WR15 | WR12 | WR10 | WR08 | WR06 | WR05 | WR03 | WR02.2

V12VNA2 Extended Frequency Series
WR12 Frequency Extension Module
56 to 94 GHz

DESCRIPTION

The V12VNA2 Series offers an extended frequency module that will expand your existing Vector Network Analyzer (VNA) capabilities so you can conduct industry-leading millimeter wave S-parameters from 56-94 GHz. These frequency extension modules connect to your existing test port(s) and leverage the inherent microwave network analyzer's performance and features to display two-port S-parameters: S_{11}, S_{21}, S_{12}, and S_{22}. Four architectures are available: 1-port, scalar 2-port, 1-path/2-port, and fully-reversing 2-port. Waveguide calibration kits are available as separate accessories.

HIGHLIGHTS

- Dynamic Range of 112 dB
- Output Power of +7 dBm
- Optional Manual Attenuation of 0 to 25 dB
- Raw Directivity of 37 dB
- Raw Test Port Match of 17 dB
- Stability of ±0.2 dB & ±2 deg

APPLICATIONS

- S-parameters for millimeter wave devices
- Truly broadband on-wafer device characterization
- Pulse setups to mitigate power handling considerations
- Filter passband and rejection verification
- Antenna characterization for lobes and polarization
- True differential measurements

ELECTRICAL AND PERFORMANCE SPECIFICATIONS (+25°C)

After a one hour warm-up period, the V12.VNA2 module will satisfy the following specifications.

Electrical Characteristics[1]	MIN	TYP	MAX
System Operating Frequency	56 GHz	--	94 GHz
Test Port Output Power[2]	+3 dBm	+7 dBm	+10 dBm
System Dynamic Range[3]	95 dB	112 dB	--
Reflection & Transmission Tracking, Magnitude[4]	--	± 0.2 dB	--
Reflection & Transmission Tracking, Phase[4]	--	± 2 deg	--
Raw Coupler Directivity (T/R module only)[5]	35 dB	> 37 dB	--
Residual Directivity (with system error correction)	--	>40 dB	--
Raw Test Port Match[5]	--	> 17 dB	--
Residual Source & Load Match (with system error correction)	--	>35 dB	--
Test Port Input Power @ 0.1 dB compress (T/R & T modules)[5]	--	+8 dBm	--
Test Port Input Damage Level	+20 dBm	--	--
Optional Manually Adjustable Attenuator (T/R & S modules)[6]	0 dB	--	25 dB
Operating Temperature Range	+20 ºC	+25 ºC	+30 ºC

[1]Specifications are typical and subject to change without notice
[2]As there are no internationally recognized power standards above 110 GHz, any power data supplied above 110 GHz is traceable only to OML's Calorimeter
[3]Measured with Keysight PNA-X (N524xA) at 10 Hz IF bandwidth
[4]At +25°C. measured for 1 hr after 1 hr warn-up. Based on "perfect" RF & LO test cables not moved after warm-up and calibration. Not tested.
[5]Not tested
[6]Available as an option (Option A)

Module Characteristics[1]	Description
Test Port, System Output Interface[7]	WR-12
RF System Input Interface, SMA(f), T/R & S modules	
RF Input Frequency	9.0 to 15.7 GHz
RF Input Power	+10 dBm ± 1.5 dB
RF Input Damage Level	+20 dBm
RF Multiply Factor	x6
LO System Input Interface, SMA(f), All modules	
LO Input Frequency	10.8 to 18.8 GHz
LO Input Power	+10 dBm ± 1.5 dB
LO Input Damage Level	+20 dBm
LO Multiply Factor	x5
IF Output Frequency, SMA(f), All modules	5 to 300 MHz
DC (+12 VDC) Power Requirements: T/R & S versus T	1.5A / 0.5A, typ
Size (L x W x H, excludes rubber feet & output WG length)	13.0" x 4.3" x 2.7" (T module: L = 4.7")
Weight: T/R & S versus T	≤ 6.0 lbs. / ≤ 3.0 lbs.

[7]Test Port Flange Configuration is compatible with MIL-DTL-3922/67D (UG387/U-M)

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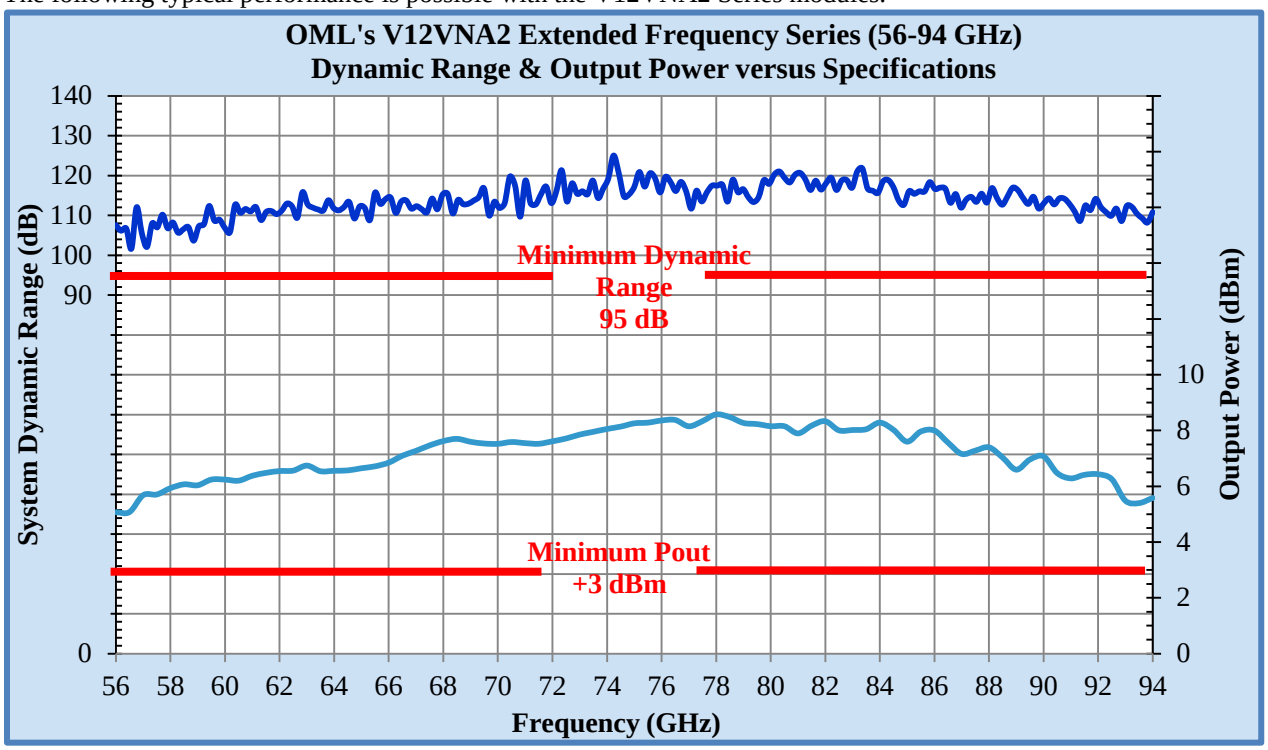
TYPICAL PERFORMANCE

The following typical performance is possible with the V12VNA2 Series modules.

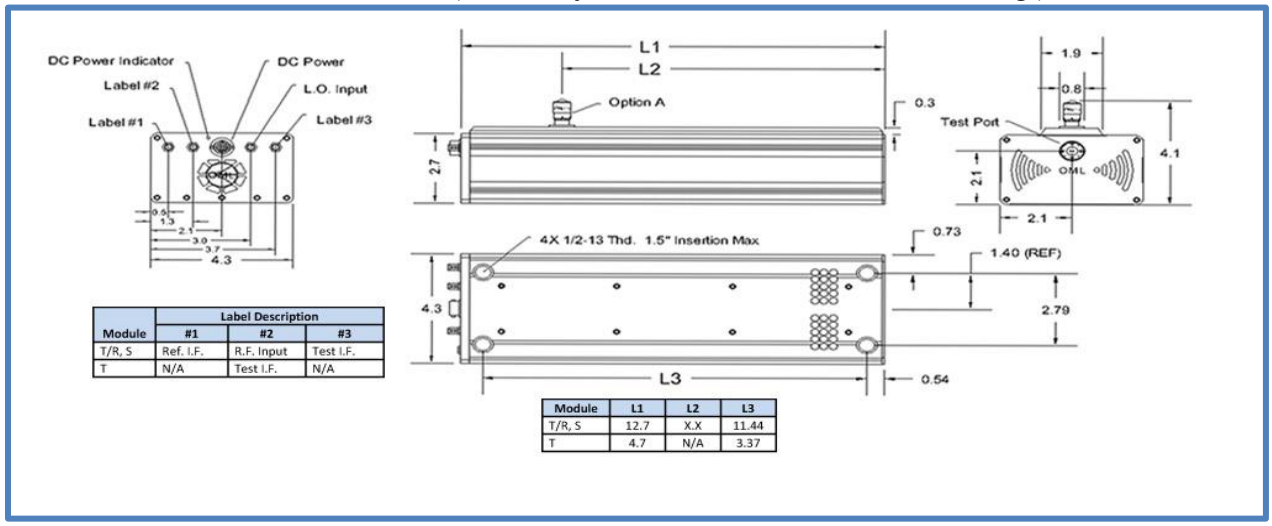


ORDER INFORMATION

S-parameters {Architecture}	S_{11}, S_{21}, S_{12}, S_{22} {Full 2-port}	(S_{11}, S_{21}) or (S_{12}, S_{22}) {1-path / 2-port}	S_{21} or S_{12} only {Scalar 2-port}	S_{11} or S_{22} only {Vector 1-port}
Test Port Module(s)	V12VNA2-T/R-5694 V12VNA2-T/R-5694	V12VNA2-T/R-5694 V12VNA2-T-5694	V12VNA2-S-5694 V12VNA2-T-5694	V12VNA2-T/R-5694
Option A	In T/R or S module, adds Manually Adjustable Attenuator (0-25 dB) to RF path			
Option RLA	In T/R or S module, adds amplifier (15 dB gain) in RF&LO paths for drive input of -5 dBm			
Option LOA	In T module, adds amplifier (15 dB gain) in LO path for drive input of -5 dBm			

Standard accessories for each module includes: DC Power Cable (V00DCBC1), Waveguide Section (V12WG2), and 20 dB Attenuator (V12AT20).

MECHANICAL DIMENSIONS (If necessary, contact OML for more detailed drawings)



Module	Label Description		
	#1	#2	#3
T/R, S	Ref. I.F.	R.F. Input	Test I.F.
T	N/A	Test I.F.	N/A

Module	L1	L2	L3
T/R, S	12.7	X.X	11.44
T	4.7	N/A	3.37

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