

# VA065

WR-6.5 voltage variable attenuator

## Specifications

Flange	WR-6.5 UG387/UM
Frequency (GHz)	110-170
Insertion Loss (dB, avg)	1.5
VSWR (typ max)	1.5:1
Dynamic Range (dB, min)	0-35
Flatness (avg/max)	Page 3
Repeatability (typ max)	Page 3
Max Forward Power (W)	1.5
Switching Speed (Hz)	200
Voltage Control Range (V)	0-10
Max Control Current (mA)	90
Control Circuit Connector*	SMP-m
Directional	Yes

**CAUTION:** Avoid magnetic fields

**IMPORTANT:** SMP cable  
available on request

## WR-6.5 Voltage Variable Attenuator

The two primary technologies used for electronically tunable attenuation in the mm-wave are PIN diode and rotary vane. Micro Harmonics has developed a third approach that uses the principle of Faraday rotation to rotate the RF signal polarity into a fixed resistive vane. There are no moving parts and no sensitivity to electrostatic discharge.

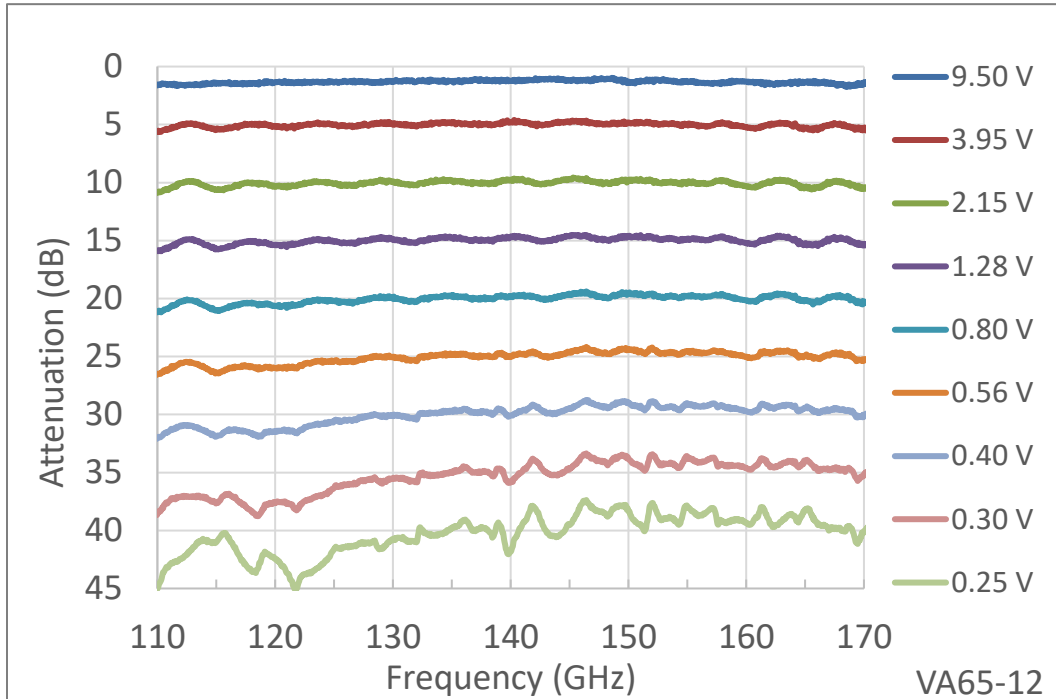
The Micro Harmonics attenuator has lower insertion loss, lower reflections, higher dynamic range, and higher power handling than the PIN diode. It has a much smaller form factor and higher switching speed than the rotary vane. These properties make the Micro Harmonics attenuator an attractive option since it combines some of the best attributes of the PIN diode and the rotary vane attenuators.

- ◆ **Anti-cocking waveguide flanges**
- ◆ **Comprehensive test data**
- ◆ **High power handling**
- ◆ **High dynamic range**
- ◆ **Low insertion loss**
- ◆ **Insensitive to ESD**
- ◆ **Compact size**
- ◆ **Low VSWR**

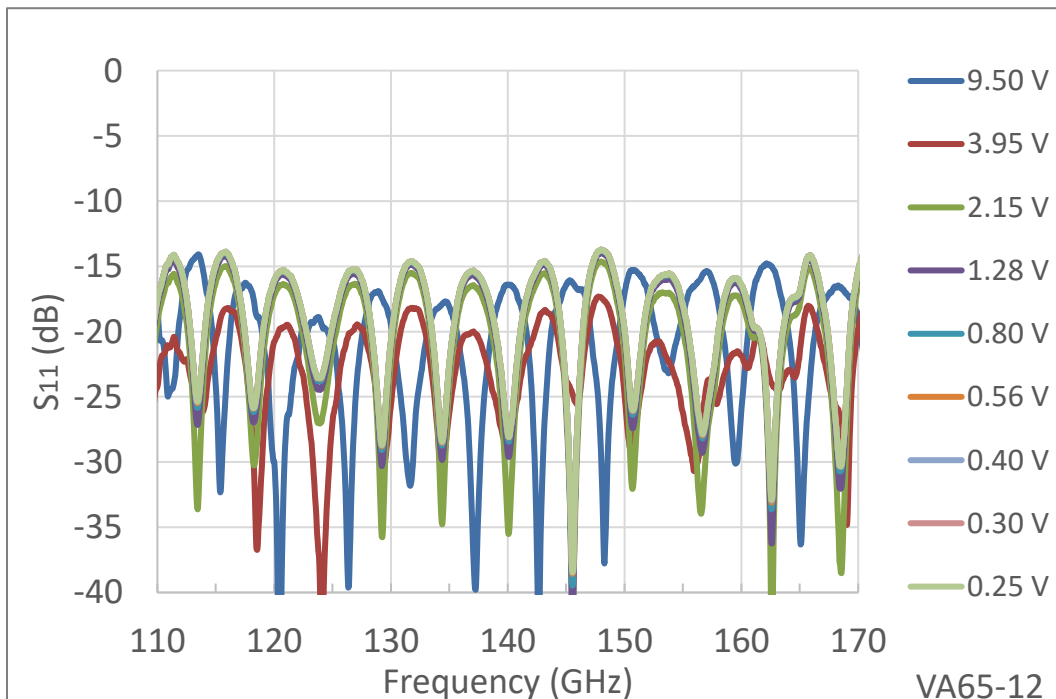




## Attenuation



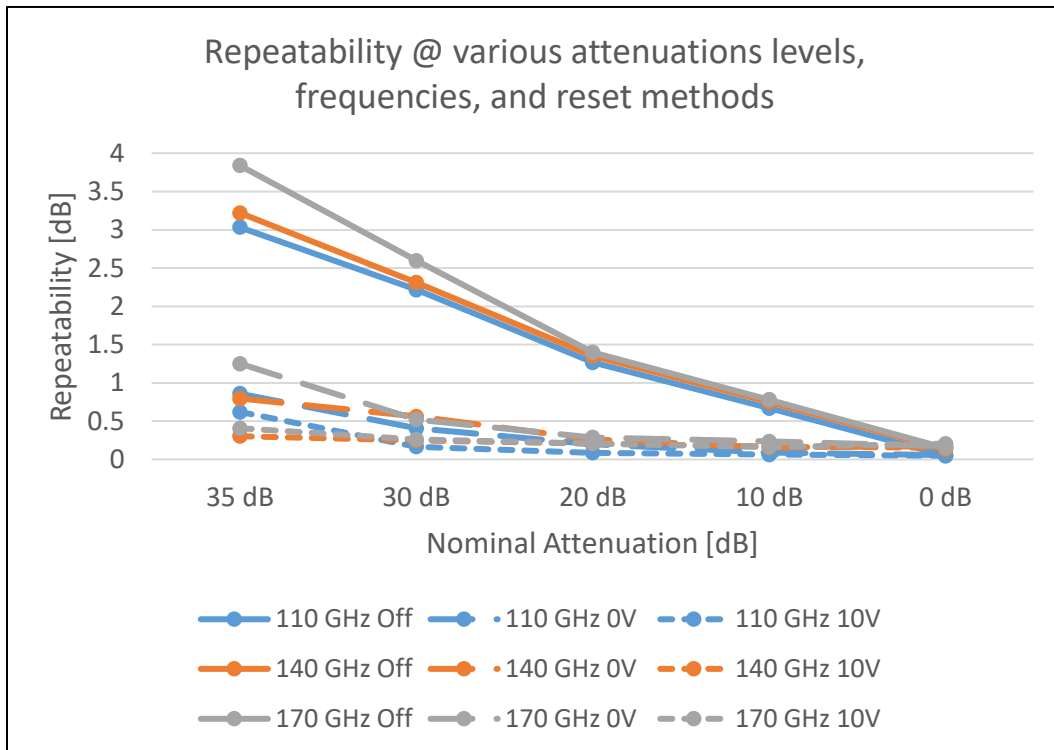
## Port Reflections





Flatness and repeatability specifications are dependent on the attenuation level and are shown in the table below. An example of repeatability measurements is shown in the plot below.

Specifications				
Nominal Attenuator Level [dB]	Flatness (dB, avg/max)	Repeatability (dB, typ max)		
		Reset @ 10V	Reset @ 0V	No Reset
0	±0.4/0.5	±0	±0	±0
10	±0.7/0.8	±0.06	±0.2	±0.7
20	±1.2/1.4	±0.2	±0.3	±1.4
30	±2.9/4.4	±0.4	±0.5	±1.4
35	±5.1/8.0	±0.5	±1.0	±1.4

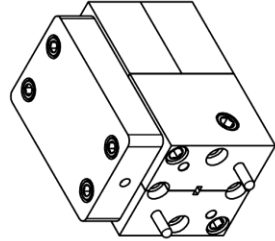
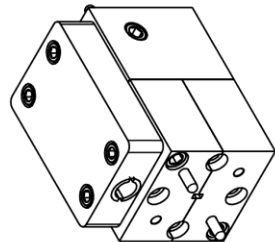
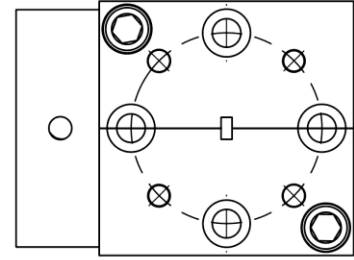
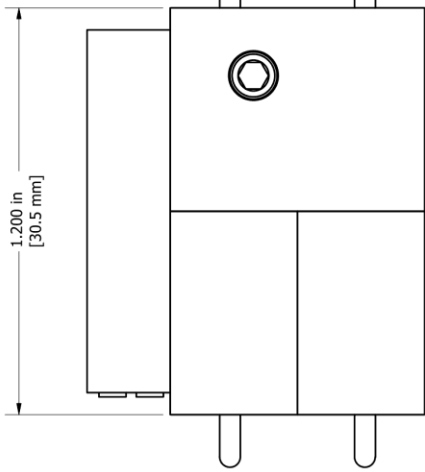
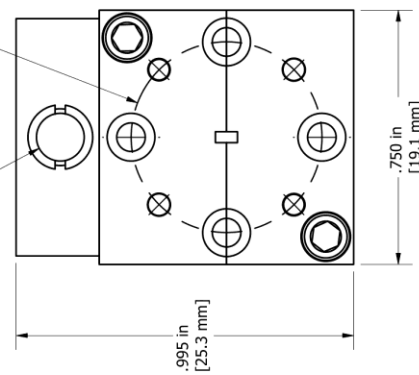


Please visit our documents page for application notes providing detailed definitions of the flatness and repeatability specs and a description of three methods for controlling the variable attenuator and how they affect repeatability



<b>Micro Harmonics</b>		Proprietary - Micro Harmonics Corporation		REVISION HISTORY		1	
Date 8/18/2023		Date 8/21/2023		DESCRIPTION		APPROVED	
		RELEASE FOR MANUFACTURE				SCS	

SMP MALE CONNECTOR  
 MATES WITH UG-387/UIM FLANGE  
 WR-6.5 WAVEGUIDE



NOTES: INPUT AND OUTPUT PORTS ARE ROTATED 90°

PART NUMBER - DESCRIPTION		Micro Harmonics Corporation	
VA65 Dimension Drawing		20 S Roanoke St. Ste 202	
DWG. UNITS: DRAWN BY: SIZE		Fincastle, VA 24090	
INCHES SCS B		ph. 540-473-9983	
PAGE NUMBER: 1 of 1		REV: -	
APPROVAL: JTK - 8/21/2023		fax 844.449.1561	