

## Specification

Model No.	:	<b>QHA.01</b>
Part No.	:	<b>QHA.01.A.0159111</b>
Product Name	:	<b>Screw Mount L-Band Quad Helix Antenna</b>
Features		Permanent Screw Mount Passive for Transmitters & Receivers IP67 Diameter 92.5mm, Height 120mm 150mm LMR195 Cable - Customizable Output Connector: SMA (M) - Customizable <b>RoHS Compliant</b>



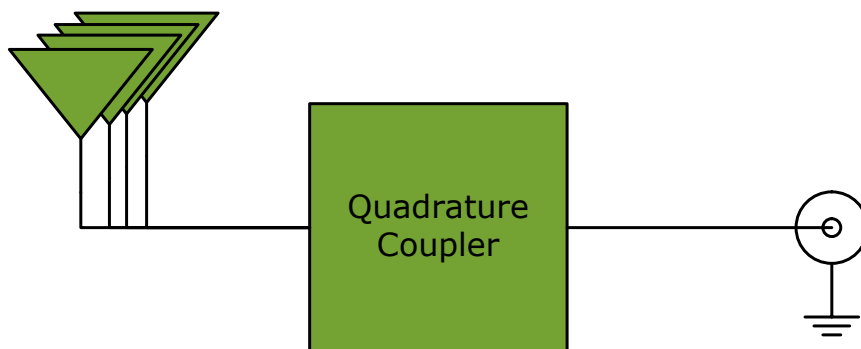
## 1. Introduction

The QHA.01 L-band quadrifilar helix antenna is a versatile, high-performing passive L-band antenna.

With excellent efficiency of nearly 70%, as well as superior axial ratio over a wide beamwidth, the QHA.01 provides a reliable solution for demanding L-band applications, even without the active front end. This wide-bandwidth antenna works well across a range of frequencies used for satellite navigation and telecommunications, including GPS, GLONASS, Beidou, and 1620 MHz SatCom.

The QHA.01 is ready for outdoor industrial and commercial usage with a UV-resistant, IP67 waterproof housing rated for temperatures from -40 to +85°C.

Cables and connectors are customizable. Contact your regional Taoglas sales office for support.



**Figure 1.** QHA.01 block diagram

## 2. Specifications

Electrical				
	BeiDou	GPS	GLONASS	LEO SatCom
Frequency	1561 MHz	1575.42 MHz	1601.6 MHz	1620 MHz
Efficiency (%)				
15cm Cable Length	72%	72%	71%	69%
1m Cable Length	56%	57%	55%	54%
2m Cable Length	34%	34%	33%	33%
Peak Gain (dBi)				
15cm Cable Length	1.8	1.8	1.6	1.4
1m Cable Length	0.8	0.7	0.5	0.4
2m Cable Length	-1.3	-1.4	-1.6	-1.7
Average Gain (dBi)				
15cm Cable Length	-1.4	-1.4	-1.5	-1.5
1m Cable Length	-2.4	-2.4	-2.5	-2.6
2m Cable Length	-4.6	-4.6	-4.7	-4.8
Axial Ratio	Zenith to 90° elevation: < 3dB			
Impedance	50 Ω			
Return Loss	< -10 dB			
Polarization	RHCP			
Mechanical				
Total Dimension	120*92.5Ø mm			
Casing	ABS with UV coating			
Base and thread	Zinc Alloy			
Ingress Protection Rating	IP67			
Maximum Assembly Torque	39.2 N·m			
Weight	325 g			
Cable/Connector	LMR195 coaxial cable, length 150mm, SMA(M)			
Environmental				
Operation Temperature	-40°C to 85°C			
Storage Temperature	-40°C to 85°C			
Humidity	Non-condensing 65°C 95% RH			
RoHS Compliant	Yes			

## 3. Antenna Characteristic

### 3.1 Return Loss

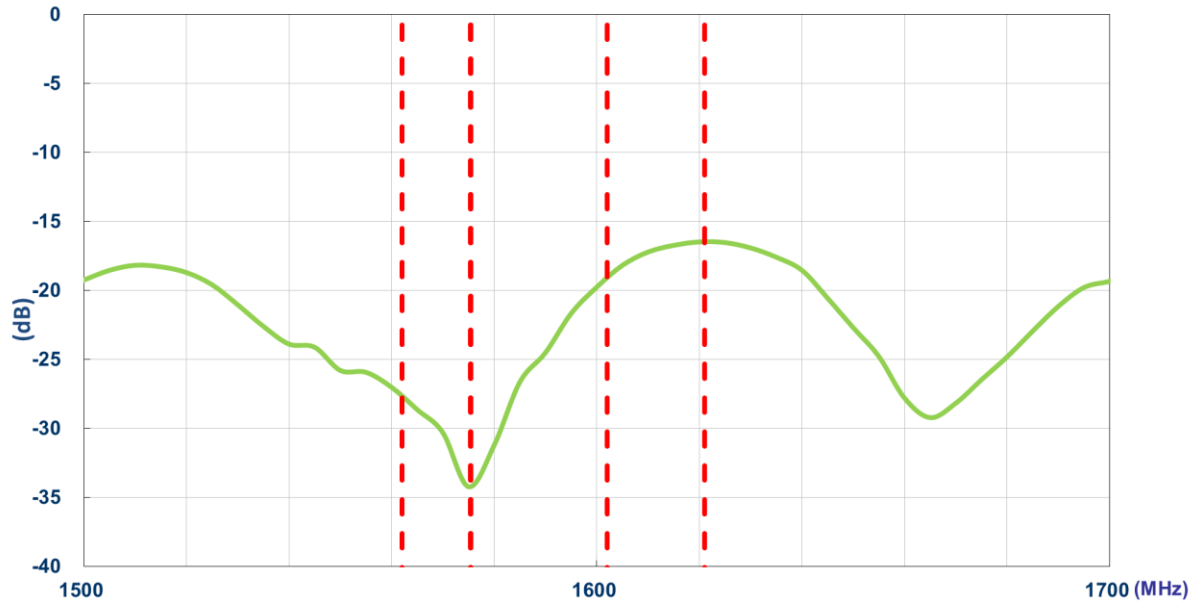
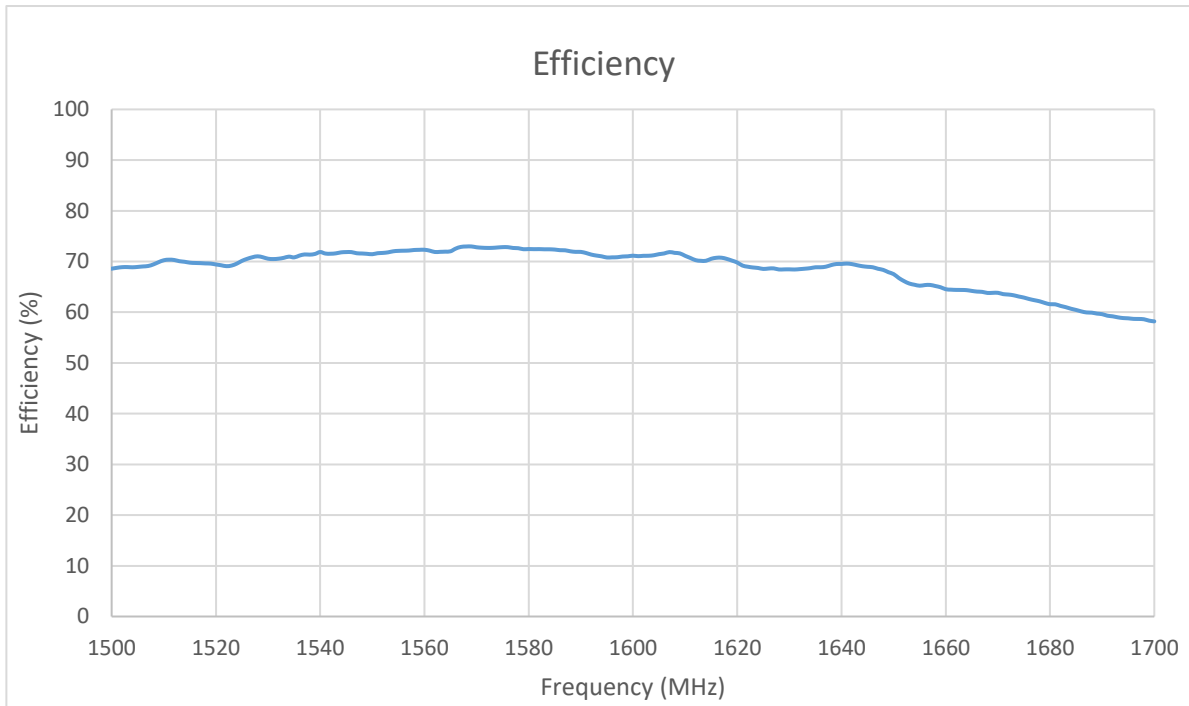
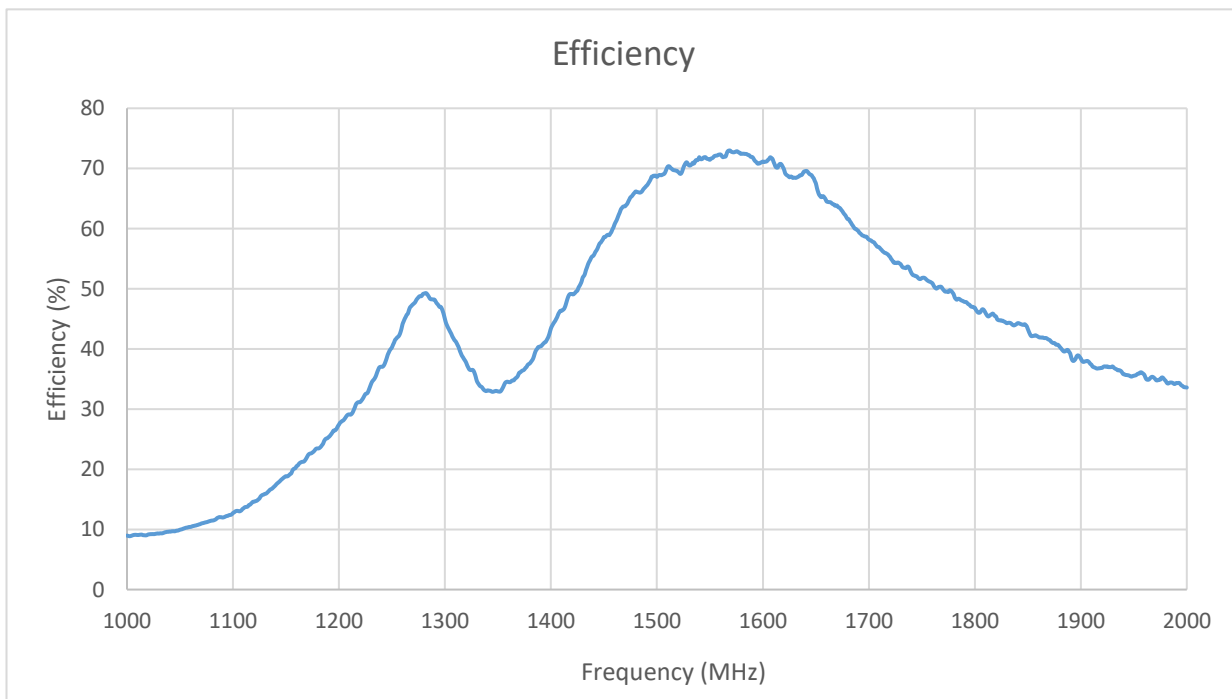


Figure 2. Wideband return loss

### 3.2 Efficiency

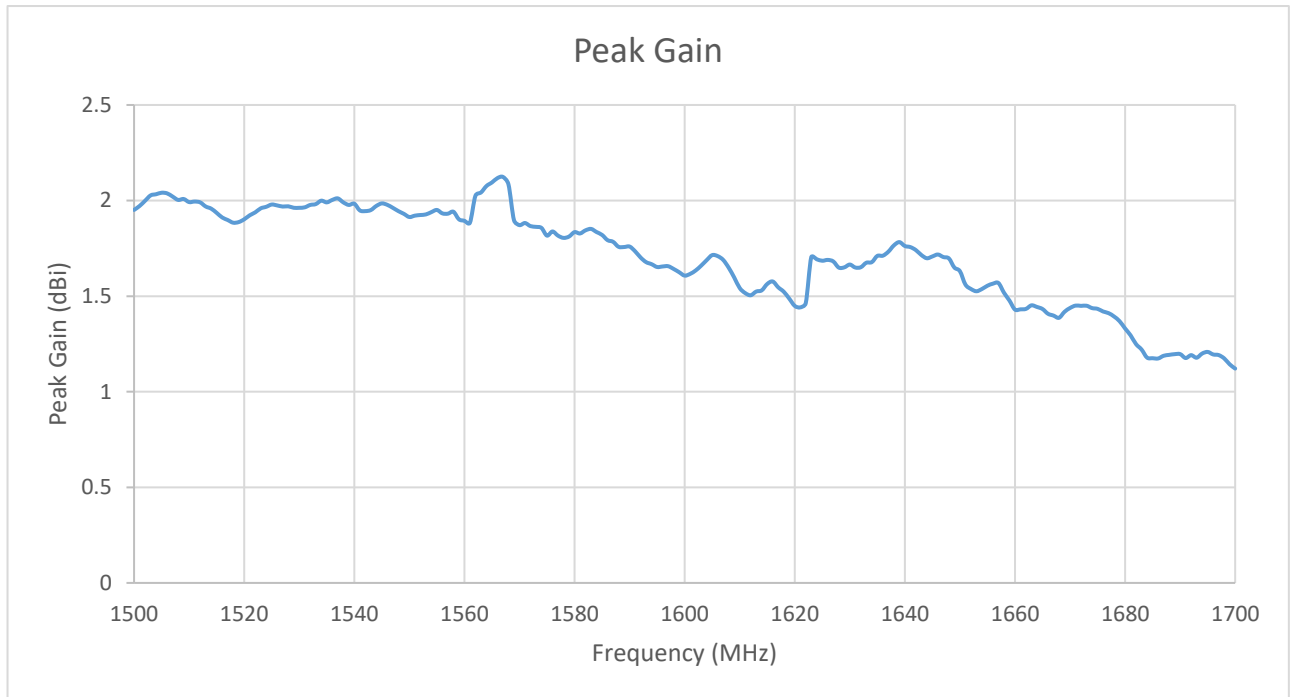


**Figure 3.** Efficiency (%), Free Space.

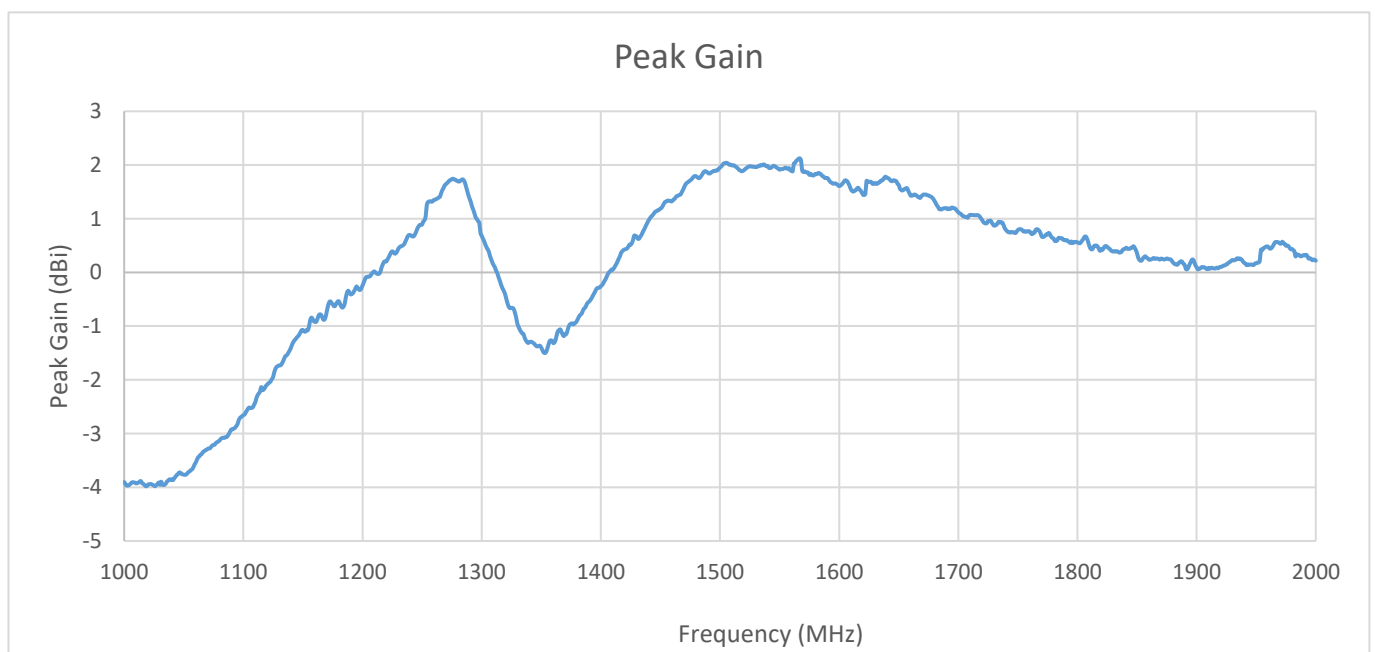


**Figure 4.** Efficiency (%), Free Space, wideband.

### 3.3 Peak Gain

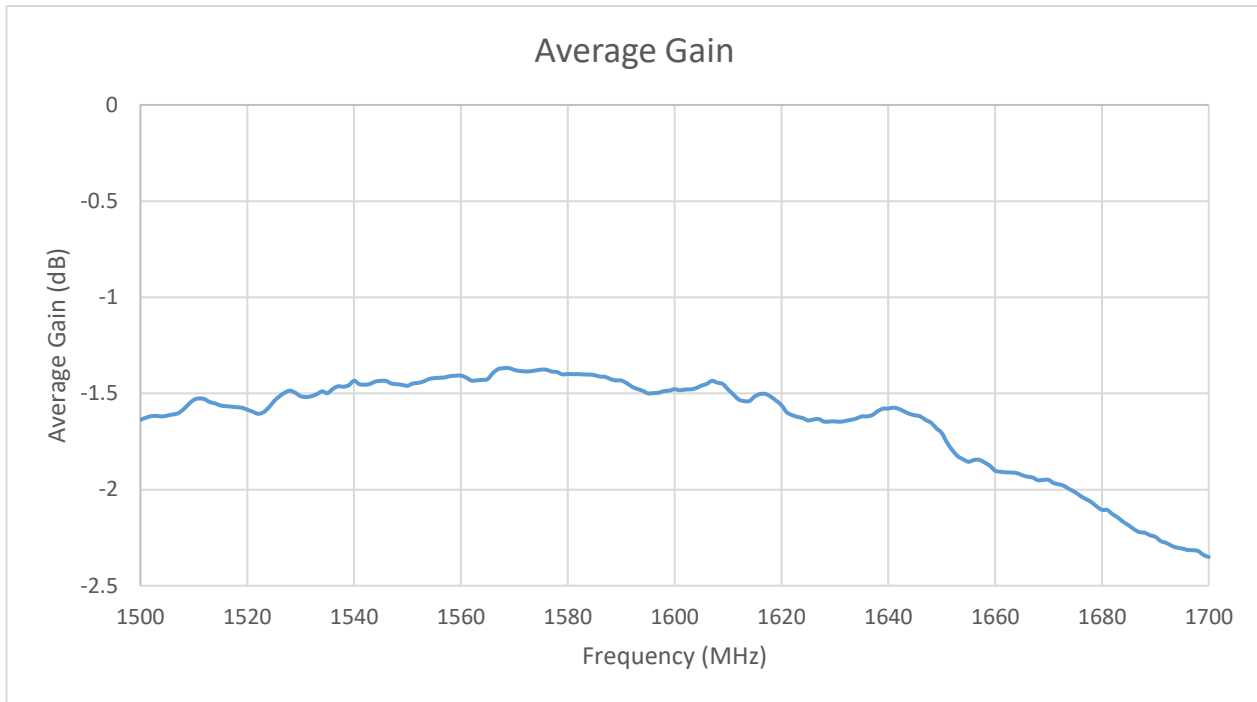


**Figure 5.** Peak Gain (dBi), Free Space.

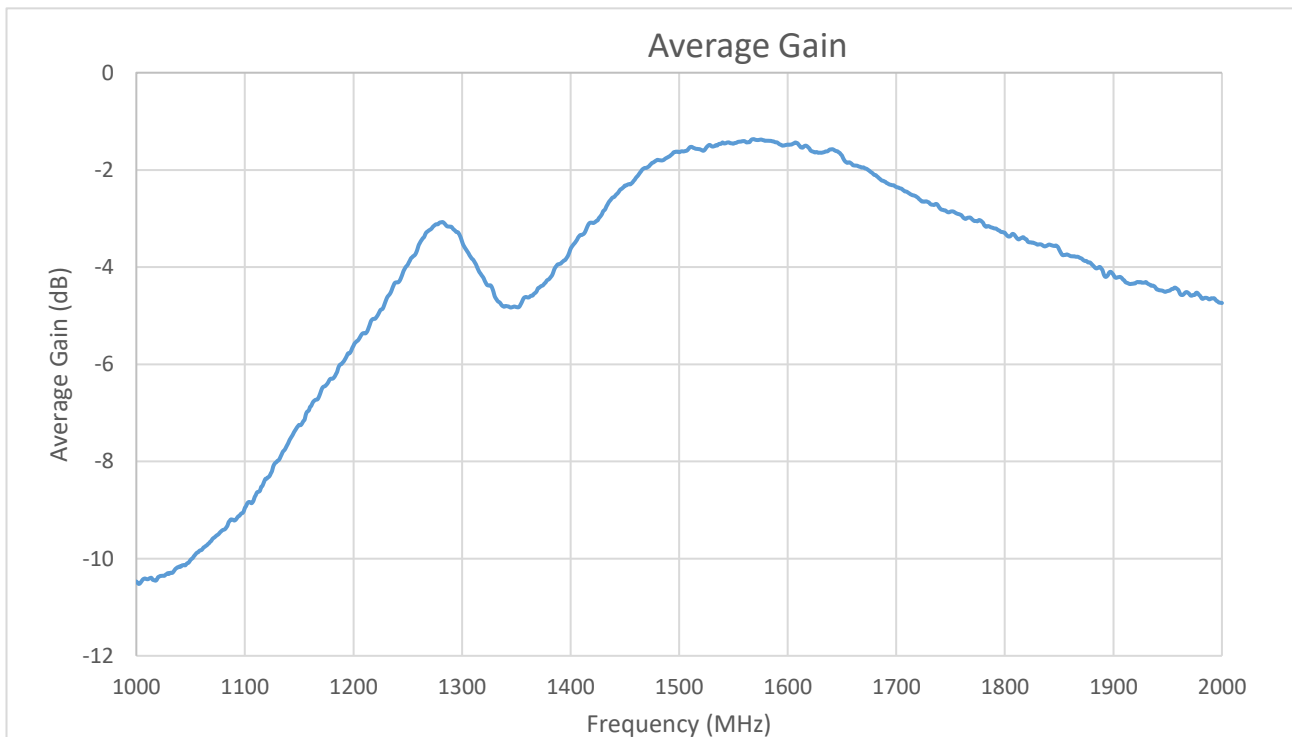


**Figure 6.** Peak Gain (dBi), Free Space, wideband.

### 3.4 Average Gain

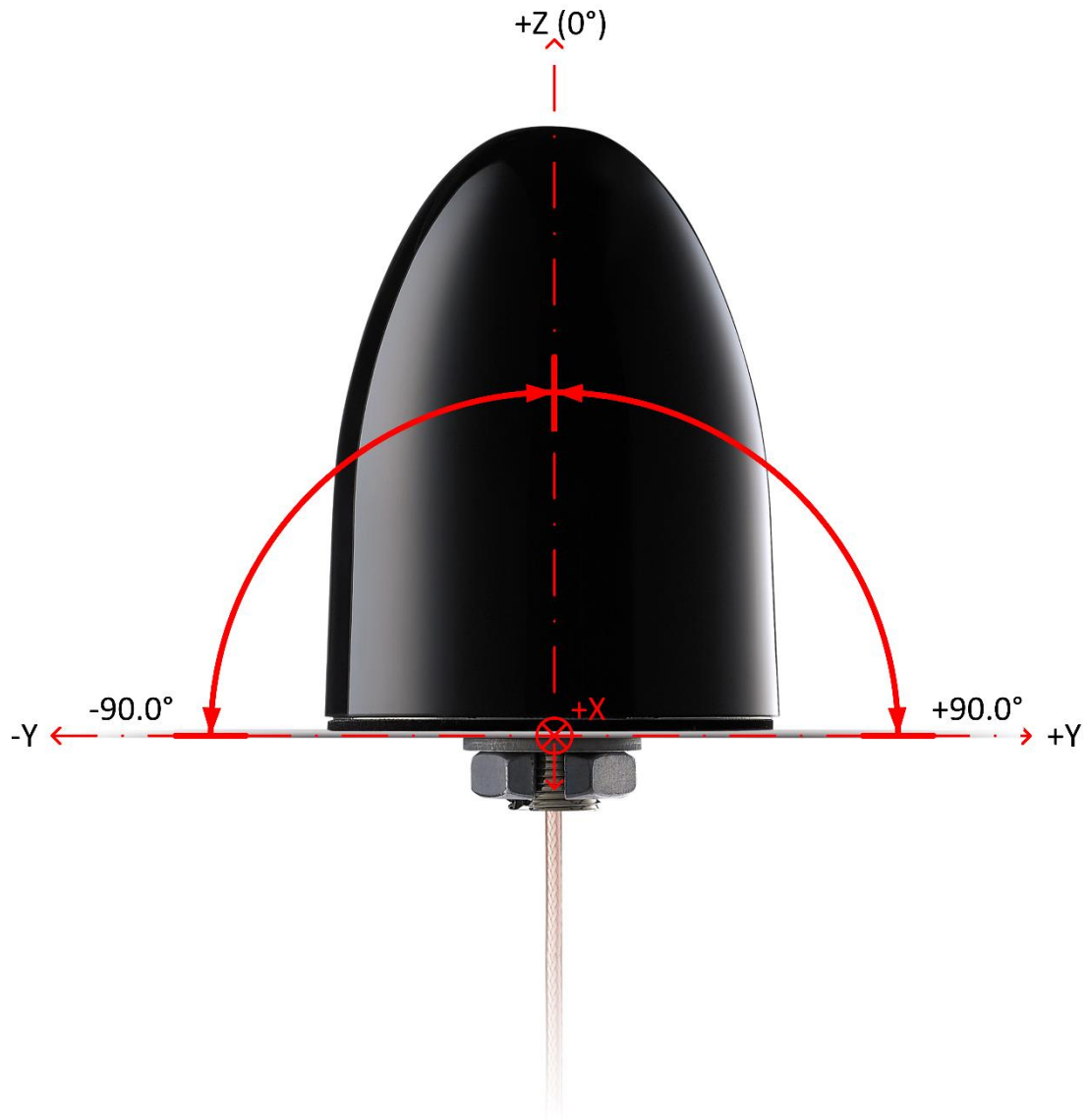


**Figure 7.** Average Gain (dB), Free Space.



**Figure 8.** Average Gain (dB), Free Space, wideband.

### 3.5 Axial Ratio



**Figure 9.** Axial Ratio pattern reference



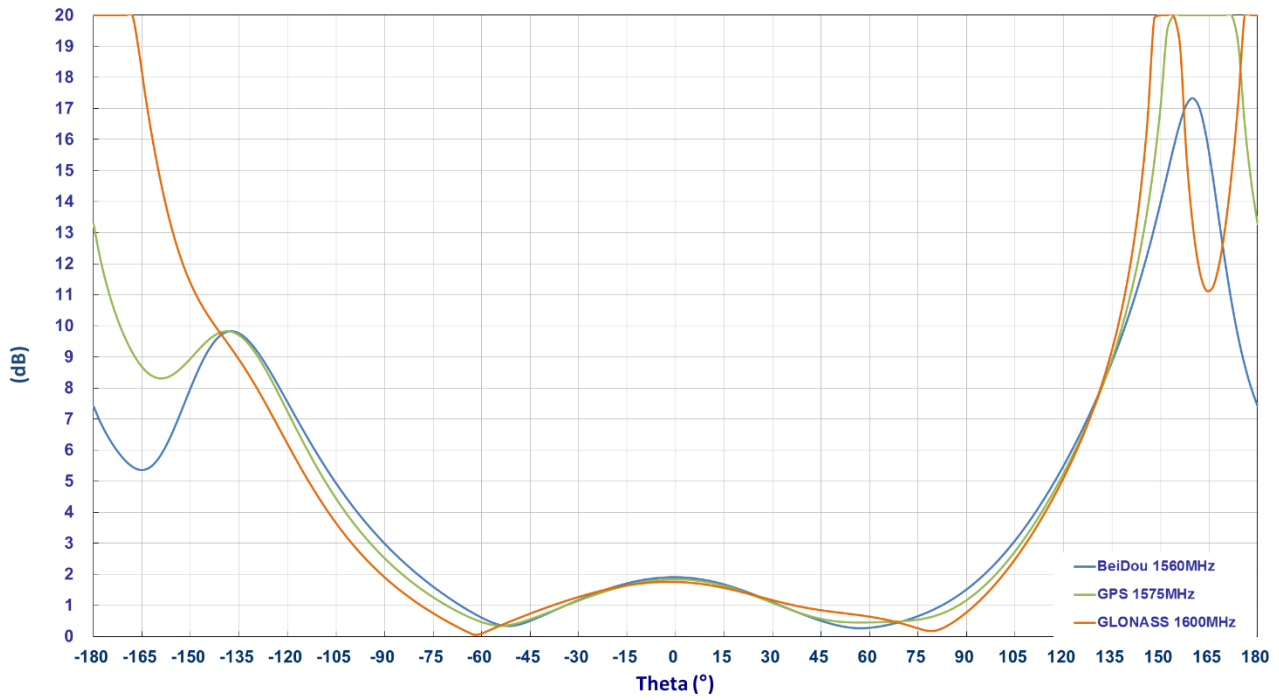


Figure 10. Axial ratio (dB), free space, X-Z cut

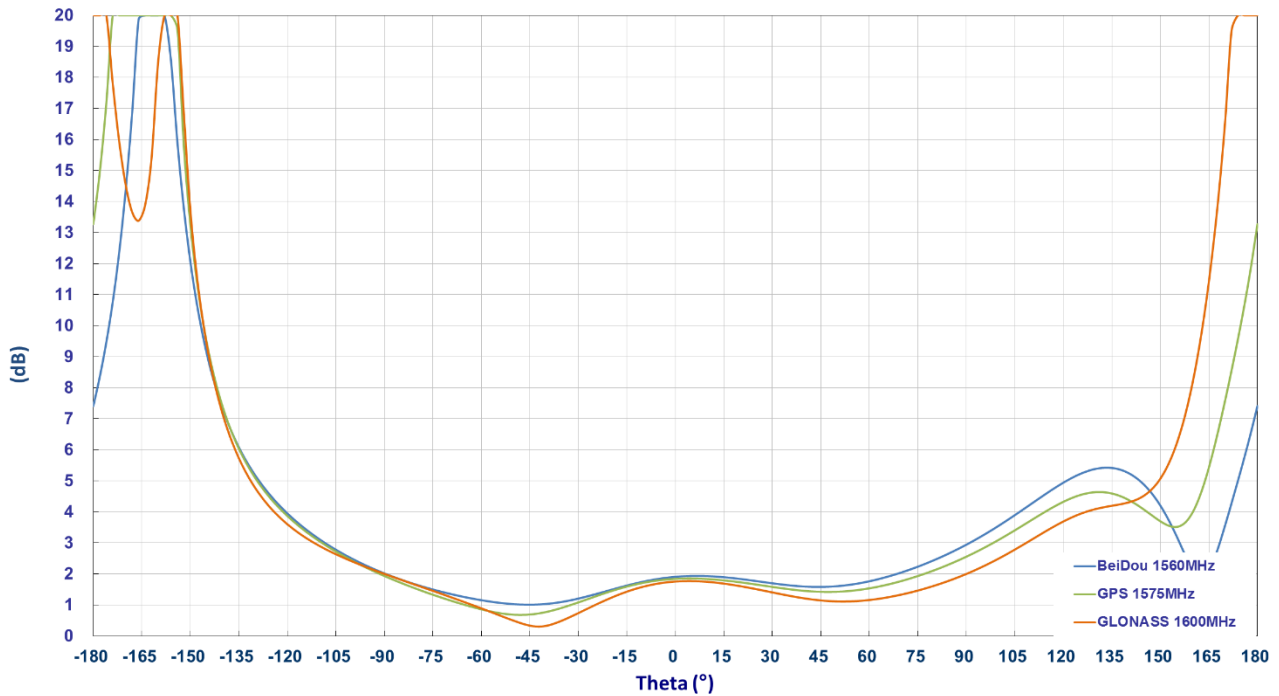


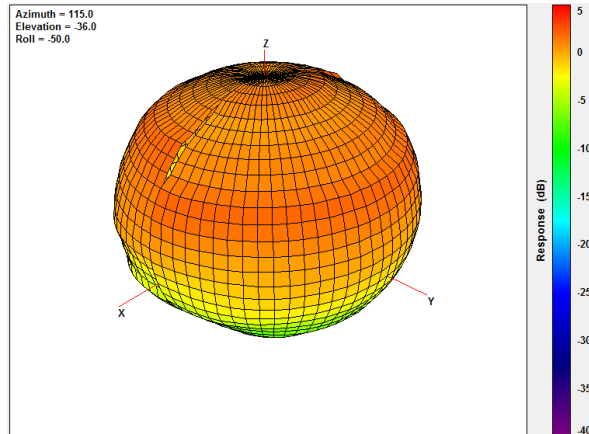
Figure 11. Axial ratio (dB), free space, Y-Z cut

## 4. Radiation Patterns

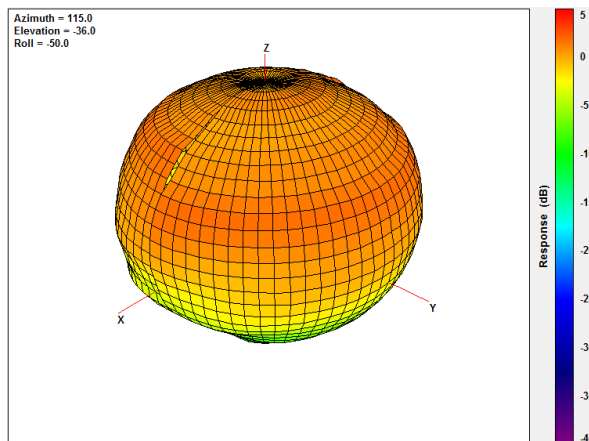
### 4.1 Measurement Setup



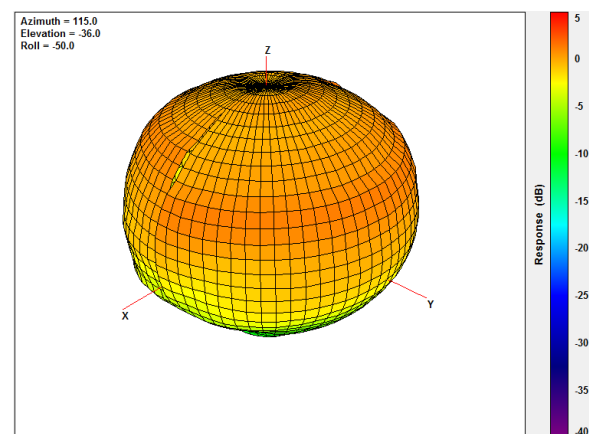
## 4.2 3D Radiation Patterns



**Figure 12.** 3D Radiation Pattern at 1561 MHz



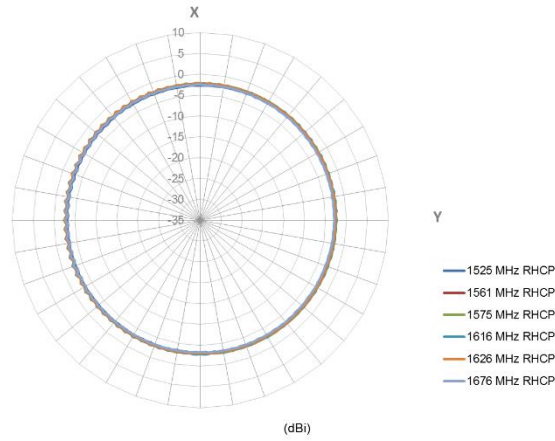
**Figure 13.** 3D Radiation Pattern at 1575 MHz



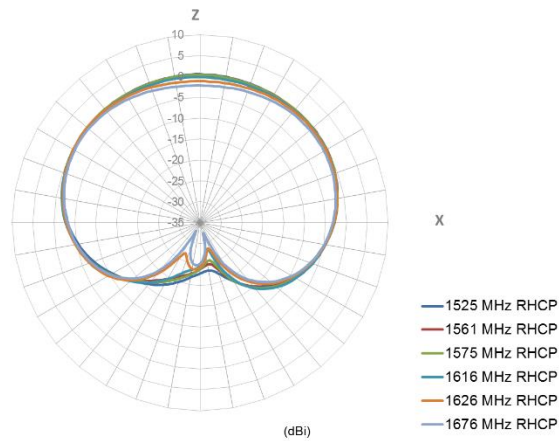
**Figure 14.** 3D Radiation Pattern at 1602 MHz

## 5.2 2D Radiation Patterns

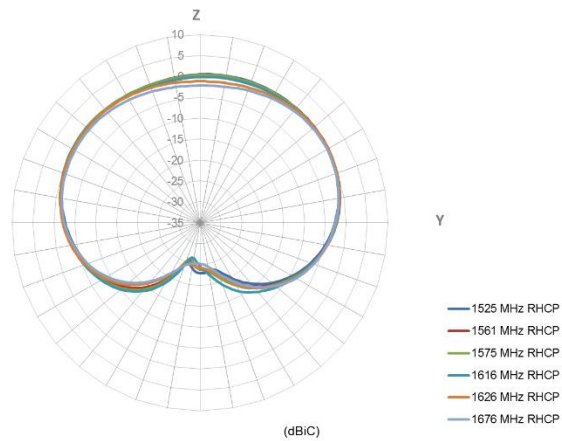
### XY-Plane



### XZ-Plane

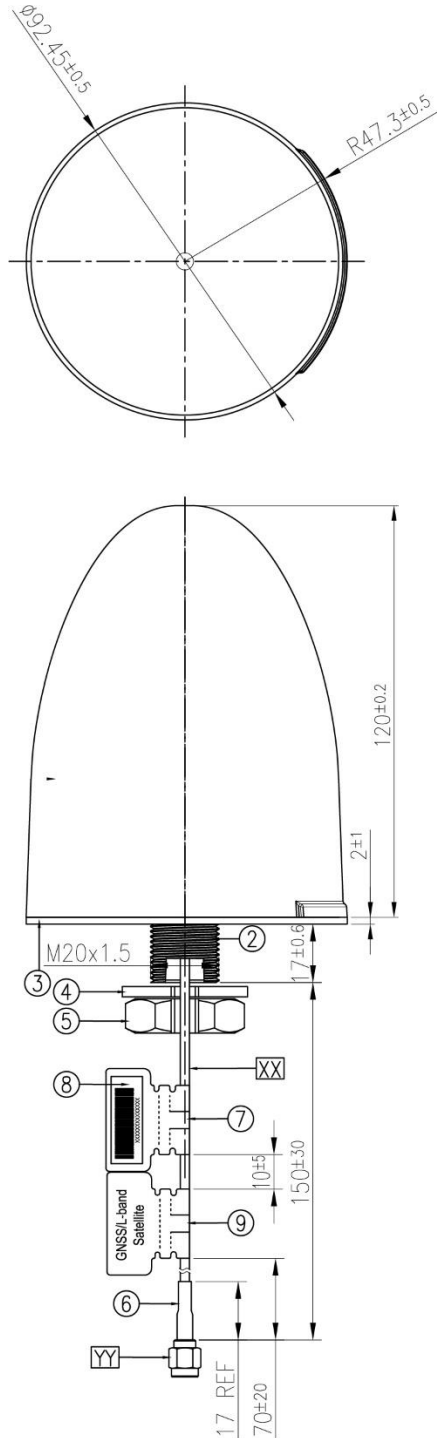


### YZ-Plane



## 5. Mechanical Specifications

### 5.1 Dimensions and Drawing



	Name	Material	Finish	QTY
1	Housing	ABS	Black/UV Coating	1
2	Mini ST Base	Zinc Alloy	Ni Plated	1
3	Double Sided Adhesive Black Foam	3M 9448HK+CR4305	White Liner	1
4	Washer_Cut	Steel	Ni-Zn Plated	1
5	Nut_M20x1.5Px10H Cut	Steel	Ni-Zn Plated	1
6	Heat Shrink Tube	PE	Black	1
7	Empty Label	PEPA	White	1
8	Barcode Label	PET	White	1
9	GNSS/L-band Satellite Label	PEPA	Yellow Brwon	1

	Name	SPEC	Finish	QTY
XX	Cable Type	LMR-195	Black	1
YY	Connector Type	SMA(M)ST	Au Plated	1

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