



4024A/B/C/D/E/F/G/H/L Spectrum Analyzer

(9kHz~4GHz/6.5GHz/9GHz//20GHz/26.5GHz/32GHz/44GHz/50GHz/67GHz)



Ceyear Technologies Co., Ltd.

Product Overview

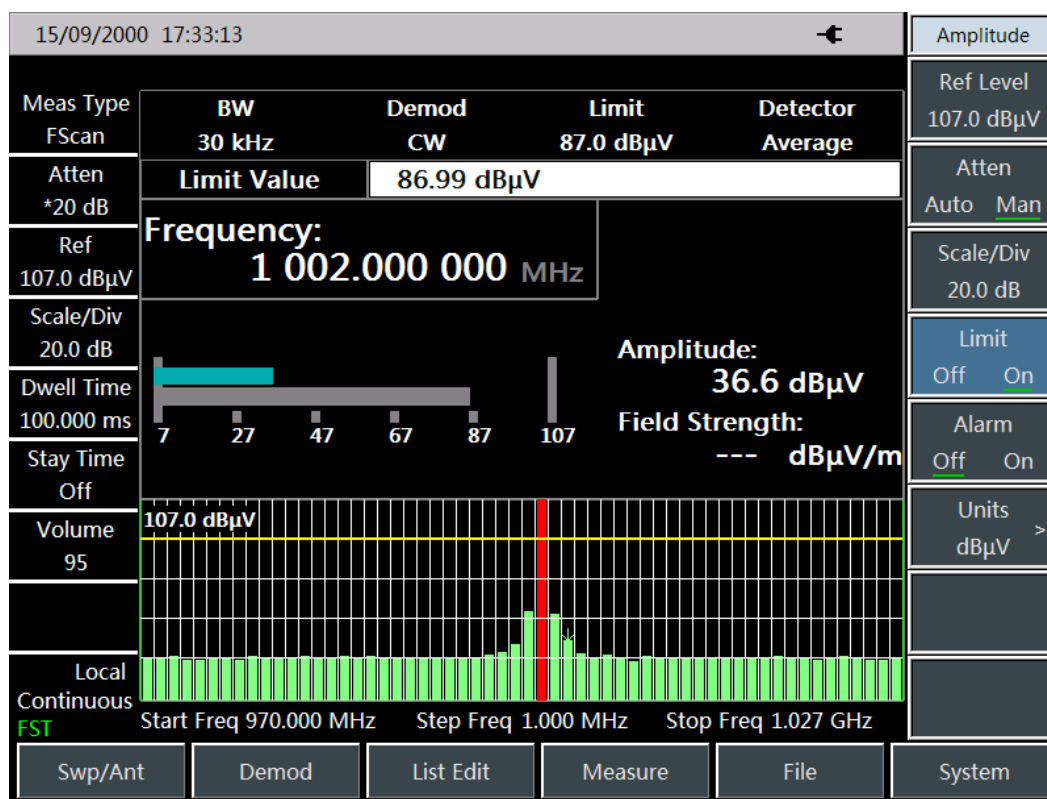
4024 series spectrum analyzer possesses many advantages: wide frequency range, high performance, high sweep speed, various functions, and easy operation. In terms of performance index, it has advantages of excellent displayed average noise level, low phase noise, and high sweep speed. In terms of measurement functions, it has measurement functions of spectrum analyzer, interference analyzer, AM/FM/PM analyzer, power meter, channel scanner etc., as well as intelligent measurement functions of channel power, occupied bandwidth, adjacent-channel power, tune & listen, emission mask, and carrier-to-noise ratio etc. 4024 adopts the integrated design of 8.4 inch LCD and capacitive touch screen, which improves the display definition and operation convenient. It is handheld, compact and light, with flexible power supply, which is very suitable for field work.

4024 can be used for signal and equipment test in the fields of aerospace, microwave & satellite communication, radio communication, radar monitoring, electronic countermeasures & reconnaissance, and precision guidance.

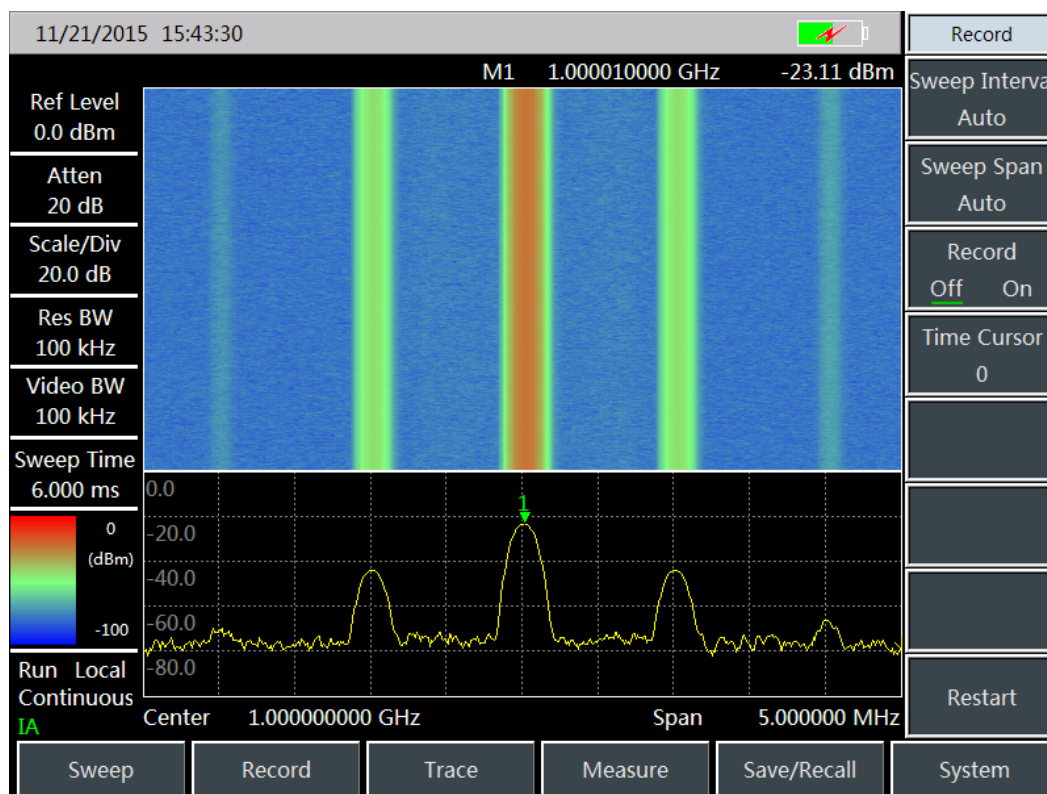
Main Characteristics

- **Wide frequency range: from 9kHz to 67GHz, 9 models**
- **Low displayed average noise level: -163dBm@1Hz RBW(typical)**
- **Excellent phase noise performance:**
 - 112dBc/Hz@100kHz frequency offset@1GHz carrier (4024A/B/C)
 - 106dBc/Hz@100kHz frequency offset@1GHz carrier (4024D/E/F/G/H/L)
- **High sweep speed: for 1GHz span, shortest sweep time <20ms**
- **Resolution bandwidth: 1Hz~10MHz**
- **Full-band pre-amplifier: standard configuration**
- **Various measurement functions: spectrum analyzer, interference analyzer (spectrogram, RSSI), AM/FM/PM analyzer, channel scanner, high accuracy power meter, signal analyzer etc.**
- **Various intelligent measurement functions: field strength measurement, channel power, occupied bandwidth, adjacent-channel power ratio, tune&listen, carrier-to-noise ratio, emission mask**
- **Various auxiliary test interface: 10MHz reference input/output interface, GPS antenna interface, zero span IF output interface, external triggering input interface etc.**
- **Easy & convenient user operation: 8.4 inch high definition LCD and large font display, convenient capacitive touch screen operation, combination of LCD and touch screen, various display modes etc.**
- **Working temperature range: -10°C~50°C**
- **Power supplied by battery or adapter**

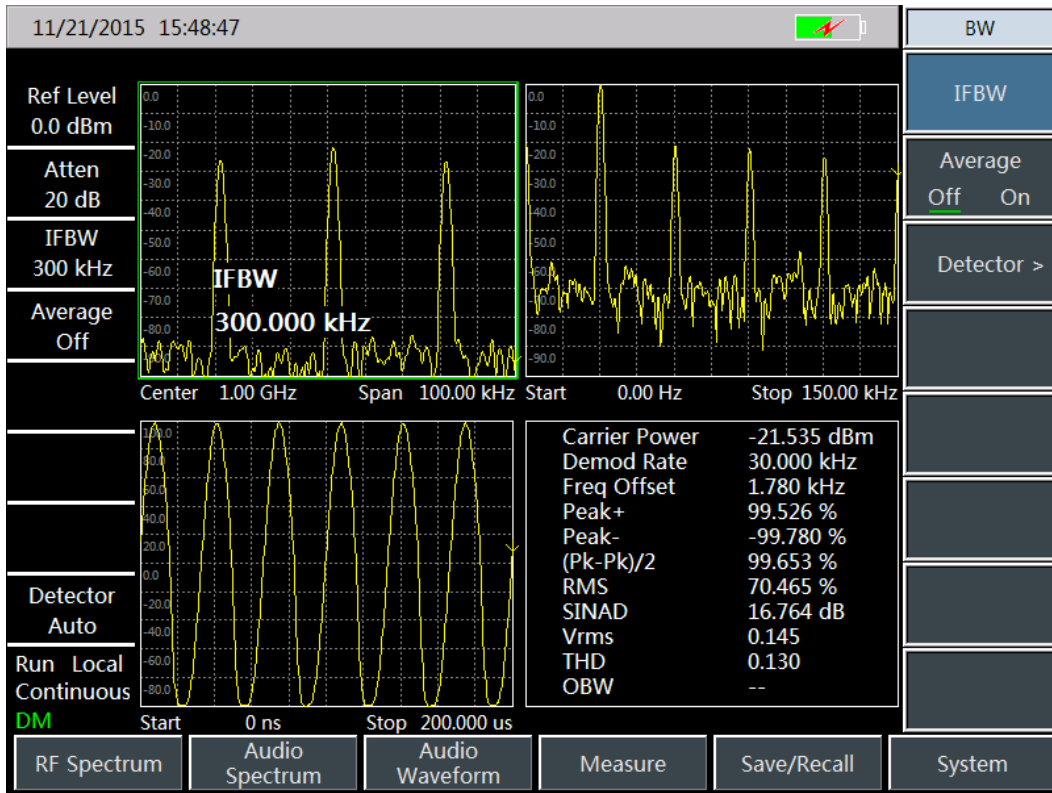
Various Measurement Functions



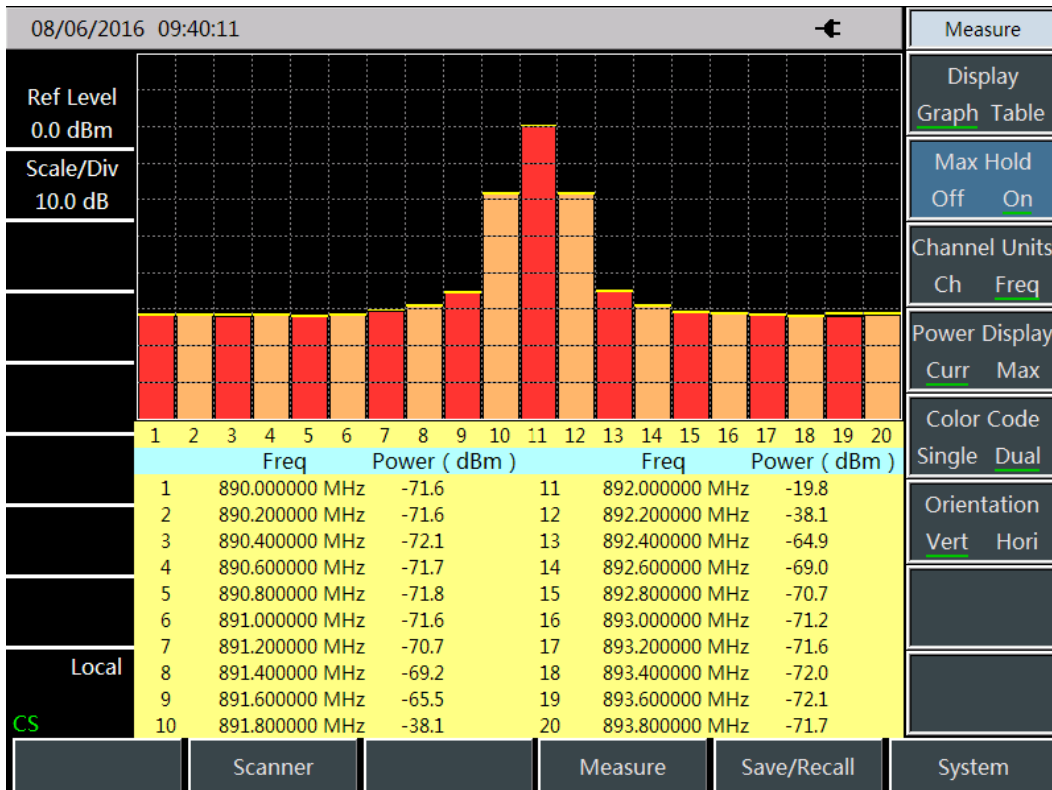
Field Strength



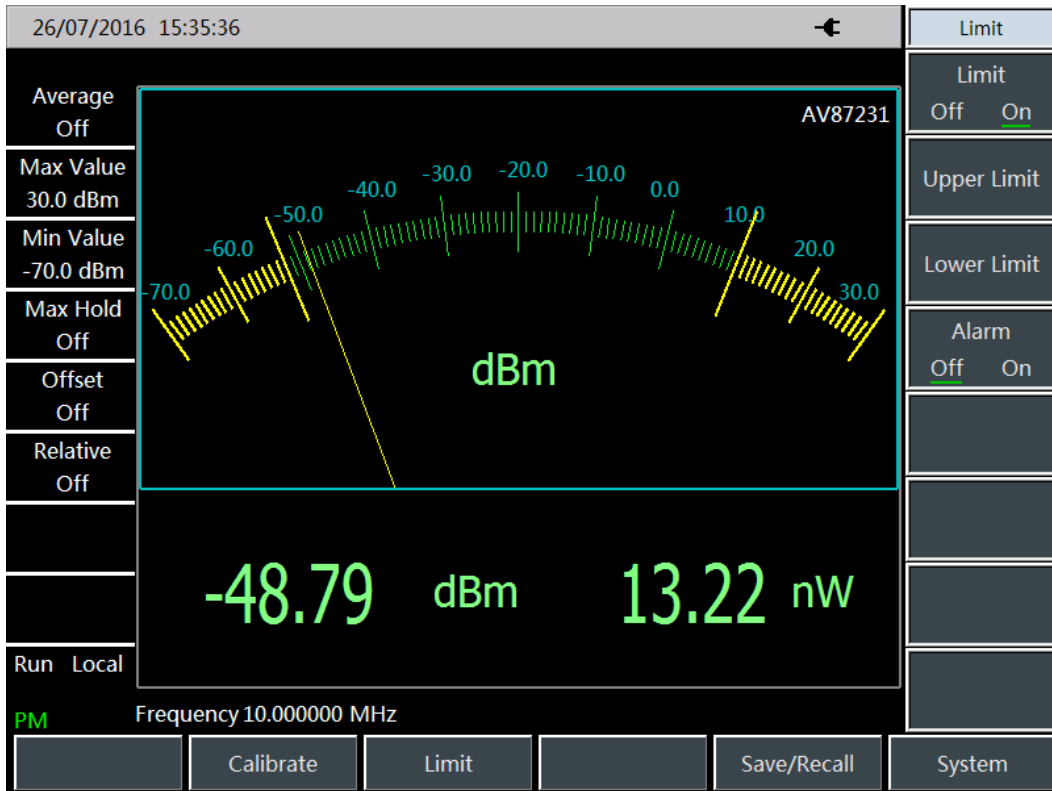
Interference Analyzer (Spectrogram)



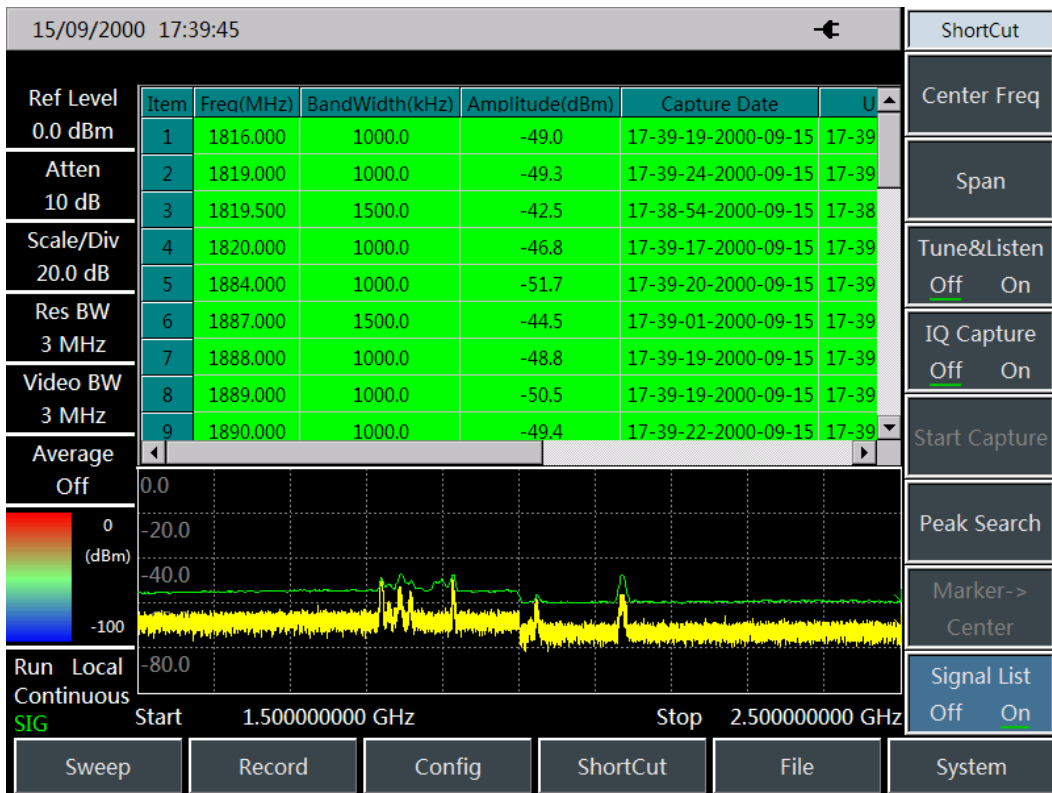
AM/FM/PM Demodulation



Channel Scanner

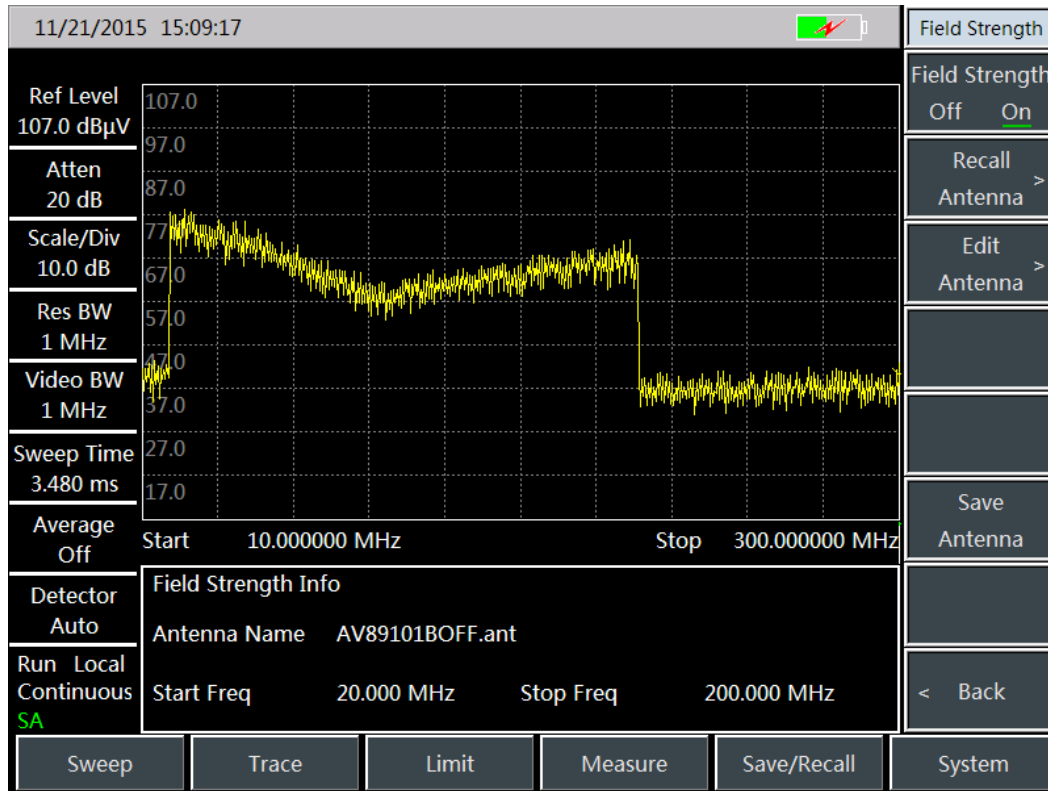


Power Meter (USB Power Probe)

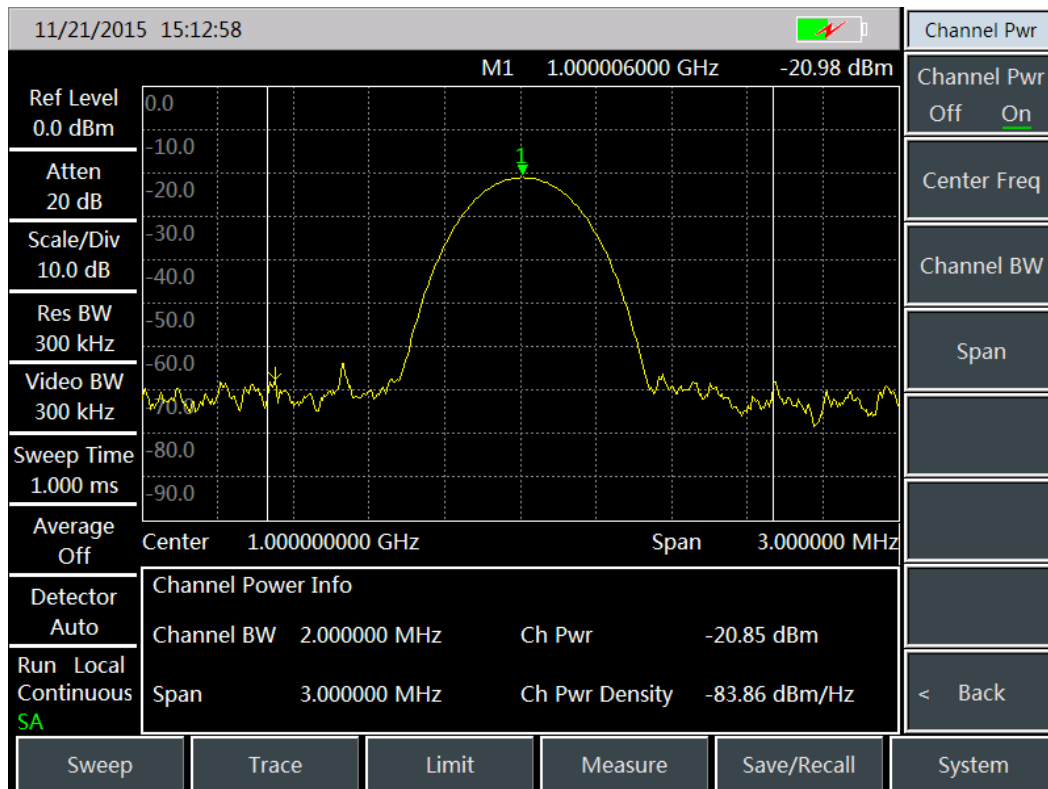


Signal Analyzer

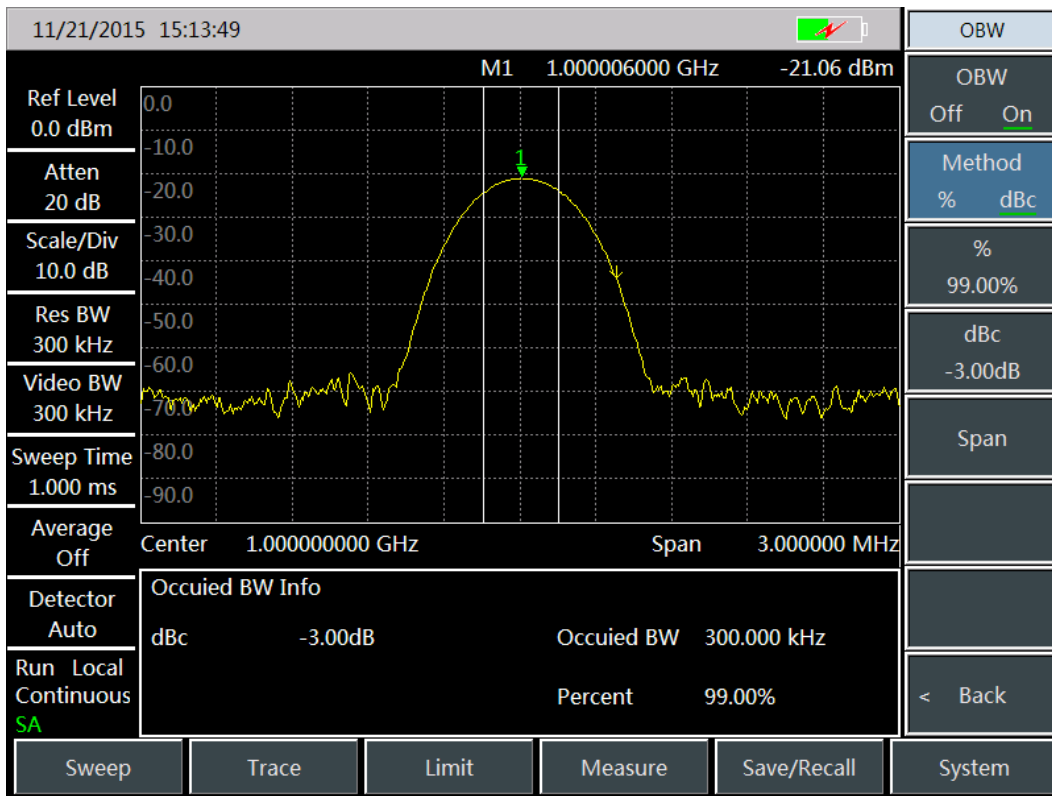
Comprehensive Intelligent Measurement Function



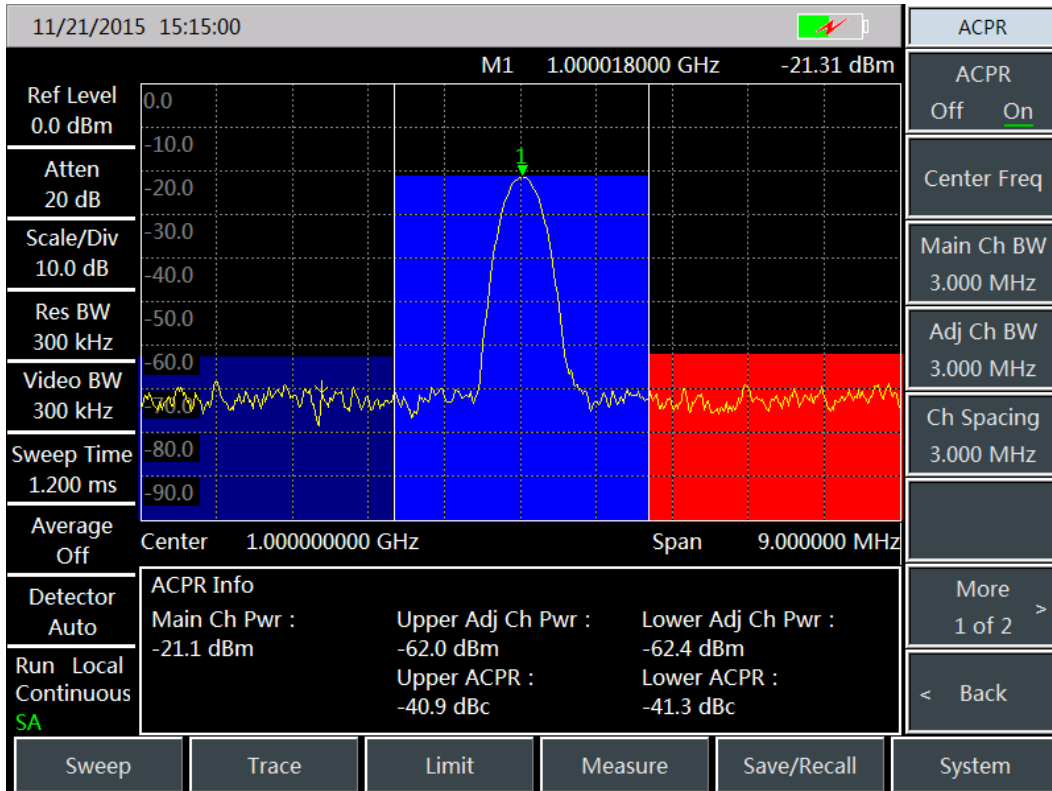
Field Strength Measurement



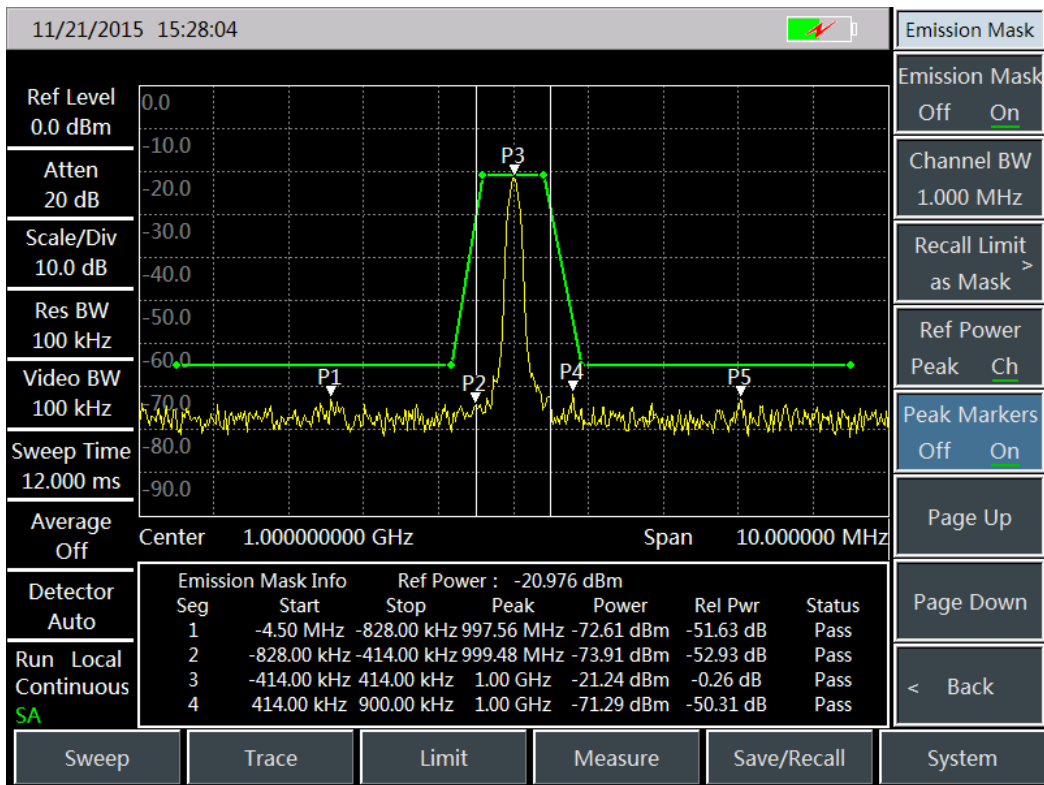
Channel Power



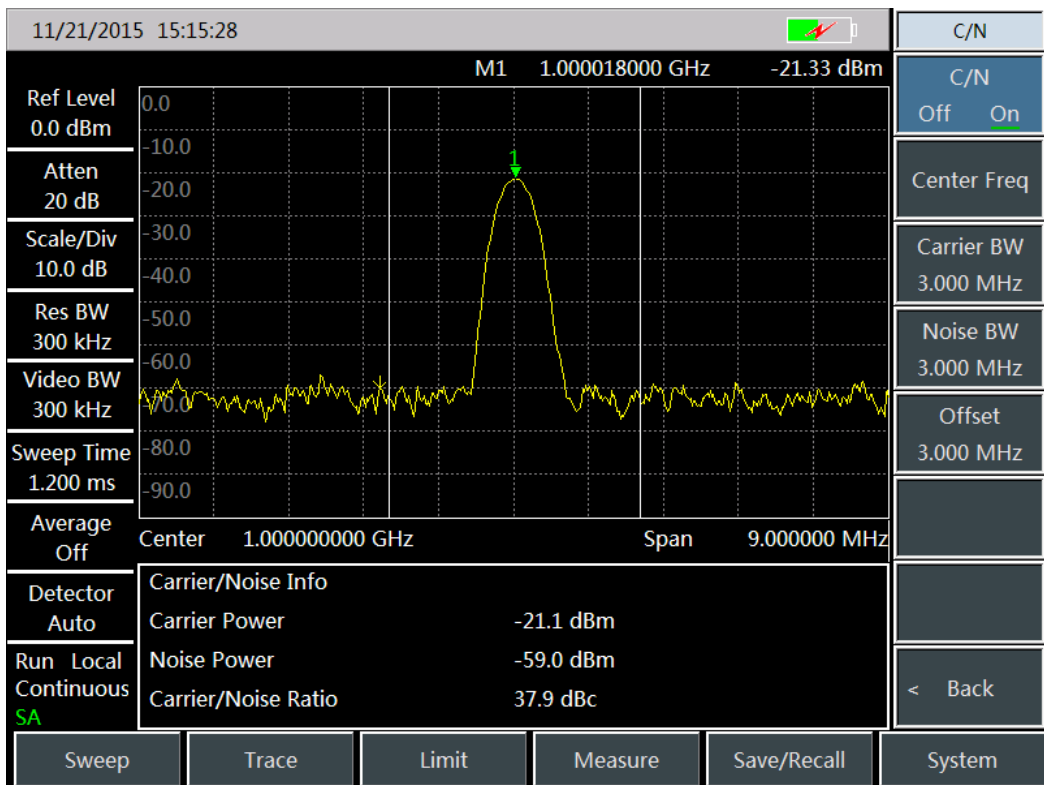
Occupied Bandwidth



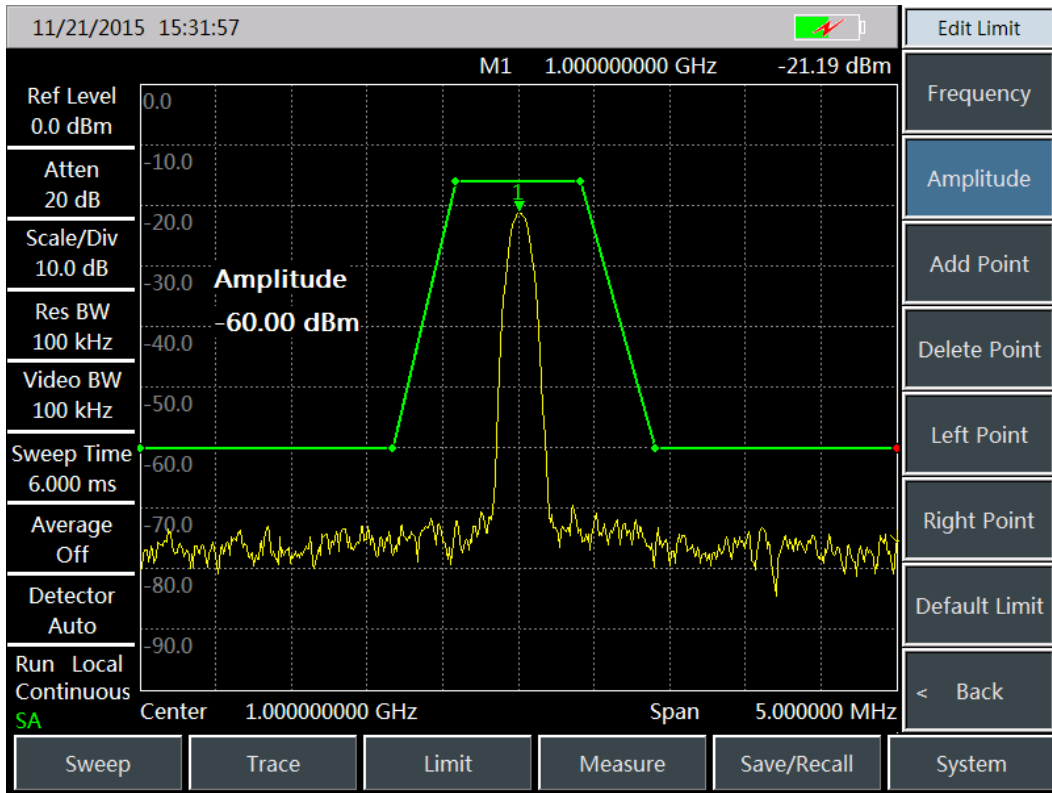
Adjacent-Channel Power Ratio



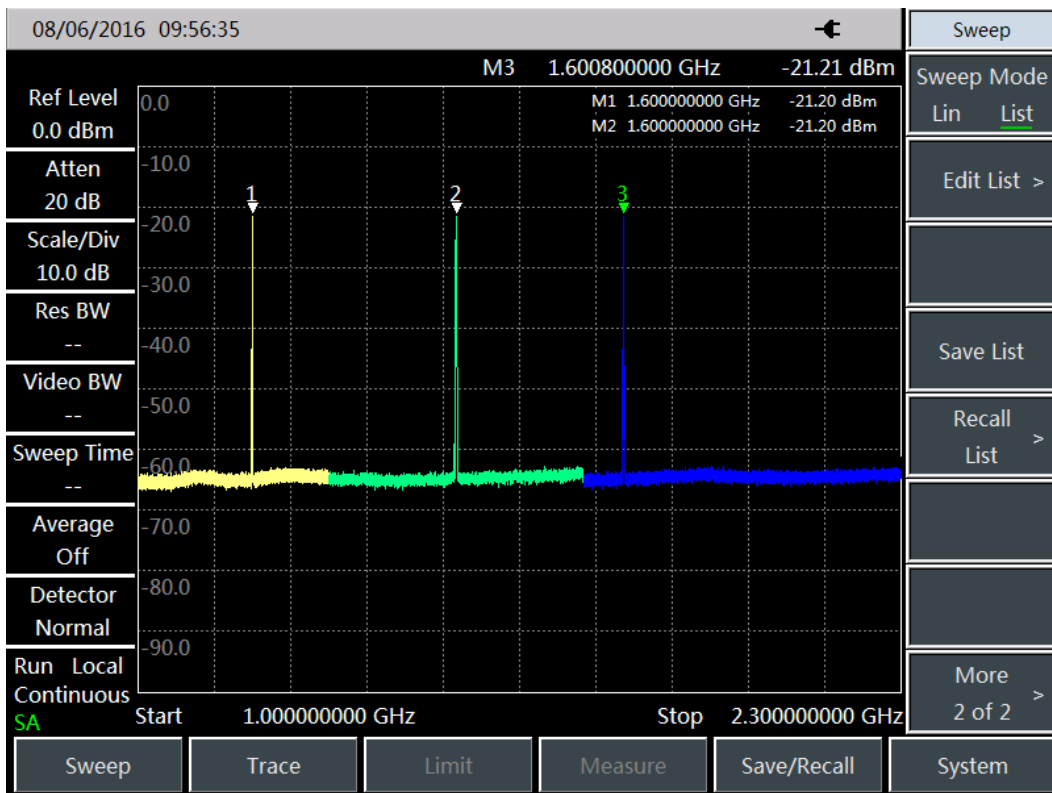
Emission Mask



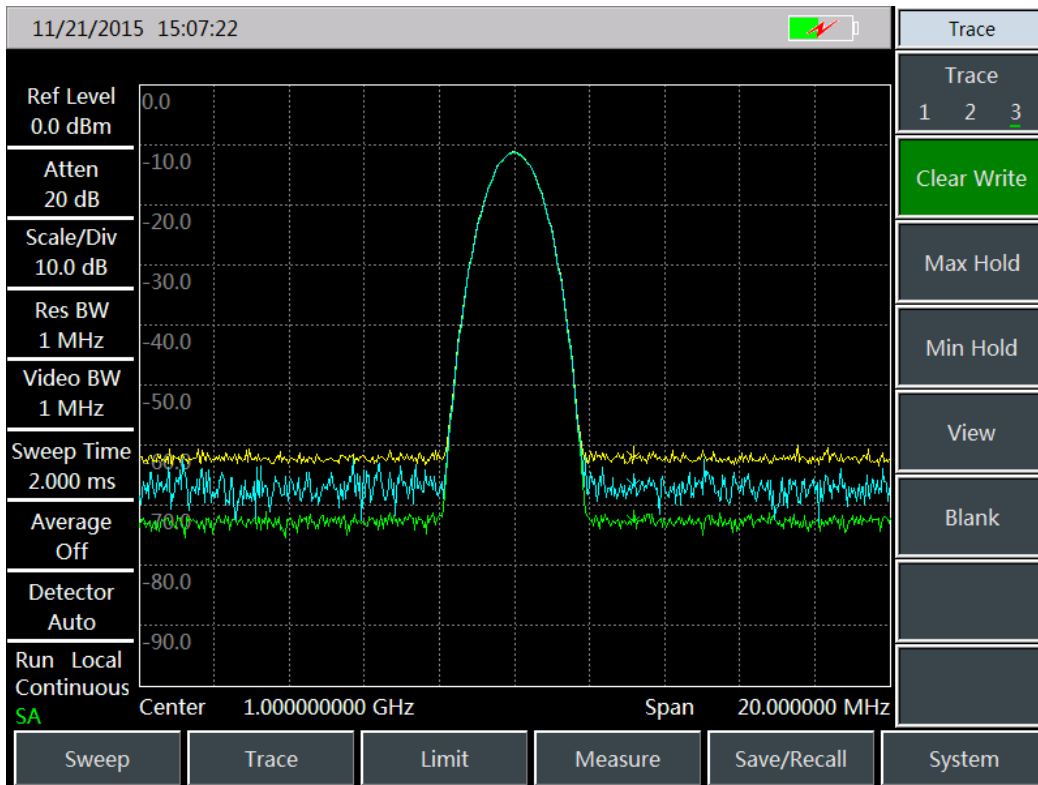
Carrier-to-Noise Ratio



Limit Line

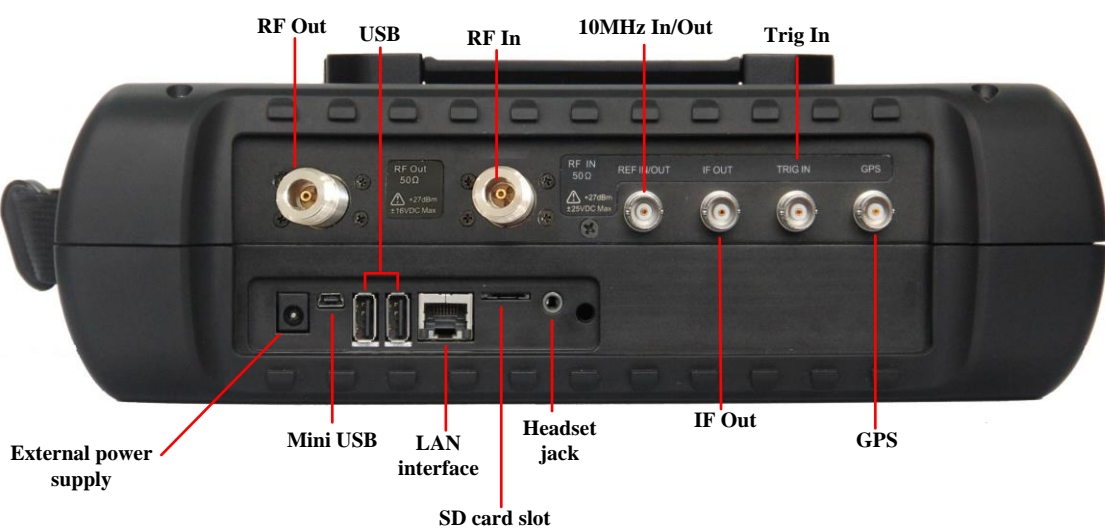


List Sweep



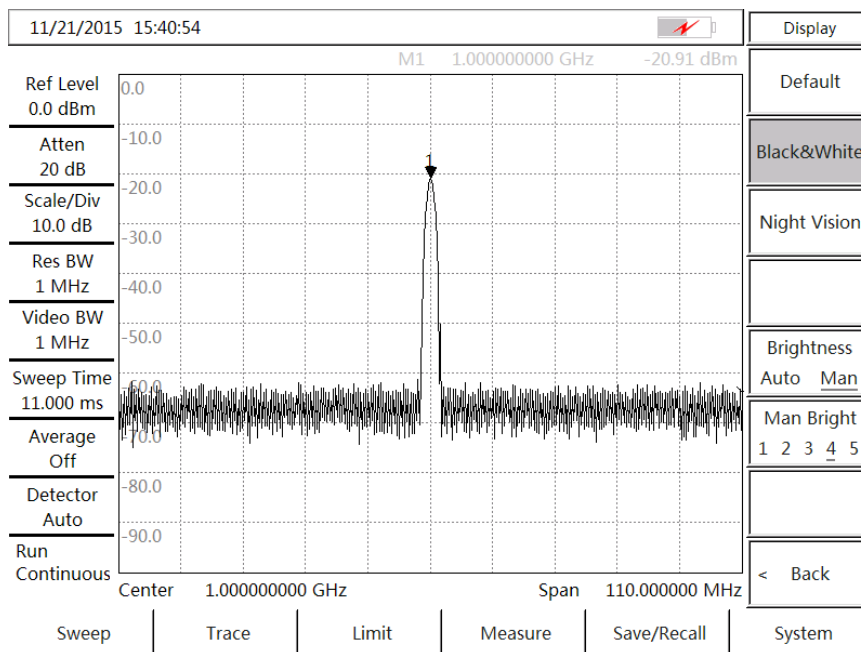
Multi-Traces

Various Auxiliary Test Interfaces

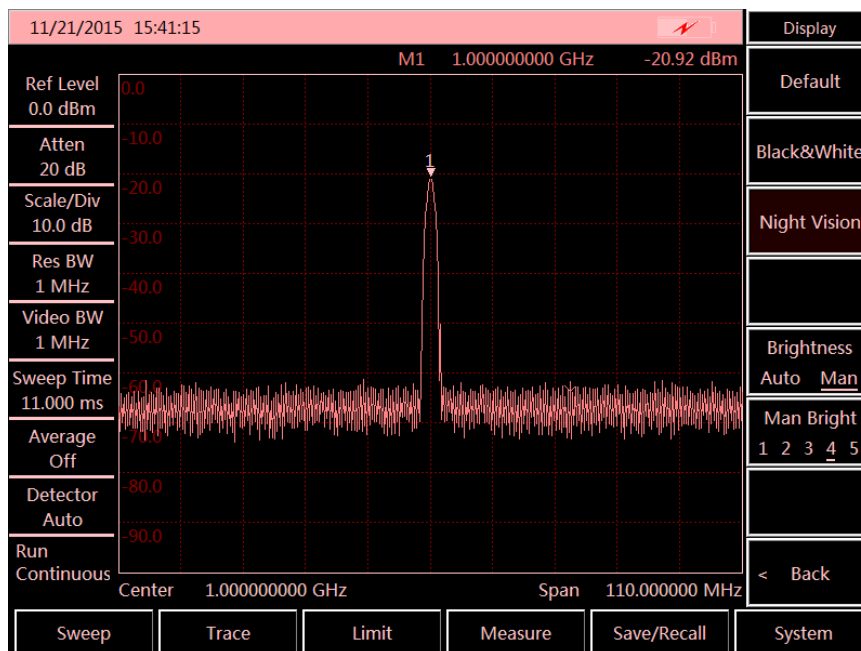


Easy & Convenient User Operation

- One-click quick measurement
- Storage and invocation of state and data
- Combination of 8.4 inch LCD and capacitive touch screen, smaller light refraction and clearer display
- Convenient capacitive touch screen operation
- Various display modes, better experience under outdoor light and night vision
- Backlight keys enable easy viewing in darkness



Outdoor Mode



Night Vision Mode

Typical Applications

Comprehensive Performance Evaluation of Electronic Weapon Equipment

4024 series spectrum analyzer has advantages of wide frequency range, high performance index, high sweep speed, multiple test functions, and easy operation. It is handheld, compact and light, which can be power supplied by battery. It can be used for the field installation & calibration, repair & maintenance of electronic weapon equipment in fields of radar, communication, electronic countermeasures & reconnaissance, and precision guidance etc.

Field Test and Diagnosis of Transmitter and Receiver

4024 series spectrum analyzers have various measurement function modes like spectrum analyzer, interference analyzer, AM/FM/PM analyzer, power meter, channel scanner etc., as well as various intelligent measurement functions such as channel power, occupied bandwidth, adjacent-channel power ratio, carrier-to-noise ratio, field strength measurement, emission mask etc.. It can provide comprehensive spectrum analysis and diagnosis service for the field test of transmitter and receiver.

Broadband Spectrum Monitoring, Interference Recognition

Connected with external directive antenna, 4024 series spectrum analyzer can be used for electromagnetic environment detection, radio interference analysis, electromagnetic environment background assessment, spectrum monitoring and illegal channel interference signal recognition.

Technical Specifications

Model	4024A/B/C/D/E/F/G/H/L
Frequency Range	4024A:9kHz~4GHz 4024B:9kHz~6.5GHz 4024C:9kHz~9GHz 4024D:9kHz~20GHz 4024E:9kHz~26.5GHz 4024F:9kHz~32GHz 4024G:9kHz~44GHz 4024H:9kHz~50GHz 4024L:9kHz~67GHz Tuning Resolution:1Hz
Frequency Reference	Frequency: 10MHz Aging: ± 0.5 ppm/Year Initial Frequency Accuracy: ± 0.3 ppm Temperature Stability: ± 0.1 ppm(-10~50°C, Comparative to 25°C)
Sweep Time	Range: 10 μ s~600s (Zero Span) Accuracy: $\pm 2.00\%$ (Zero Span)
Frequency Readout Accuracy	$\pm(\text{Frequency Readout} \times \text{frequency Reference} + 2\% \times \text{Span} + 10\% \times \text{Resolution Bandwidth})$
Frequency Span	Range: 100Hz~Upper Frequency Limit of Corresponding Model or 0Hz

	Accuracy: $\pm 2.0\%$	
Resolution Bandwidth	1Hz~10MHz (1-3 Times of Stepping)	
Video Bandwidth	1Hz~10MHz (1-3 Times of Stepping)	
SSB Phase Noise (Carrier 1GHz)	4024A/B/C: $\leq -108\text{dBc/Hz@}$ Frequency Offset 10kHz $\leq -112\text{dBc/Hz@}$ Frequency Offset 100kHz $\leq -118\text{dBc/Hz@}$ Frequency Offset 1MHz $\leq -129\text{dBc/Hz@}$ Frequency Offset 10MHz	4024D/E/F/GH/L: $\leq -102\text{dBc/Hz@}$ Frequency Offset 10kHz $\leq -106\text{dBc/Hz@}$ Frequency Offset 100kHz $\leq -111\text{dBc/Hz@}$ Frequency Offset 1MHz $\leq -123\text{dBc/Hz@}$ Frequency Offset 10MHz
Displayed Average Noise Level (input port is connected with a $50\ \Omega$ load, 0dB input attenuation, average detection, logarithm of video type, RBW normalized to 1Hz, tracking source off, $20^{\circ}\text{C}\sim 30^{\circ}\text{C}$)	4024A/B/C: Pre-amp Off: $\leq -140\text{dBm}(10\text{MHz}\sim 3\text{GHz})$ $\leq -138\text{dBm}(3\text{GHz}\sim 9\text{GHz})$ Pre-amp On: $\leq -160\text{dBm}(10\text{MHz}\sim 3\text{GHz})$ $\leq -157\text{dBm}(3\text{GHz}\sim 9\text{GHz})$	4024D/E/F/G: Pre-amp Off: $\leq -138\text{dBm}(10\text{MHz}\sim 20\text{GHz})$ $\leq -135\text{dBm}(20\text{GHz}\sim 32\text{GHz})$ $\leq -127\text{dBm}(32\text{GHz}\sim 40\text{GHz})$ Pre-amp On: $\leq -157\text{dBm}(10\text{MHz}\sim 20\text{GHz})$ $\leq -154\text{dBm}(20\text{GHz}\sim 32\text{GHz})$ $\leq -148\text{dBm}(32\text{GHz}\sim 40\text{GHz})$
	4024H/L: Pre-amp Off: $\leq -135\text{dBm}(10\text{MHz}\sim 20\text{GHz})$ $\leq -129\text{dBm}(32\text{GHz}\sim 40\text{GHz})$ $\leq -114\text{dBm}(46\text{GHz}\sim 50\text{GHz})$ $\leq -100\text{dBm}(60\text{GHz}\sim 67\text{GHz})$ Pre-amp On: $\leq -153\text{dBm}(10\text{MHz}\sim 20\text{GHz})$ $\leq -147\text{dBm}(32\text{GHz}\sim 40\text{GHz})$ $\leq -132\text{dBm}(46\text{GHz}\sim 50\text{GHz})$ $\leq -118\text{dBm}(60\text{GHz}\sim 67\text{GHz})$	$\leq -134\text{dBm}(20\text{GHz}\sim 32\text{GHz})$ $\leq -120\text{dBm}(40\text{GHz}\sim 46\text{GHz})$ $\leq -114\text{dBm}(50\text{GHz}\sim 60\text{GHz})$ $\leq -152\text{dBm}(20\text{GHz}\sim 32\text{GHz})$ $\leq -142\text{dBm}(40\text{GHz}\sim 46\text{GHz})$ $\leq -132\text{dBm}(50\text{GHz}\sim 60\text{GHz})$
Residual Response	4024A/B/C (exceptional frequency: 3.2GHz): Pre-amp Off: $\leq -82\text{dBm}(10\text{MHz}\sim 9\text{GHz})$ Pre-amp On: $\leq -95\text{dBm}(10\text{MHz}\sim 9\text{GHz})$	4024D/E/F/G (exceptional frequency: 3.2GHz): Pre-amp Off: $\leq -90\text{dBm}(10\text{MHz}\sim 13\text{GHz})$ $\leq -85\text{dBm}(13\text{GHz}\sim 20\text{GHz})$ $\leq -80\text{dBm}(20\text{GHz}\sim 44\text{GHz})$ Pre-amp On: $\leq -100\text{dBm}(10\text{MHz}\sim 32\text{GHz})$ $\leq -95\text{dBm}(32\text{GHz}\sim 44\text{GHz})$
Second Harmonic Distortion	4024A/B/C/H/L: $< -65\text{dBc}$	

(0dB attenuation, -30dBm input signal)	4024D/E/F/G: <-60dBc		
Absolute Amplitude Accuracy (input signal 0dBm~-50dBm, all settings are automatic couplings, 20 °C ~30 °C , 30 minutes of preheating)	$\pm 1.8\text{dB}$ (10MHz~13GHz) $\pm 2.3\text{dB}$ (13GHz~40GHz) $\pm 2.7\text{dB}$ (40GHz~50GHz) $\pm 3.0\text{dB}$ (50GHz~67GHz)		
Input Attenuator	4024A/B/C/H/L: Attenuation Range: 0dB~30dB, 5dB Stepping	4024D/E/F/G: Attenuation Range: 0dB~50dB, 10dB Stepping	
Maximum Continuous Input	4024A/B/C/H/L: +27dBm Peak Typical($\geq 10\text{dB}$ Attenuation) +20dBm Peak Typical($< 10\text{dB}$ Attenuation) +10dBm Peak Typical(Pre-amp On)	4024D/E/F/G: +30dBm Peak Typical($\geq 10\text{dB}$ Attenuation) +23dBm Peak Typical($< 10\text{dB}$ Attenuation) +13dBm Peak Typical(Pre-amp On)	
Reference Level	Range: -120dBm~+30dBm Conversion Uncertainty: $\pm 1.20\text{dB}$		
Dimension	314mm (W) \times 218mm (H) \times 91mm (D) (Excluding Handle, Stand) 338mm(W) \times 218mm (H) \times 100mm (D) (Including Handle, Stand)		
Weight	4024A/B/C: $\leq 4.5\text{kg}$	4024D/E/F/G: $\leq 5.1\text{kg}$	4024H/L: $\leq 5.3\text{kg}$
Working Temperature	-10°C~+50°C (the battery operation temperature is 0°C~+45°C)		
Storage Temperature	-40°C~+70°C (the battery storage temperature is -20°C~+60°C)		
Electromagnetic Compatibility	Conforms to GJB3947A-2009 3.9.1 Requirements		
Power Supply Mode	AC Power Adapter: input 100 to 240V _{AC} , 50/60Hz Output 15V _{DC} , 4A lithium ion battery: 10.8V		
Battery Operation Time	4024A/B/C: about 3h	4024D/E/F/G: about 2.5h	4024H/L: 2h (typical)
Power Consumption	4024A/B/C: $\leq 25\text{W}$	4024D/E/F/G: $\leq 33\text{W}$	4024H/L: $\leq 38\text{W}$
Test Interface	RF input: 4024A/B/C/D/E: Type-N Connector(female) 4024F/G: 2.4mm Connector(male) 4024H/L: 1.85mm Connector(male) RF output: Test interface of tracking generator option for 4024A/B/C: Type-N Connector(female)		
Other Interfaces	10MHz Reference Input/Output: BNC (female) Connector External Triggering Input: BNC (female) Connector		

	IF Output: BNC (female) Connector GPS Antenna Input: BNC (female) Connector
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Ordering Information

Main Unit: 4024A Spectrum Analyzer (9kHz~4GHz)

Main Unit: 4024B Spectrum Analyzer (9kHz~6.5GHz)

Main Unit: 4024C Spectrum Analyzer (9kHz~9GHz)

Main Unit: 4024D Spectrum Analyzer (9kHz~20GHz)

Main Unit: 4024E Spectrum Analyzer (9kHz~26.5GHz)

Main Unit: 4024F Spectrum Analyzer (9kHz~32GHz)

Main Unit: 4024G Spectrum Analyzer (9kHz~44GHz)

Main Unit: 4024H Spectrum Analyzer (9kHz~50GHz)

Main Unit: 4024L Spectrum Analyzer (9kHz~67GHz)

Standard Package

No.	Description
1	Standard 3-Phase Power Cord Power Adapter : Output 15V DC Lithium-ion rechargeable battery
2	Quick guide
3	USB Cable
4	Certificate of Conformity

Options

Serial No.	Description	Function
4024-001	Optional Accessories of English Version	English Signs、Keys、Menu
4024-002	User Manual (Chinese)	--
4024-003	User Manual (English)	--
4024-004	Programming Manual (Chinese)	--
4024-005	Programming Manual (English)	--
KPL060H-N047	Power Adapter	
GSA3SA1	Lithium-ion rechargeable battery	Backup Battery
Kingston MicroSD Class4(8G)+SD Card Adapter	Micro SD Card	Class4, Capacity: 8G
GPS Antenna(BNC)	GPS option	External antenna(BNC), Internal GPS moduls and software
4024-011	USB Power Meter Option	Provide USB Power Measurement Function (Requires USB Power Probe:012/013/014/015)

87230	87230 USB CW Power Probe	9kHz~6GHz Power Probe
87231	87231 USB CW Power Probe	10MHz~18GHz Power Probe
87232	87232 USB CW Power Probe	50MHz~26.5GHz Power Probe
87233	87233 USB CW Power Probe	50MHz~40GHz Power Probe
4024-016	Interference Analyzer Option	Provide Spectrogram, RSSI Measurement etc. Functions
4024-017	AM/FM/PM Analyzer Option	To Realize Modulation Characteristics Analysis of AM/FM/PM Signals
4024-018	Channel Scanner Option	To Realize Signal Power Measurement of Multiple Channels and Frequency
4024-019	List Sweep Option	To Realize Continuous Sweep Measurement of Various Frequency Bands
4024-020	Zero Span IF Output	Output the Third or Fourth IF Signal (Choose One of Two)
ZE9080 Antenna Module A	ZE9080 Directional Antenna A	Frequency range:9kHz~20MHz , N(f),(It is recommended that the ZE9080 handheld handle module is optional)
ZE9080 Antenna Module B	ZE9080 Directional Antenna B	Frequency range:20MHz~200MHz, N(f) (It is recommended that the ZE9080 handheld handle module is optional)
ZE9080 Antenna Module C	ZE9080 Directional Antenna C	Frequency range:200MHz~500MHz, N(f)(It is recommended that the ZE9080 handheld handle module is optional)
ZE9080 Antenna Module D	ZE9080 Directional Antenna D	Frequency range:500MHz~8GHz, N(f) (It is recommended that the ZE9080 handheld handle module is optional)
ZE9080 Handheld Module	ZE9080 Antenna Amplifier	Frequency range:9kHz~8GHz , N(m), It contains USB electronic compass option, which is used with ZE9080 Antenna Module A/B/C/D option
4024-021	89101 Antenna	Frequency Range:10kHz~20MHz (Requires Option 025)
4024-022	89102 Antenna	Frequency Range:20MHz~200MHz (Requires Option 025)

6.873.1005	Functional Bag	Protect the Instrument
6.873.1003	Backpack	Easy to Carry
6.875.1023	Safety Instrument Carrying Case	Used to Carry
6.354.1005	89901 Antenna handle	Use with 89901 antenna option
6.354.1006	89902 Antenna handle	Use with 89902 antenna option
4024-033	Signal Analyzer Option	Realize the rapid analysis of interference signals, and provide audio demodulation and IQ capture functions
4024-034	Field Strength Option	Provide Pscan, Fscan, MScan etc. Functions
4024-035	4GHz Tracking Generator	Frequency Range 100kHz~4GHz (Only For 4024A)
4024-036	6.5GHz Tracking Generator	Frequency Range 100kHz~6.5GHz (Only For 4024B)
4024-037	9GHz Tracking Generator	Frequency Range 100kHz~9GHz (Only For 4024C)
HG72703RDR-NM	Omnidirectional Whip Antenna	Frequency Range: 700MHz~2700MHz, suitable for communication frequency band
HyperLOG 7040X	700MHz~4GHz Directional Antenna	Active Log Periodic Antenna, Frequency Range: 700MHz~4GHz, SMA(f)
HyperLOG 7060X	700MHz~6GHz Directional Antenna	Active Log Periodic Antenna, Frequency Range: 700MHz~6GHz, SMA(f)
HyperLOG 60100X	680MHz~10GHz Directional Antenna	Active Log Periodic Antenna, Frequency Range: 680MHz~10GHz, SMA(f)
HyperLOG 60200X	680MHz~20GHz Directional Antenna	Active Log Periodic Antenna, Frequency Range: 680MHz~20GHz, SMA(f)
HyperLOG 4040X	400MHz~4GHz Directional Antenna	Active Log Periodic Antenna, Frequency Range: 400MHz~4GHz, SMA(f)
HyperLOG 4060X	400MHz~6GHz Directional Antenna	Active Log Periodic Antenna, Frequency Range: 400MHz~6GHz, SMA(f)
HyperLOG 30100X	380MHz~10GHz Directional Antenna	Active Log Periodic Antenna, Frequency Range: 380MHz~10GHz, SMA(f)
HyperLOG 30200X	380MHz~20GHz Directional Antenna	Active Log Periodic Antenna,

	Antenna	Frequency Range: 380MHz~20GHz, SMA(f)
USB Electronic Compass	External Electronic Compass	External USB electronic compass, requires option 038 for function realization
OmniLOG 70600	6GHz Omnidirectional Antenna	Portable Omnidirectional Antenna, Frequency Range: 680MHz~6GHz, SMA(m)
OmniLOG 30800	8GHz Omnidirectional Antenna	Portable Omnidirectional Antenna, Frequency Range: 300MHz~8GHz
NA-773	VHF/UHF Extension-Type Whip Antenna	Frequency Range: 140MHz/430MHz, SMA(m)
HyperLOG 7040	Passive Directional Antenna(700MHz~4GHz)	Passive Log Periodic Antenna, Frequency Range: 700MHz~4GHz, SMA(m)
HyperLOG 7060	Passive Directional Antenna(700MHz~6GHz)	Passive Log Periodic Antenna, Frequency Range: 700MHz~6GHz, SMA(m)
HyperLOG 60100	Passive Directional Antenna(680MHz~10GHz)	Passive Log Periodic Antenna, Frequency Range: 680MHz~10GHz, SMA(m)
HyperLOG 60180	Passive Directional Antenna(680MHz~18GHz)	Passive Log Periodic Antenna, Frequency Range: 680MHz~18GHz, SMA(m)
UF2-SMAMNM-2.0M	N/SMA-JJ RF Cable (2m)	N/SMA RF Coaxial Cable (m-m), DC~18GHz, 2m length
UF2-SMAMNM-1.0M	N/SMA-JJ RF Cable (1m)	N/SMA RF Coaxial Cable (m-m), DC~18GHz, 1m length
ZE9080 Antenna Transportation Case	ZE9080 Antenna Transportation Case	Special case for ZE9080 antenna, for the whole set of ZE9080 antenna and antenna amplifier, including ZE9080 Antenna module A/B/C/D and ZE9080 handle module option

Ceyear
Focus on measurement
Explore the future

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