MAXWELLON
3657

9kHz/100kHz ~ 4.5GHz/9GHz

Vector Network Analyzer

2023

Maxwellon

3657 series vector network analyzer is suitable for wireless communication, cable TV, education, and automotive electronics, and can be used for performance measurement of RF components such as filters, amplifiers, antennas, cables, cable TV taps, etc. This product adopts the Windows operating system; Equipped with error calibration function, time-domain function, fixture simulator function, automatic fixture removal function, and advanced time-domain analysis function; It has various display formats such as logarithmic amplitude, linear amplitude, impedance, standing wave, phase, group delay, Smith circle diagram, polar coordinates, etc; Capable of displaying multiple channels and windows; Equipped with USB interface, LAN interface, HDMI interface, and DP interface. It can quickly and accurately measure the amplitude, phase, and group delay characteristics of the S parameter of the tested object, and has efficient and powerful error correction ability.

■ Key Feature

- ■ Frequency range from 100kHz to 4.5GHz and 100kHz to 9GHz
- ■ 140dB wide dynamic range, accurate measurement on high rejection ratio devices
- ■ Ultra-low trace noise which provide higher test accuracy
- ■ Powerful data analysis functions, such as ripple test, bandwidth test and limit test, convenient for user to judge the conformity and improves the test efficiency
- ■ Time domain analysis function as the standard configuration
- ■ Fixture simulator can simulate various R&D situations to rapidly get the real-time test results
- ■ LAN and GPIB interface, capable of remote control and system interconnection, 4 USB interfaces

140dB Wide Dynamic Range

It has a dynamic range of up to 140dB (IFBW=10Hz) and accurately measures high suppression ratio devices.
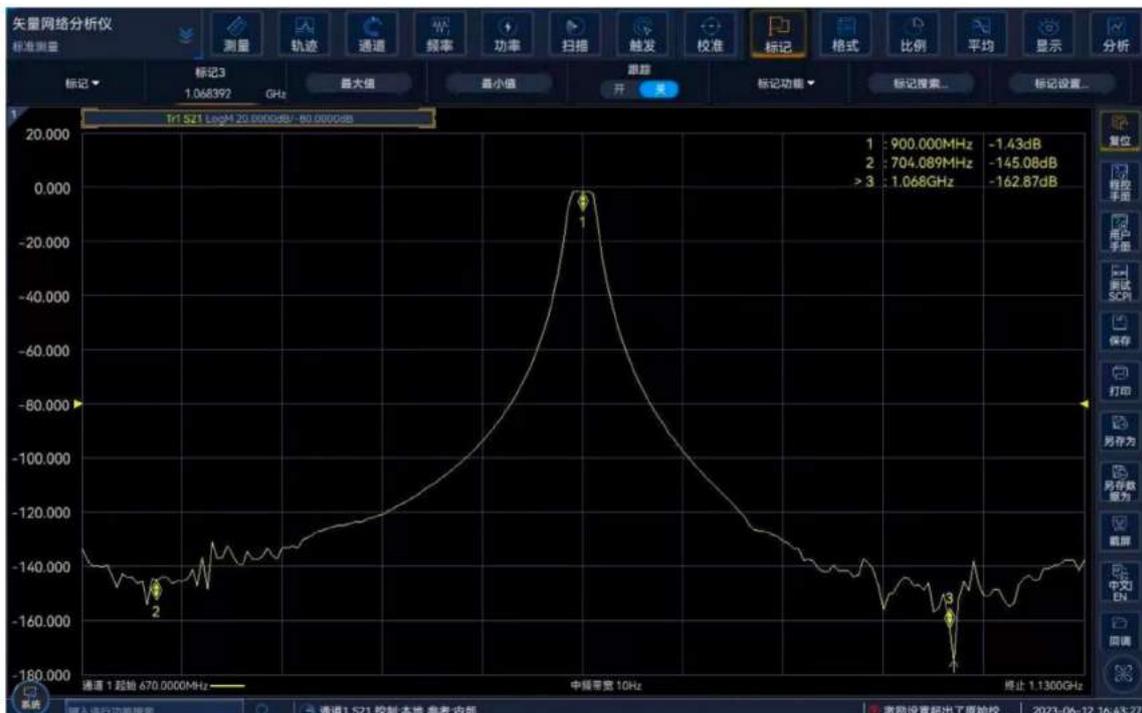
Ultra Fast Sweep Speed

The sweep speed has significantly improved compared to the previous generation of products, improving measurement response speed and efficiency in areas such as high-speed cable testing, chip production line testing, and filter tuning.
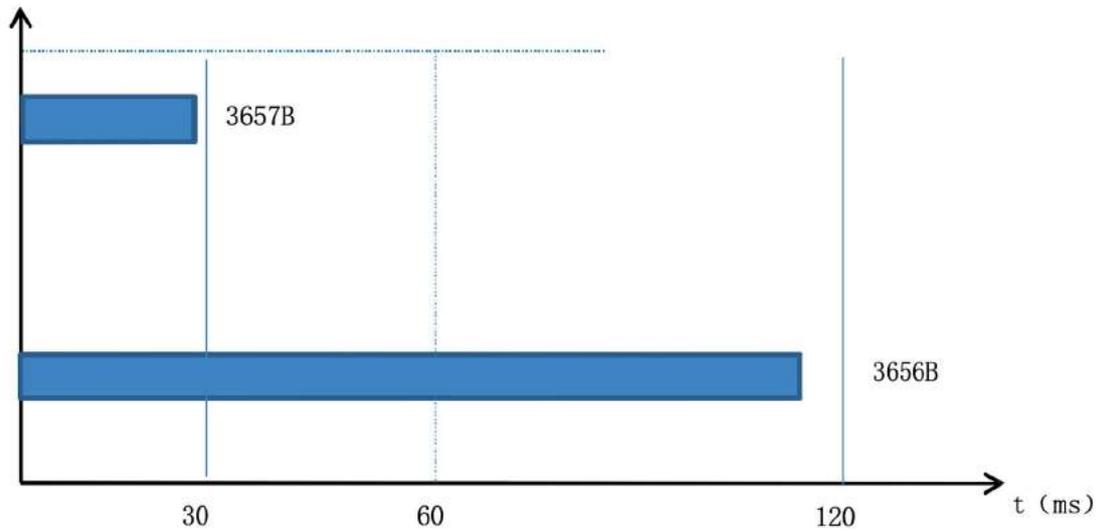
Comparison of testing time for a certain filter between 3657B and the previous generation 3656B

Rapid Analysis of Signal Integrity

Capable of generating and analyzing virtual eye maps based on network parameters. According to different high-speed digital communication standards, use pre-defined eye pattern templates for efficient Pass/Fail testing. Apply jitter, noise, and other interference to the simulated eye map, and simulate the simulated eye map at different positions of high-speed links in a real environment by incorporating correction algorithms such as pre emphasis and equalization.
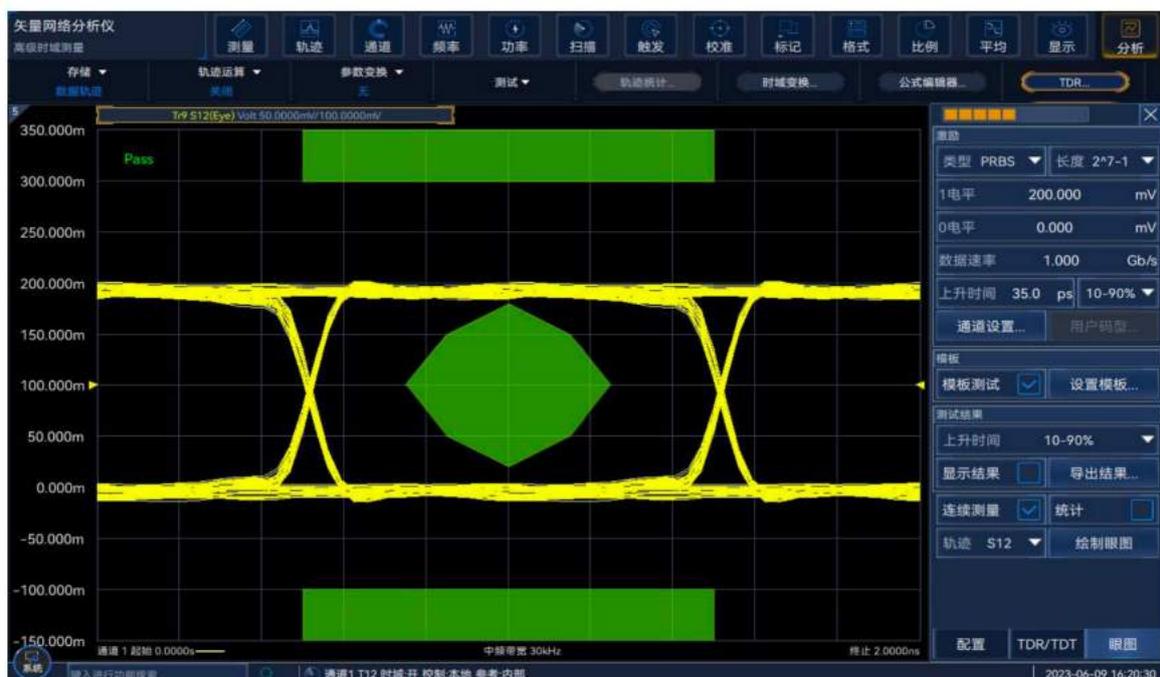
Rack Mounted (2U), Model (3657AM/BM)

Suitable for application scenarios such as automatic testing, system integration, and unmanned factories.

■ Typical Applications

Production Testing of Mobile Communication Products

The frequency range of the 3657 series vector network analyzer can meet the production testing requirements of mobile communication products. It has characteristics such as fast scanning speed, large dynamic range, and small size, making it very suitable for mass production testing in factories. It can be used for testing RF components such as filters, amplifiers, antennas, cables, etc.

Passive Multiport Device and Balanced Device Testing

The 3657 series vector network analyzer has a four port testing function, which can measure all 16 S parameters of the four port network with a single connection. It is very suitable for mass production testing of multi-port devices in factories and has a balanced parameter measurement function.

■ Specification

Model	3657A/B/AM/BM	3657BS
Frequency Properties		
Frequency Range	9kHz/100kHz~4.5GHz/9GHz	100kHz~9GHz
Frequency Resolution	1Hz	
Frequency Accuracy	$\pm 5\times 10^{-6}$(23℃ ±3℃)	
Port Power Characteristic		
Max. Output Power	0dBm, typical:+3dBm(9kHz~100kHz) 10dBm, typical:+13dBm(100kHz~9GHz)	10dBm(100kHz~9GHz)
Network Parameter Characteristic		
System Dynamic Range	98dB(9kHz~100kHz) 110dB(100kHz~10MHz) 140dB(10MHz~6GHz) 136dB(6GHz~9GHz)	100dB(100kHz~10MHz) 130dB(10MHz~6GHz) 126dB(6GHz~9GHz)
Effective Directivity	40dB(9kHz~100kHz) 46dB(100kHz~3GHz) 40dB(3GHz~6GHz) 38dB(6GHz~9GHz)	46dB(100kHz~3GHz) 40dB(3GHz~6GHz) 38dB(6GHz~9GHz)
Effective Source Match	36dB(9kHz~100kHz) 36dB(100kHz~3GHz) 35dB(3GHz~6GHz) 33dB(6GHz~9GHz)	36dB(100kHz~3GHz) 35dB(3GHz~6GHz) 33dB(6GHz~9GHz)
Effective Load Match	40dB(9kHz~100kHz) 44dB(100kHz~3GHz) 40dB(3GHz~6GHz) 38dB(6GHz~9GHz)	44dB(100kHz~3GHz) 40dB(3GHz~6GHz) 38dB(6GHz~9GHz)

Model	3657A/B/AM/BM	3657BS
Network Parameter Characteristic		
Reflection Tracking	±0.04dB(0.01~2GHz) ±0.05dB(2~26.5GHz)	±0.004dB(0.01~2GHz) ±0.010dB(2~26.5GHz)
Transmission Tracking	±0.10dB(0.01~2GHz) ±0.12dB(2~26.5GHz)	±0.005dB(0.01~2GHz) ±0.015dB(2~26.5GHz)
Trace Noise		
Amplitude trace noise (IFBW=100Hz,9kHz~10MHz) (IFBW=1kHz,10MHz~9GHz)	0.0060dBrms(9kHz~100kHz) 0.0060dBrms(100kHz~10MHz) 0.0015dBrms(10MHz~3GHz) 0.0020dBrms(3GHz~6GHz) 0.0030dBrms(6GHz~9GHz)	0.0060dBrms(100kHz~10MHz) 0.0015dBrms(10MHz~3GHz) 0.0020dBrms(3GHz~6GHz) 0.0030dBrms(6GHz~9GHz)
Phase trace noise (IFBW=100Hz,9kHz~10MHz) (IFBW=1kHz,10MHz~9GHz)	0.300°(9kHz~100kHz) 0.300°(100kHz~10MHz) 0.045°(10MHz~3GHz) 0.060°(3GHz~6GHz) 0.090°(6GHz~9GHz)	0.300°(100kHz~10MHz) 0.045°(10MHz~3GHz) 0.060°(3GHz~6GHz) 0.090°(6GHz~9GHz)
IF bandwidth	1Hz~2MHz	
Amplitude display resolution	0.001dB/div	
Phase display resolution	0.001°/div	
General		
Port Connectors	Type N(Female), 50 ohm system impedance	
Number of Measuring Ports	3657A/B/BS/AM/BM standard configuration: two ports; 3657A/B/BS/AM/BM-400 Option: Four ports	
Peripheral Interface	USB,LAN,HDMI,DP	
Display	12.1 inch high-resolution touch screen display	
Power	50Hz, 220V; 50Hz/60Hz , 110V AC	
Size (width × high × Deep) (Excluding handles, feet, and pads)	3657A/B/BS: 426mm×221.5mm×250mm 3657AM/BM: 426mm×88.1mm×500mm	
Max. Power Consumption	150W	
Max. Weight	3657A/B/BS:13.5kg; 3657AM/BM:12.5kg	

■ Ordering Information

Model

Model	Name	Description
3657A	Vector Network Analyzer	100kHz~4.5GHz, 5U with screen
3657B	Vector Network Analyzer	100kHz~9GHz, 5U with screen Performance better than 3657BS
3657BS	Vector Network Analyzer	100kHz~9GHz, 5U with screen
3657AM	Vector Network Analyzer	100kHz~4.5GHz, 2U No screen
3657BM	Vector Network Analyzer	100kHz~9GHz, 2U No screen

Standard

No.	Name	Qty.
1	Standard three core power cord	1PC
2	USB Mouse	1PC
3	Quick to use guide	1PC
4	Certificate of conformity	1PC

Common Options:

Model	Name	Function
3657-001	Cabinet installation kit	A dedicated kit installed in the cabinet. Applicable to 3657A/B/BS
3657-002	Cabinet installation kit	A dedicated kit installed in the cabinet. Suitable for 3657AM/BM
3657-003	Chinese User Manual	Provide a detailed Chinese user manual in hard copy.
3657-004	English User Manual	Provide a detailed English user manual in hard copy.
3657-005	Aluminum alloy transport box	Convenient instrument transportation. Applicable to 3657A/B/BS
3657-006	English options	Configure English front and rear panels and English operating system.
3657-S07	Automatic fixture removal	Used for automatic testing and removal of measuring fixtures for single ended and balanced devices. Suitable for the entire series.
3657-S11	Advanced Time Domain Analysis	Used for TDR time-domain impedance testing, eye pattern analysis, etc. Suitable for the entire series.
20205	N-type 50 Ω mechanical calibration piece	Used for whole machine calibration (DC~3GHz)
20201	N-type 50 Ω mechanical calibration piece	Used for whole machine calibration (DC~9GHz)
31101	N-type 50 Ω mechanical calibration piece	Used for whole machine calibration (DC~18GHz)
31121A	3.5mm mechanical calibration piece	Used for whole machine calibration (DC~6GHz)
20202	3.5mm mechanical calibration piece	Used for whole machine calibration (DC~9GHz)
31121	3.5mm mechanical calibration piece	Used for whole machine calibration (DC~26.5GHz)
20404EZ	Electronic calibration parts	1 4.3-10 interface and 3 3.5mm interfaces for overall calibration (300MHz~8.5GHz four ports)
20402	Electronic calibration parts	Used for whole machine calibration (300kHz~18GHz N-type two-port)
20403	Electronic calibration parts	Used for whole machine calibration (10MHz~26.5GHz 3.5mm two port)
20405	Electronic calibration parts	For whole machine calibration (10MHz~20GHz 3.5mm four port)
GORE-OSZKUZKU0240	N-type Gore test cable	Used for measuring the entire machine (N-type male at the testing end) with a length of 60cm
GORE-OSZKUZKV0240	N-type Gore test cable	Used for measuring the entire machine (N-type female at the testing end) with a length of 60cm
87302AZ	N-type test cable	Used for measuring the entire machine (N-type male at the testing end) with a length of 60cm
87302BA	N-type test cable	Used for measuring the entire machine (N-type female at the testing end) with a length of 60cm
87302AY	N-SMA test cable	Used for measuring the entire machine (SMA type male at the testing end) with a length of 80cm
87302AX	N-SMA test cable	Used for measuring the entire machine (SMA type female at the testing end) with a length of 80cm
87601	Microwave Assistant (N-type)	Coaxial adapter set (N-type interface converted to 3.5mm, 2.4mm interfaces, etc.)
87601A	Microwave Assistant (3.5mm)	Coaxial adapter set (3.5mm interface converted to N-type, 2.4mm interface, etc.)
P2418HT	Monitor	23.8-inch touch display

3657B Options:

Model	Name	Function
3657B-221	Two port 9kHz low-frequency expansion	The lower limit of the frequency range can be extended to 9kHz.
3657B-400	Four port measurement	Dual source excitation four port vector network analyzer configuration, frequency range 100kHz~9GHz.
3657B-421	Four port 9kHz low-frequency expansion	The lower limit of the frequency range can be extended to 9kHz. 400 is required.

3657BM Options:

Model	Name	Function
3657BM-221	Two port 9kHz low-frequency expansion	The lower limit of the frequency range can be extended to 9kHz.
3657BM-400	Four port measurement	Dual source excitation four port vector network analyzer configuration, frequency range 100kHz~9GHz.
3657BM-421	Four port 9kHz low-frequency expansion	The lower limit of the frequency range can be extended to 9kHz. 400 is required.

3657AM Options:

Model	Name	Function
3657AM-221	Two port 9kHz low-frequency expansion	The lower limit of the frequency range can be extended to 9kHz.
3657AM-400	Four port measurement	Dual source excitation four port vector network analyzer configuration, frequency range 100kHz~4.5GHz.
3657AM-421	Four port 9kHz low-frequency expansion	The lower limit of the frequency range can be extended to 9kHz. 400 is required.

3657BS Options:

Model	Name	Function
3657BS-400	Four port measurement	Dual source excitation four port vector network analyzer configuration, frequency range 100kHz~9GHz.

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