



Description

The OMT is a three-port device. It has a square waveguide common mode port (“antenna port” or “A-port”) supporting two orthogonal modes (“H-pol” and “V-pol”) and a pair of rectangular waveguide ports (“H-port” and “V-port”) that each support a single mode.



Mechanical Specifications

Parameter	Description
Flange H-Port and V-Port	WR-5.1 UG-387/UM
Flange A-Port	0.051” square UG-387/UM
Weight (Oz [g])	0.54 [15.2]
Specification Temp (°C)	22
Operation Temp (°C)	-40 to +85

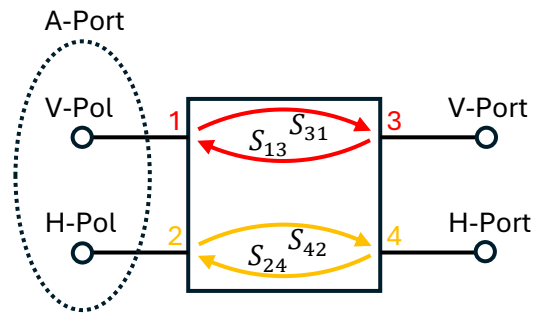
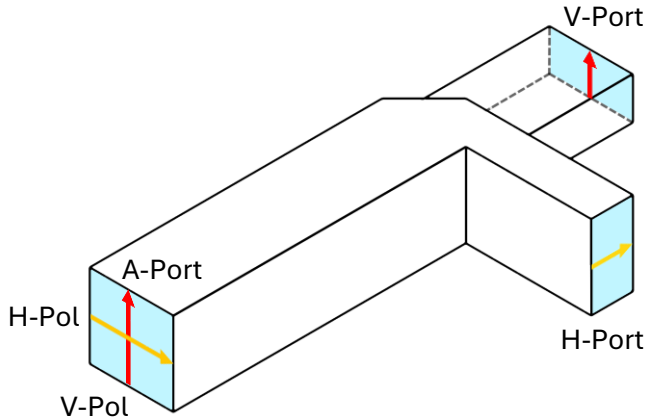
- ◆ Lowest insertion loss
- ◆ High cross-polarization and isolation
- ◆ Anti-cocking waveguide flanges

Electrical Specifications

Parameter	Value	Units
Frequency	140-220	GHz
Insertion Loss H-Port	0.8	dB, max
Insertion Loss V-Port	0.5	
Insertion Loss H-Port	0.3	dB, avg
Insertion Loss V-Port	0.3	
Cross-Polarization H-Port to A-Port, V-Pol	40	dB, min
Cross-Polarization V-Port to A-Port, H-Pol	40	
Isolation H-Port to V-Port	40	dB, min
Return Loss H-Port	15	dB, min
Return Loss V-Port	15	
Return Loss A-Port, H-Pol	15	
Return Loss A-Port, V-Pol	15	

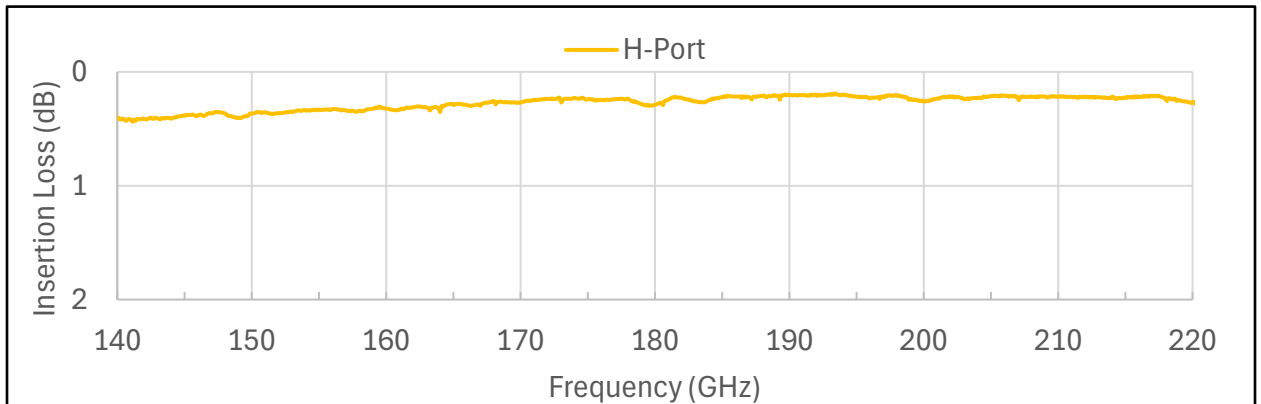
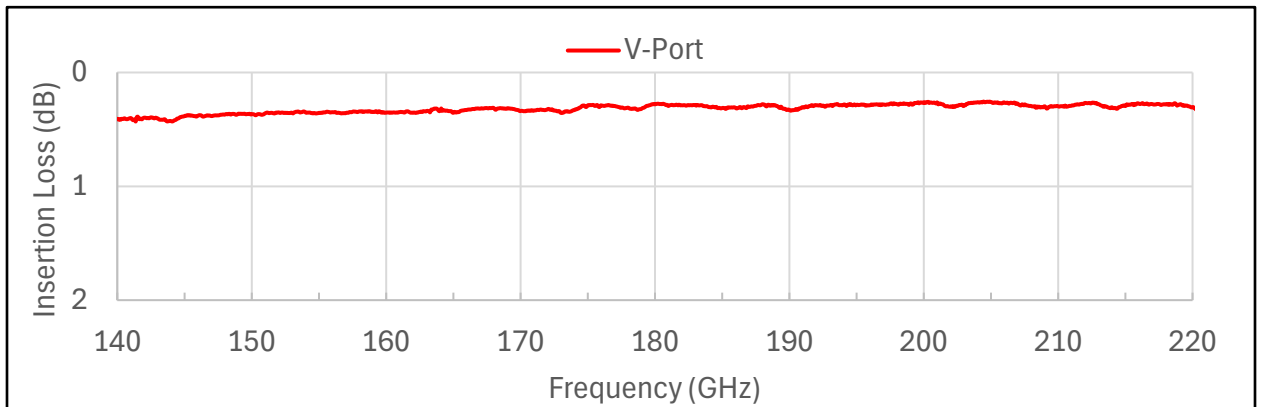


Insertion Loss



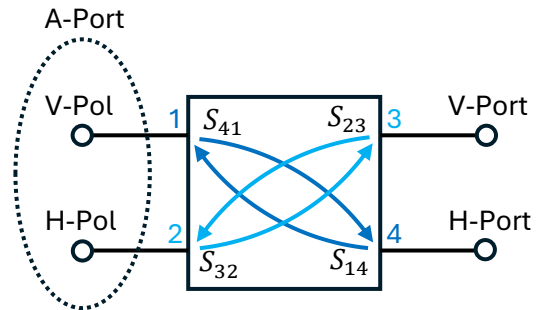
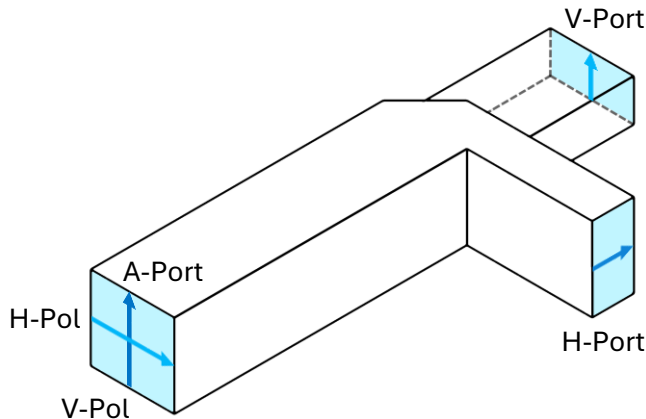
$$\begin{bmatrix} S_{11} & S_{12} & \textcolor{red}{S}_{13} & S_{14} \\ S_{21} & S_{22} & S_{23} & \textcolor{yellow}{S}_{24} \\ \textcolor{red}{S}_{31} & S_{32} & S_{33} & S_{34} \\ S_{41} & \textcolor{yellow}{S}_{42} & S_{43} & S_{44} \end{bmatrix}$$

Insertion loss between a single mode rectangular port and the corresponding polarization on the common port



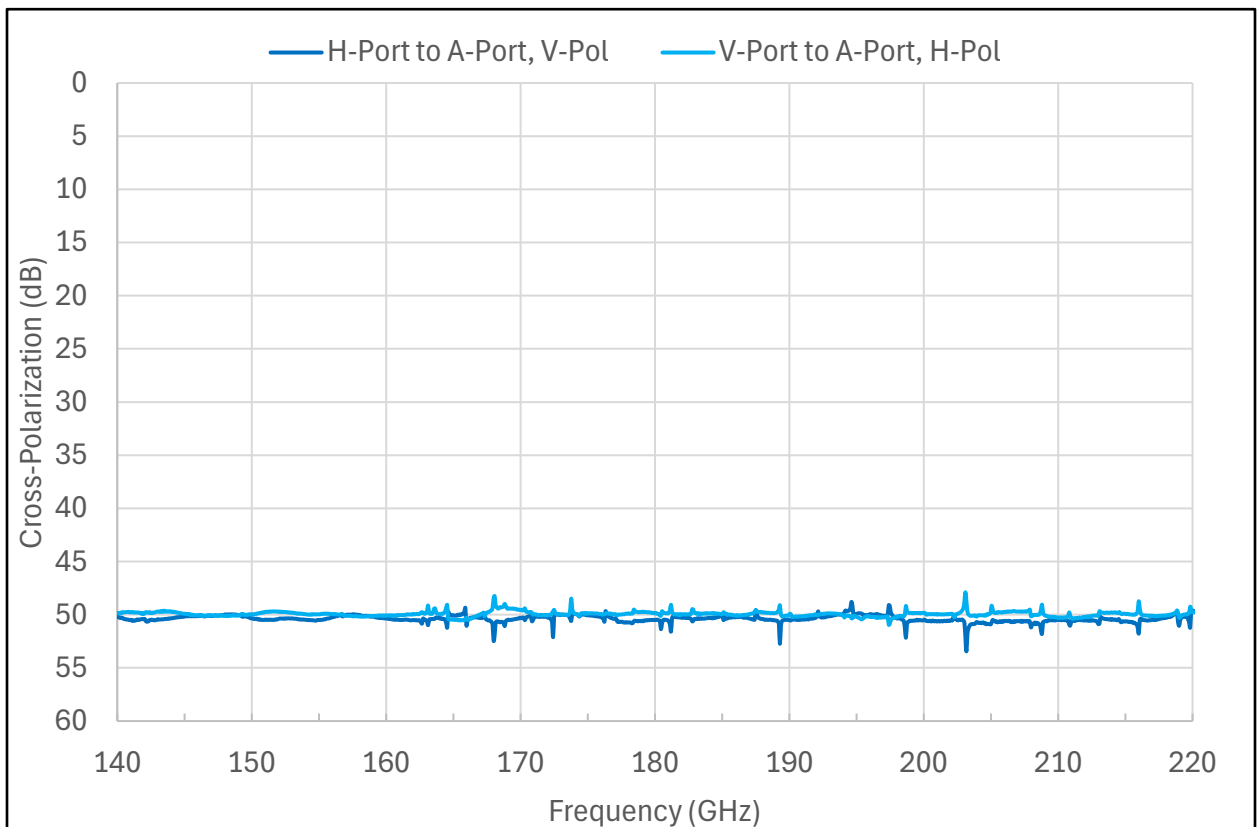


Cross-Polarization



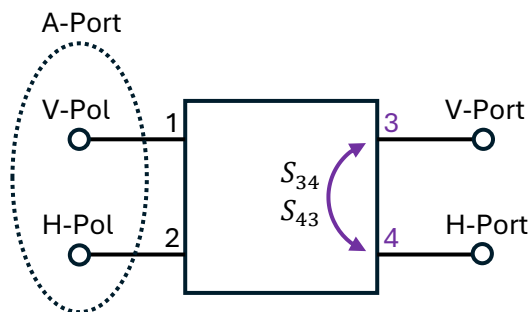
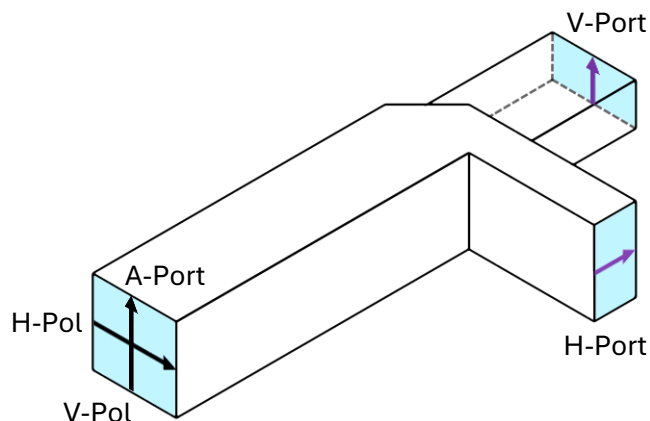
$$\begin{bmatrix} S_{11} & S_{12} & S_{13} & S_{14} \\ S_{21} & S_{22} & S_{23} & S_{24} \\ S_{31} & S_{32} & S_{33} & S_{34} \\ S_{41} & S_{42} & S_{43} & S_{44} \end{bmatrix}$$

Cross-polarization coupling between a rectangular waveguide port and the opposite mode on the common port



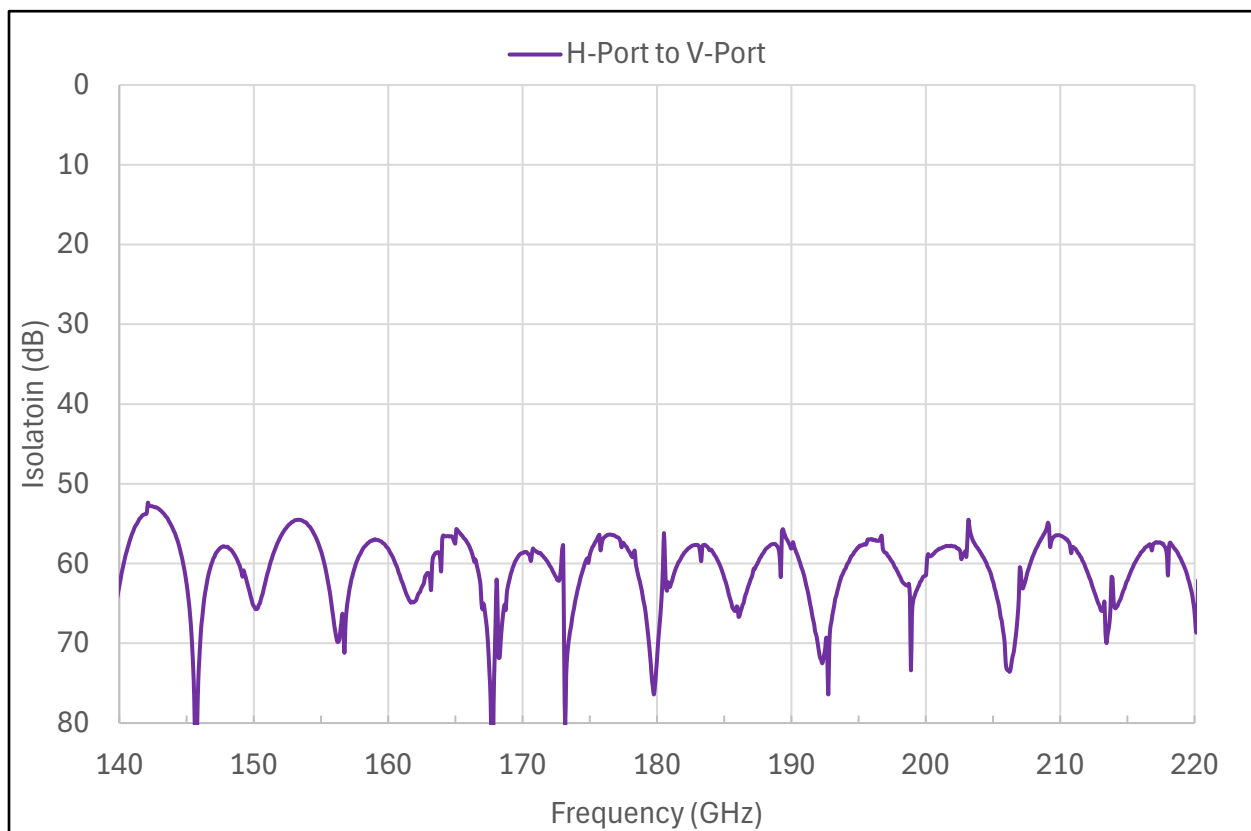


Isolation



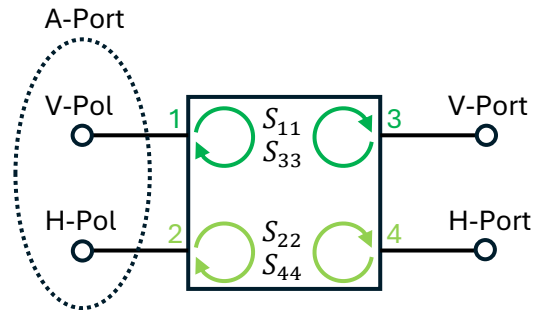
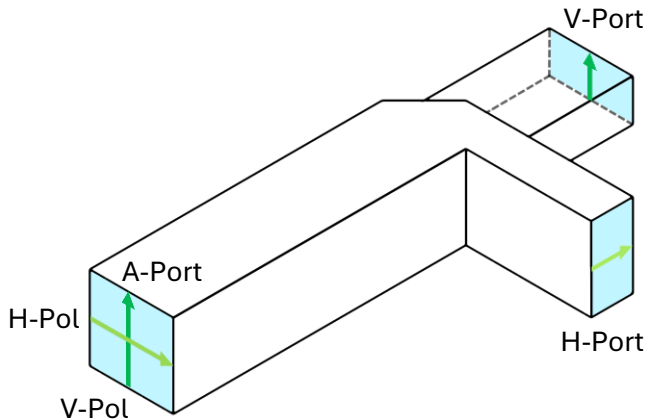
$$\begin{bmatrix} S_{11} & S_{12} & S_{13} & S_{14} \\ S_{21} & S_{22} & S_{23} & S_{24} \\ S_{31} & S_{32} & S_{33} & S_{34} \\ S_{41} & S_{42} & S_{43} & S_{44} \end{bmatrix}$$

Isolation between the two rectangular waveguide ports



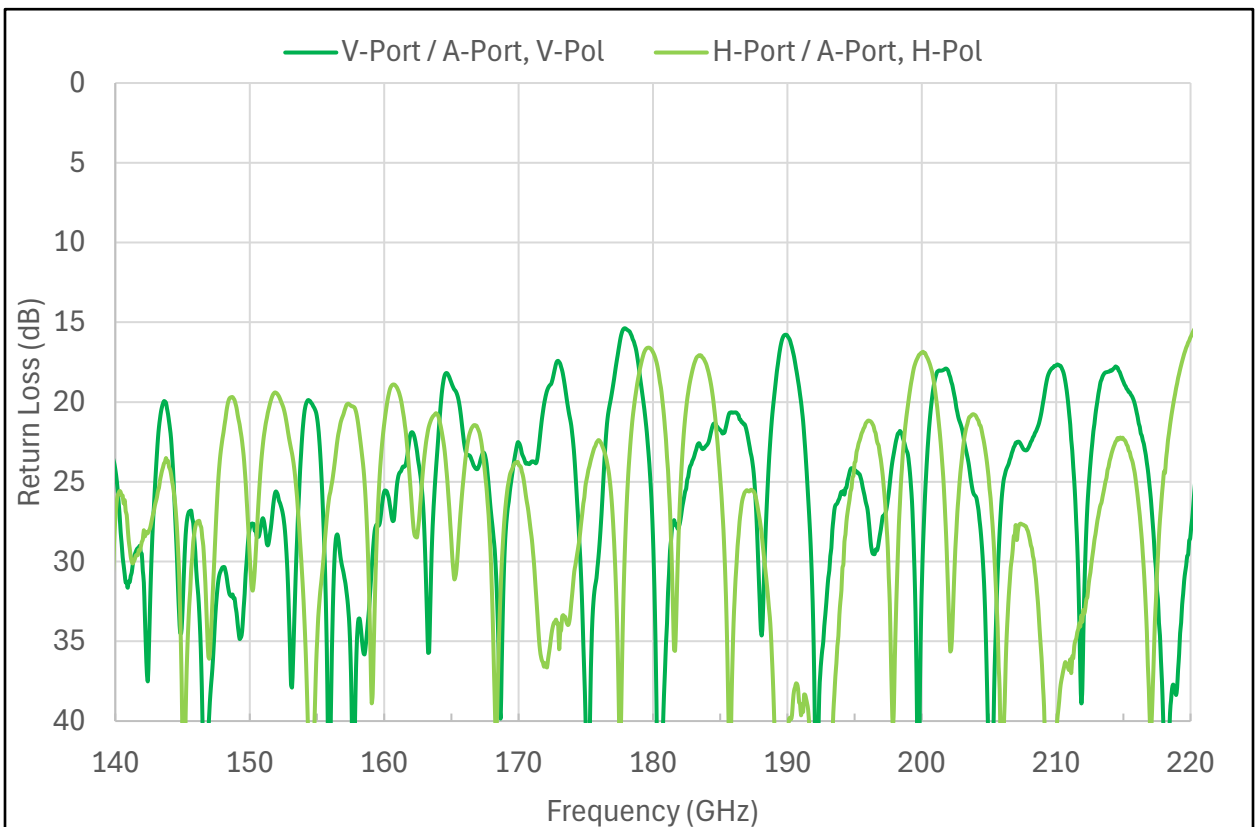


Return Loss



$$\begin{bmatrix} S_{11} & S_{12} & S_{13} & S_{14} \\ S_{21} & S_{22} & S_{23} & S_{24} \\ S_{31} & S_{32} & S_{33} & S_{34} \\ S_{41} & S_{42} & S_{43} & S_{44} \end{bmatrix}$$

Return loss for each rectangular port and each mode on the common port



OT051

WR-5.1 orthomode transducer



MicroHarmonics

Superior mm-Wave Components

