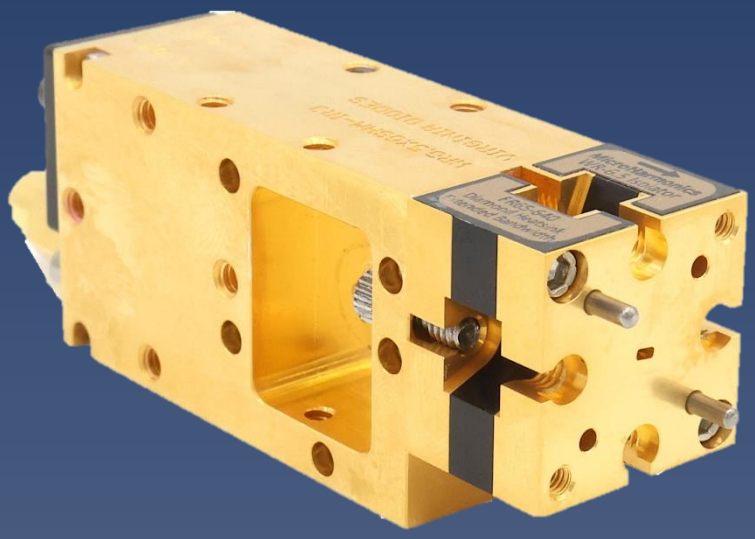


Product Overview
Noise Sources

Virginia Diodes, Inc.
979 2nd St SE, Suite 309
Charlottesville, VA 22902-6172 (USA)
Tel: 434.297.3257
Fax: 434.297.3258
www.vadiodes.com

Contents

General Operating Practices and Recommendations

General Guidelines

- Read all instructions and information in this manual before connecting the product to external equipment.
- Operational procedures must be followed for proper function. If you have questions, contact VDI before operating the product.
- VDI assumes the customer is familiar with microwave, millimeter wave and VDI products in general. The user is expected to understand all safety guidelines, health hazards and general advisories that may exist and are associated with the use of this product. VDI is not responsible for any human hazards that may exist or may occur while using this device.

Safety Guidelines

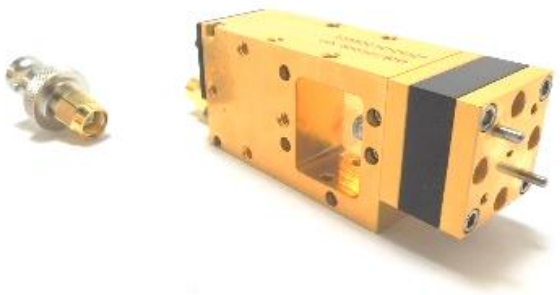
- VDI accepts no liability for damage or injury resulting from or caused by:
    - Improper use, disassembly or use for other purposes than for which the product was designed.
    - Use outside common safety, health or general advisories pertaining to microwave, millimeter-wave and VDI products.
    - Repairs carried out by persons other than VDI or its assigned agents.
- Use of any attachments and accessories not authorized by VDI or that do not meet VDI's specifications may void the product's limited warranty and could pose a hazard to the operator or cause lasting damage to the device.
- Applying liquids (other than the TexWipe wipes / cloths used for cleaning) can cause lasting damage to the product.

Waveguide Test Port Care

- Inspect waveguide flanges for damage or debris prior to making connections.
- Torque waveguide screws in the range of 20-50cNm when making waveguide flange connections. Greater torque can damage the interface.
- Making a connection with metal debris between the waveguide flanges can damage the waveguide interface and prevent repeatable connections.
- If debris is present, clean the flange with pre-dampened TexWipe wipes or swabs (e.g. Part Number TX1065).
- Cover test ports with dust caps when the system is idle.

General Operating Practices and Recommendations

- With the +28V TURNED OFF, connect the VDI Noise Source to the +28V Port on the Spectrum Analyzer or Noise Figure Analyzer. Connecting a live +28V to the VDI Noise Source may cause large turn-on transients.
- VDI does not recommend the use of liquid or paste for either thermal grounding of VDI components or for locking screws. Liquids / pastes wicking into the VDI component will void the product's warranty and can damage the internal device and worsen performance.
- Check with VDI before any use is attempted beyond those described in this manual or if it may exceed commonly accepted standards of practice.



Noise Source Product Specifications

VDI Noise Sources offer high Excessive Noise Ratio (ENR) performance across full waveguide bands up to 400 GHz. VDI Noise Sources include waveguide isolators to improve the match between the NS and the DUT and are configured with a +28V voltage bias port, compatible with many spectrum analyzers or noise figure analyzers. Additional noise sources are under development. Contact VDI for more information.

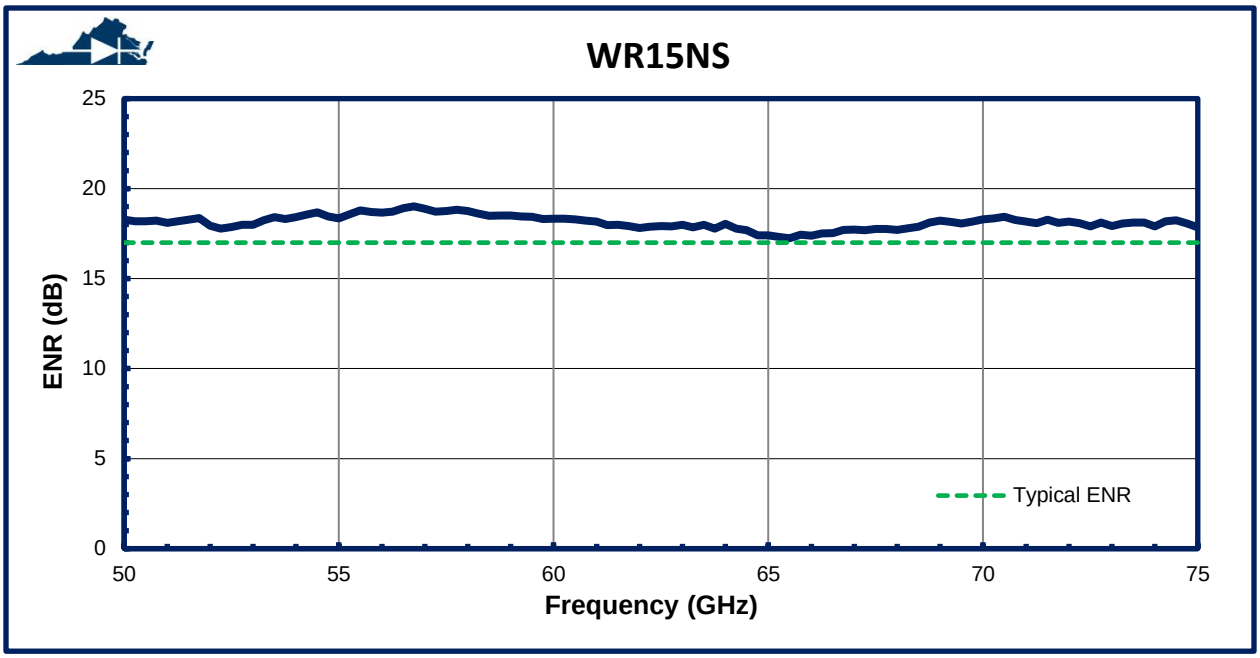
Part Number	Frequency Band (GHz)		Waveguide Flange	ENR (dB, typ.)	Output Return Loss (dB, typ.)
	Start	Stop			
WR15NS	50	75	WR-15	17	18
WR12NS	60	90	WR-12	16	17
WR10NS	75	110	WR-10	16	18
WR8.0NS	90	140	WR-8.0	13	19
WR6.5NS	110	170	WR-6.5	12.5	17
WR5.1NS	140	220	WR-5.1	11	18
WR4.3NS	170	260	WR-4.3	8	18
WR3.4NS	220	330	WR-3.4	5.5	16
WR2.8NS	260	400	WM-710(WR-2.8)	4	12

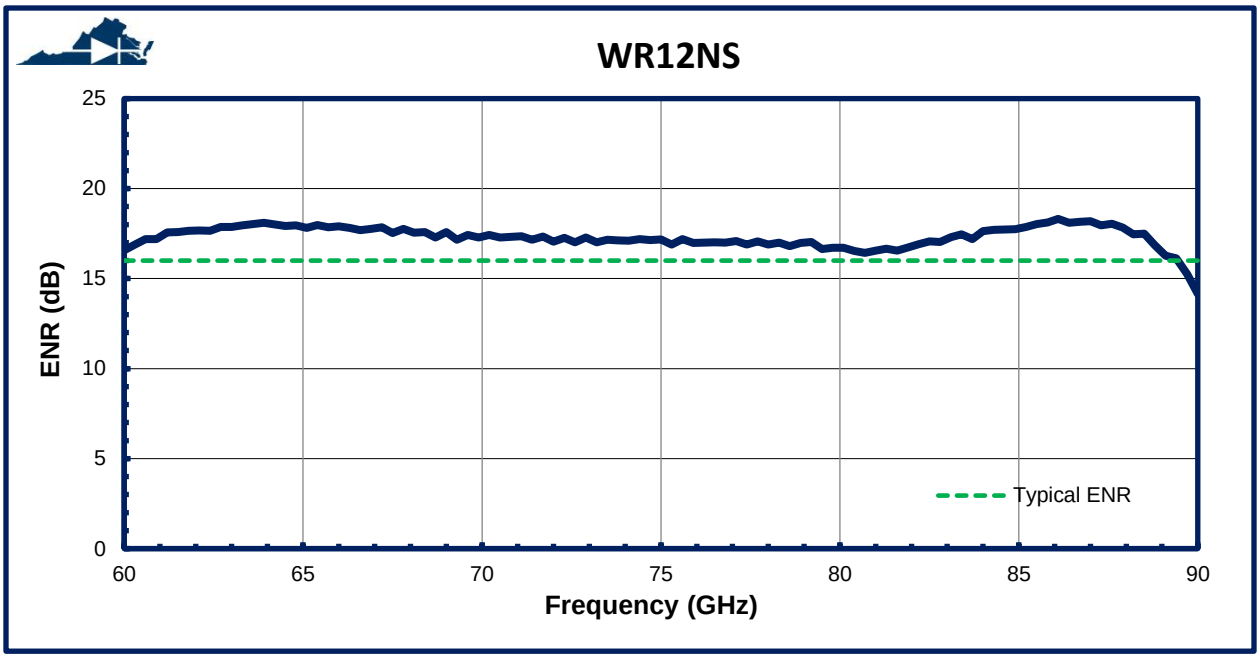
General Specifications for VDI Noise Sources	
Description	**Specification**
DC Bias Voltage (V)	+28 ± 1
Current Draw (mA)	<10
DC Bias Voltage AM Modulation Rate (ON/OFF)	1kHz (typ.)
Bias Voltage Connector	2.92mm(f)*
Maximum Weight (lbs.)	~0.1
Output Flange	UG-387/U-M**
Operating Temperature (Typical / Recommended)	25°C / 20-30°C

*VDI to include a SMA(m) to BNC(f) adapter.

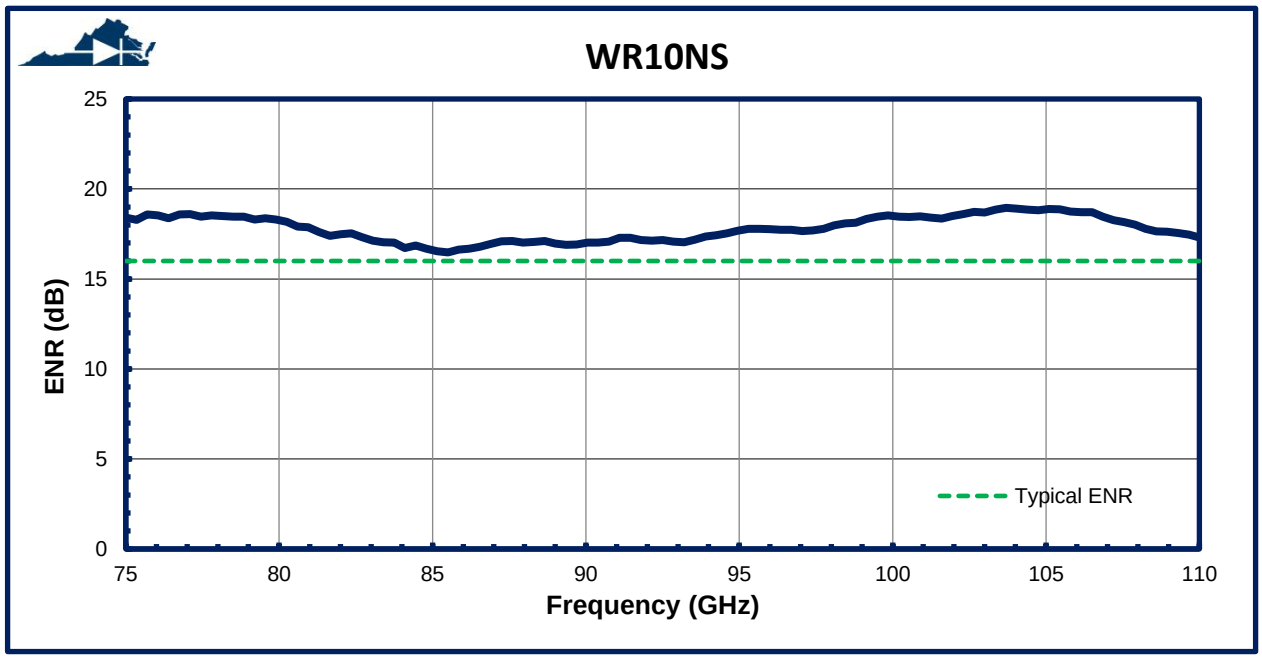
**VDI Noise Sources include Compact Isolators from MHC. MHC Isolators have slightly rotated output waveguide. The impact of the rotated waveguide is often negligible. Click here for more information on the rotated waveguide.

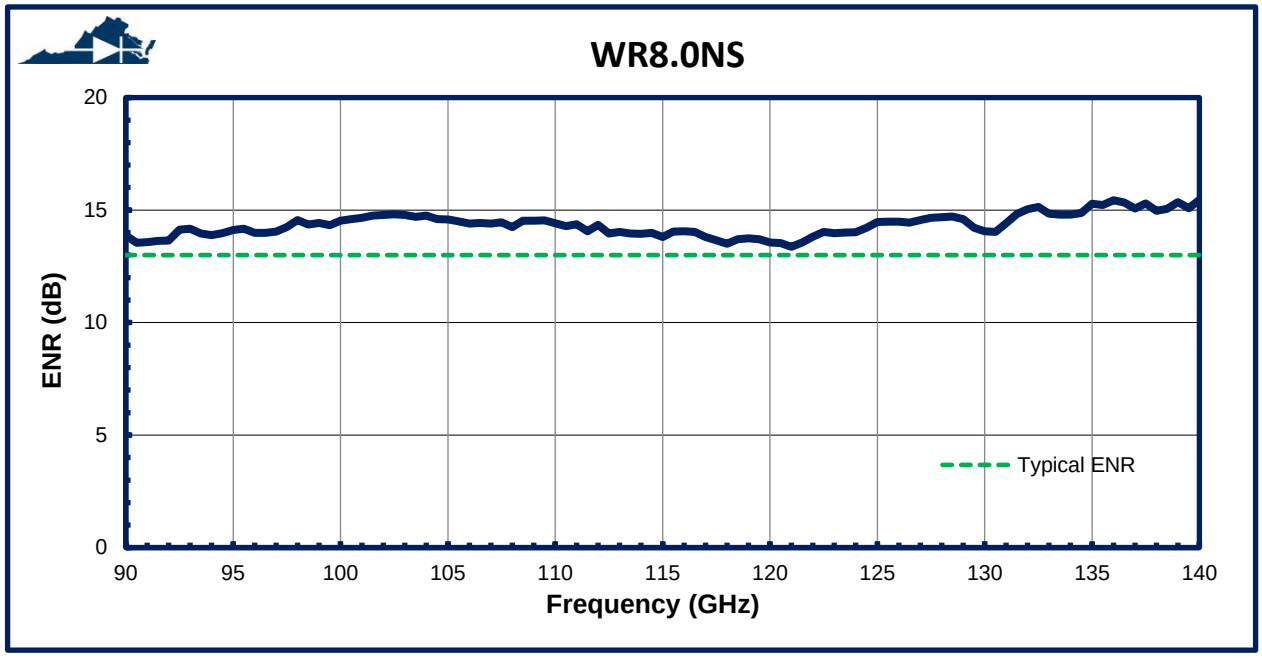
Noise Source Performance

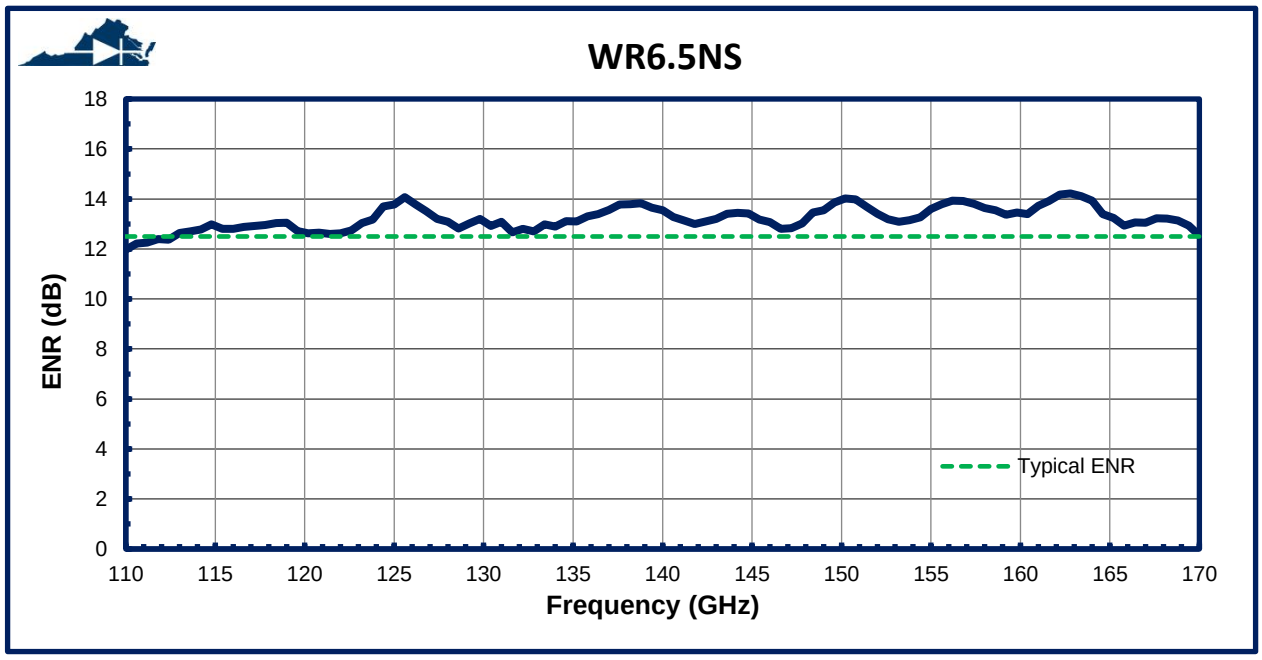


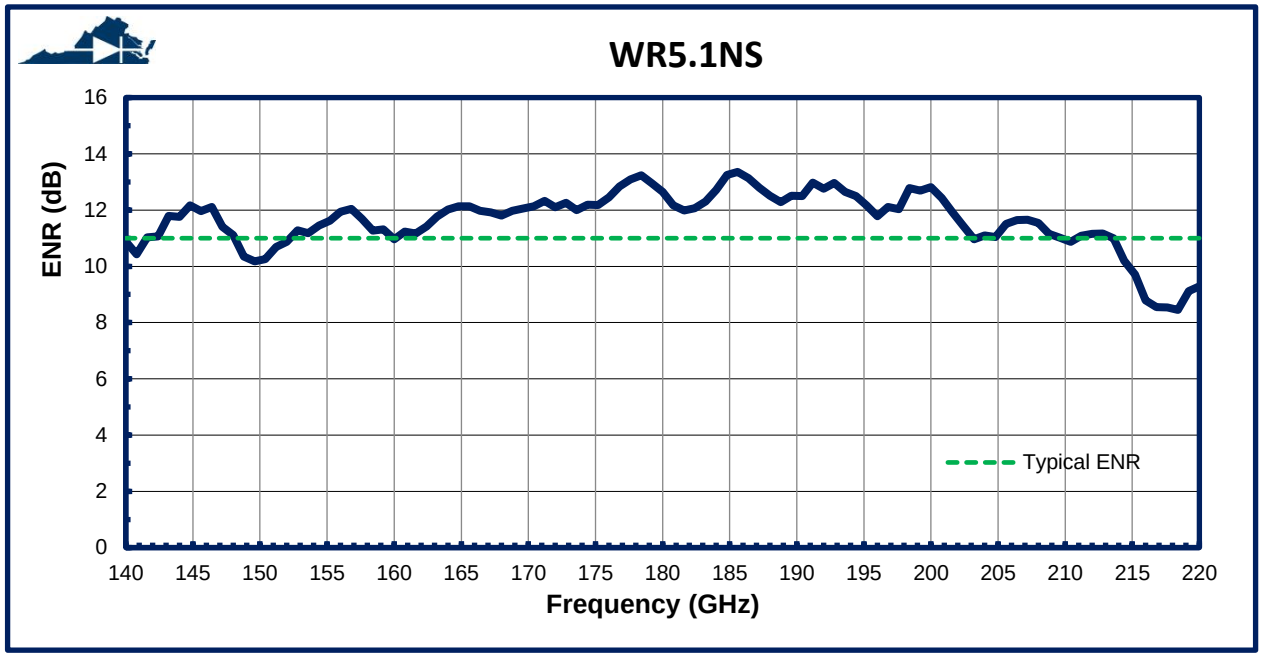


Rev: 12/30/2025

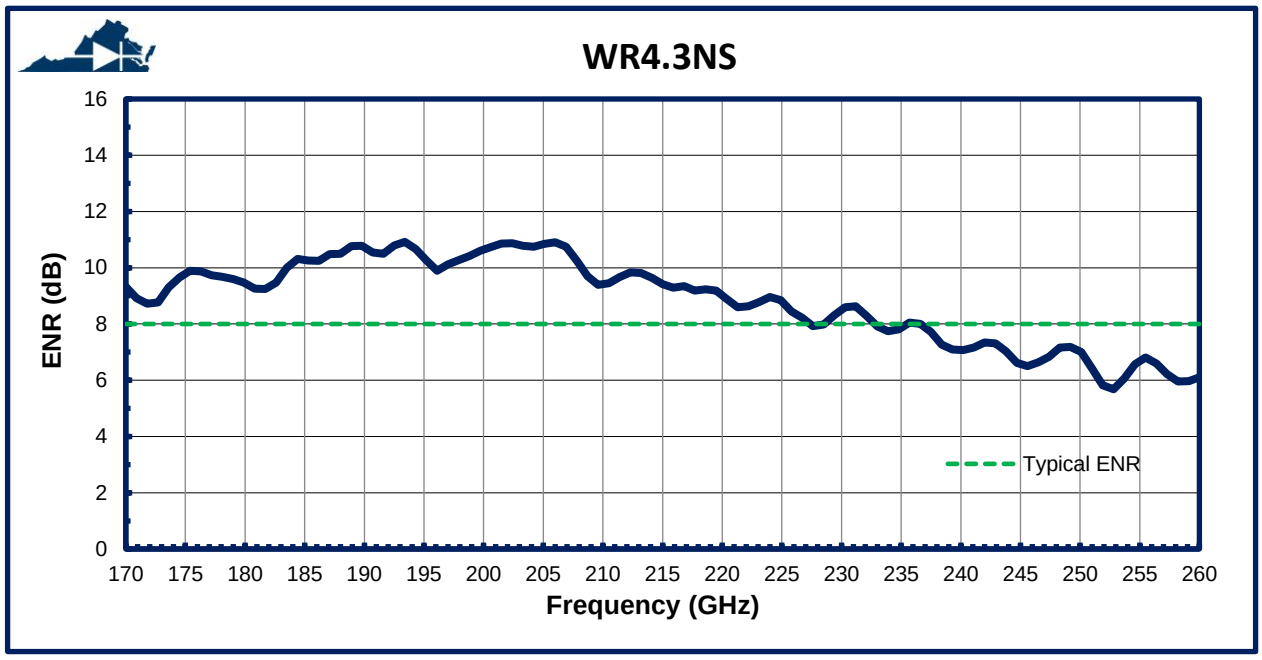

WR10NS
25
20
15
10
5
0
ENR (dB)
75
80
85
90
95
100
105
110
Frequency (GHz)
Typical ENR

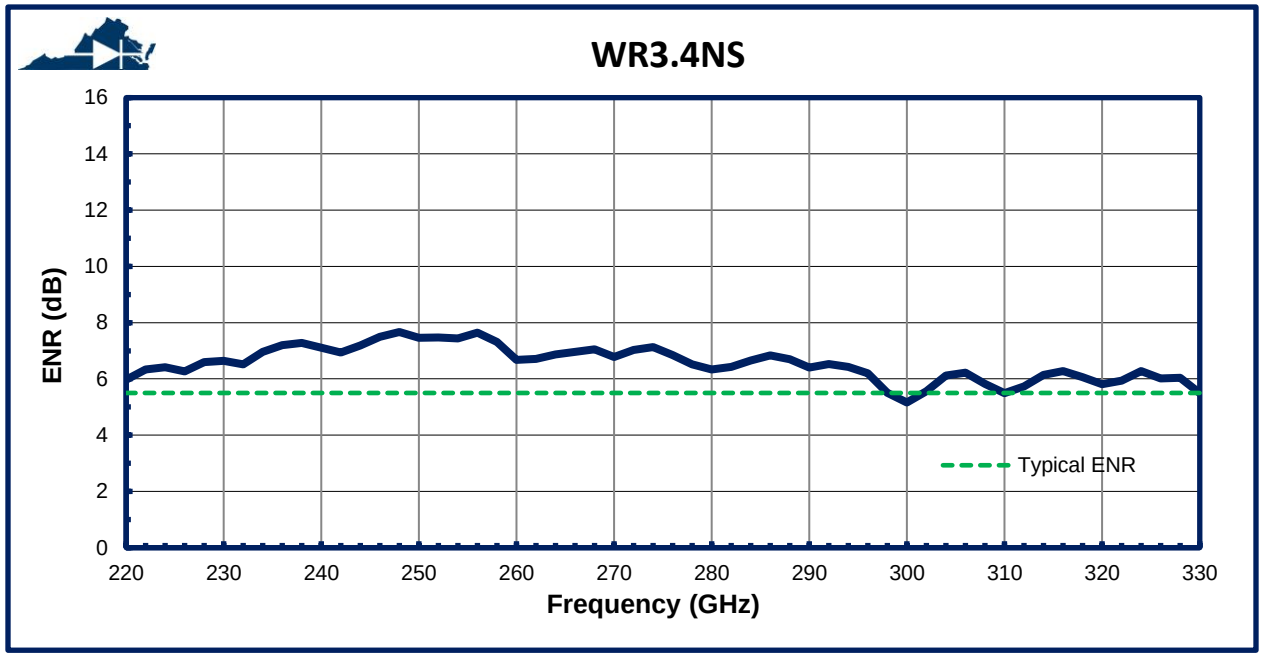

WR8.0NS
20
15
10
5
0
ENR (dB)
90
95
100
105
110
115
120
125
130
135
140
Frequency (GHz)
Typical ENR



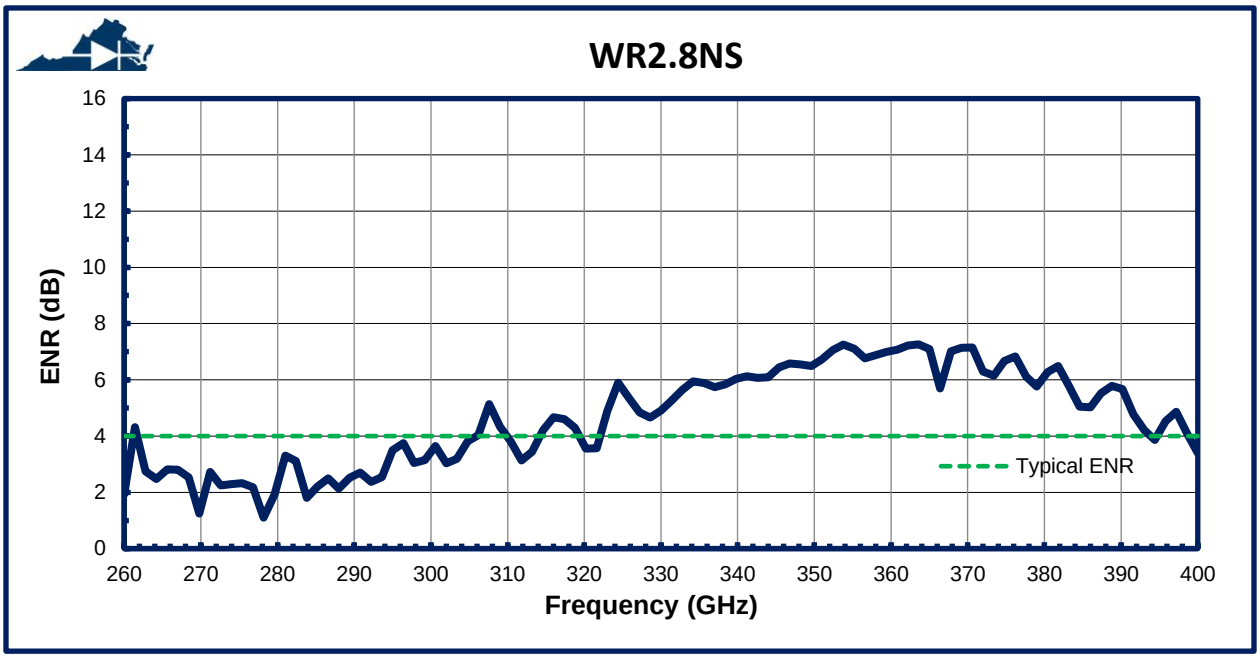


Rev: 12/30/2025



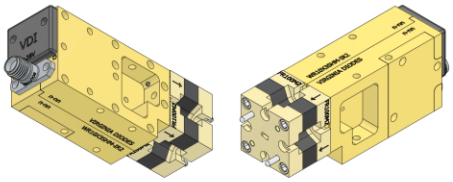


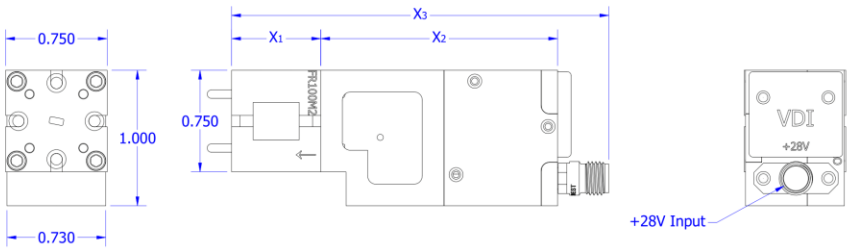
Rev: 12/30/2025


WR2.8NS
ENR (dB)
16
14
12
10
8
6
4
2
0
260
270
280
290
300
310
320
330
340
350
360
370
380
390
400
Frequency (GHz)
Typical ENR

Noise Source Drawing

Noise Source Dimensions			
Band	X1	X2	X3
WR2.8	0.900	1.250	2.529
WR3.4	0.450	1.250	2.079
WR4.3	0.460	1.250	2.089
WR5.1	0.524	1.750	2.653
WR6.5	0.550	1.750	2.679
WR8.0	0.500	1.750	2.629
WR10	0.658	1.750	2.787
WR12	0.750	1.750	2.879
WR15	0.800	1.750	2.929





Note: Specifications and characteristics are typical and subject to change at any time.

TITLE: VDI Noise Sources	MATERIAL:	N/A	VIRGINIA DIODES, INC. 979 2nd ST. SE, SUITE 309 CHARLOTTESVILLE, VA 22902 PHONE: 434.297.3257 FAX: 434-297-3258 www.vadiodes.com
	UNITS:	INCHES	
	LAST REV. DATE:	9/24/2024	
MODEL: VDI Noise Sources	LAST REV.:	1	
	SHEET:	1 of 2	

ENR File Format

Every VDI Noise Source will ship with an ENR file that is compatible for use on a Keysight Spectrum Analyzer with Noise Figure Application. A sample ENR file is shown below. Comments shown in red. Red text is not included on the .csv file.

[Filetype ENR],
[Version A.27.05], Instrument (Spectrum Analyzer) Software Revision Number*
[Serialnumber WR6.5X6SHM-IR1 1-05], Noise Source Serial Number
[Model WR6.5NS], Noise Source Model Number
1.09995E+11,11.02815447
1.10995E+11,11.17974241
1.11995E+11,11.91899908
1.12995E+11,11.08859996
1.13995E+11,10.90244843
1.14995E+11,11.08731449
…

*Software Revision Number on ENR files provided by VDI will default to A.27.05. Software Revision Number does not need to be modified to load onto user's Keysight Spectrum Analyzer.