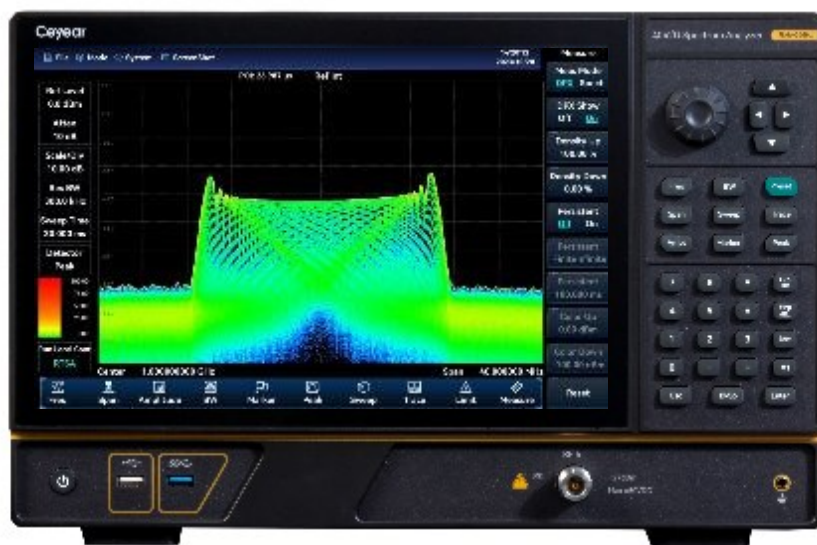




4042 Series Spectrum Analyzer

4042B/D/F/G/K

(9 kHz – 9/20/32/44/54 GHz)



Ceyear Technologies Co., Ltd

Product Overview

Ceyear 4042 series spectrum analyzer is a basic portable spectrum analyzer, which covers the frequency measurement range of 9kHz to 54GHz. The 4042 series spectrum analyzer adopts portable structure, weighs less than 6.5kg, and has multiple advantages such as wide operating band, excellent performance indicators, fast sweep, multiple testing functions, portability and easy operation.

The 4042 series spectrum analyzer has such measurement function modes as real-time spectrum, interference analyzer, AM/FM/PM analyzer, channel scanner, field strength, power meter, peak-power meter, IQ analyzer, phase noise meter, vector signal analyzer, as well as such intelligent measurement functions as channel power, OBW, ACPR, emission mask, C/N, harmonics and spur emissions, and supports such digital interfaces as LAN, USB and HDMI.

The 12.1-inch multi-touch capacitive touch screen brings better interactive experience, and the product can be applied to the research and development and testing process of industrial electronic products, as well as many fields such as communication testing, satellite communication, microwave communication, scientific research and teaching.



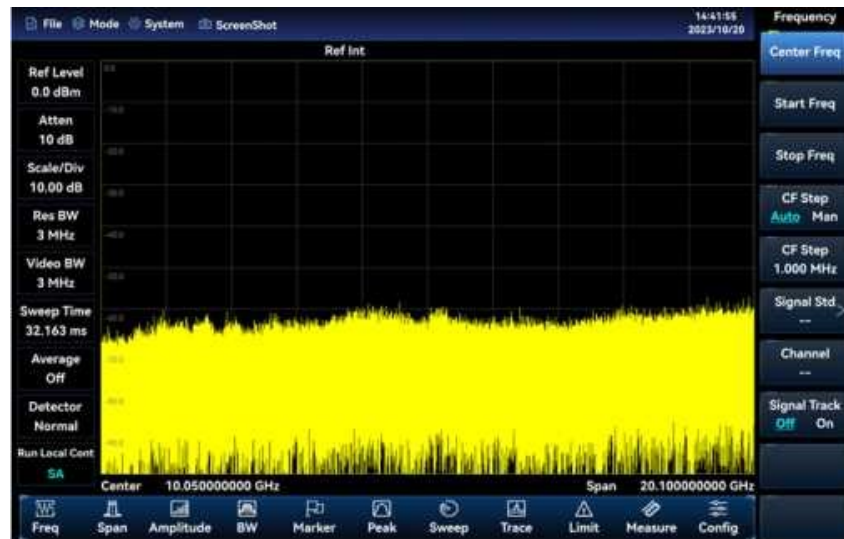
Main Features

- **Frequency measurement range**
9kHz~9/20/32/44/54 GHz, standard full-band preamplifier
- **RF performance specifications**
DANL: -163dBm/Hz (10MHz~2GHz, preamplifier ON, Typical)
SSB Phase Noise: <-113dBc/Hz@100kHz offset @1GHz carrier(Typical)
<-108dBc/Hz@100kHz offset@10GHz carrier(Typical)
TOI: +16dBm@900MHz (Typical)
Absolute Amplitude Accuracy: ±1.0dB (Typical)
- **Fast Sweep Speed**
Sweep time <33ms (span 20GHz, resolution bandwidth 3MHz)
Sweep time <4s (span 1GHz, resolution bandwidth 1kHz, Fast FFT sweep mode)
- **Multiple measurement function modes**
Including spectrum analysis, real-time spectrum (maximum BW 40MHz), interference analyzer (spectrogram, RSSI), AM/FM/PM analyzer, channel scanner, field strength, power meter, peak-power meter, IQ analyzer, EMI analyzer, phase noise meter, vector signal analyzer, time gate, etc.
- **Multiple intelligent measurement functions**
Channel power, OBW, ACPR, emission mask, C/N, harmonics and spur emissions, Tune Listen, multi-ACPR, IP3, CCDF, etc.
- **Various auxiliary test interfaces and digital interfaces**
10MHz reference input and output, zero span IF output, LAN, USB, HDMI, etc
- **Convenient and quick user operation experience**
12.1-inch capacitive touch screen, supporting multi-touch, with 6 independent markers, supporting signal tracking and peak tracking, with 3 display traces, 6 detection methods (standard, positive peak, negative peak, sampling, mean, root mean square), and supporting HDMI output.
- **Support a variety of external options and accessories**
USB CW power sensor, USB peak power sensor, EMI near field sensor, etc.

Rich Measurement Function Modes and Options

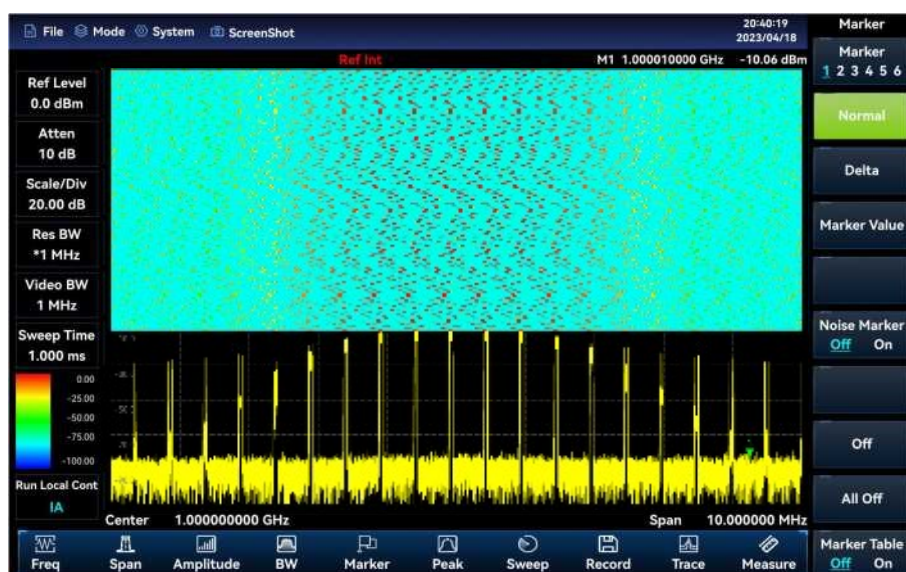
- **Spectrum Analyzer Mode**

4042 series spectrum analyzers have such test functions as Channel power, OBW, ACPR, emission mask, C/N, harmonics and spur emissions, Tune Listen, multi-ACPR, IP3, CCDF, supports noise marker and frequency counter functions, and can display 3 tracks at the same time, with different detection methods including Normal, peak, negative peak, sample, Average and RMS, supporting signal tracking and peak tracking functions.



- **Interference Analyzer (option)**

The interference analyzer option has spectrum , spectrogram and RSSI measurement. Spectrogram uses the frequency-amplitude-time three-dimensional display mode, which can conveniently observe periodic or intermittent signals. The different colors displayed in the waterfall plot reflect the strength of signal amplitude. RSSI (received signal strength indicator) is mainly used to measure the intensity change of a point frequency signal in a period of time. Both Spectrogram and RSSI measurement support the automatic storage of signals.



- Channel Scanner (option)**

The channel scanner measurement mode offers signal power measurement for multiple channels. The signal power is displayed in the form of bar graph or list, and the signal power of 20 channels can be measured at most. According to the channel setting method, it is divided into three measurement methods: channel scanner, frequency scanner, and list scanner. The bandwidth and number of channels can be set in all of the three measurement methods.

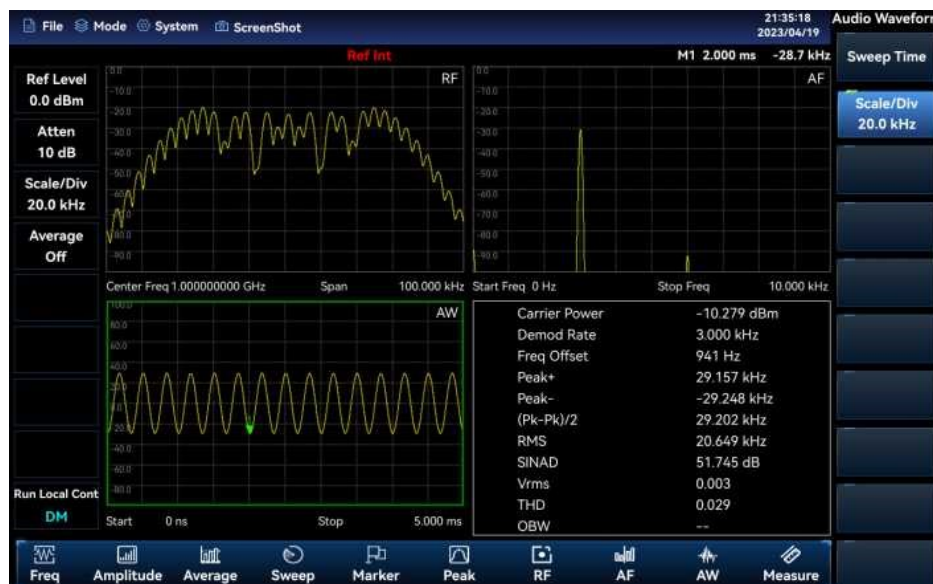


- AM/FM/PM Analyzer (option)**

AM/FM/PM Analyzer measurement mode provides the display of AM, FM and PM signal spectrum and the analysis of related parameters. The main spectrum and related parameters are measured as follows:

RF spectrum: similar to the spectrum analysis mode, displaying the spectrum of the modulated signal and measuring the occupied bandwidth. Audio spectrum: showing the spectrum of the demodulated audio signal.

Audio waveform: showing the waveform of the demodulated audio signal in the time domain. Show all: measuring and analyzing parameters of the modulated signal including carrier power, modulation rate, carrier frequency offset, modulation depth (AM), modulation frequency offset (FM), modulation phase offset (PM), signal-to-noise ratio, modulation distortion and total harmonic distortion.



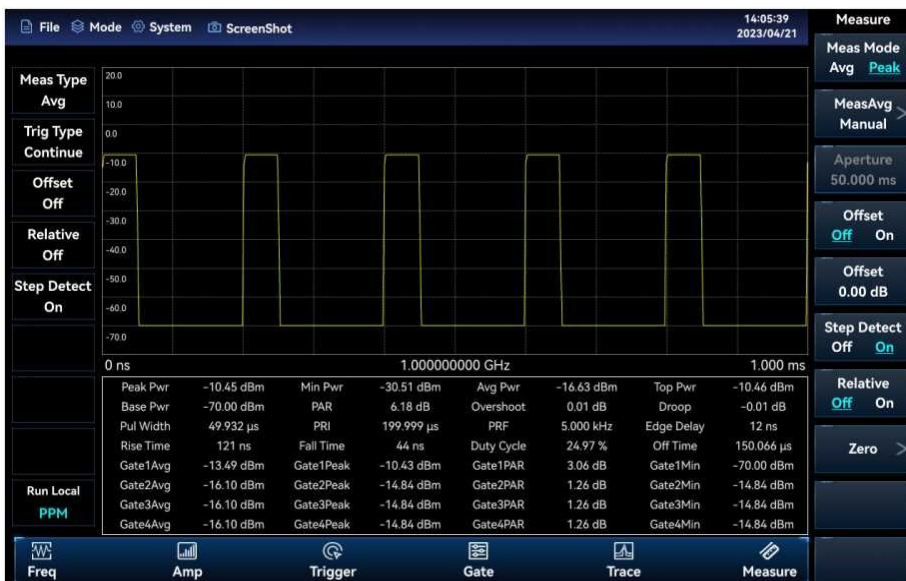
- Power Meter (option)**

The function can support Ceyear 87233 series USB CW average power sensor and 87235 series multichannel true average USB Power Sensor. USB power measurement function. It can be used to measure average power of up to 67GHz.



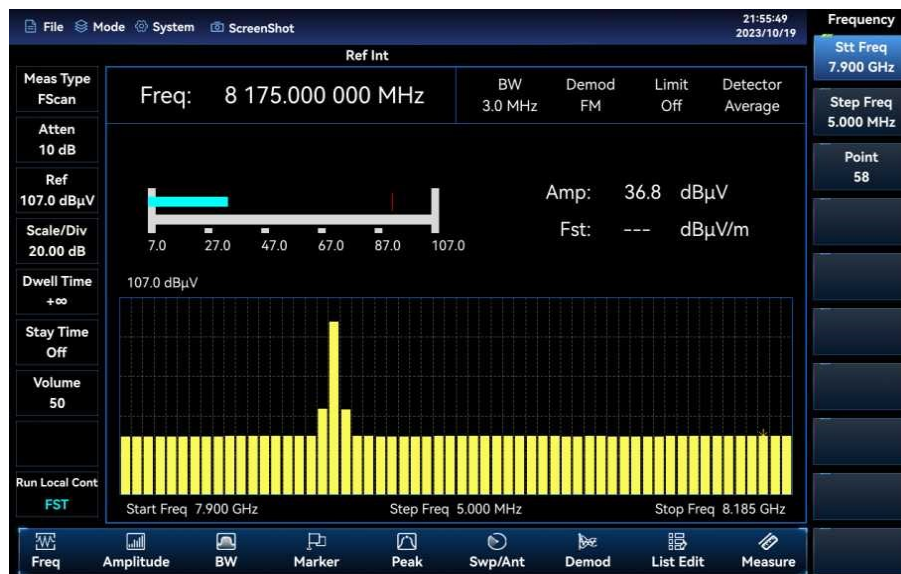
- Peak-Power Meter(option)**

By connecting to the Ceyear 87234D/E/F/L USB peak sensor via the USB interface, this function can be used to test RF/microwave signals up to 67GHz, enabling pulse power measurement in a large dynamic range.



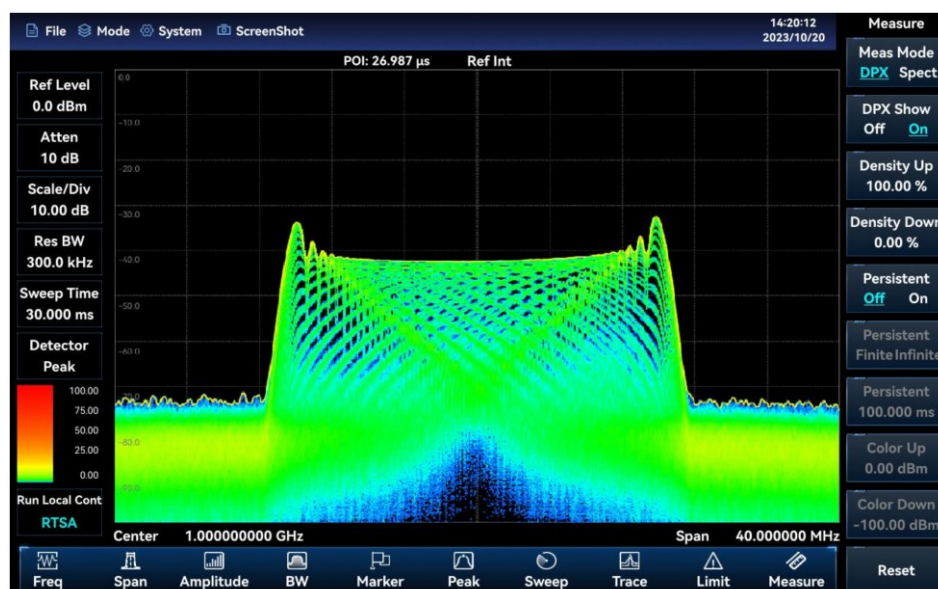
- Field Strength (option)**

Field strength measurement can be divided into three modes: PScan, FScan and MScan. Whereas, the PScan measurement can be used to observe the frequency offset, amplitude value and field strength value of the current point by setting the point frequency rate. The FScan measurement By setting the initial frequency, step frequency and sweep points, the amplitude and field strength changes in a frequency range can be observed. The MScan measurements can be used to observe amplitude values and field strength values at list frequency points by calling a pre-edited or saved list.



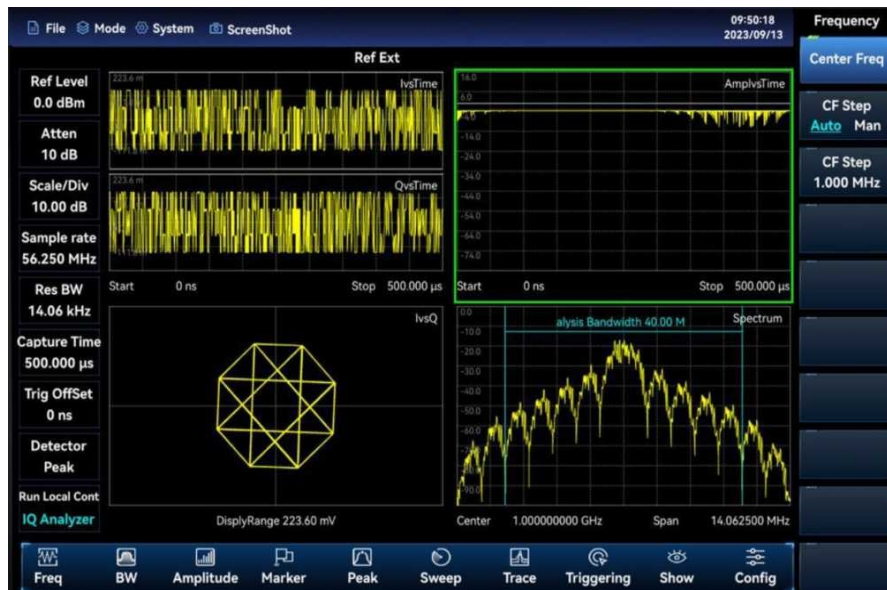
- 40MHz Real-time Spectrum Analyzer (option)**

The real-time spectrum analyzer is mainly used for the capture and analysis of transient time-varying signals and burst signals. The real-time analysis bandwidth is up to 40MHz, which can realize the digital afterglow and waterfall plot measurement function of transient signals



- IQ Analyzer (option)**

The IQ analyzer option supports the capture and display of IQ data as well as graphical display interfaces such as IQvs time, amplitude vs time, spectrogram and I vs Q.

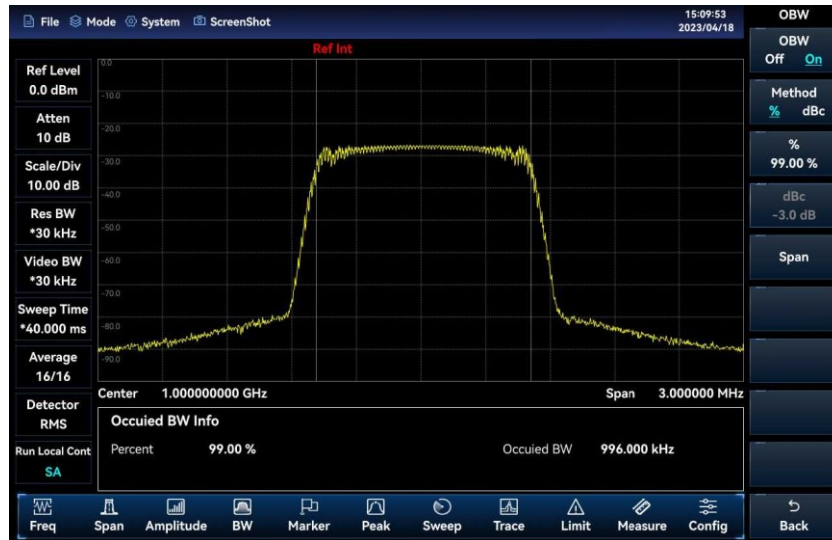


Comprehensive intelligent measurement functions

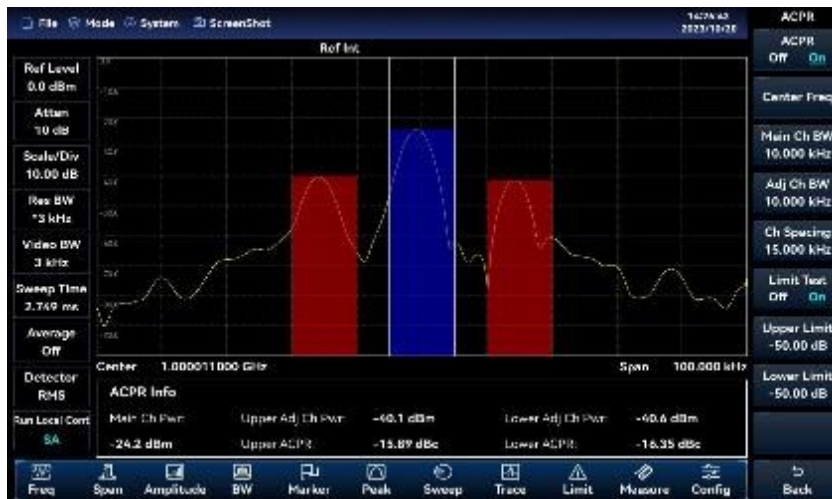
- Channel Power**



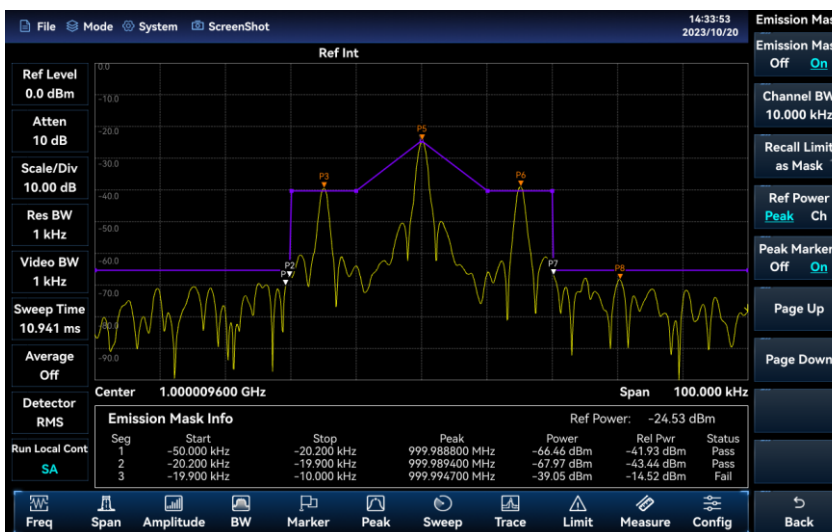
- Occupied Bandwidth (OBW)



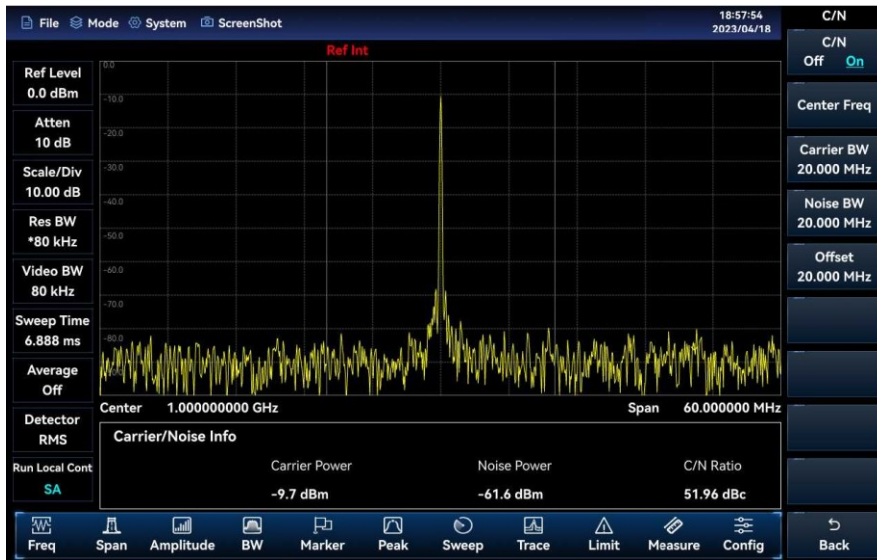
- Adjacent Channel Power Ratio (ACPR)



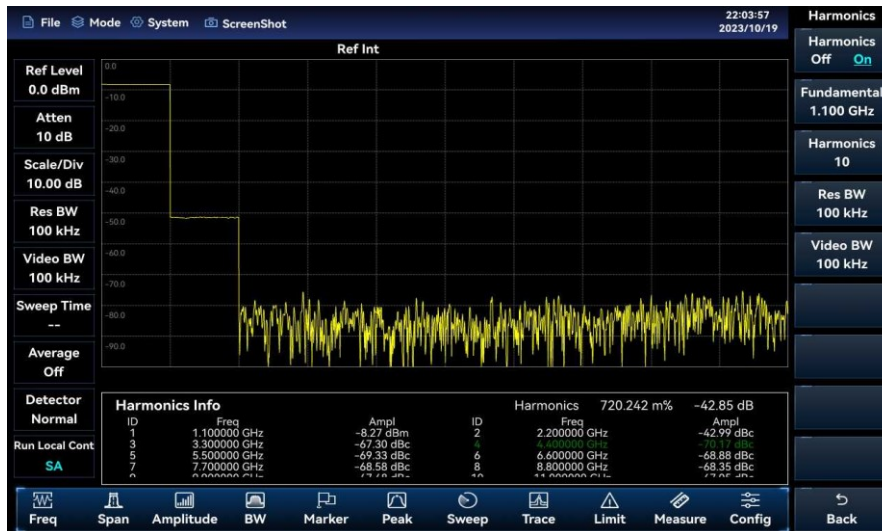
- Emission Mask



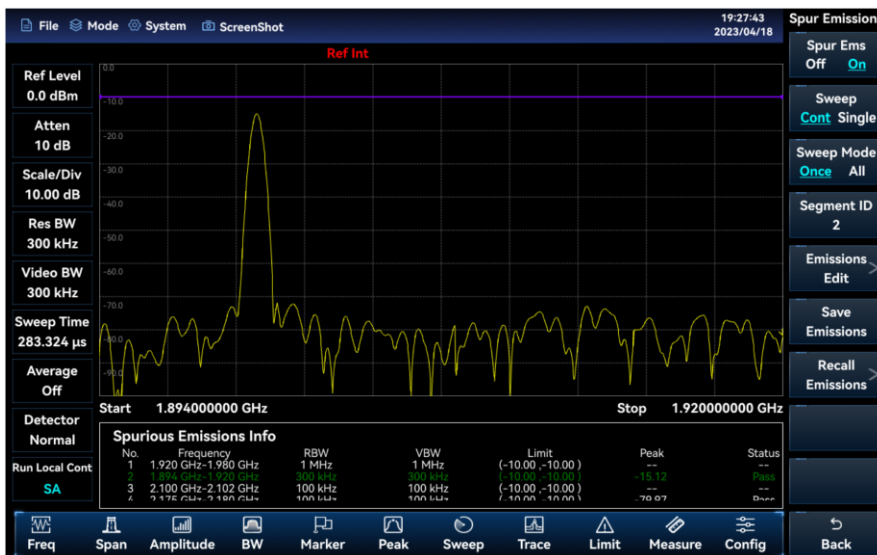
Carrier-to-Noise Ratio



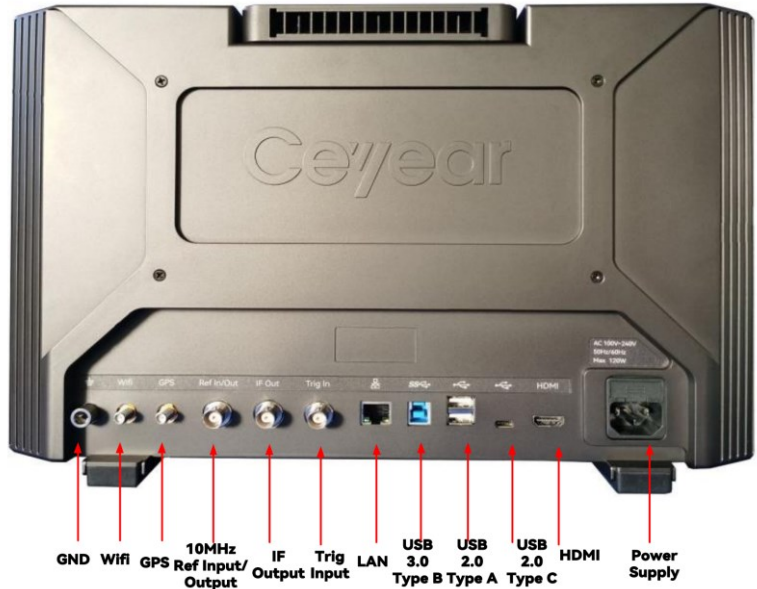
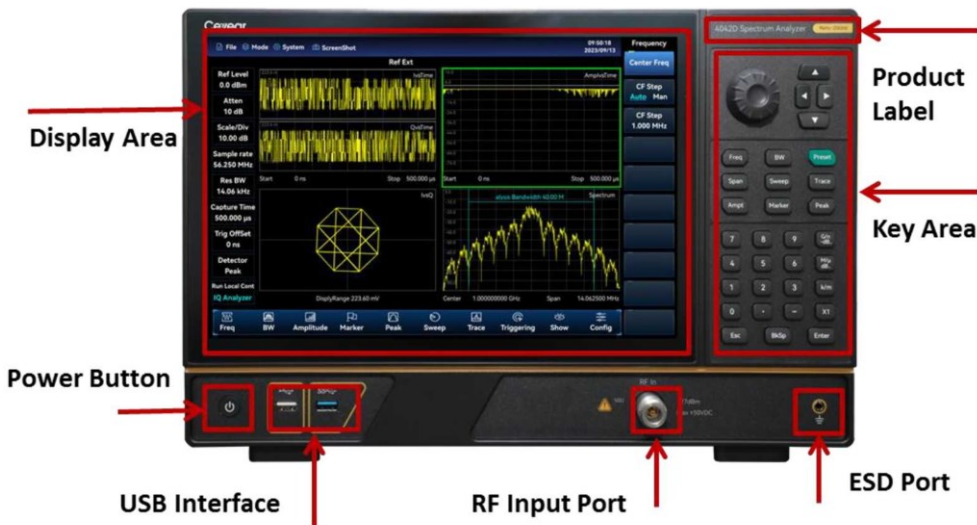
Harmonics



Spur Emissions



Overall RF and Auxiliary Interfaces



Specifications

Model	4042B/D/F/G/k
Frequency range	4042B: 9kHz~9GHz; 4042D: 9kHz~20GHz; 4042F: 9kHz~32GHz; 4042G: 9kHz~44GHz; 4042K: 9kHz~54GHz;
Frequency reference	Nominal frequency: 10MHz Aging rate: $\pm 5 \times 10^{-7}$ /year Initial frequency accuracy: $\pm 3 \times 10^{-7}$ Temperature stability: $\pm 1 \times 10^{-7}$ (0°C to +50°C, relative to 25°C $\pm 10^\circ\text{C}$) Frequency reference error: \pm (to last calibration date x aging rate + temperature stability + calibration accuracy) Note: By default, the time until the last calibration is 1 year. This indicator is guaranteed by the crystal oscillator manufacturer.
Sweep Time	Range: 1 μ s~6000s (zero span) Accuracy: $\pm 1.0\%$ (zero span)
Frequency Readout Accuracy	\pm (frequency reading x frequency reference error + 1% x span + 10% x resolution bandwidth)
Span	Range: 0Hz (zero sweep width), 10Hz - upper limit of frequency range Accuracy: $\pm 1.0\%$
RBW	Bandwidth range: 1 Hz~20MHz (1-2-3-5-8 steps)
VBW	Bandwidth range: 1 Hz~20MHz (1-2-3-5-8 steps)
SSB Phase Noise (Carrier 1GHz, +15°C~+35°C)	<-108dBc/Hz@10kHz <-110dBc/Hz@100kHz <-118dBc/Hz@1 MHz <-129dBc/Hz@10MHz
Displayed Average Noise Level (50Q load connected at input, 0dB input attenuation, average detector, RBW normalized to 1Hz, +15°C~+35°C)	4042B/D: Preamplifier ON: $\leq -161\text{dBm}$ (2MHz~2.4GHz) , $\leq -160\text{dBm}$ (2.4GHz~6GHz) , $\leq -159\text{dBm}$ (6GHz~9GHz) , $\leq -158\text{dBm}$ (9GHz~14GHz) , $\leq -156\text{dBm}$ (14GHz~20GHz) 前置放大器关闭: $\leq -142\text{dBm}$ (2MHz~2.4GHz) , $\leq -141\text{dBm}$ (2.4GHz~6GHz) , $\leq -140\text{dBm}$ (6GHz~9GHz) , $\leq -138\text{dBm}$ (9GHz~14GHz) , $\leq -138\text{dBm}$ (14GHz~20GHz)
	4042F/G/K: Preamplifier ON: $\leq -159\text{dBm}$ (2MHz~9GHz) , $\leq -156\text{dBm}$ (9GHz~14GHz) , $\leq -154\text{dBm}$ (14GHz~21GHz) , $\leq -154\text{dBm}$ (21GHz~32GHz) , $\leq -152\text{dBm}$ (32GHz~40GHz) , $\leq -148\text{dBm}$ (40GHz~44GHz) , $\leq -145\text{dBm}$ (44GHz~50GHz) , $\leq -140\text{dBm}$ (50GHz~54GHz) Preamplifier OFF: $\leq -140\text{dBm}$ (2MHz~6GHz) , $\leq -138\text{dBm}$ (6GHz~9GHz) , $\leq -136\text{dBm}$ (9GHz~14GHz) , $\leq -136\text{dBm}$ (14GHz~21GHz) , $\leq -135\text{dBm}$ (21GHz~32GHz) , $\leq -133\text{dBm}$ (32GHz~40GHz) , $\leq -130\text{dBm}$ (40GHz~44GHz) , $\leq -126\text{dBm}$ (44GHz~50GHz) , $\leq -123\text{dBm}$ (50GHz~54GHz)

Second Harmonic Distortion (Attenuation 0dB, -30 dBm input, preamplifier OFF)	$\leq -70\text{dBc}$ (50MHz~27GHz)
TOI (-15 dBm dual tone signal, 100 kHz spacing, 0dB attenuation, preamplifier OFF)	$\geq +13\text{dBm}$ (50MHz~54GHz)
Image, Multiple and Out-of-band responses (-10dBm mixer level)	$< -65\text{dBc}$ (10MHz~7.5GHz), $< -60\text{dBc}$ (7.5GHz~10.5GHz), $< -65\text{dBc}$ (10.5GHz~54GHz)
Residual response (50 Q load connected to input port, 0 dB input attenuation)	Preamplifier ON: $\leq -110\text{dBm}$ (10MHz~3GHz), $\leq -105\text{dBm}$ (3GHz~9GHz) $\leq -103\text{dBm}$ (9GHz~12GHz), $\leq -100\text{dBm}$ (12GHz~20GHz) $\leq -95\text{dBm}$ (20GHz~54GHz) Preamplifier OFF: $\leq -90\text{dBm}$ (10MHz~20GHz), $\leq -85\text{dBm}$ (20GHz~54GHz)
Absolute Amplitude Accuracy (Frequency 10MHz~20GHz, attenuation 10dB, 0 dBm~-50 dBm, preamplifier OFF, RBW 1kHz, other parameters automatic)	$\pm 1.3\text{dB}$ (10MHz~20GHz) $\pm 1.8\text{dB}$ (20GHz~54GHz)
Input Attenuator	Attenuation range 0dB-30dB, 2dB step
Maximum Input Level	+27dBm CW (input) frequency >50 MHz, attenuation > 10dB, preamplifier OFF)
Reference Level	Range: -150 dBm ~ +30 dBm, min step 1dB Conversion error: $\pm 0.50\text{dB}$ (reference level 0 dBm~-60 dBm)
Detector Type	Normal, PosP, NegP, Smp, Avg, Rms.
Dimensions	377mm (W) x250mm (H) x119.5mm (D) (the padding block is closed, without protrusions such as handles, rotary pulse generators and adapters)
Weight	<6.5kg
Working Temperature:	0°C ~ +50°C
Storage Temperature	-40°C ~ +70°C
Electromagnetic Compatibility	Complies with relevant requirements of 3.9.1 in GJB 3947A-2009
Power Supply	100~120VAC, 50~60Hz; or 200~240VAC, 50~60Hz
Power Consumption	<55W
Test Interface	4042B/D RFIN: Type N (female) 4042F/G/KRFI: 2.4mm (male)
Other Interfaces	10MHz reference input/output: BNC female External trigger input interface: BNC female GPS antenna interface: SMA female (option) IF output interface output: BNC female (option) Wi-Fi antenna interface: SMA female (option)
Communication and Auxiliary Interfaces	Front panel: 1 USB3.0 A-type interface, 1 USB2.0 A-type interface Rear panel: 2 USB2.0 A-type interfaces, 1 USB3.0 B-type interface (reserved) 1 USB 2.0 C-type interface, LAN interface: standard RJ-45 type 1 HDMI interface

Ordering Information

● Main Unit:

No.	Model	Name	Frequency
1	4042B	Spectrum Analyzer	9kHz ~ 9GHz
2	4042D	Spectrum Analyzer	9kHz ~ 20GHz
3	4042F	Spectrum Analyzer	9kHz ~ 32GHz
4	4042G	Spectrum Analyzer	9kHz ~ 44GHz
5	4042K	Spectrum Analyzer	9kHz ~ 54GHz

● Standard Accessories:

No.	Name	Remarks
1	Power cord	
2	Quick Start Manual	Simple user manual for quick start
3	Product quality certificate	

● Options:

No.	Option	Name	Functions
1	4042-001	English options	English signs, English configuration software, English quick start guide.
2	4042-002	User' Manual (Chinese version)	User' Manual (Chinese version).
3	4042-004	Programming Manual (Chinese version)	Programming Manual (Chinese version).
4	4042-S01	Power Meter	It provides power measurement function, which can be used with an external USB power sensor, such as 87333 series and 87235 series.
5	4042-S02	Peak-Power Meter	It provides peak power measurement, which can be used with the 87234D/E/F/L USB peak/average power meter.
6	4042-S03	Interference Analyzer	It provides waterfall plot, RSSI measurement and other functions.
7	4042-S04	Channel Scanner	It can measure the signal power of multiple channels.
8	4042-S05	Field Strength	It can be used to measure the radiation strength of the electric field of the device under test.
9	4042-S08	AM/FM/PM Analyzer	It can realize the analysis and measurement of AM, FM and PM modulation signals.
10	4042-S09	Zero Span IF Output	It outputs analog IF signal at zero span.
11	4042-S10	Time Gated	It is used for testing the time division interference signal.
12	4042-S12	40MHz Real-Time Spectrum Analyzer	It provides 40MHz BW real-time spectrum analysis.
13	4042-S13	List Sweep	It enables continuous sweeping measurement of multiple frequency bands.
14	4042-S14	IQ Analyzer	Storage and display of IQ data.
15	4042-S18	Phase Noise Meter	SSB phase noise curves and single-point phase noise meter.
16	4042-S19	EMI analysis	The EMI pre-compliance measurement function provides detection methods such as quasi-peak detection, CISPR average value detection, and CISPR RMS detection. It can use functions such as pre-scan, final measurement, EMI scan, and spot frequency scan to complete the prediction of electromagnetic interference.
17	4042-S20	Vector Signal Analyzer	It provides flexible demodulation functions of multiple single-carrier digital modulation signals. It can provide spectrum diagrams, vector charts, constellation diagrams, eye diagrams, etc., to analyze the characteristics of the modulation signals.
18	4042-H01	GPS/BeiDou Function	GPS or BeiDou positioning function through an external antenna.
19	4042-H02	Wi-Fi Communication	Wireless data transfer communication with external devices

No.	Option	Name	Functions
20	4042-H03	4042 Safety Case	Safety transport case.
21	4042-H04	Shelf Kit	Standard 19-inch shelf kit for device integration testing.
22	4025-H36	PBS1 Near-field Probe	The highest working frequency is 9GHz, including one electric field probe and magnetic field probes of 6mm, 12mm, 25mm and 50mm, one each, and the interface type is SMB(m).
23	87233C	USB CW Power Sensor	8kHz~12GHz, -70dBm~+20dBm
24	87233D	USB CW Power Sensor	10MHz~18GHz, -70dBm~+20dBm
25	87233E	USB CW Power Sensor	50MHz~26.5GHz, -70dBm~+20dBm
26	87233F	USB CW Power Sensor	50MHz~40GHz, -70dBm~+20dBm
27	87233L	USB CW Power Sensor	50MHz~67GHz, -55dBm~+20dBm
28	87235B	USB Average Power Sensor	8kHz – 8GHz, -70dBm – +26dBm
29	87235C	USB Average Power Sensor	10MHz ~ 8GHz, -60dBm ~ +23dBm
30	87235D	USB Average Power Sensor	10MHz ~ 18GHz, -70dBm ~ +26dBm
31	87235F	USB Average Power Sensor	10MHz ~ 33GHz, -65dBm ~ +26dBm
32	87235FA	USB Average Power Sensor	10MHz ~ 40GHz, -65dBm ~ +26dBm
33	87235H	USB Average Power Sensor	10MHz ~ 50GHz, -65dBm ~ +23dBm
34	87235L	USB Average Power Sensor	50MHz ~ 67GHz, -60dBm ~ +23dBm
35	87234D	USB Peak/Average Power Sensor	50MHz ~ 18GHz, N(m).
36	87234E	USB Peak/Average Power Sensor	50MHz ~ 26.5GHz, 3.5mm(m).
37	87234F	USB Peak/Average Power Sensor	50MHz ~ 40GHz, 2.4mm(m).
38	87234L	USB Peak/Average Power Sensor	500MHz ~ 67GHz, 1.85mm(m).
39	4042B-JL	Metrological Service	It provides metrological calibration services and metrological reports.
40	4042D-JL	Metrological Service	
41	4042F-JL	Metrological Service	
42	4042G-JL	Metrological Service	
43	4042K-JL	Metrological Service	
44	4042B-EWT1	One Year Extension Warranty	Beyond the warranty period, the warranty is extended for 1 year, and the two-year extended warranty is optional for 2 items, and so on.
45	4042D-EWT1	One Year Extension Warranty	
46	4042F-EWT1	One Year Extension Warranty	
47	4042G-EWT1	One Year Extension Warranty	
48	4042K-EWT1	One Year Extension Warranty	



Ceyear

Focus on Measurement
Explore the Future

Ceyear Technologies Co., Ltd

Add: No. 98, Xiangjiang Road, Qingdao (266555), China

Tel: +86 532 86896691

<https://www.ceyear.com>

Email: sales@ceyear.com; zhaohao@ceyear.com