



4052 Series

Signal/Spectrum Analyzer

4052A/B/C/D/E/F/G/H

(2Hz – 4/8/13.6/18/26.5/40/45/50GHz)



Ceyear Technologies Co., Ltd

Product Overview

4052 series signal/spectrum analyzer is a new mid-range series of signal analyzers launched by Ceyear Technologies. The analyzer has excellent test dynamic range, phase noise, amplitude accuracy and measurement speed, and has rich test functions such as spectrum analysis, I/Q analysis, real-time spectrum analysis, transient analysis, vector signal analysis, pulse analysis, and audio analysis functions.



As a multifunctional general-purpose signal and spectrum analyzer, Ceyear 4052 has good expansion capability and can build a test system or carry out secondary development through a variety of digital and analog output interfaces. With the perfect match of superior performance and flexible applications, it can meet your testing needs for rapid production of signals and equipment in wireless communications, automotive electronics, low-orbit satellites, Internet of Things, aerospace and defense and other fields.

Main Features

- Coaxial frequency coverage: 2 Hz to 50 GHz
- Maximum 1.2 GHz analysis bandwidth, optional analysis bandwidth from 10 MHz to 1.2 GHz
- Excellent phase noise performance: -122 dBc/Hz at 1GHz carrier @10kHz offset
- 10 Gigabit network interface, 1.2GHz bandwidth data interface
- Full bandwidth of real-time signal collecting, recording and playback
- Powerful wireless communication, radar, satellite signal analysis function

First-class Spectrum Performance and Characteristics

Ceyear 4052 has excellent test dynamic range, phase noise, amplitude accuracy and fast test speed.

Ultra-wide Frequency Coverage

The measurement frequency range ranges from 2Hz to 50GHz, with 8 optional frequency band configurations, meeting the test requirements from low frequency to millimeter wave requirements.

Outstanding DANL Specification

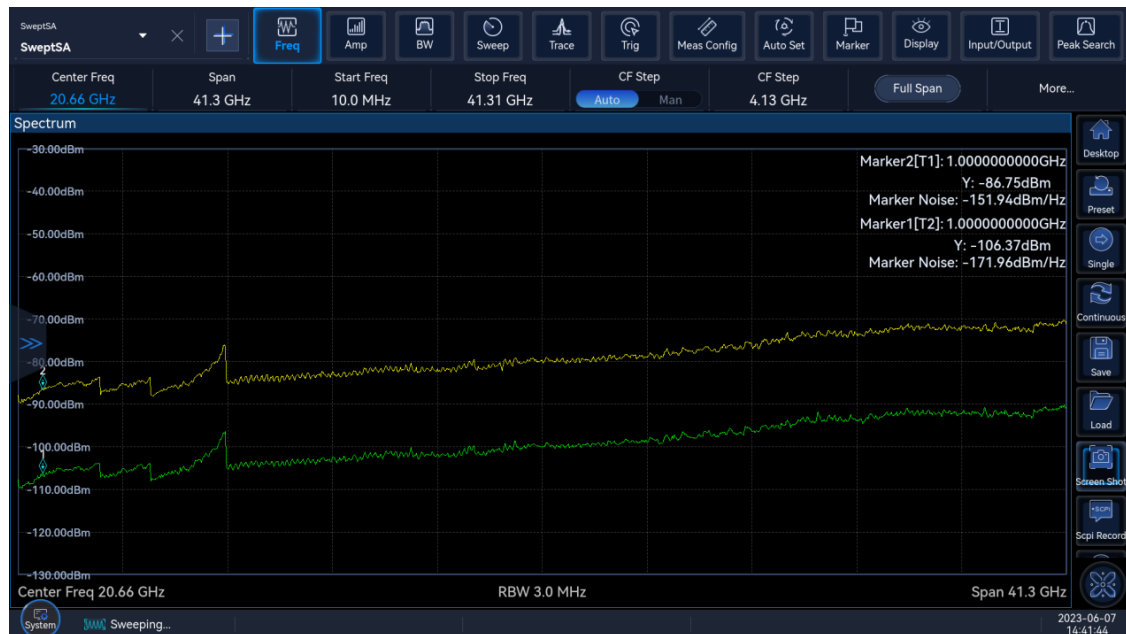
The displayed average noise level at 1GHz is -154dBm/Hz, it can reach -165dBm/Hz after configuring the preamplifier, and it can reach -172dBm/Hz after the noise cancellation function is turned on. (All are typical.)

Excellent Phase Noise Performance

With excellent phase noise performance, it can meet the extreme requirements of users in radar and communication signal measurement. Under the condition of 1GHz carrier and 10kHz frequency offset, the phase noise is better than -122dBc/Hz.

High Precision Amplitude Measurement Error

With excellent amplitude measurement accuracy, the signal amplitude measurement accuracy in the frequency band below 8GHz is better than ± 0.4 dB.



DANL Specification with Pre-amplifier ON and OFF

Comprehensive Spectrum Analysis Capabilities

The Ceyear 4052 series signal/spectrum analyzers offer a wide range of spectrum parameter test functions, providing more comprehensive and detailed analysis results.

Supports both frequency sweep and FFT sweep types.

The number of sweep points can be selected from 101 to 120,001, with a maximum sweep time of 16,000 seconds and a minimum zero-span sweep time of 1 microsecond.

Comprehensive Trajectory and Detection Methods

Supports six trace configurations, 12 marker functions, six detection methods, and three averaging types. It features a wide range of marker measurement functions, including NdB marker, noise marker, bandwidth power, bandwidth density, and noise power ratio. It also supports trace statistics, automatic trace saving and recall, and time-gated measurement.

Supports waterfall chart display of historical traces

You can save 10,000 frames of waterfall chart traces, clearly showing the changing patterns of the signal spectrum.

One-click power measurement suite

Provides test functions such as occupied bandwidth, adjacent/channel power, power statistics, burst power, harmonic distortion, third-order intermodulation, spurious emissions, and spectrum emission mask.



Adjacent Channel Power Measurement Screen

1.2GHz Analysis Bandwidth

Ceyear 4052 has an instantaneous analysis bandwidth of 1.2GHz, and provides 6 options from 10MHz (standard) to 1.2GHz (optional) to meet the application requirements of different test scenarios.

Multiple Analysis Bandwidth Configuration Options

Provide a total of 6 bandwidth configuration options of 10MHz/ 40MHz/ 200MHz/ 400MHz/ 600MHz/ 1.2GHz to meet flexible configuration in different test application scenarios such as broadband radar, 5G NR, and WLAN.

Superior Spurious Free Dynamic Range

The spurious-free dynamic range under the 200MHz analysis bandwidth is -75dBc, and the spurious-free dynamic range under the 1.2GHz analysis bandwidth is -65dBc.



1.2GHz Analysis Bandwidth Measurement

Comprehensive wireless communication protocol analysis capabilities

The mobile communication protocol analysis option of Ceyear 4052 can quickly and intuitively test the signal characteristics of various wireless communication standards such as 5G NR, LTE, NB-IoT, WCDMA, and GSM.

5G NR Signal Analysis

The 5G NR measurement function can perform in-band demodulation analysis of 5G NR uplink and downlink signals of 3GPP Rel-15, Rel-16, Rel-17, Rel-18, supports FDD and TDD duplex modes, supports QPSK to 1024QAM modulation formats, supports Test Model and custom Parameter setting, support to provide measurement results such as error vector magnitude (EVM), frequency error and power of different channels and signals, with constellation diagram, error summary table, resource allocation and other display maps.



5G NR Signal Analysis Measurement

LTE Signal Analysis

The LTE signal analysis function can perform modulation analysis on both uplink and downlink signals, supporting both FDD and TDD duplex modes, and modulation schemes from QPSK to 256QAM. It supports one-click E-TM testing and flexible configuration analysis with customizable parameters. It displays measurement results such as error vector magnitude (EVM), frequency error, and power for different modulation schemes, physical channels, and physical signals. It provides various views including constellation diagrams, result summary tables, and EVM vs carrier.



LTE Signal Analysis

OFDM Signal Analysis

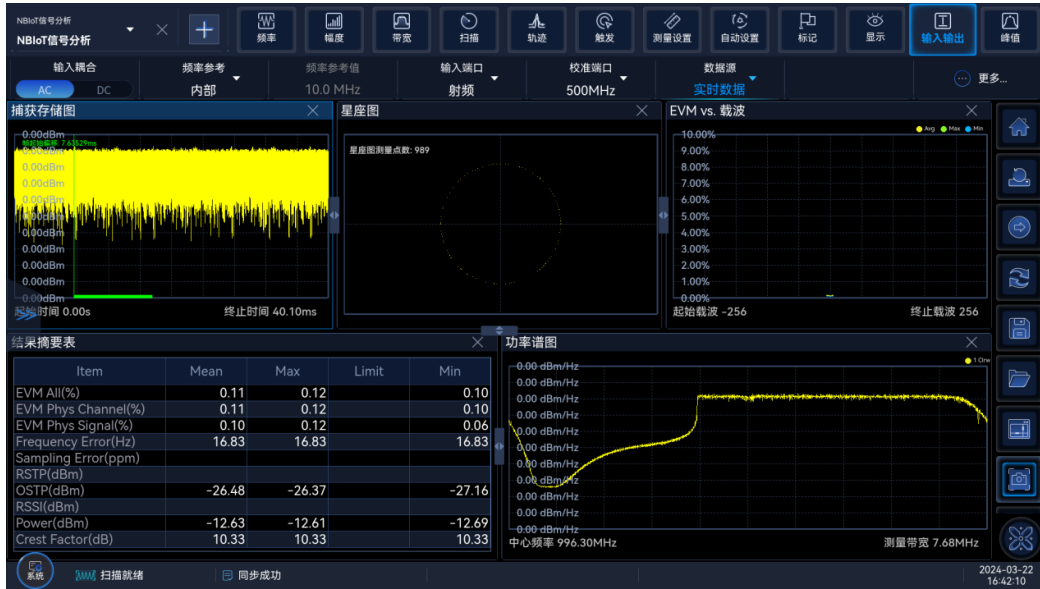
The OFDM signal analysis function can perform modulation analysis on custom OFDM signals, supporting flexible configuration of multiple parameters such as preamble, pilot, CP, subcarriers, and symbol count. It supports various modulation schemes from BPSK to 1024QAM and provides views such as capture and storage, power spectral density, and constellation diagram summary table.



OFDM Measurement

NB-IoT Signal Analysis

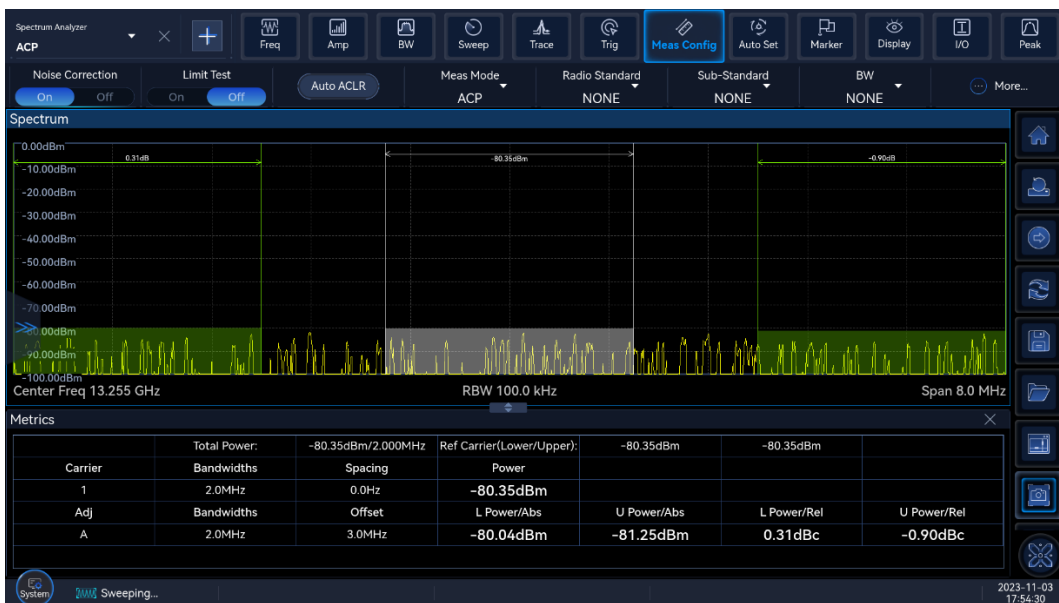
The NB-IoT signal analysis function can perform modulation analysis on narrowband IoT downlink signals based on FDD LTE standard, supporting three deployment modes: Stand alone, In band, and Guard band. It also supports one click testing of N-Test Model and flexible parameter settings, displaying measurement results such as error vector amplitude (EVM), frequency error, and power of different physical channels and signals, providing constellation diagrams, result summary tables, EVM vs carrier views, etc.



NB-IoT Signal Analysis

Analysis of Out-of-Band Characteristics of Wireless Communication Signals

In terms of out-of-band measurement, it can provide a wide range of standard and limit line one-key setting capabilities, and efficiently perform adjacent channel leakage ratio (ACLR), spectrum emission mask (SEM) and other measurements.



ACLR Measurement

Powerful Real-time Spectrum Analysis Function

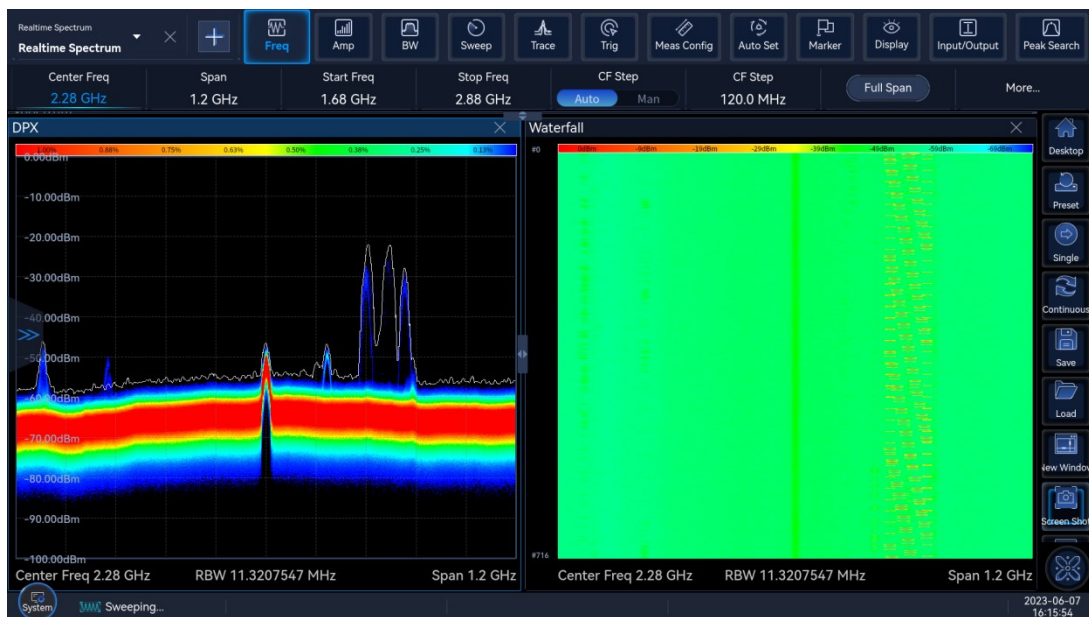
The real-time spectrum analysis function is an excellent test tool for time-varying signals such as bursting, agile, and frequency-hopping signals.

Burst Signal Capture

The real-time spectrum analysis function supports the discovery of transient and burst interference signals, the triggering and interception of transient signal data, and the time-domain and frequency-domain analysis of transient signal events.

Powerful High Bandwidth Realtime Processing Performance

The real-time analysis bandwidth is up to 400MHz (1.2GHz real-time analysis bandwidth is also available for special customization). The 100% frequency domain intercepted signal duration is less than 0.6 μ s. And the spectrum processing speed is as high as 1,950,000 times/second.



Real-time Spectrum Analysis

Flexible Transient Signal Analysis

The transient signal analysis function can analyze parameters such as IQ amplitude, phase, frequency, and power of captured data, as well as automatically analyze frequency hopping signals and frequency modulated continuous wave signals to obtain parameter results.

Frequency-hopping/FMCW Signal Analysis

Based on transient analysis options, the signal/spectrum analyzer can also be equipped with S10H frequency hopping signal analysis options and S10F FMCW (frequency modulated continuous wave) signal analysis options. Among them, the S10H option can conveniently analyze frequency jump signals and obtain characteristic parameters such as dwell time/switching time, frequency, and deviation of the signal. The S10F option can automatically test frequency modulated continuous wave signals to obtain parameters such as frequency modulation rate, bandwidth, and frequency nonlinearity.



Transparent Signal Analysis

Comprehensive Pulse Signal Analysis Function

The Ceyear 4052 series signal/spectrum analyzer is equipped with pulse signal measurement software, which can perform multi-level measurement and analysis of pulse modulation signals, and display them in various display modes such as spectrum, time spectrum, parameter table, etc., to assist in system performance measurement and problem localization.

Abundant Pulse Parameters Measurement

Support pulse signal spectrum and time-domain characteristic testing, and can simultaneously analyze and display pulse parameters such as pulse width, pulse period, pulse rise and fall time, power drop within the pulse, peak power, minimum power, top value, bottom value, pulse amplitude, pre pulse, overshoot, peak frequency error, effective frequency error value, frequency offset, etc.



Pulse Signal Analysis

Intra-pulse Characteristic Analysis

Detailed analysis of amplitude, intra pulse frequency/phase characteristics, and spectral characteristics can be performed on any selected pulse.

Analysis of Inter-pulse Characteristics

Equipped with pulse parameter trend analysis and statistical analysis functions, it can analyze the trend and distribution characteristics of inter pulse characteristic parameters.

Accurate Vector Modulation Signal Analysis Function

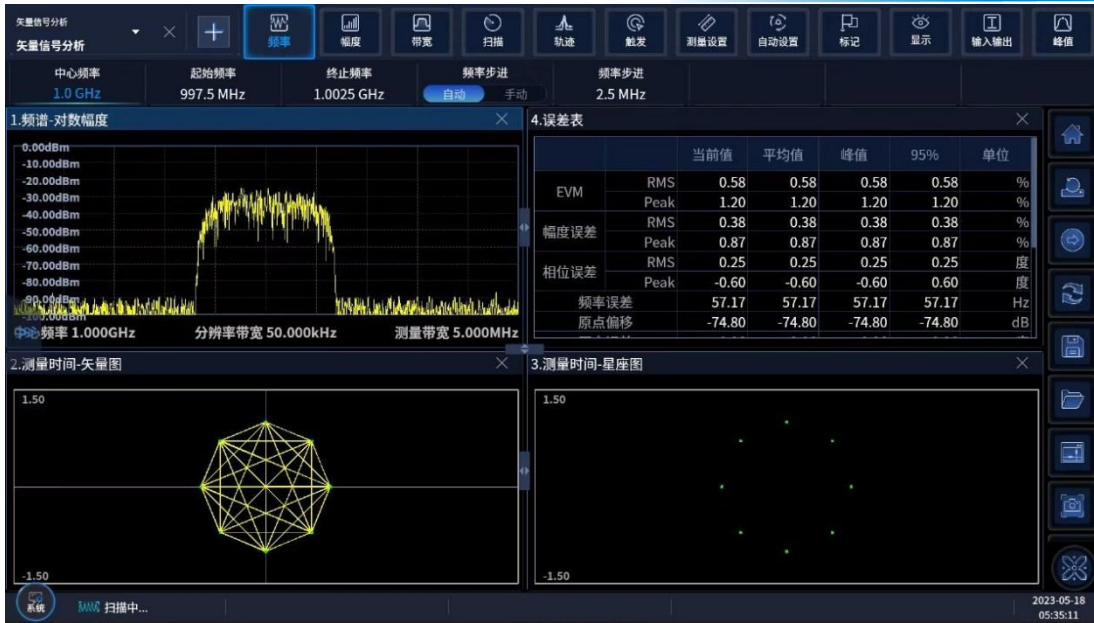
The Ceyear 4052 series signal/spectrum analyzer has built-in vector signal analysis function, which can demodulate universal single carrier and single modulation digital modulation signals to obtain the original modulation symbol array and modulation quality analysis results. It can perform joint analysis of digital modulation signals in time domain, frequency domain, and modulation domain, accurately test signal quality, and assist in diagnosing signal problems such as gain imbalance, orthogonal error, filtering error, and compression.

Rich modulation signal type demodulation

It can perform demodulation analysis on various universal single carrier and single modulation digital modulation signals such as PSK, FSK, QAM, ASK, APSK, etc. Analysis of demodulation of high-order modulation signals that can support up to 4096QAM.

Comprehensive Analysis Format

It can simultaneously display pre demodulation, post demodulation, reference signal, symbols, and various error results, supporting multiple display windows such as spectrogram, constellation diagram, vector diagram, phase trajectory diagram, eye diagram, error/symbol table, etc., with rich results and presentation forms.



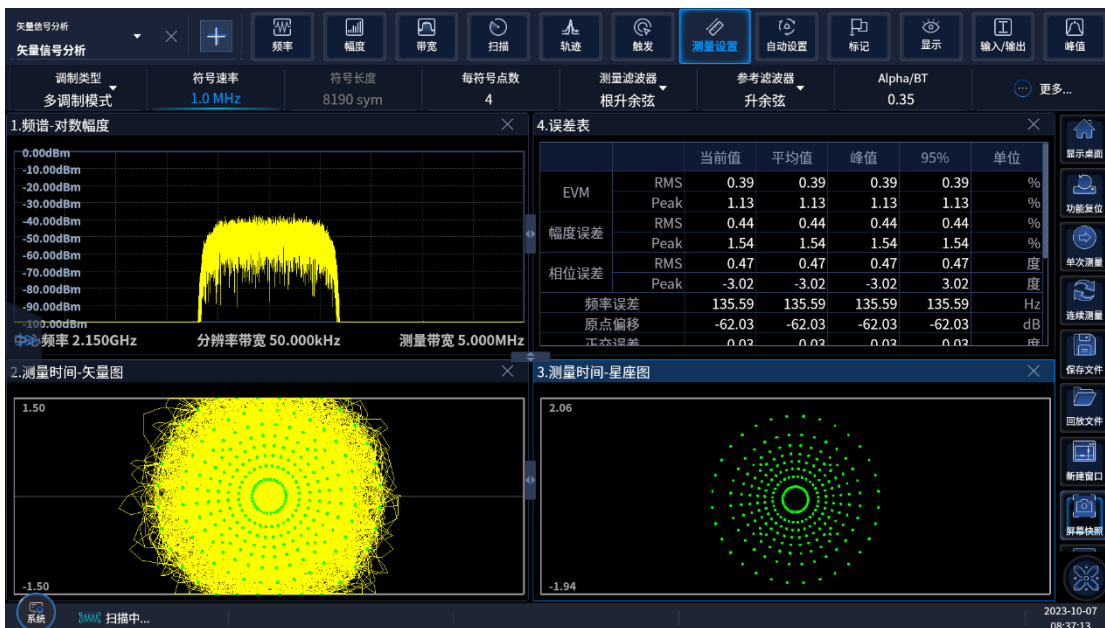
Vector Signal Analysis

Support bit error rate testing.

Based on vector signal analysis options, the S12B option can be selected to support bit error rate testing based on importing known data from files: support bit error rate testing based on user recorded known data; support bit error rate testing based on PRBS: provide bit error rate result output.

Support multi modulation analysis

Based on the vector signal analysis option, the S12M option can be selected to support signal demodulation analysis that complies with the DVB-S2/X standard: providing display windows such as constellation diagrams and symbol tables; providing modulation quality analysis results such as EVM and origin offset.



DVB-S2/X Analysis

Full bandwidth data real-time recording and playback

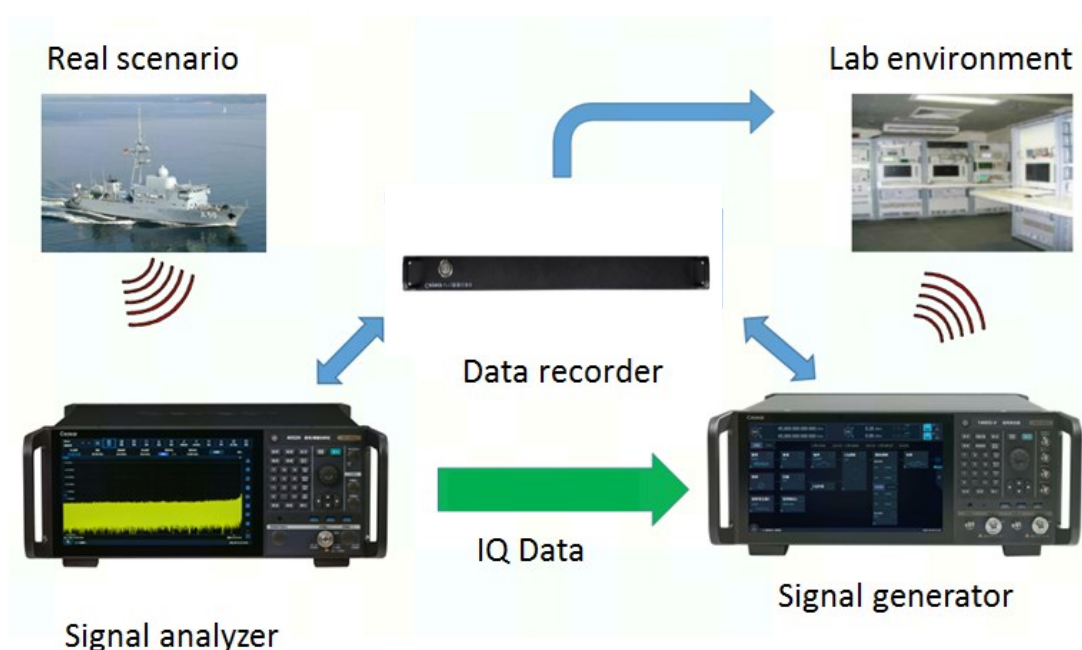
Real-time analysis of complex electromagnetic environments is extremely difficult. Long-term seamless recording of surrounding electromagnetic signals such as battlefields and positions and laboratory analysis are urgent needs of national defense users.

Superior RF Performance

As a signal and spectrum analyzer with excellent performance, as the receiving front end of RF acquisition and recording, it has large dynamic range, low distortion, and high sensitivity. Combined with the powerful analysis function of Ceyear 4052, it can also provide functions such as search, analysis and playback of complex signals.

Record and Playback

The recording signal bandwidth is up to 1200MHz, with the function of starting and stopping the acquisition, and the real-time preview analysis of the spectrum analysis mode.



Data record and playback solution

Advanced user interface, new interactive experience

Ceyear 4052 adopts an 11.6-inch touch screen, and the test details are displayed more comprehensively and intuitively. The parameter setting menu is concise, one-key direct parameter setting. Parallel operation and display of multiple measurement modes, convenient and efficient mode switching.

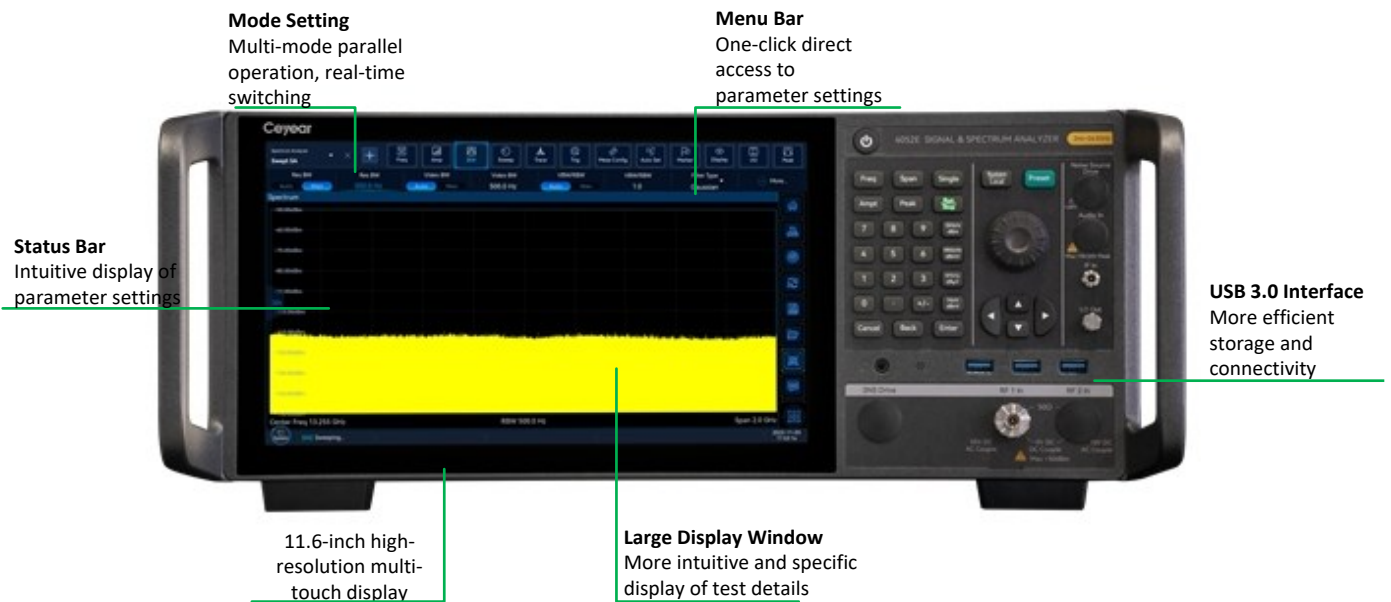
Smarter human-computer interaction

Remote control via a browser allows for real-time monitoring of test status. Automatic recording of SCPI commands makes test flow planning more efficient. User-defined

shortcut menus make parameter settings more efficient and convenient.

High-performance processor, large memory

Optional configuration with a higher-performance i7 processor and industrial computer with 16GB of memory ensures smoother operation and efficient operation even during extended testing.



Ceyear 4052 series Signal/Spectrum Analyzer

Convenient Interface Configuration

Ceyear 4052 faces potential applications in the future, and is configured with 10 Gigabit network control interfaces, optical fiber interfaces with 1.2GHz bandwidth and other interfaces to meet various digital transformation challenges.

10 Gigabit Network Control Interface

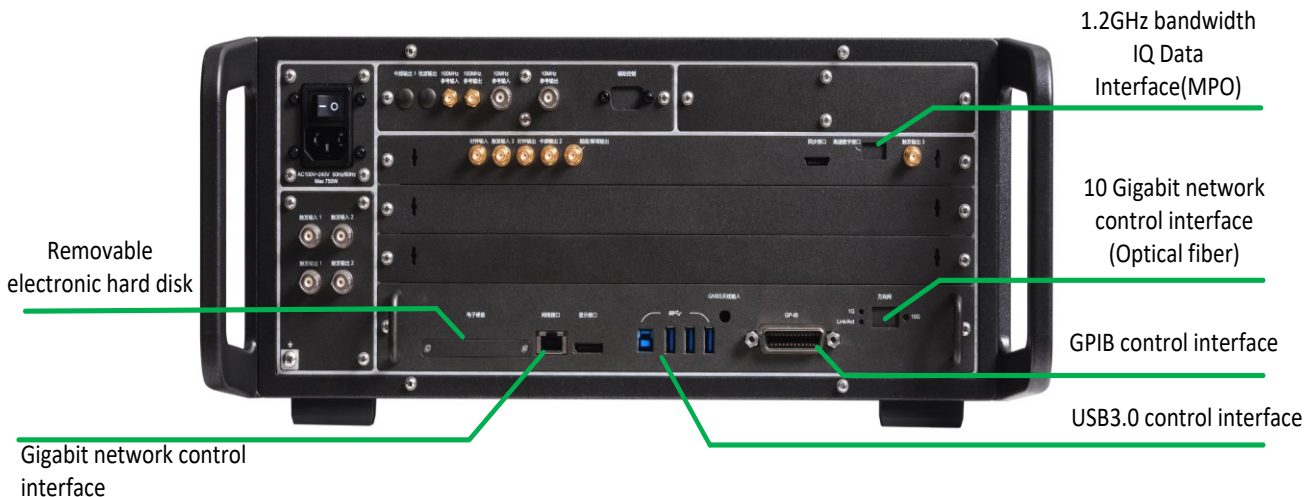
Configure 10 Gigabit network interface to provide you with higher bandwidth, faster speed and more stable data transmission.

1.2GHz Bandwidth Optical Fiber Interface

Equipped with 1.2GHz ultra-wideband digital interface, it can realize real-time broadband data acquisition and output with 1.2GHz bandwidth.

4TB built-in Electronic Hard Disk

Built-in 4TB electronic hard disk (optional) provides convenience for mass data storage during measurement.



Technical Specification

	Model	DC coupled	AC coupled
Frequency range	4052A	2Hz to 4GHz	10MHz to 4GHz
	4052B	2Hz to 9GHz	10MHz to 8GHz
	4052C	2Hz to 13.2GHz	10MHz to 13.6GHz
	4052D	2Hz to 18GHz	10MHz to 18GHz
	4052E	2Hz to 26.5GHz	10MHz to 26.5GHz
	4052F	2Hz to 40GHz	10MHz to 40GHz
	4052G	2Hz to 45GHz	10MHz to 45GHz
	4052H	2Hz to 50GHz	10MHz to 50GHz
10 MHz Precise frequency reference	Frequency accuracy: \pm (last calibration date \times aging rate + temperature stability + calibration accuracy) Aging rate: $\pm 5 \times 10^{-8}$ /year Temperature stability: $\pm 5 \times 10^{-8}$ (20°C ~ 30°C) Calibration accuracy: $\pm 4 \times 10^{-8}$		
Frequency readout accuracy	\pm (frequency readout \times frequency reference accuracy + 0.1% frequency band + 5% resolution bandwidth + 2Hz + 0.5 horizontal resolution*) *: horizontal resolution = span / (sweep points - 1)		
Frequency counting accuracy	\pm (frequency readout \times frequency reference accuracy + 0.1Hz)		
Frequency Span	Range: 0Hz (zero frequency span), 10Hz to the highest frequency of the model		
Sweep time range	Frequency span \geq 10Hz: 1ms to 16000s Frequency span = 0Hz: 1us to 16000s		
Sweeping points	101 - 120001		
Resolution Bandwidth	Range: 0.1Hz to 20MHz (1,2,3,5 steps) Conversion uncertainty: ± 0.10 dB 1Hz to 1 MHz (1,2,3,5 steps) ± 0.30 dB 5MHz to 10 MHz (1,2,3,5 steps) ± 1.00 dB 20 MHz		
Attenuator	Range: 0-70dBm, step: 2dB		
Low Noise Pre-amplifier	Frequency Range: 100kHz to Highest frequency of current model		
Analysis bandwidth	Standard: 10MHz Option H38-40: 40MHz		

	Option H38-200: 200MHz Option H38-400: 400MHz Option H38-600: 600MHz Option H38-1200: 1.2GHz				
Video bandwidth	1Hz to 20MHz (1,2,3,5 steps)				
Trigger Type	Free, Power Line, video, external level 1/2, timer				
Detector Type	Normal, positive peak, negative peak, sample, video average, power average, voltage average				
SSB phase noise (1GHz carrier, 20°C ~ 30°C)	Frequency offset	Specification	Typical		
	100Hz	-95dBc/Hz	-102dBc/Hz		
	1kHz	-112dBc/Hz	-115dBc/Hz		
	10kHz	-122dBc/Hz	-125dBc/Hz		
	100kHz	-122dBc/Hz	-124dBc/Hz		
1MHz	-135dBc/Hz				
Residual FM	$\leq(0.25 \text{ Hz} \times N)$, (10Hz resolution bandwidth, 10Hz video bandwidth, the rated value within 20ms. N is the number of frequency multiple times of LO)				
Displayed average noise level (the input end is connected to match load, sample or average wave detection, the average type is logarithm, 0dB input attenuation, RF gain takes the DANL as the priority, 20°C ~ 30°C)	4052A/B		With preamplifier (OFF)		
	Frequency range	Specification	Typical		
	10MHz to 1GHz	-151dBm	-154dBm		
	1GHz to 2GHz	-149dBm	-154dBm		
	2GHz to 3GHz	-147dBm	-151dBm		
	3GHz to 4GHz	-144dBm	-148dBm		
	4GHz to 6GHz	-147dBm	-150dBm		
	6GHz to 8GHz	-145dBm	-149dBm		
	4052A/B		With preamplifier (ON)		
	Frequency range	Specification	Typical(H34A-XX)	Typical(H34-XX)	
	10MHz to 50MHz	-156dBm	-165dBm	-160dBm	
	50MHz to 4GHz	-161dBm	-164dBm	-164dBm	
	4GHz to 6GHz	-161dBm	-164dBm	-165dBm	
	6GHz to 8GHz	-157dBm	-159dBm	-163dBm	
	4052C/D/E/F/G/H		With preamplifier (OFF)		
Frequency range	Specification	Typical			
10MHz to 1GHz	-149dBm	-153dBm			
1GHz to 2GHz	-147dBm	-152dBm			

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Frequency response & absolute amplitude accuracy (10dB attenuation, 20°C ~ 30°C)	Preamplifier (OFF)																														
	Frequency range	Specifications	Typical																												
	10MHz to 4GHz	±0.40dB	±0.24dB																												
	4GHz to 8GHz	±0.70dB	±0.40dB																												
	8GHz to 18GHz	±2.00dB	±0.90dB																												
	18GHz to 26.5GHz	±2.50dB	±1.20dB																												
	26.5GHz to 40GHz	±2.80dB	±1.80dB																												
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<p>Absolute amplitude accuracy (10 dB attenuation, 20°C ~ 30°C, 1 Hz ≤ resolution bandwidth ≤ 1 MHz, input signal -10 to -50 dBm):</p> <p>±0.24dB @ 500MHz calibration frequency</p> <p>± (0.24dB+frequency response) @all frequency except 500MHz frequency point</p>																															

1dB gain compression (mixer level, dual-tone test, resolution bandwidth is 5kHz, 3MHz frequency interval, 20°C ~ 30°C)	Frequency range	Specification	Typical
	10MHz to 100MHz	0dBm	+8dBm
	100MHz to 1GHz	0dBm	+5dBm
	1GHz to 8GHz	+5dBm	+12dBm
	8GHz to 50GHz	+5dBm	+18dBm
TOI distortion (input mixer 2 - 10dBm signal test, frequency interval is 50kHz, 20°C ~ 30°C)	Frequency range	Specification	Typical
	10MHz to 200MHz	+12dBm	+17dBm
	200MHz to 4GHz	+17dBm	+19dBm
	4GHz to 8GHz	+16dBm	+20dBm
	8GHz to 50GHz	+16dBm	+18dBm
Residual response (the input end is connected to match load, 0dB attenuation)	≤ -90dBm	200kHz to 8GHz	
IQ Data	Memory depth (IQ length):		
	Analysis bandwidth≤40MHz: 500M IQ samples, IQ bits length: 32 bits I, 32 bits Q Analysis bandwidth>40MHz: 1000M IQ samples, IQ bits length: 16 bit I, 16 bit Q		
Dimensions	W (mm)×H (mm)×D (mm):		
	(426±4)mm × (177±4)mm × (450±4)mm (excluding handle, foot-pad, bottom feet) (475±4)mm × (193±4)mm × (560±4)mm (including handle, foot-pad, bottom feet)		
Weight	About 25kg (different configuration have different weights)		
Power supply	AC 110~240V, 50~60Hz		
Power consumption	Maximum 300W (Standard), 450W(H38/H41 or Real-time Option)		
Temperature range	Operating temperature: 0°C ~ +50°C		
	Storage temperature: -40°C ~ +70°C		
RF connectors	4052A/B/C/D: N Type (female), 50 Ohm		
	4052E: 3.5mm (male), 50 Ohm		
	4052F/G/H: 2.4mm (male), 50 Ohm		

Notes:

1. Rated values refer to the estimated performance, or the performance which is useful for the product beyond the warrant range.
2. Typical value refers to other performance information beyond the product guarantee range; when the performance is over the technical index, 80% of the samples will present 95% confidence within 20°C ~ 30°C temperature range; typical performance excludes test uncertainty.

Ordering Information

- **Mainframe:**

Model	Description	Frequency range
4052A	Signal/Spectrum Analyzer	2Hz to 4GHz
4052B	Signal/Spectrum Analyzer	2Hz to 8GHz
4052C	Signal/Spectrum Analyzer	2Hz to 13.6GHz
4052D	Signal/Spectrum Analyzer	2Hz to 18GHz
4052E	Signal/Spectrum Analyzer	2Hz to 26.5GHz
4052F	Signal/Spectrum Analyzer	2Hz to 40GHz
4052G	Signal/Spectrum Analyzer	2Hz to 45GHz
4052H	Signal/Spectrum Analyzer	2Hz to 50GHz

- **Standard:**

No.	Name	Quantity	Description
1	Power cord	1	Standard three-core power cord
2	Quick User Guide	1	
3	Product qualification certificate	1	

- **Options:**

No.	Description	Functions
4052-H02	Auxiliary High IF output	Output second IF signal, the frequency is 425MHz \pm 40MHz (\leq 40MHz analysis bandwidth), 750MHz \pm 600MHz (200MHz-1.2GHz analysis bandwidth)
4052-H08	Wideband Log detection signal output	Output a logarithmic detection signal reflecting the level characteristics of the input signal
4052-H11	10 Gigabit Ethernet Control and Data Interface	Optical fiber based 10 gigabit network interface
4052-H12C	Wideband digital interface	It can output broadband IQ data through optical fiber in real time, and supports IQ data output with a maximum bandwidth of 400MHz. Combined with the large capacity data Recorder (4712C data recorder), the IQ data can be recorded in real time. (Note: 4052-H12C can be selected when the analysis bandwidth is less than 400MHz).
4052-H12E	Wideband digital interface	Broadband IQ data collection can be output in real time through optical fiber, supporting IQ data output with a maximum bandwidth of 1.2GHz. Combined with a large capacity data logger (4712E data logger), it can achieve real-time large-capacity recording of IQ data. (Note: 4052-H12E can be selected when 600MHz \leq analysis bandwidth \leq 1.2GHz).

4052-H22C-4T	4712C Data Recorder	Interconnect with a signal/spectrum analyzer equipped with a 4052-H12C broadband digital interface to achieve real-time large-capacity recording of signal data with a maximum analytical bandwidth of 400MHz. For details of the logger specifications, see the 4712 Series Data logger data.
4052-H22C-8T	4712C Data Recorder	Interconnect with a signal/spectrum analyzer equipped with a 4052-H12C broadband digital interface to achieve real-time large-capacity recording of signal data with a maximum analytical bandwidth of 400MHz. For details of the logger specifications, see the 4712 Series Data logger data.
4052-H22C-16T	4712C Data Recorder	
4052-H22C-32T	4712C Data Recorder	
4052-H22E-8T	4712E Data Recorder	Interconnect with a signal/spectrum analyzer equipped with a 4052-H12E broadband digital interface to enable real-time large-capacity recording of signal data up to 1.2GHz analysis bandwidth. See the 4712 Series data logger for detailed specifications.
4052-H22E-16T	4712E Data Recorder	
4052-H22E-32T	4712E Data Recorder	
4052-H22E-64T	4712E Data Recorder	
4052-H17-E	Enhanced processor (CPU)	Update to I7 series processor, Enhanced CPU computing and processing capabilities to improve measurement speed.
4052-H19-2T	Local memory expansion	Supports up to 2TB storage memory (electronic hard disk), need to configure 4052-H17-E.
4052-H19-4T	Local memory expansion	Supports up to 4TB storage memory (electronic hard disk), need to configure 4052-H17-E.
4052-H33-08	Electronic attenuator	Frequency range: 9kHz to 8GHz,attenuation range: 30dB,in 0.5dB steps
4052-H34-04	Low-noise preamplifier	The preamplifier is selected according to the frequency upper limit of the signal analyzer Example: 4052A frequency upper limit is 4GHz,Pre-amplifier need to select option H34-04
4052-H34-08	Low-noise preamplifier	The preamplifier is selected according to the frequency upper limit of the signal analyzer Example: 4052B frequency upper limit is 8.4GHz,Pre-amplifier need to select option H34-08
4052-H34-13	Low-noise preamplifier	The preamplifier is selected according to the frequency upper limit of the signal analyzer. Example: 4052C frequency upper limit is 13.2GHz,Pre-amplifier need to select option H34-13.
4052-H34-18	Low-noise preamplifier	The preamplifier is selected according to the frequency upper limit of the signal analyzer. Example: 4052D frequency upper limit is 18GHz,Pre-amplifier need to select option H34-18.
4052-H34-26	Low-noise preamplifier	The preamplifier is selected according to the frequency upper limit of the signal analyzer. Example:4052E frequency upper limit is 26.5GHz,Pre-amplifier need to select option H34-26.
4052-H34-40	Low-noise preamplifier	The preamplifier is selected according to the frequency upper limit of the signal analyzer. Example: 4052F frequency upper limit is 40GHz,Pre-amplifier need to select option H34-40.
4052-H34-45	Low-noise preamplifier	The preamplifier is selected according to the frequency upper limit of the signal analyzer.

			Example: 4052G frequency upper limit is 45GHz, Pre-amplifier need to select option H34-45.
4052-H34-50	Low-noise preamplifier		The preamplifier is selected according to the frequency upper limit of the signal analyzer. Example: 4052H frequency upper limit is 50GHz, Pre-amplifier need to select option H34-50.
4052-H34A-04	Low-noise preamplifier		Only 4052A mainframe can be configured, and 4052-H34-04 is not optional at the same time.
4052-H34A-08	Low-noise preamplifier		Only 4052B mainframe can be configured, and 4052-H34-08 is not optional at the same time.
4052-H36	Pre-selector Bypass		The tracking pre-selector in the bypass receiving channel. All model with H38 options need to select this option, except 4052A/B.
4052-H38-40	40MHz bandwidth	Analysis	Support 10Hz to 40MHz Analysis bandwidth
4052-H38-200	200MHz bandwidth	Analysis	Support 10Hz to 200MHz Analysis bandwidth
4052-H38-400	400MHz bandwidth	Analysis	Support 10Hz to 400MHz Analysis bandwidth
4052-H38-600	600MHz bandwidth	Analysis	Support 10Hz to 600MHz Analysis bandwidth
4052-H38-1200	1.2GHz bandwidth	Analysis	Support 10Hz to 1.2GHz Analysis bandwidth
4052-H39	Audio analyzer		Audio signal parameters test, distortion test and waveform analysis. This option cannot be configured together with H48.
4052-H40	External extender	frequency	To extend the frequency range using external frequency mixing method. This option provides LO output and IF input, as well as signal recognition ability. (Notes: this option can be selected when the main unit is not 4052A and 4052B. the extended frequency range depends on the selected extension modules; the frequency extension module needs to buy additionally)
4052-H41-10	Real-time analysis	spectrum	This option provides digital phosphor spectrum and seamless waterfall, including frequency template trigger, which can support real-time spectrum analysis of 10MHz bandwidth.
4052-H41-40	Real-time analysis	spectrum	This option provides digital phosphor spectrum and seamless waterfall, including frequency template trigger, which can support real-time spectrum analysis of 40MHz bandwidth. (The H38 option must also be configured. This option is available when H38-40, H38-200, H38-400, H38-600, and H38-1200 are configured.
4052-H41-200	Real-time analysis	spectrum	This option provides digital phosphor spectrum and seamless waterfall, including frequency template trigger, which can support real-time spectrum analysis of 200MHz bandwidth. Advised to configure the 4052-H17-E option. (The H38 option must also be configured. This option is available when H38-200, H38-400, H38-600, and H38-1200 are configured.
4052-H41-400	Real-time analysis	spectrum	This option provides digital phosphor spectrum and seamless waterfall, including frequency template trigger, which can support real-time spectrum analysis of 400MHz bandwidth. Advised to configure the 4052-H17-E option. (The H38 option must also be configured. This option is available when H38-400, H38-600, and H38-1200 are configured.
4052-H48	Noise figure analysis		Provide noise source drive and noise figure measurement function.(note: need to select H34 low-noise pre-amplifier option

		and corresponding 16613/4/5 series noise source to finish the noise figure measurement. This Option and H39 audio analysis cannot be selected simultaneously)
4052-H96	User manual (paper publication)	Provide a detailed user manual in hard copy
4052-H97	Mounting rack	handles and accessories for 4052 mounting on standard racks
4052-H98	English Option	English panel, English manual, English operation interface and English operating system
4052-H99-1	Aluminum transportation case	High-strength lightweight aluminum transportation case, with handle and roller, convenient for transportation
4052-H99-2	Plastic safety rod pulley packing case	High strength plastic safety tie rod with wheel packing box, with handle and roller, easy to transport.
4052-S01	Absolute Power Measurement	The RF signal power is measured with high precision by means of an external USB power sensor. (The corresponding 87230/1/2/3 , 87233 and 87235 series power sensor is required.)
4052-S02	Noise power ratio Measurement	Provide noise power ratio parameters measurement
4052-S04	Phase noise measurement	SSB phase noise curves and single-point phase noise measurement
4052-S05	EMC Pre-Compliance	Provide EMC pre-compliance measurement function
4052-S09	Analog Demodulation Option	The modulation characteristics and distortion characteristics of AM, FM and Φ M signals are analyzed
4052-S10	Transient analyzer	To realize the measurement & analysis of transient parameters, spectrum, and time-varying characteristics of signals, support playback of the recorded data.
4052-S10H	Frequency hopping signal analysis	Provides automatic measurement of frequency hopping signal residence time, switching time, frequency and error characteristics. (S10 option required).
4052-S10F	FMCW Signal Analysis	Provides automatic measurement of FMCW signal slope, deviation, power and other characteristics. (S10 option required)
4052-S12	Vector signal analyzer	This option provides flexible demodulation functions of multiple single-carrier digital modulation signals. It can provide vector charts, constellation diagrams, eye diagrams, spectrum diagrams, etc., to analyze the characteristics of the modulation signal. The modulation error of the signal can be obtained by demodulation, which helps to judge the cause of the signal error.
4052-S12B	Bit error rate test	Support for bit-error rate testing based on file import of known data; Support for bit-error rate testing based on user recorded known data; Support bit error rate test based on PRBS; Provides output of bit-error rate results. (S12 option required)
4052-S12M	Multi-modulation analysis	Support signal demodulation analysis in line with DVB-S2/X standards; Provide display Windows such as constellation chart and symbol table; The modulation quality analysis results such as EVM and origin migration are provided. (S12 option required)
4052-S13	Pulse signal analyzer	Automatic measurement on time, level and modulation parameters of pulse waveform and statistical analysis of pulse sequence
4052-S14	OFDM signal analysis	Support custom OFDM signal modulation analysis; Support multi-parameter custom configuration such as lead, pilot, CP, subcarrier, symbol number, etc. It has the view window of capture storage, power spectral density, constellation chart, result summary table and so on.

4052-S15	Amplifier Test	Support to test the ACLR, AM/AM, AM/PM, frequency response, EVM characteristic measurement. Support time-domain and frequency-domain analysis.
4052-S15D	Digital Pre-distortion measurement	Support correction of amplifier nonlinear distortion and iterative learning control of DPD memory polynomial DPD. (S15 option needs to be selected at the same time)
4052-S16	Multicarrier group delay measurement	Provides absolute and relative group delay measurement capability for wideband signals
4052-S40	WLAN 802.11a/b/g measurement	Broadband wireless local area network protocol physical layer test (802.11a/b/g), covering radio frequency, modulation analysis, and modulation quality testing.
4052-S40N	WLAN 802.11n measurement	Broadband wireless local area network protocol physical layer test (802.11n), covering radio frequency, modulation analysis, and modulation quality testing. (S40 option required)
4052-S40AC	WLAN 802.11ac measurement	Broadband wireless local area network protocol physical layer test (802.11ac), covering radio frequency, modulation analysis, and modulation quality testing. (S40 option required)
4052-S40AX	WLAN 802.11ax measurement	Broadband wireless local area network protocol physical layer test (802.11ax), covering radio frequency, modulation analysis, and modulation quality testing. (S40 option required)
4052-S40BE	WLAN 802.11be measurement	Broadband wireless LAN protocol physical layer testing (802.11be), covering RF, modulation analysis, modulation quality testing. (S40 option required)
4052-S41D	LTE/LTE-A TDD Downlink signal analysis	Support downlink signal modulation analysis; Support TDD sub-frame configuration type modulation analysis; Support custom parameter configuration modulation analysis; Support downlink E-TM template modulation analysis; Support EVM, switching power, frequency error, power and other parameters measurement; Provides capture storage, power spectral density, constellation chart, results summary table, EVM Vs. Carrier and other view output.
4052-S41U	LTE/LTE-A TDD Uplink signal analysis	Support uplink signal modulation analysis; Support custom parameter configuration modulation analysis; Support EVM, frequency error, power and other parameters measurement; Provides capture storage, power spectral density, constellation chart, results summary table, EVM Vs. Carrier and other view output.
4052-S42D	LTE/LTE-A FDD Downlink signal analysis	Support downlink signal modulation analysis; Support custom parameter configuration modulation analysis; Support downlink E-TM template modulation analysis; Support EVM, frequency error, power and other parameters measurement; Provides capture storage, power spectral density, constellation chart, results summary table, EVM Vs. Carrier and other view output.
4052-S42U	LTE/LTE-A FDD Uplink signal analysis	Support uplink signal modulation analysis; Support custom parameter configuration modulation analysis; Support EVM, frequency error, power and other parameters measurement; Provides capture storage, power spectral density, constellation chart, results summary table, EVM Vs. Carrier and other view output.
4052-S43D	NB-IoT Downlink signal analysis	Support modulation analysis of narrowband IoT downlink signals based on FDD LTE standard; Supports three deployment modes: independent, in band, and protected frequency band. Supports N-Test Model with one click testing and flexible parameter configuration analysis. Supports EVM, frequency error, power, and other parameter measurements. Provides constellation diagram, result summary table, EVM vs carrier and other views




4052-S43U	NB-IoT Uplink signal analysis	Support narrowband IoT uplink signal modulation analysis based on FDD LTE standard: support flexible configuration analysis of custom parameters; Support measurement of EVM, frequency error, power and other parameters: provide constellation diagram, result summary table, EVM Vs carrier and other views
4052-S45	V2X Signal Analysis	Support modulation analysis of vehicle networking lateral link signals based on 5G NR standard: support measurement of EVM, frequency error, power and other parameters, provide constellation diagram, result summary table, EVM vs carrier and other views
4052-S46D	5G NR Downlink signal measurement	Support 5G NR DOWNlink signal demodulation, EVM, spectrum flatness, time alignment error; Support ACP, spectrum emission template, transmit on/off, CCDF and other power measurement; Support multiple bandwidth and multiple TM.
4052-S46U	5G NR Uplink signal measurement	Support 5G NR UPlink signal demodulation, EVM, spectrum flatness, time alignment error; Support ACP, spectrum emission template, transmit on/off, CCDF and other power measurement; Support multiple bandwidth and multiple TM.
4052-S47D	5G NR Downlink Singal Combined measurement	Support modulation analysis of vehicle networking lateral link signals based on 5G NR standard: support measurement of parameters such as EVM, frequency error, power, etc., provide constellation diagram, result summary table, EVM vs carrier and other views to support one measurement, while displaying EVM, ACLR and SEM measurement results of 5G downlink signals. (S46D option needs to be selected at the same time)
4052-S48	Bluetooth signal analysis	Bluetooth signal analysis supporting BR, EDR, and LE modes: supports measurement of output power, frequency drift, and other parameters: provides result summary tables, constellation diagrams, and other views.
4052-S49D	WCDMA Downlink Singal Analysis	Support WCDMA downlink signal demodulation, support code domain power EVM、 Measurement of frequency error, symbol rate error, Q offset and other parameters: supports automatic detection of active channels, providing views such as code domain power, result summary table, constellation diagram, channel list, etc
4052-S49U	WCDMA Uplink Singal Analysis	Support WCDMA uplink signal demodulation, support code domain power EVM、 Measurement of parameters such as frequency error, symbol rate error, and 1Q offset; Support automatic detection of active channels, providing views such as code domain power, result summary table, constellation diagram, channel list, etc.
4052-S50	GSM Signal analysis	Supports GSM signal demodulation, supports time-domain power EVM、 Frequency error and parameter measurement: provide amplitude capture, result summary table, constellation diagram and other views. Support UWB signal analysis based on IEEE 802.15.4 and IEEE 802.15.4z
4052-S51	UWB Signal Analysis	Support measurement of parameters such as PPDU power, SHR power, NRMSE.STS, etc; Supports all UWB channels and bandwidths: provides amplitude capture, result summary table, pulse and other views
4052A-JL	Professional calibration services	Provide metrological calibration services and provide metrological reports
4052B-JL	Professional calibration services	Provide metrological calibration services and provide metrological reports
4052C-JL	Professional calibration	Provide metrological calibration services and provide metrological reports

	services	
4052D-JL	Professional calibration services	Provide metrological calibration services and provide metrological reports
4052E-JL	Professional calibration services	Provide metrological calibration services and provide metrological reports
4052F-JL	Professional calibration services	Provide metrological calibration services and provide metrological reports
4052G-JL	Professional calibration services	Provide metrological calibration services and provide metrological reports
4052H-JL	Professional calibration services	Provide metrological calibration services and provide metrological reports
4052A-EWT1	Extended warranty for 1 year	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. Calibration services are not included in this warranty extension policy
4052B-EWT1	Extended warranty for 1 year	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. Calibration services are not included in this warranty extension policy
4052C-EWT1	Extended warranty for 1 year	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. Calibration services are not included in this warranty extension policy
4052D-EWT1	Extended warranty for 1 year	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. Calibration services are not included in this warranty extension policy
4052E-EWT1	Extended warranty for 1 year	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. Calibration services are not included in this warranty extension policy
4052F-EWT1	Extended warranty for 1 year	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. Calibration services are not included in this warranty extension policy
4052G-EWT1	Extended warranty for 1 year	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. Calibration services are not included in this warranty extension policy
4052H-EWT1	Extended warranty for 1 year	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. Calibration services are not included in this warranty extension policy




● **USB Power Sensor Options (Requires 4052-S01 option):**

	Model and name	Descriptions	Remarks
1	87230 USB CW Power Sensor	9kHz ~ 6GHz, -60dBm ~ +20dBm	Will be discontinued soon
2	87231 USB CW Power Sensor	10MHz ~ 18GHz, -60dBm ~ +20dBm	
3	87232 USB CW Power Sensor	50MHz ~ 26.5GHz, -60dBm ~ +20dBm	
4	87233 USB CW Power Sensor	50MHz ~ 40GHz, -60dBm ~ +20dBm	
5	87233C USB CW Power Sensor	8kHz ~ 12GHz, -70dBm ~ +20dBm	
6	87233D USB CW Power Sensor	10MHz ~ 18GHz, -70dBm ~ +20dBm	
7	87233E USB CW Power Sensor	50MHz ~ 26.5GHz, -70dBm ~ +20dBm	
8	87233F USB CW Power Sensor	50MHz ~ 40GHz, -70dBm ~ +20dBm	
9	87233L USB CW Power Sensor	50MHz ~ 67GHz, -55dBm ~ +20dBm	
10	87235B USB Average Power Sensor	8kHz ~ 8GHz, -70dBm ~ +26dBm	
11	87235C USB Average Power Sensor	10MHz ~ 8GHz, -60dBm ~ +23dBm	
12	87235D USB Average Power Sensor	10MHz ~ 18GHz, -70dBm ~ +26dBm	
13	87235F USB Average Power Sensor	10MHz ~ 33GHz, -65dBm ~ +26dBm	
14	87235FA USB Average Power Sensor	10MHz ~ 40GHz, -65dBm ~ +26dBm	
15	87235H USB Average Power Sensor	10MHz ~ 50GHz, -65dBm ~ +23dBm	
16	87235L USB Average Power Sensor	50MHz ~ 67GHz, -60dBm ~ +23dBm	

● **Spectrum Frequency Extender Modules (Requires 4052-H40 option):**

	Model and name	Frequency Range	
1	82407NA Spectrum Analyzer Extender	50GHz ~ 75GHz	
2	82407NC Spectrum Analyzer Extender	60GHz ~ 90GHz	
3	82407PA Spectrum Analyzer Extender	75GHz ~ 110GHz	
4	82407QA Spectrum Analyzer Extender	90GHz ~ 140GHz	
5	82407QB Spectrum Analyzer Extender	110GHz ~ 170GHz	
6	82407RA Spectrum Analyzer Extender	140GHz ~ 220GHz	
7	82407SA Spectrum Analyzer Extender	170GHz ~ 260GHz	
8	82407S Spectrum Analyzer Extender	220GHz ~ 325GHz	
9	82407TA Spectrum Analyzer Extender	260GHz ~ 400GHz	
10	82407R Spectrum Analyzer Extender	325GHz ~ 500GHz	
11	82407U Spectrum Analyzer Extender	500GHz ~ 750GHz	
12	82407V Spectrum Analyzer Extender	750GHz ~ 1100GHz	
13	4000N Spectrum Analyzer Extender	60GHz ~ 90GHz	New generation small size version  
14	4000P Spectrum Analyzer Extender	75GHz ~ 110GHz	
15	4000Q Spectrum Analyzer Extender	110GHz ~ 170GHz	
16	4000R Spectrum Analyzer Extender	140GHz ~ 220GHz	
17	4000SA Spectrum Analyzer Extender	170GHz ~ 260GHz	
18	4000S Spectrum Analyzer Extender	220GHz ~ 330GHz	
19	4000T Spectrum Analyzer Extender	330GHz ~ 500GHz	

● **Noise Source Option (Requires 4052-H48 and 4052-H34 option):**

	Model and name	Frequency Range	
1	16613DA Noise Source	10MHz ~ 18GHz, ENR 5dB ~ 8dB	BNC interface traditional noise source 
2	16613DB Noise Source	10MHz ~ 18GHz, ENR 14dB ~ 17dB	
3	16613EA Noise Source	10MHz ~ 26.5GHz, ENR 5dB ~ 8dB	
4	16613EB Noise Source	10MHz ~ 26.5GHz, ENR 12dB ~ 17dB	
5	16613FB Noise Source	10MHz ~ 40GHz, ENR 12dB ~ 19dB	
6	16613HB Noise Source	10MHz ~ 50GHz, ENR 10dB ~ 19dB	
7	16613LC Noise Source	10MHz ~ 67GHz, ENR 7dB ~ 23dB	
8	16614DA Smart Noise Source	10MHz ~ 18GHz, ENR 5dB ~ 8dB	I2C interface smart noise source 
9	16614DB Smart Noise Source	10MHz ~ 18GHz, ENR 14dB ~ 17dB	
10	16614EA Smart Noise Source	10MHz ~ 26.5GHz, ENR 5dB ~ 8dB	
11	16614EB Smart Noise Source	10MHz ~ 26.5GHz, ENR 12dB ~ 17dB	
12	16614FB Smart Noise Source	10MHz ~ 40GHz, ENR 12dB ~ 19dB	
13	16614HB Smart Noise Source	10MHz ~ 50GHz, ENR 10dB ~ 19dB	
14	16614LC Smart Noise Source	10MHz ~ 67GHz, ENR 7dB ~ 23dB	
15	16615DA Noise Source	10MHz ~ 18GHz, ENR 5dB ~ 8dB	USB noise source 
16	16615DB Noise Source	10MHz ~ 18GHz, ENR 14dB ~ 17dB	
17	16615EA Noise Source	10MHz ~ 26.5GHz, ENR 5dB ~ 8dB	
18	16615EB Noise Source	10MHz ~ 26.5GHz, ENR 12dB ~ 17dB	
19	16615FB Noise Source	10MHz ~ 40GHz, ENR 12dB ~ 19dB	
20	16615HB Noise Source	10MHz ~ 50GHz, ENR 10dB ~ 19dB	
21	16615LC Noise Source	10MHz ~ 67GHz, ENR 7dB ~ 23dB	

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