Quality&**Precise**

MAXWELLON 4042

9kHz~ 9GHz/20GHz

Signal/Spectrum Analyzers

2023

Maxwellon

The 4042 series Spectrum analyzer is a basic Spectrum analyzer newly launched by Maxwellon, and its frequency measurement range covers 9kHz~20GHz. 4042 series Spectrum analyzer adopts a portable structure with a weight of less than 6.5kg, which has multiple advantages such as wide working frequency band, high performance indicators, fast sweep speed, multiple test functions, portability and easy operation.

4042 series Spectrum analyzer has multiple measurement function modes such as real-time spectrum analysis, interference analysis, channel sweep, field strength measurement, USB continuous wave and peak power measurement, analog demodulation analysis, IQ analysis, and intelligent measurement functions such as channel power, occupied bandwidth, adjacent channel power, spectrum transmission module, carrier noise ratio, harmonic distortion, stray transmission module, and supports digital interfaces such as LAN, USB, HDMI, etc. The 12.1 inch Multi-touch capacitive touch screen adopted by 4042 brings a better interactive experience. The product can be used in the R&D and testing process of industrial electronic products, communication testing, satellite communication, Microwave transmission, scientific research and teaching and many other fields.

Key Feature

Frequency Range:

9kHz~9GHz/20GHz, standard full band preamplifier

Excellent Spectral Purity:

Display Average Noise Level: -163 dBm/Hz (10 MHz ~ 2 GHz, preamplifier on, Typ.)

SSB Phase Noise:-113dBc/Hz@100kHz Frequency offset@1GHz carrier (Typ.);-108dBc/Hz@100kHz Frequency offset@10GHz carrier (Typ.)

Third-Order Intermodulation Distortion: +16dBm@900MHz (Typ.)

Total Level Uncertainty:±1.0dB(Typ.)

Fast Sweep Speed:

Sweep time <33ms (sweep width 20 GHz, resolution bandwidth 3MHz)

Sweep time <4s (sweep width 1 GHz, resolution bandwidth 1 kHz, Fast FFT Sweep Mode)

Multiple Measurement Function Modes:

Multiple Measurement Function Modes: Spectrum Analysis, Interference Analysis (Waterfall, RSSI), Channel Sweep, Field Strength Measurement, USB Continuous Wave Power Measurement, USB Peak Power Measurement, Analog Demodulation Analysis (AM, FM, PM), Real-Time Spectrum Analysis (Maximum Analysis Bandwidth 40mhz), IQ Analysis, Time Gate Sweep, etc

Multiple Intelligent Measurement Functions:

Channel Power, Occupied Bandwidth, Adjacent Channel Power, Spectrum Emission Mask, Carrier To Noise Ratio, Harmonic Distortion, Stray Emission Mask, etc

Various Auxiliary Testing Interfaces and Digital Interfaces:

10MHz reference input/output, zero sweep width IF output, LAN, USB, HDMI, etc

Convenient and Fast User Operation Experience:

12.1 inch capacitive touch screen, supporting Multi-touch, with 6 independent marks, supporting signal tracking and peak tracking, with 3 display traces, 6 detection modes (standard, positive peak, negative peak, sampling, mean, root mean square), and supporting HDMI output

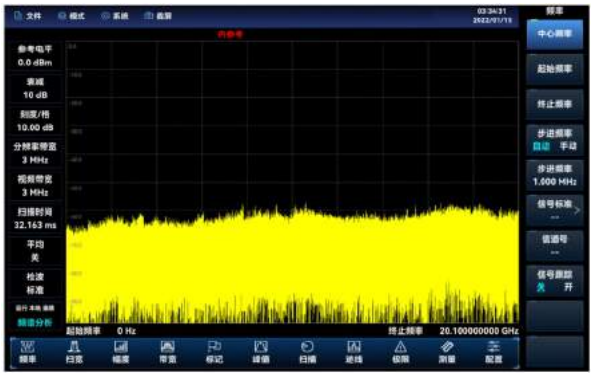
Support Multiple External Options And Accessories:

USB continuous wave power probe, USB peak power probe, E-MI near-field probe, etc.

Abundant Measurement Function Modes And Options

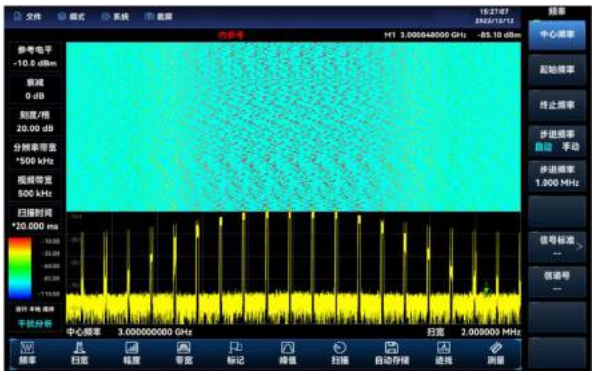
Spectrum Analysis

The 4042 series Spectrum analyzer has test functions such as Channel Power, Occupied Bandwidth, Adjacent Channel Power, Spectrum Emission Mask, Carrier To Noise Ratio, Audio Demodulation, Harmonic Distortion, Spectrum Emission Mask, Multi Carrier Adjacent Channel Power, etc. It supports noise marking and frequency counter functions, can display three traces at the same time, and has different detection methods such as standard, positive peak, negative peak, sampling, mean and root mean square, Support signal tracking and peak tracking functions.



Interference Analysis (Option)

The interference analysis option has functions such as spectrum measurement, waterfall plot, and RSSI measurement. The waterfall plot uses a three-dimensional display of frequency, amplitude, and time to conveniently observe periodic or intermittent signals. The waterfall plot displays different colors to reflect the strength of signal amplitude. RSSI (received signal strength indicator) is mainly used to measure the intensity change of a point frequency signal over a period of time, Both waterfall plot and RSSI measurement support automatic signal storage function.



Channel Sweep (Option)

The channel sweep measurement mode provides measurement of signal power for multiple channels. The signal power is displayed in the form of a Bar chart or a list, and the signal power of up to 20 channels can be measured. According to the method of setting channels, there are three measurement methods: channel sweep, frequency sweep, and list sweep. All three measurement methods can set the bandwidth and number of channels.

Analog Demodulation Analysis (Option)

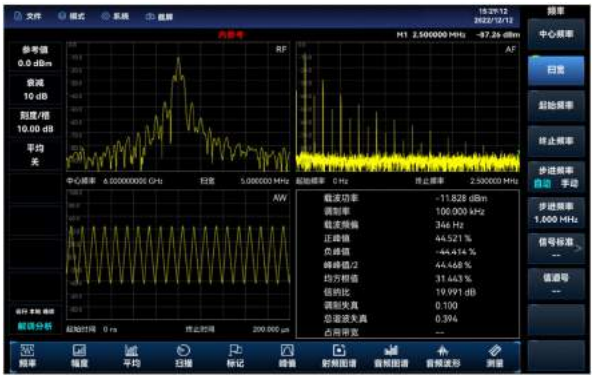
Demodulation analysis measurement mode provides display of AM, FM, and PM modulation signal spectra and analysis of related parameters. The main spectra and related parameter measurements are as follows:

RF Spectrum: Similar to spectrum analysis mode, it displays the spectrum of modulated signals and can be used for bandwidth measurement.

Audio Spectrum: Display the spectrum of the demodulated audio signal.

Audio Waveform: Display the waveform of the demodulated audio signal in the time domain.

Parameter Analysis: Measure and analyze the Carrier Power, Modulation Rate, Carrier Frequency Offset, Modulation Depth (AM), Modulation Frequency Offset (FM), Modulation Phase Offset (PM), SNR, Modulation Distortion, Total Harmonic Distortion and other parameters of the modulated signal.

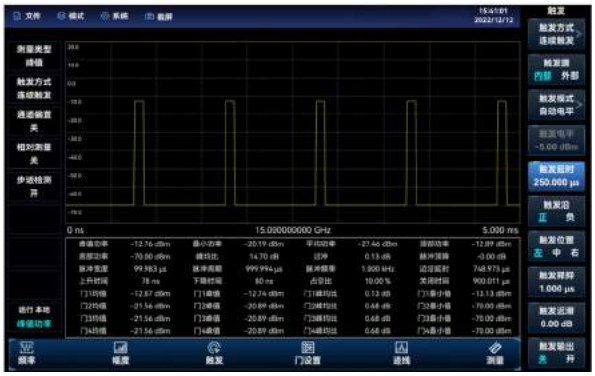


USB Power Measurement (Option)

The USB power measurement function can measure continuous wave signal power up to 40GHz through the external USB power probe of the 87230/87231/84232/87233 series of the Maxwellon.

USB Peak Power Measurement (Option)

The 4042 spectrum analyzer is connected to the 87234 D/E/F/L USB peak power probe of Maxwellon via the USB interface, which can test radio frequency microwave signals up to 67GHz and achieve Pulsed power measurement in a large dynamic range.

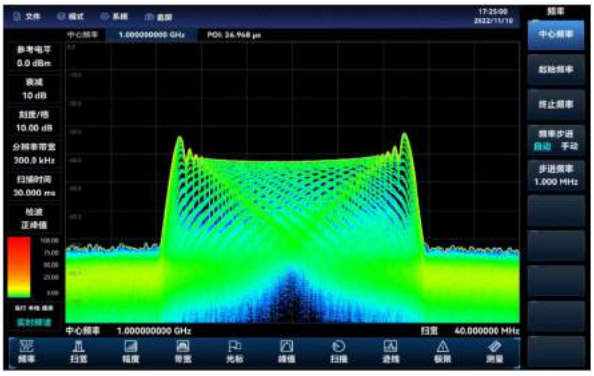


Field Strength Measurement (Option)

Field strength measurement can be divided into three modes: point frequency measurement, frequency sweep measurement, and list sweep measurement. The point frequency measurement observes the frequency deviation, amplitude value, and field strength value of the current point by setting the point frequency; Frequency sweep measurement observes the amplitude and field strength changes within a frequency range by setting the starting frequency, step frequency, and number of sweep points; List sweep measurement observes the amplitude and field strength values of frequency points in the list by calling pre edited or saved lists.

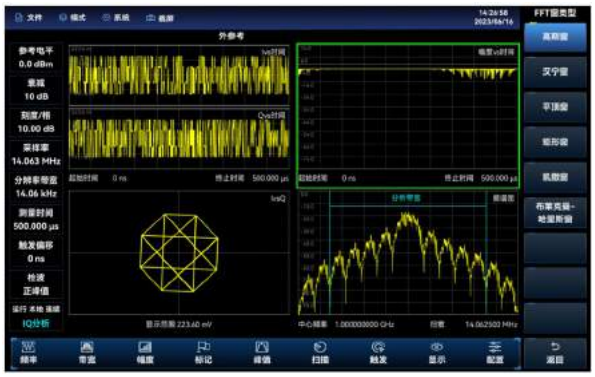
40MHz Bandwidth Real-Time Spectrum Analysis (Option)

The real-time spectrum analysis function of 4042 is mainly used to capture and analyze transient time-varying signals and burst signals. The maximum real-time analysis bandwidth is 40MHz, which can realize the digital afterglow and waterfall map measurement function of transient signals.



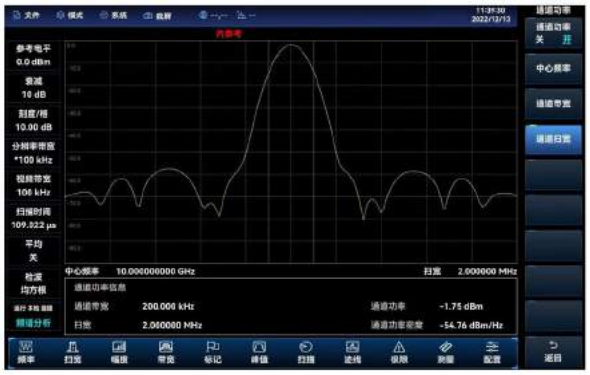
IQ Analysis (Option)

The IQ analysis option supports the capture and display of IQ data, and can support graphical display interfaces such as IQ vs time, amplitude vs time, spectrum, and IvsQ.

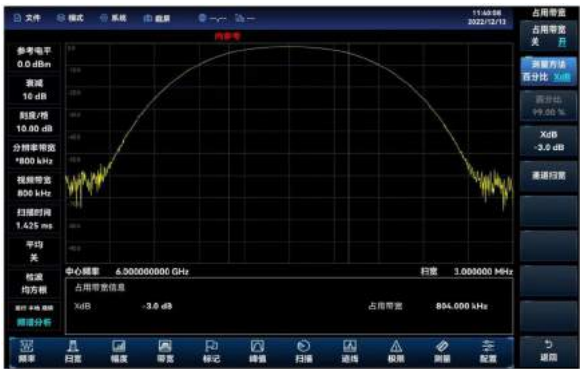


Comprehensive Intelligent Measurement Functions

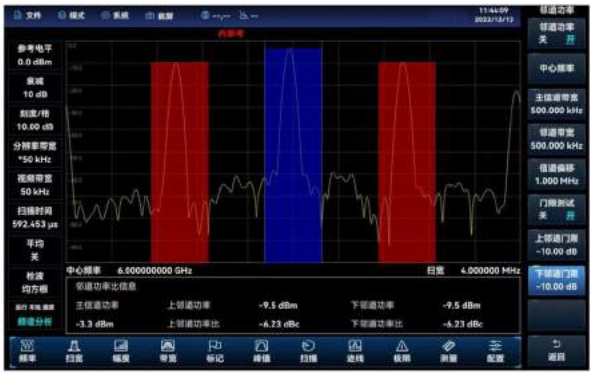
Channel Power



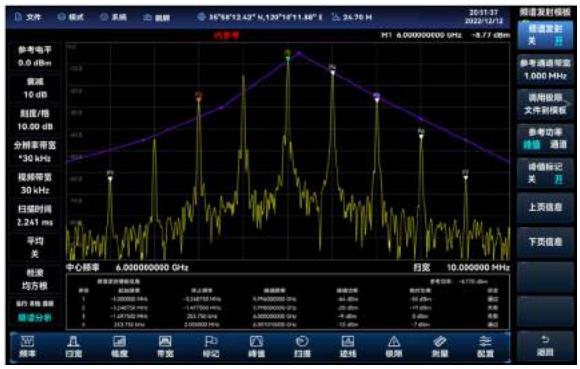
Occupied Bandwidth



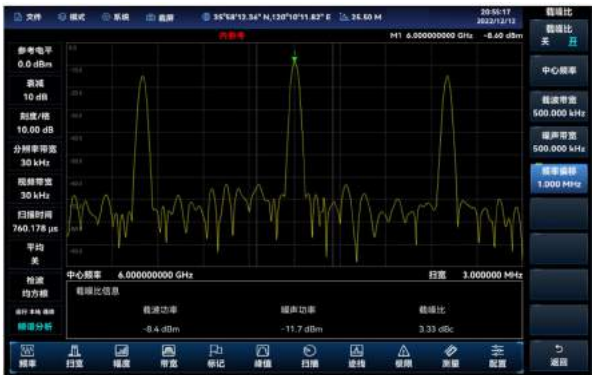
Adjacent Channel Power



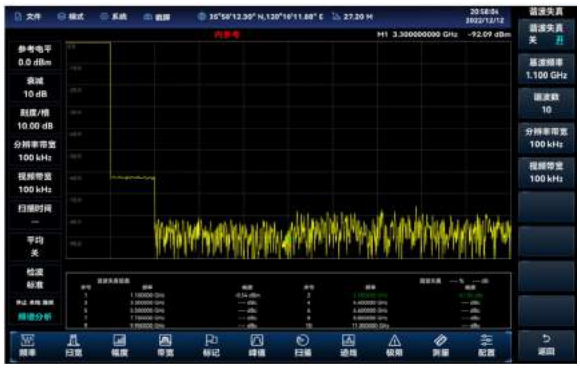
Spectrum Emission Mask



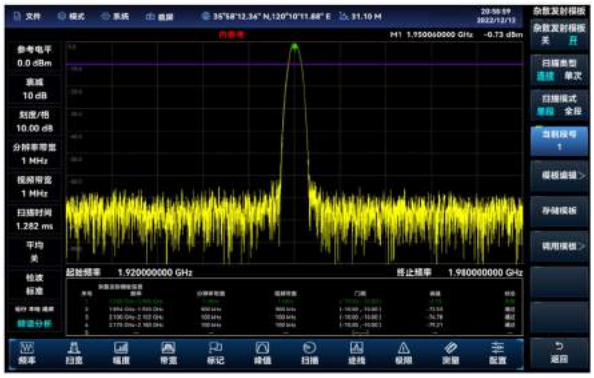
Carrier to Noise Ratio(CNR)



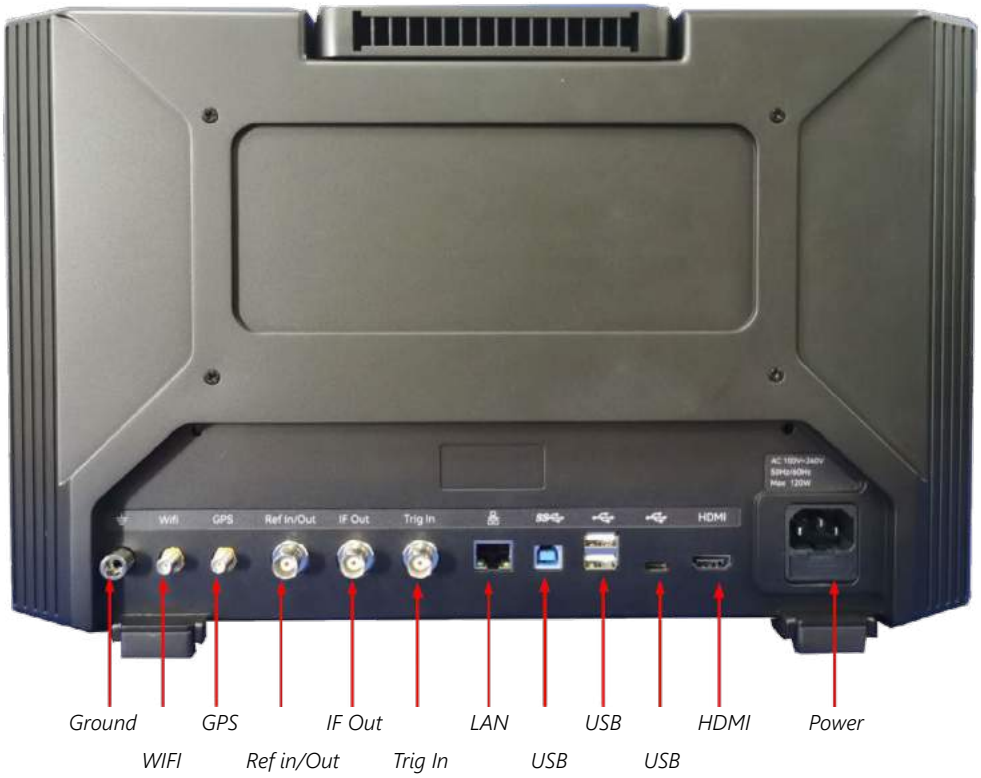
Harmonic Distortion



Spurious Emission Mask



Multiple RF and Auxiliary Testing Interfaces



Specification

Frequency Range	4042B:9kHz~9GHz 4042D:9kHz~20GHz	
Frequency Reference	Nominal Frequency: 10MHz Aging Rate: ±5×10^{-7}/year Initial Frequency Accuracy:±3×10^{-7} Temperature Stability: ±1×10^{-7}(-20℃ +55℃) Frequency Reference Error=± (Until the last calibration date × Aging rate+temperature stability+calibration accuracy) ***Note:** The default calibration time until the last calibration is 1 year, and this indicator is guaranteed by the crystal oscillator manufacturer*	
Sweep Time	Range: 1μs~6000s(zero sweep width) Accuracy: ± 1.0% (zero sweep width)	
Frequency Reading Accuracy	±(Frequency Reading × Frequency Reference Error+1% × Sweep Width+10% × Resolution Bandwidth)	
Sweep Width	Range: 0Hz (zero sweep width), 10Hz~20GHz Accuracy: ± 1.0%	
Resolution Bandwidth	Bandwidth Range: 1Hz-20MHz(in steps of 1-2-3-5-8)	
Video Bandwidth	Bandwidth Range: 1Hz-20MHz(in steps of 1-2-3-5-8)	
SSB Phase Noise (Carrier 1GHz,+15℃ to+35℃)	≤-108dBc/Hz@10kHz ≤-110dBc/Hz@100kHz ≤-118dBc/Hz@1MHz ≤-129dBc/Hz@10MHz	
DANL (Input terminal connected to 50 Ω load, 0dB input attenuation, mean detection, resolution bandwidth normalized to 1Hz,+15℃ -+35℃)	Preamplifier On: ≤-161dBm(2MHz~2.4GHz) ≤-160dBm(2.4GHz~6GHz) ≤-159dBm(6GHz~9GHz) ≤-158dBm(9GHz~14GHz) ≤-156dBm(14GHz~20GHz)	Preamplifier Off: ≤-142dBm(2MHz~2.4GHz) ≤-141dBm(2.4GHz~6GHz) ≤-140dBm(6GHz~9GHz) ≤-138dBm(9GHz~14GHz) ≤-138dBm(14GHz~20GHz)
Second Harmonic Distortion (Attenuation 0dB, -30dBm input, preamplifier off)	≤-70dBc(50MHz~10GHz)	
Third-Order Intermodulation Distortion (-15dBm dual tone signal, 100kHz interval, 0dB attenuation, preamplifier off)	≥+13dBm(50MHz~20GHz)	
Mirror, Multiple, and Out of Band Response (-10dBm mixer level)	<-65dBc(10MHz~7.5GHz) <-60dBc(7.5GHz~10.5GHz) <-65dBc(10.5GHz~20GHz)	
Residual Response (RF input terminal connected to 50 Ω load, 0dB input attenuation)	Preamplifier On: ≤-110dBm (10MHz~3GHz) ≤-105dBm(3GHz~9GHz) ≤-103dBm(9GHz~12GHz) ≤-100dBm(12GHz~20GHz)	Preamplifier Off: ≤-90dBm(10MHz~20GHz)
Total Level Uncertainty (Frequency 10MHz~20GHz, attenuation 10dB, 0dBm~-50dBm, preamplifier off, resolution bandwidth 1kHz, other parameters automatic)	±1.30dB(working temperature:+15℃ ~+35℃)	
Input Attenuator	Attenuation range 0-30dB, 2dB step	
Max. Safe Input Level	+27dBm continuous wave(input frequency ≥ 50MHz, ≥ 10dB attenuation, preamplifier off)	
Reference Level	Range: -150dBm~+30dBm, Min. 1dB step Conversion Error: ± 0.50dB (reference level 0dBm~-60dBm)	
Detection Mode	Standard, Positive Peak, Negative Peak, Sampling, Mean, Root Mean Square	
Dimensions (W×H×D)	377mm × 250mm × 119.5mm (with foot pads closed, excluding protrusions such as handles, rotating pulse generators, and adapters)	
Weight	≤6.5kg	

Operation Temperature	0℃ ~+50℃
Storage Temperature	-40℃ ~+70℃
EMC	Comply with the relevant requirements of item 3.9.1 of GJB 3947A-2009
Power	100-120VAC, 50-60Hz; Or 200-240VAC, 50-60Hz
Consumption	≤55W
Test Port	RF input: N-type female connector
Other Interfaces	10mhz Reference Input/Output: BNC Female External Trigger Input Interface: BNC Female GPS Antenna Interface: SMA Female (Optional) IF Output Interface: BNC Female (Optional) WiFi Antenna Interface: SMA Female (optiona)
Communication And Auxiliary Interfaces	Front Panel: USB 3.0 Type-A *1 USB 2.0 Type-A *1 Rear Panel: USB 2.0 Type-A *2 USB 3.0 Type-B(reserved) *1 USB 2.0 Type-C *1 LAN(standard RJ-45 type) *1 HDMI interface *1

Ordering Information

Model

Model	Name	Description
4042B	Spectrum/Signal Analyzers	9 kHz~9GHz
4042D	Spectrum/Signal Analyzers	9 kHz~20 GHz

Standard

No.	Name	Description
1	Power Cord Components	Standard three core power cord
2	Qualification Certificate	/

Options

Option Model	Name	Description
4042-002	Chinese version of user manual	Chinese version of user manual.
4042-004	Chinese version of programming manual	Chinese version of programming manual.
4042-S01	USB power measurement	Provide power measurement function, which needs to be used in conjunction with an external USB continuous wave power probe 87230/87231/87232/87233.
4042-S02	USB peak power measurement	Provide peak power measurement function, which needs to be used in conjunction with 87234D/E/F/L USB peak/average power meter.
4042-S03	Interference analysis	Provide waterfall plots, RSSI measurements, and other functions.
4042-S04	Channel scanning	Provide signal power measurement for multiple channels.
4042-S05	Field strength measurement	It is used to measure the electric field Radiant intensity intensity of the tested equipment.
4042-S08	Analog Demodulation Analysis	Capable of analyzing and measuring AM, FM, and PM modulated signals.
4042-S09	Zero sweep width IF output	Output analog intermediate frequency signal at zero sweep width.
4042-S10	Time Gate	Used for time division interference signal testing.
4042-S12	40MHz bandwidth real-time spectrum analysis	Provide 40MHz bandwidth real-time spectrum analysis function.
4042-S13	List Scan	Realize continuous scanning measurement of multiple frequency bands.
4042-S14	IQ analysis	Storage and display of IQ data.
4042-H03	4042 safety box	Safe transport box.
4025-H36	PBS1 near-field probe	The highest operating frequency is up to 9GHz, including one electric field probe and one 6mm, 12mm, 25mm, and 50mm magnetic field probe each. The interface type is SMB (m).
87230	USB continuous wave power probe	Frequency range: 9kHz~6GHz, interface type N (m).
87231	USB continuous wave function probe	Frequency range 10MHz~18GHz, interface type N (m).
87232	USB continuous wave function probe	The frequency range is 50MHz~26.5GHz, and the interface type is 3.5mm (m).
87233	USB continuous wave function probe	The frequency range is 50MHz~40GHz, and the interface type is 2.4mm (m).
87234D	USB peak/average power meter	Frequency range 50MHz~18GHz, interface type N (m).
87234E	USB peak/average power meter	The frequency range is 50MHz~26.5GHz, and the interface type is 3.5mm (m).
87234F	USB peak/average power meter	The frequency range is 50MHz~40GHz, and the interface type is 2.4mm (m).
87234L	USB peak/average power meter	The frequency range is 500MHz~67GHz, and the interface type is 1.85mm (m).

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