

# HC43

WR-4.3 hybrid circulator



**MicroHarmonics**

Superior mm-Wave Components

## Specifications

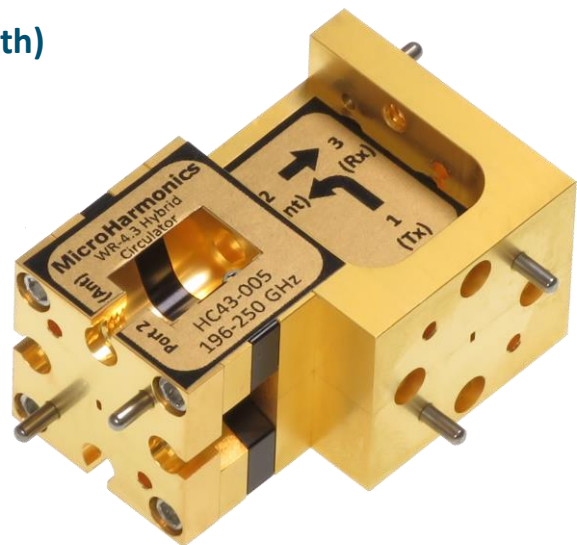
Flange	WR-4.3
Frequency (GHz)	196-250
Insertion Loss (dB, avg)	1.6
Insertion Loss (dB, max)	2.9
Isolation [ $S_{12}$ ] (dB, typ min)	21
Isolation [ $S_{23}$ ] (dB, typ min)	20
Isolation [ $S_{31}$ ] (dB, typ min)	18
Return Loss (dB, typ min)	15
VSWR (typ max)	1.45:1
Maximum Power (W)	1.5

## WR-4.3 Hybrid Circulator

The patent-pending hybrid circulator is designed for wideband millimeter wave applications. The hybrid circulator is an innovative technology, combining an orthomode transducer with a Faraday rotator to achieve more than an order of magnitude greater bandwidth than the traditional Y-junction. Every circulator is tested on a vector network analyzer to ensure conformity and the test data is provided to the customer.

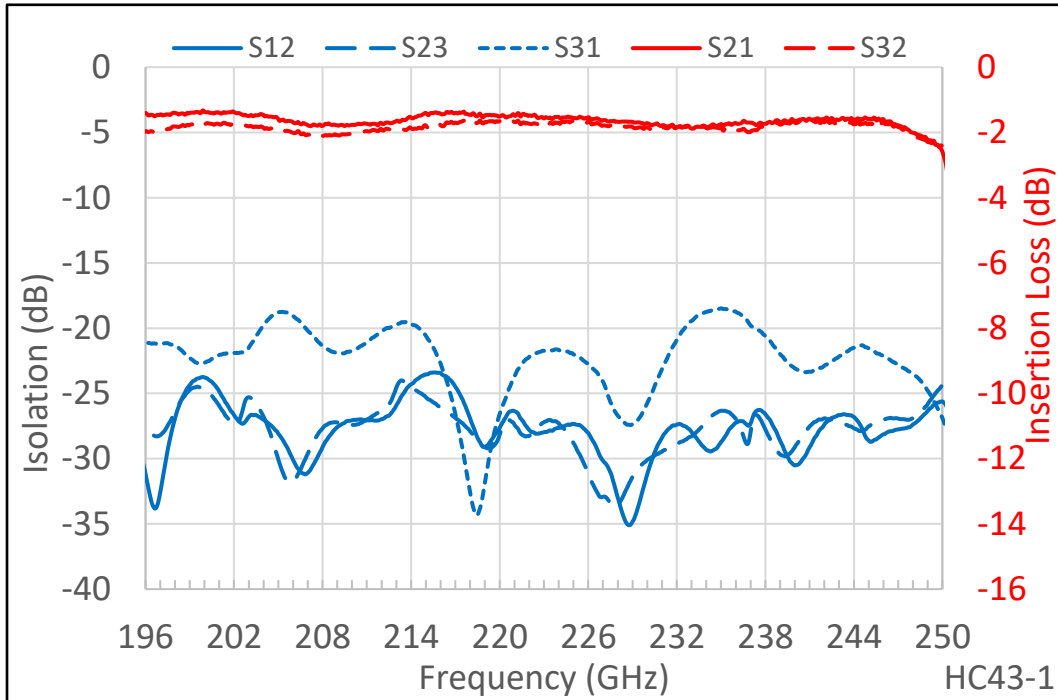
## 196-250 GHz Bandwidth

- ◆ Wideband (24% fractional bandwidth)
- ◆ Internal waveguide screw access
- ◆ Anti-cocking waveguide flanges
- ◆ Resists stray magnetic fields
- ◆ Comprehensive test data
- ◆ Low insertion loss
- ◆ Diamond heatsink
- ◆ Patent pending

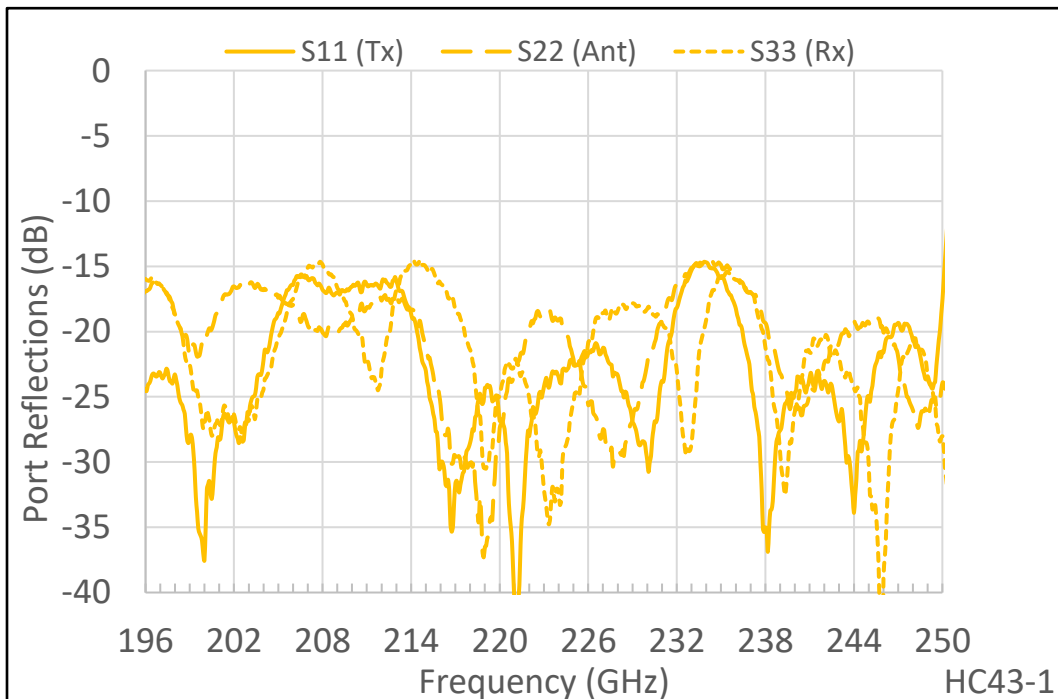




## Insertion Loss and Isolation



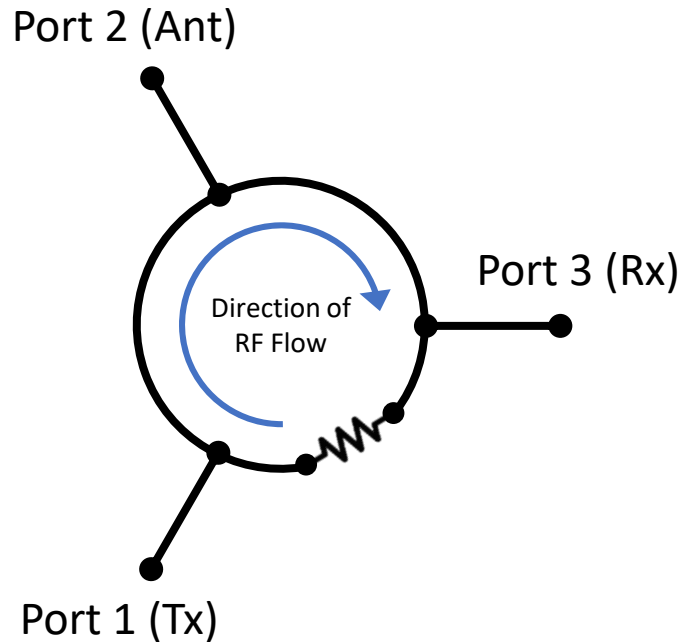
## Port Reflections



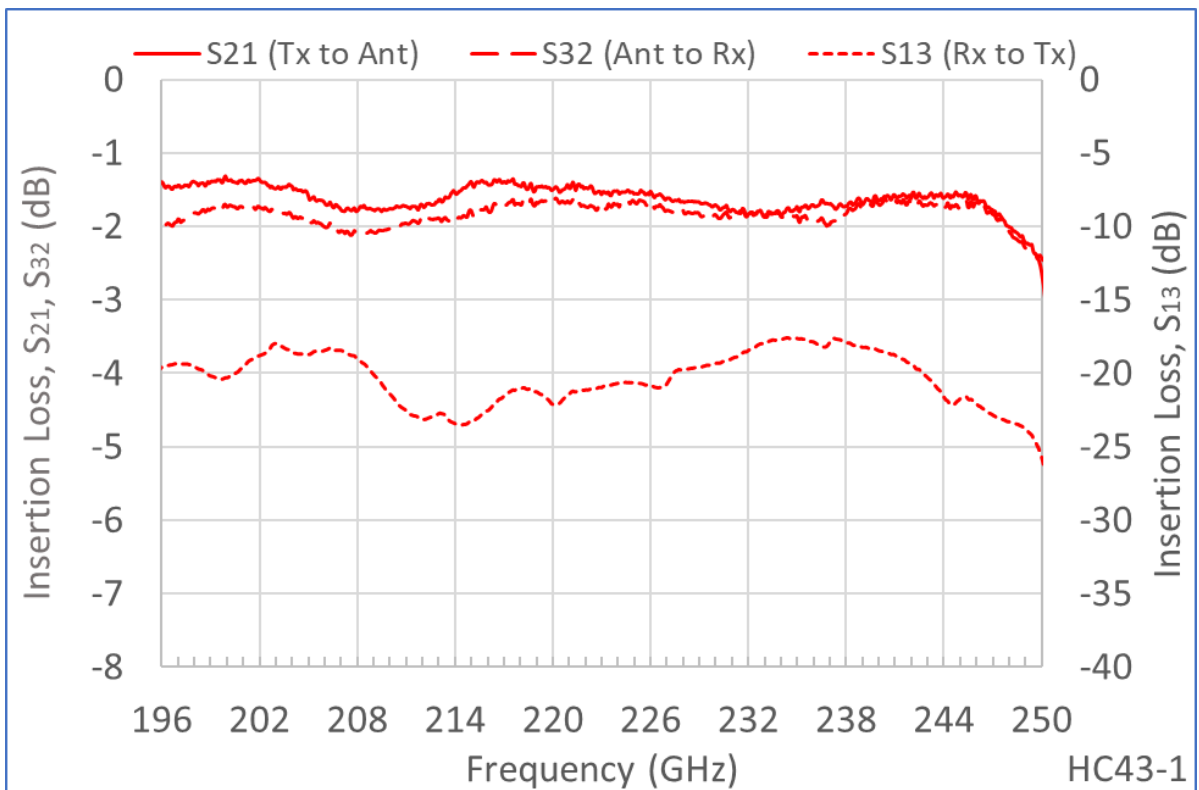


### Asymmetry

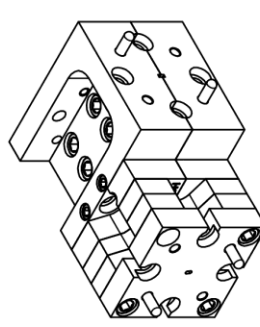
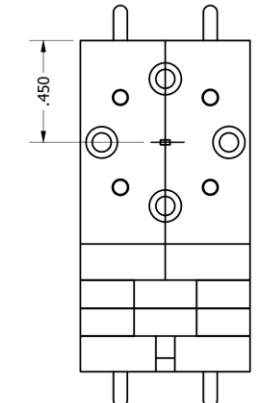
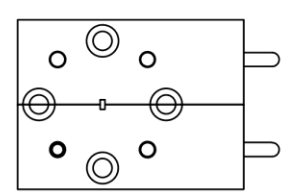
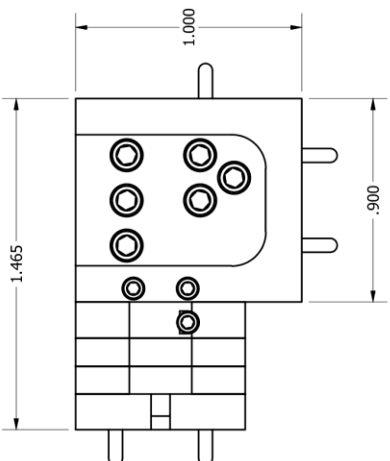
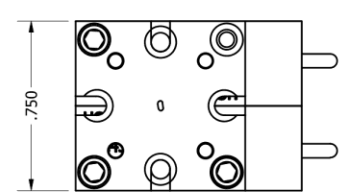
Unlike the Y-junction circulator, the hybrid circulator is asymmetric. The path from port 3 to port 1 is internally attenuated as shown in the schematic to the right and verified by the  $S_{13}$  trace in the measured data below. On request, the hybrid circulator can be assembled in a way that restores the symmetry if needed.



### Asymmetric Insertion Loss



Micro Harmonics	Proprietary - Micro Harmonics Corporation		REVISION HISTORY		1		
	Date	4/25/2023	ZONE	REV		DESCRIPTION	DATE
					RELEASE FOR CUSTOMER	4/25/2023	SCS



PART NUMBER - DESCRIPTION		MATERIAL & FINISH:		1
HC43 Dimension Drawing	HC65			
FLANGES: UG-383/U	DWG. UNITS: INCHES	DRAWN BY: SCS	SIZE: B	2
		APPROVAL: JTK - 4/25/2023	PAGE NUMBER: 1 of 1	
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