

# CEYEAR TECHNOLOGIES

## Company Profile

2023

Ceyear

Contents

**I** Basic Information

**II** Product Family

# 1. Ceyear at a Glance



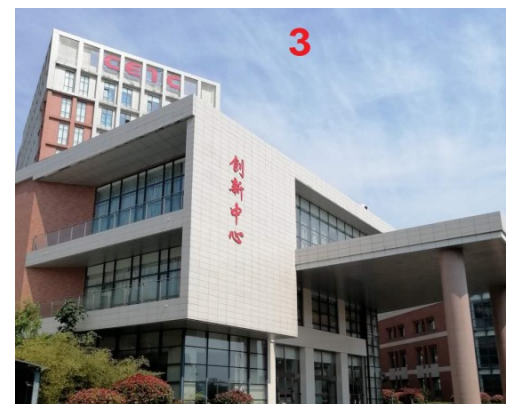
<b>Headquarters</b>	<b>Qingdao, China</b>
<b>Establishment</b>	<b>1968 &gt;&gt; 2017 &gt;&gt; NOW</b>
<b>Business Focus</b>	<b>Components, Instruments &amp; Total Solutions</b>
<b>Business Area</b>	<b>RF, Microwave, Millimeter-wave, THz, Optics</b>



## 2. Headquarters

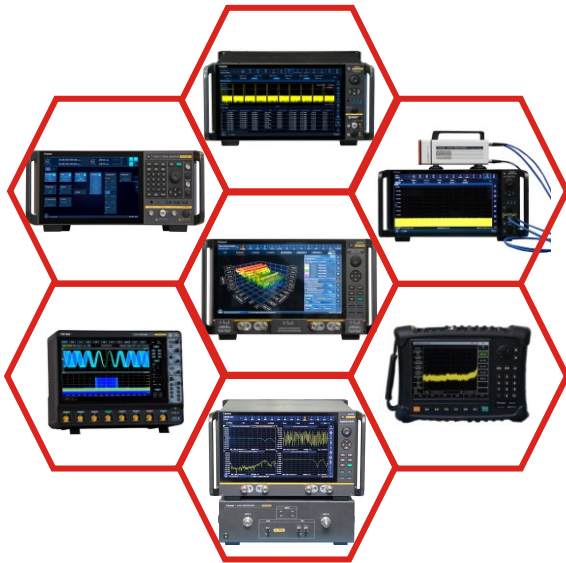
1. R&D Building
2. National T&M Lab, Metrology & Calibration Center
3. New Innovation R&D Building
4. New Employee Apartment
5. Precision Machining Center
6. Manufacturing Center
7. Hotel and Training Center

RF/ $\mu$ W/mmW/THz/Optical  
Components, Instruments and  
Systems  
R&D and Manufacturing  
at  
Qingdao Campus



## 3.1 Businesses

### Focus on Instrument



<p><b>Mixers</b> Fundamental Mixers: 1GHz to 40GHz Harmonic Mixers: 26.5GHz to 500GHz</p>	<p><b>Solid-state Switches</b> FET Switches: DC to 200GHz PIN Switches: 0.01GHz to 40GHz</p>
<p><b>Millimeter wave multipliers</b> 26.5GHz to 500GHz</p>	<p><b>YIG oscillators</b> Frequency: 2.2GHz to 20GHz Multioctave Bandwidth</p>
<p><b>Solid State Amplifier</b></p> <p>Maximum Saturated Output Power</p>	
<p><b>Power Detectors</b> Coaxial Detectors: 0.01GHz to 40GHz Waveguide Detectors: 26.5 to 110GHz</p>	<p><b>YIG Band-pass Filters</b> Frequency: 2.8GHz to 50GHz</p>



Electronic/Optical  
Test & Measurement  
Instruments

Automatic  
Test System/Solutions

ICs, Components &  
Modules

Metrology/Calibration  
Services

# 3.2 Businesses

## Explore the Future

Egg Hatching & Animal Breeding

Fire Electronics

Communication Equipment

New Energy Solutions



## 4. Subsidiary R&D labs and Institutes



ISO 9001



ISO 14001



OHSA 18001



ISO/IEC 17025 = CNAS-CL01



CE and RoHS



Внесение в госреестр

### Certificates and Qualifications



National Key Laboratory for Science and Technology on Electronic Test & Measurement



National Defense Optical and Electronic Primary Metrology Laboratory



Beidou Open Laboratory Qingdao Sub Laboratory



National Quality Supervision & Test Center for Electronic Instrument, Connectors and Relays

National-level Labs, R&D centers, regulation commissions and centers are put in Ceyear for operation and administration purpose.

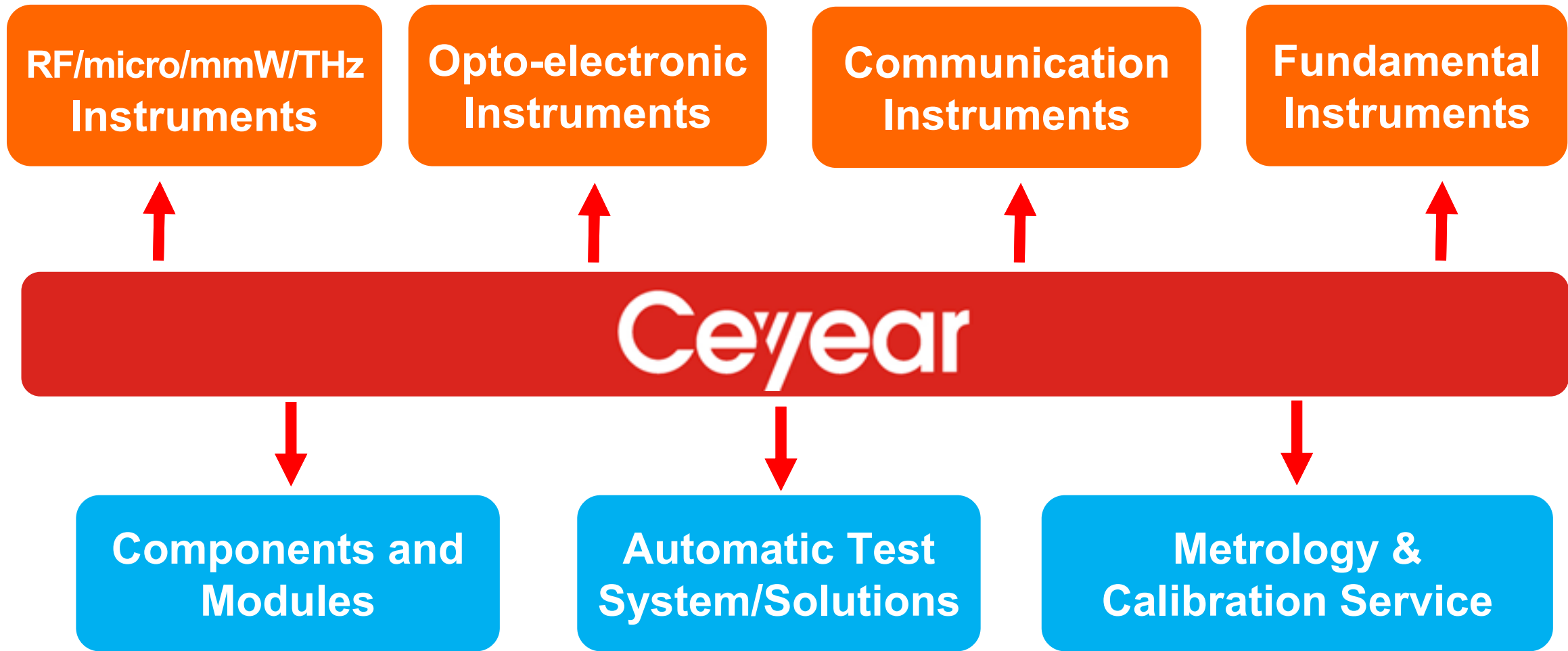
Contents

**I** Basic Information

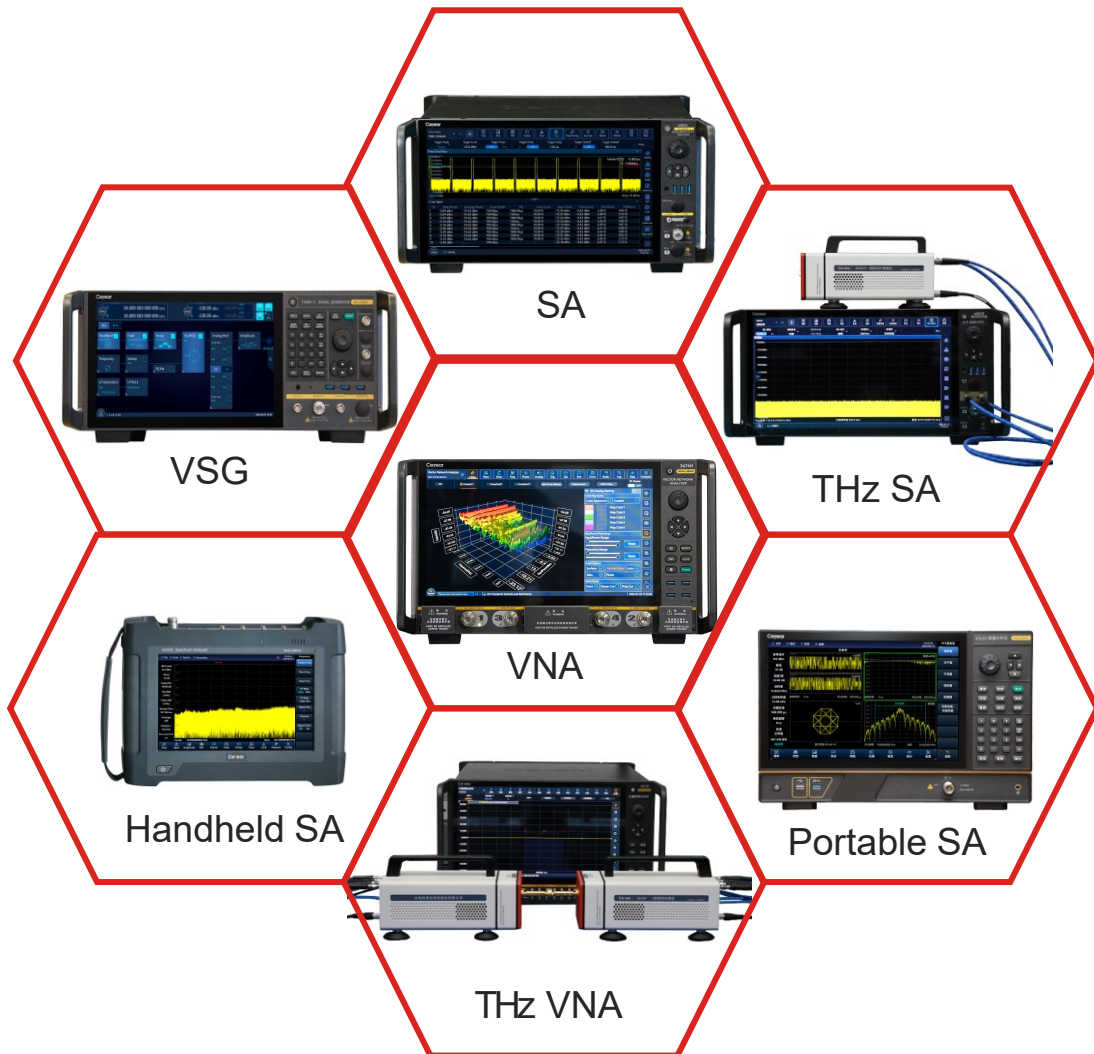
**II** Product Family



# 1. Overall Products and Services



## 2.1 Microwave/mmW Instruments



### Products

- Signal Generator
- Signal/Spectrum Analyzer
- Vector Network Analyzer
- Noise Figure Analyzer
- Power Meter
- Monitoring Receiver

### Overall Level

- Coaxial to 110GHz, Waveguide to 1100 GHz
- Max signal internal modulation bandwidth 2 GHz
- Max signal receiving analysis bandwidth 2 GHz
- Multi-ports, large dynamic range network parameter test
- Diversified product realization forms from PXIe, module to handheld/portable/benchtop and cabinet

## 2.2 Microwave Instruments – Other Typical Solutions



EMI Test Receiver



Measurement Receiver



Power Meter



Noise Figure Analyzer



Cable & Antenna Analyzer



Real Time Spectrum Analyzer



Spectrum Analyzer



USB Power Sensor



Microwave Analyzer



Monitoring Receiver

### Metrological

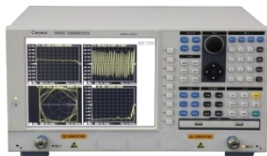
### Handheld

### Economical

### Modules



Signal Generator



VNA



VNA



Spectrum Analyzer



VNA



VNA



Signal Generator



Receiver Module



Monitoring Receiver



PXI



## 2.3 1466 and 1466-V Series Signal Generator



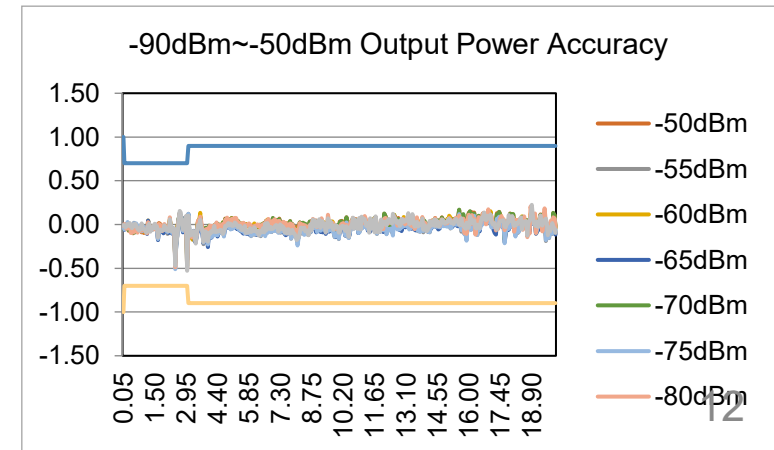
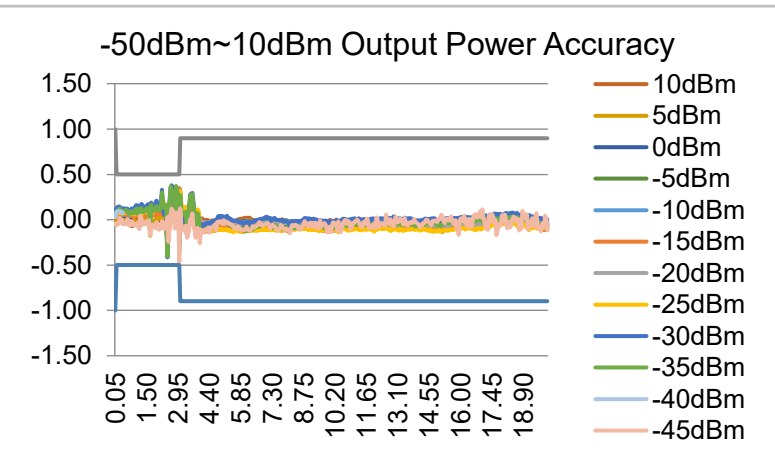
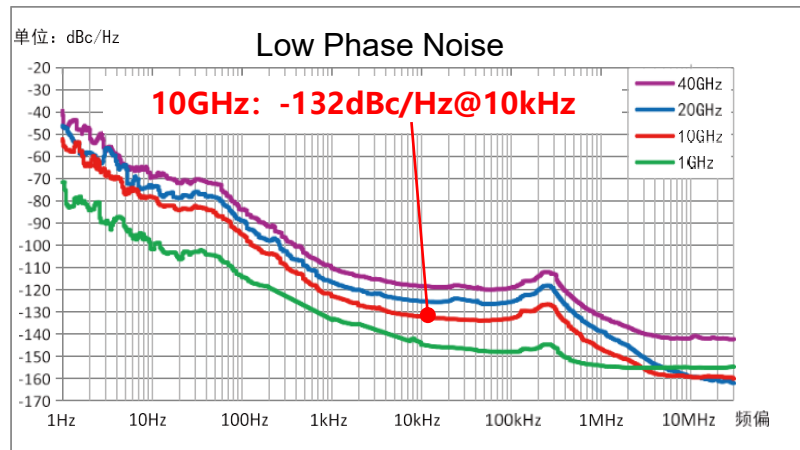
1466 series Analog SG



1466 series Vector SG

### Features

- Analog Signal Frequency: 6 kHz to 110 GHz (coaxial connectors)
- Vector Signal Frequency: 6 kHz to 67 GHz (coaxial connectors)
- Phase Noise:  $< -132$  dBc/Hz (10GHz@10kHz)
- Harmonic:  $-55$  dB ( $3\text{GHz} < f \leq 67\text{GHz}$ )
- A/B two output channels at 13GHz/20GHz/33GHz/45GHz
- Internal/external Modulation bandwidth 2GHz/5GHz,
- Internal 5G NR EVM  $< 0.8\%$ , 20 channel fading scenarios
- Abundant modulation functions, with 30+ digital types



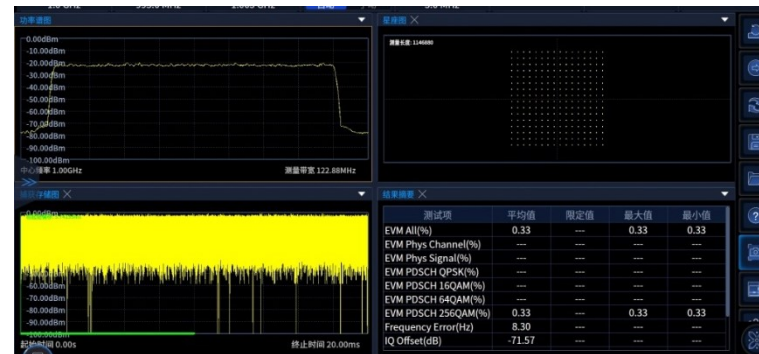
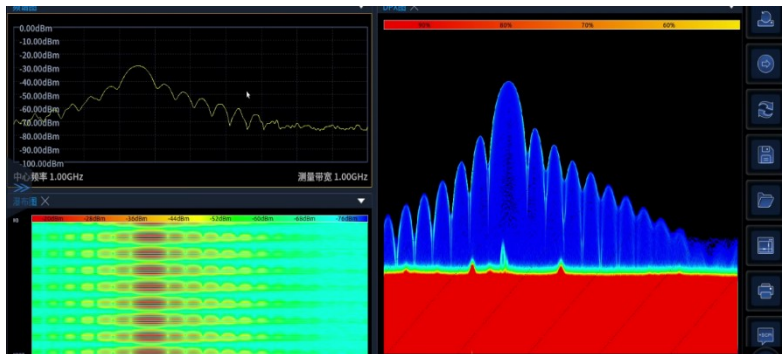
## 2.4 4082 Series Signal/Spectrum Analyzer



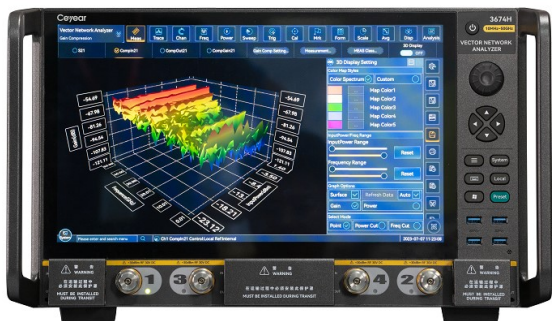
4082 series Signal/Spectrum Analyzer

### Features

- Frequency: 2 Hz to 110 GHz coaxial connectors
- Analysis Bandwidth: 10MHz/ 40MHz/ 200MHz/ 400MHz/ 600MHz/ 1.2GHz/ **2GHz**
- Maximum Real Time Bandwidth: **2GHz**
- Low Noise Preamplifier to **67GHz**, Hardware Preselector up to **110GHz**
- Phase Noise: -134 dBc/Hz (1GHz @10kHz offset)
- 5G/4G, NB-IoT, WIFI, Bluetooth, 5GNR 100MHz/400MHz, LTE 20MHz
- 100% POI signal minimum duration 0.27μs
- 2ns pulse width analysis ability with 20 pulse parameters



## 2.5 3674 Series Vector Network Analyzer



3674 series 4 port Vector Network Analyzer



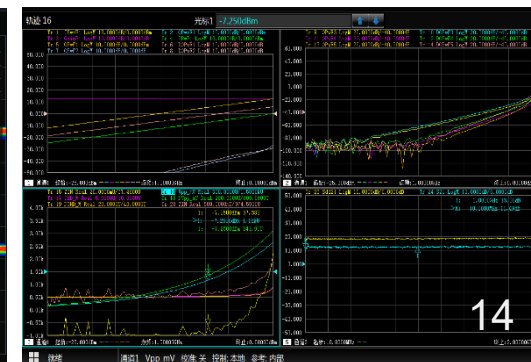
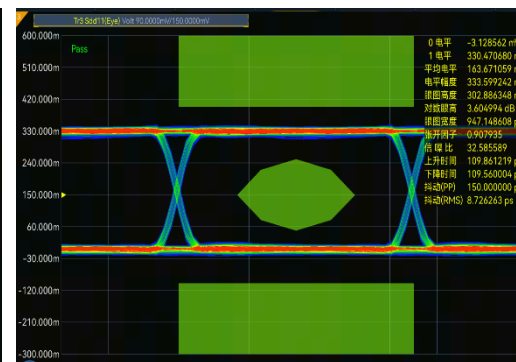
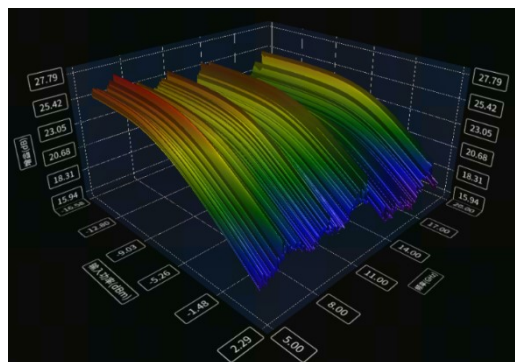
3674 series 2 port Vector Network Analyzer



3674PA 4 port 110GHz Coaxial VNA

### Features

- Frequency: 500 Hz to **110 GHz coaxial** connectors
- 140 dB dynamic range, 0.002dB amplitude trace noise
- 21 Measurement functions of S parameter, differential signal, pulse, eye diagram, time domain measurements and so on
- Test of Mixer, gain compress, noise figure, Intermodulation distortion test, Embedded LO frequency converter and so on
- Fast continuous wave, THD, signal integrity analysis, spectrum analysis
- 3 independent signal source and 8 reception channels
- Faster measurement speed, higher dynamic range of output power



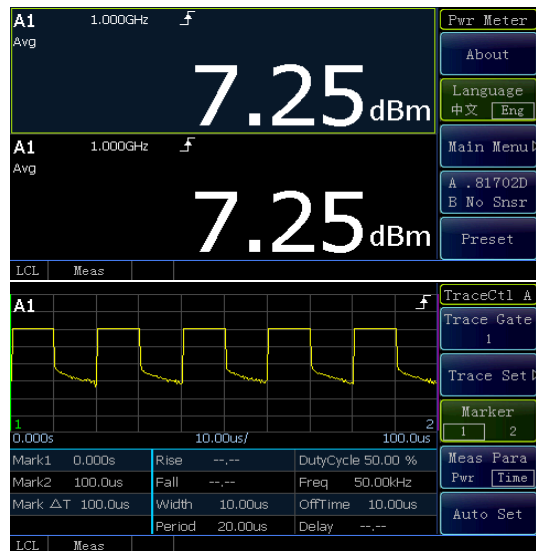
## 2.6 Power Meter and Power Sensors



2438 series Power Meter



71710, 81702/3 series Power Sensor for 2438



87230 series USB CW Average Power Sensor



87234 series USB Peak / Average Power Sensor



87235 series USB Average Power Sensor

### Features

- Frequency: 9k Hz to 67 GHz, coaxial connectors
- -70 dBm to +26 dBm (Expandable with attenuator or coupler)
- Rise time: <13ns, minimum measurable pulse width: 40ns
- Benchtop and USB power measurement solutions
- Peak and true average power measurement
- USB series support most of Ceyear products for Power Measurement and Power Calibration



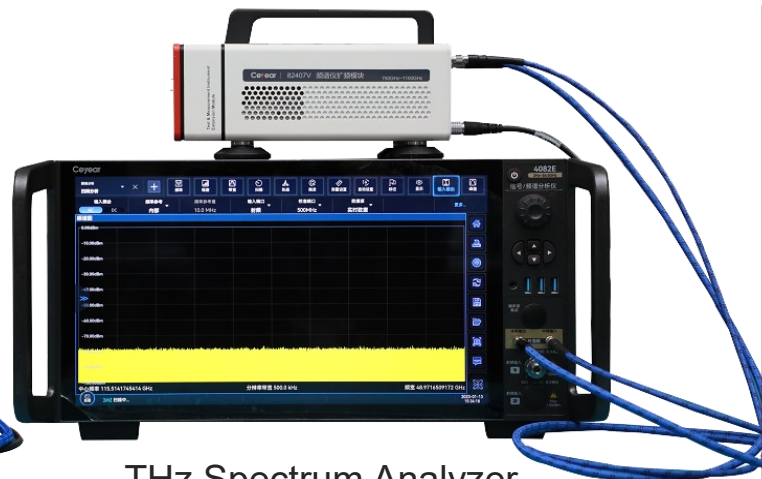
Ceyear Products support USB Power Sensor



## 2.7 THz Test Solutions based on Electronics



THz Signal Generator



THz Spectrum Analyzer

- ### Features
- Freq.: 50 GHz to 1.1THz, Waveguide
  - Total mmW/sub-THz/THz test solutions based on Electronics
  - Signal generation, signal analysis, S parameter test, power test, noise figure analysis
  - Abundant THz Passive / Active Components and Module, with high customized capability



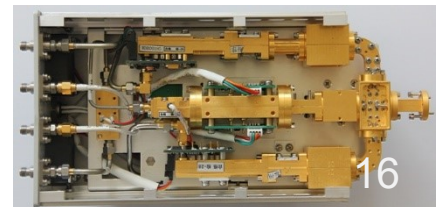
THz Vector Network Analyzer



THz Power Meter and sensors



THz Passive / Active Components and Modules

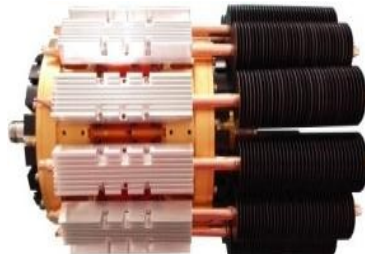
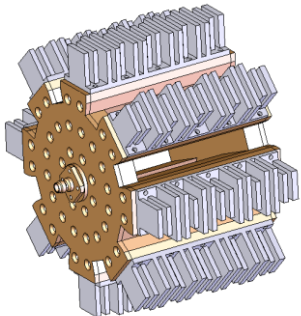
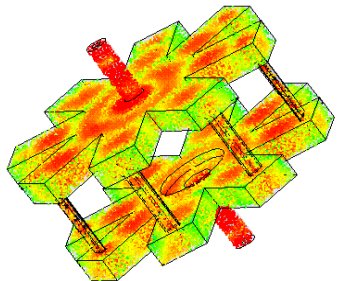




## 2.8 3871 Series Solid State Power Amplifier

### Features

- Wide Frequency: **4 kHz ~ 110 GHz**
- High Output Power: **0.1 W ~ 200 kW**
- Built-in power meter to for Accurate **Power**;
- Displaying **Output power and Reflected power**
- **Automatic Level Control (ALC)** to output steady power;
- Or **Open Loop** to set the gain, even remotely by GPIB or LAN;
- Protection against **Mismatch, Over** voltage, current and temperature.



4U Height 3871 SSPA



5U Height 3871 SSPA



Module



11U Height

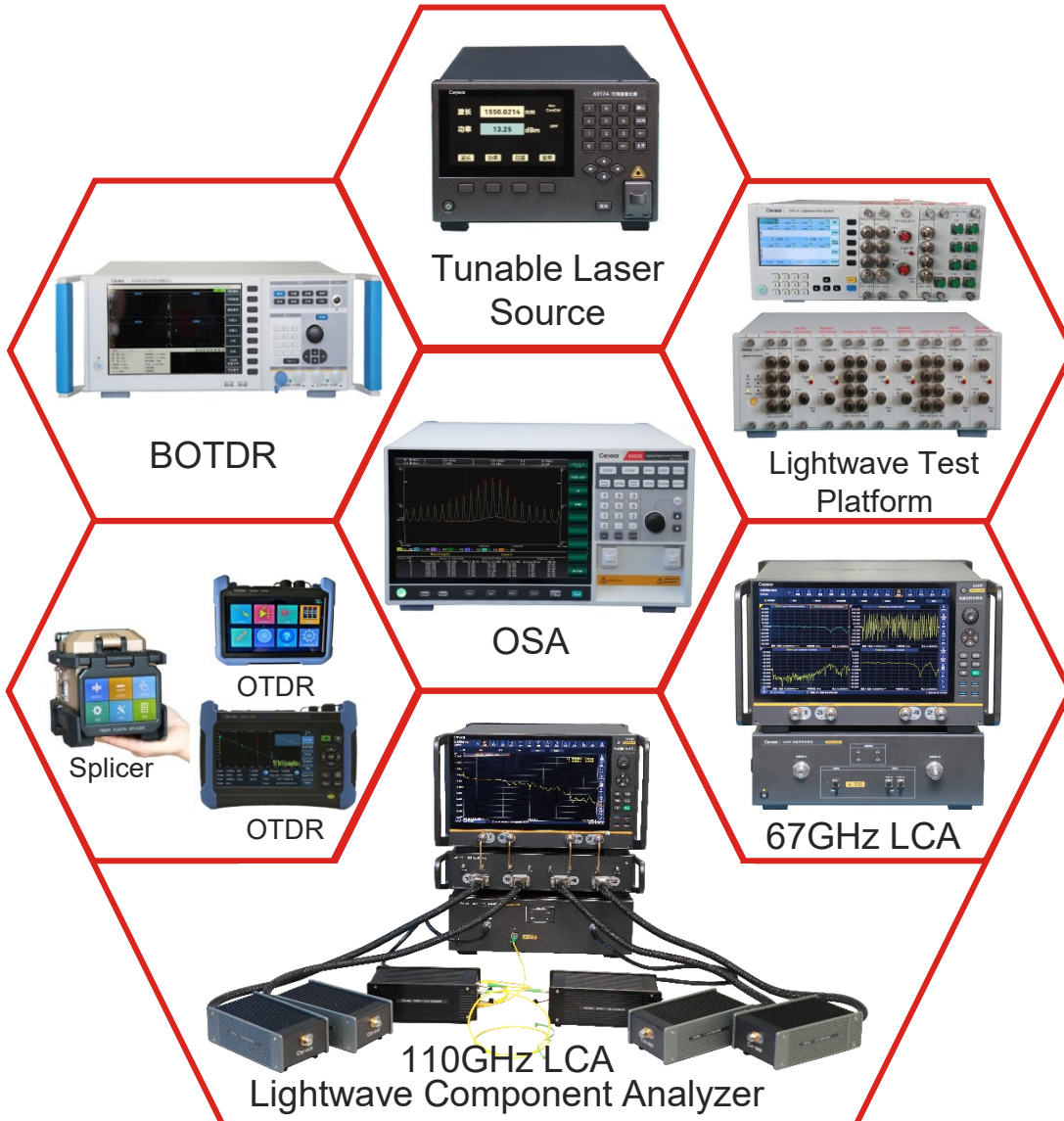


32U Height



15U Height

## 3 Optic-electronic Instruments



### Products

- 6317 series Tunable Laser Source
- 6362D Optical Spectrum Analyzer (OSA)
- 6433 series Lightwave Component Analyzer (LCA)
- 9951 series Lightwave Test Platform
- Fusion Splicer, OTDR
- Light Sensing Solutions: BOTDR

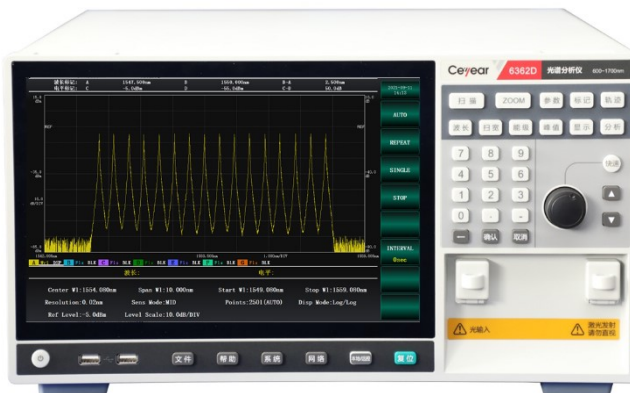
### Overall Level

- 200 nm ~ 14  $\mu\text{m}$  spectrum measurement range
- 50 dB fiber loss distribution dynamic range
- 40000  $\mu\text{e}$  fiber strain distribution single-end test range
- - 90 dBm power sensitivity, 0 – 80 dB attenuation
- 0.005 dB/15min laser source stability

## 3.1 Tunable Laser Source and Optical Spectrum Analyzer



6317A Tunable Laser Source



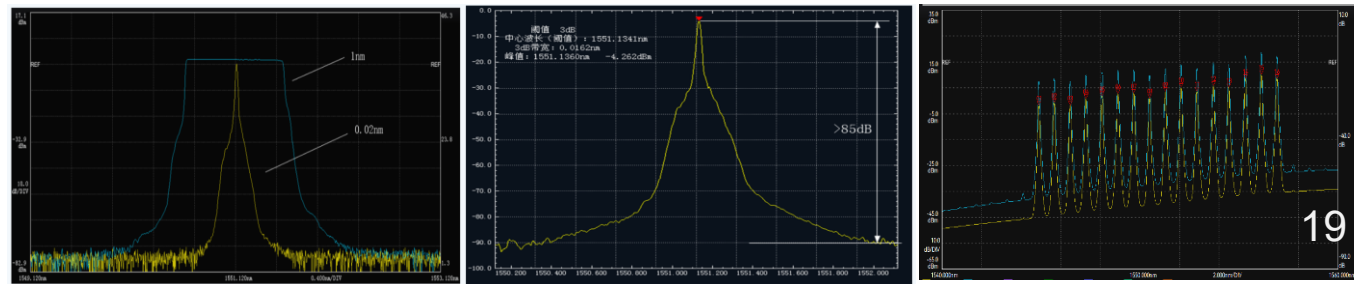
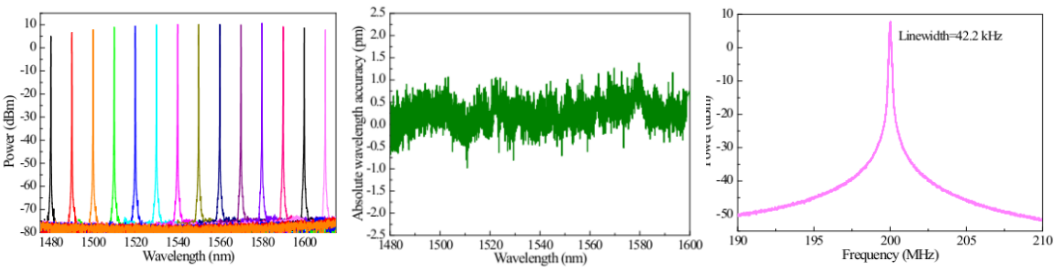
6362D Optical Spectrum Analyzer



Screen shot of 6362D

- ### Feature
- Wavelength: **1480 nm to 1610 nm**
  - Mode-hop free design
  - Accuracy: **20 pm**
  - Continuous scan speed: **1~200nm/s**

- ### Features
- Wavelength: **600nm to 1700nm**
  - **20 pm** minimum optical spectrum resolution
  - **78 dB** dynamic range, **-90 dBm** sensitivity
  - **Build-in** optical source for calibration and special applications



## 3.2 110GHz Lightwave Component Analyzer



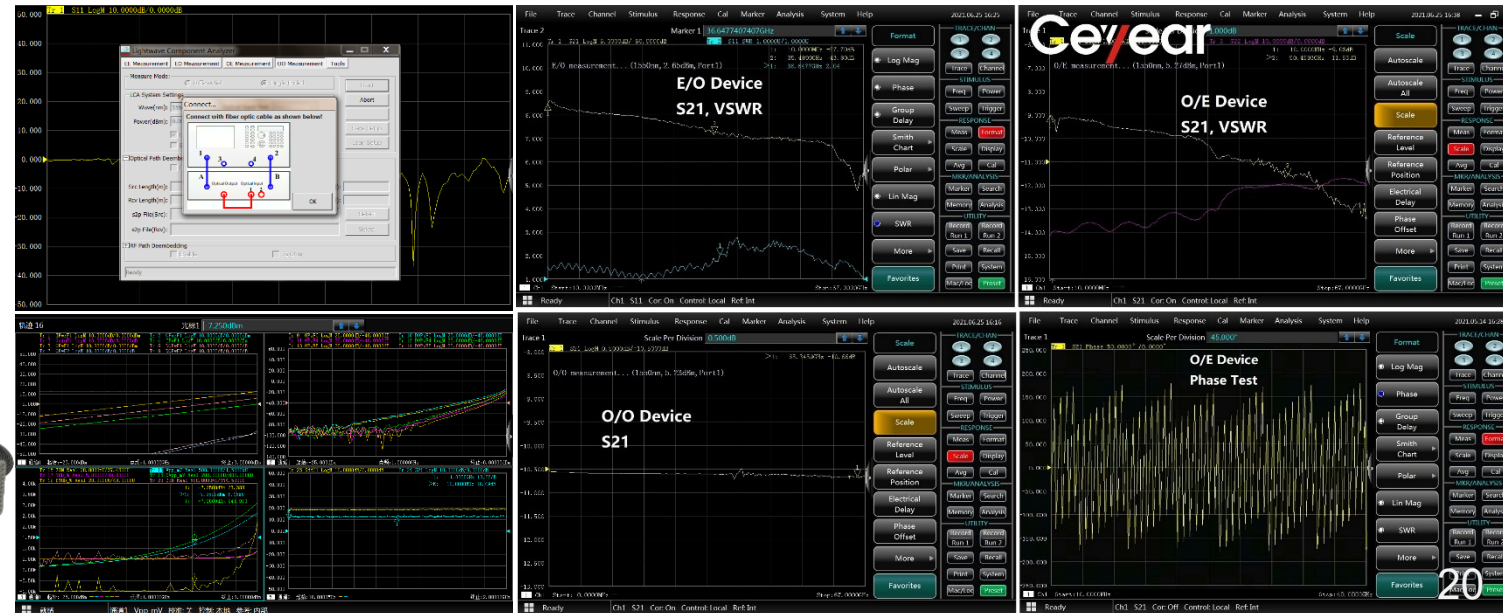
67GHz Light Component Analyzer



110GHz LCA  
Lightwave Component Analyzer

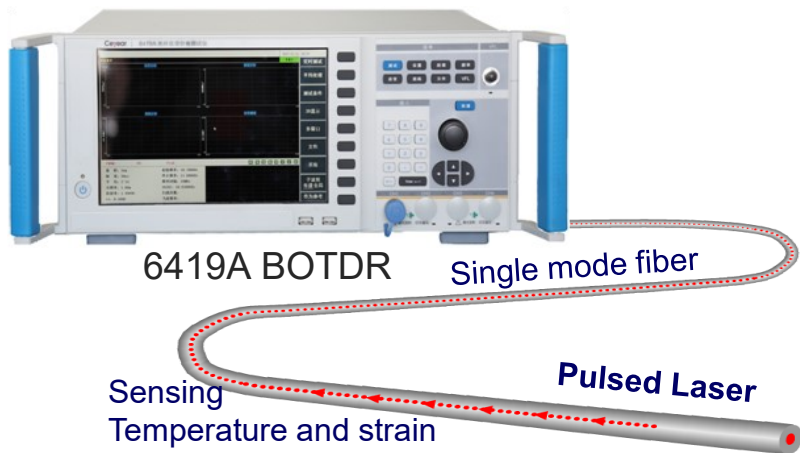
### Features

- Modulation Frequency: 10MHz to 67GHz, to 110GHz
- Internal Laser wavelength: 1310nm/1550nm  $\pm$  20nm
- External Input Laser wavelength: 1260nm to 1610nm
- O/E, E/O, O/O, E/E Four measurement mode
- Build-in optical source for calibration and special applications



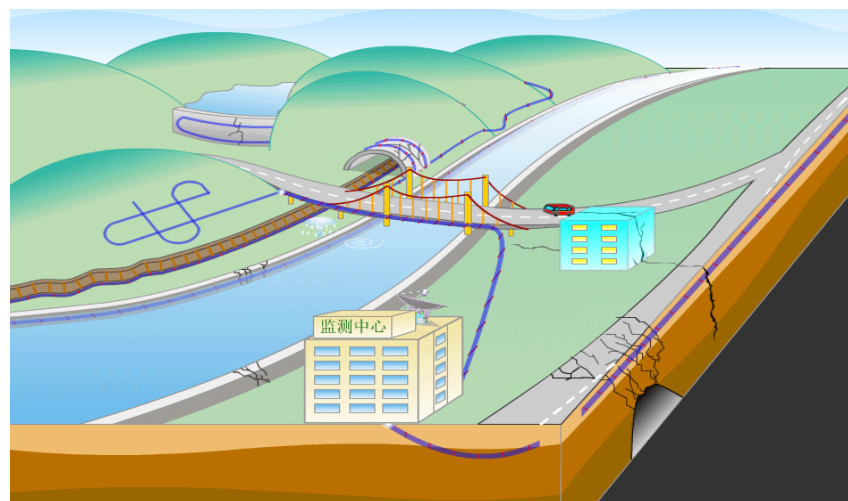
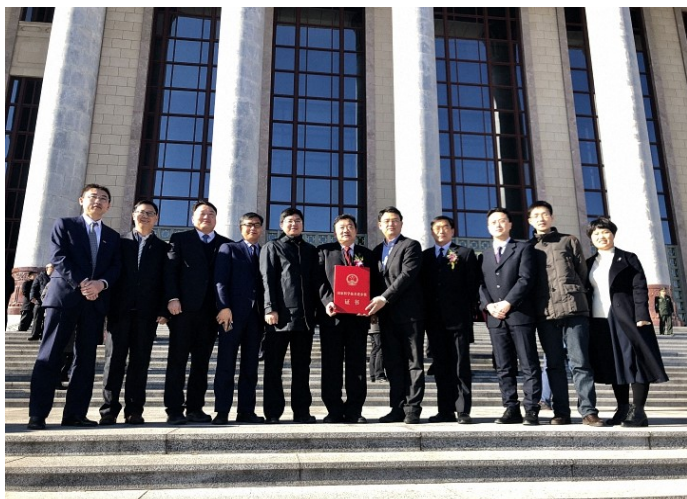
## 3.3 Tunable Laser Source and Optical Spectrum Analyzer

### Distributed Optical Fiber Monitoring System



BOTDR can simultaneously measure strain distribution, loss distribution and Brillouin scattering spectrum at different location of optical fiber, and then to pre-alarm the vulnerable structures.

**Distributed Optical Fiber Monitoring System based on Ceyear 6419A BOTDR has won the China National First Prize for Progress in Science and Technology.**



## 4 Communication Instruments

### 5G Test System



5256C 5G End Device Tester



5252D 5G Base station Tester



5201 Data Network Tester

- 5G Customer Premise Equipment Test from 70MHz to 7.1GHz
- 5G Multichannel Base Station Testing System for Transmitter and Receiver
- Also support LTE、WCDMA、GSM for 4G/3G/2G
- 200MHz bandwidth, Support 64 channel MIMO test
- 20 channels with 10Gbps/100Gbps test ability
- High accurate time delay and jitter measurement

### Radio Communication Tester



4945B/C Radio Communication Tester

- 1MHz~1.05GHz and 1MHz~3GHz
- RF analog/vector signal generator, Broadband power measurement, Audio generator and analyzer, signal/ spectrum analyzer, Oscilloscope, frequency error test, frequency hopping test and so on.
- For wireless communication device test, transmitter test, receiver test and so on

## 5 Fundamental Test Instruments



1652A AWG



1652B AWG

1652AM AWG  
(Arbitrary Waveform Generator)



PXIe-3U

Feature	1652A, 1652B	1652AM
● Rate:	2.5GSa/s, 10GSa/s	1.2GSa/s
● Bandwidth:	500MHz, 2GHz	400MHz
● Resolution:	14bit, 16bit	16bit
● Channels:	2, 4	4-64 to 100+

## 4457 series Oscilloscope

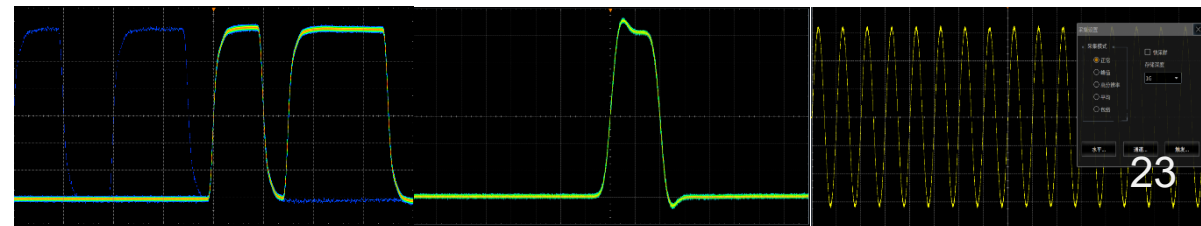
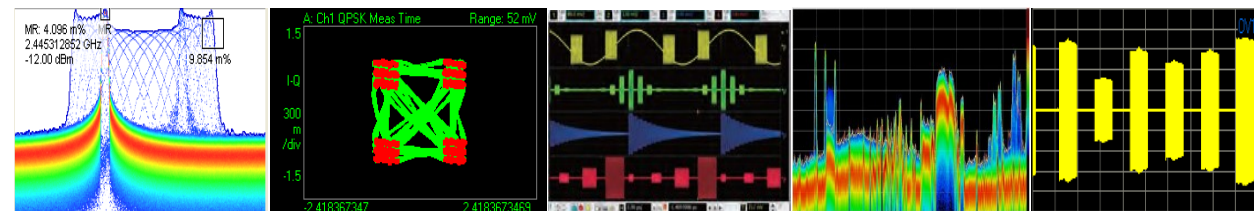


4457E/F/G/K 8bit



4457EH/FH/GH/KH 12bit

Feature
● Bandwidth: 1GHz, 2GHz, 3GHz, 4GHz
● Channels: 4 or 8 channels
● Sampling Rate: 10GSa/s-20GSa/s
● Vertical Resolution: 8 bit or 12 bit
● Memory depth: 1Gpts or 2Gpts



## 6.1 Components and Modules - Passive

➤ Ultra-broadband, high performance for instrument level use



**Coaxial and waveguide Switches**



**Calibration Kit, Adapters**



**Fixed/Programmable Attenuator**



**Cable**



**Directional Coupler/ Bridge**



**Divider/Balun/Antenna**



## 6.2 Components and Modules - Active

➤ Ultra-broadband, high performance for instrument level use



**Broadband Amplifier Modules**



**Solid State E-Switch**



**YIG Filter**



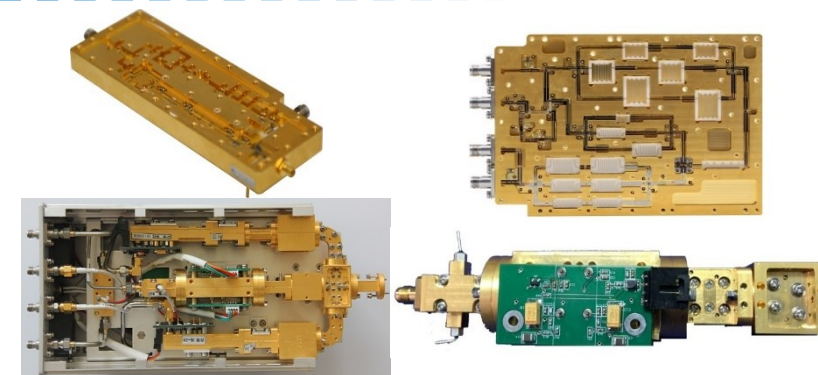
**Detectors**



**Frequency UP/Down Converter**

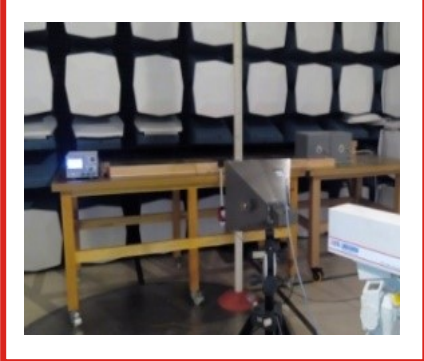
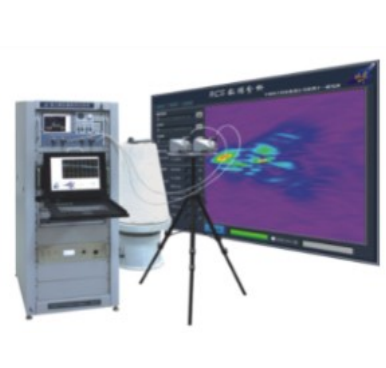
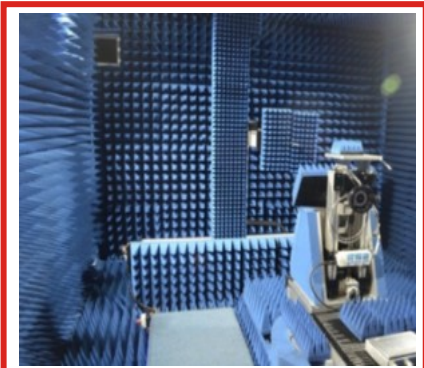


**Noise Source**



**Customized Multifunctional Modules**

## 7.1 Automatic Test Systems Total Solutions



### Solutions

- Antenna Test System
- EM Material Test
- Spectrum Monitoring and Direction-finding
- Radar Cross Section (RCS) Test System
- Teaching and Experiment System
- T/R component
- EMC Total Solution

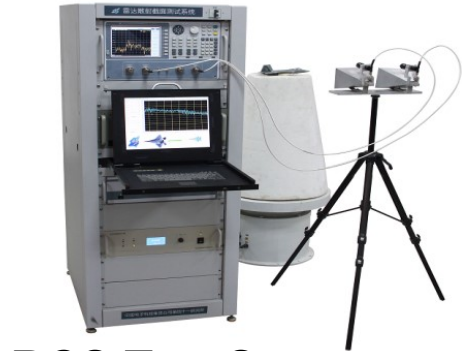
### Overall Level

- Standard, universal software platform
- Various calibration technology, advanced test accuracy
- Various software and hardware safety technology to protect the parts under test
- Customized software and hardware to provide best system solutions

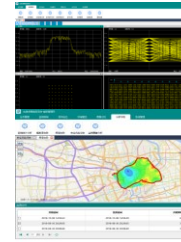
# 7.2 Automatic Test Systems Total Solutions



Antenna Test System



RCS Test System



Radio Spectrum Monitoring and Direction Finding

Customized Solution

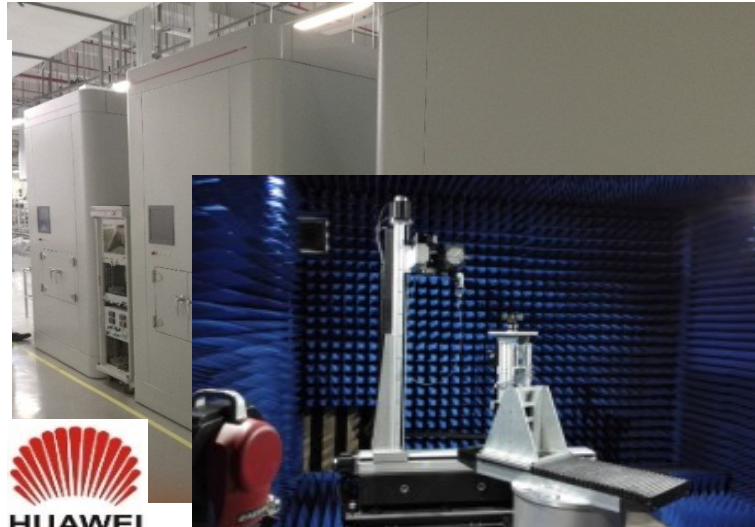
Ceyear-based Instrument



Radar Equipment Comprehensive Test



ElectroMagnetic Environment Simulation



Far-field 5G Antenna Test System

Field Installation

One-stop Total Solution

## 8 Metrology and Calibration Services



### Three Electronic Specialty

- RF/Microwave/mmW Instrument
- Communication Instrument
- Fundamental Instrument



ISO/IEC 17025  
= CNAS-CL01



### Four opto-electronic Specialty

- Opto-electronic Sensing
- Optical Fiber and components
- Space Optical Communication and Display
- Metrology and Measurement of Opto-electronic Instrument and Systems

**Provide Calibration Service and Lab Construction Total Solutions !**

# THANKS !



**Ceyear**

**Focus on Measurement  
Explore the Future**

**CEYEAR TECHNOLOGIES CO., LTD**

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