

# Dual-Ridge Horns



Typical 3D radiation pattern

## SOLUTION FOR

- Gain reference
- Far-field test ranges
- Reflector feeds for high gain applications

## Main features

### Technical performance

- Stable gain with frequency
- Low return loss / VSWR
- Wide bandwidth

### Design

- Unique design preventing the excitation of unwanted higher order modes in the aperture
- Well-defined smooth radiation pattern throughout the operational bandwidth
- Lightweight for easy handling

### Surface treatment

- Surtec 650 according to MIL-C 5541E class 3
- Polyurethane paint

### Repeatability

- Stiff and robust mechanical design
- Standard MVG circular interface for precision centering
- Precision pin for accurate polarization alignment
- Precision machined
- High reliability coaxial connector

### Delivered documents

- Typical performance data (TYMEDA™)
- Measured return loss data

## Product configuration

### Equipment

- Mounting flange
- Integrated coaxial transition with high precision connector
- Protective radome for outdoor installation

### Related services

- Calibration and maintenance
- Customization

■ Included □ Optional

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The MVG dual-ridge horns have been selected as high reliability reference antennas in international measurement facility comparison campaigns\*.

\* L.J. Foged, B. Bencivenga, L. Scialacqua, S. Pivnenko, O. Breinbjerg, M. Sierra-Castañer, P.C. Almena, E. Seguenot, C. Sabatier, M. Bottcher, E. Arnaud, T. Monediere, H. Garcia, D. Allenic, G. Hampton, A. Daya, "Facility comparison and evaluation using dual ridge horns", EuCAP 2009, Berlin

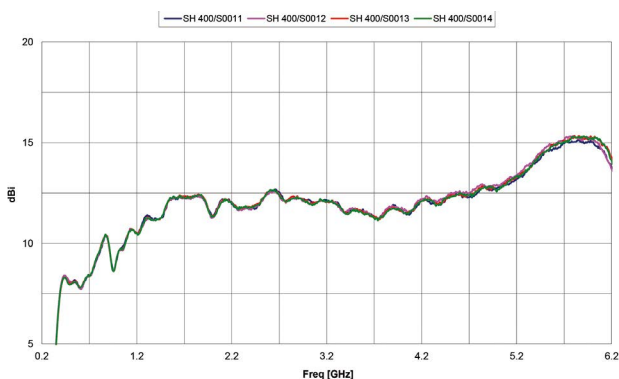
## Electrical characteristics

Part number	SH100	SH200	SH400	SH600	SH800	/... /
Type of antenna	Dual-ridge horn	Dual-ridge horn	Dual-ridge horn	Dual-ridge horn	Dual-ridge horn	
Frequency range	0.1 – 1.5 GHz	0.2 – 3.0 GHz	0.4 – 6.0 GHz	0.6 – 9.0 GHz	0.8 – 12 GHz	
Gain	5 – 15 dBi	6 – 15 dBi	6 – 15 dBi	6 – 15 dBi	6 – 15 dBi	
VSWR	< 2.5	< 1.9	< 1.9	< 1.9	< 1.9	
Return loss	< -7.5 dB	< -10 dB	< -10 dB	< -10 dB	< -10 dB	
Polarization	Single linear	Single linear	Single linear	Single linear	Single linear	
Cross-polar discrimination	> 45 dB	> 45 dB	> 45 dB	> 45 dB	> 45 dB	
Impedance	50 Ohms	50 Ohms	50 Ohms	50 Ohms	50 Ohms	

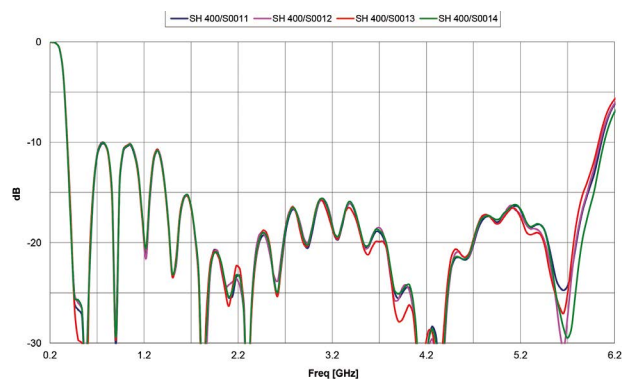
/... /	SH1000	SH2000	SH4000	SH5000
Type of antenna	Dual-ridge horn	Dual-ridge horn	Dual-ridge horn	Dual-ridge horn
Frequency range	1.0 – 18 GHz	2.0 – 32 GHz	4.0 – 40 GHz	5.0 – 50 GHz
Gain	5.5 – 17 dBi	3 – 17 dBi	3 – 14 dBi	3.6 – 15 dBi
VSWR	< 2.2 [1 – 2.8 GHz] < 1.9 [2.8 – 18 GHz]	< 2.3 [2 – 6 GHz] < 1.9 [6 – 31 GHz] < 2.3 [31 – 32 GHz]	< 2.3 [4 – 10 GHz] < 1.9 [10 – 37 GHz] < 2.3 [37 – 40 GHz]	< 1.9
Return loss	< -8.5 [1 – 2.8 GHz] < -10 [2.8 – 18 GHz]	< -8 dB [2 – 6 GHz] < -10 dB [6 – 31 GHz] < -8 dB [31 – 32 GHz]	< -8 dB [4 – 10 GHz] < -10 dB [10 – 37 GHz] < -8 dB [37 – 40 GHz]	< -10 dB
Polarization	Single linear	Single linear	Single linear	Single linear
Cross-polar discrimination	> 45 dB	> 45 dB	> 45 dB	> 45 dB
Impedance	50 Ohms	50 Ohms	50 Ohms	50 Ohms

### Performance repeatability

SH400 measured boresight realized gain



SH400 measured return loss



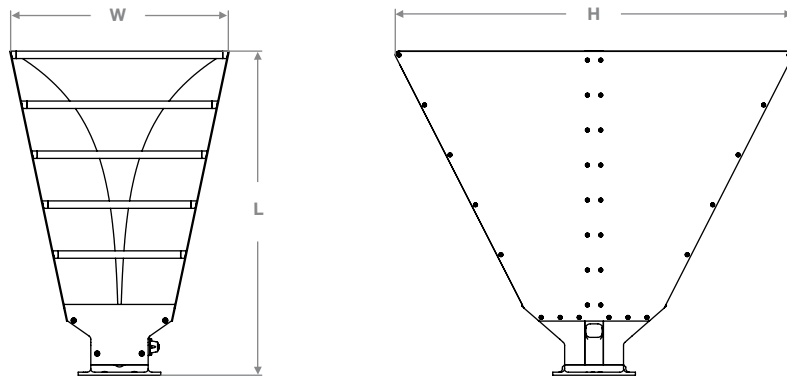
## Mechanical characteristics

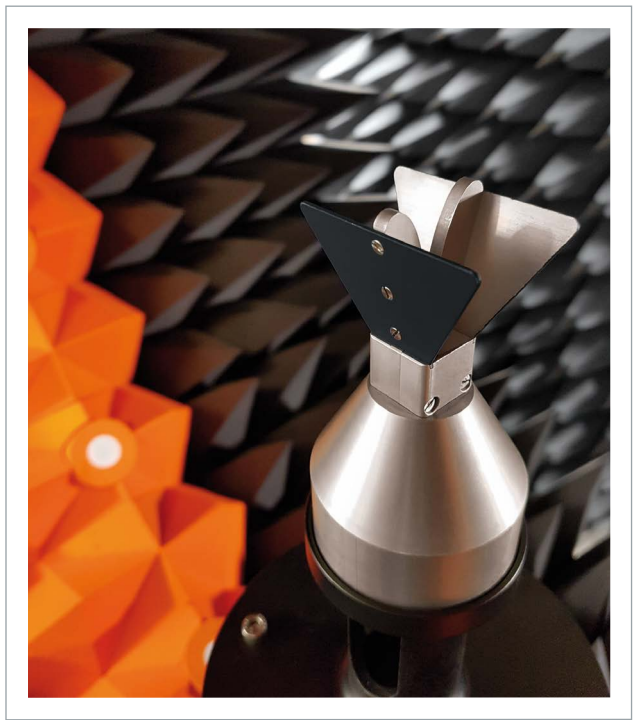
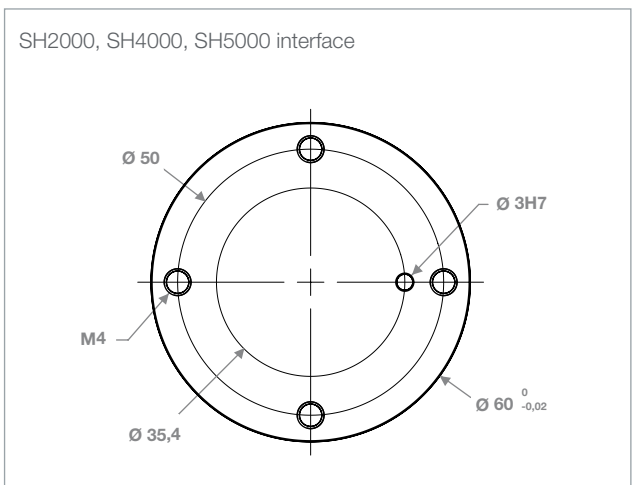
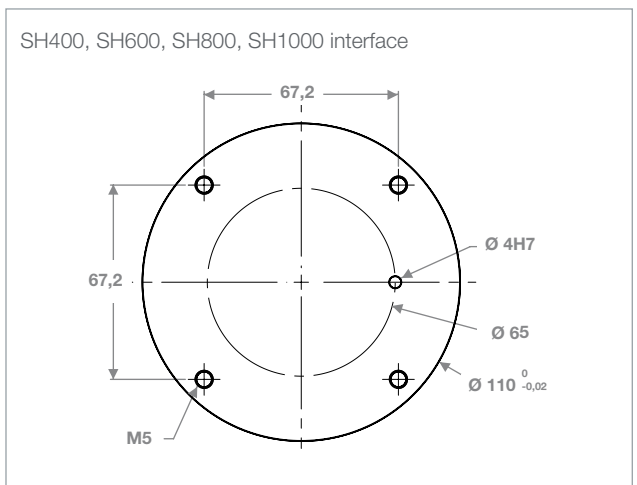
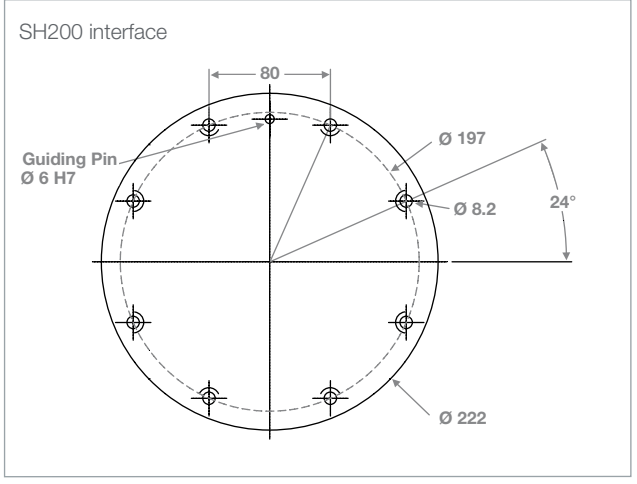
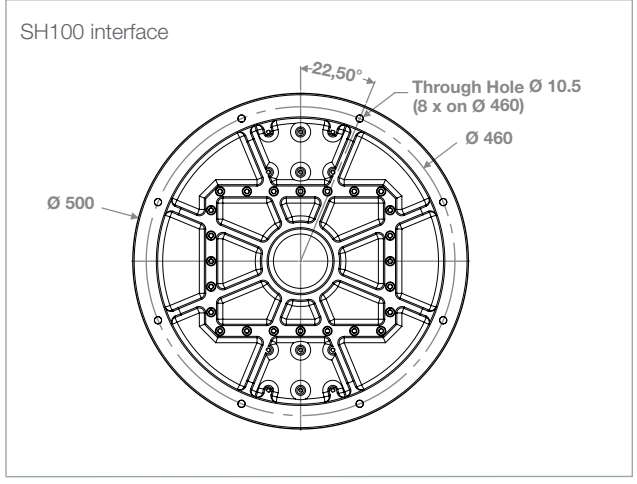
Part number	SH100	SH200	SH400	SH600	SH800	/.../
Dimensions (H x W x L) [mm]	2133 x 1181 x 1724	1068 x 585 x 870	540 x 292.3 x 435	355.9 x 198.7 x 294.6	270 x 149.1 x 225	
Weight (approx.) [Kg]	80	25	4.1	1.8	1.2	
Connector	N-type Female <sup>(1)</sup>	N-type Female <sup>(1)</sup>	N-type Female <sup>(1)</sup>	3.5 mm Female <sup>(2)</sup> (N-type <sup>(3)</sup> optional)	3.5 mm Female <sup>(2)</sup>	
Material	Aluminum	Aluminum	Aluminum	Aluminum	Aluminum	
Treatment	Surtec 650 <sup>(7)</sup>	Surtec 650 <sup>(7)</sup>	Surtec 650 <sup>(7)</sup>	Surtec 650 <sup>(7)</sup>	Surtec 650 <sup>(7)</sup>	
Interface	Circular Ø 500 mm	Circular Ø 222 mm	Circular Ø 110 mm	Circular Ø 110 mm	Circular Ø 110 mm	

/.../	SH1000	SH2000	SH4000	SH5000
Dimensions (H x W x L) [mm]	243 x 134 x 262	105 x 61 x 104.3	51.6 x 34 x 104.3	51.6 x 34 x 104.3
Weight (approx.) [Kg]	1.8	0.3	0.2	0.2
Connector	SMA Female <sup>(4)</sup> (N-type <sup>(3)</sup> optional)	3.5 mm Female <sup>(2)</sup>	2.92 mm Female <sup>(5)</sup>	2.4 mm Female <sup>(6)</sup>
Material	Aluminum	Aluminum	Aluminum	Aluminum
Treatment	Surtec 650 <sup>(7)</sup>	Surtec 650 <sup>(7)</sup>	Surtec 650 <sup>(7)</sup>	Surtec 650 <sup>(7)</sup>
Interface	Circular Ø 110 mm	Circular Ø 60 mm	Circular Ø 60 mm	Circular Ø 60 mm

- (1) Southwest 312-04SF  
 (2) Huber & Suhner 23 PC35-50-0-51/199 UE  
 (3) Southwest 312-14 SF  
 (4) Southwest 212-503SF  
 (5) Anritsu K103F + Southwest 1030-10SF  
 (6) Southwest 1814-04SF + SGMC 100-30-33-000  
 (7) According to MIL-C 5541E class 3

Dimensional drawing

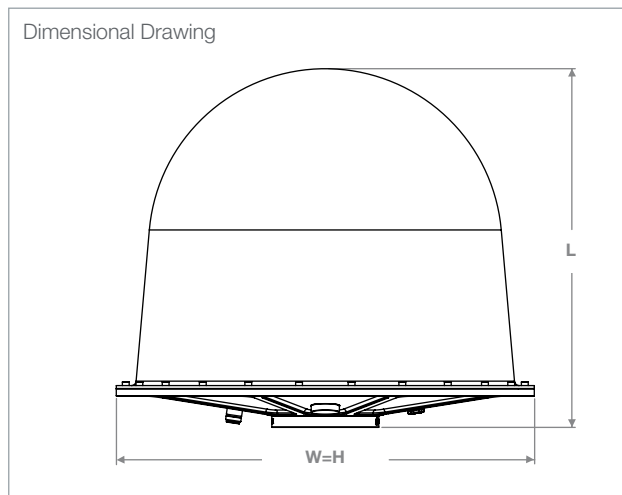




## Solutions For Outdoor Installation



The MVG protective radomes are designed to fit Dual-Ridge Horns, allowing outdoor installation with minimum impact on electrical performance. The materials and coating employed provide hydrophobic properties and good UV stability, low relative permittivity and low dielectric loss, therefore offering an effective protection in outdoor conditions and good RF transparency. The radome enclosures are also equipped with pressure equalizing vents to reduce condensation caused by rapid changes in temperature, while preventing water and dust ingress.



### Mechanical characteristics

Part number	R430	R175
Featured dual-ridge horn	SH800	SH2000, SH4000, SH5000
Dimensions (H x W x L)	430 x 430 x 369 mm	199 x 199 x 190 mm
Weight (approx.)	4 Kg	0.9 Kg
Materials	Aluminum, PVC, GFRP	Aluminum, Dyneema™
Color	White	White
Connector	N-type Female – sealed <sup>(1)</sup>	2.92 mm Female <sup>(2)</sup>
Interface	Circular Ø 110 mm	Circular Ø 60 mm
Ingress protection	IP67	IP67
Wind rating <sup>(3)</sup>	160 km/h	160 km/h

(1) Inmet/Aeroflex 5217

(2) H&S 34-SK-50-0-54-199\_NE

(3) Based on FE (Finite Element) analysis in accordance to UNI EN 1991-1-4 EUROCODE 1



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