



## Tango 21

Robust Through Hole Active GNSS L1 Antenna for GPS, Galileo, BeiDou and QZSS



### Key Features

- Robust screw-mount GPS antenna with compact 30.5 mm housing
- High RHCP gain:  $21 \pm 2$  dBiC across top hemisphere, 22 dBiC peak
- Low mismatch for efficient signal transfer ( $VSWR < 2$ )
- Strong satellite lock performance with axial ratio as low as 2.45 dB
- Low current consumption, ideal for power-limited systems (5–15 mA)
- Durable ABS enclosure, suitable for vandal-prone or exposed locations

### General Description

The Tango 21 is Siretta's most compact screw-mount GPS antenna, designed for secure installation in embedded and space-constrained applications.

The built-in Low Noise Amplifier (LNA) delivers up to 22 dBiC gain, enabling strong signal reception that reduces satellite fix times and improves application readiness. With a top hemisphere axial ratio as low as 2.45 dB, the antenna performs reliably in environments prone to multipath interference.

It supports GPS L1, Galileo E1, BeiDou B1C and QZSS L1 constellations for full multi-system compatibility. Supplied as standard with IPEX or MCXM connectors. Custom cable lengths and connector types can be specified for high-volume orders.

### Typical Applications

- Vehicle tracking and fleet management
- Embedded GNSS modules in industrial devices
- Covert or space-limited asset tracking
- Smart metering and remote monitoring units
- Outdoor positioning in challenging environments
- Battery-powered GPS receivers





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### Electrical Specifications

Impedance:	50 Ohm
Polarisation:	RHCP
Centre Frequency:	1575.42 MHz
Supported Bands:	GPS L1, Galileo E1, BeiDou B1C, QZSS L1
Return Loss:	> 27 dB
VSWR:	< 2
Ground Plane Independent:	No
RHCP Gain:	21 ± 2 dBiC (top hemisphere)
Axial Ratio:	< 3
Out-of-band attenuation:	12 dB at CF + 50 MHz, 16 dB at CF – 50 MHz
Noise Figure:	< 1.5 dB
Supply Voltage:	2.2 – 5.0 V DC
Current Consumption:	5 – 15 mA

### Environmental Specifications

Operational Temperature Range:	–40 to +85 °C
Storage Temperature Range:	–40 to +85 °C
Relative Humidity:	Up to 95%

### Mechanical Specifications

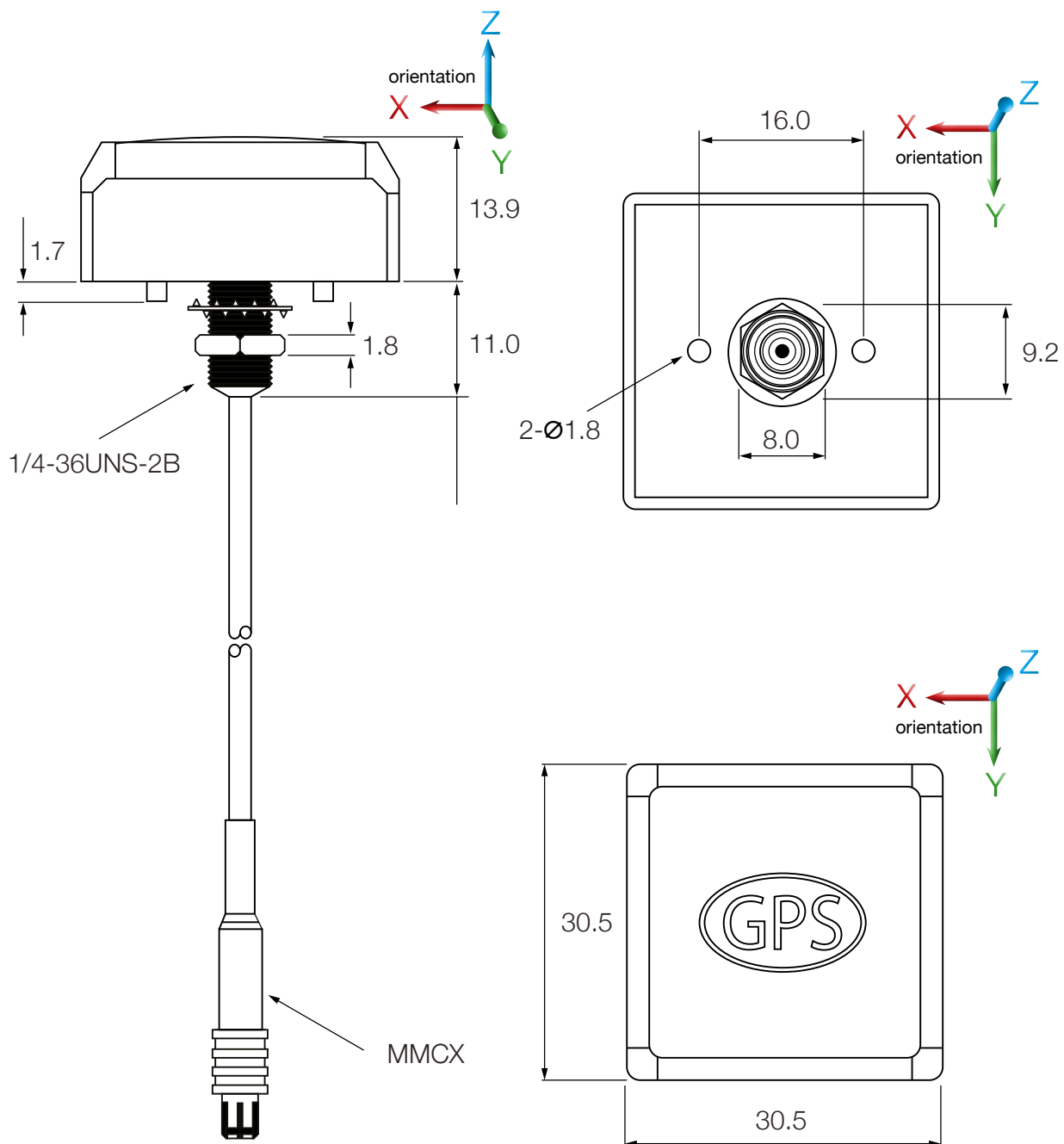
Dimension:	30.5 x 30.5 x 13.9 mm
Weight:	45 g
Connector:	IPEX, MCXM or SMA Male (specify when ordering)
Cable:	RG178
Mounting Methods:	Screw mount

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### Dimensional Drawing

Unit: mm



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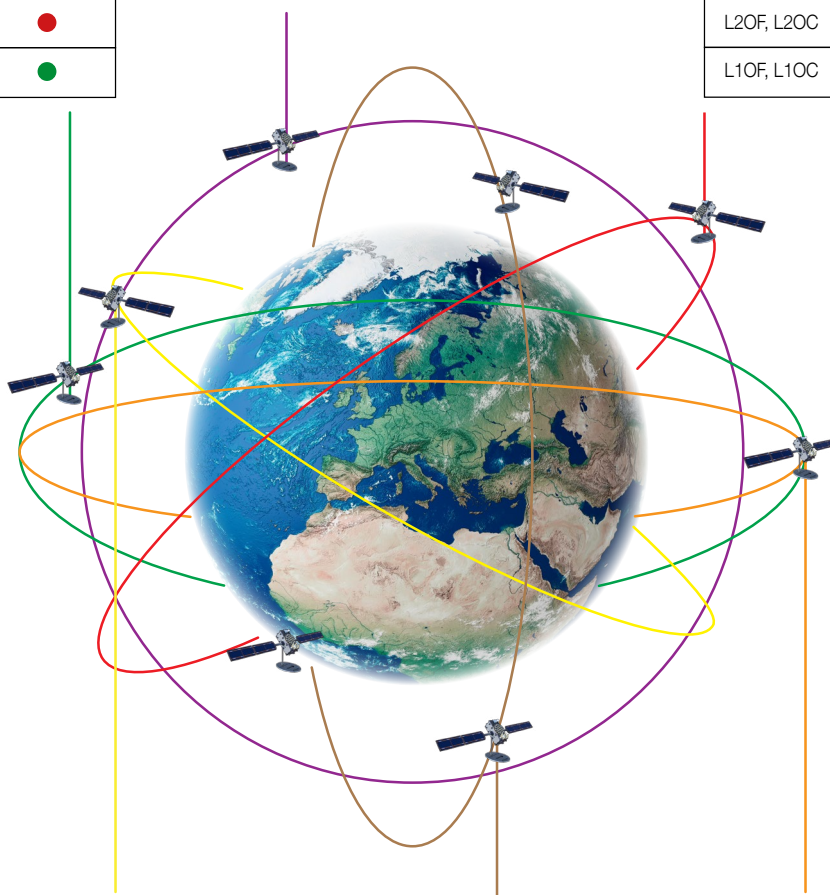
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### Spectrum Coverage

GPS		
Band	Frequency	Use Indicator
L5	1176.45	●
L2	1227.6	●
L1	1575.42	●

NavIC		
Band	Frequency	Use Indicator
L5	1176.45	●

GLONASS		
Band	Frequency	Use Indicator
L3OC	1202.025	●
L2OF, L2OC	1246	●
L1OF, L1OC	1602	●



Galileo		
Band	Frequency	Use Indicator
E5a	1176.45	●
E5b	1207.14	●
E6-I, E6-Q	1278.75	●
E1-I, E1-Q	1575.42	●

BeiDou		
Band	Frequency	Use Indicator
B2a	1176.45	●
B2I, B2b	1207.14	●
B3I	1268.52	●
B1I	1561.098	●
B1C	1575.42	●

QZSS		
Band	Frequency	Use Indicator
L5	1176.45	●
L2	1227.6	●
L6	1278.75	●
L1	1575.42	●

● Suitable band

● Adequate band in good signal conditions

● Likely to be unsuitable



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### GNSS Standards Band Support

	Electrical Interface		Spherical RF Measurements			
Centre Frequency (MHz)	VSWR	Return Loss (dB)	Average RHCP Gain (dBiC)	Peak RHCP Gain (dBiC)	Median Axial Ratio (dB)	Minimum Axial Ratio (dB)
1575.42	1.0852	-27.7936	16.80	22.30	5.80	0.07

	Top hemisphere RF Measurements				Zenith RF Measurements	
Centre Frequency (MHz)	Average RHCP Gain (dBiC)	Peak RHCP Gain (dBiC)	Median Axial Ratio (dB)	Minimum Axial Ratio (dB)	RHCP Gain at Zenith (dBiC)	Axial Ratio at Zenith (dB)
1575.42	21.29	22.30	2.45	0.07	21.20	2.99

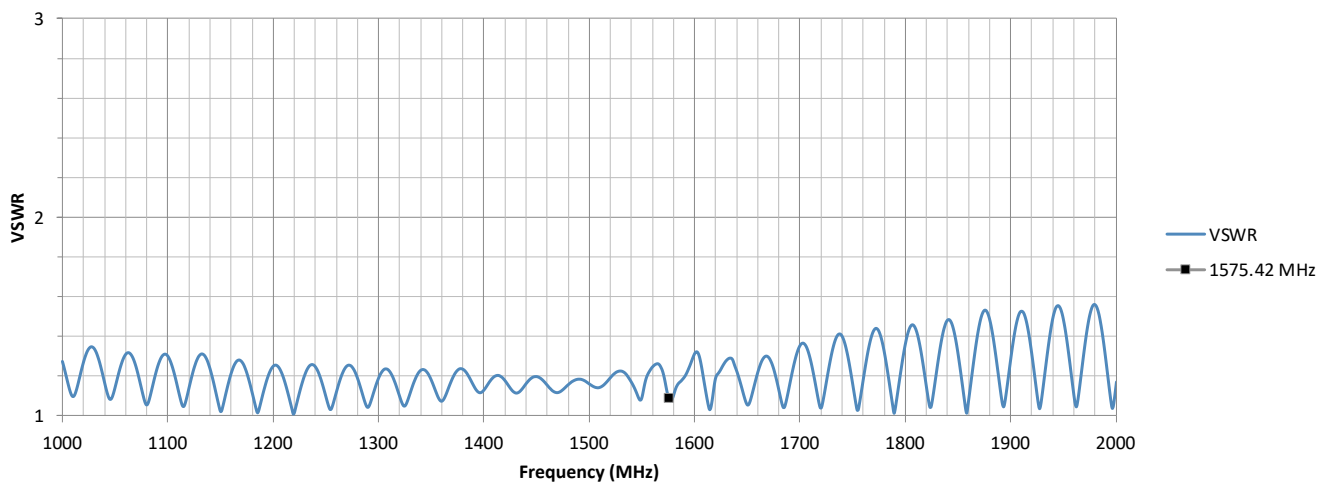


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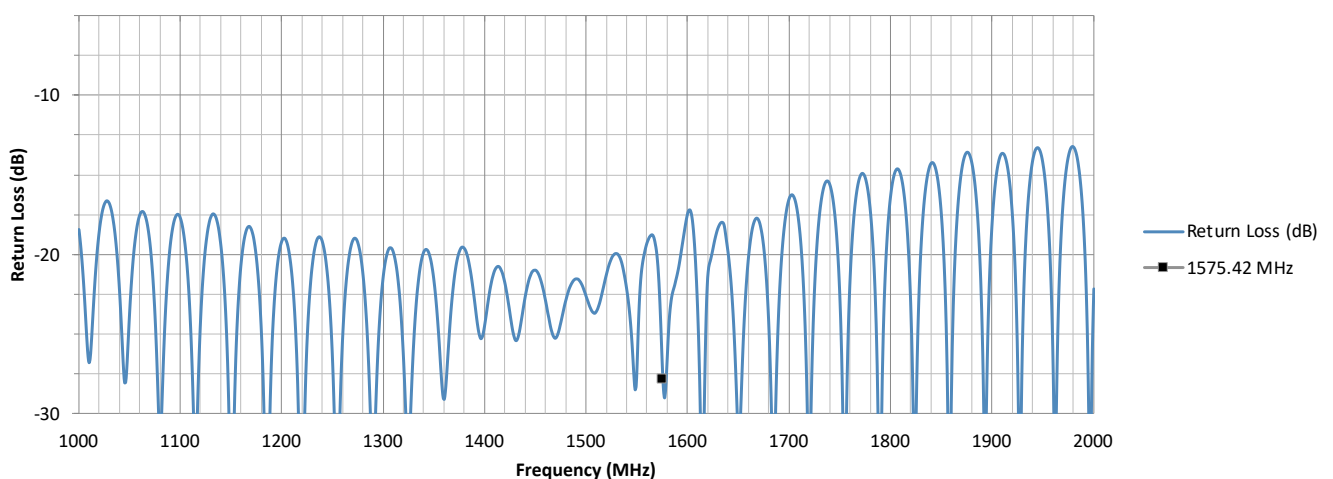
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### Electrical

VSWR Vs Frequency



Return Loss (dB) Vs Frequency

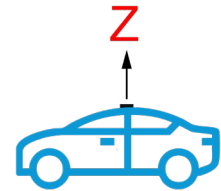


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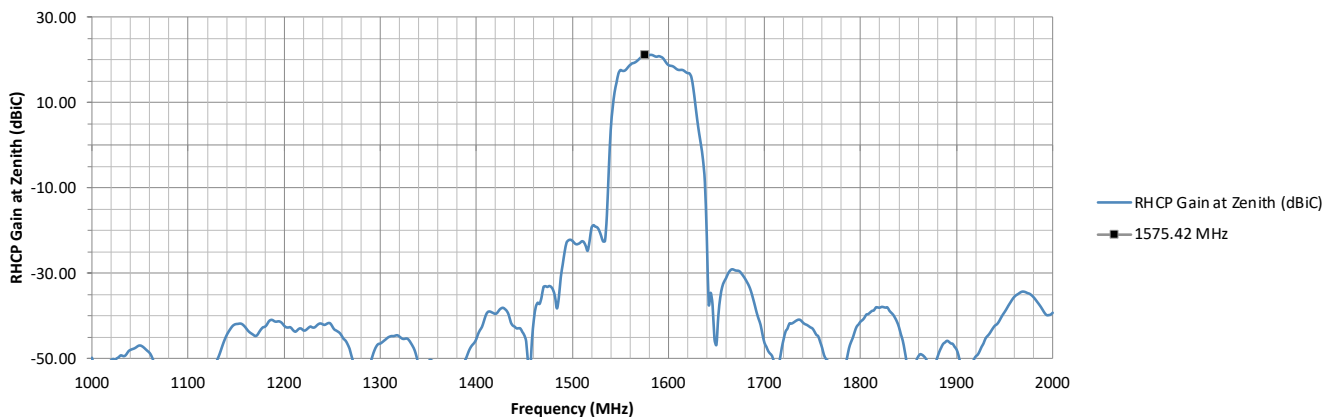
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### RF Zenith

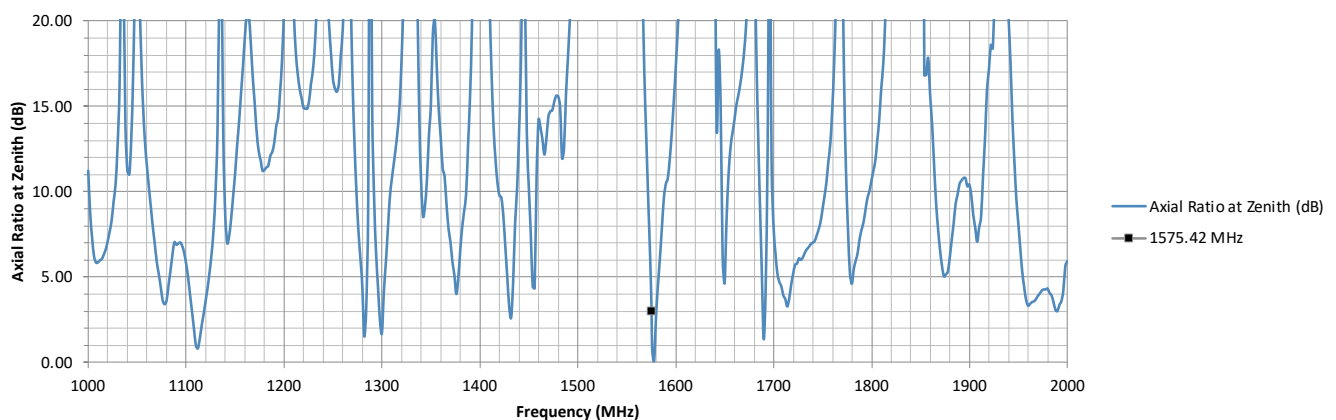
This page presents the RHCP Gain at Zenith and the Axial Ratio at Zenith as a function of frequency. These measurements indicate how well the antenna performs when receiving signals directly from satellites overhead (zenith direction). A higher RHCP gain ensures strong signal reception, while a lower axial ratio signifies better polarization purity for optimal GNSS performance.



**RHCP Gain at Zenith Vs Frequency**



**Axial Ratio at Zenith Vs Frequency**

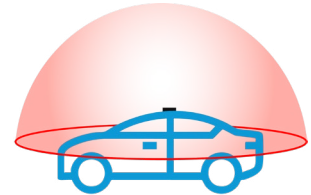


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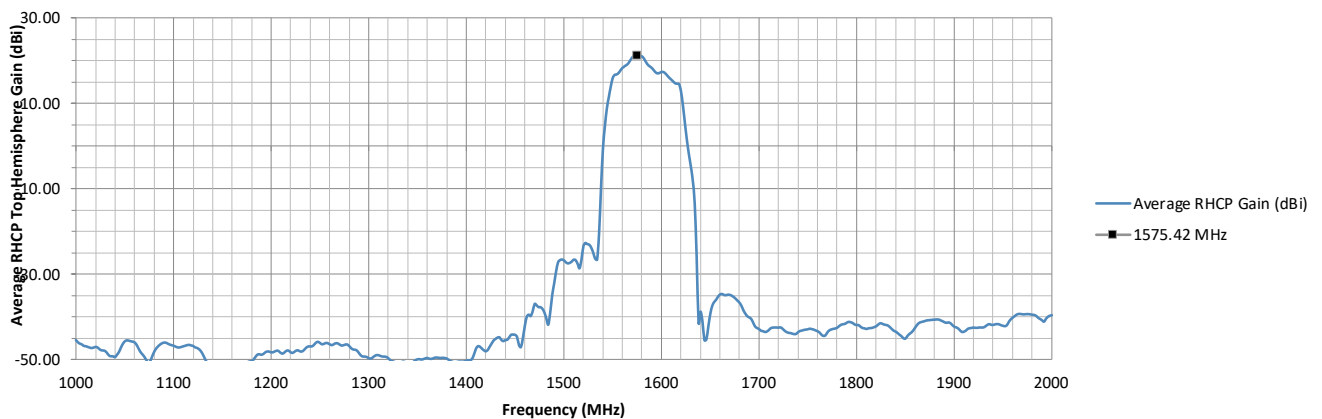
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### RF Top Hemisphere

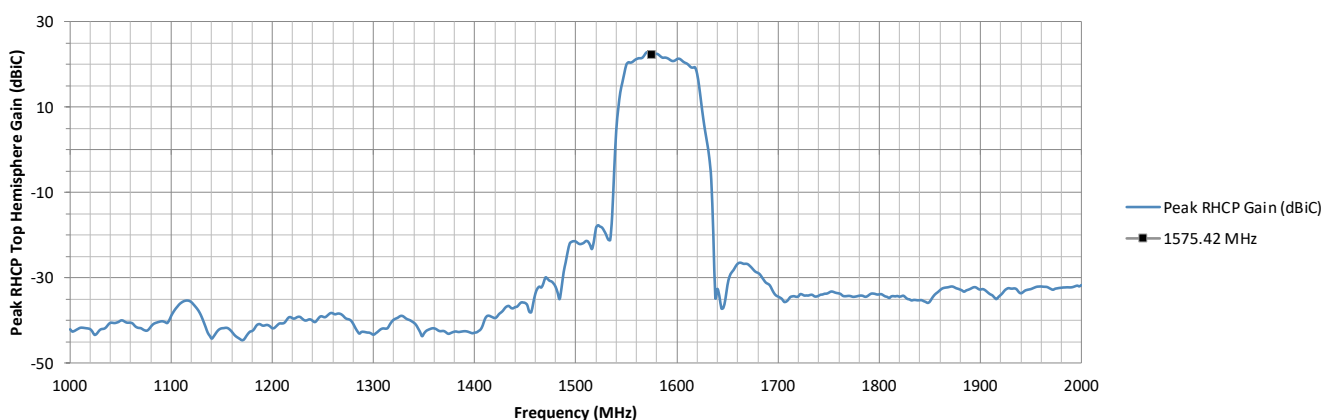
The graphs on this page showcase the Average and Peak RHCP Gain in the Top Hemisphere. These measurements assess how effectively the antenna receives signals from satellites positioned in the upper half of the sky. Strong RHCP gain in this region is critical for reliable GNSS reception, especially in environments where satellites may not always be directly overhead.



**Average RHCP Top Hemisphere Gain Vs Frequency**



**Peak RHCP Top Hemisphere Gain Vs Frequency**

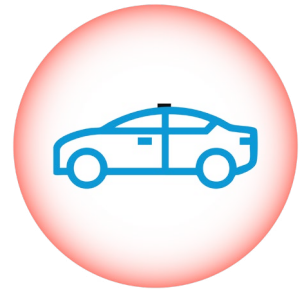


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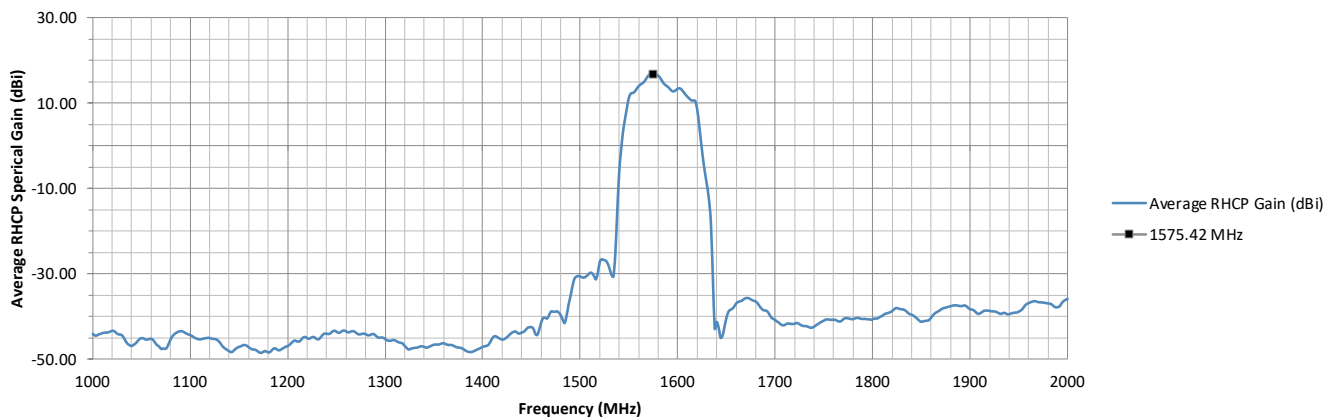
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### RF Spherical

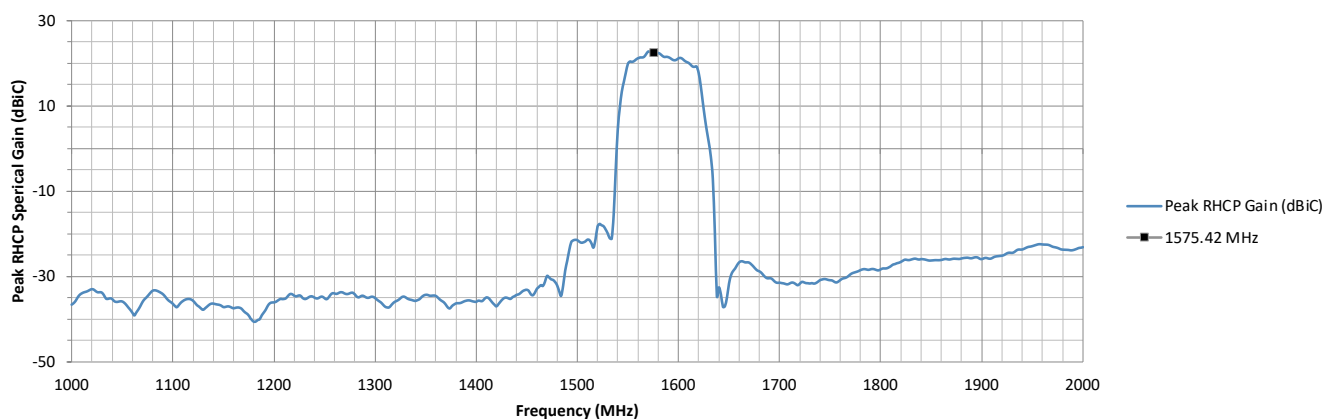
This page displays the Average and Peak RHCP Gain across the entire spherical coverage of the antenna. These metrics provide a comprehensive view of the antenna's ability to receive signals from satellites at all elevations and directions. Consistently high gain across the sphere ensures strong and stable GNSS reception in a variety of operating conditions.



**Average RHCP Spherical Gain Vs Frequency**



**Peak RHCP Spherical Gain Vs Frequency**



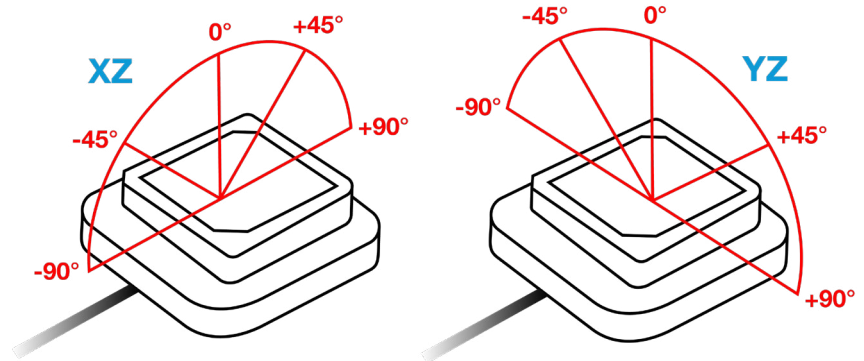
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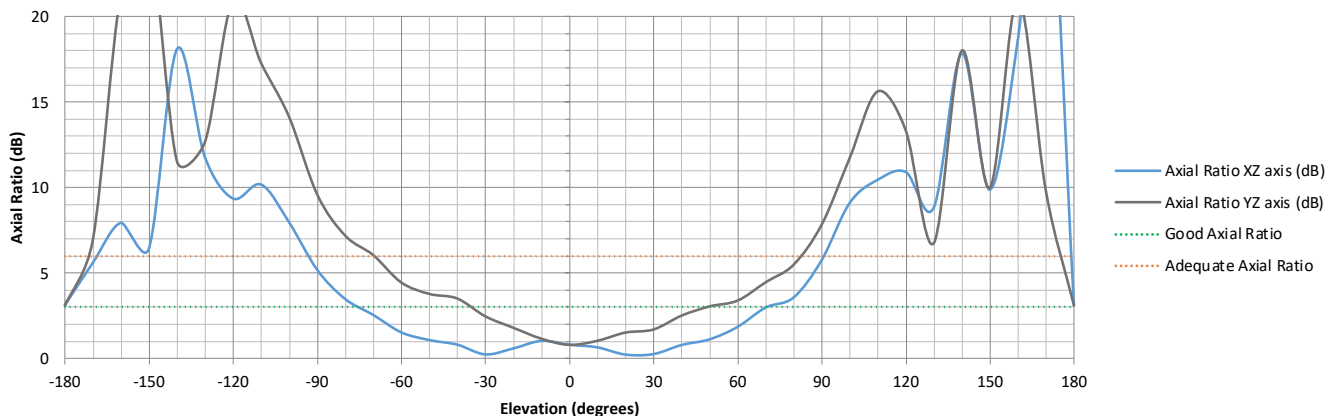
### ZX and YZ Plane Axial Ratio Plots (Zenith is at 0 degrees)

This page shows how well the antenna maintains circular polarization at different elevation angles.

A lower axial ratio ensures better GNSS signal reception, especially at low elevations, which is crucial for applications requiring strong performance in obstructed environments or wide-angle satellite visibility.



**XZ and YZ Axial Ratio at 1575.42 MHz**

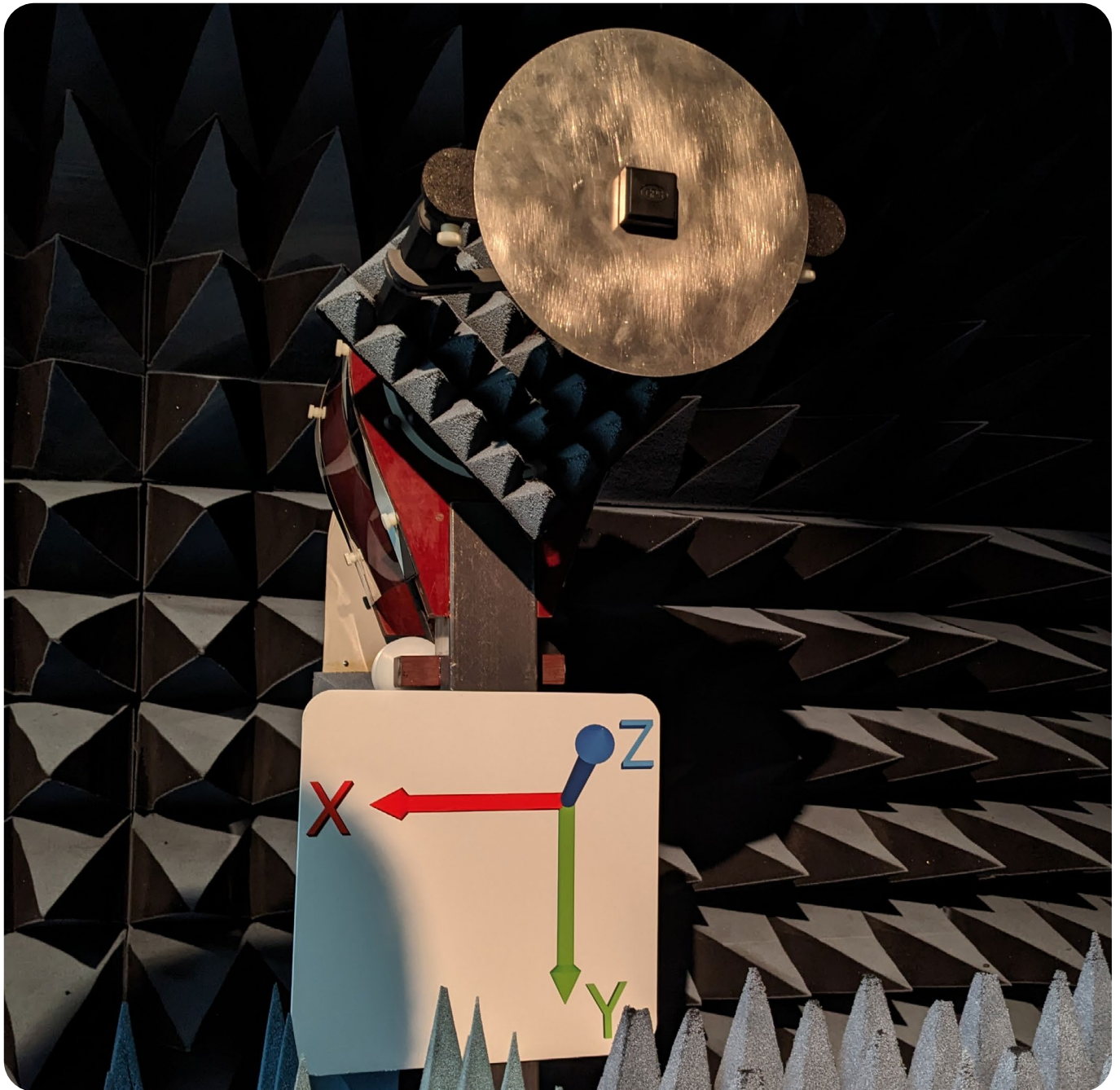




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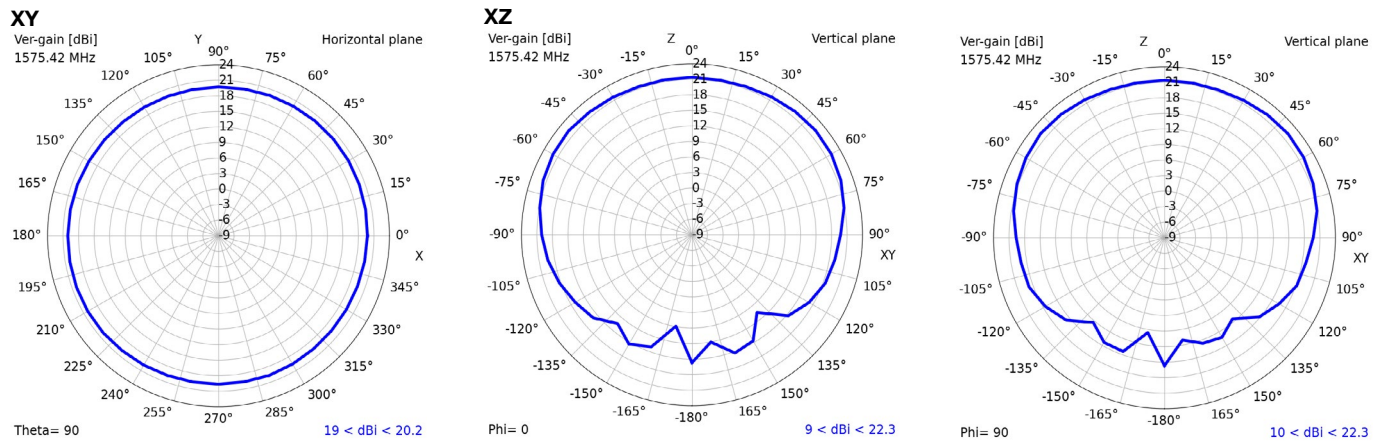
### Test Setup (in Ø200 mm Ground Plane)



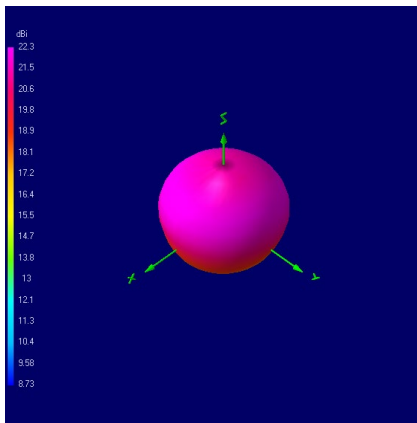
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### 2D Radiation Plots (1575.42 MHz)



### 3D Radiation Plot (1575.42 MHz)



**NOTE:** All 3D radiation plots are shown with Theta = 45 and Phi = 45.



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### Ordering Details:

Part Number	Description
TANGO21/0.3M/IPEX/S/S/26	Robust Through Hole GPS Antenna, 300mm Cable IPEX Connector
TANGO21A/0.21M/MCXM/S/S/26	Robust Through Hole GPS Antenna, 210mm Cable MCXM Male Connector
TANGO21/0.3M/SMAM/S/S/26	Robust Through Hole GPS Antenna, 300mm Cable SMA Male Connector
TANGO21/3M/SMAM/S/S/26	Robust Through Hole GPS Antenna, 3M Cable SMA Male Connector

*Alternative cable lengths and connector types can be specified for high-volume projects.  
Please email - [siretta@sales.com](mailto:siretta@sales.com)*