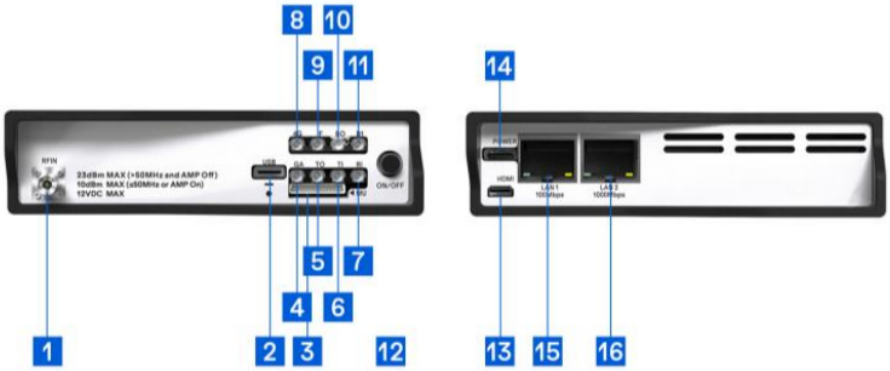
- Signal quality assessment
- ASK/FSK/PSK/GMSK/QAM
- Constellation & Eye diagrams
- Bit table & data extraction
- Modulation performance analysis



GNSS module

- External GNSS module support
- USB-to-serial connection
- Virtual serial interface
- Configurable COM & Baud rate
- Real-time positioning display

Instrument interface description



Detailed information of external interface

Pin	Interface Name	Description
1	RF Input	YSA-N400 series instruments: 2.92 mm (F), input impedance 50Ω
2	USB	Type-C, USB 2.0
3	Multifunctional AUXIO	14 pin misc interface
4	GNSS Antenna Input	MMCX (F)
5	Trigger Output	MMCX (F), 3.3V CMOS
6	Trigger Input	MMCX (F), 3.3V CMOS high-impedance input max trigger rate 500 times/s
7	Reference Clock Input	MMCX (F), Amplitude ≥ 1.5 Vpp, Input Impedance 330 Ω. Supports Sine, Square, Peak Clipping Sine
8	4G Antenna Input	MMCX (F)
9	Analog IF Output	MMCX (F) Max Output Power -25 dBm Output Impedance 50 Ω
10, 11	Reserved Interface	/
12	Instrument Power Switch	Switch the instrument on/off. The instrument starts up automatically on first power-up,eliminating the need to manually press the switch. During power-up, the instrument can be switched off and on again with a switch.
13	Reserved Interface	/
14	Power Port	Type-C PD 3.0 12 V 2 A/9 V 2 A
15	LAN1	Fast Ethernet Port (100 Mbps)
16	LAN2	Fast Ethernet Port (1 Gbps)

Specifications

Category	Parameter / Condition	Specification
Frequency	Frequency Range	9 kHz - 40 GHz
	Reference Clock	Internal TCXO (std.), OCXO (opt.), or External
	Frequency Accuracy	< 1 ppm (TCXO), < 0.15 ppm (OCXO), < 0.05 ppm (GNSS locked)
	Aging Stability	< 1 ppm/year (TCXO), < 0.15 ppm/year (OCXO)
Spectrum Purity	SSB Phase Noise(Carrier: 1 GHz)	1 kHz: -99.0 dBc/Hz 10 kHz: -107.5 dBc/Hz 100 kHz: -107.7 dBc/Hz 1 MHz: -122.7 dBc/Hz
	SSB Phase Noise(Carrier: 40 GHz)	1 kHz: -78.4 dBc/Hz 10 kHz: -85.7 dBc/Hz 100 kHz: -85.1 dBc/Hz 1 MHz: -100.8 dBc/Hz
	Image Rejection	90 MHz - 33 GHz: > 90 dBc33 GHz - 40 GHz: > 58 dBc
	LO Related Spurious	< -65 dBc
Amplitude	Max. Input Power (CW)	+10 dBm (9 kHz - 50 MHz or preamp on) +23 dBm (50 MHz - 40 GHz, preamp off)
	Display Range	DANL to +20 dBm
	Amplitude Accuracy	±2.0 dB (9 kHz - 9.5 GHz) ±3.0 dB (9.5 GHz - 40 GHz)
	Reference Level (R.L.)	-50 dBm to +20 dBm
	VSWR	< 2.0:1 (90 MHz - 16 GHz) < 3.0:1 (16 GHz - 40 GHz)
Sensitivity (DANL)(RBW=1kHz)	Condition	Ref Level: -20 dBm / -50 dBm
	9 kHz - 1 MHz	-136.0 / -145.8 dBm/Hz
	1 MHz - 3.0 GHz	-158.0 / -153.7 dBm/Hz
	3.0 GHz - 4.5 GHz	-159.9 / -154.1 dBm/Hz
	4.5 GHz - 19 GHz	-159.9 / -154.1 dBm/Hz (Typical range values)
	19 GHz - 40 GHz	-149.3 / -145.2 dBm/Hz
Non-Linearity	IIP3 / IIP2 (Carrier: 1 GHz)	Ref 20dBm: 40.3 / 75.5 dBm Ref -20dBm: 8.7 / 25.2 dBm
	IIP3 / IIP2 (Carrier: 40 GHz)	Ref 20dBm: 31.7 / 88.6 dBm Ref -20dBm: 4.8 / 66.6 dBm
Inputs / Outputs	Power Supply	Type-C PD 3.0 (12V 2A / 9V 2A)
	Data Interfaces	1x 1000 Mbps Ethernet (LAN2) 1x 100 Mbps Ethernet (LAN1) 1x USB 2.0 Type-C
	RF Input	2.92 mm (Female), 50 Ω
	Reference Input	MMCX (F), ≥ 1.5 Vpp, 330 Ω
	Ext. Trigger	MMCX (F), 3.3V CMOS (Input: High Z)
	Analog IF Output	MMCX (F), Max -25 dBm, 50 Ω, 307.2 MHz ± 50 MHz
	GNSS Antenna Input	MMCX (F)
General	Real-Time Bandwidth	Up to 100 MHz
	Sweep Speed	657.4 GHz/s (RBW=250kHz)
	Size & Weight	167 x 117 x 30 mm, < 665 g
	Power Consumption	13 to 16 W
	Operating Temperature	0 - 50 °C (ambient)
	OS Support	Windows, Linux (Ubuntu, Debian)