Keysight Technologies N5256AW01/R01 N5262AW01/W065 N5262AR01/R065 VNAX LG Millimeter-wave Modules

KEYSIGHT TECHNOLOGIES

Product Note

Notices

Trademark Acknowledgments

Manual Part Number

N5256-90002

Edition

Edition 4, August 2020

Supersedes: September 2019

Printed in USA

Published by:
Keysight Technologies
1400 Fountaingrove Parkway
Santa Rosa, CA 95403

Warranty

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Safety Notices

CAUTION

A **CAUTION** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a CAUTION notice until the indicated conditions are fully understood and met.

WARNING

A **WARNING** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.

Keysight Technologies N5256AW01/R01 N5262AW01/W065 and N5262AR01/R065 VNAX LG Millimeter-wave Modules

The Keysight N5256AWxx or N5262AWxx Transceiver Modules (Tx/Rx) and the Receiver Modules (Rx) are manufactured by Virginia Diodes, Inc. (VDI). These modules may be used with the Keysight N5222/24/25/27A PNA or N5242/44/45/47A/B PNA-X with Options 080 and 400 or 224, or the Keysight N5261/62A/92A Controller to configure a banded millimeter-wave network analyzer system for S-parameter measurements.

N5262AWxx transceiver modules have both a source and measurement receiver and can be used with the network analyzer to make S-parameter reflection measurements. Another transceiver or receiver module is required to make transmission measurements. Transceiver modules are also known as transmission/reflection modules.

N5262ARxx receiver modules have only a measurement receiver. They can be used with the network analyzer to make S-parameter transmission measurements only and require a transmitter module or a transceiver module to complete the network analyzer system.

Cable Sets and Adapter Sets are available to enable direct connect to the PNA, PNA-X or the controller. For information on Direct Connect Solutions, refer to Keysight technical document 5989-2177EN. For information on connection to the controller, refer to N5261A and N5262A User's and Service Guide (N5262-90001) at http://www.keysight.com.

Both TxRx and Rx modules are available with 1.2 or 5 meter cable sets. The TxRx modules are available with internal micrometer adjustable (0-30 db) attenuators. The Rx modules are available with external attenuators for high sensitivity.

The cable set can be ordered with the module or individually (N5262AKCBL).

For ordering information, reference the "Keysight Technologies Banded Millimeter Wave Network Analysis Technical Overview" at https://literature.cdn.keysight.com/litweb/pdf/5992-2177EN.pdf?id=2870369&cc=US&lc=eng.

For ordering information on the N5262BW/BT/BRxx Mini VNA Extension Modules, reference https://literature.cdn.keysight.com/litweb/pdf/N5262-90002.pdf?id=2945628

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Figure 1

Inspect the shipping container. If the container or packing material is damaged, it should be kept until the contents of the shipment have been checked mechanically and electrically. If there is physical damage refer to "Contacting Keysight" on page 11. Keep the damaged shipping materials (if any) for inspection by the carrier and a Keysight Technologies representative.

NOTE

The product serial number is the OEM serial number **VNAXxxxx** (xxxx = numbers in the OEM serial number) assigned by Virginia Diodes, Inc. Refer to the label on the product for the serial number.

NOTE

Modules sold for use with 5 meter cable sets have 2 or 3 dB RF and LO power requirements at module inputs. Modules can be used with 1.2 cable sets when power is reduced. Refer to VDI Users Guide recommendations.

NOTE

Modules sold for use with 1.2 meter cable sets have a 10dBm (± 3dBm) RF and LO power requirement at module inputs. For direct connection ONLY using FOM, the PNA source power may indicate unleveled at 10dBm. Reduce power until the unlevel warning turns off, ensuring the power level is at least 7dBm at input to module.

Table 1 Tx/Rx Transceiver Modules without Attenuators

Waveguide Flange	Frequency (GHz)	Keysight Model	VDI P/N for use with 1.2 m Cable Set	VDI P/N for use with 5 m Cable Set
WR1.5	500 to 750	N5256AW01-700	VNAX-WR1.5TxRx-1.2	VNAX-WR1.5TxRx-5
WR1.0	750 to 1100	N5262AW01-700	VNAX-WR1.0TxRx-1.2	VNAX-WR1.0TxRx-5
WR0.65	1100 to 1500	N5262AW065-700	VNAX-WR0.65TxRx-1.2	VNAX-WR0.65TxRx-5

Table 2 Tx/Rx Transceiver Modules with Attenuators

Waveguide Flange	Frequency (GHz)	Keysight Model	VDI P/N for use with 1.2 m Cable Set	VDI P/N for use with 5 m Cable Set
WR1.5	500 to 750	N5256AW01-701	VNAX-WR1.5TxRx-Attn-1.2	VNAX-WR1.5TxRx-Attn-5
WR1.0	750 to 1100	no attenuator option	no attenuator option	no attenuator option
WR0.65	1100 to 1500	no attenuator option	no attenuator option	no attenuator option

Table 3 Rx Receiver Modules without Attenuators

Waveguide Flange	Frequency (GHz)	Keysight Model	VDI P/N for use with 1.2 m Cable Set	VDI P/N for use with 5 m Cable Set
WR1.5	500 to 750	N5256AR01-700	WR1.5Rx-1.2	WR1.5Rx-5
WR1.0	750 to 1100	N5262AR01-700	WR1.0Rx-1.2	WR1.0Rx-5
WR0.65	1100 to 1500	N5262AR065-700	WR0.65TxRx-1.2	WR0.65TxRx-5

Table 4 Rx Transceiver Modules with Attenuators

Waveguide Flange	Frequency (GHz)	Keysight Model	VDI P/N for use with 1.2 m Cable Set	VDI P/N for use with 5 m Cable Set
WR1.5	500 to 750	N5256AR01-701	WR1.5Rx-HS-1.2	WR1.5Rx-HS-5
WR1.0	750 to 1100	no attenuator option	no attenuator option	no attenuator option
WR0.65	1100 to 1500	no attenuator option	no attenuator option	no attenuator option

NOTE If ordering a Cable Set separately, use the Model number to determine appropriate set.

Table 5 Available TxRx Cable Sets

TxRx IF (x2), LO, RF and DC Power	VDI Part Number	Description
N5262AWCBL-501	CS-TST-TxRx-1.2	1.2 m cable set for controller
N5262AWCBL-505	CS-TST-TxRx-5	5 m cable set for controller
N5262AWCBL-201	CS-24-TxRx-1.2	1.2 m cable set for 26.5 GHz PNA or PNA-X
N5262AWCBL-205	CS-24-TxRx-5	5 m cable set for 26.5 GHz PNA or PNA-X
N5262AWCBL-401	CS-40-TxRx-1.2	1.2 m LF cable set for > 43 GHz PNA or PNA-X
N5262AWCBL-701	CS-40-TxRx-H-1.2	1.2 m dual cable set for > 43 GHz PNA or PNA-X
N5262AWCBL-705	CS-40-TxRx-5	5 m dual cable set for connection to controller
N5262AWCBL-N01	no cable set	Use a 1.2 m cable set
N5262AWCBL-N05	no cable set	Use a 5 m cable set

Table 6 Available Rx Cable Sets

Rx IF, LO and DC Power	VDI Part Number	Description
N5262ARCBL-501	CS-TST-Rx-1.2	1.2 m cable set for controller
N5262ARCBL-505	CS-TST-Rx-5	5 m cable set for controller
N5262ARCBL-201	CS-24-Rx-1.2	1.2 m cable set for 26.5 GHz PNA or PNA-X
N5262ARCBL-205	CS-24-Rx-5	5 m cable set for 26.5 GHz PNA or PNA-X
N5262ARCBL-401	CS-40-Rx-1.2	1.2 m LF cable set for > 43 GHz PNA or PNA-X
N5262ARCBL-701	CS-40-Rx-H-1.2	1.2 m dual cable set for > 43 GHz PNA or PNA-X
N5262ARCBL-705	CS-40-Rx-5	5 m dual cable set for connection to controller
N5262ARCBL-N01	no cable set	Use a 1.2 m cable set
N5262ARCBL-N05	no cable set	Use a 5 m cable set

The following adapters are recommended for option 701 cable sets if connecting modules to an N5261/62A controller or an N5222/42A/B network analyzer. Tables 7, 8, 9 and 10 indicate which adapters connect to the controller or network analyzer.

Table 7 Adapters for TxRx to Connect to Controller

Model	Description	TEST/REF	Qty	RF/LO	Qty
N5261/62A	Test Set	11901-60004	2	11901-60001	2

Table 8 Adapters for TxRx to Connect to PNA

Model	Description	RCVR A/B RCVR R1/R2	Qty	RF (Port 1/2) LO (Port 3/4)	Qty
N5222/42A	PNA/-X, 26.5 GHz	11901-60004	2	N4903-61250	2

Table 9 Adapters for Rx to Connect to Controller

Model	Description	TEST/REF	Qty	LO	Qty
N5261A	Test Set	11901-60004	1	11901-60001	1

Table 10 Adapters for Rx to Connect to PNA

Model	Description	RCVR A/B RCVR R1/R2	Qty	LO (Port 3/4)	Qty
N5222/42A/B	PNA/-X, 26.5 GHz	11901-60004	1	N4903-61250	1

Descriptions of Adapters:

- 11901A = 2.4 mm Male to 3.5 mm Male
- 11904D = 2.4 mm Female to 3.5 Male
- N4903-61250 = 3.5 mm Female to 2.4 mm Male

NOTE Cable Set 701 has 2.4 mm connectors. No adapters needed for N5224/25/45/47A

NOTE Individual adapters are available by “Contacting Keysight” on page 11

The following adapters are recommended for option 705 cable set if connecting modules to a network analyzer. See Figure 2 and Tables 11 and 12 below.

Figure 2 Connection indicators for 705 TxRx (Rx) Cable Set

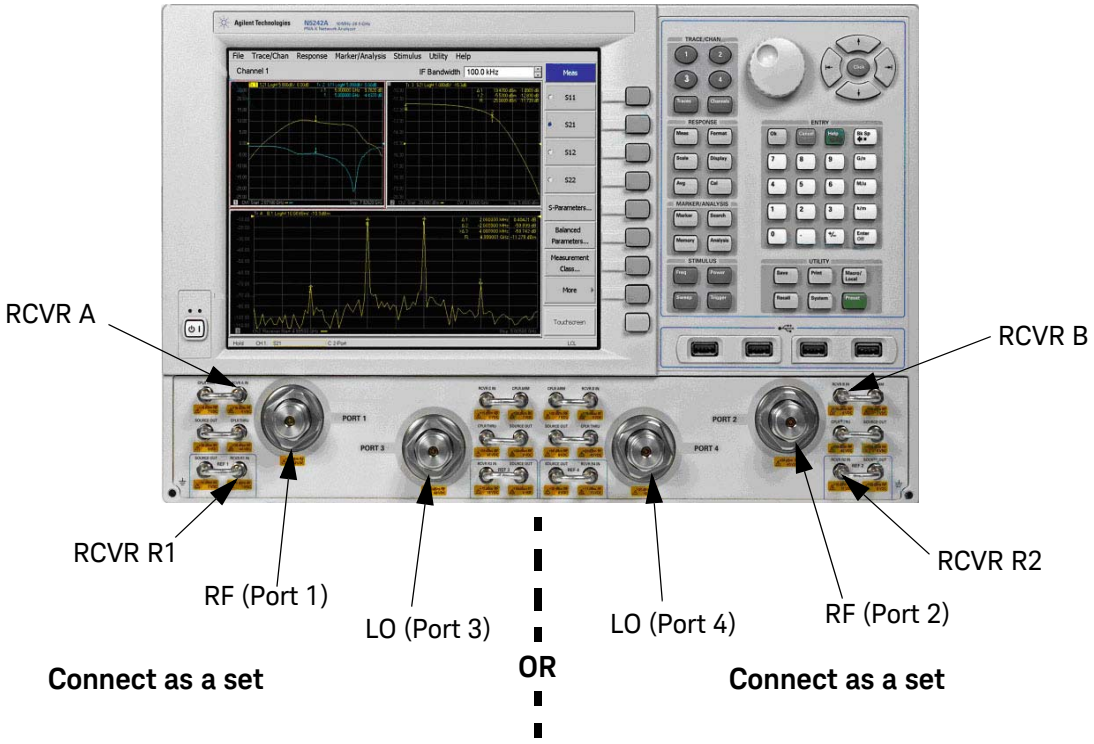

Table 11 indicates which TxRx adapters connect to a network analyzer.

Table 11 Adapters for TxRx to Connect to PNA

Model	Description	RCVR A/B RCVR R1/R2	Qty	RF (Port 1/2) LO (Port 3/4)	Qty
N5222/42A/B	PNA/-X, 26.5 GHz	N/A	N/A	5061-5311	2
N5224/25/45/47A/B	PNA/-X, >43 GHz	N4903-61250	2	1250-3782	2

Table 12 indicates which Rx adapters connect to a network analyzer.

Table 12 Adapters for Rx to Connect to PNA

Model	Description	RCVR A/B	Qty	LO (Port 3/4)	Qty
N5222/42A/B	PNA/-X, 26.5 GHz	N/A	N/A	5061-5311	1
N5224/25/45/47A/B	PNA/-X, >43 GHz	N4903-61250	1	1250-3782	1

- 5061-5311 = 3.5 mm Female to Female
- 1250-3782 = 2.92 mm Female to 2.4 mm Female
- N4903-61250 = 3.5 mm Female to 2.4 mm Male

NOTE Cable Set 705 has 3.5 mm connectors.
No adapters needed to connect to controller

NOTE Individual adapters are available by “Contacting Keysight” on page 11

EMI and EMC Compliance

Complies with European EMC Directive 2014/30/EU

- IEC/EN 61326-1
- CISPR Pub 11 Group 1, class A
- AS/NZS CISPR 11
- ICES/NMB-001
  This ISM device complies with Canadian ICES-001.
  Cet appareil ISM est conforme a la norme NMB du Canada.

NOTE The N5262AW065 product has not completed regulatory testing. Compliance to the European EMC Directive and standards mentioned above has not been confirmed.

South Korean Class A EMC Declaration

Information to the user:

This equipment has been conformity assessed for use in business environments. In a residential environment, this equipment may cause radio interference.

※ This EMC statement applies to the equipment only for use in a business environment.

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Instrument Markings

Listed below are definitions for the markings that may be found on the product.

	The instruction documentation symbol. The product is marked with this symbol when it is necessary for the user to refer to the instructions in the documentation.
	The AC symbol indicates the required nature of the line module input power.
	This symbol indicates separate collection for electrical and electronic equipment, mandated under EU law. All electric and electronic equipment are required to be separated from normal waste for disposal (Reference WEEE Directive).
	This symbol indicates that the power line switch is ON.
	This symbol indicates that the power line switch is in the OFF position.
IP 2 0	The instrument has been designed to meet the requirements of IP 2 0 for egress and operational environment.
	The RCM mark is a registered trademark of the Australian Communications and Media Authority
	Indicates the time period during which no hazardous or toxic substance elements are expected to leak or deteriorate during normal use. Forty years is the expected useful life of the product.
	The CE mark is a registered trademark of the European Community.
ccr.keysight@keysight.com	The Keysight email address is required by EU directives applicable to our product.
	South Korean Certification (KC) mark; includes the marking's identifier code which follows the format: MSIP-REM-YYY-ZZZZZZZZZZZZZZ.

Contacting Keysight

Assistance with test and measurement needs, and information on finding a local Keysight office are available on the Internet at:
http://www.keysight.com/find/assist

You can also purchase accessories or documentation items on the Internet at:
http://www.keysight.com/find

If you do not have access to the Internet, contact your field engineer.

NOTE

In any correspondence or telephone conversation, refer to the Keysight product by its model number and full serial number. With this information, the Keysight representative can determine the warranty status of your unit.

Edition 4, August 2020
Supersedes: September 2019

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