3657 Series Vector Network Analyzer

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● Product Overview

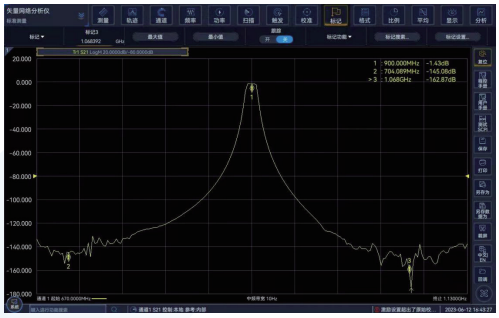
The 3657 series vector network analyzers are used in wireless communications, cable TV, education, automotive electronics and other fields to measure the performance of RF components such as filters, amplifiers, antennas, cables and CATV taps. They provide error calibration, time-domain analysis, fixture simulator, automatic fixture removal and advanced time-domain analysis; multiple display formats including log magnitude, linear magnitude, SWR, phase, group delay, Smith chart and polar; multi-channel, multi-window display; and USB, LAN, HDMI and DP interfaces. They measure the magnitude, phase and group delay of DUT S-parameters quickly and accurately, with efficient and powerful error correction.

● Key Features

·Up to 140 dB dynamic range for accurate measurement of high-rejection devices;
·4 μs/point measurement speed greatly improves production-line test efficiency;
·Higher stability to meet high-accuracy test requirements;
·Richer functionality: time-domain analysis as standard, with automatic fixture removal and advanced time-domain analysis as options;
·Smaller and lighter, allowing more instruments in the same space;
·Three form factors: rack-mount (2U), benchtop (5U) and USB;
·USB models use a Thunderbolt interface with the same speed as benchtop units;
·Powerful data analysis such as ripple, bandwidth and limit tests for easy pass/fail judgement and higher test efficiency;
·LAN interface for remote control and system integration;
·SCPI command recording with one-click script generation;
·12.1-inch multi-parameter display with multi-touch operation (3657A/B/C/D/E).

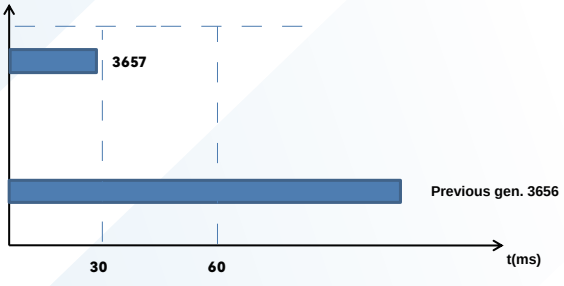
Wide Dynamic Range

Dynamic range up to 140 dB (IFBW = 10 Hz) for accurate measurement of high-rejection devices.



Ultra-Fast Sweep Speed

Much faster sweep than the previous generation, speeding up high-speed cable tests, chip production tests and filter tuning.



Filter test time: 3657 vs. previous-generation 3656



3657A/B/C/D/E Vector Network Analyzer



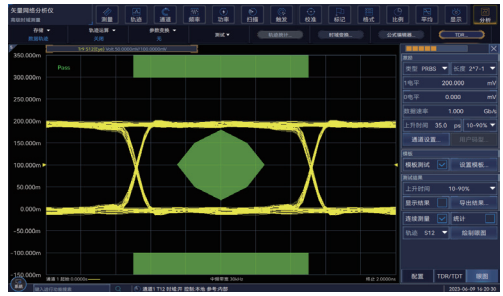
3657AM/BM/CM/DM/EM Vector Network Analyzer



3657CU/DU/EU Vector Network Analyzer

Fast Signal Integrity Analysis

Virtual eye diagram generation and analysis based on network parameters. Predefined eye masks for different high-speed digital communication standards enable efficient pass/fail testing. Jitter, noise and other impairments can be added to the simulated eye, and correction algorithms such as pre-emphasis and equalization can be applied to simulate the eye at different points of a high-speed link under real conditions.



Rack-mount (2U) models (3657AM/BM/CM/DM/EM)

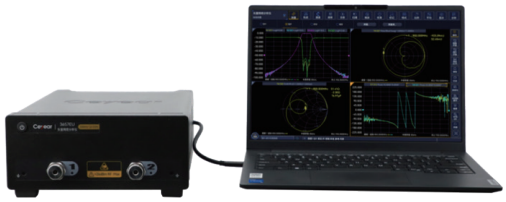
Built-in CPU, no external computer needed. Ideal for automated test, system integration and unmanned factories; easy to network.



Note: the touch display is optional.

USB models (3657CU/DU/EU)

The USB models combine high performance with portability. They are compact and widely used for high-accuracy field testing and in production environments requiring mobile testing. A Type-C Thunderbolt interface connects directly to a Thunderbolt-equipped computer, while sweep speed, dynamic range, temperature stability and other key specifications match the benchtop instruments. They save a great deal of space, integrate easily into test systems and meet the needs of more complex test scenarios.



Note: laptop is optional

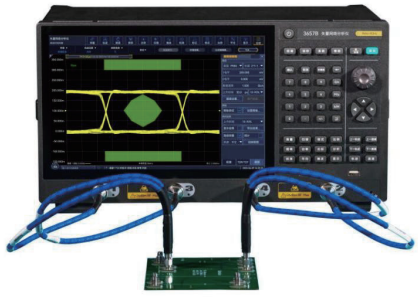
Mobile Communication Production Testing

The frequency coverage of the 3657 series meets production-test requirements of mobile communication products. Fast sweep, wide dynamic range and compact size make it ideal for high-volume factory testing of filters, amplifiers, antennas, cables and other RF components.



Passive Multiport and Balanced Device Testing

With four-port capability, the 3657 series measures all 16 S-parameters of a four-port network in a single connection, ideal for high-volume factory testing of multiport devices, and supports balanced parameter measurements.



● Main Specifications

Model	3657A/B/AM/BM	3657C/D/E/CM/DM/EM/CU/DU/EU
Frequency		
Frequency range	9kHz/100kHz~4.5GHz/9GHz	100kHz~14GHz/20GHz/26.5GHz
Freq. resolution	0.1Hz	0.1Hz
Freq. accuracy	±5×10-6(23°C±3°C)	±5×10-6(23°C±3°C)
Port Power		
Max. output power	0dBm(9kHz~100kHz); 10dBm(100kHz~9GHz)	10dBm(100kHz~14GHz), 0dBm(14GHz~26.5GHz)
Network Parameters		
System dynamic range	98dB(9kHz~100kHz), 110dB(100kHz~10MHz) 140dB(10MHz~6GHz), 136dB(6GHz~9GHz)	95dB(100kHz~18MHz), 140dB(18MHz~6GHz) 130dB(6GHz~9GHz), 120dB(9GHz~14GHz) 110dB(14GHz~20GHz), 100dB(20GHz~26.5GHz)
Eff. directivity	40dB(9kHz~100kHz), 46dB(100kHz~3GHz) 40dB(3GHz~6GHz), 38dB(6GHz~9GHz)	42dB(100kHz~3GHz), 38dB(3GHz~6GHz) 36dB(6GHz~20GHz), 32dB(20GHz~26.5GHz)
Eff. source match	36dB(9kHz~100kHz), 36dB(100kHz~3GHz) 35dB(3GHz~6GHz), 33dB(6GHz~9GHz)	34dB(100kHz~3GHz), 31dB(3GHz~6GHz) 26dB(6GHz~20GHz), 24dB(20GHz~26.5GHz)
Eff. load match	40dB(9kHz~100kHz), 44dB(100kHz~3GHz) 40dB(3GHz~6GHz), 38dB(6GHz~9GHz)	42dB(100kHz~3GHz), 38dB(3GHz~6GHz) 36dB(6GHz~20GHz), 32dB(20GHz~26.5GHz)
Refl. tracking	±0.050dB(9kHz~100kHz), ±0.030dB(100kHz~3GHz) ±0.030dB(3GHz~6GHz), ±0.050dB(6GHz~9GHz)	±0.050dB(100kHz~3GHz), ±0.050dB(3GHz~6GHz) ±0.080dB(6GHz~20GHz), ±0.080dB (20GHz~26.5GHz)
Trans. tracking	±0.050dB(9kHz~100kHz), ±0.030dB(100kHz~3GHz) ±0.030dB(3GHz~6GHz), ±0.050dB(6GHz~9GHz)	±0.050dB(100kHz~3GHz), ±0.080dB(3GHz~6GHz) ±0.100dB(6GHz~20GHz), ±0.150dB(20GHz~26.5GHz)
Trace noise, magnitude (IFBW 100 Hz: 9 kHz~10 MHz; IFBW 1 kHz: 10 MHz~26.5 GHz)	0.0060dBrms(9kHz~100kHz),0.0060dBrms (100kHz~10MHz), 0.0015dBrms(10MHz~3GHz), 0.0020dBrms(3GHz~6GHz), 0.0030dBrms(6GHz~9GHz)	0.0300dBrms(100kHz~10MHz),0.0030dBrms (10MHz~3GHz), 0.0050dBrms(3GHz~9GHz), 0.0080dBrms(9GHz~18GHz), 0.0120dBrms(18GHz~26.5GHz)
Trace noise, phase (IFBW 100 Hz: 9 kHz~10 MHz; IFBW 1 kHz: 10 MHz~26.5 GHz)	0.300°rms(9kHz~100kHz),0.300°rms(100kHz~10MHz) 0.045°rms(10MHz~3GHz),0.060°rms(3GHz~6GHz), 0.090°rms(6GHz~9GHz)	0.300°dBrms(100kHz~10MHz),0.045°dBrms (10MHz~3GHz), 0.050°dBrms(3GHz~9GHz), 0.080°dBrms(9GHz~18GHz) 0.120°dBrms(18GHz~26.5GHz)
IF bandwidth	1 Hz~5 MHz (1, 2, 3, 5, 7 steps)	
Magnitude resolution	0.001dB/div	
Phase resolution	0.001°/div	
General		
Port connector	3657A/B/AM/BM: N-type (female), 50 Ω; 3657C/D/E/CM/DM/EM/CU/DU/EU: NMD 3.5 mm (male), 50 Ω	
Test ports	Standard: 2 ports; 3657A/B/C/D/E/AM/BM/CM/DM/EM-400 option: 4 ports	

Model	3657A/B/AM/BM	3657C/D/E/CM/DM/EM/CU/DU/EU
Peripheral interfaces	3657A/B/C/D/E/AM/BM/CM/DM/EM: USB, LAN, HDMI, DP; 3657CU/DU/EU: USB, Thunderbolt	
Display	12.1-inch high-resolution touch screen (3657A/B/C/D/E; other models need an external display)	
Dimensions (W*H*D)	Overall dimensions: 3657A/B: (435.5±4)mm×(235±2.5)mm×(296±2.5)mm; 3657AM/BM: (426±2)mm×(102±1.5)mm×(546±4)mm; 3657C/D/E: (435.5±4)mm×(235±2.5)mm×(302±2.5)mm; 3657CM/DM/EM: (426±2)mm×(102±1.5)mm×(552±4)mm; 3657CU/DU/EU: (213±1.2)mm×(99±1.5)mm×(352±2.5)mm; Nominal dimensions: 3657A/B: (426±2)mm×(221.5±1.2)mm×(250±1.2)mm; 3657AM/BM: (426±2)mm×(88.1±0.8)mm×(500±2)mm; 3657C/D/E: (426±2)mm×(221.5±1.2)mm×(250±1.2)mm; 3657CM/DM/EM: (426±2)mm×(88.1±0.8)mm×(500±2)mm; 3657CU/DU/EU: (213±1.2)mm×(88.1±0.8)mm×(300±1.2)mm. Note: excluding handles, feet, rear feet, knobs, rubber keys, side straps, plugs, screws, ground post, connectors and other local protrusions.	
Power consumption	3657A/B/AM/BM:≤150W;3657C/D/E/CM/DM/EM:≤200W; 3657CU/DU/EU:≤90W	
Power supply	50 Hz single-phase 220 V or 50/60 Hz single-phase 110 V AC	
Weight (kg)	3657A/B/C/D/E: <13.5kg; 3657AM/BM/CM/DM/EM: <12.5kg; 3657CU/DU/EU: <4.5kg	

• Ordering Information

No.	Vector Network Analyzer	Model	No.	Vector Network Analyzer	Model
1	Vector Network Analyzer (100kHz~4.5GHz) (5U model, with display)	3657A	8	Vector Network Analyzer (100kHz~14GHz) (2U model, no display)	3657CM
2	Vector Network Analyzer (100kHz~9GHz) (5U model, with display)	3657B	9	Vector Network Analyzer (100kHz~20GHz) (2U model, no display)	3657DM
3	Vector Network Analyzer (100kHz~14GHz) (5U model, with display)	3657C	10	Vector Network Analyzer (100kHz~26.5GHz) (2U model, no display)	3657EM
4	Vector Network Analyzer (100kHz~20GHz) (5U model, with display)	3657D	11	Vector Network Analyzer (100kHz~14GHz) (USB model, no CPU, no display, no 4-port option)	3657CU
5	Vector Network Analyzer (100kHz~26.5GHz) (5U model, with display)	3657E	12	Vector Network Analyzer (100kHz~20GHz) (USB model, no CPU, no display, no 4-port option)	3657DU
6	Vector Network Analyzer (100kHz~4.5GHz) (2U model, no display)	3657AM	13	Vector Network Analyzer (100kHz~26.5GHz) (USB model, no CPU, no display, no 4-port option)	3657EU
7	Vector Network Analyzer (100kHz~9GHz) (2U model, no display)	3657BM			

No.	3657 Series Vector Network Analyzer		Model
Functional Options			
1	Rack mount kit	Dedicated rack mount kit. For 3657A/B/C/D/E	3657-001
2	Rack mount kit	Dedicated rack mount kit. For 3657AM/BM/CM/DM/EM	3657-002
3	Chinese user manual	Detailed printed user manual in Chinese.	3657-003
4	English user manual	Detailed printed user manual in English.	3657-004
5	Aluminum transit case	For instrument transport. For 3657A/B/C/D/E.	3657-005
6	English option	English front/rear panels and English operating system.	3657-006
7	Laptop computer	Laptop computer with Thunderbolt interface.	3657-007
8	Auto fixture removal	Automatic fixture test and removal for single-ended and balanced devices. For all models.	3657-S07
9	Advanced time domain	For TDR impedance testing, eye diagram analysis, etc. For all models.	3657-S11
10	Calibration service	Calibration service with calibration report. For 3657A/AM	3657A-JL
11	Calibration service	Calibration service with calibration report. For 3657B/3657BM	3657B-JL
12	Calibration service	Calibration service with calibration report. For 3657C/CM/CU	3657C-JL
13	Calibration service	Calibration service with calibration report. For 3657D/DM/DU	3657D-JL
14	Calibration service	Calibration service with calibration report. For 3657E/EM/EU	3657E-JL
15	1-year extended warranty	1-year extension beyond warranty (order 2 for 2 years, etc.). Excludes calibration; one-way freight only.	3657A-EWT1
16	1-year extended warranty	1-year extension beyond warranty (order 2 for 2 years, etc.). Excludes calibration; one-way freight only.	3657B-EWT1
17	1-year extended warranty	1-year extension beyond warranty (order 2 for 2 years, etc.). Excludes calibration; one-way freight only.	3657C-EWT1
18	1-year extended warranty	1-year extension beyond warranty (order 2 for 2 years, etc.). Excludes calibration; one-way freight only.	3657D-EWT1

No.	3657 Series Vector Network Analyzer		Model
19	1-year extended warranty	1-year extension beyond warranty (order 2 for 2 years, etc.). Excludes calibration; one-way freight only.	3657E-EWT1
20	1-year extended warranty	1-year extension beyond warranty (order 2 for 2 years, etc.). Excludes calibration; one-way freight only.	3657AM-EWT1
21	1-year extended warranty	1-year extension beyond warranty (order 2 for 2 years, etc.). Excludes calibration; one-way freight only.	3657BM-EWT1
22	1-year extended warranty	1-year extension beyond warranty (order 2 for 2 years, etc.). Excludes calibration; one-way freight only.	3657CM-EWT1
23	1-year extended warranty	1-year extension beyond warranty (order 2 for 2 years, etc.). Excludes calibration; one-way freight only.	3657DM-EWT1
24	1-year extended warranty	1-year extension beyond warranty (order 2 for 2 years, etc.). Excludes calibration; one-way freight only.	3657EM-EWT1
25	1-year extended warranty	1-year extension beyond warranty (order 2 for 2 years, etc.). Excludes calibration; one-way freight only.	3657CU-EWT1
26	1-year extended warranty	1-year extension beyond warranty (order 2 for 2 years, etc.). Excludes calibration; one-way freight only.	3657DU-EWT1
27	1-year extended warranty	1-year extension beyond warranty (order 2 for 2 years, etc.). Excludes calibration; one-way freight only.	3657EU-EWT1
28	20205 N-type 50Ω mech. cal kit	For calibration (DC~3GHz)	
29	20201 N-type 50Ω mech. cal kit	For calibration (DC~9GHz)	
30	31101 N-type 50Ω mech. cal kit	For calibration (DC~18GHz)	
31	31121A 3.5mm mech. cal kit	For calibration (DC~6GHz)	
32	20202 3.5mm mech. cal kit	For calibration (DC~9GHz)	
33	31121 3.5mm mech. cal kit	For calibration (DC~26.5GHz)	
34	20404EZ ECal kit	For calibration (300MHz~8.5GHz, 4-port): one 4.3-10 and three 3.5mm connectors	
35	20402D ECal kit	For calibration (100kHz~18GHz, N-type 2-port)	
36	20404D ECal kit	For calibration (100kHz~18GHz, N-type 4-port)	
37	20402E ECal kit	For calibration (10MHz~26.5GHz, 3.5mm 2-port)	
38	20404E ECal kit	For calibration (10MHz~26.5GHz, 3.5mm 4-port)	
39	GORE-OSZKUZKU0240 N-type Gore test cable	For measurements (N male/male), 60 cm	
40	GORE-OSZKUZKV0240 N-type Gore test cable	For measurements (N female/male), 60 cm	
41	FB0HA0HB025.0 3.5mm Gore test cable	For measurements (3.5mm male test end). For 3657C/D/E/CM/DM/EM/CU/DU/EU	
42	FB0HA0HC025.0 3.5mm Gore test cable	For measurements (3.5mm female test end). For 3657C/D/E/CM/DM/EM/CU/DU/EU	
43	87302AZ N-type test cable	For measurements (N male/male), 60 cm	
44	87302BA N-type test cable	For measurements (N female/male), 60 cm	
45	87302AY N-SMA test cable	For measurements (N male to SMA female), 80 cm	
46	87302AX N-SMA test cable	For measurements (N male to SMA male), 80 cm	
47	87302FZ 3.5mm test cable	For measurements (3.5mm female test end). For 3657C/D/E/CM/DM/EM/CU/DU/EU	
48	87302FE 3.5mm test cable	For measurements (3.5mm male test end). For 3657C/D/E/CM/DM/EM/CU/DU/EU	
49	87601 microwave kit (N-type)	Coaxial adapter kit (N-type to 3.5mm, 2.4mm, etc.)	
50	87601A microwave kit (3.5mm)	Coaxial adapter kit (3.5mm to N-type, 2.4mm, etc.)	
51	P2418HT display	23.8-inch touch display	
52	Fast CW sweep	FIFO buffering for real-time data readout. For all models.	3657-S18
3657A Options			
1	2-port 9 kHz low-freq. extension	Extends lower frequency limit to 9 kHz.	3657A-221
2	4-port measurement	Dual-source 4-port VNA configuration, 100kHz~4.5GHz.	3657A-400
3	4-port 9 kHz low-freq. extension	Extends lower frequency limit to 9 kHz. Requires 400.	3657A-421

No.	3657 Series Vector Network Analyzer		Model
3657B Options			
1	2-port 9 kHz low-freq. extension	Extends lower frequency limit to 9 kHz.	3657B-221
2	4-port measurement	Dual-source 4-port VNA configuration, 100kHz~9GHz.	3657B-400
3	4-port 9 kHz low-freq. extension	Extends lower frequency limit to 9 kHz. Requires 400.	3657B-421
3657C Options			
1	4-port measurement	Dual-source 4-port VNA configuration, 100kHz~14GHz.	3657C-400
3657D Options			
1	4-port measurement	Dual-source 4-port VNA configuration, 100kHz~20GHz.	3657D-400
3657E Options			
1	4-port measurement	Dual-source 4-port VNA configuration, 100kHz~26.5GHz.	3657E-400
3657AM Options			
1	2-port 9 kHz low-freq. extension	Extends lower frequency limit to 9 kHz.	3657AM-221
2	4-port measurement	Dual-source 4-port VNA configuration, 100kHz~4.5GHz.	3657AM-400
3	4-port 9 kHz low-freq. extension	Extends lower frequency limit to 9 kHz. Requires 400.	3657AM-421
3657BM Options			
1	2-port 9 kHz low-freq. extension	Extends lower frequency limit to 9 kHz.	3657BM-221
2	4-port measurement	Dual-source 4-port VNA configuration, 100kHz~9GHz.	3657BM-400
3	4-port 9 kHz low-freq. extension	Extends lower frequency limit to 9 kHz. Requires 400.	3657BM-421
3657CM Options			
1	4-port measurement	Dual-source 4-port VNA configuration, 100kHz~14GHz.	3657CM-400
3657DM Options			
1	4-port measurement	Dual-source 4-port VNA configuration, 100kHz~20GHz.	3657DM-400
3657EM Options			
1	4-port measurement	Dual-source 4-port VNA configuration, 100kHz~26.5GHz.	3657EM-400

Accessories (3657A/B/C/D/E/AM/BM/CM/DM/EM)					
1	Power cord	Standard 3-wire power cord	3	Quick start guide	—
2	Mouse	—	4	Certificate of conformity	—

Accessories (3657CU/DU/EU)					
1	Power cord	Standard 3-wire power cord	4	Mouse	—
2	Power adapter	—	5	Quick start guide	—
3	Communication cable assembly	—	6	Certificate of conformity	—