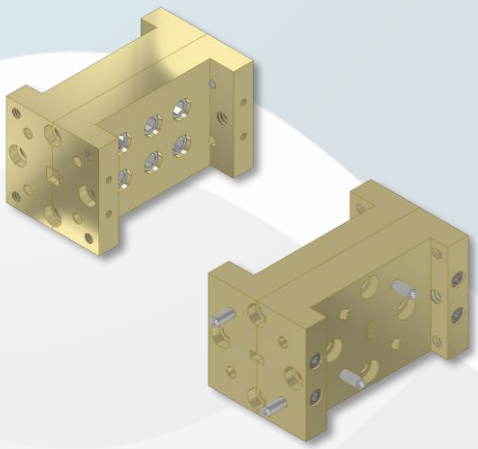
OT100

WR-10 orthomode transducer

MicroHarmonics
Superior mm-Wave Components

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

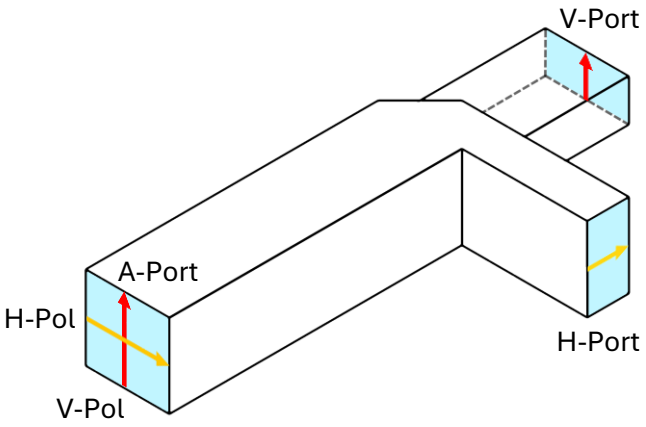
Parameter	Description
Flange | H-Port and V-Port	WR-10 UG-387/UM
Flange | A-Port	0.1” square UG-387/UM
Weight (Oz [g])	0.97 [27.6]
Specification Temp (°C) Operation Temp (°C)	22 -40 to +85

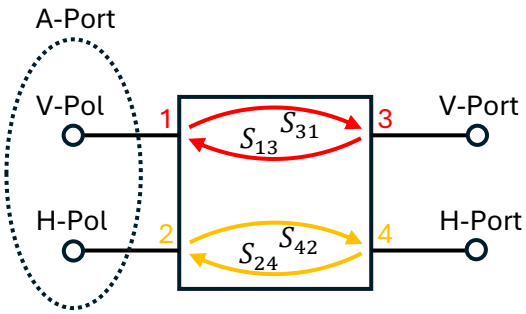
- Lowest insertion loss
- High cross-polarization and isolation
- Anti-cocking waveguide flanges

Electrical Specifications

Parameter	Value	Units
Frequency	75-110	GHz
Insertion Loss | H-Port Insertion Loss | V-Port	0.3 0.6	dB, max
Insertion Loss | H-Port Insertion Loss | V-Port	0.1 0.2	dB, avg
Cross-Polarization | H-Port to A-Port, V-Pol Cross-Polarization | V-Port to A-Port, H-Pol	44 45	dB, typ min
Isolation | H-Port to V-Port	54	dB, typ min
Return Loss | H-Port Return Loss | V-Port Return Loss | A-Port, H-Pol Return Loss | A-Port, V-Pol	17 18 17 18	dB, typ min

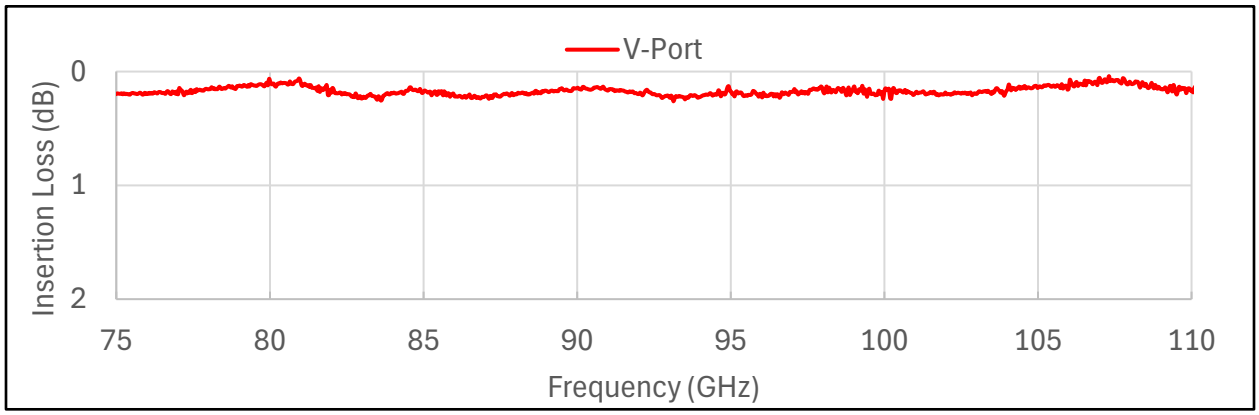
Insertion Loss

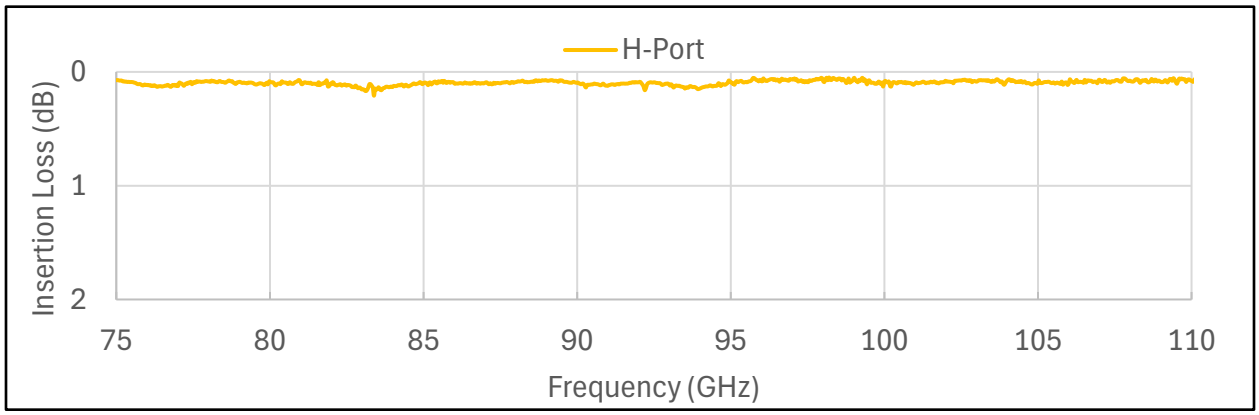




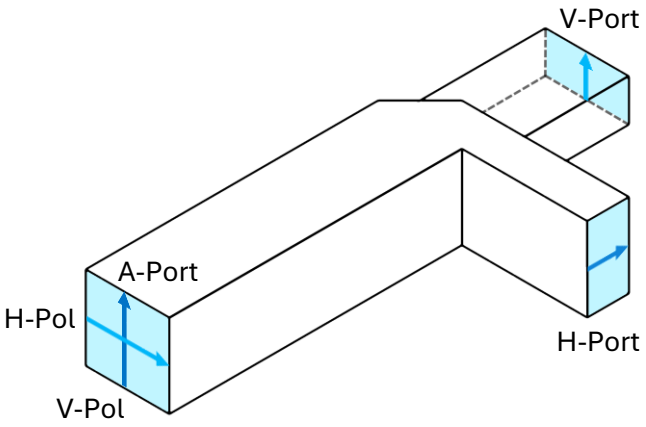
$$\begin{bmatrix} S_{11} & S_{12} & S_{13} & S_{14} \\ S_{21} & S_{22} & S_{23} & S_{24} \\ S_{31} & S_{32} & S_{33} & S_{34} \\ S_{41} & S_{42} & S_{43} & S_{44} \end{bmatrix}$$

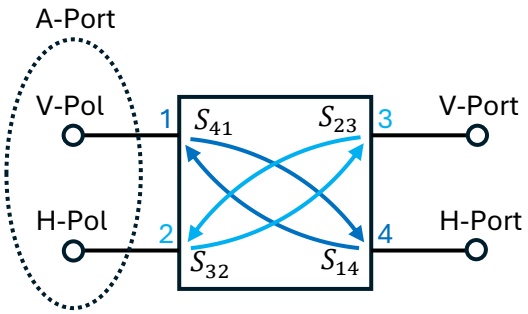
Insertion loss between a single mode rectangular port and the corresponding polarization on the common port





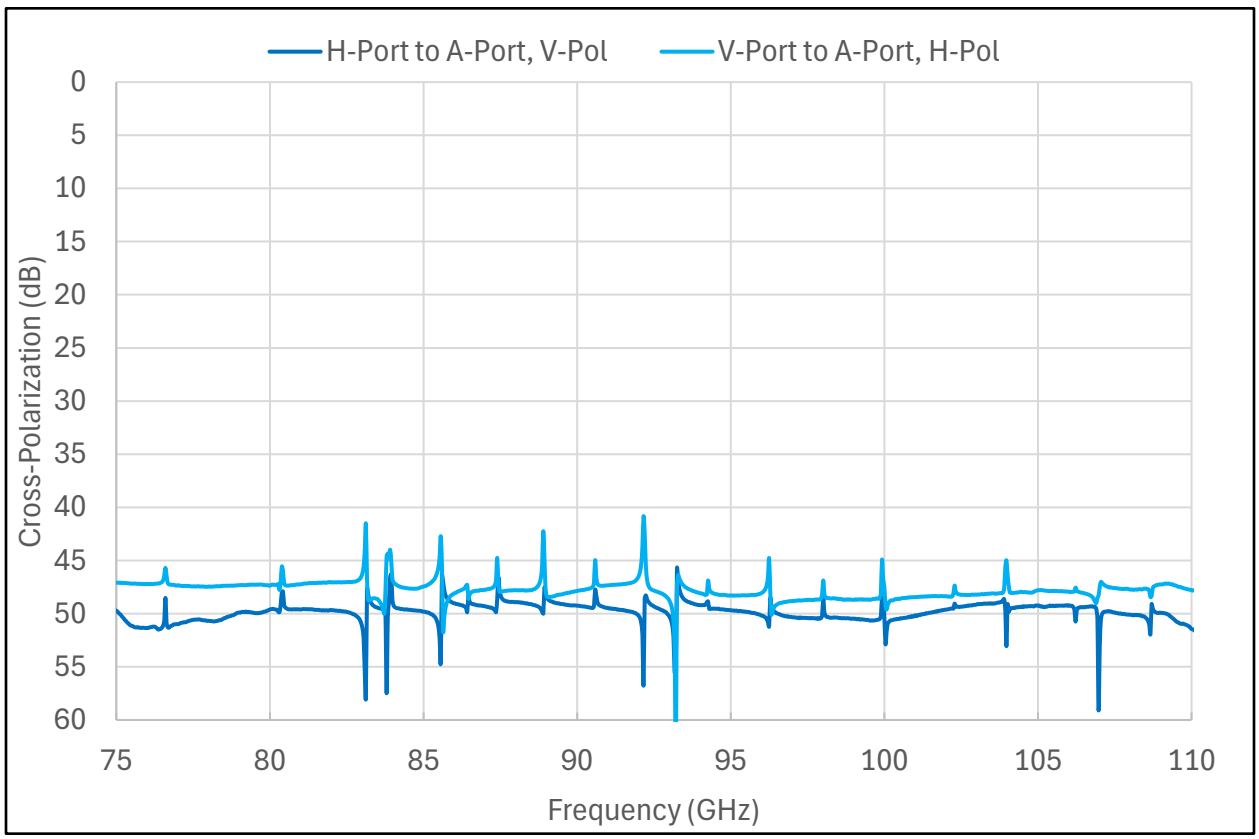
Cross-Polarization



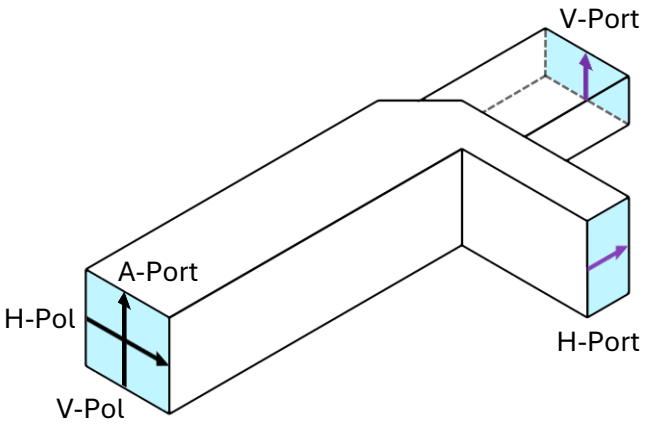


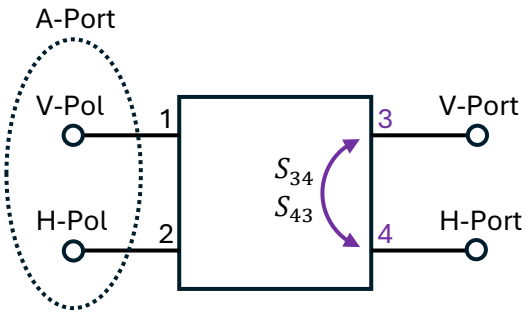
$$\begin{bmatrix} S_{11} & S_{12} & S_{13} & S_{14} \\ S_{21} & S_{22} & S_{23} & S_{24} \\ S_{31} & S_{32} & S_{33} & S_{34} \\ S_{41} & S_{42} & S_{43} & S_{44} \end{bmatrix}$$

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



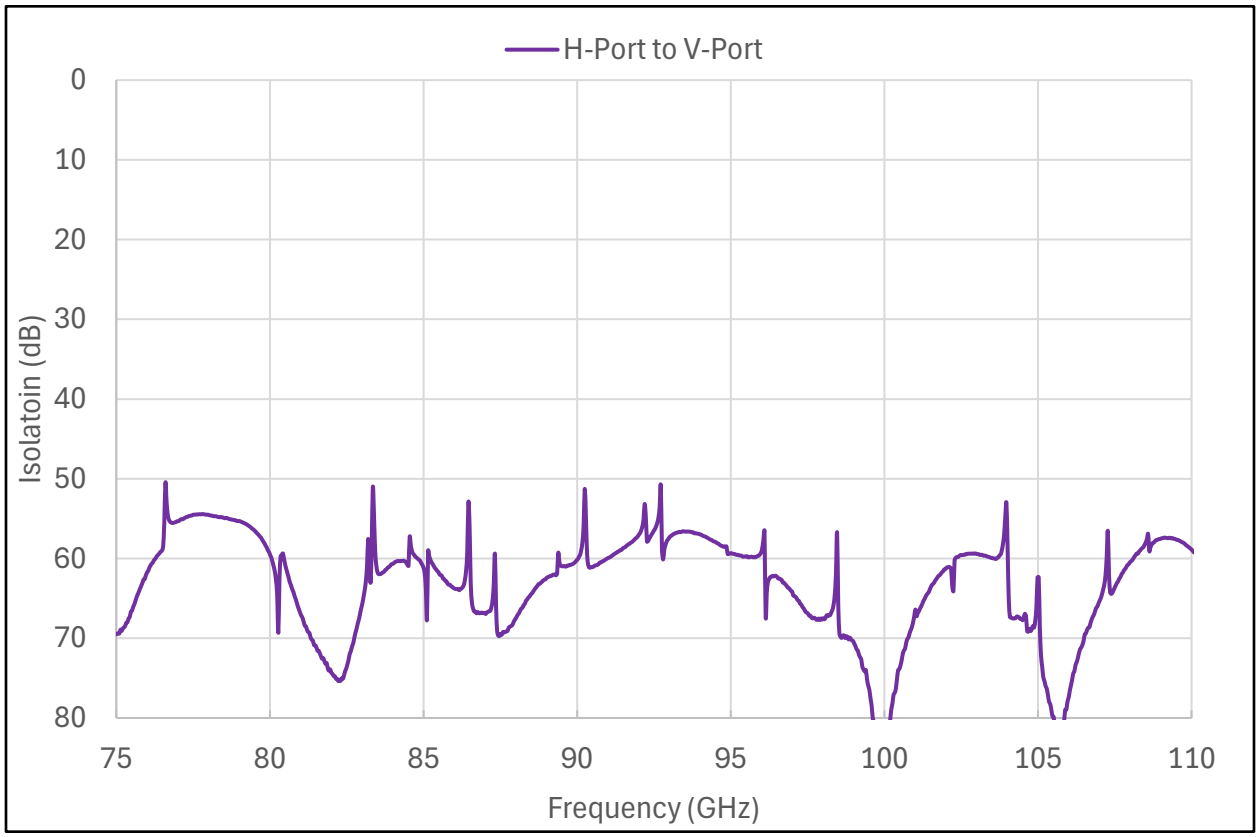
Isolation



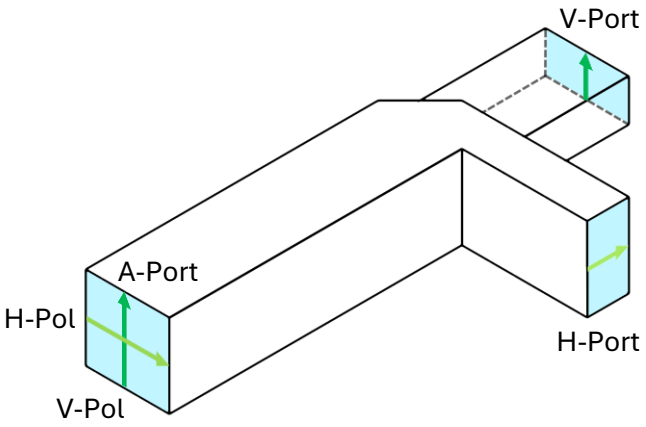


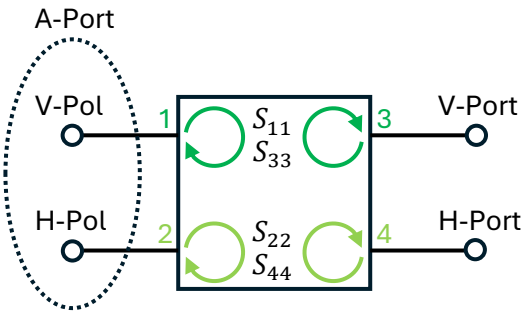
$$\begin{bmatrix} S_{11} & S_{12} & S_{13} & S_{14} \\ S_{21} & S_{22} & S_{23} & S_{24} \\ S_{31} & S_{32} & S_{33} & S_{34} \\ S_{41} & S_{42} & S_{43} & S_{44} \end{bmatrix}$$

Isolation between the two rectangular waveguide ports



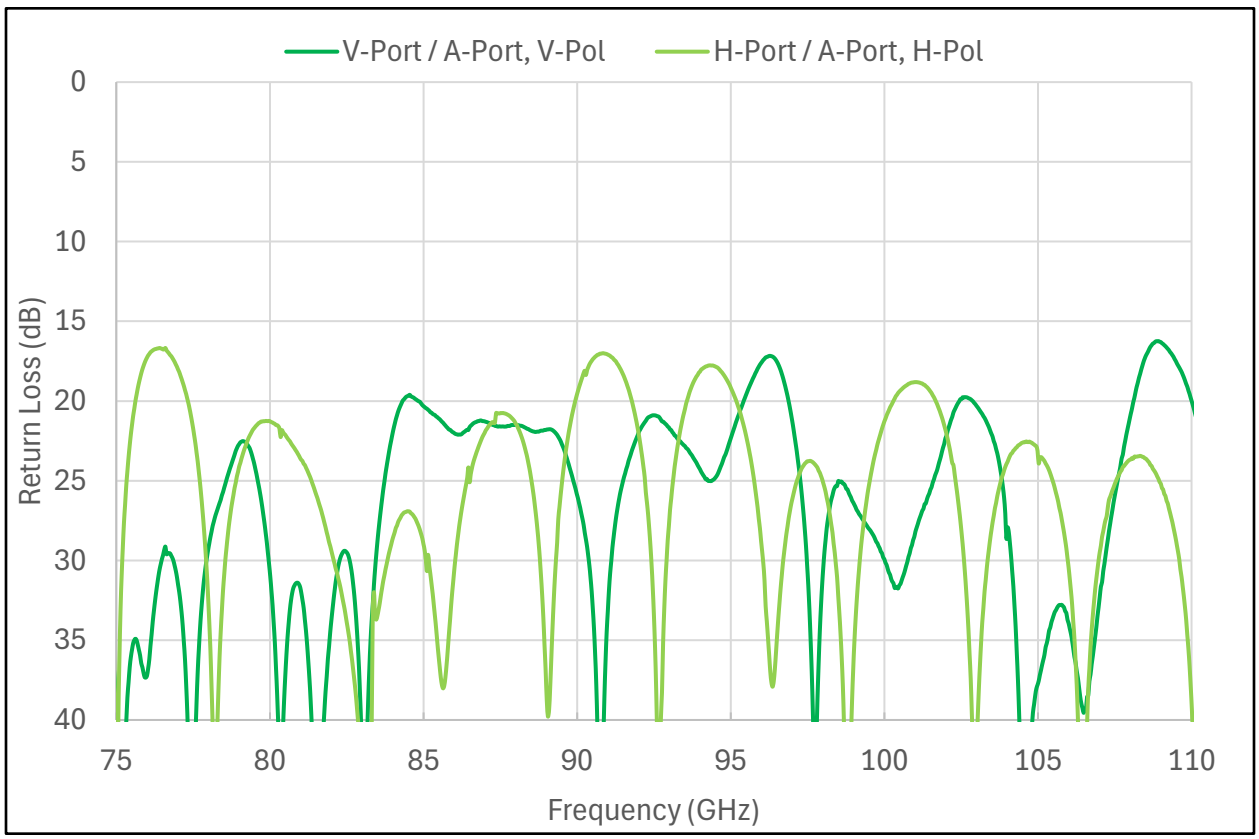
Return Loss

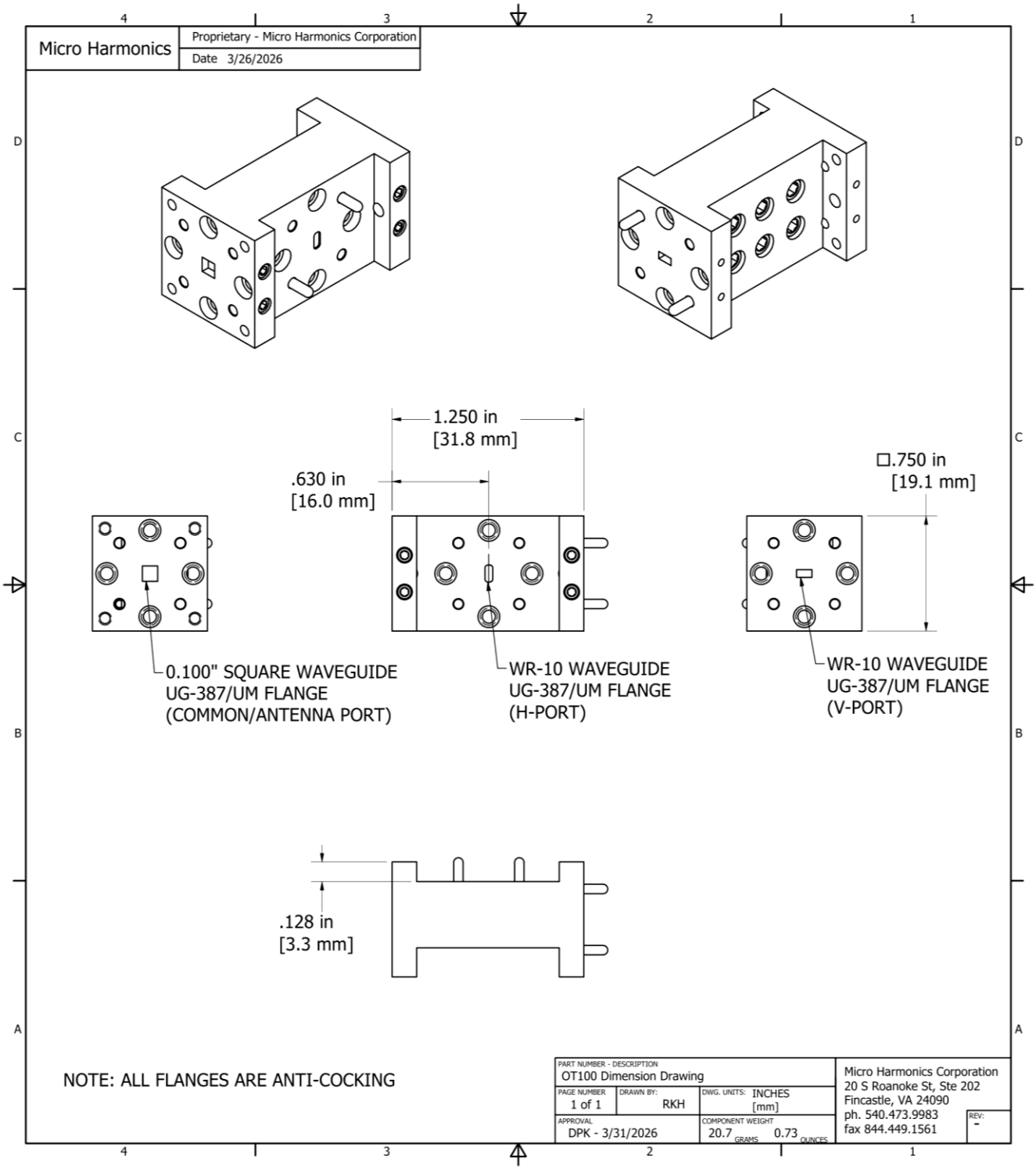




$$\begin{bmatrix} S_{11} & S_{12} & S_{13} & S_{14} \\ S_{21} & S_{22} & S_{23} & S_{24} \\ S_{31} & S_{32} & S_{33} & S_{34} \\ S_{41} & S_{42} & S_{43} & S_{44} \end{bmatrix}$$

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




Micro Harmonics
Proprietary - Micro Harmonics Corporation
Date 3/26/2026
1.250 in
[31.8 mm]
.630 in
[16.0 mm]
□.750 in
[19.1 mm]
0.100" SQUARE WAVEGUIDE
UG-387/UM FLANGE
(COMMON/ANTENNA PORT)
WR-10 WAVEGUIDE
UG-387/UM FLANGE
(H-PORT)
WR-10 WAVEGUIDE
UG-387/UM FLANGE
(V-PORT)
.128 in
[3.3 mm]
NOTE: ALL FLANGES ARE ANTI-COCKING
PART NUMBER - DESCRIPTION
OT100 Dimension Drawing
PAGE NUMBER 1 of 1
DRAWN BY: RKH
DWG. UNITS: INCHES [mm]
APPROVAL DPK - 3/31/2026
COMPONENT WEIGHT 20.7 GRAMS 0.73 OUNCES
Micro Harmonics Corporation
20 S Roanoke St, Ste 202
Fincastle, VA 24090
ph. 540.473.9983
fax 844.449.1561
REV: -