



**3643K/43NA/43N/43P/43QA/43Q/49/43SA/43R/49A/49B**

### **Millimeter-Wave VNA Extender**

(40GHz~60GHz/50GHz~75GHz/60GHz~90GHz/75GHz~110GHz/90GHz~  
140GHz/110GHz~170GHz/170GHz~220GHz/140GHz~220GHz/170GHz~  
260GHz/220GHz~325GHz/325GHz~500GHz)



### **Product Overview**

The 3643K/43NA/43N/43P/43QA/43Q/49/43SA/43R/49A/49B Millimeter-Wave VNA Extender has reached the international level in measuring speed, dynamic range and measuring stability. In terms of hardware, this module adopts new design concepts and technical solutions, so that the key technical performance indicators of the whole unit are significantly improved; in terms of software, its spread spectrum system is based on the platform environment of Windows operating system, so that the interconnectivity and usability of the whole unit has been greatly improved.

The 3643K/43NA/43N/43P/43QA/43Q/49/43SA/43R/49A/49B Millimeter-Wave VNA Extender can be used to compose a millimeter wave vector network analyzer system with a 3640A millimeter wave spread

spectrum controller and a vector network analyzer, which can realize flexible configuration of 5mm, 3mm, 2mm, 1mm frequency band and an even higher frequency band, and the highest frequency can cover 500GHz. It has the features of simple system configuration, friendly user interface and high test precision, and realizes the measurement of all S parameters of millimeter wave measured network. The system is widely used in R&D and production testing for millimeter wave components, MMIC, antenna and RCS and materials.

## Main Features

- Frequency coverage: 40GHz~500GHz.
- Windows 7 operating system, Chinese menu, as well as English menu options.
- Various calibration methods such as frequency response, single port, response isolation, dual port, TRL and so on.
- Applicable to different types of vector network analyzer hosts.
- Realizing spread spectrum measurement of two-port vector network analyzer by 3640A.

A uniform miniaturization and tilt panel design is adopted at different frequency bands. Universal platform, easy to operate, and higher test efficiency.



## Technical Specifications

Model	3643K	3643NA	3643N	3643P	3643QA
Technical Indicators					
Frequency range	40GHz~ 60GHz	50GHz~ 75GHz	60GHz~ 90GHz	75GHz~ 110GHz	90GHz~ 140GHz
Port output power	≥+6dBm	≥+5dBm	≥+5dBm	≥5dBm	≥+3dBm

System dynamic range (intermediate frequency bandwidth 10Hz)	≥100dB	≥100dB	≥100dB	≥100dB	≥100dB
Reflection tracking (dB)	≤0.12	≤0.12	≤0.12	≤0.12	≤0.15
Transmission tracking (dB)	≤0.12	≤0.12	≤0.12	≤0.12	≤0.15
Effective directivity (dB)	≤-35dB	≤-35dB	≤-35dB	≤-35dB	≤-34dB
Payload matching (dB)	≤-35dB	≤-35dB	≤-35dB	≤-35dB	≤-34dB
Port connector form	WR19, system Impedance 1 ohm	WR15, system Impedance 1 ohm	WR12, system Impedance 1 ohm	WR10, system Impedance 1 ohm	WR8.0, system Impedance 1 ohm
Working voltage	12VDC@2A	12VDC@2A	12VDC@2A	12VDC@3A	12VDC@3A
Outline dimension width × height × depth (mm)	120×90×240	120×90×240	120×90×240	120×90×240	120×90×240

3643Q	3649	3643SA	3643R	3649A	3649B
110GHz~ 170GHz	170GHz~ 220GHz	140GHz~ 220GHz	170GHz~ 260GHz	220GHz~ 325GHz	325GHz~ 500GHz
≥-1dBm	≥-10dBm	≥-9dBm	≥-10dBm	≥-13dBm	≥-23dBm
≥100dB	≥100dB	≥100dB	≥100dB	≥95dB	≥80dB
≤0.15	≤0.2	≤0.25	≤0.2	≤0.2	≤0.3
≤0.15	≤0.2	≤0.25	≤0.2	≤0.2	≤0.3
≤-34dB	≤-30dB	≤-30dB	≤-25dB	≤-25dB	≤-20dB
≤-34dB	≤-30dB	≤-30dB	≤-25dB	≤-25dB	≤-20dB
WR6.5, system Impedance 1 ohm	WR5.1, system Impedance 1 ohm	WR5.1, system Impedance 1 ohm	WR4.3, system Impedance 1 ohm	WR3.4, system Impedance 1 ohm	WR2.2, system Impedance 1 ohm
12VDC@2A	12VDC@2A	12VDC@2A	12VDC@2A	12VDC@3A	12VDC@3A
120×90×240	120×90×240	120×90×240	120×90×240	120×90×240	120×90×240

3640A millimeter wave spread spectrum controller, compatible with 3672X series and PNA-X series vector network analyzers.



## Technical Specifications

Technical Indicators Model	Frequency range	Output power	Control interface	Power output	Power supply	Outline dimension width × height × depth (mm)
3640A	8GHz~ 20GHz	10±1dBm	Test device interface	12VDC@2A	Self-adaption power supply: AC220/240V; 50/60Hz; 100/115V: 50/60/400Hz;	426×177×460 (without handles, pad, feet)

## Ordering Information

### System Instrument List

Model	Instrument Name	Main Indicators	Quantity	Remarks
3672B/C/D/E	Vector network analyzer	10MHz~26.5GHz/40GHz /50GHz/67GHz	1 set	S80 option
3640A	Millimeter wave spread spectrum controller	8GHz~20GHz	1 set	-
3643K	Millimeter-wave VNA extender	40GHz~60GHz	2 sets	-
3643NA	Millimeter-wave VNA extender	50GHz~75GHz	2 sets	-
3643N	Millimeter-wave VNA extender	60GHz~90GHz	2 sets	-

3643P	Millimeter-wave VNA extender	75GHz~110GHz	2 sets	-
3643QA	Millimeter-wave VNA extender	90GHz~140GHz	2 sets	-
3643Q	Millimeter-wave VNA extender	110GHz~170GHz	2 sets	-
3649	Millimeter-wave VNA extender	170GHz~220GHz	2 sets	-
3643SA	Millimeter-wave VNA extender	140GHz~220GHz	2 sets	-
3643R	Millimeter-wave VNA extender	170GHz~260GHz	2 sets	-
3649A	Millimeter-wave VNA extender	220GHz~325GHz	2 sets	-
3649B	Millimeter-wave VNA extender	325GHz~500GHz	2 sets	-
32121K	6mm waveguide calibration kit	40GHz~60GHz	1 box	-
32156	5mm waveguide calibration kit	50GHz~75GHz	1 box	-
32155N	60-90 waveguide calibration kit	60GHz~90GHz	1 box	-
32141	3mm waveguide calibration kit	75GHz~110GHz	1 box	-
32155Q	90-140 waveguide calibration kit	90GHz~140GHz	1 box	-
32155	2mm waveguide calibration kit	110GHz~170GHz	1 box	-
20301	1mm waveguide calibration kit	140GHz~220GHz	1 box	-
32155S	170-260 waveguide calibration kit	170GHz~260GHz	1 box	-
20302	1mm waveguide calibration kit	220GHz~325GHz	1 box	-
20301T	0.5THz waveguide calibration kit	325GHz~500GHz	1 box	-
-	System connection cable	-	1 set	See the following table for details

Cable List of the Spread Spectrum System of the Controller

No.	Cable Name and Function	Length (meter)	Connector	Quantity	Remarks
Microwave Cable					
A1	RF output of network analyzer to RF input of control machine	0.6	3.5mm/3.5mm-JJ	1	Low loss cable
A2	Local oscillator output of network analyzer to local oscillator input of control machine	0.6	3.5mm/3.5mm-JJ	1	Low loss cable
A3/A4	RF output of control machine to input of millimeter-wave VNA extender.	1.2/1.5/2	3.5mm/3.5mm-JJ	2	Low loss cable, length optional
A5/A6	Local oscillator output of control machine to local oscillator input of	1.2/1.5/2	3.5mm/3.5mm-JJ	2	Low loss cable, length

	millimeter-wave VNA extender.				optional
IF Cable					
C1	IF output of control machine to outer IF input of control machine	0.6	SMA/SMA	4	IF cable
C2	IF output of millimeter-wave VNA extender to IF input of control machine	1.2/1.5/2	SMA/SMA	4	IF cable, length optional
Communication/Power Cable					
D1	Interface of network analyzer test device to interface of control machine test device	1	PCL-10125	1	Test device cable
D2	Control machine power output to millimeter-wave VNA extender power input	1.2/1.5/2	Circular connection cable	2	Power cable, length optional

Cable List of 3672B Vector Network Analyzer (Four-Port) Spread Spectrum System

No.	Cable Name and Function	Length (meter)	Connector	Quantity	Remarks
Microwave Cable					
A1	3672B complete machine four port spread spectrum system cable option	/	/	1	RF cable kit
Power Supply					
C1/C2	Adapter power output to millimeter-wave VNA extender power input	/	Seven core	2	Power adapter

Cable List of 3672C/D/E Vector Network Analyzer (Four-Port) Spread Spectrum System

No.	Cable Name and Function	Length (meter)	Connector	Quantity	Remarks
Microwave Cable					
A1	3672C/D/E complete machine four port spread spectrum system cable option	/	/	1	RF cable kit
Power Supply					
C1/C2	Adapter power output to millimeter-wave VNA extender power input	/	Seven core	2	Power adapter