

3657 Series Vector Network Analyzer (9kHz/100kHz to 4.5GHz/9GHz)



Product Overview

The 3657 series vector network analyzer can be used in such fields as wireless communication, cable TV, education, and automotive electronics for measuring the performance of RF components such as filters, amplifiers, antennas, cables, and cable TV taps.

The product has such functions as error calibration, time domain, fixture simulator, automatic fixture removal, advanced time domain analysis, with many display formats such as logarithm magnitude, linear magnitude, standing wave, phase, group delay, Smith pie chart, polar coordinates, etc. for multi-channel and multi-window display, as well as many interfaces such as USB, LAN, HDMI and DP. It can quickly and accurately measure the amplitude, phase, and group delay characteristics of the S-parameter of the DUT, and has efficient and powerful error correction capability.

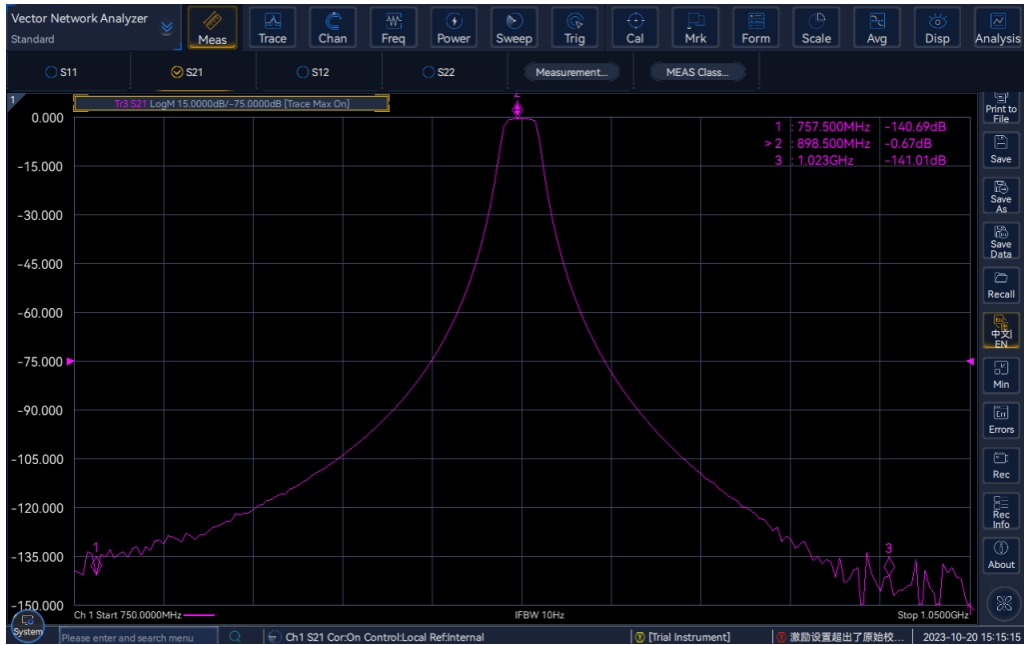
Main features

- It has a dynamic range of up to 140dB for accurate measurement of devices with high rejection ratio
- The test speed of 4us/point can greatly improve the production line test efficiency
- Higher stability can meet the needs of high-precision testing;
- Its functions are more abundant; in addition to the standard time domain analysis function, there are automatic fixture removal function and advanced time domain analysis function for selection
- It is smaller in size and lighter in weight, and more testing instruments can be arranged in the same footprint.
- It has two models, namely, overhead (2U) and desktop (5U);
- It has a four-port option, and a single connection can realize measurement of all 16 S-parameters of the four-port network, and measurement of balance parameters;
- It has powerful data analysis capabilities, such as ripple test, bandwidth test, limit test and other functions, which is convenient for users to determine the qualification and improve the test efficiency;
- It has a LAN interface for remote control and system interconnection and comes with six USB ports
- It can record SCPI instructions synchronously and generate scripts with one click.
- It uses 12.1-inch screen to display multi-parameters on the same screen, with multi-touch operation.



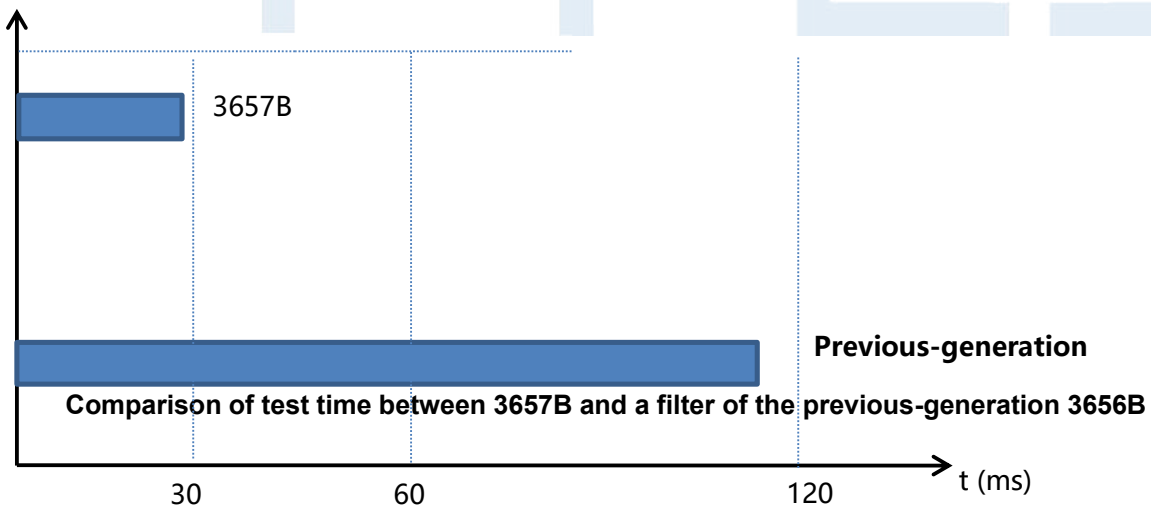
Wide Dynamic Range

It has a dynamic range of up to 140dB (IFBW=10Hz) for accurate measurement of devices with high rejection ratio.



Super Fast Sweep

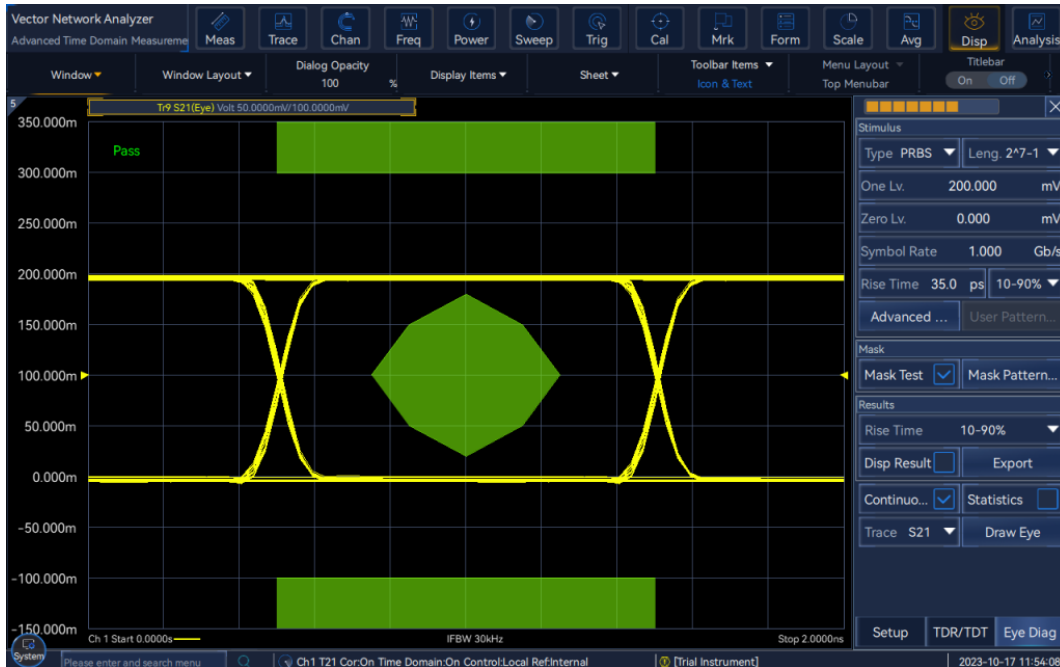
Its sweep speed is significantly improved compared with the previous-generation products, which can improve the measurement reaction speed and improve the measurement efficiency in high-speed cable testing, chip production line testing, filter commissioning and other fields.



Fast Analysis of Signal Integrity

It has the function of generating and analyzing virtual eye diagram based on network parameters. Depending on the standard of high-speed digital communication, it can perform efficient Pass/Fail testing using a pre-defined eye diagram template. It can apply jitter, noise and other interference on the simulated eye diagram, and simulate the simulated eye diagram

of different positions of high-speed link in real environment by adding correction algorithms such as pre-weighting and equalization.



Desktop Model (2U)

It is applicable to automatic testing, system integration, unmanned factory, and other application scenarios.



Typical applications

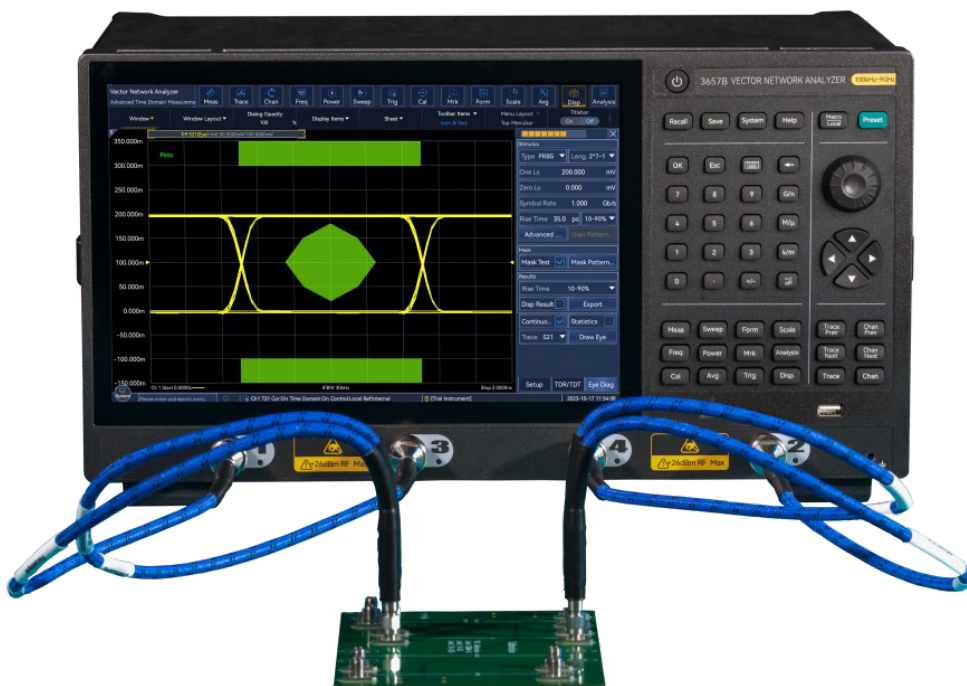
Production test of mobile communication products

The frequency range of the 3657 series vector network analyzer can meet the production and testing needs of mobile communication products. It has the characteristics of fast sweep, large dynamic range, small size, etc., which can be applicable to the mass production test of the factory, and test of RF components such as filters, amplifiers, antennas, and cables.



Test of passive multi-port device and balanced device

The 3657 series vector network analyzer has the four-port test function, and a single connection can measure all 16 S-parameters of the four-port network, which is applicable to the mass production test of multi-port devices in the factory, with balance parameter measurement function.



Technical specification

Model	3657A/B/AM/BM
Frequency characteristics	
Frequency Range	9kHz/100kHz to 4.5GHz/9GHz
Frequency Resolution	1Hz
Frequency Accuracy	$\pm 5 \times 10^{-6} (23^{\circ}\text{C} \pm 3^{\circ}\text{C})$
Port power characteristics	
Maximum Output Power	0dBm, typical values: +3dBm (9kHz to 100kHz) 10dBm, typical values: +13dBm (100kHz to 9GHz)
Network parameter characteristics	
System Dynamic Range	98dB (9kHz to 100kHz) 110dB (100kHz to 10MHz) 140dB (10MHz to 6GHz) 136dB (6GHz to 9GHz)
Effective Directivity	40dB (9kHz to 100kHz) 46dB (100kHz to 3GHz) 40dB (3GHz to 6GHz) 38dB (6GHz to 9GHz)
Effective Source Match	36dB (9kHz to 100kHz) 36dB (100kHz to 3GHz) 35dB (3GHz to 6GHz) 33dB (6GHz to 9GHz)
Effective Load Match	40dB (9kHz to 100kHz) 44dB (100kHz to 3GHz) 40dB (3GHz to 6GHz) 38dB (6GHz to 9GHz)
Reflection tracking	$\pm 0.050\text{dB}$ (9kHz to 100kHz) $\pm 0.030\text{dB}$ (100kHz-3GHz) $\pm 0.030\text{dB}$ (3GHz-6GHz) $\pm 0.050\text{dB}$ (6GHz-9GHz)
Transmission Tracking	$\pm 0.050\text{dB}$ (9kHz-100kHz) $\pm 0.030\text{dB}$ (100kHz-3GHz) $\pm 0.030\text{dB}$ (3GHz-6GHz) $\pm 0.050\text{dB}$ (6GHz-9GHz)
Trace noise	
Amplitude Trace Noise (IFBW=100Hz, 9kHz to 10MHz) (IFBW=1kHz, 10MHz to 9GHz)	0.0060dBrms (9 kHz to 100 kHz) 0.0060dBrms (100 kHz to 10 MHz) 0.0015dBrms (10 MHz to 3 GHz) 0.0020dBrms (3 GHz to 6 GHz) 0.0030dBrms (6 GHz to 9 GHz)
Phase Trace Noise (IFBW=100Hz, 9kHz to 10MHz) (IFBW=1kHz, 10MHz to 9GHz)	0.300° (9kHz to 100kHz) 0.300° (100kHz to 10MHz) 0.045° (10MHz to 3GHz) 0.060° (3GHz to 6GHz) 0.090° (6GHz to 9GHz)
IFBW	1Hz to 2MHz

Amplitude Display Resolution	0.001dB/div
Phase Display Resolution	0.001°/div
General characteristics	
Port Connector Type	Type N (female end), system impedance 50 ohms
Number of measurement ports	3657A/B/AM/BM standard configuration: 2-port; with 3657A/B/AM/BM-400 option: 4-port
Peripheral Interface	USB interface, LAN interface, HDMI interface and DP interface
Display Mode	12.1-inch high-resolution touch screen;
Dimensions	Overall dimensions (width × height × depth), (host, excluding handle, led and padding block): 3657A/B: 426mm×221.5mm×250mm 3657AM/BM: 426mm×88.1mm×500mm
Max. power Consumption	150W
Power Supply	50Hz single-phase 220V AC or 50Hz/60Hz single-phase 110V AC
Max. weight	3657A/B: 13.5kg; 3657AM/BM: 12.5kg

Order information

Host	Description
3657A	Vector network analyzer (100kHz to 4.5GHz) (model 5U, with screen)
3657B	Vector network analyzer (100kHz to 9GHz) (model 5U, with screen, better than 3657BS in respect of indicators)
3657AM	Vector network analyzer (100kHz to 4.5GHz) (model 2U, without screen)
3657BM	Vector network analyzer (100kHz to 9GHz) (model 2U, without screen)

Standard configuration:

No.	Name	Description
1.	Standard 3-core power cord	1
2.	USB mouse	1
3.	Quick start guide	1
4.	Certificate of conformity	1

General options:

No.	Option No.	Name	Function
1.	3657-001	Rack mount kit	special kit for installation to the cabinet, applicable to 3657A/B
2.	3657-002	Rack mount kit	special kit for installation to the cabinet, applicable to 3657AM/BM
3.	3657-004	User Manual	printing user manual

4.	3657-005	Aluminum transportation case	for instrument transportation, applicable to 3657A/B
5.	3657-006	English option	for setting language of front and rear panels and operating system to English.
6.	3657-S07	Automatic fixture removal function(AFR)	for automatic testing and removal of single-end and balance device measuring fixture.
7.	3657-S11	Advanced time domain analysis	for TDR time-domain impedance test, eye diagram analysis, etc. suitable for the full range
8.	20205 N-type 50Ω mechanical calibration kit		for overall calibration (DC to 3GHz)
9.	20201 N-type 50Ω mechanical calibration kit		for overall calibration (DC to 9GHz)
10.	31101 N-type 50Ω mechanical calibration kit		for overall calibration (DC to 18GHz)
11.	31121A 3.5mm mechanical calibration kit		for overall calibration (DC to 6GHz)
12.	20202 3.5mm mechanical calibration kit		for overall calibration (DC to 9GHz)
13.	31121 3.5mm mechanical calibration kit		for overall calibration (DC to 26.5GHz)
14.	20404EZ electronic calibration kit		for overall calibration (300MHz to 8.5GHz four-port) One 4.3-10 port and three 3.5mm ports
15.	20402 electronic calibration kit		for overall calibration (300kHz ~ 18GHz N-type two-port)
16.	20403 electronic calibration kit		for overall calibration (10MHz ~ 26.5GHz 3.5mm two-port)
17.	20405 electronic calibration kit		for overall calibration (10MHz ~ 20GHz 3.5mm four-port)
18.	GORE-OSZKUZKU0240 N-type Gore test cable		for overall measurement (test end N-type male), Length: 60cm
19.	GORE-OSZKUZKV0240 N-type Gore test cable		for overall measurement (test end N-type female), Length: 60cm
20.	87302AZ N-type test cable		for overall measurement (test end N-type male), Length: 60cm
21.	87302BA N-type test cable		for overall measurement (test end N-type female), Length: 60cm
22.	87302AY N-SMA test cable		for overall measurement (test end SMA-type male), Length: 80cm
23.	87302AX N-SMA test cable		for overall measurement (test end SMA-type female), Length: 80cm
24.	87601 microwave tools (N-type)		Coaxial adapter set (N-type interface converted to 3.5mm, 2.4mm interface, etc.)
25.	87601A microwave tools (3.5mm)		coaxial adapter set (3.5mm interface converted to N type, 2.4mm interface, etc.)
26.	P2418HT display		23.8-inch touch display

3657B option

No.	Option No.	Name	Function
1.	3657B-221	2-port 9kHz low frequency expansion	for extending the lower limit of the frequency range to 9kHz.
2.	3657B-400	Four-port measurement	for configuring a dual-source stimulus four-port vector network analyzer with a frequency range of 100kHz ~ 9GHz.
3.	3657B-421	4-port 9kHz low frequency expansion	for extending the lower limit of the frequency range to 9kHz. 400 is required.

3657A option

No.	Option No.	Name	Function
1.	3657A-221	2-port 9kHz low frequency expansion	for extending the lower limit of the frequency range to 9kHz.
2.	3657A-400	Four-port measurement	for configuring a dual-source stimulus four-port vector network analyzer with a frequency range of 100kHz ~ 4.5GHz.
3.	3657A-421	4-port 9kHz low frequency expansion	for extending the lower limit of the frequency range to 9kHz. 400 is required.

3657BM option

No.	Option No.	Name	Function
1.	3657BM-221	2-port 9kHz low frequency expansion	for extending the lower limit of the frequency range to 9kHz.
2.	3657BM-400	Four-port measurement	for configuring a dual-source stimulus four-port vector network analyzer with a frequency range of 100kHz ~ 9GHz.
3.	3657BM-421	4-port 9kHz low frequency expansion	for extending the lower limit of the frequency range to 9kHz. 400 is required.

3657AM option

No.	Option No.	Name	Function
1.	3657AM-221	2-port 9kHz low frequency expansion	for extending the lower limit of the frequency range to 9kHz.
2.	3657AM-400	Four-port measurement	for configuring a dual-source stimulus four-port vector network analyzer with a frequency range of 100kHz ~ 4.5GHz.
3.	3657AM-421	4-port 9kHz low frequency expansion	for extending the lower limit of the frequency range to 9kHz. 400 is required.