Siretta
Enabling Industrial IoT

Delta 67

Ø 27 mm Stubby Active Multi-Band L1, L2, L5 & L6 Helical Antenna



Multi-Band GNSS
1176–1602 MHz

Active Antenna
Integrated LNA

RHCP Polarisation
GNSS Optimised

QFH Design
Low-Elevation Reception

General Description

The Delta 67 is a high-performance, active multi-band L1, L2, L5 & L6 GNSS terminal mount SMA stubby antenna designed to deliver highly accurate positioning, navigation and timing for precision applications without the need for a ground plane. Supporting all major global and regional satellite constellations, the Delta 67 provides comprehensive coverage across the primary GNSS L-band frequencies from 1176 MHz to 1602 MHz.

This antennas advanced Quadrifilar Helix element and integrated low noise amplifier enables simultaneous multi-frequency reception with excellent right-hand circularly polarised performance. Delivering 28–33 dBiC RHCP gain at the top hemisphere together with a low axial ratio of up to 1.83 dB, the antenna provides consistent hemispherical coverage, improving satellite availability, reducing multipath interference and maintaining accurate positioning. This high-performance combination supports the fast, reliable signal acquisition required for Real-Time Kinematic positioning and Grade of Fixed Holdover timing systems.

The Delta 67's SWaP optimised form factor is ideally suited for easy external mounting to portable and handheld equipment,
embedding into UAVs, and securing high-precision, multi-constellation positional accuracy in rugged asset trackers or autonomous vehicular sub-assemblies.

Key Features

- Supports all major global GNSS frequencybands (L1, L2, L5 & L6) from 1176 – 1602 MHz
- Advanced QFH technology and integrated LNA for superior all-sky satellite reception
- Ground plane independent for easy installation
- Top Hemisphere RHCP Gain of between 28-33 dBiC and low axial ratio up to 1.83 dB
- Terminal-mounted SMA Male connection for easy equipment integration
- Compact lightweight form factor for easy efficient integration

Typical Applications

- Precision surveying equipment
- Construction safety and infrastructure protection systems
- Autonomous vehicles and UAVs
- Machine control and intelligent transport systems
- Timing and synchronisation equipment

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Electrical Specifications

Impedance:	50 Ohm
Polarisation:	RHCP
Frequency Range:	1176.45 – 1602 MHz
Return Loss:	≥ -19.74 dB
VSWR:	≤ 1.53
Ground plane independent:	Yes
RHCP Gain at Zenith:	≤ 38.87 dBiC
Axial Ratio at Zenith:	≤ 1.83 dB
Supply Voltage:	3 - 12 V DC
Current Consumption:	≤ 55 mA

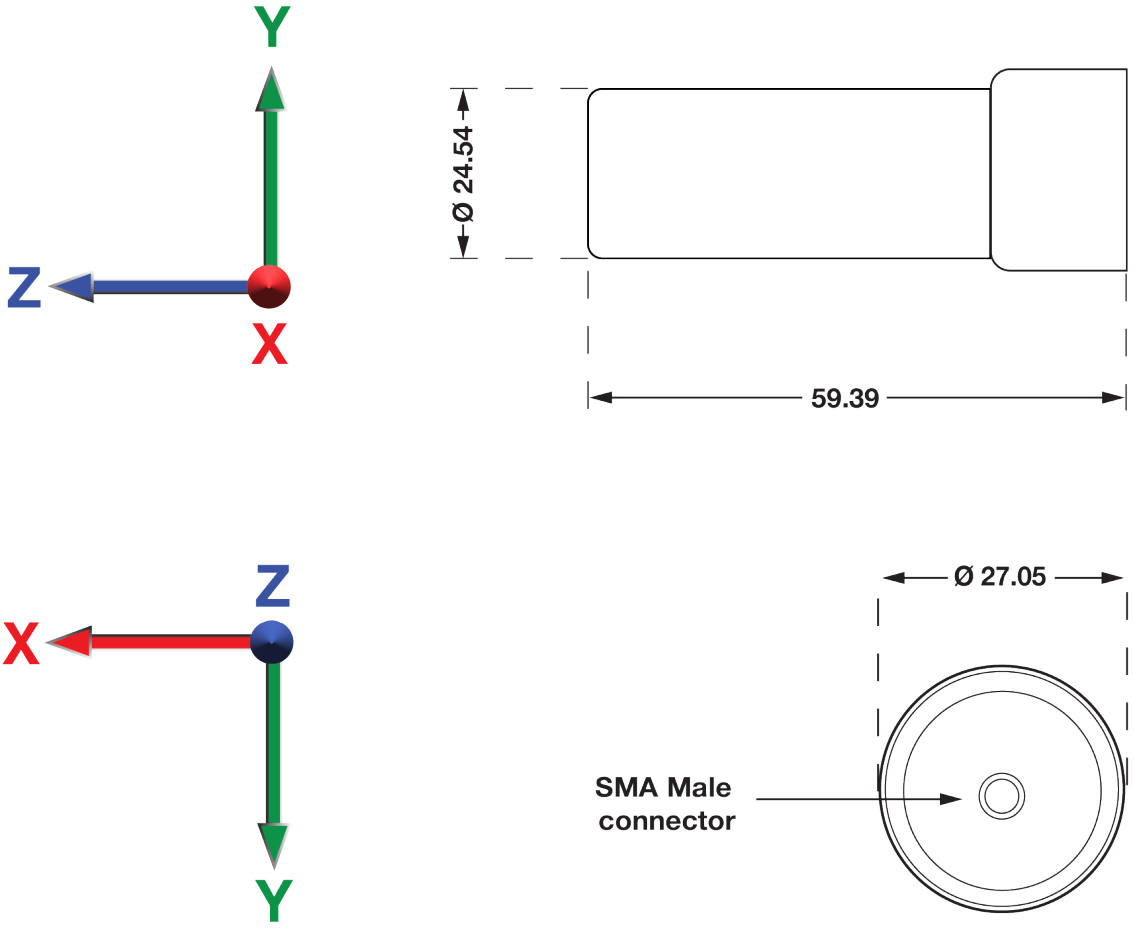
Environmental Specifications

Operating Temperature range:	-40°C to 75 °C
Storage Temperature range:	-40°C to 75 °C

Mechanical Specifications

Dimensions:	Ø = 27.05 mm H = 59.39 mm
Weight:	16 g
Connector:	SMA Male
Mounting method:	Direct
Housing materials:	ABS Radome

Mechanical Drawing



Note: Dimensions in mm

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Delta 67

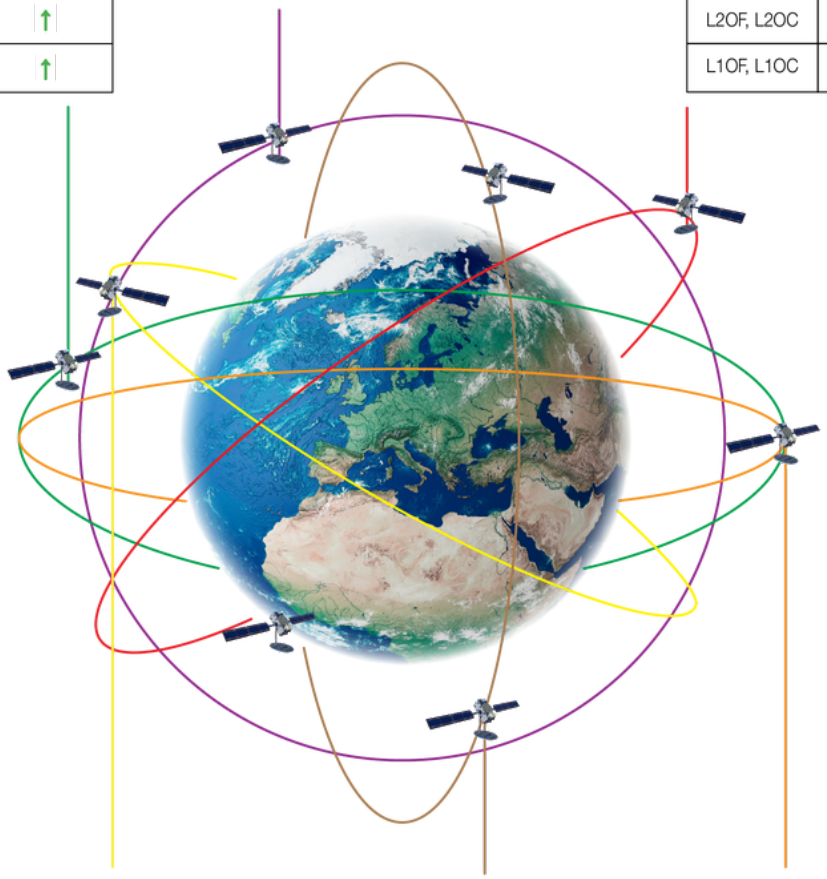
Ø 27 mm Stubby Active Multi-Band L1, L2, L5 & L6 Helical Antenna

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

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)
1176.45	1.5276	-13.6085	28.97	36.13	2.39	0.05
1202.025	1.3586	-16.3620	31.19	38.93	2.45	0.05
1207.14	1.4549	-14.6433	30.44	38.58	2.42	0.09
1227.6	1.5166	-13.7532	24.26	34.11	3.74	0.12
1246	1.4465	-14.7747	22.37	32.74	4.05	0.05
1268.52	1.3131	-17.3714	20.72	31.41	3.97	0.06
1278.75	1.3725	-16.0820	18.57	29.30	3.98	0.08
1561.098	1.2438	-19.2788	23.11	31.92	6.80	0.22
1575.42	1.2297	-19.7419	22.43	30.73	6.28	0.09
1602	1.2738	-18.3871	24.09	31.59	4.96	0.07

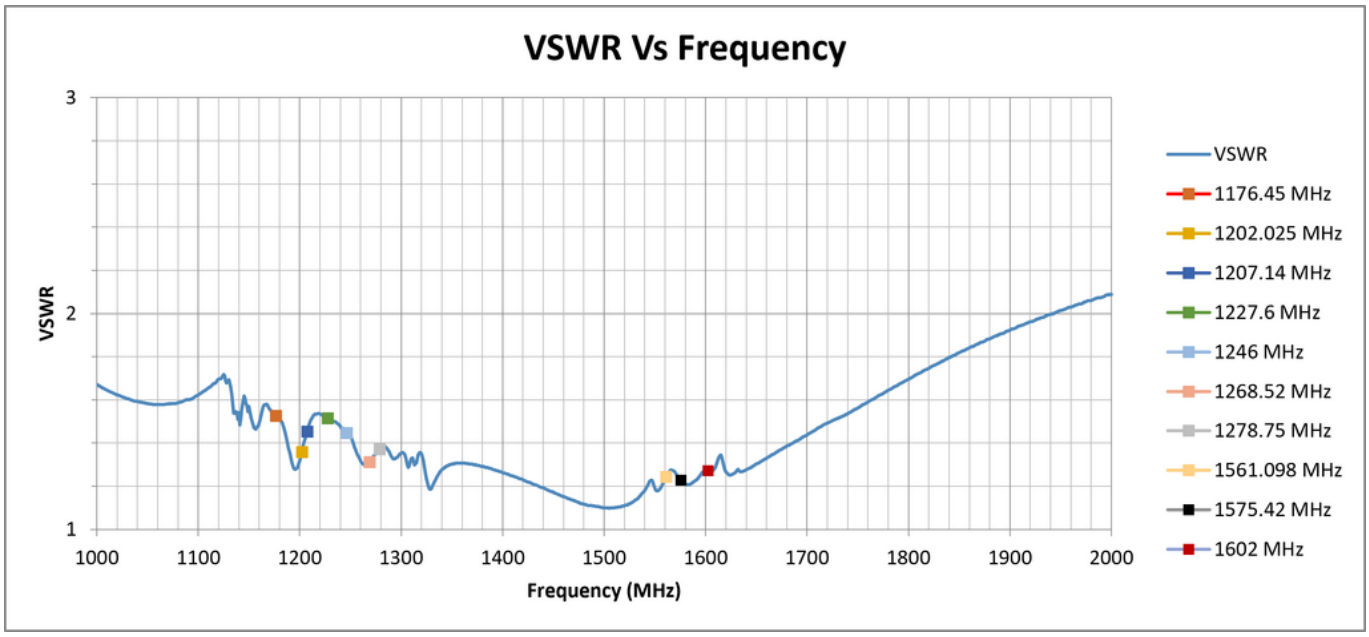
Delta 67

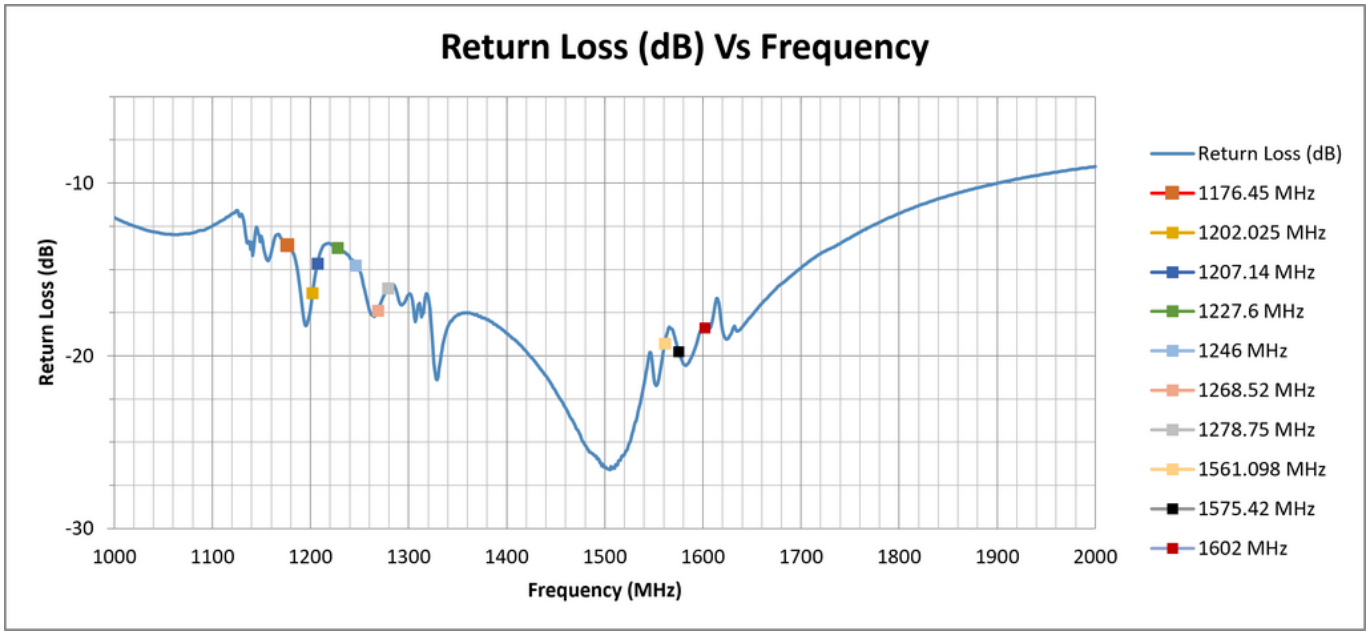
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Top Hemisphere RF Measurements					Zenith RF Measurements	
Centre Frequency (MHz)	Average RHCP Gain (dBiC)	Peak RHCP Gain (dBiC)	Median Axial Ratio (dB)	Minimum Axial Ratio (dB)	RHCP Gain at Zenith (dBiC)	Axial Ratio at Zenith (dB)
1176.45	33.12	36.13	1.92	0.05	35.91	1.83
1202.025	35.99	38.93	1.70	0.05	38.87	0.68
1207.14	35.68	38.58	1.58	0.09	38.58	0.38
1227.6	31.18	34.11	1.34	0.12	34.11	0.62
1246	29.79	32.74	1.22	0.05	32.74	0.73
1268.52	28.49	31.41	0.92	0.06	31.37	0.55
1278.75	26.38	29.30	0.81	0.08	29.23	0.51
1561.098	29.36	31.92	2.53	0.22	31.92	0.55
1575.42	28.26	30.73	2.80	0.09	30.79	0.12
1602	29.25	31.59	2.41	0.07	32.16	0.43

RF Matching Performance

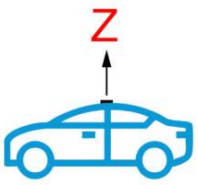
This section illustrates the antenna's impedance matching characteristics across the operating frequency range using VSWR and Return Loss measurements.

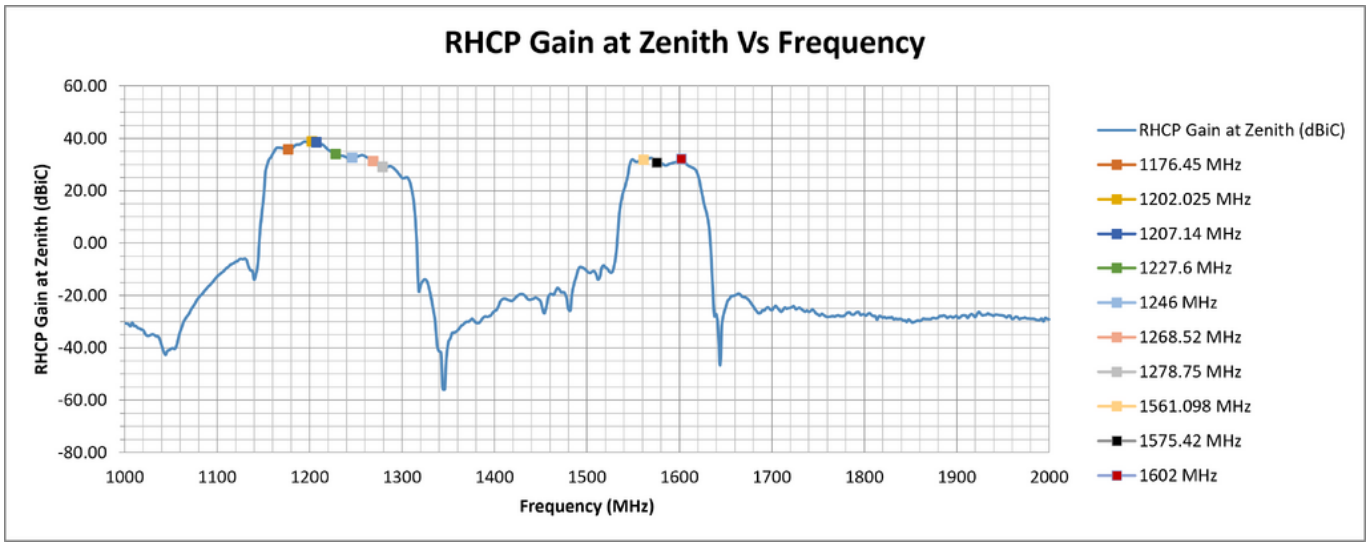


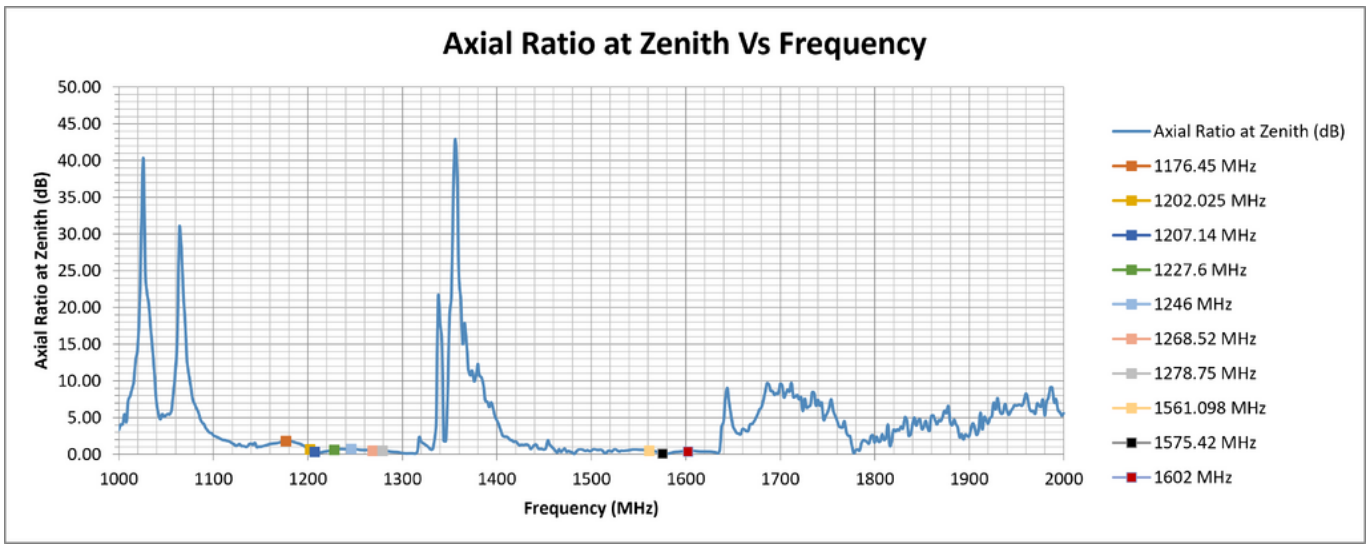


RF Zenith

The following graphs represent 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 polarisation purity for optimal GNSS performance.

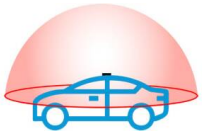


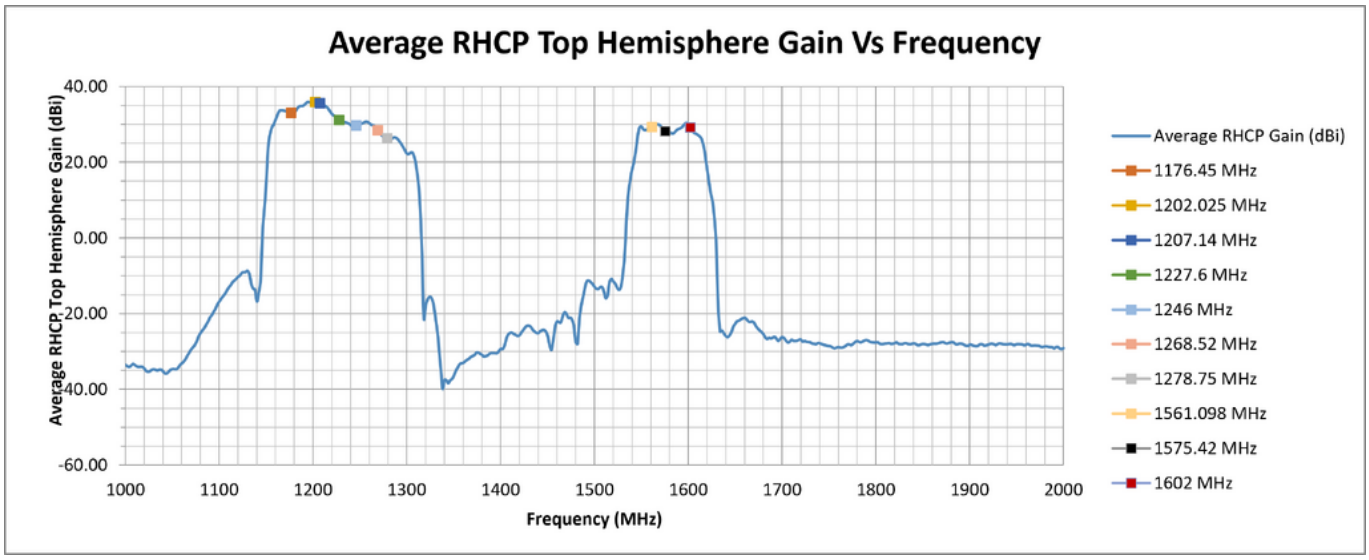


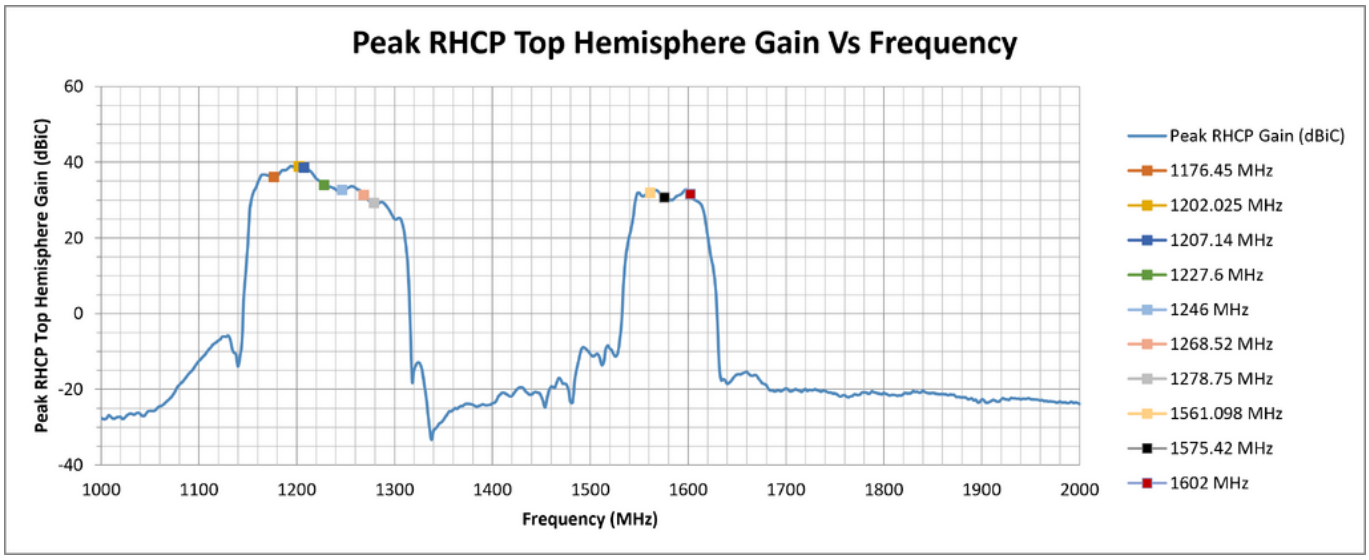


RF Top Hemisphere

The following graphs show 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.

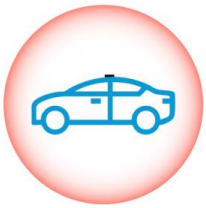


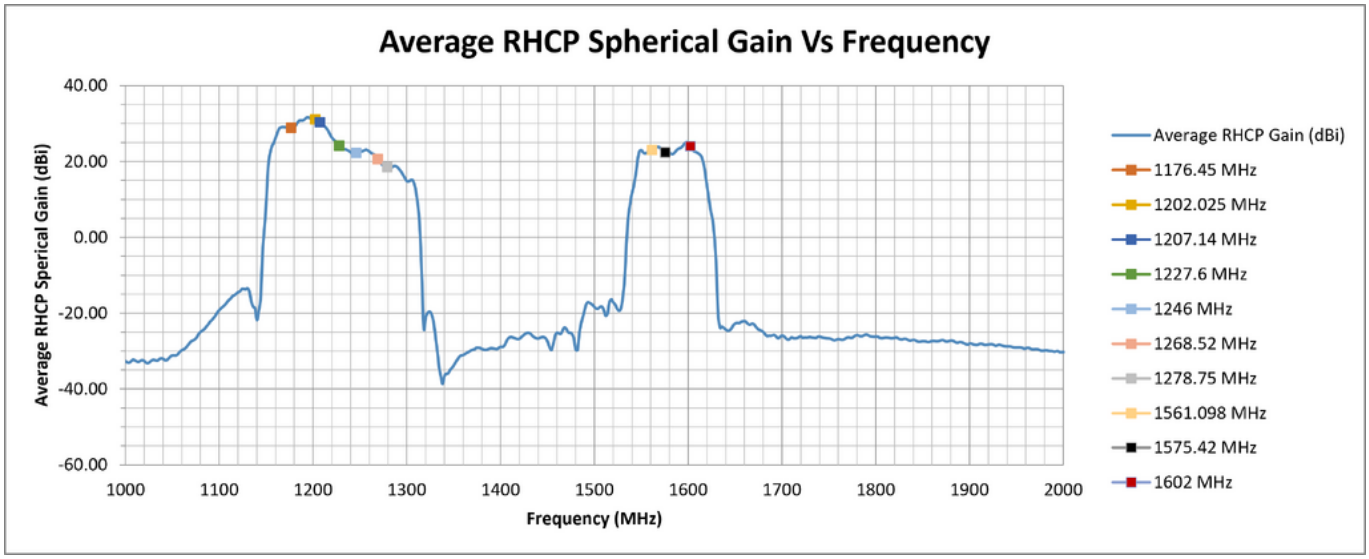


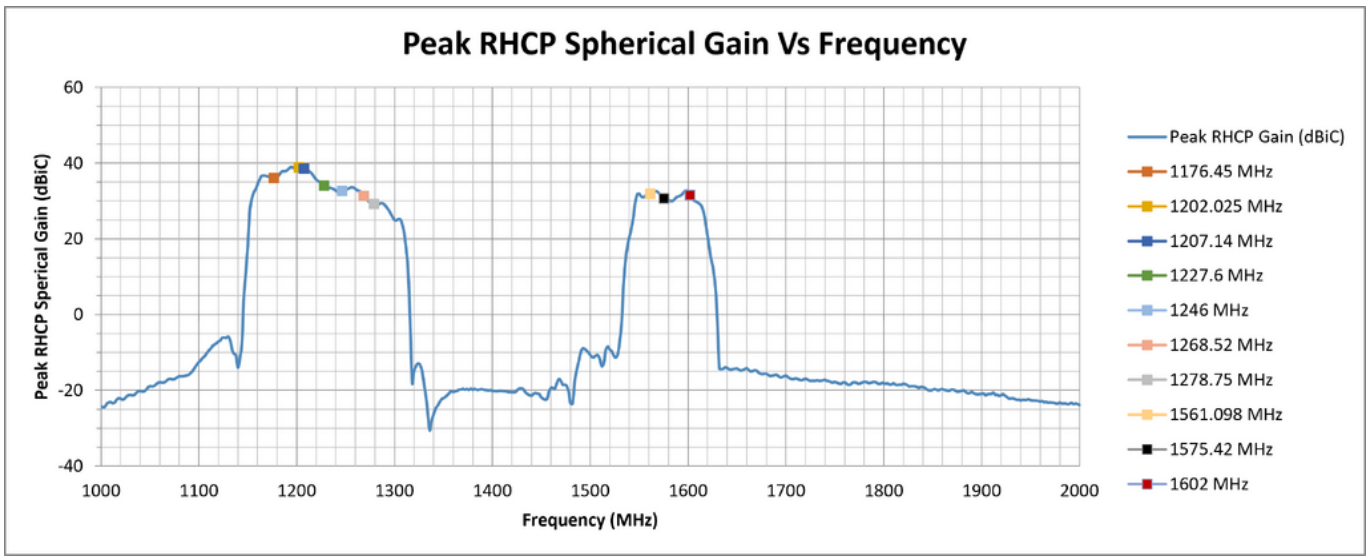


RF Spherical

The following graphs display 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.

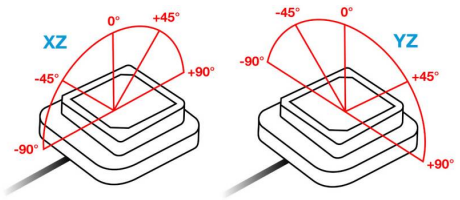


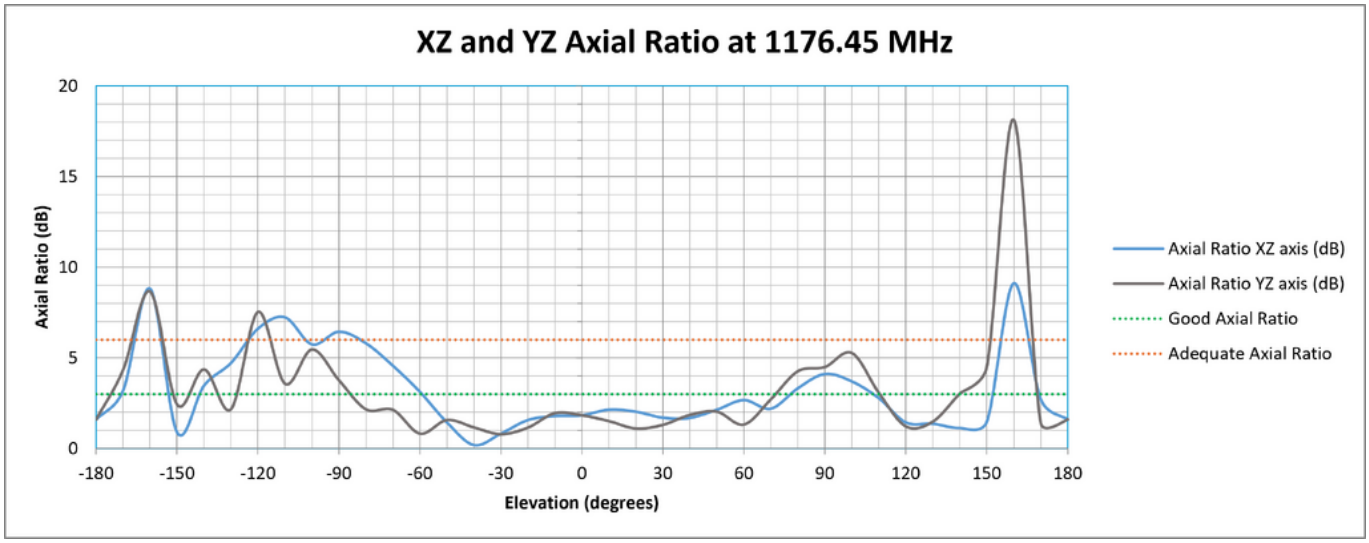


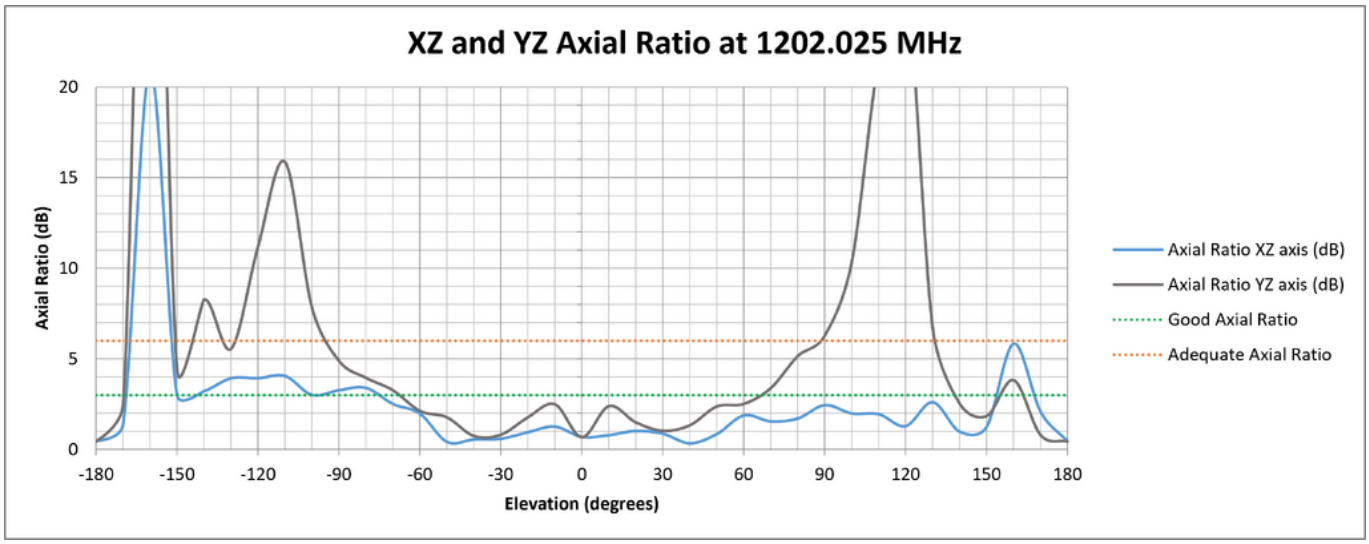


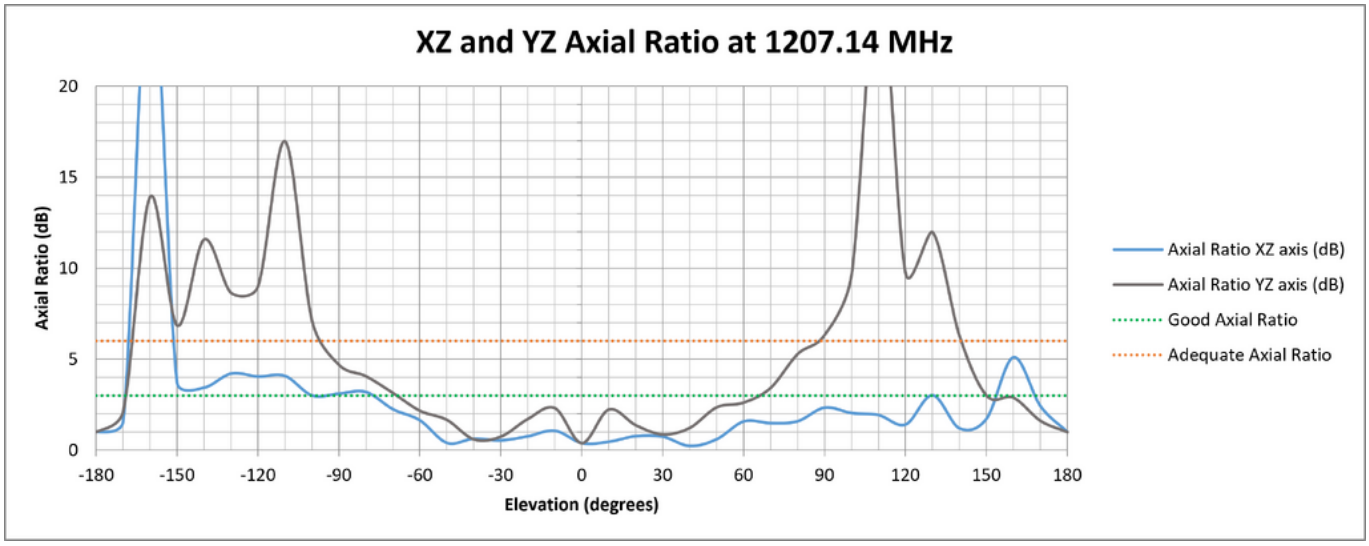
ZX and YZ Plane Axial Ratio Plots (Zenith is at 0 degrees)

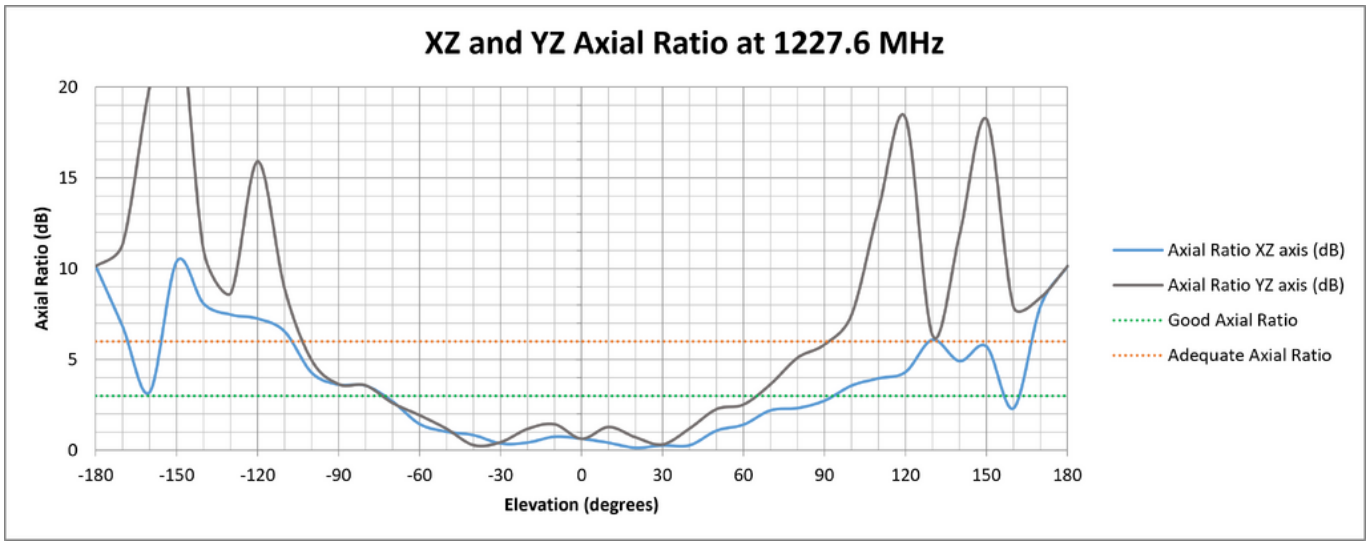
The following graphs show how well the antenna maintains circular polarisation at different elevation angles. A lower axial ratio ensures better GNSS signal reception, especially at low elevations, which is crucial for applications requiring strong performance in obstructed environments or wide-angle satellite visibility.

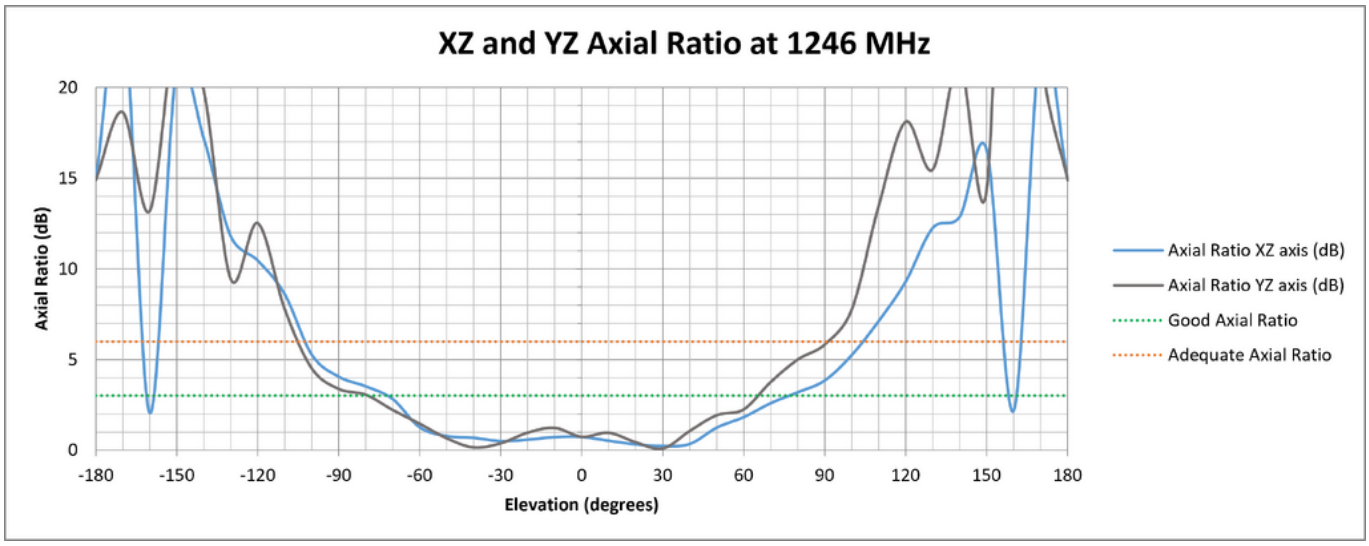


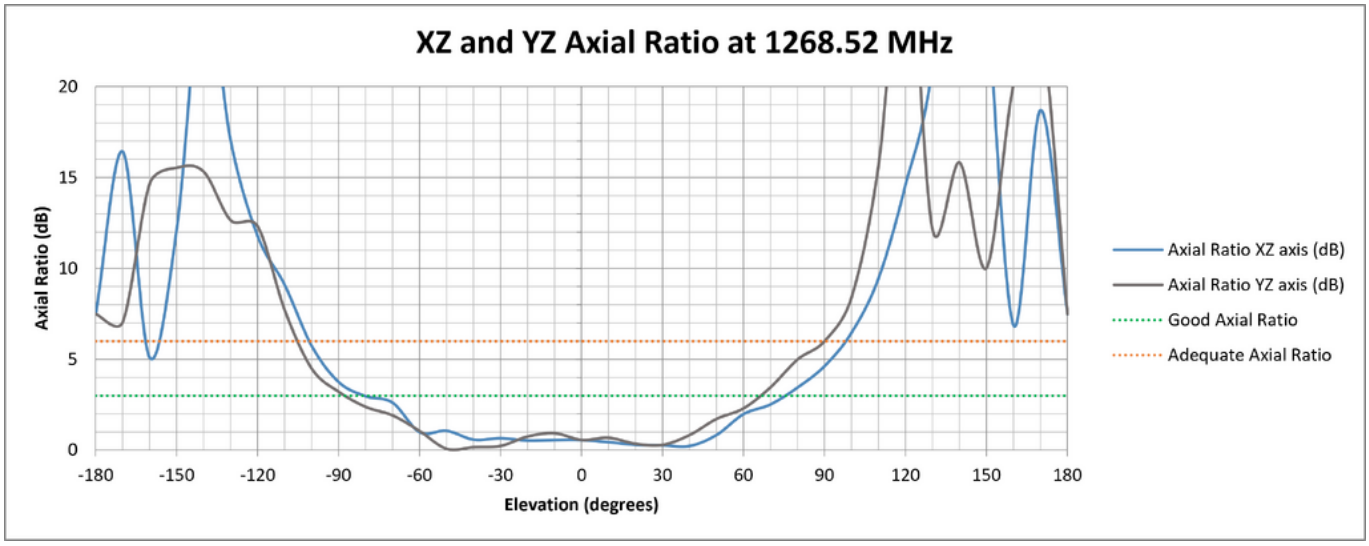


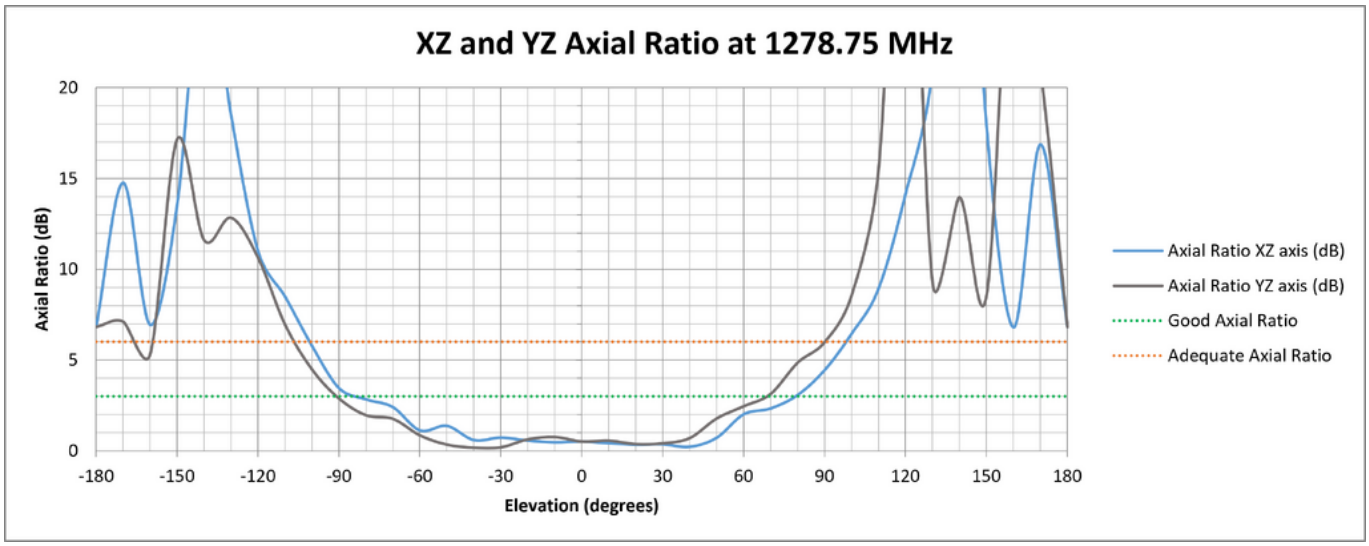


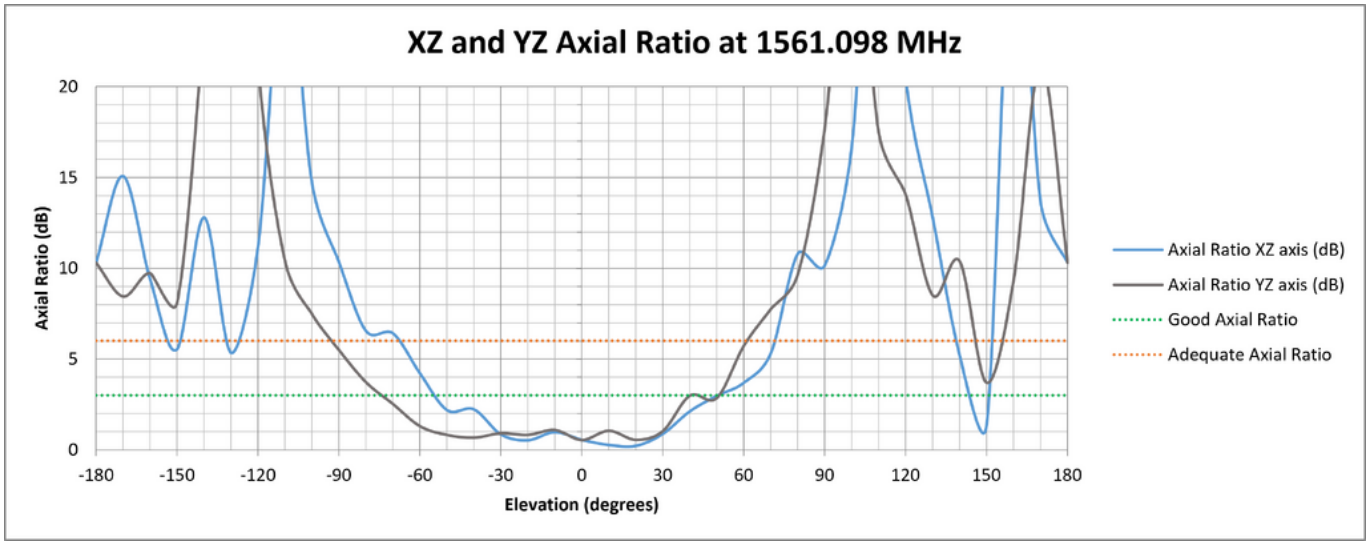

XZ and YZ Axial Ratio at 1207.14 MHz
Axial Ratio (dB)
20
15
10
5
0
-180
-150
-120
-90
-60
-30
0
30
60
90
120
150
180
Elevation (degrees)
Axial Ratio XZ axis (dB)
Axial Ratio YZ axis (dB)
Good Axial Ratio
Adequate Axial Ratio

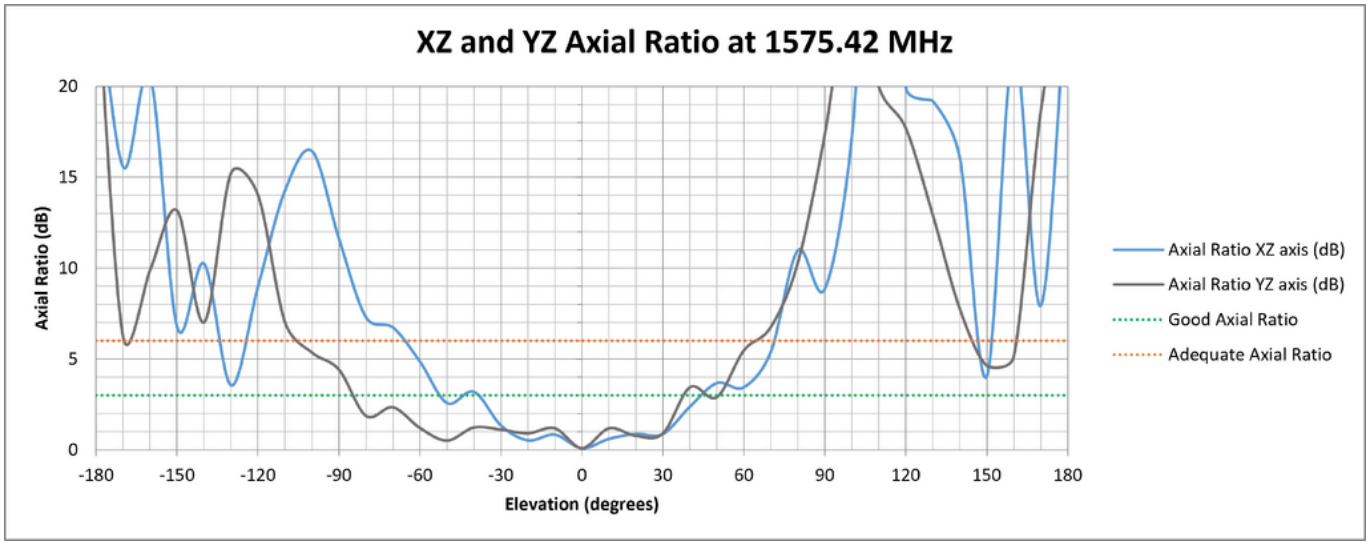

XZ and YZ Axial Ratio at 1227.6 MHz
Axial Ratio (dB)
20
15
10
5
0
-180
-150
-120
-90
-60
-30
0
30
60
90
120
150
180
Elevation (degrees)
Axial Ratio XZ axis (dB)
Axial Ratio YZ axis (dB)
Good Axial Ratio
Adequate Axial Ratio

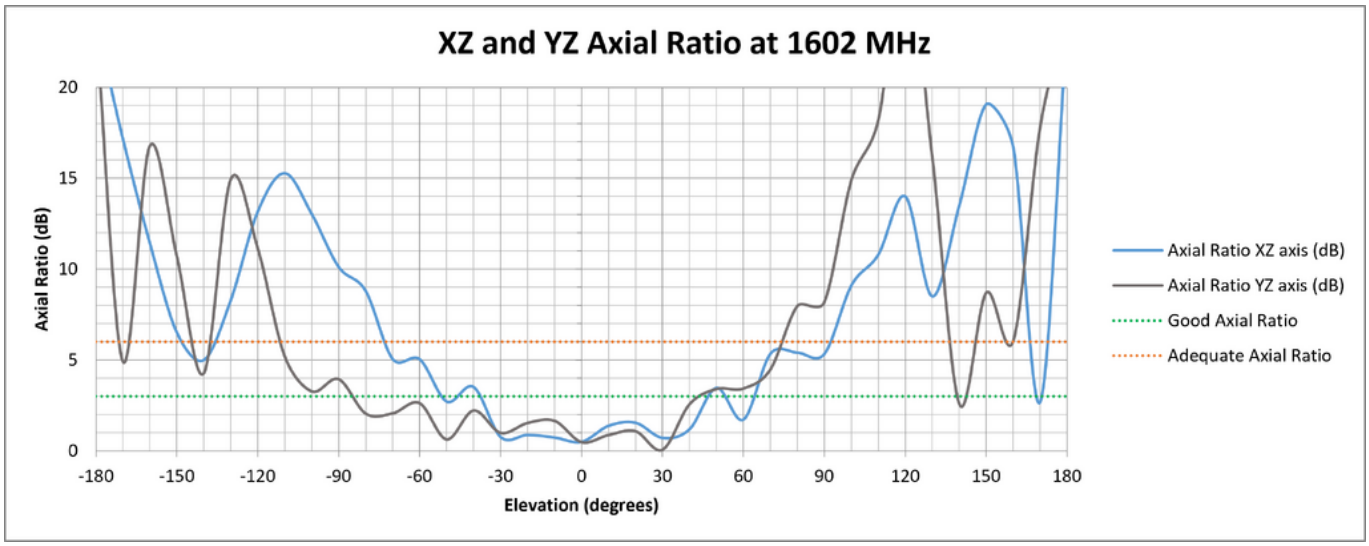

XZ and YZ Axial Ratio at 1246 MHz
Axial Ratio (dB)
20
15
10
5
0
-180
-150
-120
-90
-60
-30
0
30
60
90
120
150
180
Elevation (degrees)
Axial Ratio XZ axis (dB)
Axial Ratio YZ axis (dB)
Good Axial Ratio
Adequate Axial Ratio


XZ and YZ Axial Ratio at 1268.52 MHz
Axial Ratio (dB)
20
15
10
5
0
-180
-150
-120
-90
-60
-30
0
30
60
90
120
150
180
Elevation (degrees)
Axial Ratio XZ axis (dB)
Axial Ratio YZ axis (dB)
Good Axial Ratio
Adequate Axial Ratio

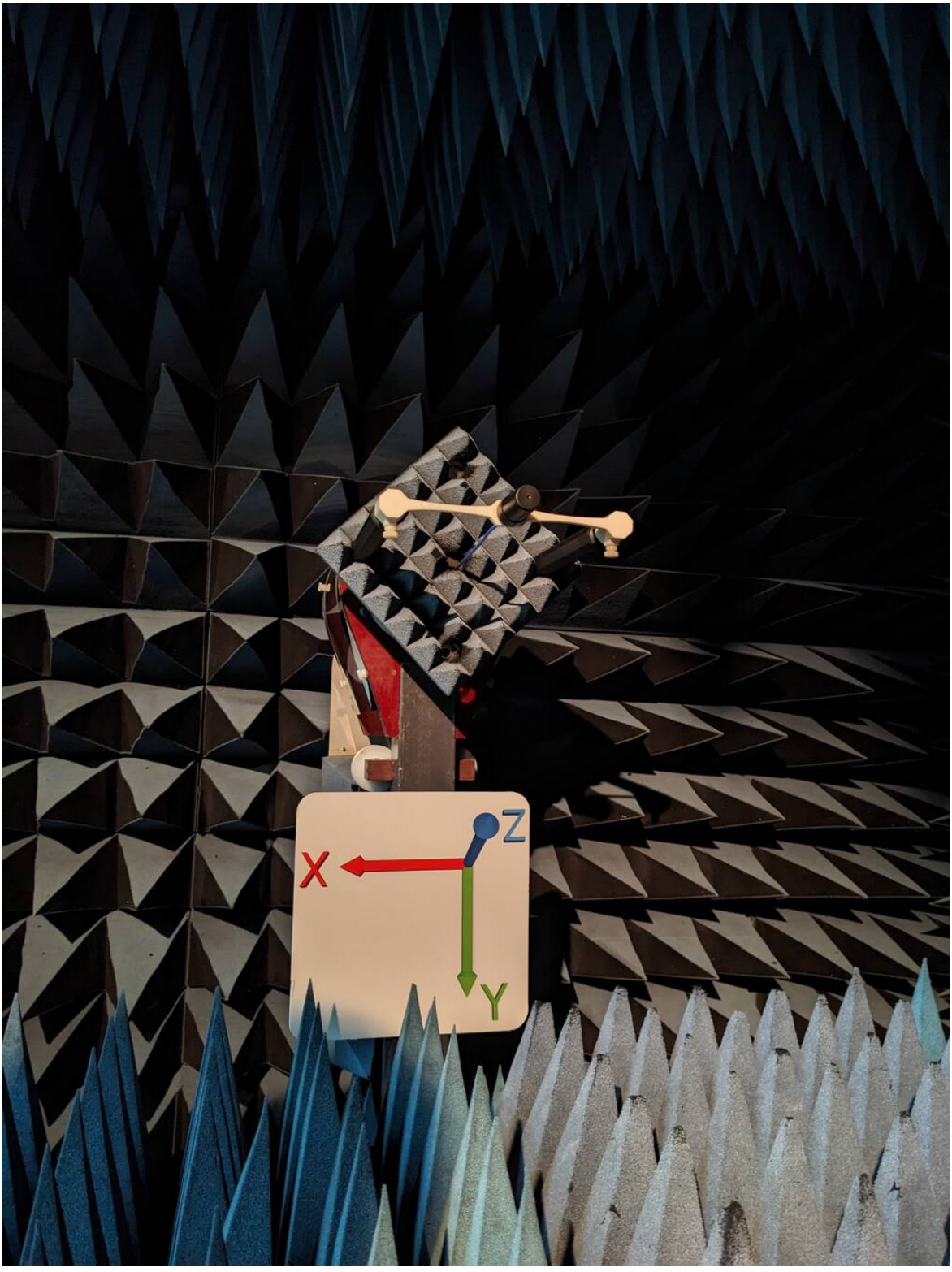

XZ and YZ Axial Ratio at 1278.75 MHz
Axial Ratio (dB)
20
15
10
5
0
-180
-150
-120
-90
-60
-30
0
30
60
90
120
150
180
Elevation (degrees)
Axial Ratio XZ axis (dB)
Axial Ratio YZ axis (dB)
Good Axial Ratio
Adequate Axial Ratio


XZ and YZ Axial Ratio at 1561.098 MHz
Axial Ratio (dB)
20
15
10
5
0
-180
-150
-120
-90
-60
-30
0
30
60
90
120
150
180
Elevation (degrees)
Axial Ratio XZ axis (dB)
Axial Ratio YZ axis (dB)
Good Axial Ratio
Adequate Axial Ratio


XZ and YZ Axial Ratio at 1575.42 MHz
Axial Ratio (dB)
20
15
10
5
0
-180
-150
-120
-90
-60
-30
0
30
60
90
120
150
180
Elevation (degrees)
Axial Ratio XZ axis (dB)
Axial Ratio YZ axis (dB)
Good Axial Ratio
Adequate Axial Ratio


XZ and YZ Axial Ratio at 1602 MHz
Axial Ratio (dB)
20
15
10
5
0
-180
-150
-120
-90
-60
-30
0
30
60
90
120
150
180
Elevation (degrees)
Axial Ratio XZ axis (dB)
Axial Ratio YZ axis (dB)
Good Axial Ratio
Adequate Axial Ratio

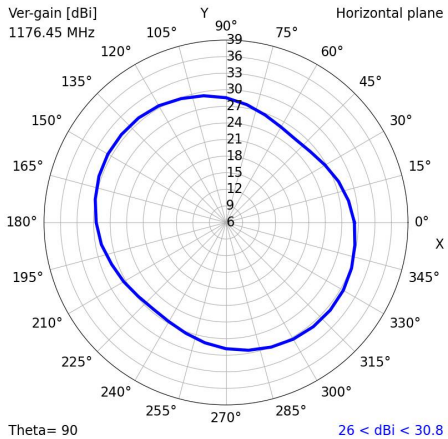
Test Setup (in Free Space)



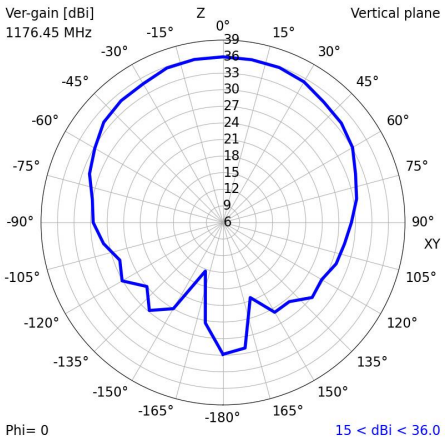
2D Radiation Plots

1176.45 MHz

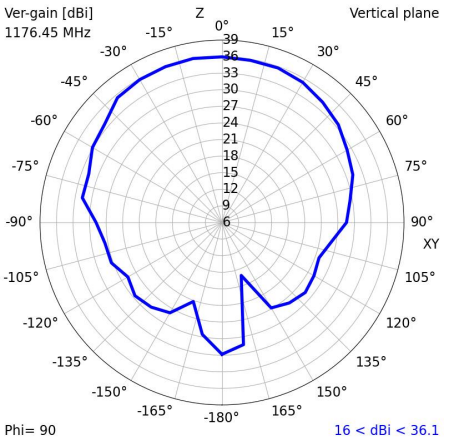
XY



XZ

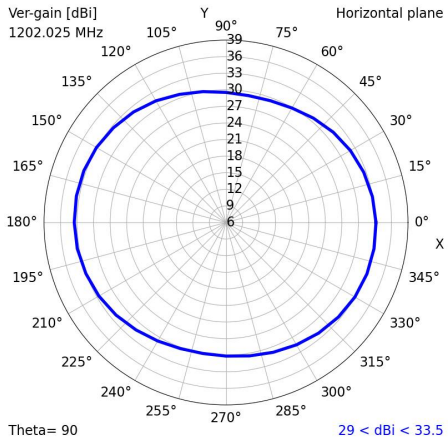


YZ

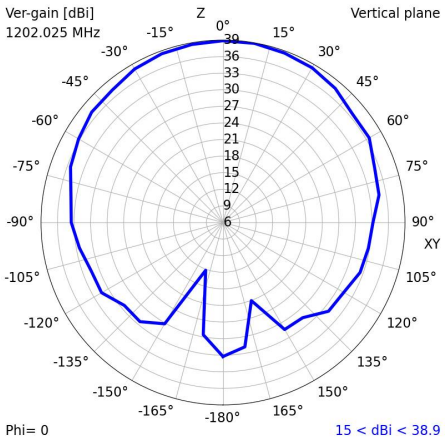


1202.025 MHz

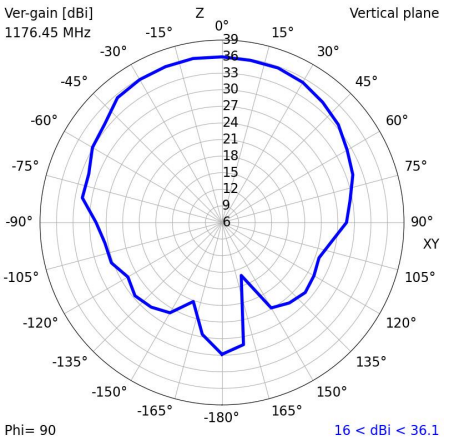
XY



XZ

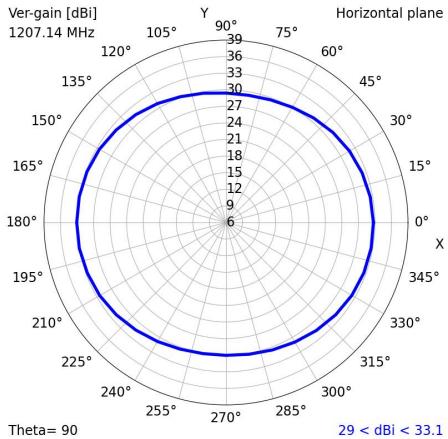


YZ

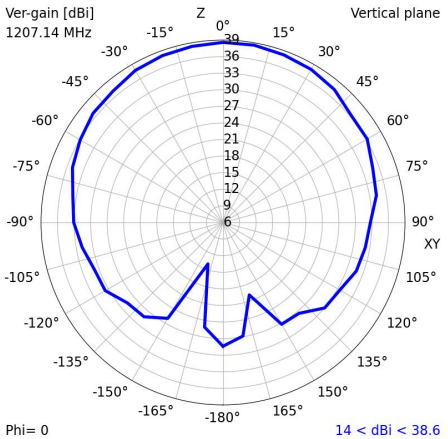


1207.14 MHz

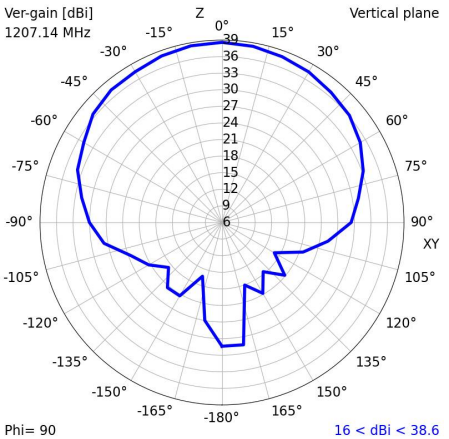
XY



XZ



YZ

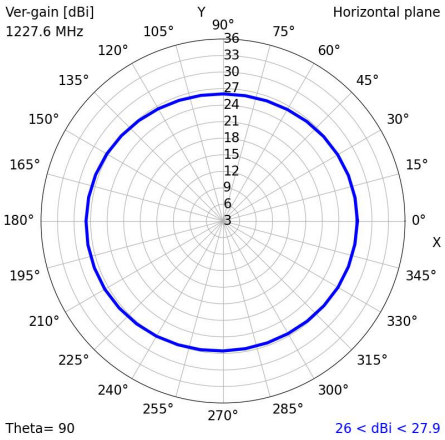


1227.6 MHz

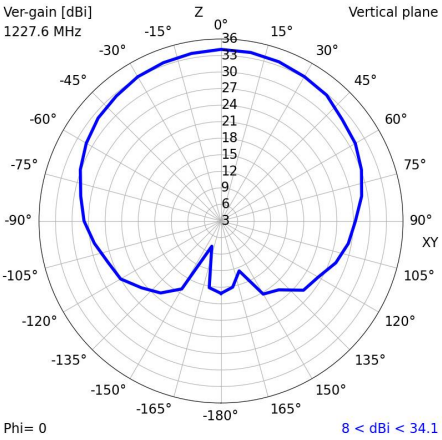
XY **XZ** **YZ**

Delta 67

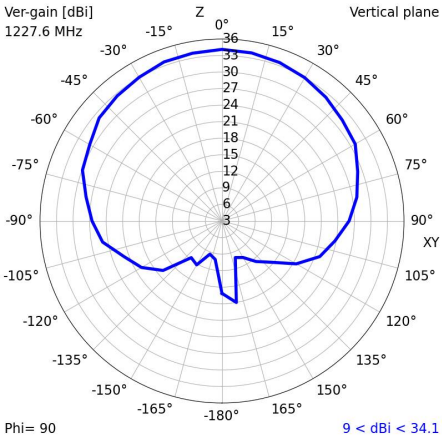
Ø 27 mm Stubby Active Multi-Band L1, L2, L5 & L6 Helical Antenna



Theta= 90 26 < dBi < 27.9



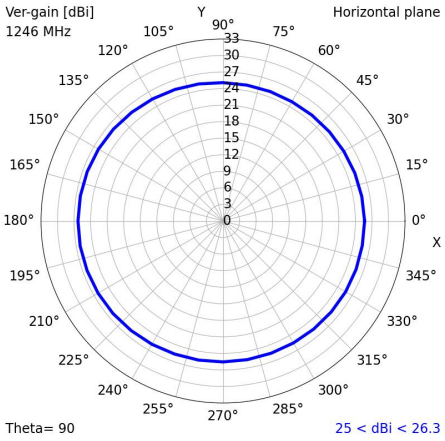
Phi= 0 8 < dBi < 34.1



Phi= 90 9 < dBi < 34.1

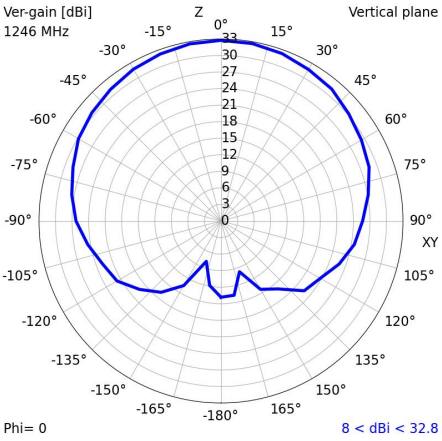
1246 MHz

XY



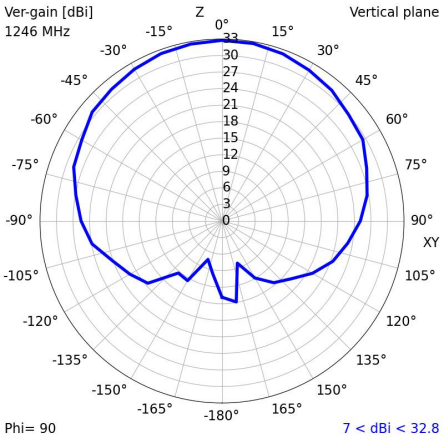
Theta= 90 25 < dBi < 26.3

XZ



Phi= 0 8 < dBi < 32.8

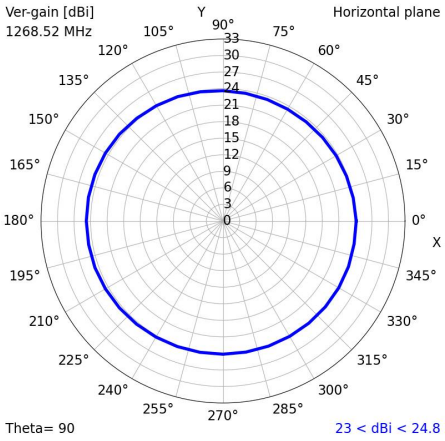
YZ



Phi= 90 7 < dBi < 32.8

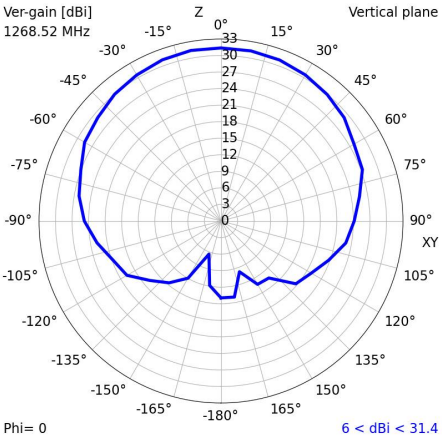
1268.52 MHz

XY



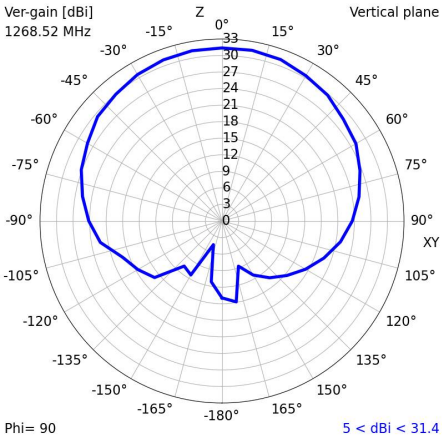
Theta= 90 23 < dBi < 24.8

XZ



Phi= 0 6 < dBi < 31.4

YZ



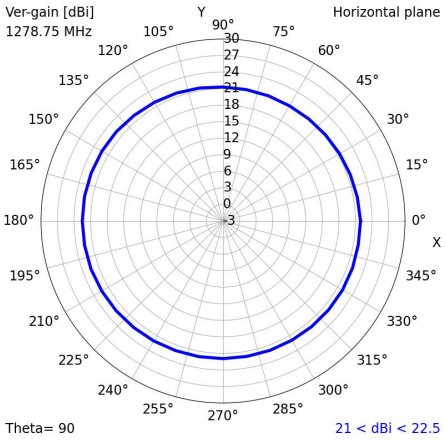
Phi= 90 5 < dBi < 31.4

1278.75 MHz

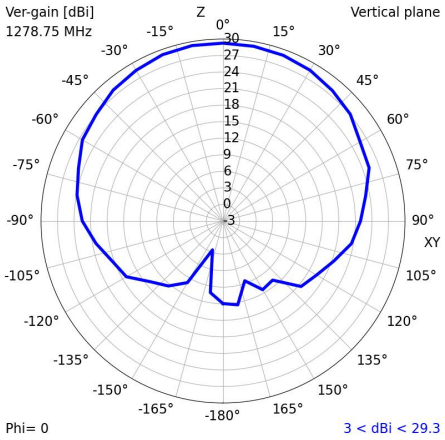
XY

XZ

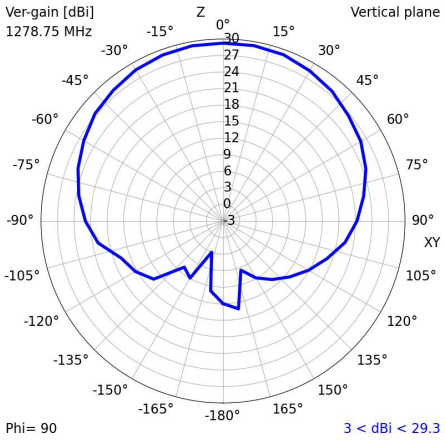
YZ



Theta= 90 21 < dBi < 22.5



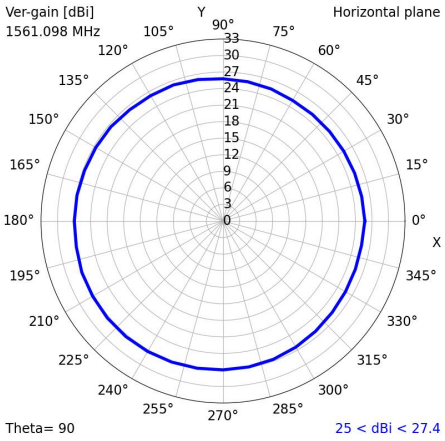
Phi= 0 3 < dBi < 29.3



Phi= 90 3 < dBi < 29.3

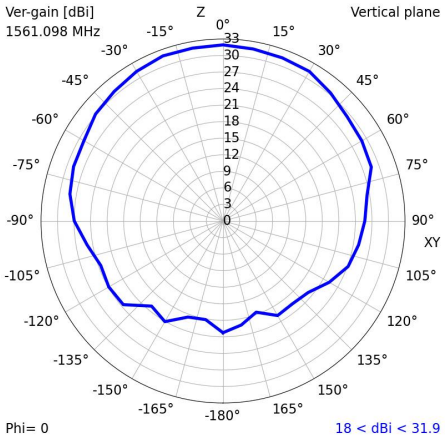
1561.098 MHz

XY



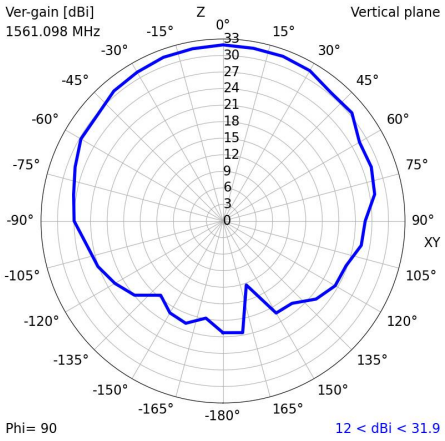
Theta= 90 25 < dBi < 27.4

XZ



Phi= 0 18 < dBi < 31.9

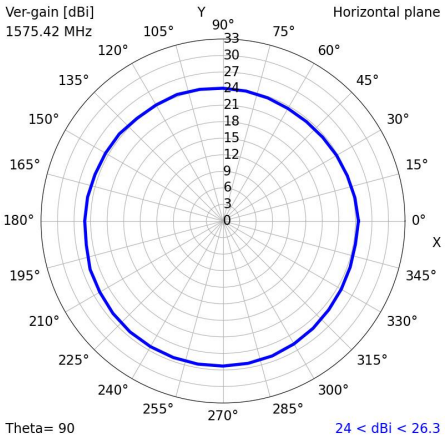
YZ



Phi= 90 12 < dBi < 31.9

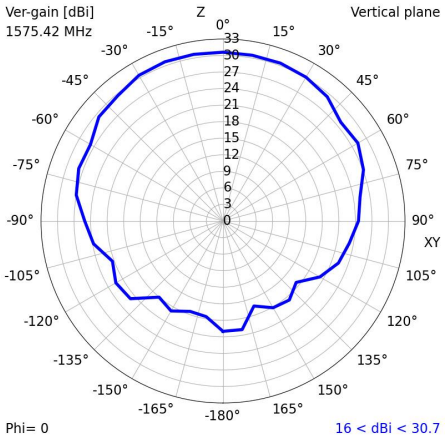
1575.42 MHz

XY



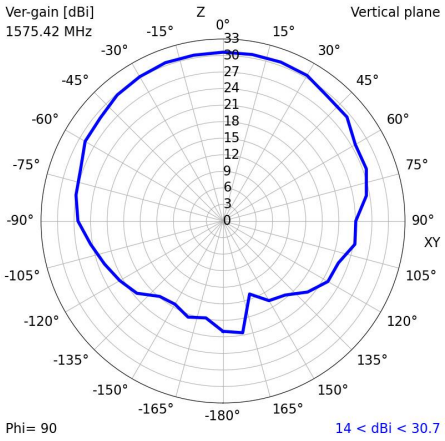
Theta= 90 24 < dBi < 26.3

XZ



Phi= 0 16 < dBi < 30.7

YZ



Phi= 90 14 < dBi < 30.7

1602 MHz

XY

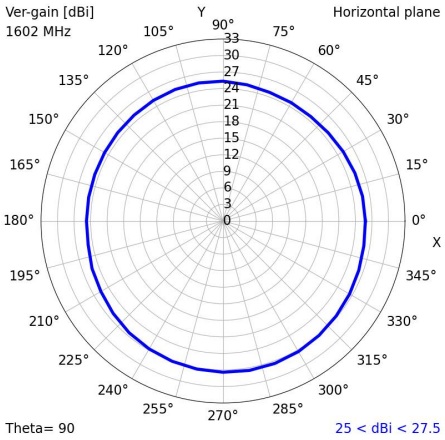
XZ

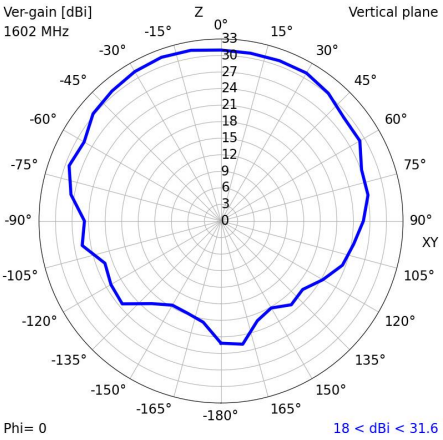
YZ

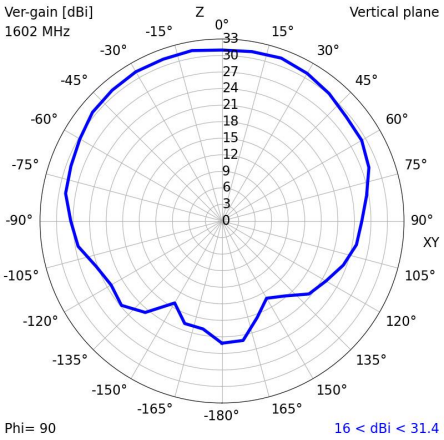
Siretta
Enabling Industrial IoT

Delta 67

Ø 27 mm Stubby Active Multi-Band L1, L2, L5 & L6 Helical Antenna

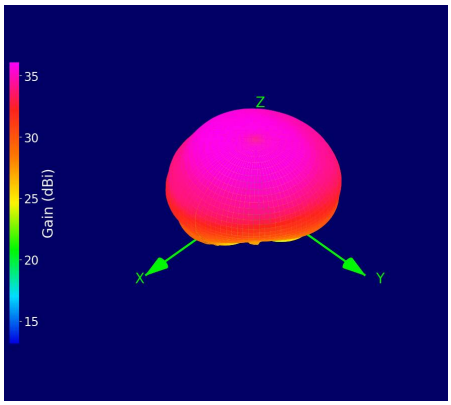




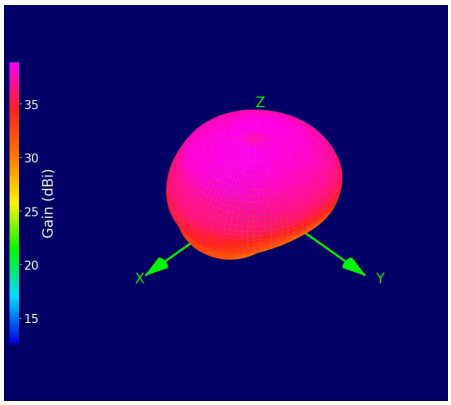


3D Radiation Plots

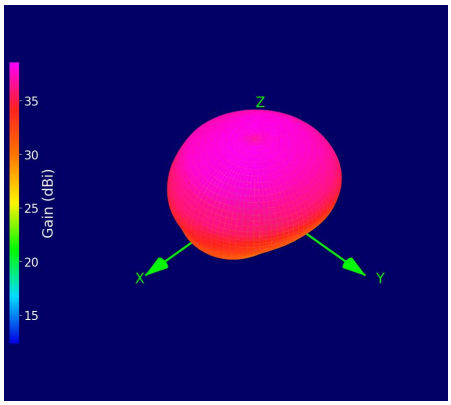
1176.45 MHz



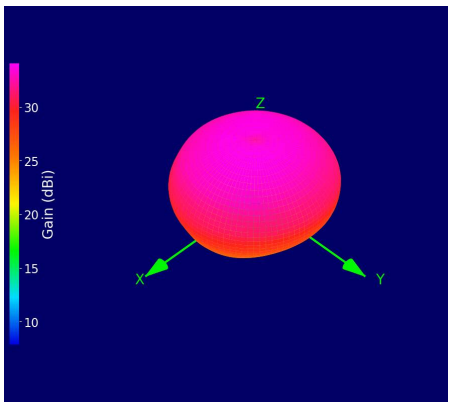
1202.025 MHz



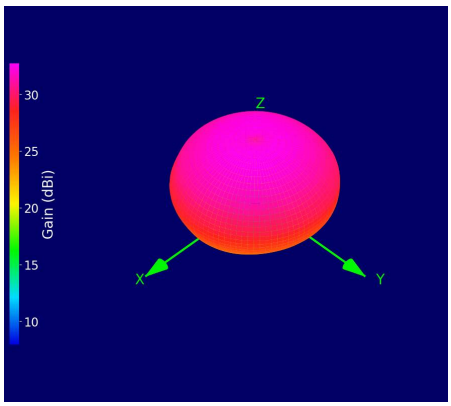
1207.14 MHz



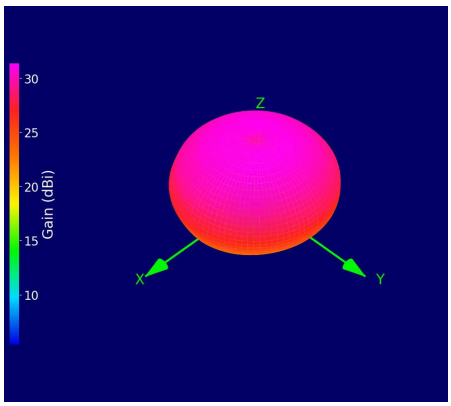
1227.60 MHz



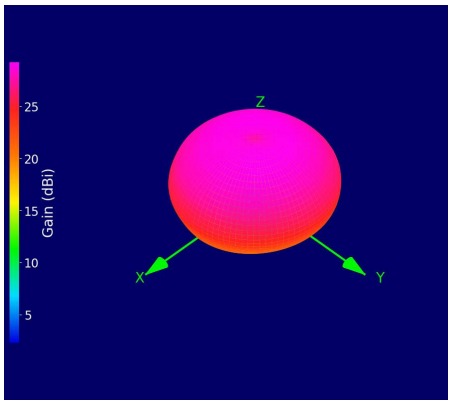
1246 MHz



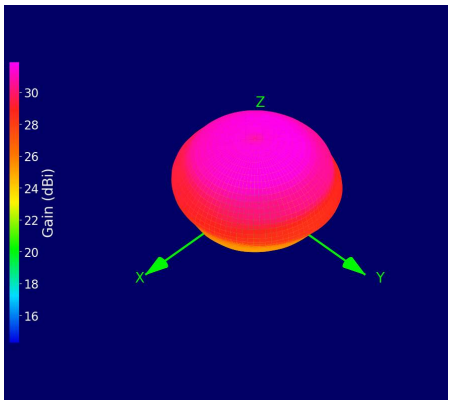
1268.52 MHz



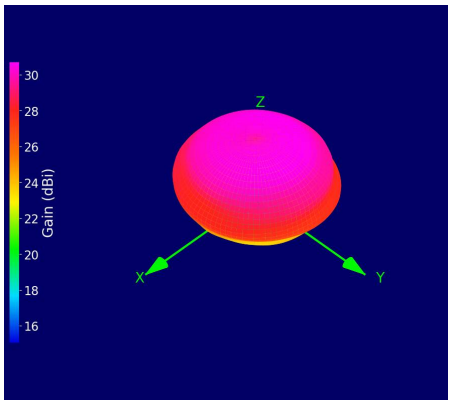
1278.750 MHz



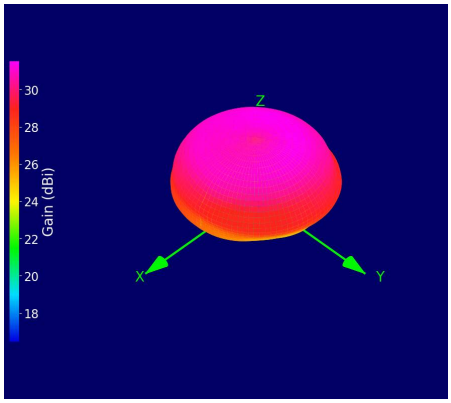
1561.098 MHz



1575.420 MHz



1602 MHz


30
28
26
24
22
20
18
Gain (dBi)
Z
X
Y

Ordering Details

Part Number	Description
DELTA67/X/SMAM/S/S/48	Compact Active Multi-Band Multi-Constellation GNSS Direct Mount Antenna SMA Male Connector

About Siretta

Founded in 1998 and headquartered in Reading, United Kingdom, Siretta is a leading wireless communications company specialising in the design, manufacture, and supply of industrial IoT solutions.

Siretta's product portfolio includes:

- Antennas, plus their associated Cable Assemblies & Adapters
- Cellular Network Analysers
- Industrial Modems
- Industrial Routers
- Associated Cloud Management

Siretta supplies products directly and via a worldwide network of distributors, into numerous markets and applications across the globe.
Siretta’s distribution partners range from industrial IoT specialists through to global catalogue organisations.

Whether “off the shelf” or custom solutions are required, Siretta has a wide portfolio of products to fit many types of application.

Siretta’s extensive knowledge and experience in the wireless market allows support of a wide range of customer applications, focusing on frequencies between 400 MHz to 6 GHz. These encompass modems, routers and antennas for:

- Cellular technologies: GSM / UMTS / LTE / 5G NR (SA & NSA)
- LPWAN technologies: LTE-M / NB-IoT
- Global positioning technologies: GNSS (GPS / GLONASS / Galileo / BeiDou / QZSS / NavIC)
- Short range technologies: Wireless LAN / Bluetooth / Zigbee / ISM band / LoRa / Sigfox
- Satellite technologies: NTN NB-IoT

With a heavy emphasis on design, Siretta has a team of dedicated Engineers and Product Managers, who specialise in wireless applications.
Siretta continually makes significant investment in R&D endeavouring to provide customers with market leading, future-proofed, wireless solutions. Siretta works closely with many technology partners to stay at the forefront of industrial IOT.

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Siretta Ltd does not take responsibility for the performance, installation, or operation of any antenna, wireless device, or communication system used in conjunction with the products characterised in this document. It is the responsibility of the installer and system integrator to ensure that all products are installed and operated in

accordance with applicable regulatory, safety, and local compliance requirements within the country of use.

Performance characteristics, coverage, gain, and network operation may vary depending on installation environment, device configuration, network conditions, cable losses, mounting position, and surrounding structures. Any application deployed using Siretta antenna products should be fully evaluated and tested within the intended operating environment prior to deployment.

Siretta Ltd reserves the right to make modifications, additions, and deletions to this document due to typographical errors, inaccurate information, or improvements to the product at any time and without notice. Such changes will be incorporated into new editions of this document.

Please refer to the Siretta wiki for the latest version of this document.

***IMPORTANT NOTE**
For each frequency band, Siretta provides a traffic light indication to show the suitability of the antenna for use at that frequency band. Determination of exactly what makes an antenna good or bad at any frequency is subjective.

The view presented is that of Siretta's engineering team having taken into account the efficiency and VSWR measurements. The end user is advised to use their own criteria and/or testing to confirm suitability.

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