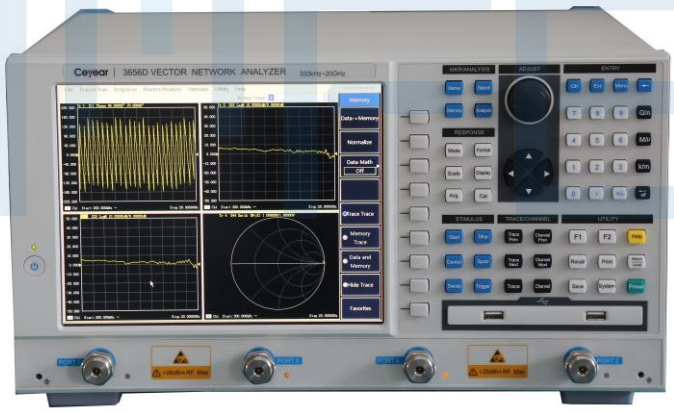
3656A/BA/B/D

Vector Network Analyzer

(100kHz~3GHz/6.8GHz/8.5GHz/ 300kHz~20GHz)



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Product Overview

3656A/BA/B/D vector network analyzer is applicable to fields of radio communications, cable TV, teaching and automotive electronics etc. It can be used for performance measurement of RF components such as filter, amplifier, antenna, cable, and cable television sub connectors etc. It adopts Windows operating system, and has functions of error calibration, time domain and fixture simulator; It supports multiple display formats such as logarithmic amplitude, linear amplitude, standing wave, phase, group delay, Smith chart and polar coordinates etc.; It provides multiple calibration types including frequency response, single port, response isolation, enhanced response and full dual-port, rapid SOLT calibration and electrical calibration; It is capable of multi-channel and multi-window display; It is designed with USB interface, LAN interface, GPIB interface and VGA interface. It can rapidly and accurately measure the amplitude, phase and group delay characteristics of the DUT S-parameter, with efficient and powerful error correction capability.

Main Features

- Dynamic range up to 125dB; accurate measurement on high rejection ratio devices
- 75Ω test port impedance option of 3656A for cable TV components measurement
- 3656D provide 4-port option which can accomplish all 16 S parameters test of 4-port net by a single connection
- Ultra-low trace noise which provide higher test accuracy
- Up to 64 independent measuring channels that can implement complex testing schemes rapidly
- 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

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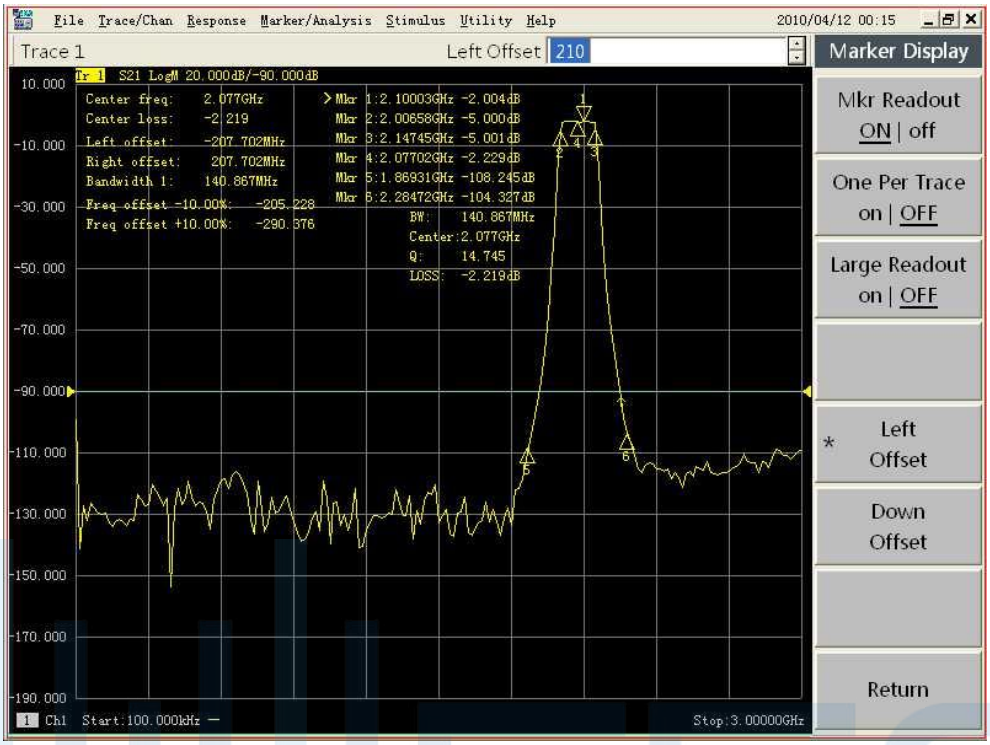
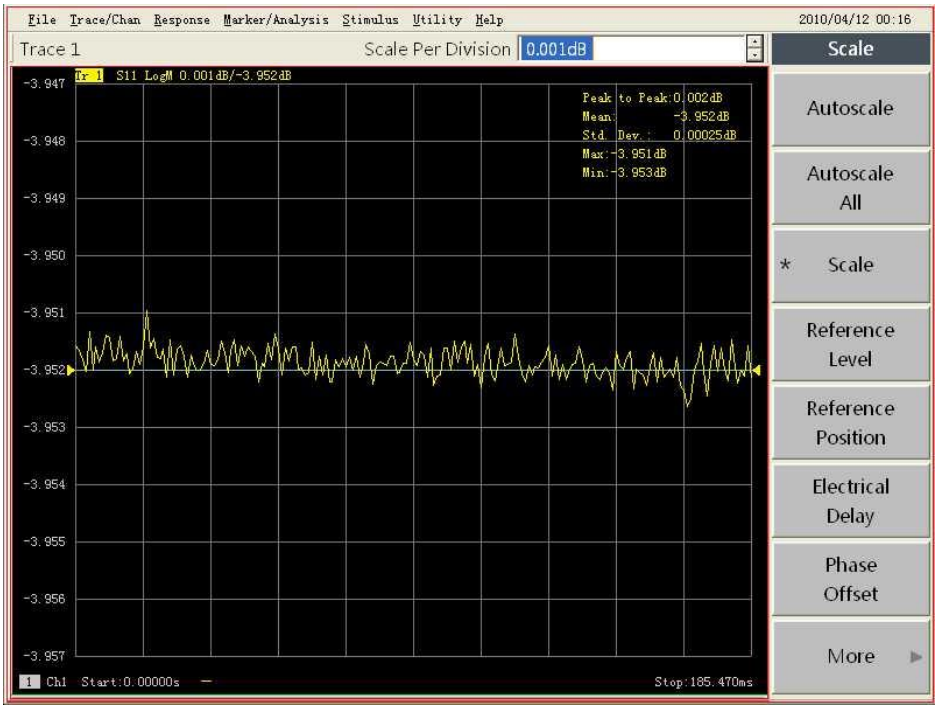
Wide dynamic range

With dynamic range up to 125dB (IFBW=10Hz), 3656 is capable of accurate measurement on devices with high rejection ratio.



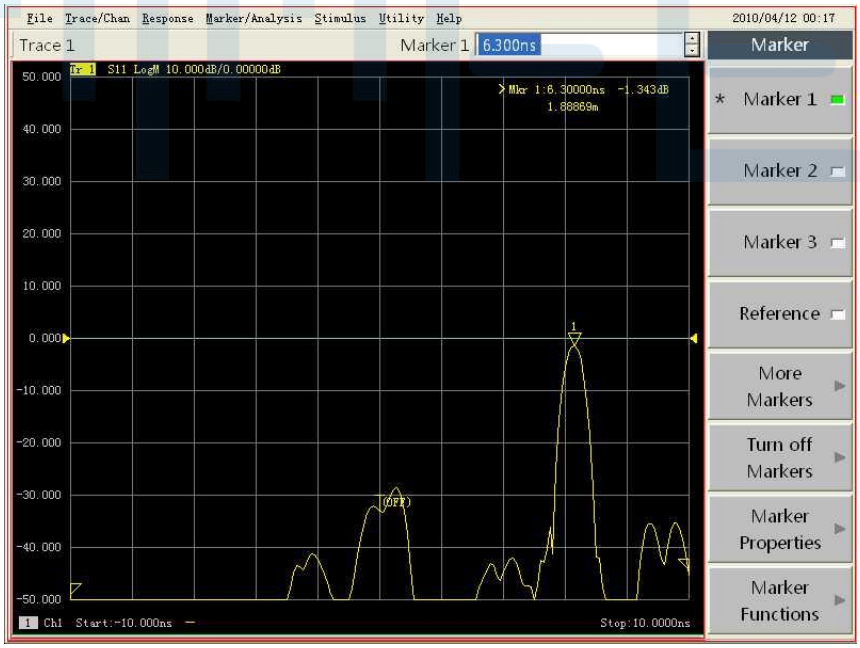
Ultra -low trace noise

Trace noise of 3656 is ultra-low, which minimizes measurement error.



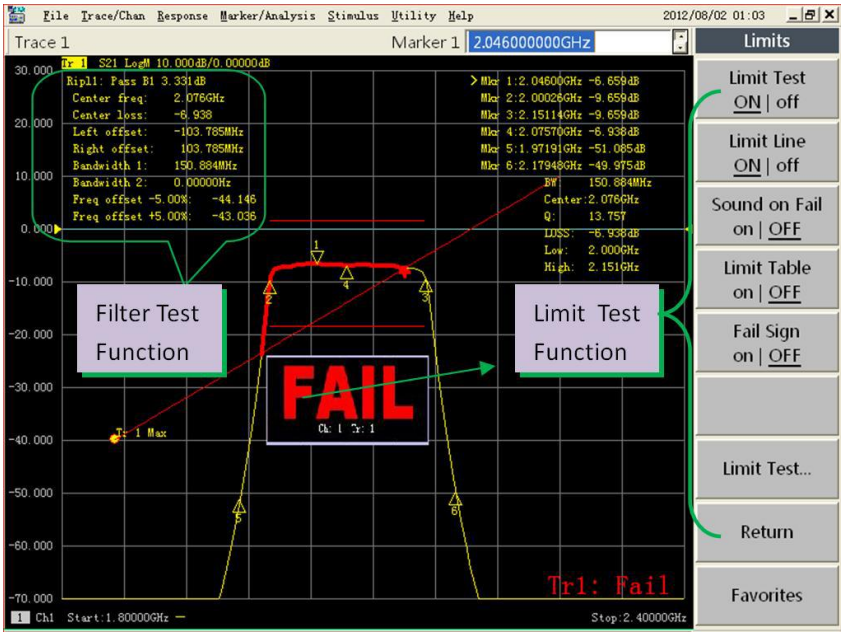
Time-domain analysis function

The analyzer can conduct time-domain measurement on DUT via time-domain software so as to comprehensively test the performance indicators of DUT, such as cable fault location and length measurement.



Powerful data analysis function

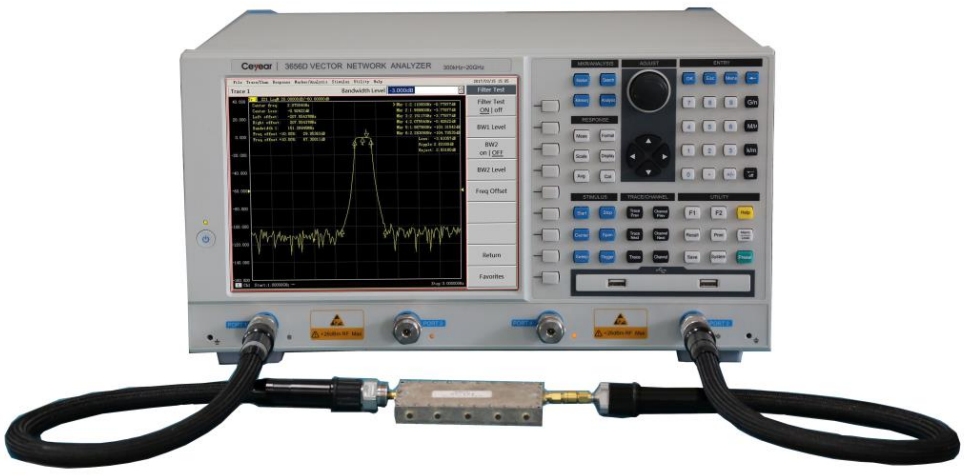
It has analysis functions such as limit test, ripple test and bandwidth test, filter automatic statistics etc., which can clearly test the loss, ripple and rejection and help for conduct hopping filter debugging.



Typical Applications

Production test of mobile communication products

The frequency range of 3656 series vector network analyzer can meet the demand of production test on mobile communication products. It has advantages of high sweep speed, wide dynamic range and compact size which is very suitable for the test of mass production in factories. 3656 can be applied to the test of RF components such as filter, amplifier, antenna and cables. The 75Ω test assembly of 3656A is also available for performance test of CATV devices.



Test of passive multi-port device and balanced device

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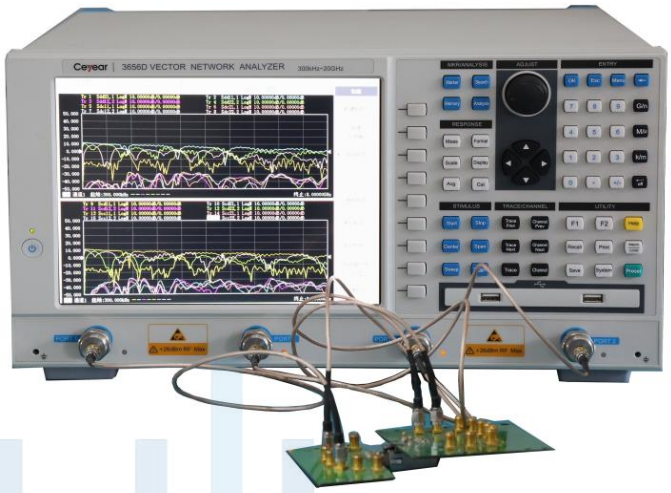
3656D VNA provide 4-port test function . It can test the whole 16 S parameters of 4-port network via one single connection, thus is very suitable for the mass production test of multi-port devices in factories. It has balanced parameter test function: after the full 3-port or full 4-port calibration using 3 or 4 test ports, choose the corresponding operation mode (single port-balanced network, single port-single port-balanced network, balanced-balanced network), then you can gain the mixed S-parameters of balanced devices.



3656A/B Technical Specifications:

Parameters	3656A	3656BA	3656B
Frequency range	100kHz-3GHz	100kHz-6.8GHz	100kHz-8.5GHz
Frequency resolution	1Hz	1Hz	1Hz
Frequency accuracy	±5×10^{-6}(23℃±3℃)	±5×10^{-6}(23℃±3℃)	±5×10^{-6}(23℃±3℃)
System dynamic range	(10Hz) (3kHz) 100kHz-1MHz 90dB 60dB 1MHz-10MHz 110 dB 80 dB 10MHz-3GHz 125dB 95dB	(10Hz) (3kHz) 100kHz-20MHz 110dB 80dB 20MHz-3GHz 125 dB 95 dB 3GHz-6GHz 123dB 93dB 6GHz-6.8GHz 118dB 88dB	(10Hz) (3kHz) 100kHz-20MHz 110dB 80dB 20MHz-3GHz 125 dB 95 dB 3GHz-6GHz 123dB 93dB 6GHz-8.5GHz 118dB 88dB
Reflection track	100kHz-10MHz ±0.030dB 10MHz-3GHz ±0.020dB	100kHz-3GHz ±0.030dB 3GHz-6GHz ±0.040dB 6GHz-6.8GHz ±0.050dB	100kHz-3GHz ±0.030dB 3GHz-6GHz ±0.040dB 6GHz-8.5GHz ±0.050dB
Transmission track	100kHz-10MHz ±0.030dB 10MHz-3GHz ±0.020dB	100kHz-3GHz ±0.030dB 3GHz-6GHz ±0.040dB 6GHz-6.8GHz ±0.050dB	100kHz-3GHz ±0.030dB 3GHz-6GHz ±0.040dB 6GHz-8.5GHz ±0.050dB
Effective directivity	100kHz-10MHz 49 dB	100kHz-3GHz 46dB	100kHz-3GHz 46dB

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	10MHz-3GHz 46 dB 100kHz-10MHz 49dB (option H01) 10MHz-3GHz 46dB (option H01)	3GHz-6GHz 40dB 6GHz-6.8GHz 38dB	3GHz-6GHz 40dB 6GHz-8.5GHz 38dB
Effective source match	100kHz-10MHz 44dB 10MHz-3GHz 40dB 100kHz-10MHz 43dB (option H01) 10MHz-3GHz 21dB (option H01)	100kHz-3GHz 36dB 3GHz-6GHz 35dB 6GHz-6.8GHz 33dB	100kHz-3GHz 36dB 3GHz-6GHz 35dB 6GHz-8.5GHz 33dB
Effective load match	100kHz-10MHz 49 dB 10MHz-3GHz 46 dB 100kHz-10MHz 48dB (option H01) 10MHz-3GHz 41dB (option H01)	100kHz-3GHz 44dB 3GHz-6GHz 40dB 6GHz-6.8GHz 36dB	100kHz-3GHz 44dB 3GHz-6GHz 40dB 6GHz-8.5GHz 36dB
Test points	1 to 16001		
IF bandwidth	Min. 1Hz； Max. 5MHz, in 1, 2, 3, 5, 7 step		
Port connector type	Type-N (female) 50 ohm system impedance Type-N (female) 75 ohm system impedance(3656-H01)		
Number of test ports	2		
Reference level amplitude setting	Setting range: ±500dB Setting resolution: 0.001dB		
Reference phase setting	Setting range: ±500° Setting resolution: 0.01°		
Time-base reference output	Output frequency: 10MHz Output level: +10dBm±4dB		
Digital interface	GPIB, USB, Ethernet interface and VGA display interface		
Operation system	Windows XP		
Display	10.4-inch high brightness LCD		
Test domain	Frequency domain, Time domain		
Dimensions	435×233×348 (W×H×D) (including foot pad, foot, lateral stripping, input and output port)		
Power consumption	150W		
Power supply	50Hz single phase 220V or 50Hz/60Hz single phase 110V AC		
Weight	16kg		

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3656D Technical Specifications:

Parameters	3656D		
Frequency range	300kHz-20GHz		
Frequency resolution	1Hz		
Frequency accuracy	±1×10^{-6}(23℃±3℃)		
System dynamic range IF bandwidth： 10Hz	Frequency range	2-port	4-port
	300kHz-100MHz	95dB	90 dB
	100MHz-1GHz	110dB	100 dB
	1GHz-6GHz	120dB	115 dB
	6GHz-8GHz	117dB	110 dB
	8GHz-10GHz	115dB	105 dB
	10GHz-15GHz	110dB	100 dB
	15GHz-20GHz	100dB	90 dB
Reflection track	300kHz-10MHz ±0.030dB 10MHz-3GHz ±0.040dB 3GHz-20GHz ±0.050dB		
Transmission track	300kHz-10MHz ±0.030dB 10MHz-3GHz ±0.040dB 3GHz-6GHz ±0.100dB 6GHz-20GHz ±0.150dB		
Effective directivity	300kHz-10MHz 46dB 10MHz-3GHz 42dB 3GHz-6GHz 38dB 6GHz-20GHz 36dB		
Effective source match	300kHz-10MHz 37dB 10MHz-3GHz 37dB 3GHz-6GHz 31dB 6GHz-20GHz 28dB		
Effective load match	300kHz-10MHz 44dB 10MHz-3GHz 42dB 3GHz-6GHz 38dB 6GHz-20GHz 36dB		
Test points	1 to 16001		
IF bandwidth	Min. 1Hz； Max. 5MHz, in 1, 2, 3, 5, 7 step		
Port connector type	3.5mm (male) 50 ohm system impedance		

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Number of test ports	2/4
Reference level amplitude setting	Setting range：±500dB Setting resolution：0.001dB
Reference phase setting	Setting range：±500° Setting resolution：0.01°
Time-base reference output	Output frequency：10MHz Output level：+10dBm±4dB
Digital interface	GPIB, USB, Ethernet interface and VGA display interface
Operation system	Windows XP
Display	10.4-inch high brightness LCD
Test domain	Frequency domain, Time domain
Dimensions	436×236.5×410 (W×H×D) (including foot pad, foot, lateral stripping, input and output port)
Power consumption	150W
Power supply	50Hz single phase 220V or 50Hz/60Hz single phase 110V AC
Weight	18kg

3656A Ordering Information：

●Main Unit：3656A Vector Network Analyzer

●Standard Configuration/Option Information

	No.	Standard Configuration/Option
Standard Configuration	---	Power cord ,1 piece
	---	USB mouse, 1 piece
	---	Quick start guide, 1 piece
	---	Certificate of conformity , 1 piece
Option	3656-H01	75Ω port impedance system Notes：After choosing this option, the main unit will not has 50Ω port impedance system
	3656-H02	Type-N testing cable(GORE-OSZKUZKU0240, dual male, 60cm)
	3656-H03	Type-N testing cable(GORE-OSZKUZKV0240, female male, 60cm)
	3656-H04	English options(Button, front panel, label) Notes：After choosing this option, the main unit will not has Chinese button,front panel,label
	3656-H05	20205 Type-N calibration kit(DC-3GHz)
	3656-H06	20204 Type-N 75Ω calibration kit
	3656-H07	Economical stable phase testing cable CETC41-N/J.SMA/J.197C-800(N to 3.5mm

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		connector, dual male, 80cm)
	3656-H08	Economical stable phase testing cable CETC41-N/J.N/K.197C-800(N type connector, female-male, 80cm)
	3656-H09	Economical stable phase testing cable CETC41-N/J.N/J.197C-800(N type connector, dual male, 80cm)
	3656-H10	75Ω testing cable 24-0800-51M1-51M1
	3656-H11	20402 Electronic calibration kit(300kHz-18GHz, Type-N (female-male), 2-port)
	3656-H12	20403 Electronic calibration kit(10MHz-26.5GHz, 3.5mm (female-male), 2-port)
	3656-H13	20405 Electronic calibration kit(10MHz-20GHz, 3.5mm (female), 4-port)
	3656-H14	3656 series user manual in Chinese
	3656-H15	3656 series user manual in English
	3656-H16	Aluminum alloy transportation case
	3656-H17	Front panel jumper(Supports 4-port extension and receiver through test)
	3656-H18	2813A 4-port test equipment(Need option 3656A-H17)
	3656-H19	Cabinet, easy to build system

3656BA Ordering Information

●Main Unit：3656BA Vector Network Analyzer

●Standard Configuration/Option Information

	No.	Standard Configuration/Option
Standard Configuration	---	Power cord ,1 piece
	---	USB mouse, 1 piece
	---	Quick start guide, 1 piece
	---	Certificate of conformity , 1 piece
Option	3656-H02	Type-N testing cable(GORE-OSZKUZKU0240, dual male, 60cm)
	3656-H03	Type-N testing cable(GORE-OSZKUZKV0240, female-male, 60cm)
	3656-H07	Economical stable phase testing cable CETC41-N/J.SMA/J.197C-800(Type-N to 3.5mm connector, dual male, 80cm)
	3656-H08	Economical stable phase testing cable CETC41-N/J.N/K.197C-800(Type-N connector, female-male, 80cm)
	3656-H09	Economical stable phase testing cable CETC41-N/J.N/J.197C-800(Type-N connector, dual male, 80cm)
	3656-H11	20402 Electronic calibration kits(300kHz-18GHz, Type-N (female-male), 2 port)
	3656-H12	20403 Electronic calibration kits(10MHz-26.5GHz, 3.5mm(female-male), 2 port)
	3656-H13	20405 Electronic calibration kits(10MHz-20GHz, 3.5mm(female), 4 port)
	3656-H15	3656 series user manual in English
	3656-H16	Aluminum transportation case
	3656-H19	Cabinet, Easy to build system

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	3656-H20	English options(Button, front panel, label)
	3656-H21	20201 Type-N calibration kit(DC-9GHz)
	3656-H22	20202 3.5mm calibration kit(DC-9GHz)
	3656-S02	Production line test function option (for 3656BA only)

3656B Ordering Information

●Main Unit：3656B Vector Network Analyzer

●Standard Configuration/Option Information

	No.	Standard Configuration/Option
Standard Configuration	---	Power cord ,1 piece
	---	USB mouse, 1 piece
	---	Quick start guide, 1 piece
	---	Certificate of conformity , 1 piece
Option	3656-H02	Type-N testing cable(GORE-OSZKUZKU0240, dual male, 60cm)
	3656-H03	Type-N testing cable(GORE-OSZKUZKV0240, female-male, 60cm)
	3656-H07	Economical stable phase testing cable CETC41-N/J.SMA/J.197C-800(Type-N to 3.5mm connector, dual male, 80cm)
	3656-H08	Economical stable phase testing cable CETC41-N/J.N/K.197C-800(Type-N connector, female-male, 80cm)
	3656-H09	Economical stable phase testing cable CETC41-N/J.N/J.197C-800(Type-N connector, dual male, 80cm)
	3656-H11	20402 Electronic calibration kits(300kHz-18GHz, Type-N (female-male), 2 port)
	3656-H12	20403 Electronic calibration kits(10MHz-26.5GHz, 3.5mm(female-male), 2 port)
	3656-H13	20405 Electronic calibration kits(10MHz-20GHz, 3.5mm(female), 4 port)
	3656-H15	3656 series user manual in English
	3656-H16	Aluminum transportation case
	3656-H19	Cabinet, Easy to build system
	3656-H20	English options(Button, front panel, label)
	3656-H21	20201 Type-N calibration kit(DC-9GHz)
	3656-H22	20202 3.5mm calibration kit(DC-9GHz)
	3656-H23	32111 waveguide calibration kit(1.72-2.61GHz)
	3656-H24	32112 waveguide calibration kit(2.60-3.95GHz)
	3656-H25	32113 waveguide calibration kit(3.94-6.00GHz)
	3656-H26	32114 waveguide calibration kit(4.64-7.05GHz)
	3656-H27	32115 waveguide calibration kit(5.88-8.17GHz)
	3656-H28	32116 waveguide calibration kit(7.00-10.0GHz)
	3656-H29	Front panel jumper(Supports 4-port extension and receiver through test)
	3656-S01	Production line test function option (for 3656B only)

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3656D Ordering Information

●Main Unit：3656D Vector Network Analyzer

●Standard Configuration/Option Information

	No.	Standard Configuration/Option
Standard Configuration	---	Power cord ,1 piece
	---	USB mouse, 1 piece
	---	Quick start guide, 1 piece
	---	Certificate of conformity , 1 piece
Option	3656-H12	20403 Electronic calibration kits
	3656-H13	20405 Electronic calibration kits
	3656-H15	3656 series user manual in English
	3656-H19	Cabinet
	3656-H30	31121 3.5mm calibration kits
	3656-H31	87308 3.5NMD/3.5mm-KJ testing cable
	3656-H32	87308A 3.5NMD/3.5mm-KK testing cable
	3656-H33	FB0HA0HB025.0 3.5mm GORE testing cable
	3656-H34	FB0HA0HC025.0 3.5mm GORE testing cable
	3656-H35	2-port English option
	3656-H36	4-port option
	3656-H37	4-port English option
	3656-H38	Aluminum transportation case

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