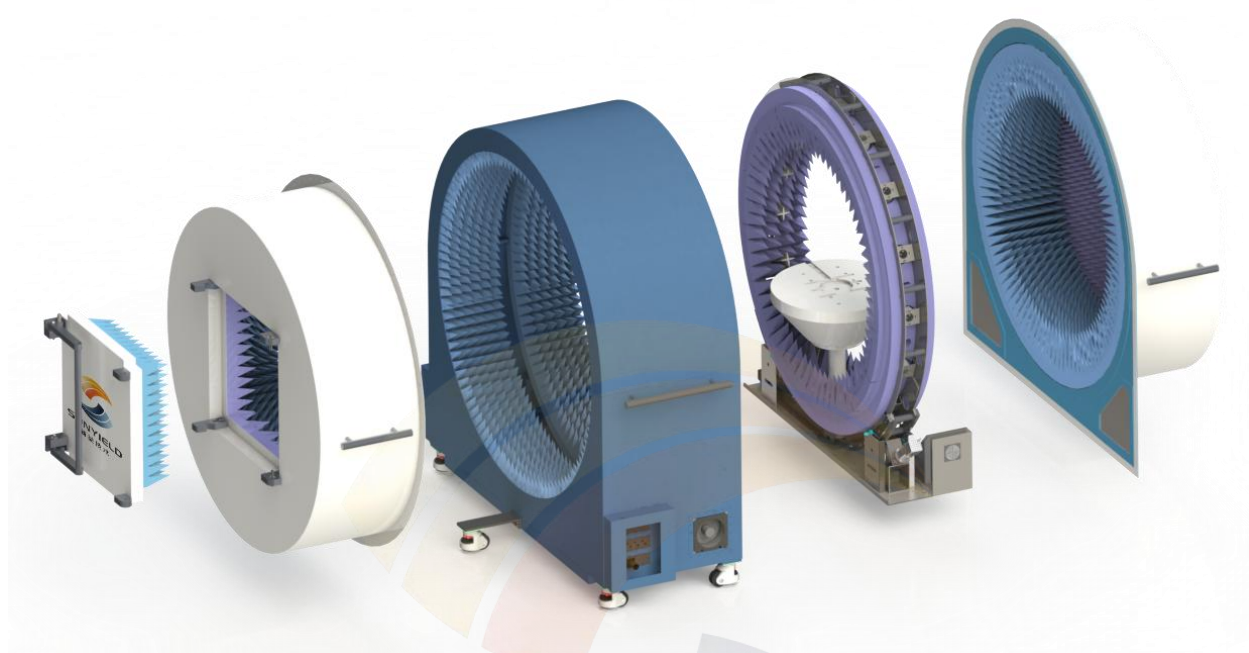


Sunyield

New Generation Accurate OTA Test System: Mini-Chamber Product Manual



Faster testing
Better accuracy
More stable



Small mobile antenna measurement system , with shielding room, flexible and mobile, decrease the cost of chamber to move. Support frequency band between 650 MHz ~40GHz (by version) , suitable for small diameter (36 cm) antenna measurement, is widely used in mobile phone manufacturers, research and development, Radar antenna testing,the production line of small antenna consistency validation, etc.

1

Faster testing

the symmetrical distribution of probes is applied. Thus, the object can be 3D measured completely as long as a 180-degree.rotation is performed horizontally under normal circumstances.

2

Powerful function

It supports the active measurement in most of the models such as 2G, 3G, 4G,5G,NB-IoT,eMTC,WIFI , GPS and BT within the frequency range between 650MHz and 8GHz.

3

Strong Compatibility

It is compatible with common network analyzers and general-purpose testers from renowned companies such as Keysight,R&S , Anritsu, StarPoint and LitePoint .

4

Smooth upgrade

After upgrade of software and hardware, the system also can support LTE-CA measurement.

5

More Convenient

This system has its own shielding room, which is much smaller than the traditional shielding room. It is convenient to move, move and share the test system

6

Cost effective

The user needs not to establish a shielding darkroom since the system itself is capable of shielding disturbance.

7

Real-time display

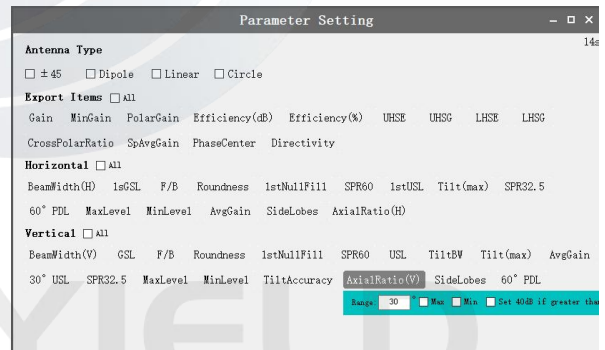
It allows real-time viewing of active and passive directivity diagram as well as active power and sensitivity.

Basic parameter

Mini-Chamber System name	SY-16M/SY-24M	SY-30M-18G	SY-30M-40G
Frequency bands	650MHz-8.5GHz / 650MHz-12GHz	650MHz~18GHz	650MHz~40GHz
Number of probes	16 / 24	14(650MHz~6GHz) +15 (6GHz-18GHz)	14(650MHz~10GHz) +15 (10GHz-40GHz)
Quiet zone size	36 cm	36 cm	36 cm
Max weight of DUT	15kg	15 kg	15 kg
Typical dynamic range	60-80dB	60-80dB	60-80dB
Shielding Effectiveness	≥80dB	≥80dB	≥80dB
External dimensions (L×W×H)	1820*1700*1950mm	1820*1700*1950mm	1820*1700*1950mm
φ Angular resolution	0.1°	0.1°	0.1°
θ Angular resolution	15° / 22.5°	11.25°	11.25°

Upgradable projects

- Support Frequency band upgrade
650MHz~12GHz/650MHz~18GHz
- Support signaling and non-signaling tests
- Support RSE test
- Support Wi Fi throughput test: Wi Fi single
channel throughput and Wi Fi MIMO (4×4、
2×2) Throughput
- Support LTE / NR throughput test: LTE / NR
MIMO (4×4、2×2) Throughput



OTA Active support upgrade items

- 2G:GSM GPRS EDGE HSDPA HSUPA
- 3G:WCDMA TD-SCDMA
CDMA2000 CDMA2000_1xEvDO
CDMA2000_1xRTT
- 4G:LTE-TDD LTE-FDD
- 5G:NSA SA
- Wi-Fi:802.11_a/b/g/n/ac/ax / 6E
- BT: BDR/EDR BLE DTM
- IOT: eMTC、NB-Iot、Cat 1、Zigbee、LoRa
- GNSS:GPS GLONSS BDS (Tracking sensitivity
and Acquisition sensitivity)

Passive supportable test project

- 2D/3D Radiation pattern
- Gain / Efficiency
- Axial ratio
- FrontToRatio
- TiltAccuracy
- Sidelobe Level
-
- Cross Polar
- 1stNullFill
- Beam width
- Level drop
- Beam offset
- Roundness

****The system supports automatic report generation**



System Compatibility :

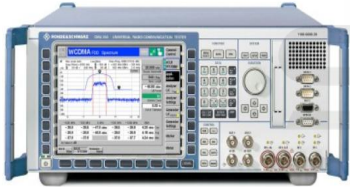


ZNB40

Type	Vendor	Model
Vector Network Analyzer	R&S	ZND, ZNB, ZVL Series
	Keysight	ENA/PNA series
	Anritsu	MS46522B



Keysight 8960



R&S CMU200

Call Box	R&S	CMU200, CMW270, CMW500, CMX
	Antitsu	MT8820C/ MT8821C/ MT8000A -5G/ MT8860C/MT8862C
	Keysight	E7515B/C -5G, UXM
Spectrum Analyzer (non-signaling)	StarPoint	SP8315 / SP6010 /SP9500- 5G
	R&S	FSV,FSW series
	Keysight	E5182B,E9020 series

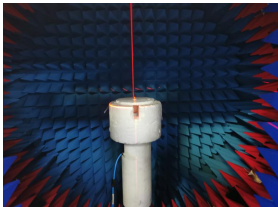


IQxel



R&S CMW500

Signal generator	R&S	SMB, SMA series
	Keysight	E4438C, N5182B



Inside of system physical drawing

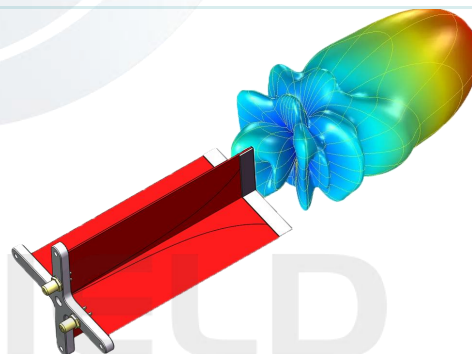
Measurement Efficiency

OTA Active Measurement Time	Power real-time test: 1-2sec	Sensitivity real-time test: 10sec
	TRP Measurement (1Ch) : 20-40sec	TIS Measurement (1Ch) : 1-8min
OTA Passive Measurement Tim	Check directivity diagram: Real time	11 frequency point measurement : Less than 1 min

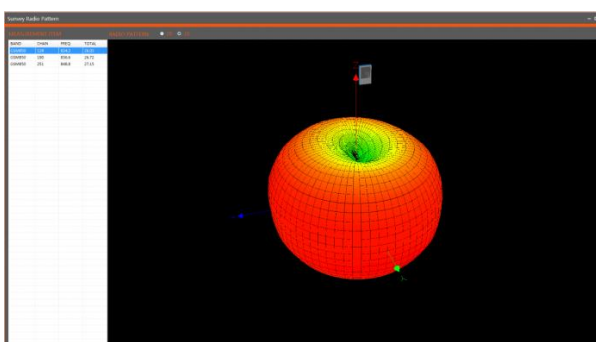
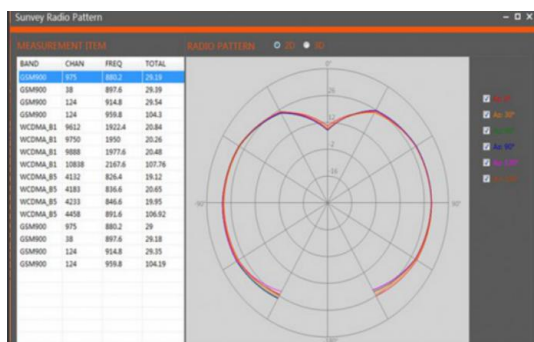
Test Repeatability and Accuracy

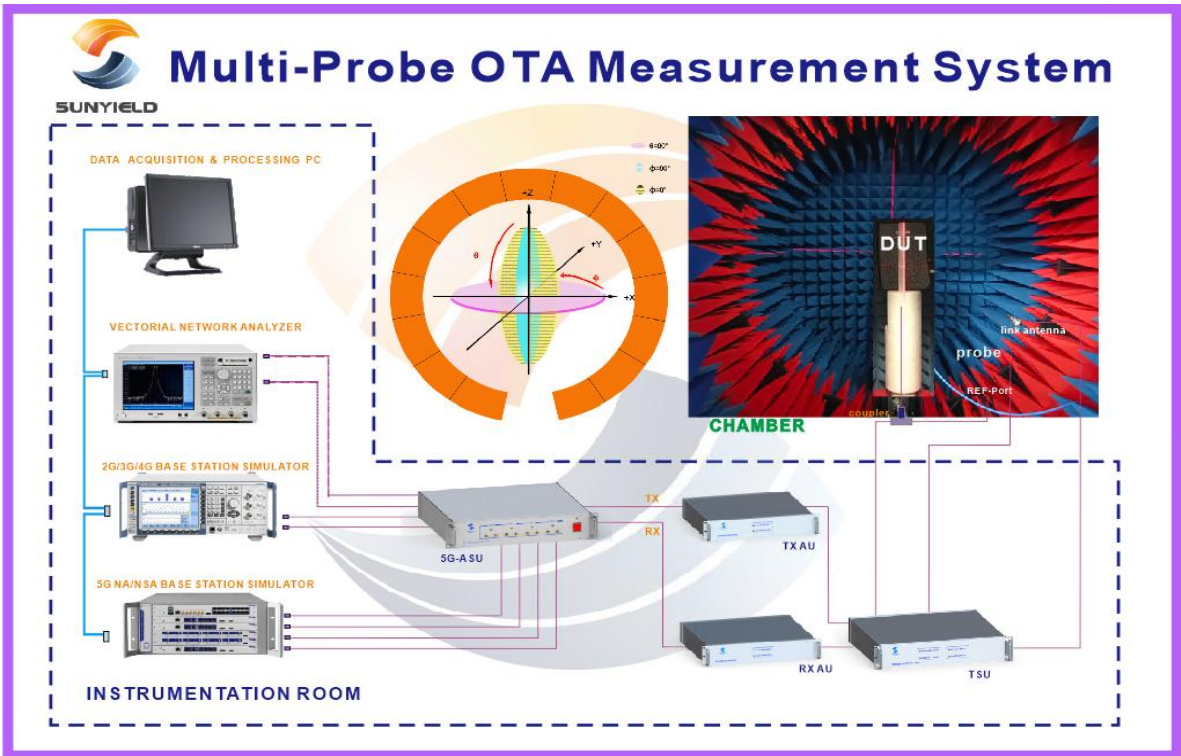
Test Items	Potocol	Repeatability	Test Accuracy
TRP	2G/3G/4G/5G	$\leq \pm 0.3\text{dB}$	$\leq \pm 0.5\text{dB}$
	Wi-Fi	$\leq \pm 0.3\text{dB}$	$\leq \pm 0.7\text{dB}$
TIS	2G/3G/4G/5G	$\leq \pm 0.5\text{dB}$	$\leq \pm 1.0\text{dB}$
	Wi-Fi	$\leq \pm 0.5\text{dB}$	$\leq \pm 1.2\text{dB}$
Gain	400MHz-6GHz	$\leq \pm 0.2\text{dB}$	$\leq \pm 0.6\text{dB}$
	6GHz-18GHz	$\leq \pm 0.3\text{dB}$	$\leq \pm 0.7\text{dB}$
	18GHz-40GHz	$\leq \pm 0.4\text{dB}$	$\leq \pm 0.8\text{dB}$

- Dual-polarized Vivaldi test antenna can meet various types of test objects such as linear polarization and circular polarization.
- Probe normalization processing, through software calibration compensation, make each probe performance consisten.



The near-field data measured by this system can be converted into accurate and reliable far-field data via near-field-to-far-field transformation, which is unmatched by similar products currently available on the market.





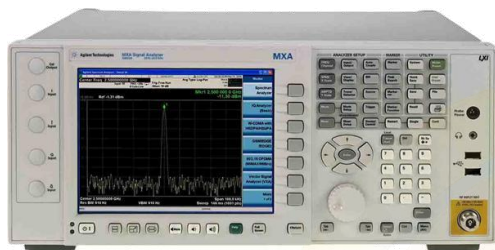
Equipment Power (Typical)

OTA Test System	Mini-Chamber	500W
Operating System	PC (with Monitor)	600W
Vector Network Analyzer	Keysight E5071C	350W
Comprehensive Tester	R&S CMW500	850W
Comprehensive Tester	Antitsu MT8820C	1200W
Comprehensive Tester	Keysight 8960 (E5515C)	550W
Comprehensive Tester (5G NR)	Antitsu MT 8000	1500W
Comprehensive Tester (5G NR)	R&S CMX500	1500W
Comprehensive Tester (5G NR)	StarPoint SP9500	1600W
Comprehensive Tester (5G NR)	StarPoint SP9500	1600W
Signal Generator	E4438C	300W

Non-signaling Test

The non signaling test of mobile phones, tablets, audios, Bluetooth headsets, etc. is to test the RF of the tested object without signaling interaction between the tested object and the test instrument (analog base station, such as n9020a/iq).

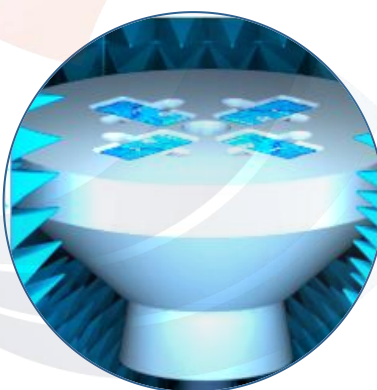
In general, taking two band GSM mobile phones as an example, compared with the signaling mode, non signaling can save more than 50% of the test time, that is to say, the output of the same number of test equipment will be doubled. Non signaling test is especially suitable for production line test in mass production stage.



One-to-many test

The system can customize the test fixture according to the shape of the tested object, which is suitable for one to many test mode in non signaling mode.

- It supports multi-antenna test (Up to 1 to 4) in non-signaling mode and has high test efficiency.



Throughput Test

Throughput is the amount of data that a network device or port can successfully transmit per unit of time (Mbps), that is, the maximum rate at which a Wi-Fi device can receive and send without losing frames.

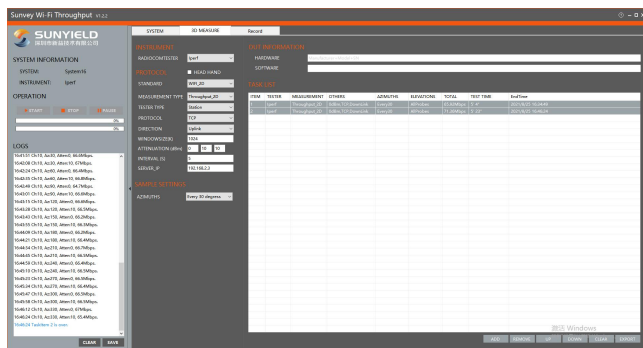
The throughput test method and test environment adopted by the system can identify the advantages and disadvantages of the current MIMO router/terminal throughput performance. Therefore, for THE Sation/AP designed by MIMO technology, the system has good testing ability.

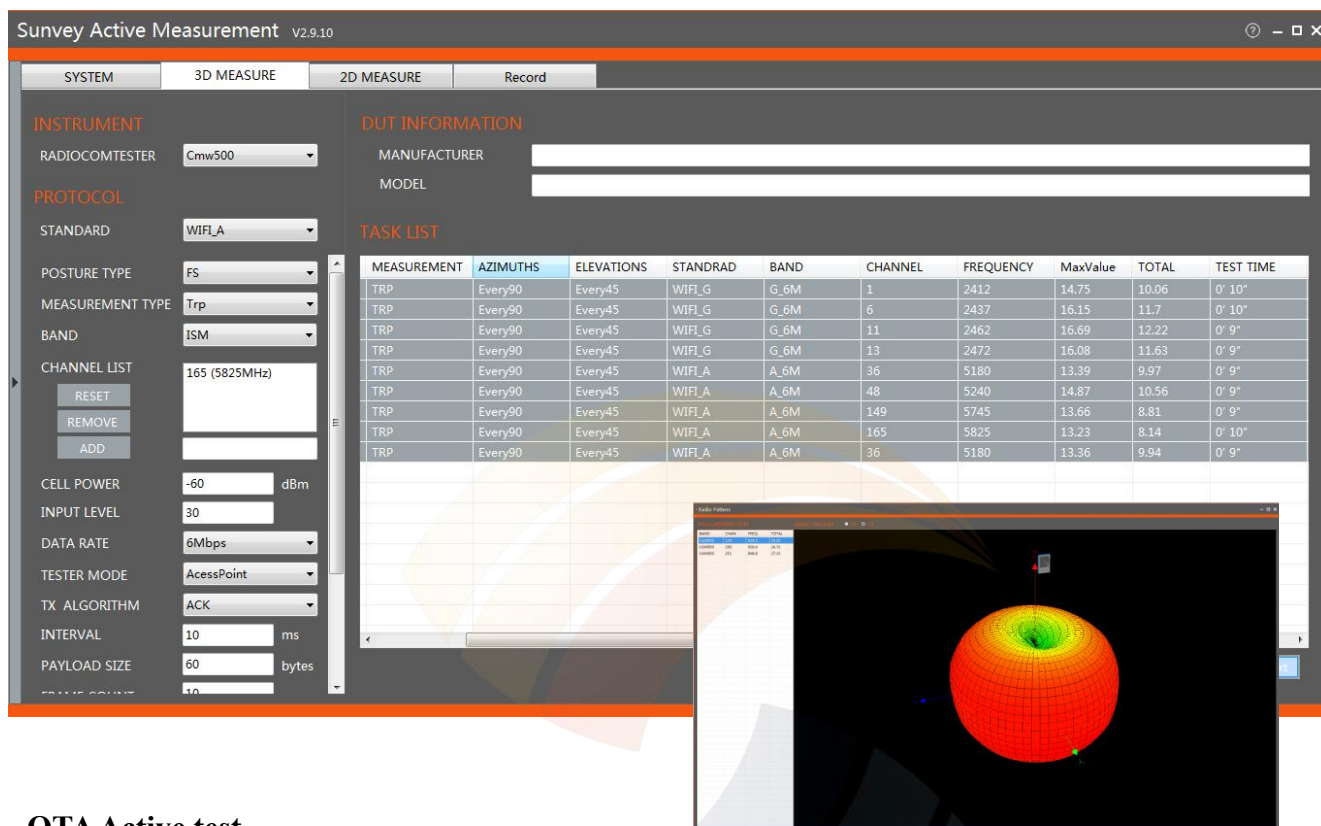
Test Function:

- ◆ Wi-fi/Bluetooth throughput test.
- ◆ Data buffer Settings, the computer receives data buffer according to the test throughput size custom Settings.
- ◆ Line loss setting, custom setting start loss, stop loss and loss reduction step, control test time.
- ◆ Data interaction duration can be set.

Test Support :

- Support Wi-Fi MIMO (4 x 4, 2 x 2) throughput testing;
- Supports Sation and AP tests
- Support wi-fi a/b/g/n/ac/ax
- 360° throughput
- DUT different posture throughput
- Peak throughput





OTA Active test

Traditional antenna measurement methods, known as passive testing, mainly test the radiation properties of the antenna itself. But for mobile terminal equipments, such as mobile phone, antenna performance do not represent the whole equipment rf signal receiving and sending performance. So at present, on behalf of the mobile phone eventually radiation performance, the whole machine transmitting and receiving performance test is more and more attention. This measurement method is usually within the specific microwave dark room, test of mobile phone radiation power and receiver sensitivity, is called the active test.

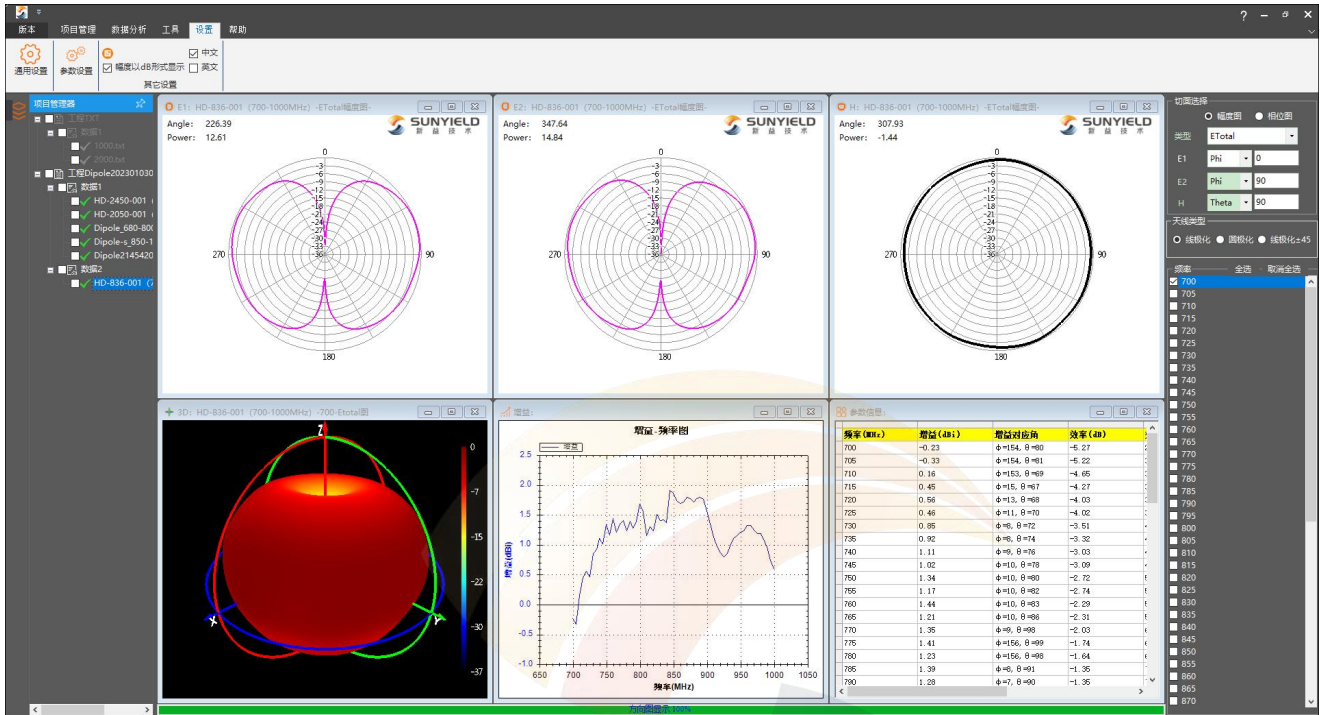
Test project

- 2G: GSM GPRS EDGE HSDPA HSUPA
- 3G: WCDMA TD-SCDMA CDMA2000 CDMA2000 1xEvDO CDMA2000 1xRTT
- 4G: LTE-TDD LTE-FDD
- 5G: NSA SA
- Wi-Fi: 802.11_a/b/g/n/ac/ax 6E/be

- Bluetooth: BDR/EDR BLE DTM
- IOT: Zigbee eMTC LoRa NB-IoT

Function:

- Mobilephone TIS and TRP performance test, including 2G/3G/4G/5G test, Wi-Fi test, Bluetooth test, Zigbee, LoRa test. TIS test contains TIS with RSSI/TIS with RSSI(L)/TIS BER FAST/TIS test mode.
- 2D/3D direction diagram, support direction figure project a key import and export.
- The active gain calibration.
- Auxiliary calibration.Can perform ASU calibration, IO Port calibration, line loss measurement, active gain compensation calibration file.
- With the real-time testing, real-time display of the test results, output MaxPoint automatically.
- Support the human phantom head and hand model test.



Passive test

Currently, passive testing is the most commonly used antenna test methods, mainly used by the antenna company. In general, the passive testing is network analyzer send signal through a cable, transmitted signal to a horn antenna, and radiation to the device to be measured (DUT) antenna, DUT antenna send the signal back to the network analyzer through the cable, and with the analysis of the network analyzer to get a passive measurement parameters. The measurement of antenna parameters is an important method to design the antenna and adjust the antenna. And for mobile phones and other DUT is usually a complex material, passive testing simulation of the whole engine emission performance relatively active test more stable and reliable, so in antenna test system often still will passive testing as a benchmark to measure the stability of the system.

test project

- 2D/3D Radiation pattern
- Gain / Efficiency

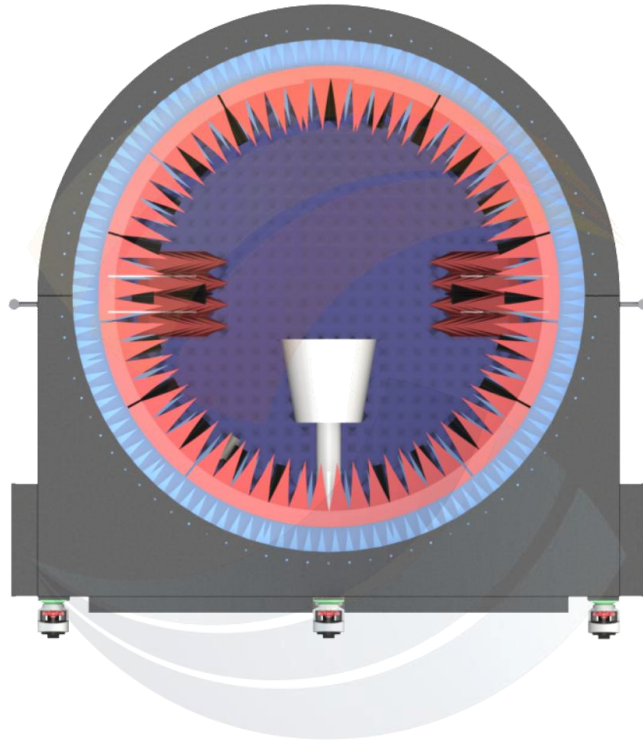
- Axial ratio
- FrontToRatio
- TiltAccuracy
- Sidelobe Level
- Roundness
-
- Cross Polar
- 1stNullFill
- Beam width
- Level drop
- Beam offset

Function:

- Parameters can be calculated manually or automatically
- Display the calculation results in the form of graphics (the software supports viewing six images at the same time)
- You can view the corresponding 2D and 3D patterns for different types of antennas
- Near far field calculation, parameter calculation, report export and other optional configurations are provided
- Provide project management function
- Provide data analysis, data export function
- The test data can be exported in many formats, such as TXT, Excel and cm
- Calculation, configuration, etc. all provide software memory function, background memory user habits

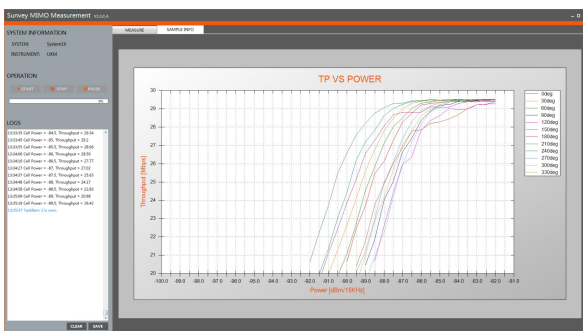
Modern wireless communication systems need to provide higher and higher data rates. By using multiple antenna systems (typical MIMO), data rates and channel capacity can be greatly improved. Therefore, MIMO system has been widely used in a variety of mobile communication standards, and has also become a mandatory item of future mobile communication standards.

Mini-Chamber provides a MIMO upgrade solution. The original OTA test system can meet the requirements of SISO and MIMO testing after software and hardware upgrading.



Testing software

Test function



- Performance of Downlink RX diversity wireless terminal in real channel environment.
- Performance of Carrier Aggregation wireless terminal in real channel environment.
- Performance of MIMO wireless terminals in real channel environment.
- SISO/MIMO wireless terminal TRP, TIS, and pattern.
- Passive indicators of antenna include pattern, radiation efficiency, gain and correlation coefficient (ECC).
- MIMO test supports wireless protocols including 3GPP LTE and IEEE802.11. SISO test supports 3GPP 2/3/4 G, IEEE802.11, Blue Tooth, GNSS



Global Satellite Positioning - GNSS Testing

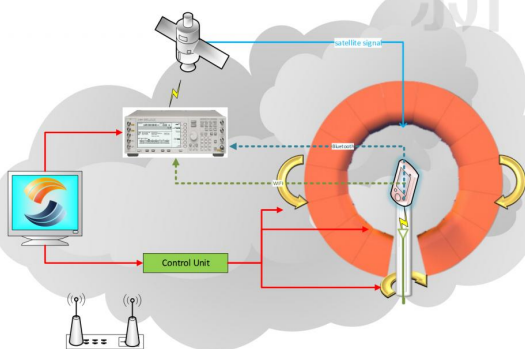
In order to provide a solution that can truly and accurately reflect the performance of GPS, GLONASS, and Beidou receivers in practical applications, Sunyield Technology has invested a lot of manpower and material resources in research and development. After extensive experiments and repeated verification, based on the commonly used multi satellite positioning testing methods in the industry, it has launched a SGM (Sunyield Gnss Measurement) testing solution that can be repeatedly executed and accurately measured. This solution not only has excellent stability but also fills the gap in current GPS testing technology. From the customer's perspective, four testing modes are added, providing five testing options: Multi Satellites, Multi Satellites Estimate, Single Satellites Estimate, C/N0 Measurement, and MSC/N0 Measurement.

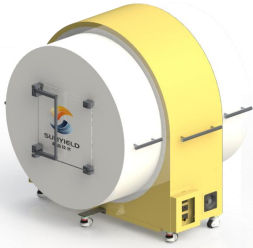
Test characteristics

- Widely supports GPS, GLONASS, and BDS testing.
- To compensate for the lack of output from other testing vendors for C/N0, support single star C/N0 testing and multi star C/N0 testing.
- Support multiple measurement methods, flexible application, and meet various user needs.

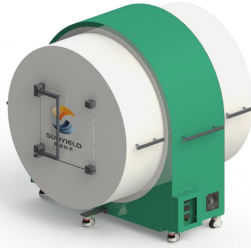
Test function

- Test the tracking sensitivity and acquisition sensitivity of receivers for satellite positioning signals, such as GPS, GLONASS, and BDS, in mobile phones and other devices.
- Display the distribution of signal strength and 3D directional map.
- Multiple testing modes include multi star sensitivity testing, multi star estimation testing, single star estimation testing, single star C/N0 testing, and multi star C/N0 testing.

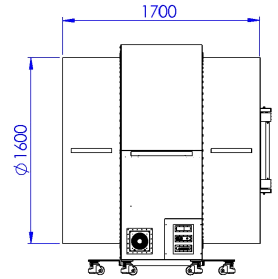
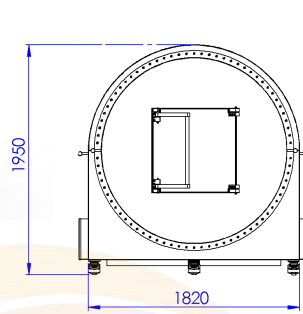




Base color:
yellow



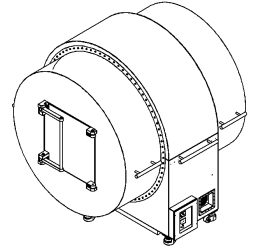
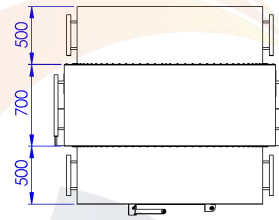
Base color:
green



Base color:
grey



Base
color:blue



Service and technical support

System calibration	Free system calibration after delivery
Warranty service	Free for the first year
Software upgrade	Free for the first year

Sunyield Technologies CO.LTD, founded in 2011, is the earliest company in China to research near field multi-probes antenna measurement technology. Over the years has focused on the related areas technology innovation and market development, Sunyield service in the domestic most antenna manufacturer, and is committed to become the industry leading manufacturers.

website:



wechat:



For more details please visit us at: www.sunyield.com
or contact us at: [0755-82997688](tel:0755-82997688)