

Part No. 9002225L0-L01

Iridium LDS “Cap” Antenna

1559 - 1610 MHz / 1616 - 1626.5 MHz

Supports: Iridium, GNSS



KYOCERA AVX's 9002225L0-L01 is an innovative - one of its kind - on-board antenna with circular polarization for satellite applications. This antenna is manufactured using Laser Direct Structuring (LDS) technology.

The LDS technology is a revolutionary approach offering a streamlined and efficient process for creating complex 3D antenna designs on a myriad of substrates.

Among the benefits of this solution are the low weight, wide bandwidth and high gain. LDS technology is ideal when more curves are needed or less 3D volume is available.

Iridium LDS Cap Antenna

1559 – 1610 MHz: GNSS

1616 – 1626.5 MHz: Iridium

Electrical Specifications

Typical Performance using Yantel PD1400U06-524 Power Divider/Combiner was used for the radiating test (Power handling of 2W as a Divider).

KEY BENEFITS

Stay-in-Tune

KYOCERA AVX's antenna technology provides superior RF field containment, resulting in less interaction with surrounding components.

Quicker Time-to-Market

By optimizing antenna size, performance and emissions, customer and regulatory specifications are more easily met.

Environmental Compliance

Products are the latest RoHS and REACH version compliant

APPLICATIONS

- Telematics
- Asset Tracking
- IoT, Industrial devices
- Smart Agriculture
- Smart city

Frequency (MHz)	Free Space	
	1559 - 1610	1616 - 1626.5
Peak Gain	2 dBi	2.2 dBi
Average Efficiency	59 %	62 %
RL Match	< -16.1 dB	< -16 dB
Gain Zenith	1.5 dBic	2.2 dBic
Axial Ratio @Zenith	< 1 dB	< 2 dB
Power Handling	4 W (Antenna)	
Feed Points Impedance (x4)	50 ohms	
Polarization	R.H.C.P	
Radiation Pattern	Omni-Directional	

KYOCERA AVX Iridium LDS Cap Antenna Specifications.
KYOCERA AVX produces a wide variety of standard and custom antennas to meet user needs.

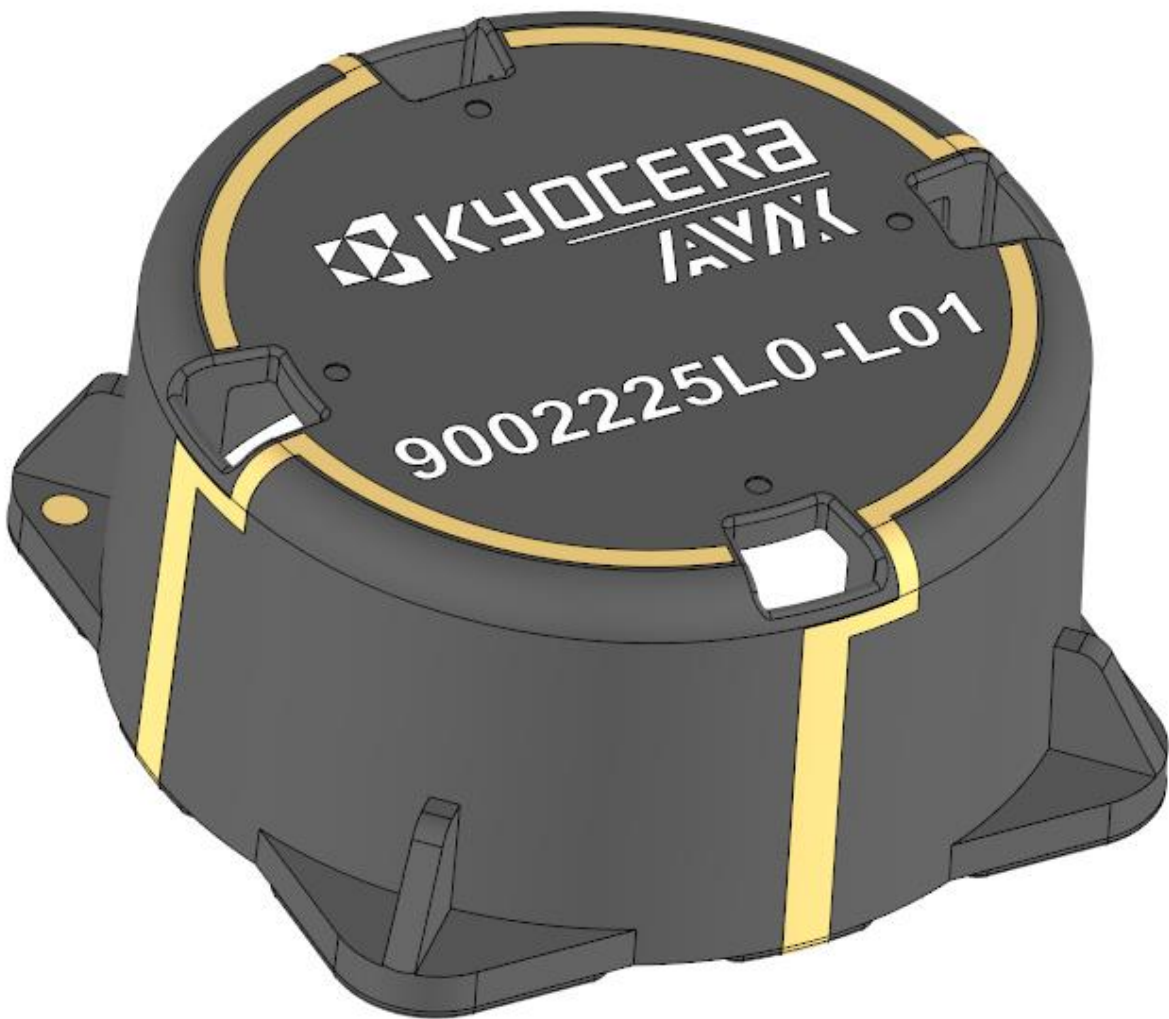
Mechanical Specifications & Ordering Part Number

Ordering Part #	9002225L0-L01
Dimensions (mm)	37.5 (ø) x 17.98 (h)
Recommended Distance between the antenna and the casing	5 mm
Weight (grams)	6.85
Mounting	SMT (Pick-and-Place)
Demo Board Part Number	9002225L0-L01-14D
Storage Temperature (°C) / Humidity	-40 to +85 °C / 45~75% (Sealed Shipping Pack)
Operation Temperature (°C)	-40 to + 85°C
Packaging	T&R Package
Additional resources	Download DXF and 3D FIT Files

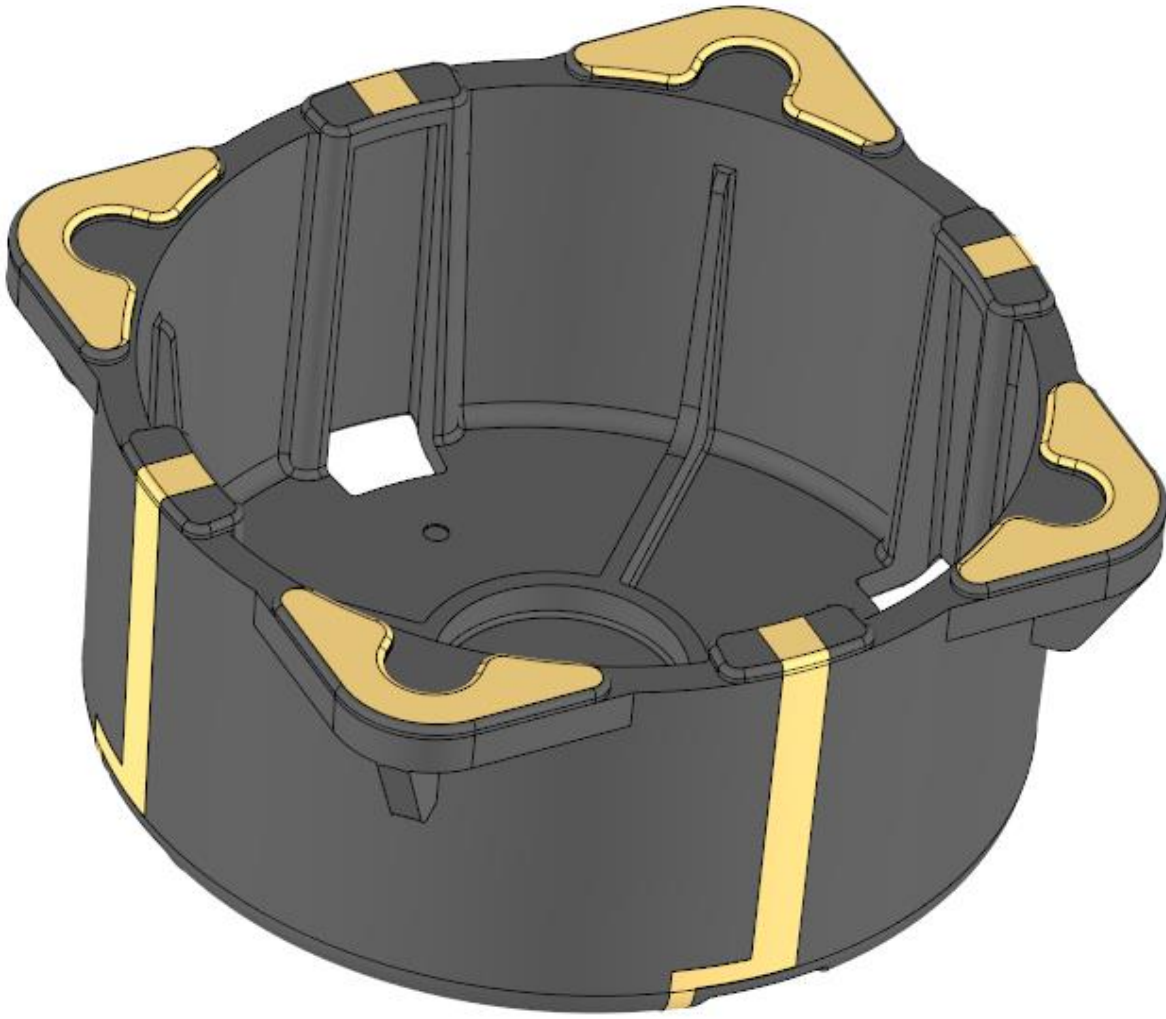
Reliability Testing Summary

High Temperature and High Humidity (HTHH) Test	Conditions: Temperature: +85°C, Humidity: 85% RH, Test Duration: 96 Hours Acceptance Criteria: No visible Corrosion.
Salt Spray Test	Conditions: Expose to a +35 ±3 °C spray of a 5% (by volume) resolution of NaCl in water for 48 hours. Acceptance Criteria: No visible Corrosion / Discoloration acceptable.

Antenna 3D View: 9002225L0-L01



Top View



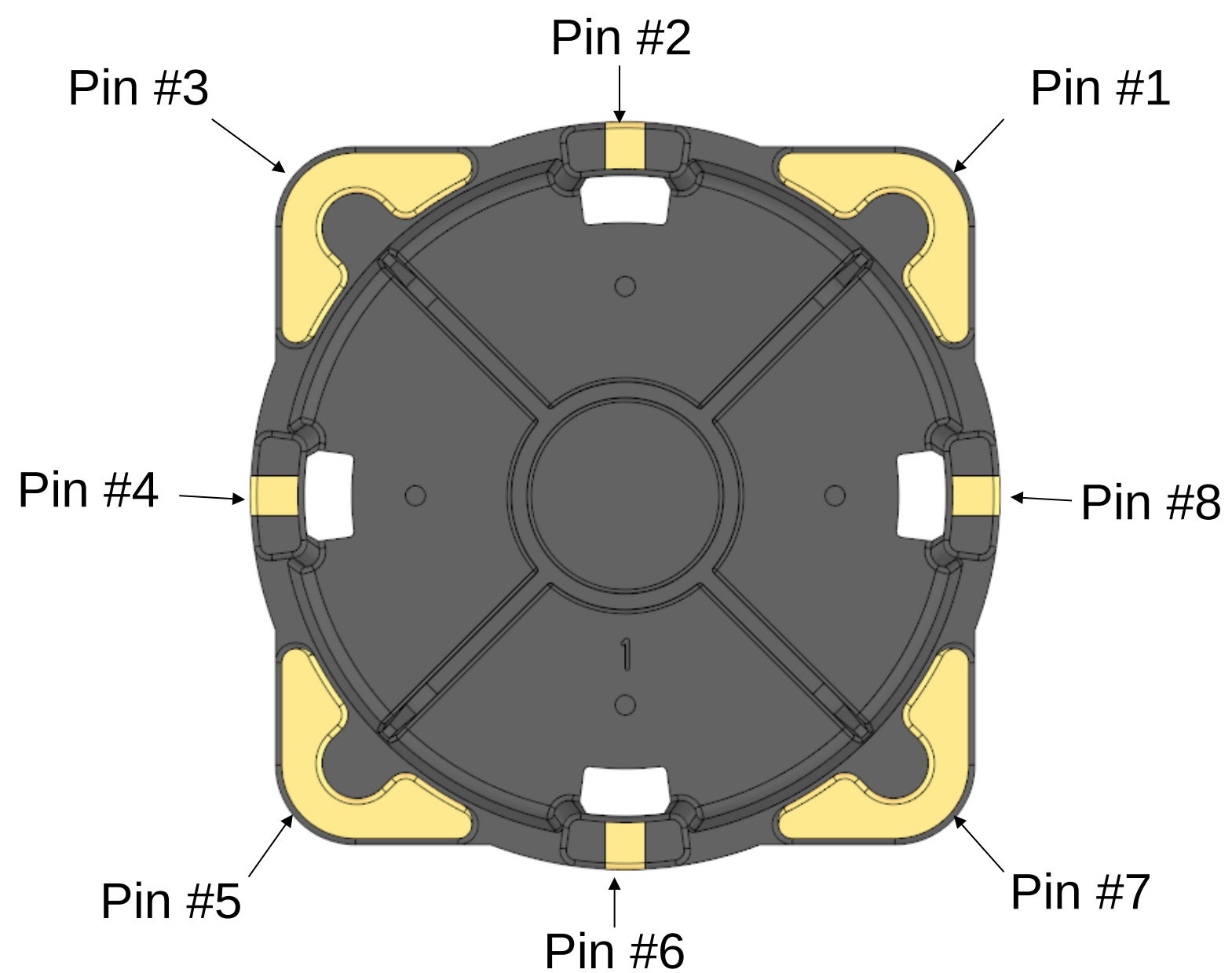
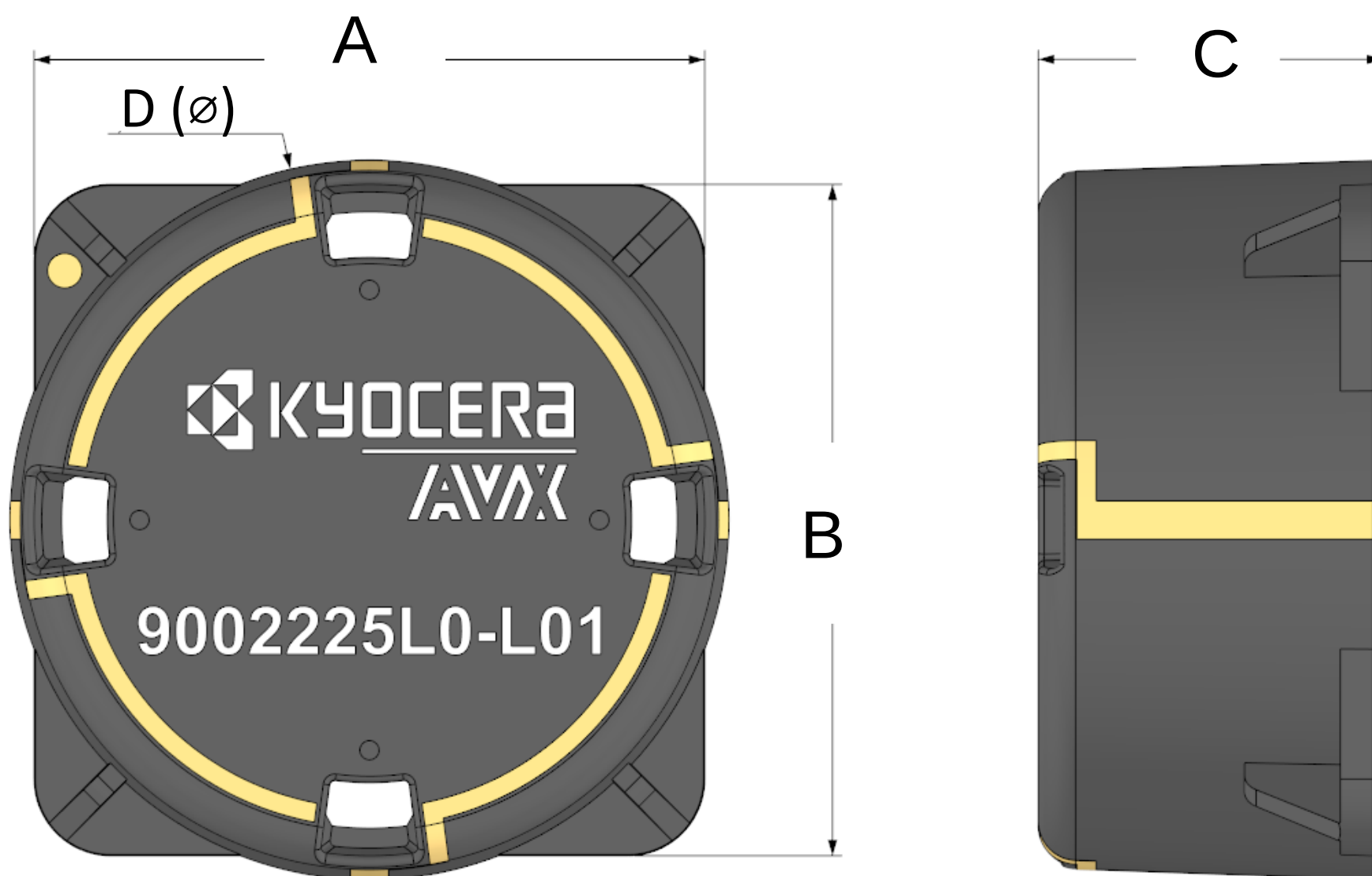
Bottom View

KYOCERA AVX Iridium LDS Cap Antenna Specifications.
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Antenna Dimensions

Typical antenna dimensions (mm)

Part Number	A (mm)	B (mm)	C (mm)	D (ø)
9002225L0-L01	35 ± 0.3	35 ± 0.3	17.98 ± 0.1	37.5 ± 0.2

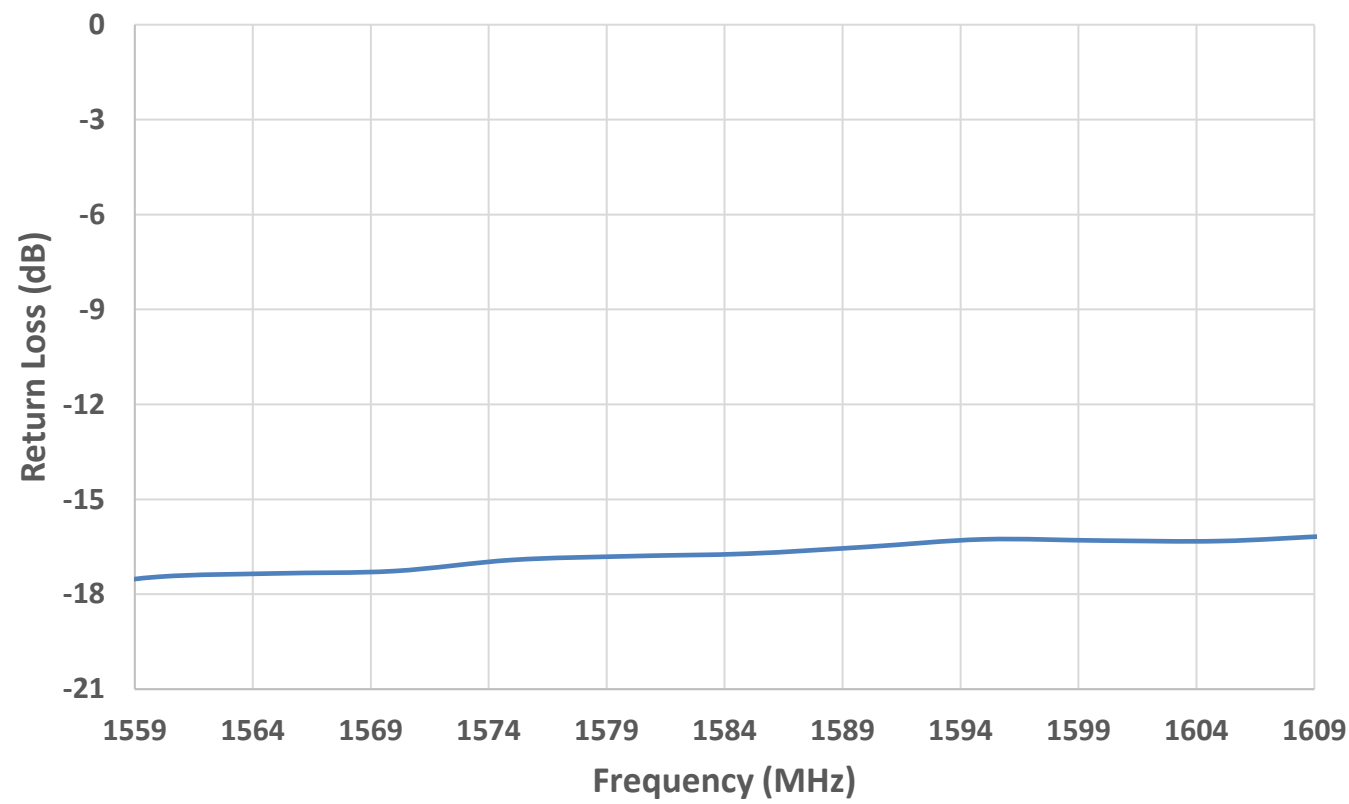


Pin#	Description
1, 3, 5, 7	GND
2, 4, 6, 8	Feed

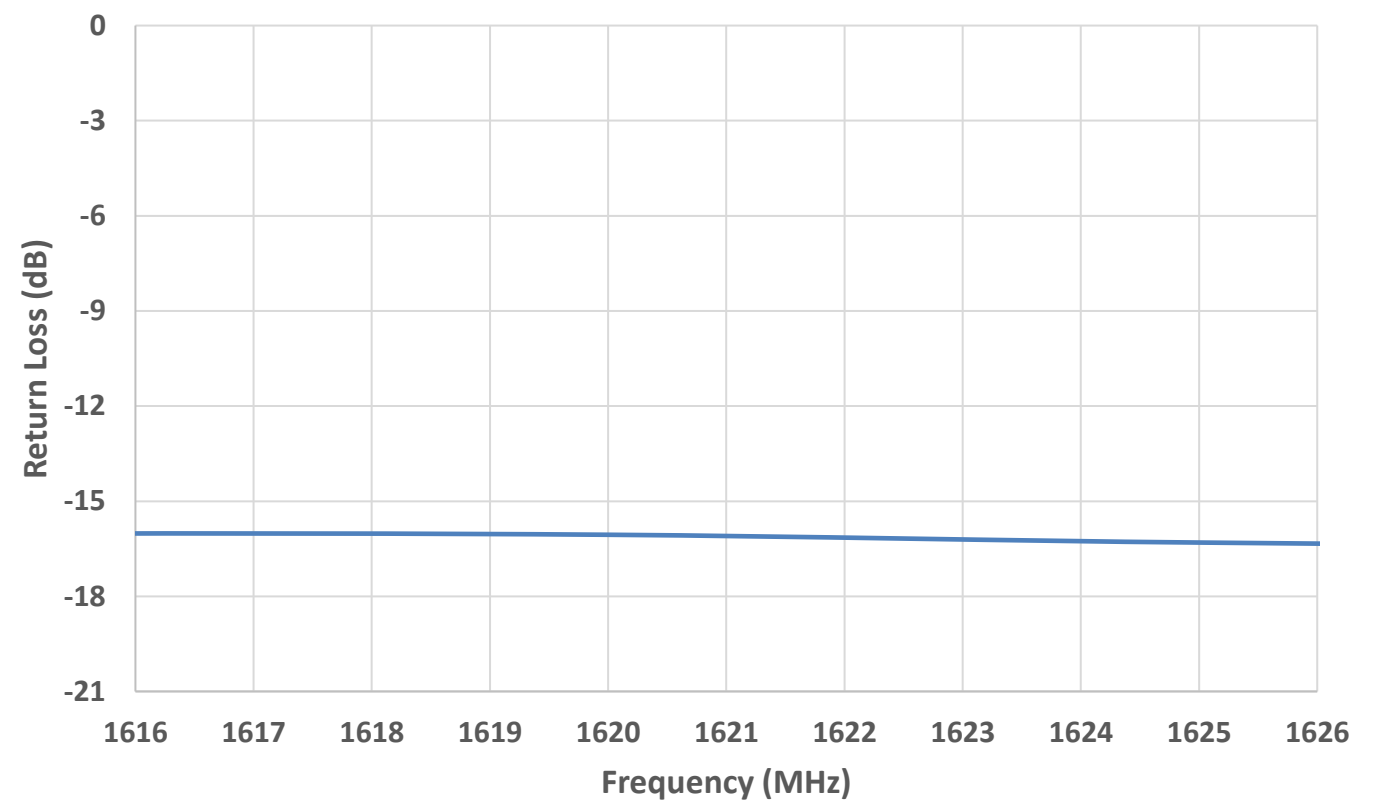
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Return Loss, Efficiency and Peak Gain plots

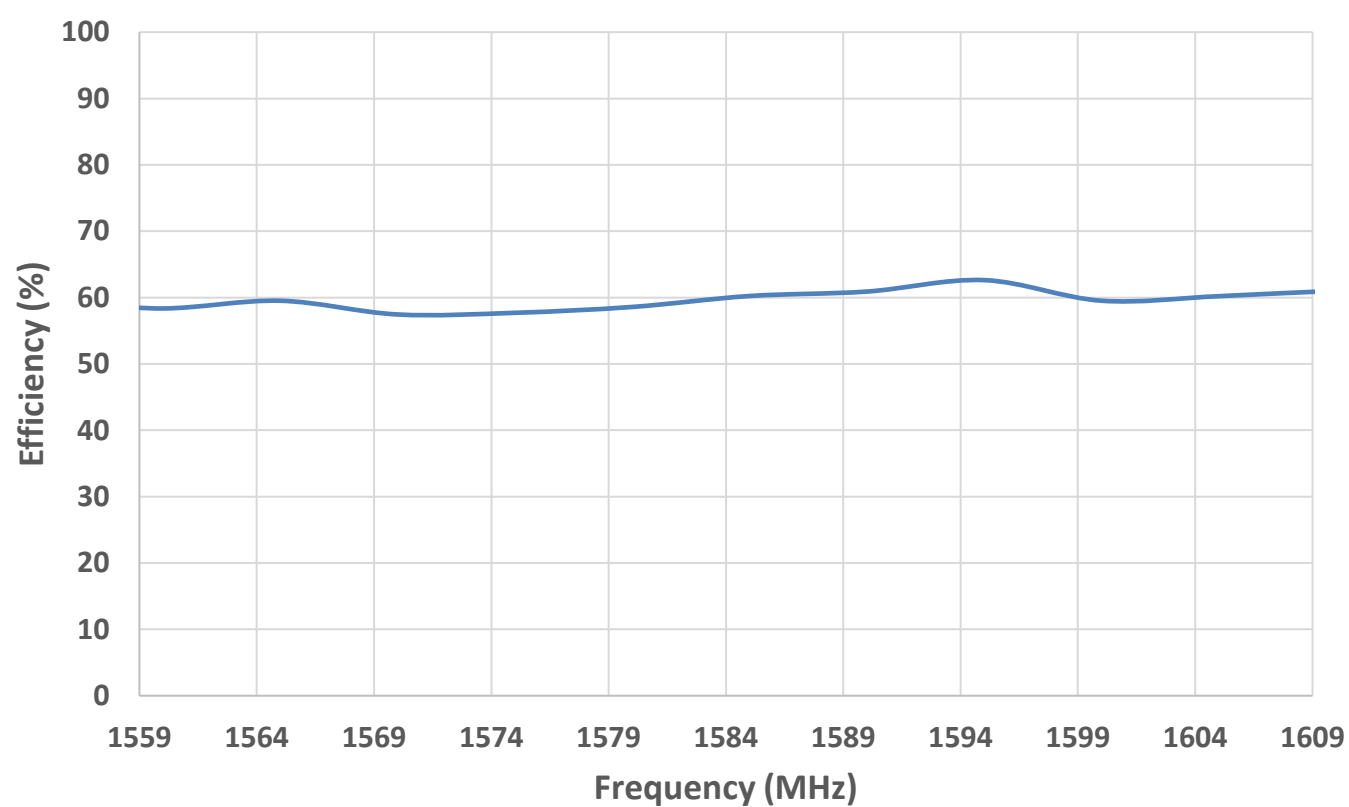
Return Loss Data - GNSS (1559 – 1609 MHz)



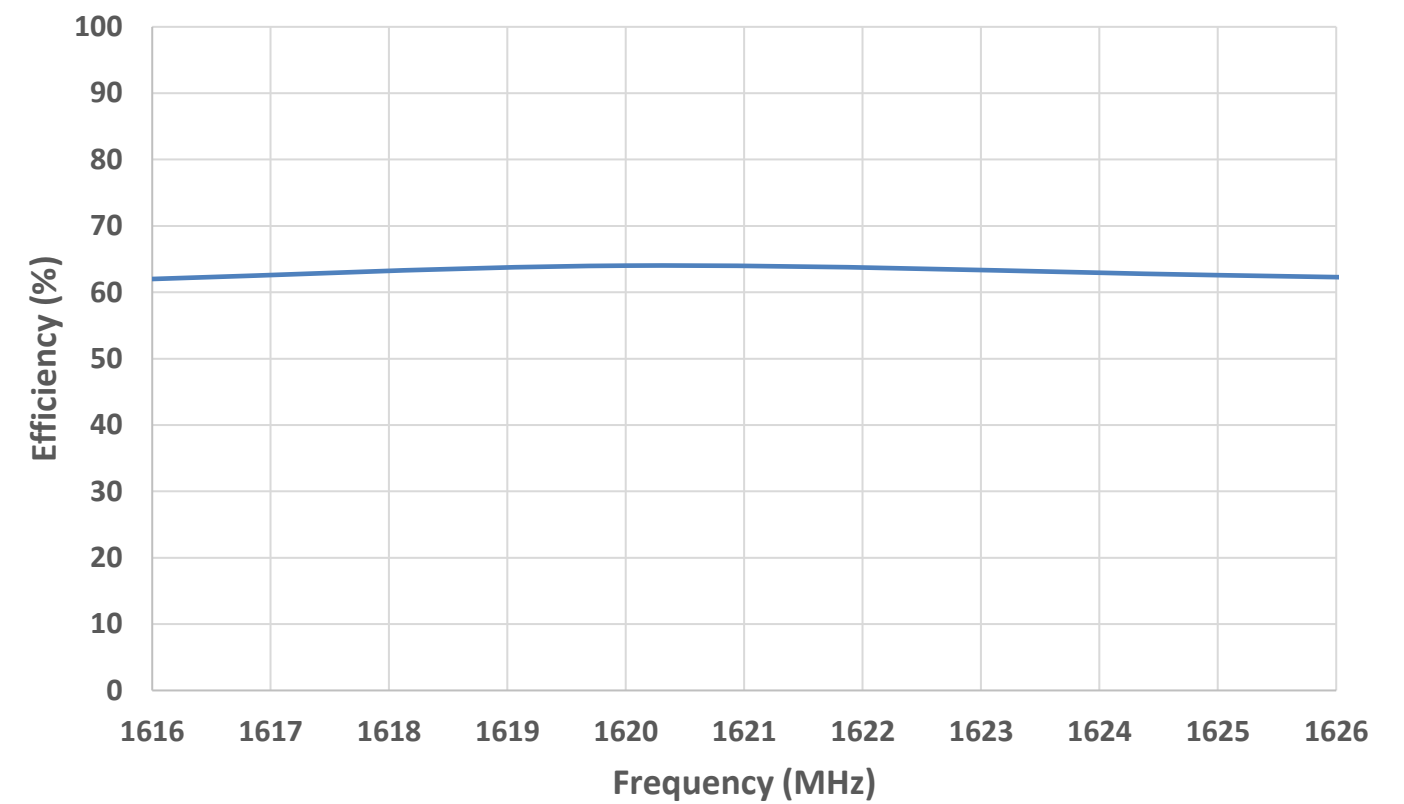
Return Loss Data - Iridium (1616 – 1626.5 MHz)



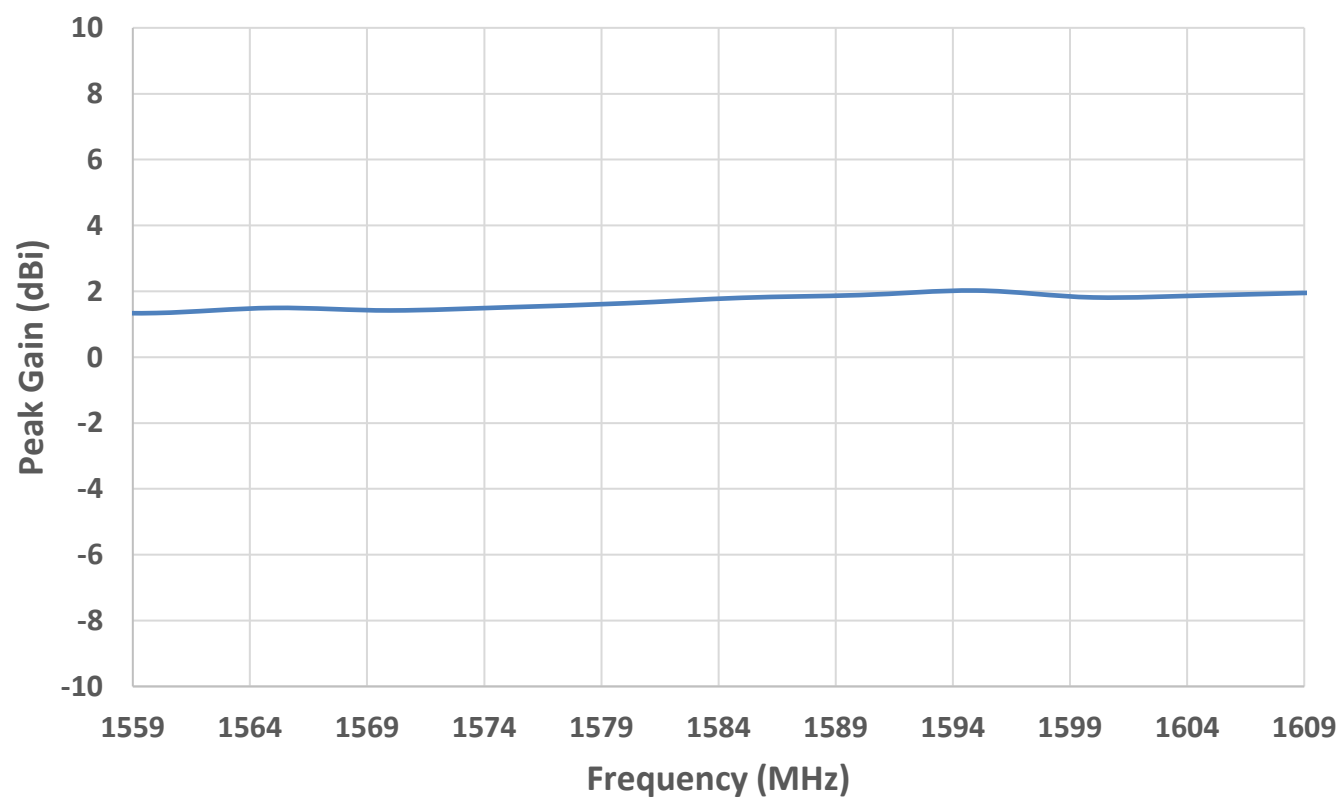
Efficiency- GNSS (1559 – 1609 MHz)



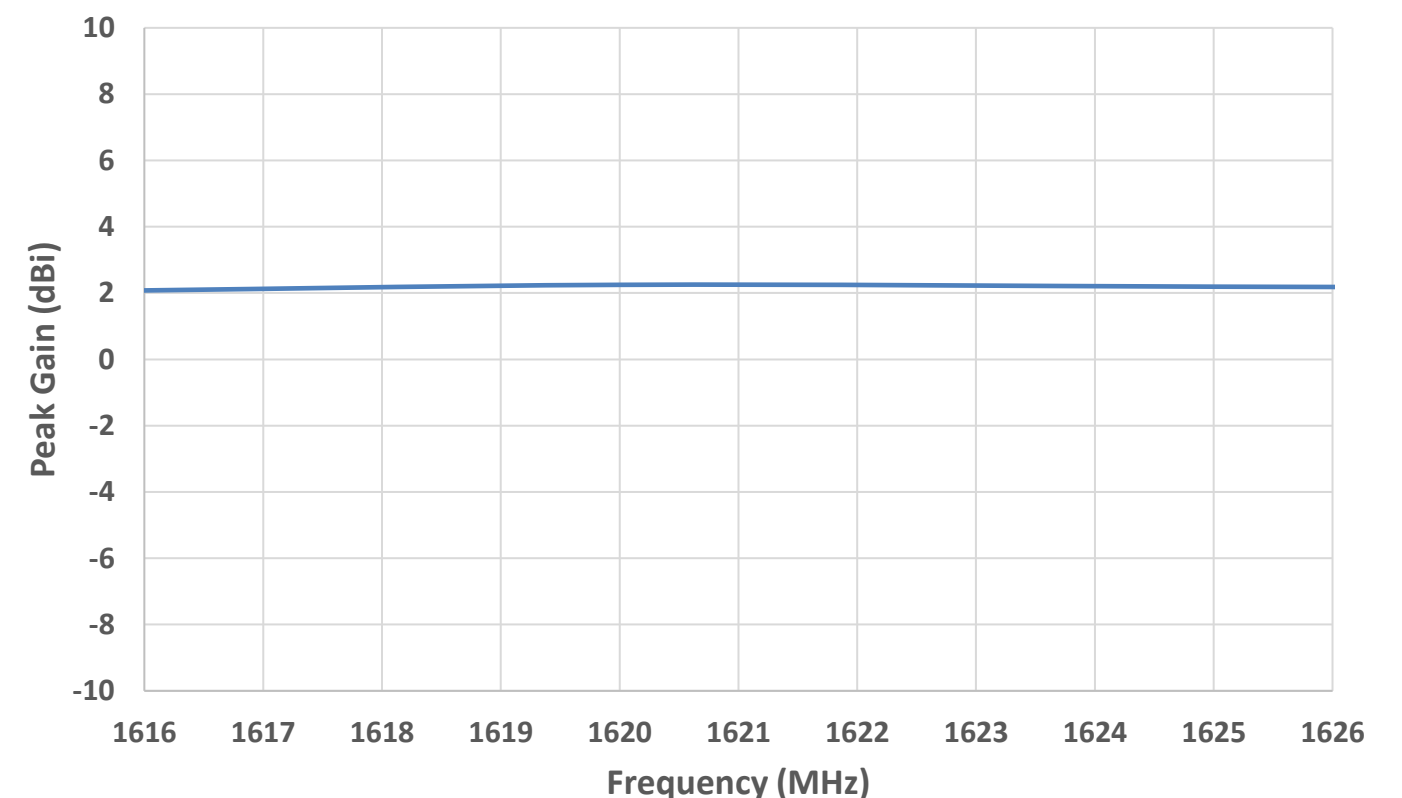
Efficiency - Iridium (1616 – 1626.5 MHz)



Peak Gain - GNSS (1559 – 1609 MHz)



Peak Gain - Iridium (1616 – 1626.5 MHz)

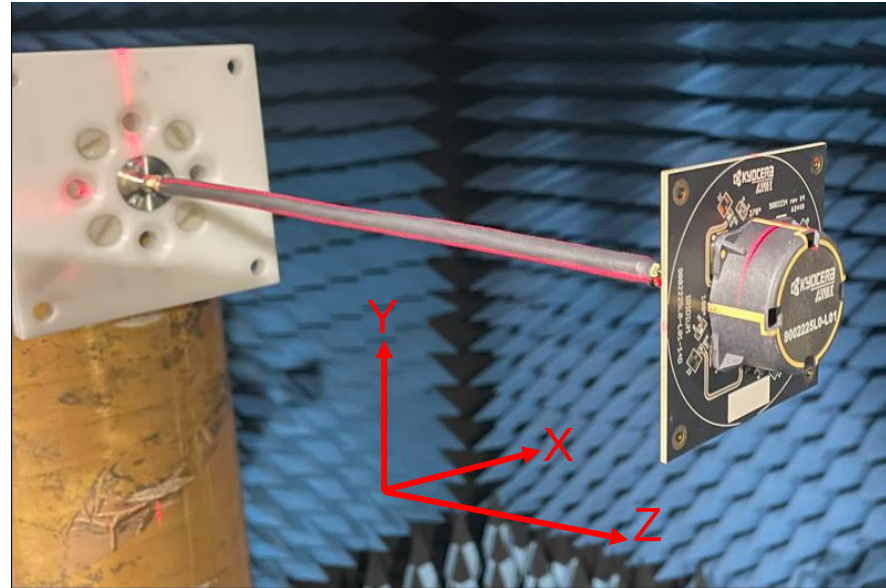


Yantel PD1400U06-524 Power Divider/Combiner was used for the radiating test.

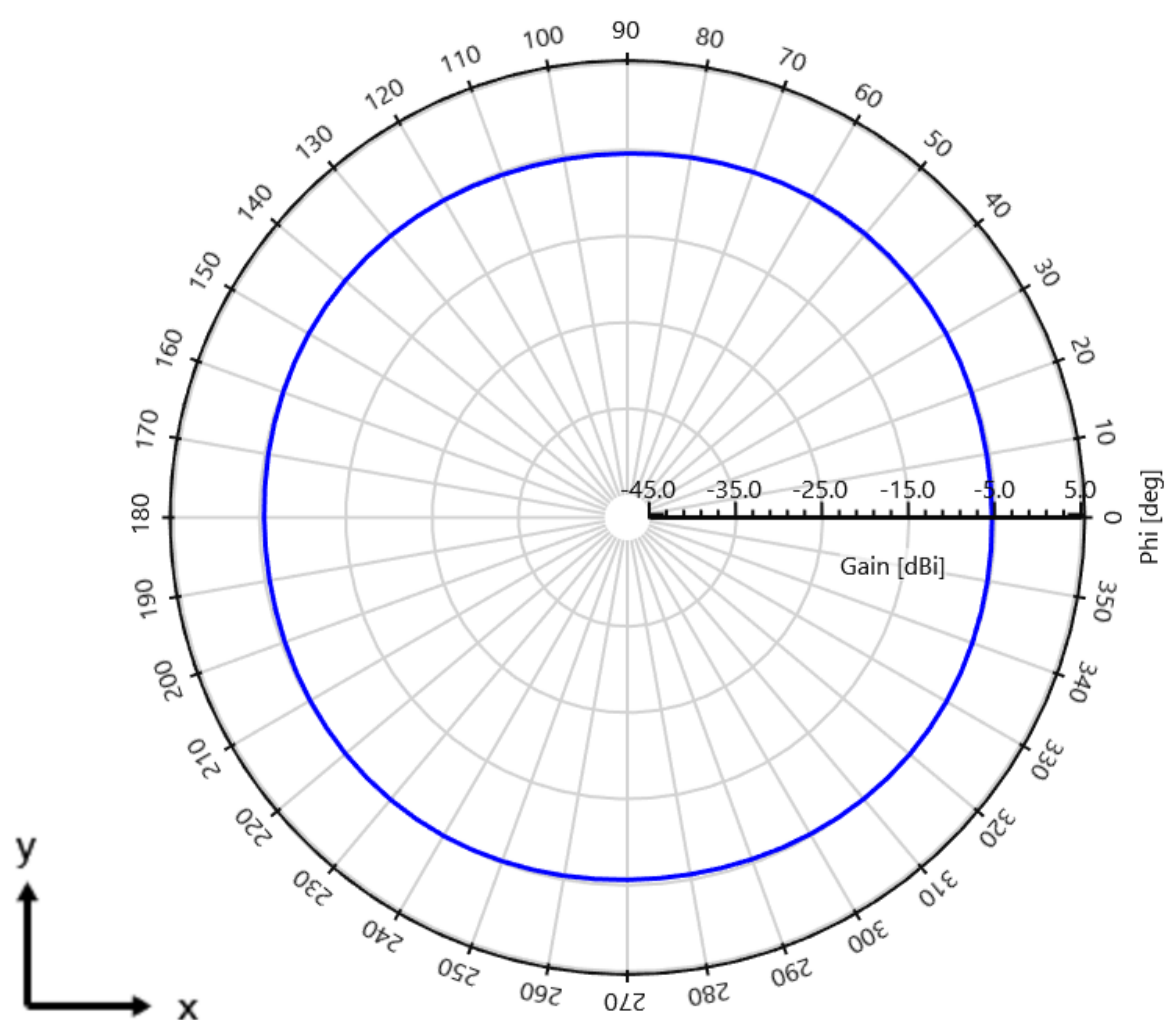
KYOCERA AVX Iridium LDS Cap Antenna Specifications.
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Radiation Patterns Plots

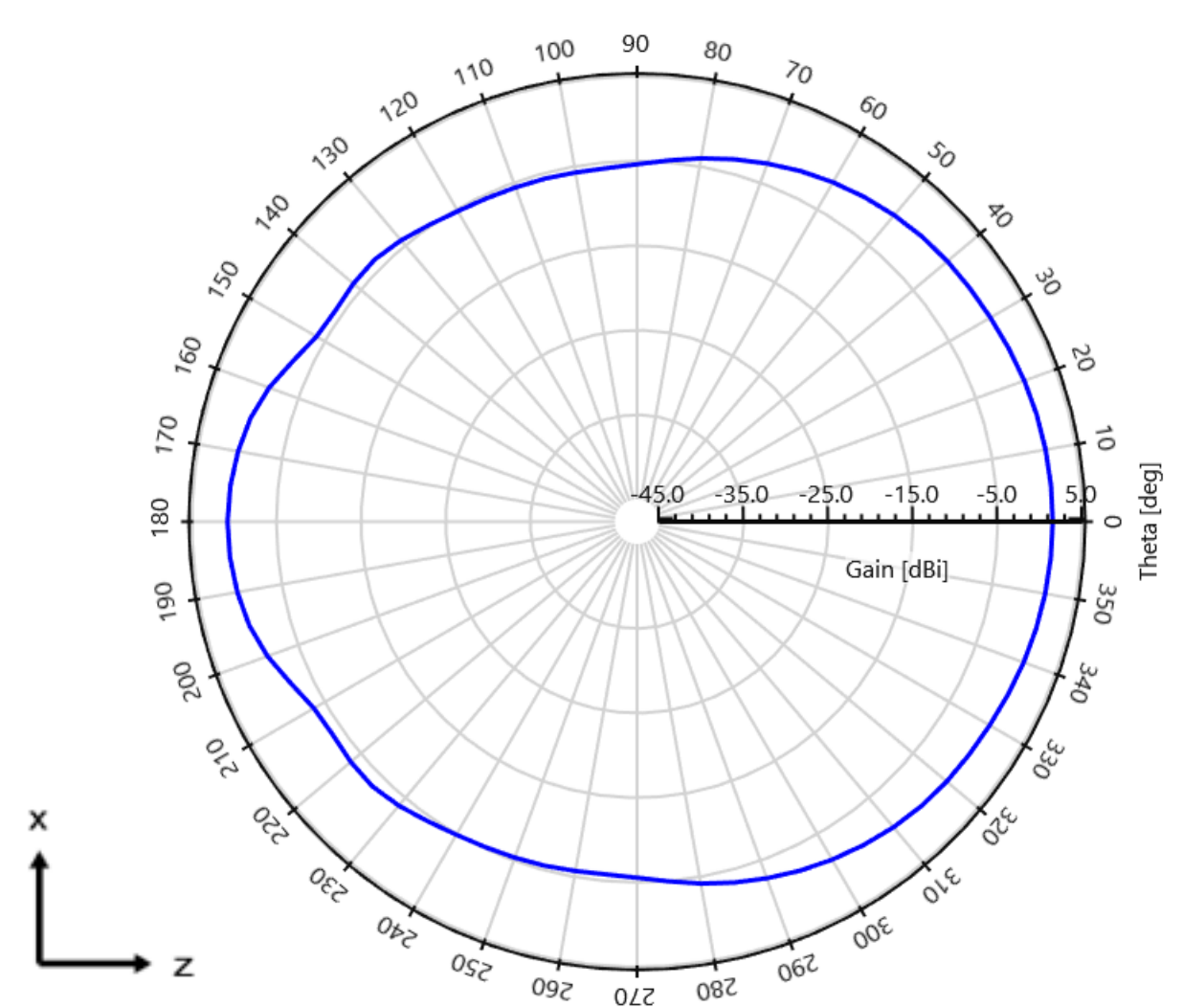
Measured at 1575 MHz (GNSS)



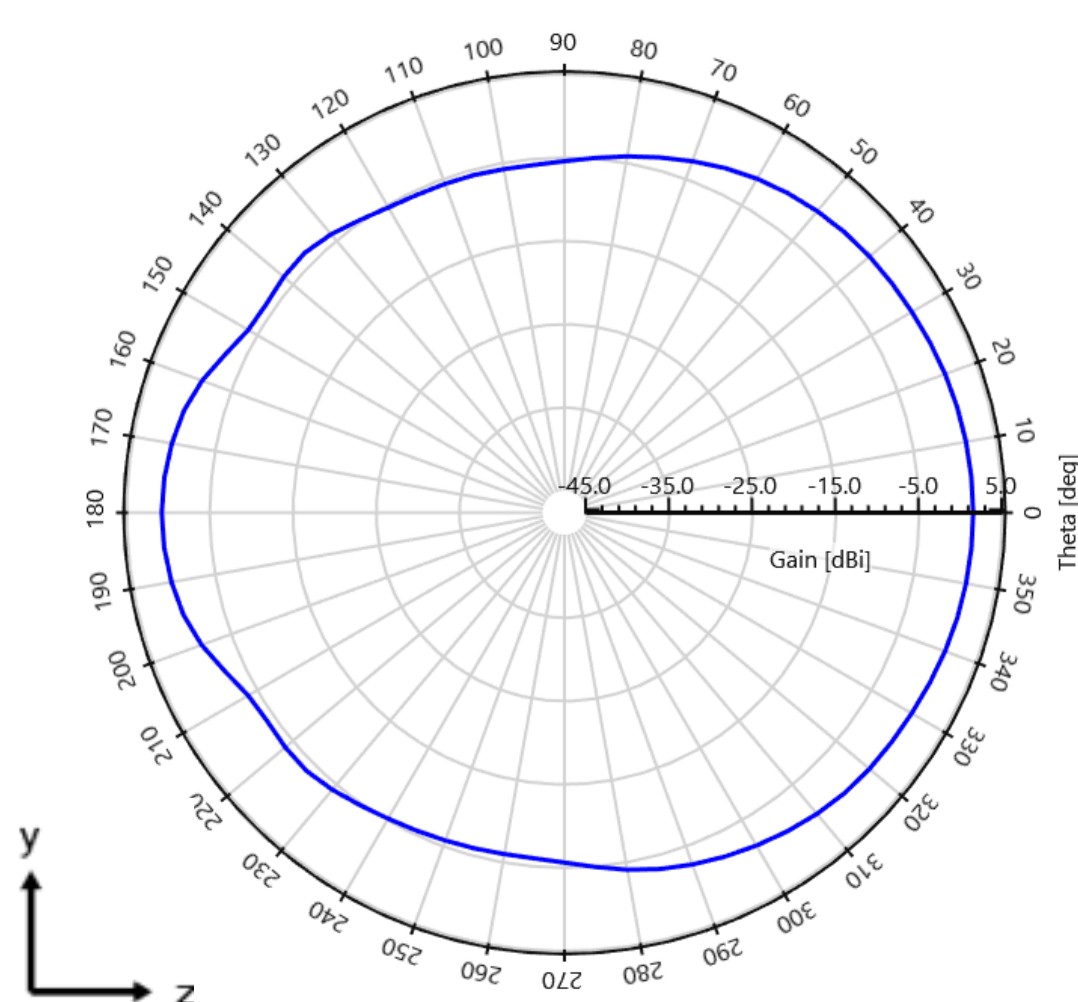
Gain (Total) - $\theta = 90$ deg - 1575 MHz [Plane XY]



Gain (Total) - $\phi = 0$ deg - 1575 MHz [Plane XZ]



Gain (Total) - $\phi = 90$ deg - 1575 MHz [Plane YZ]

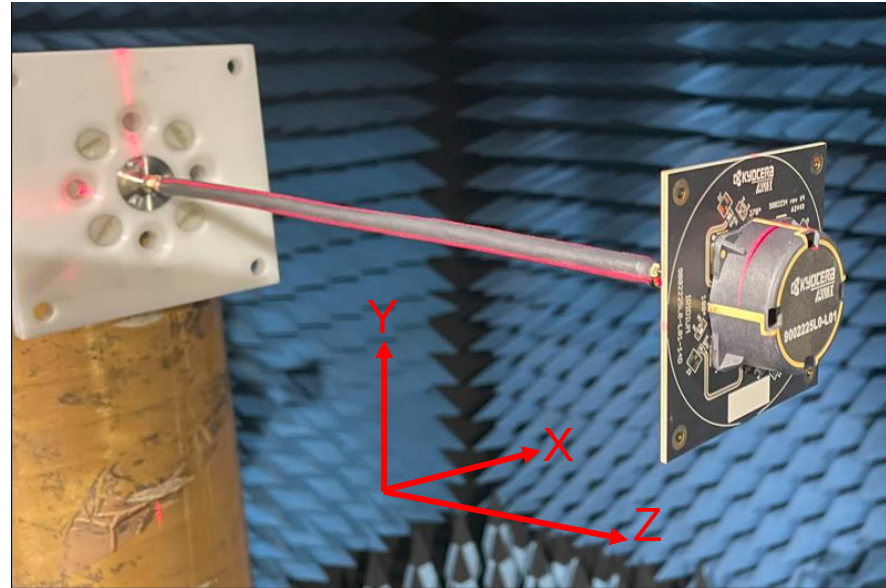


Yantel PD1400U06-524 Power Divider/Combiner was used for the radiating test

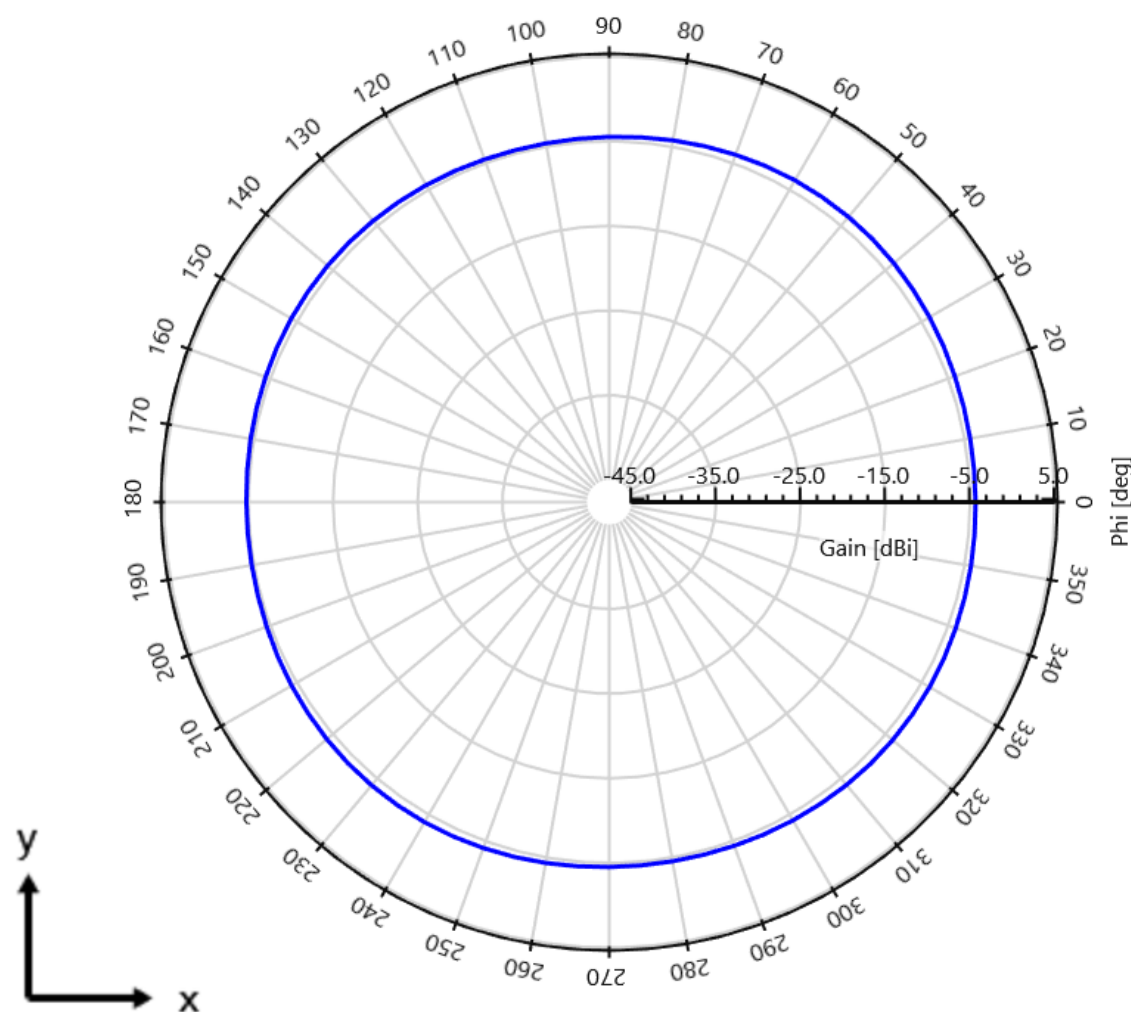
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Radiation Patterns Plots

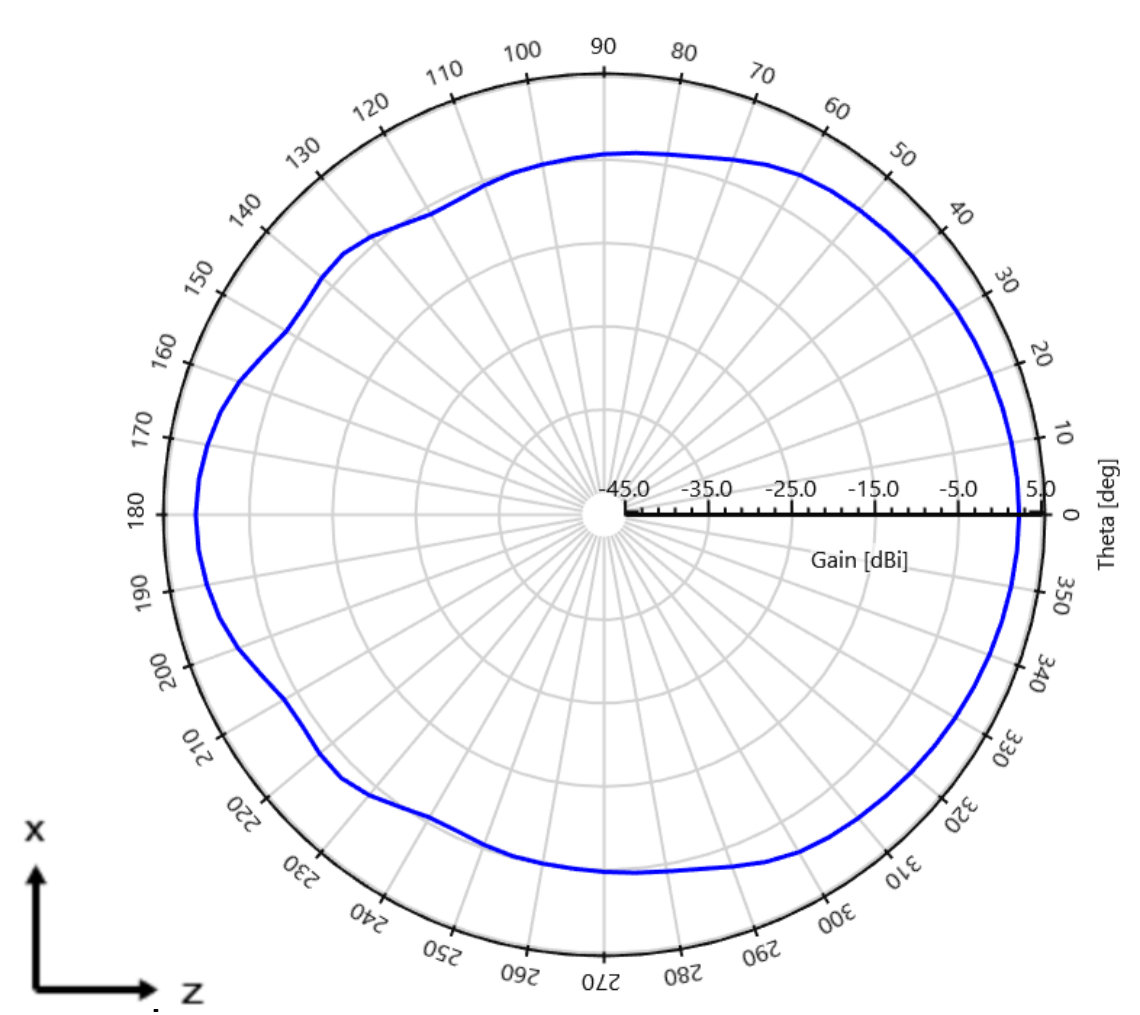
Measured at 1620 MHz (Iridium)



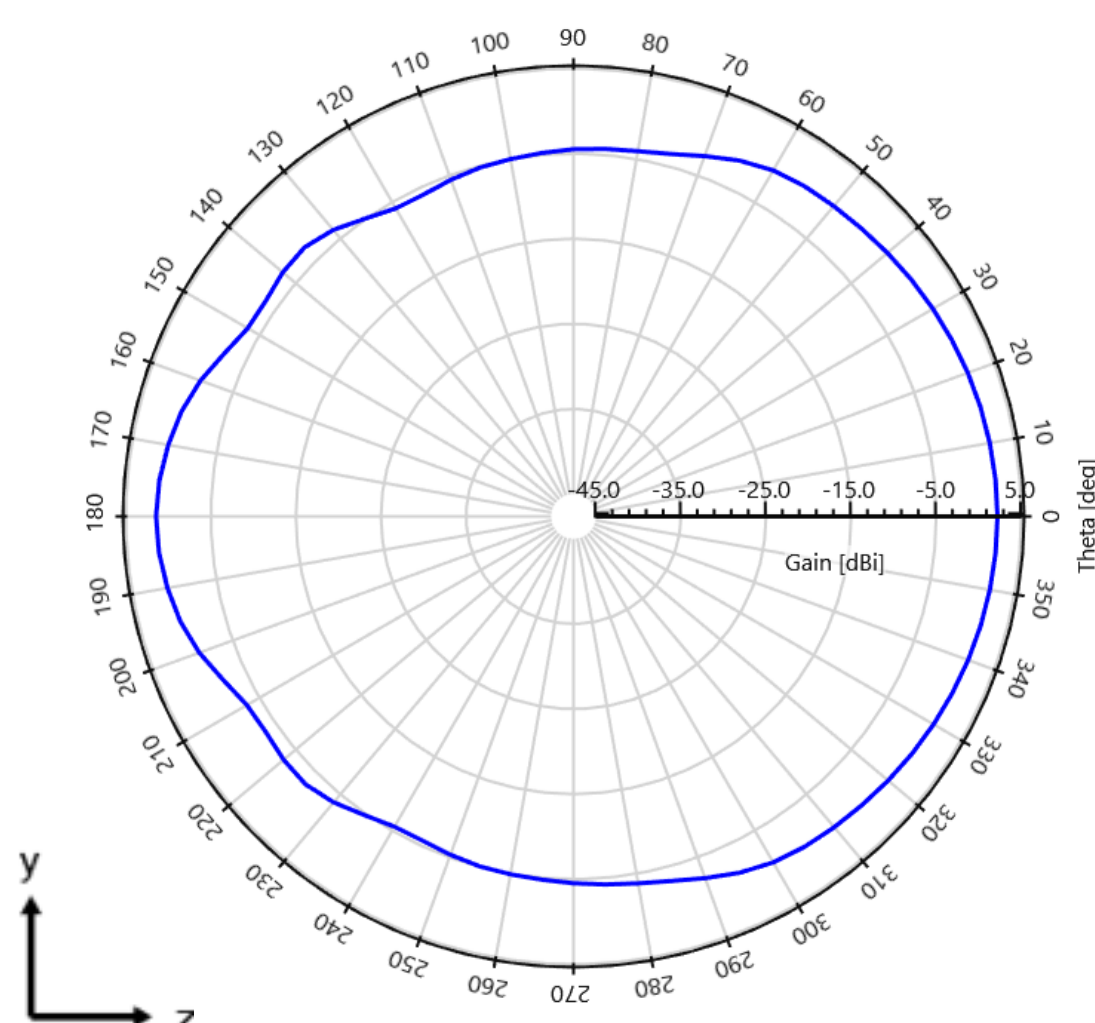
Gain (Total) - $\theta = 90$ deg - 1620 MHz [Plane XY]



Gain (Total) - $\phi = 0$ deg - 1620 MHz [Plane XZ]



Gain (Total) - $\phi = 90$ deg - 1620 MHz [Plane YZ]

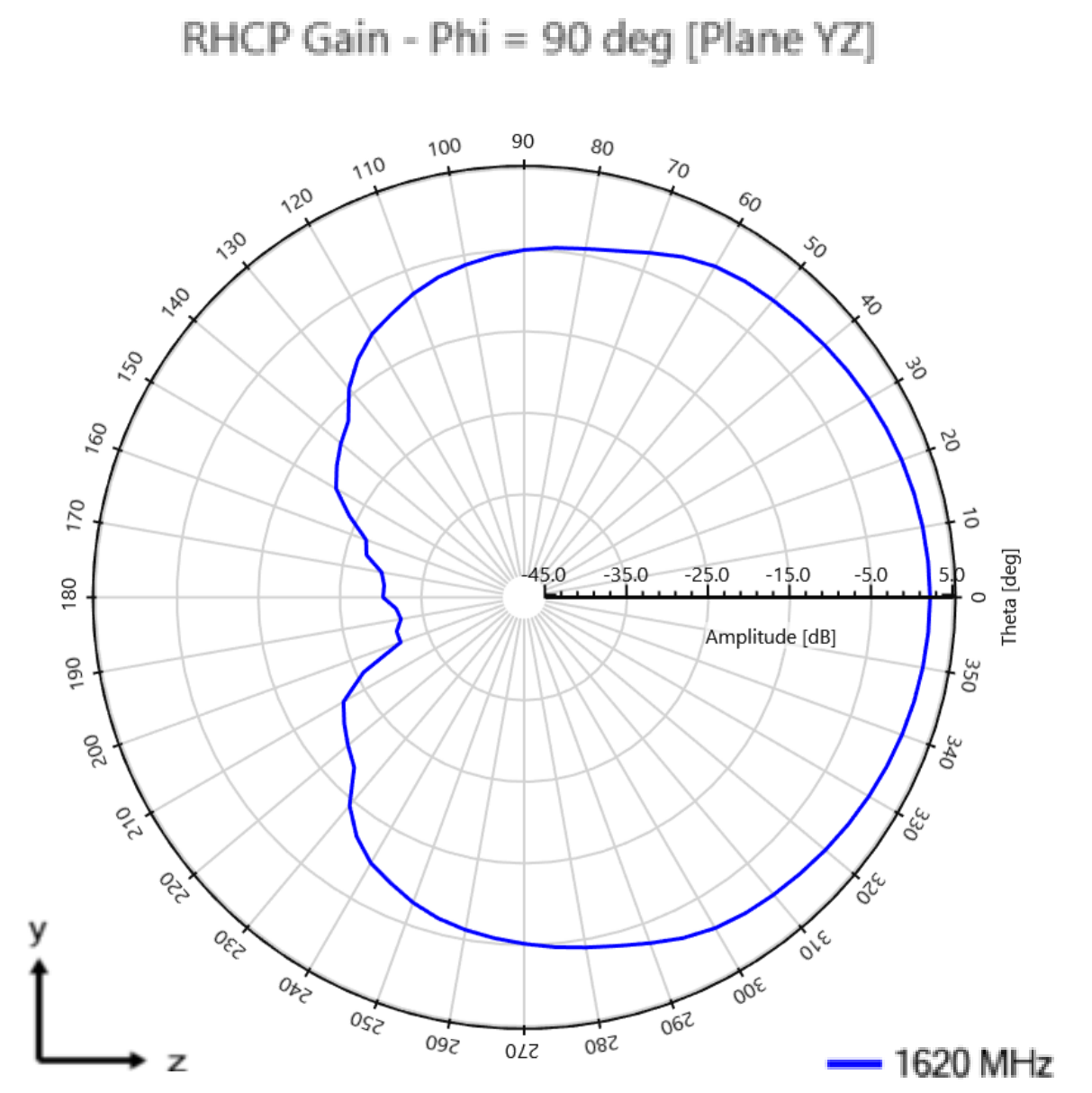
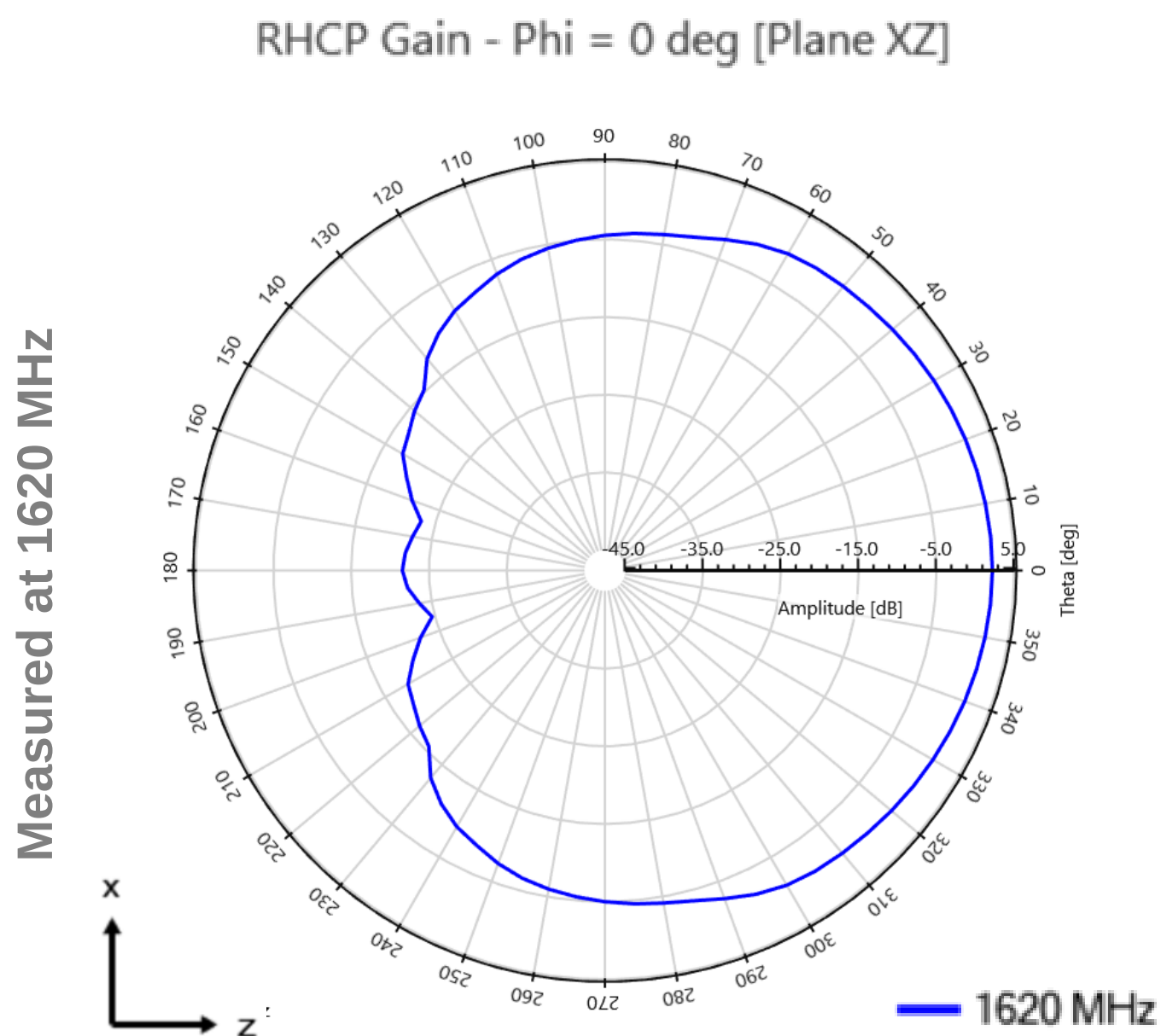
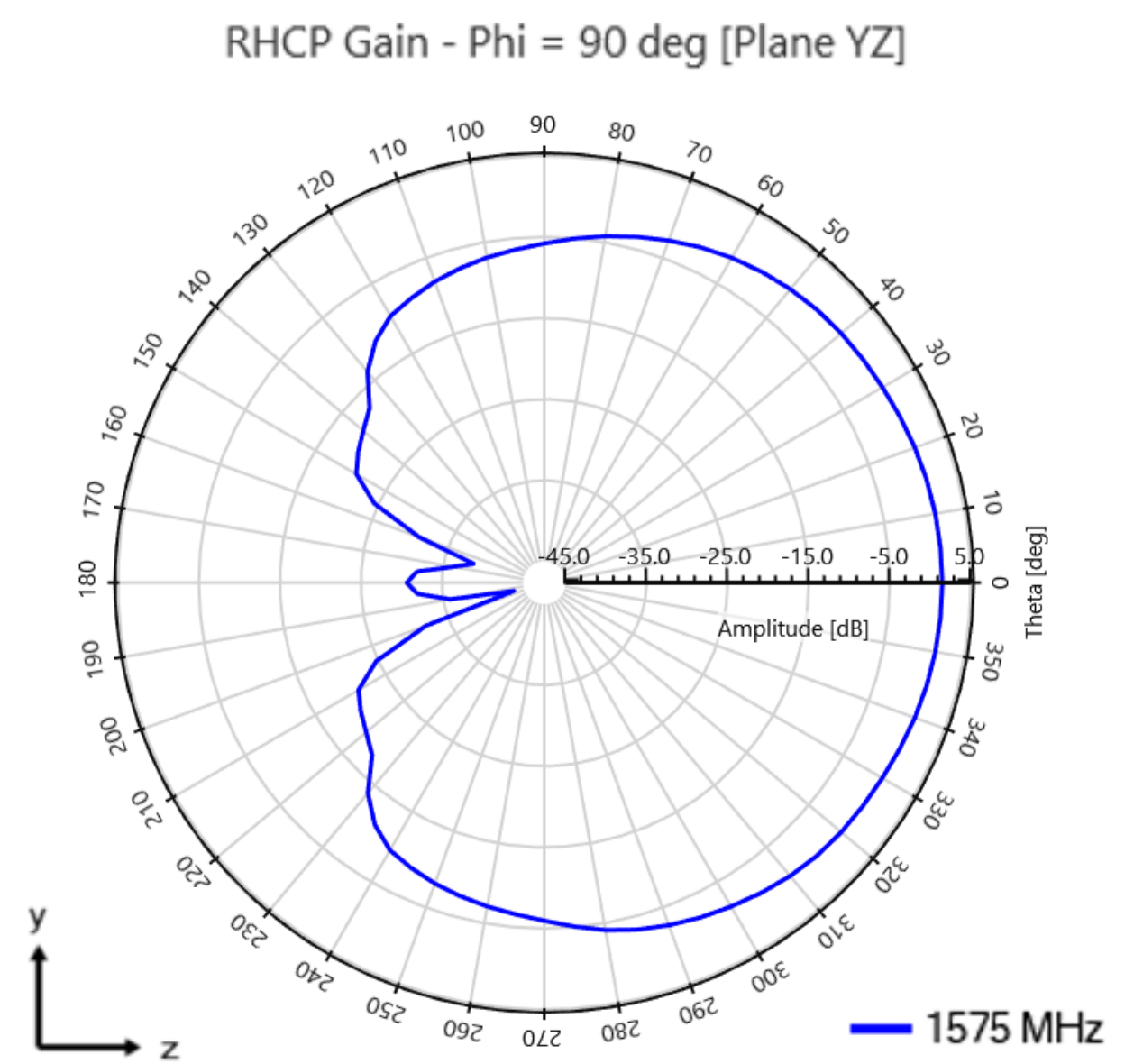
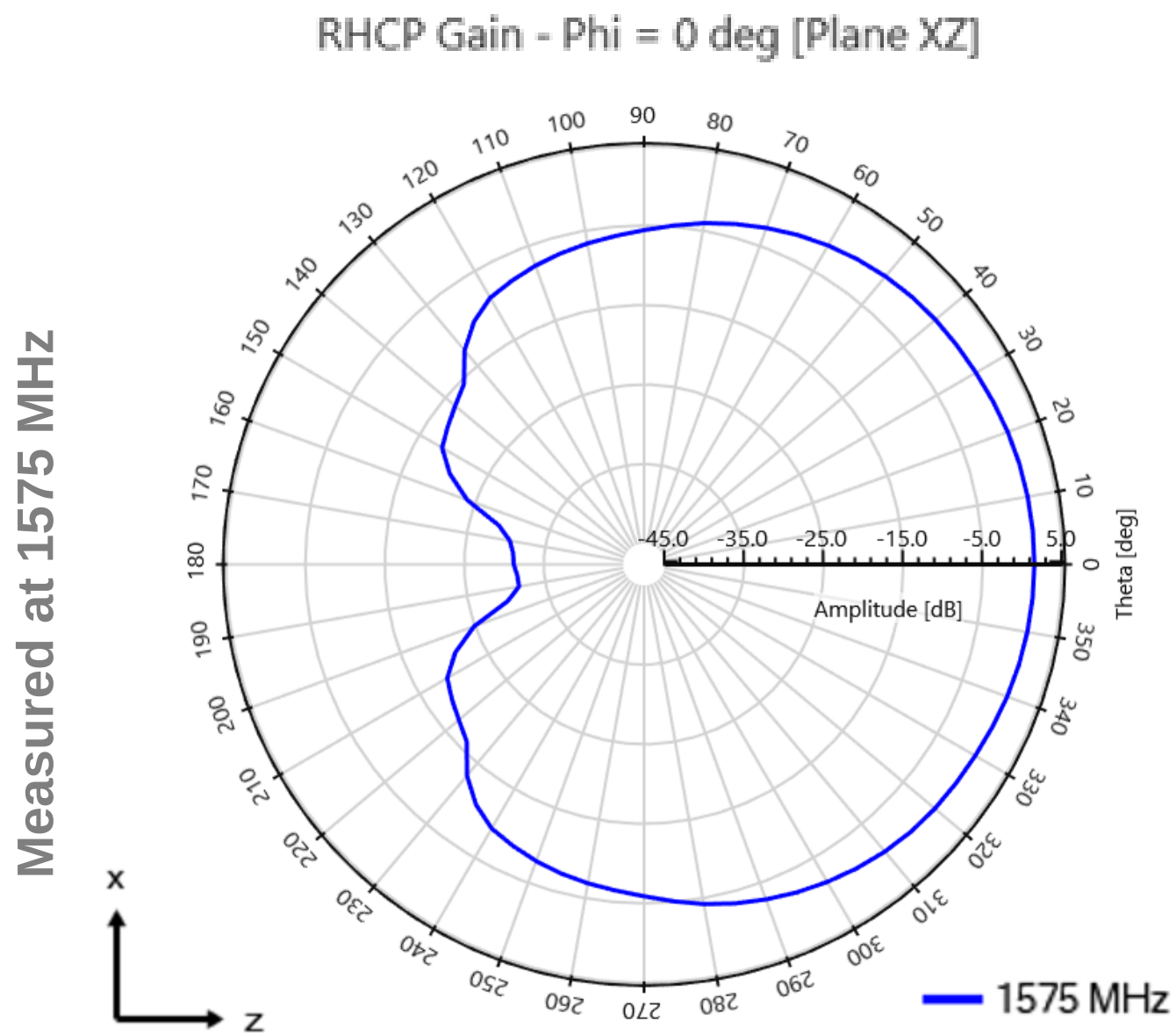


Yantel PD1400U06-524 Power Divider/Combiner was used for the radiating test

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RHCP Gain 2D

Measured at 1575 and 1620 MHz

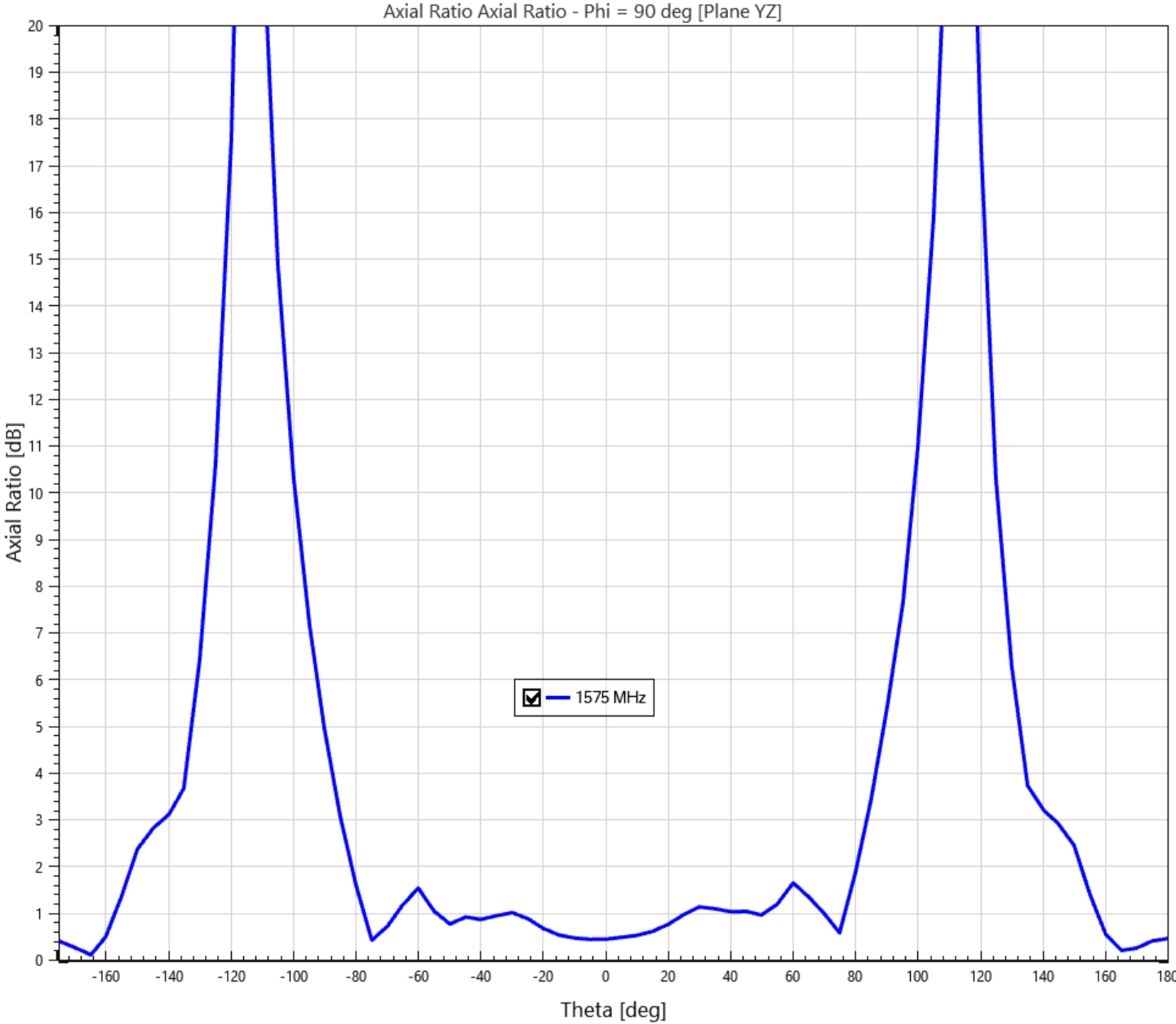
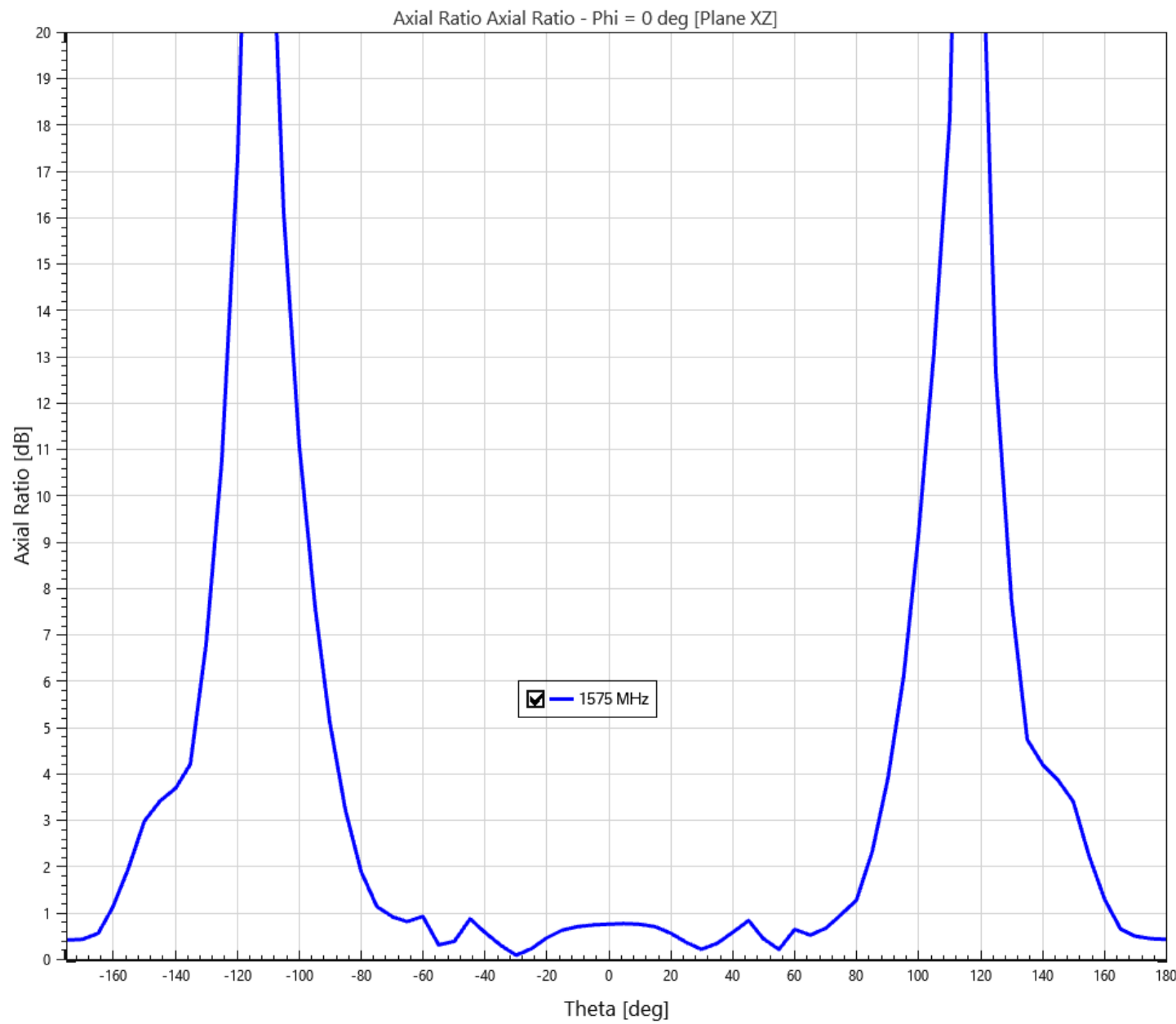


Yantel PD1400U06-524 Power Divider/Combiner was used for the radiating test

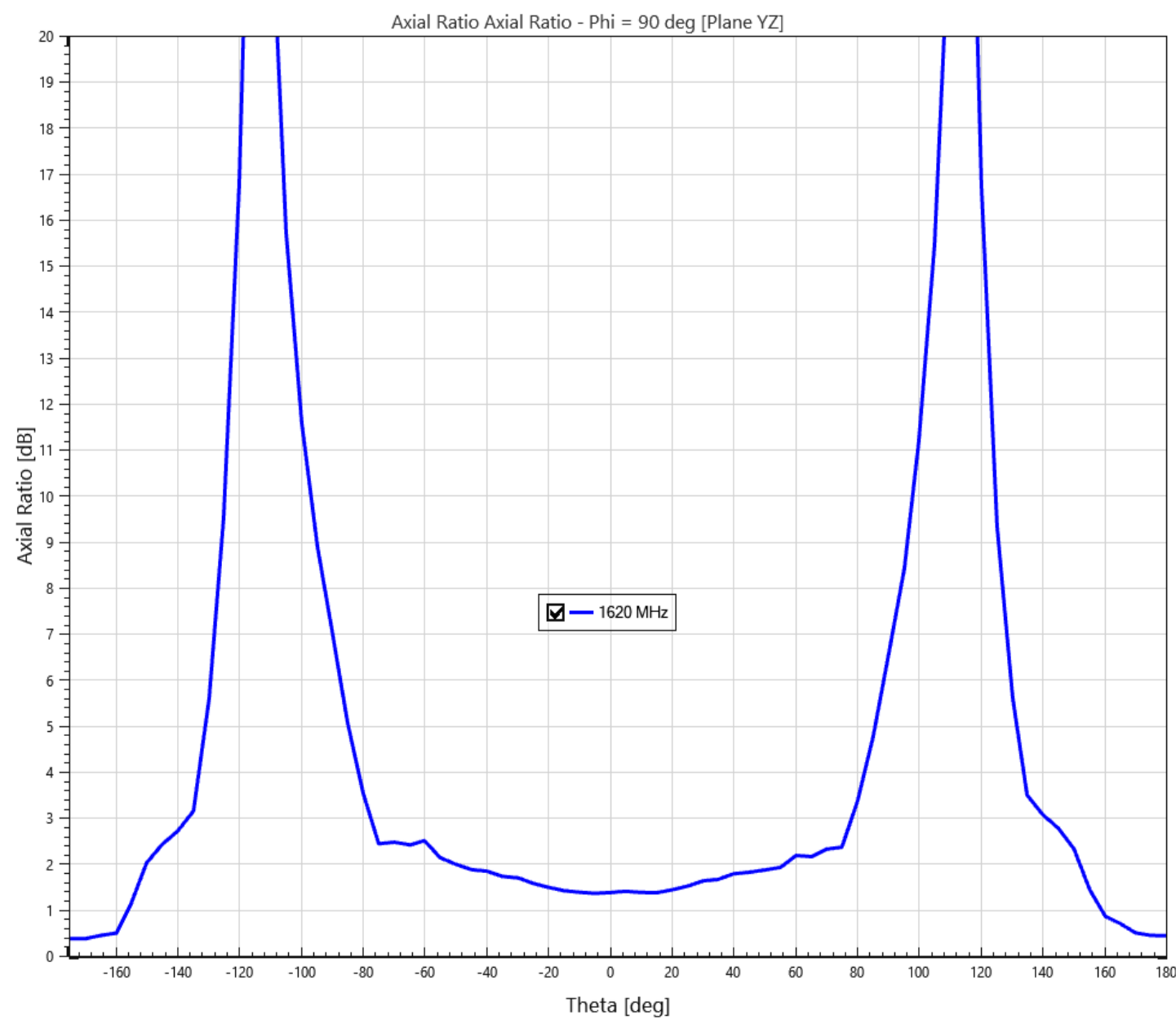
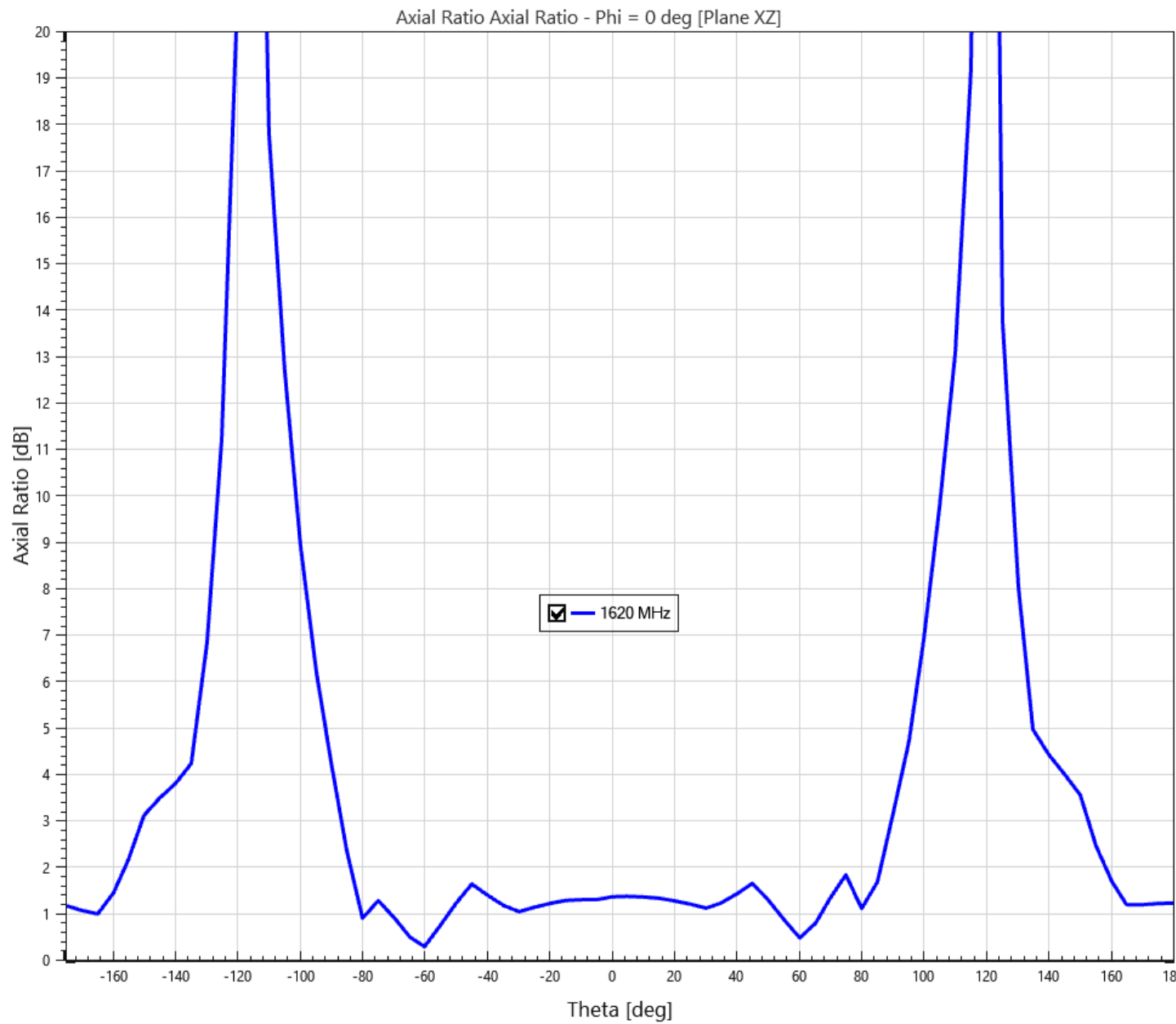
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Axial Ratio 2D

Measured at 1575 MHz (GNSS)



Measured at 1620 MHz (Iridium)

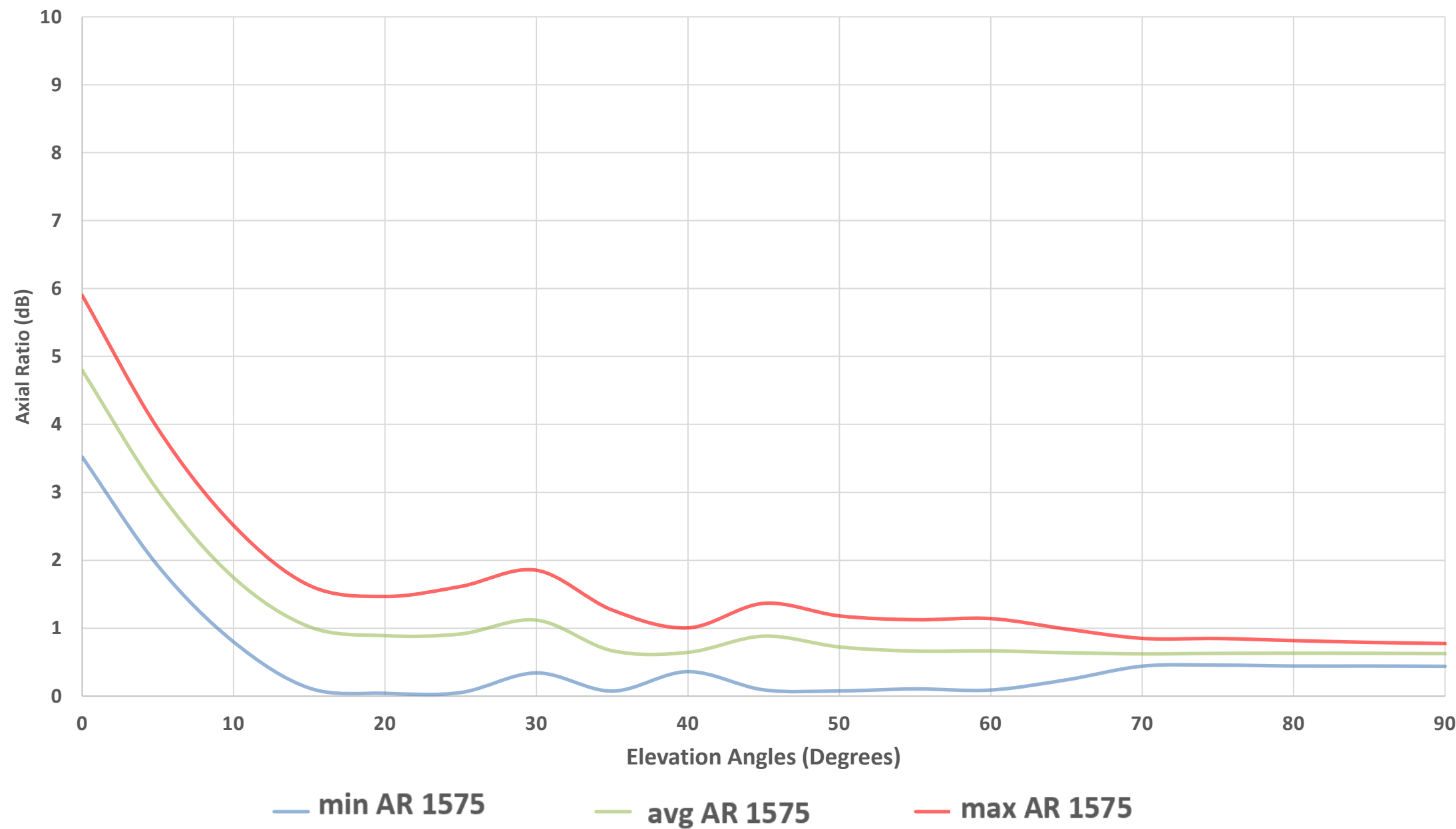


Yantel PD1400U06-524 Power Divider/Combiner was used for the radiating test

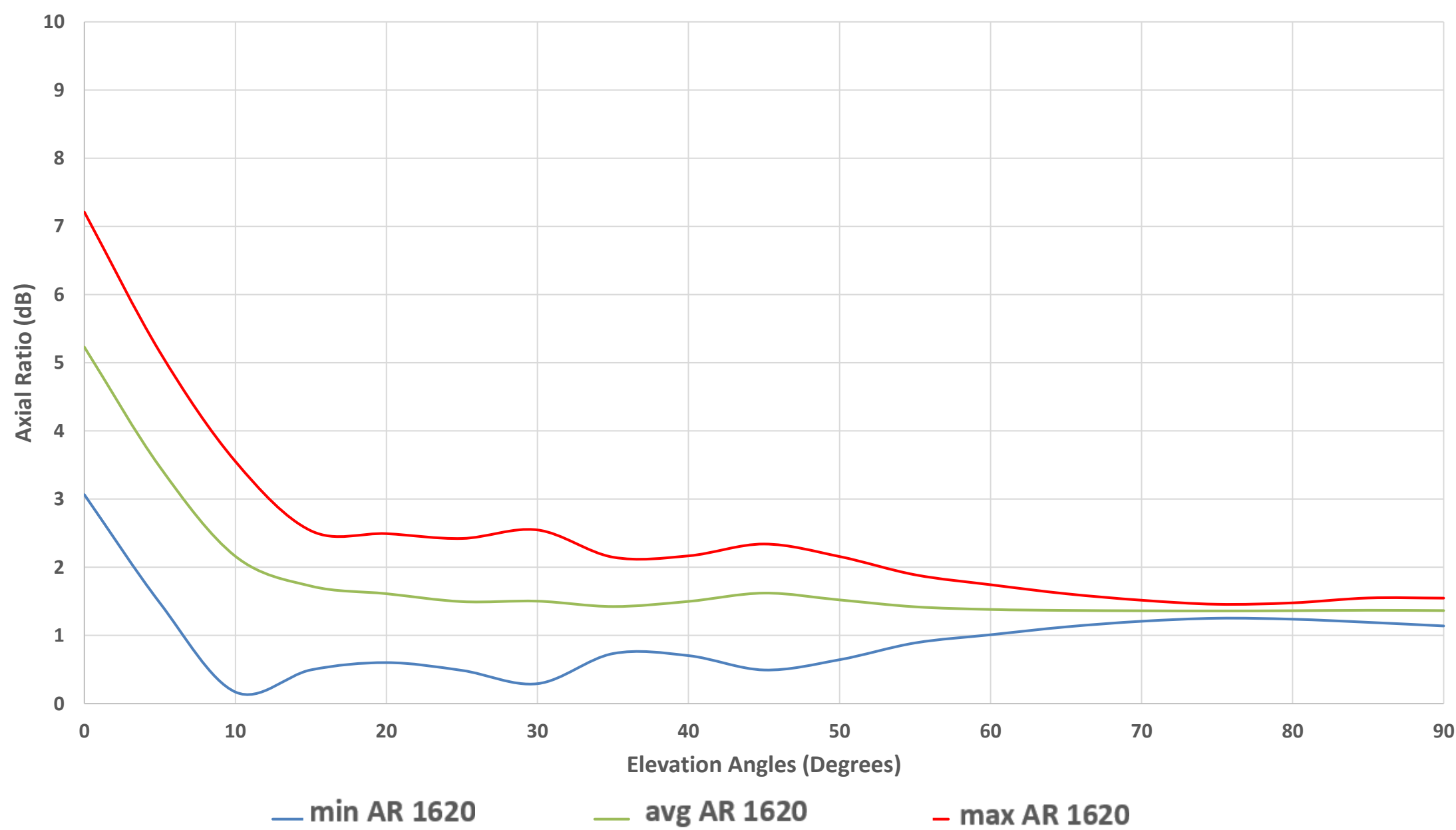
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Axial Ratio
Zenith is at 90 °

Axial Ratio – GNSS (1575 MHz)



Axial Ratio – Iridium (1620 MHz)

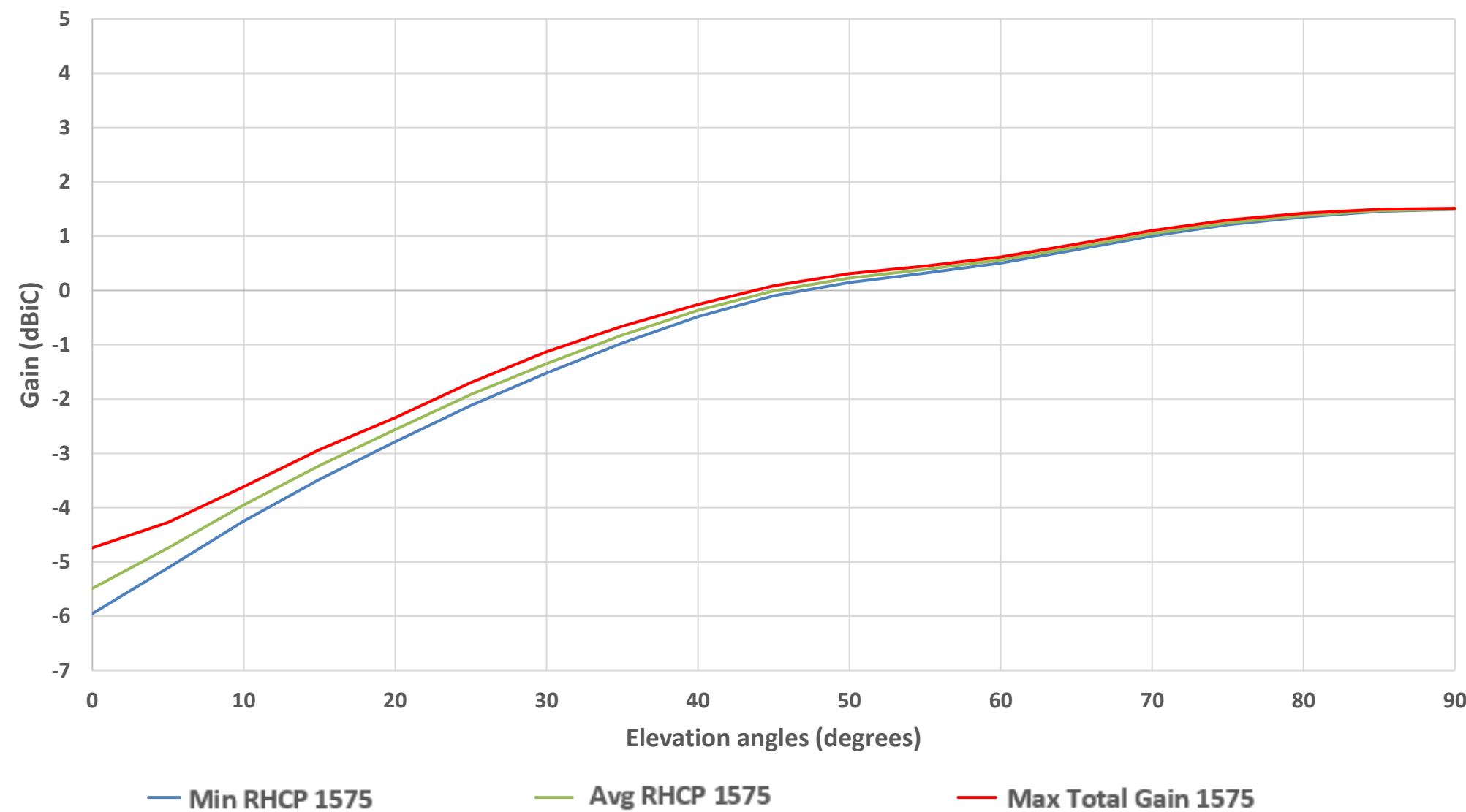


Yantel PD1400U06-524 Power Divider/Combiner was used for the radiating test

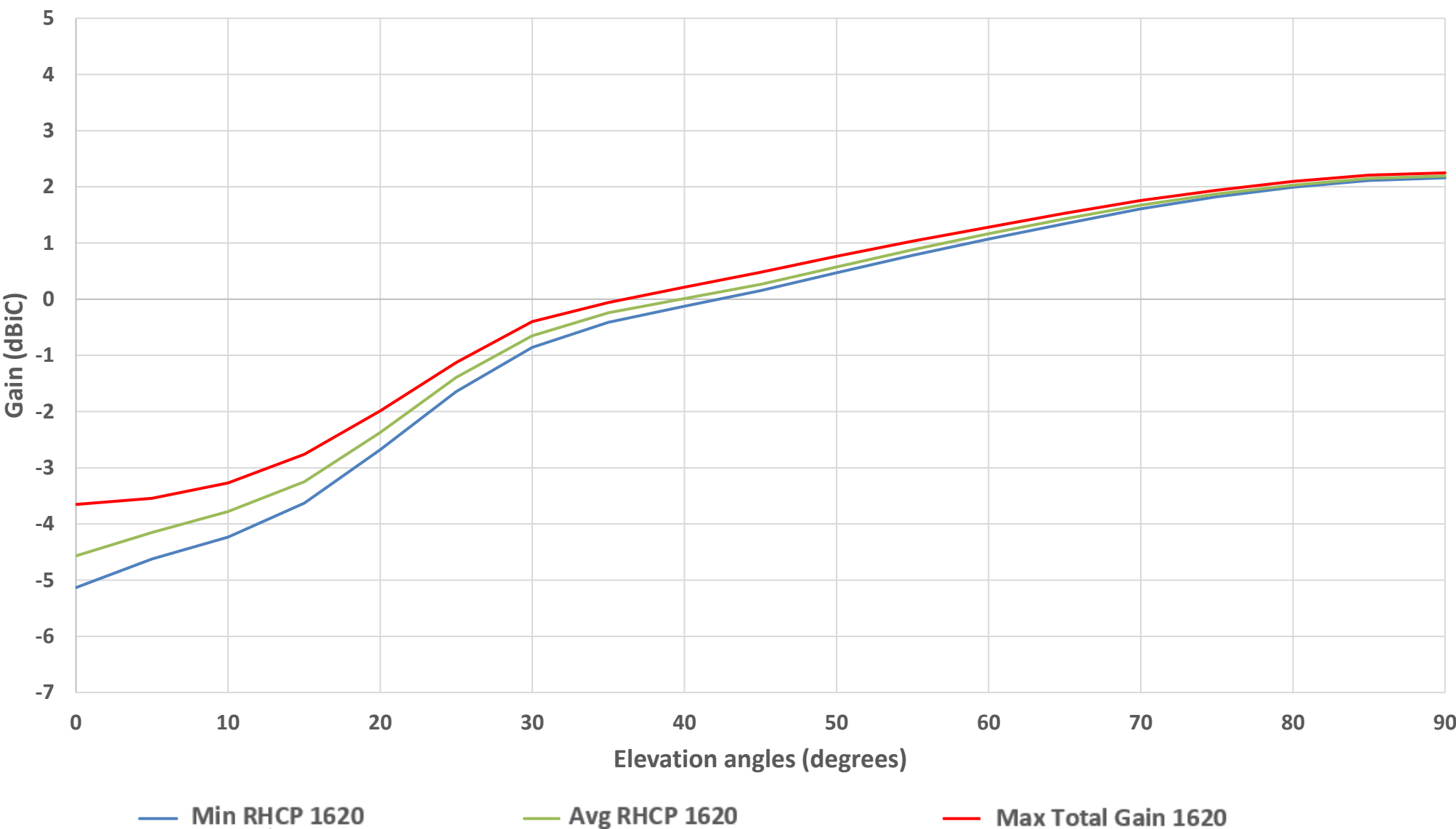
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RHCP Gain
 Zenith is at 90 °

RHCP Gain (1575 MHz)



RHCP Gain (1620 MHz)

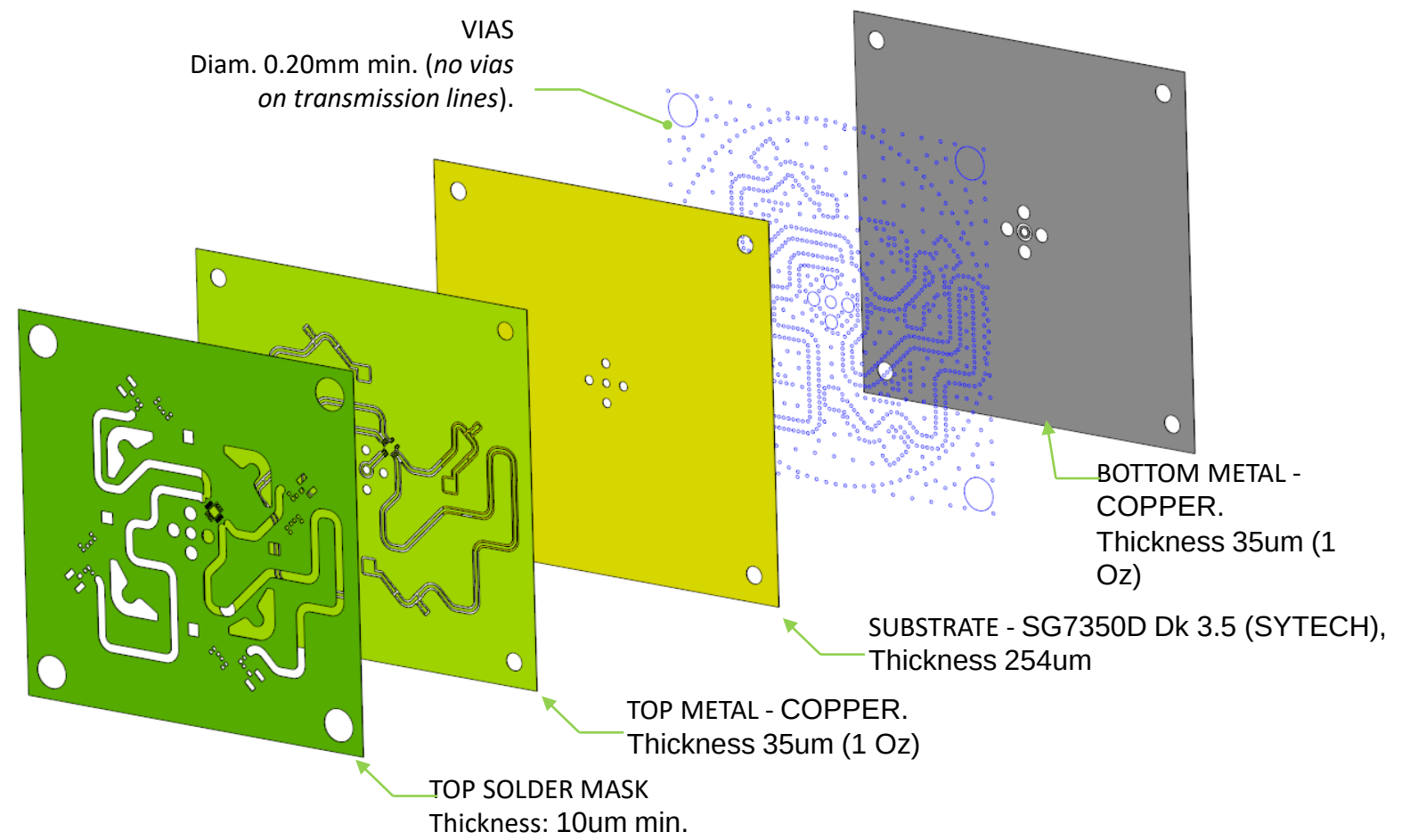
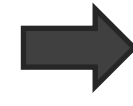
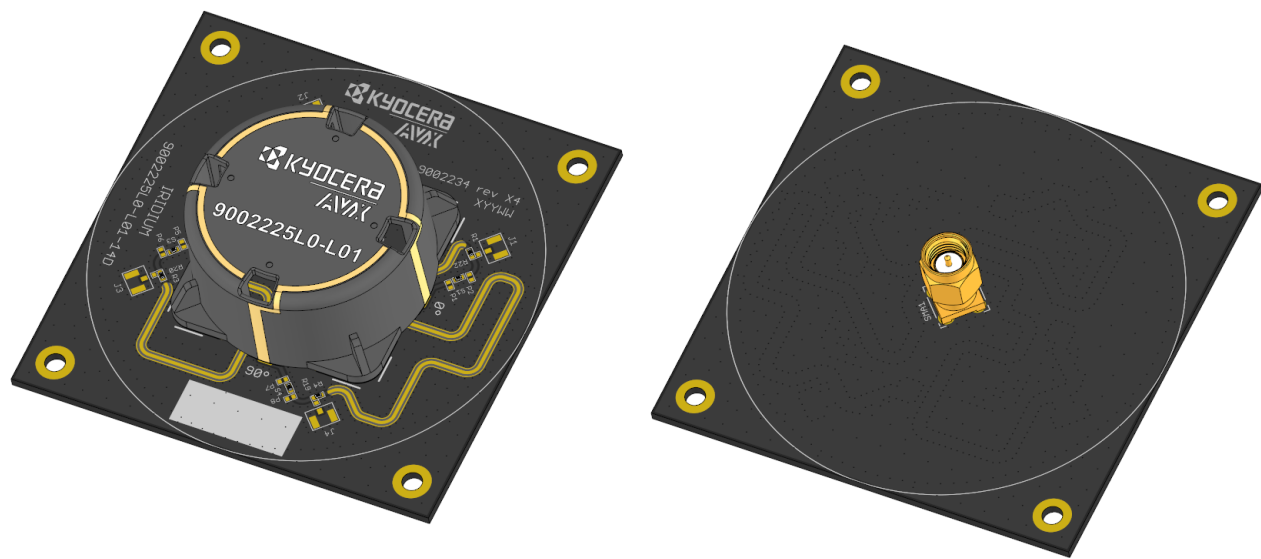


Yantel PD1400U06-524 Power Divider/Combiner was used for the radiating test

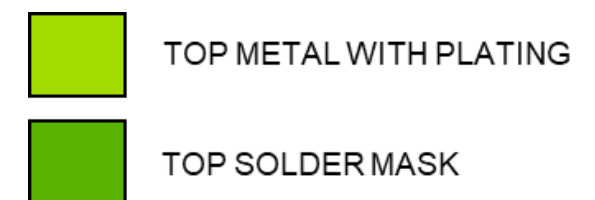
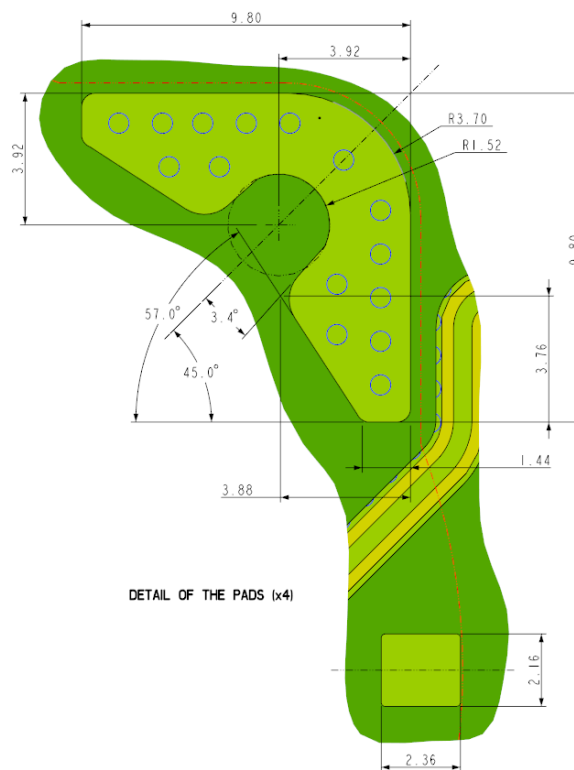
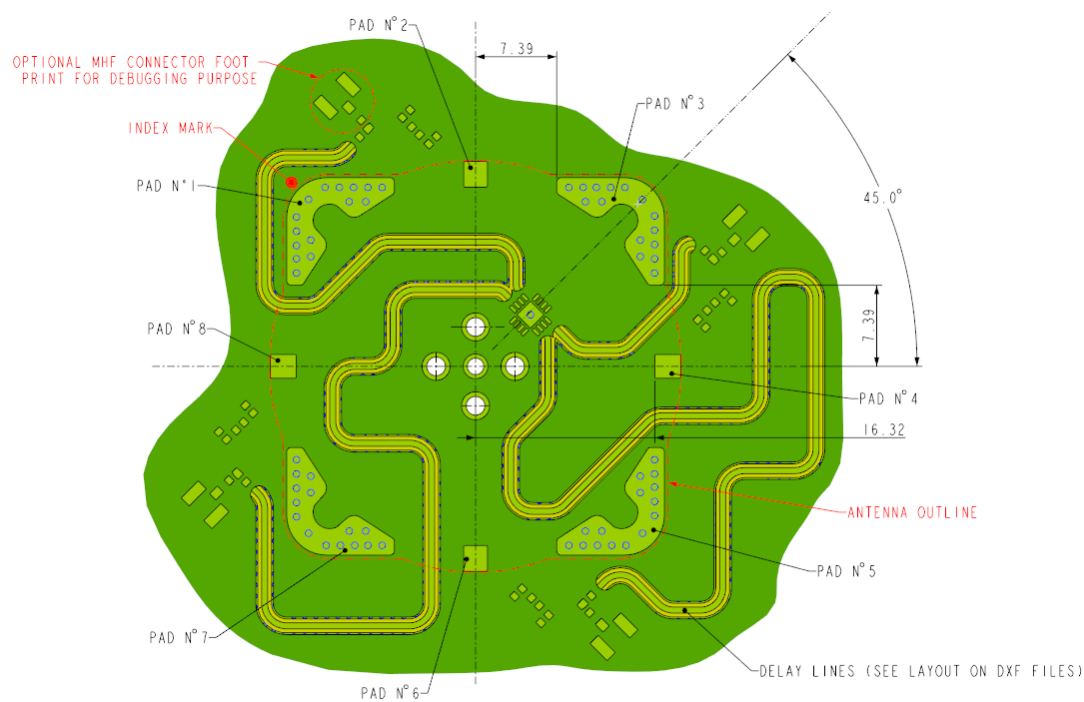
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Antenna layout (9002225L0-01-14D)

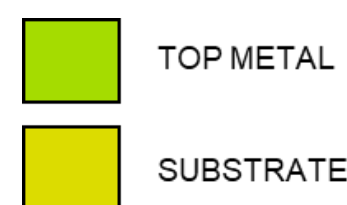
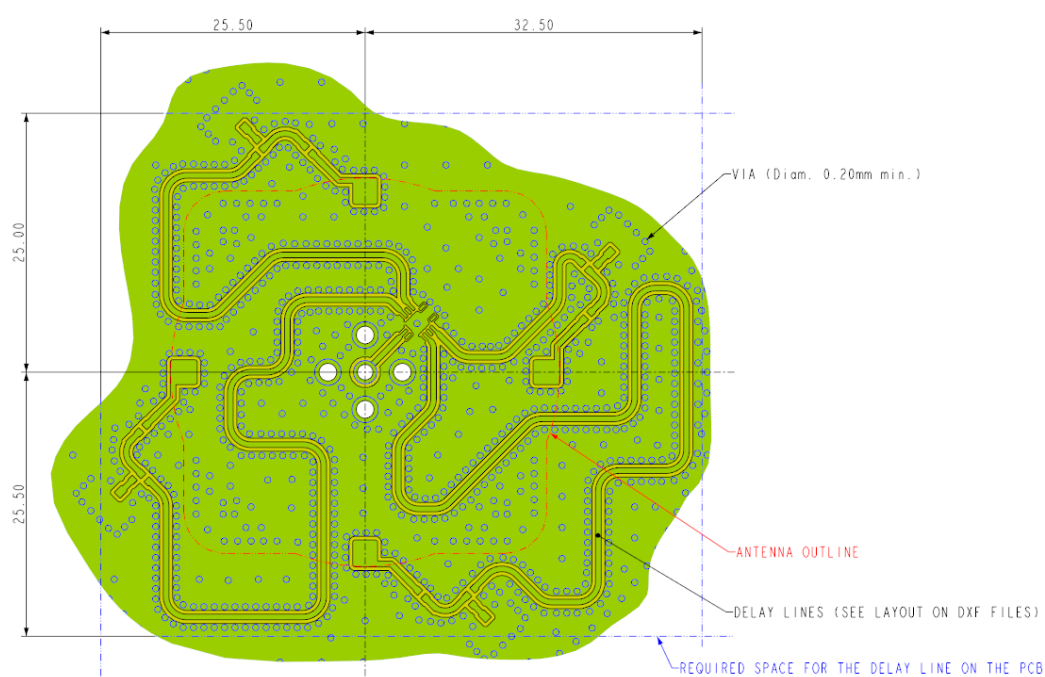
Typical layout dimensions (mm)



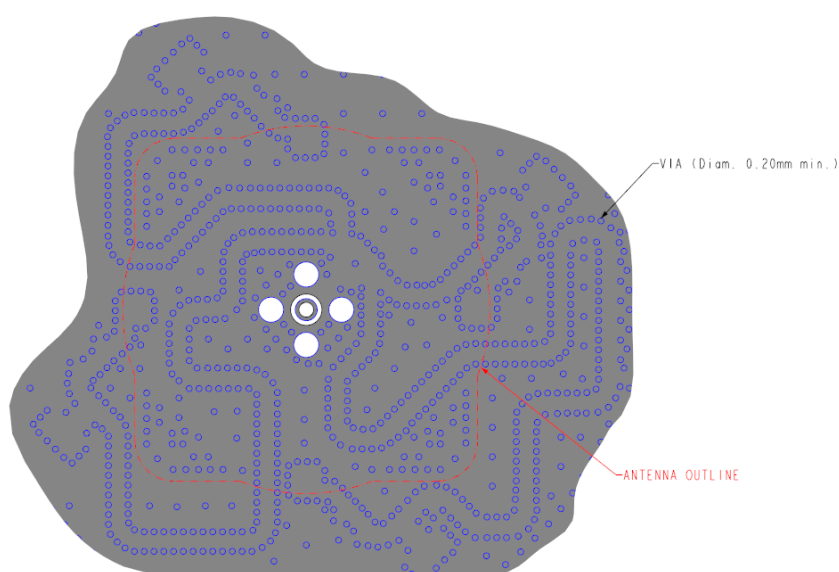
Top Solder Mask:



Top Metal:

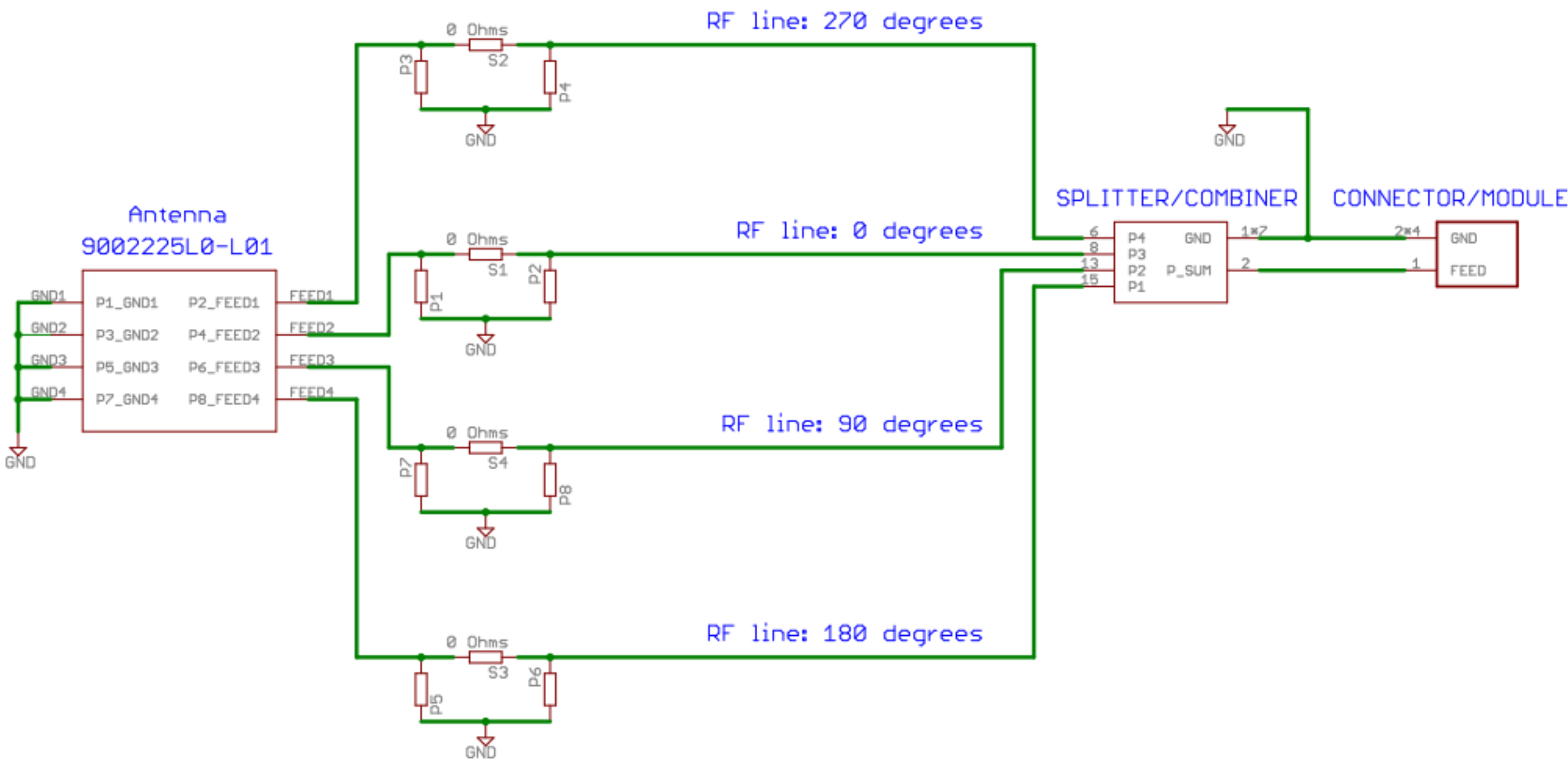


Bottom Metal:



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Antenna Schematic (9002225L0-01-14D)



	P1/P2/P3/P4/P5/P6/P7/P8	S1/S2/S3/S4
Default Matching	DNI	0 ohm

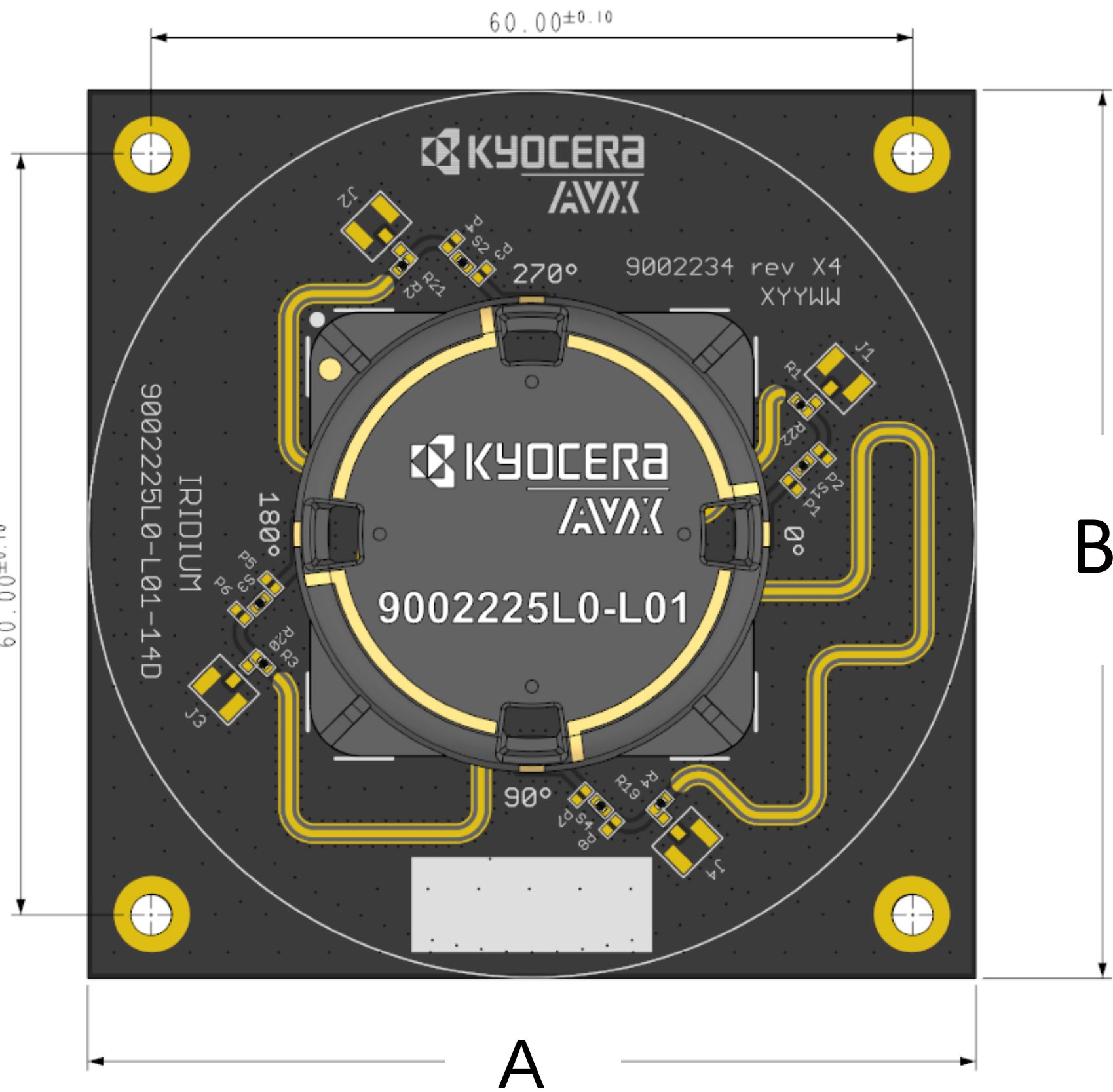
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Antenna Demo Board (9002225L0-L01-14D)

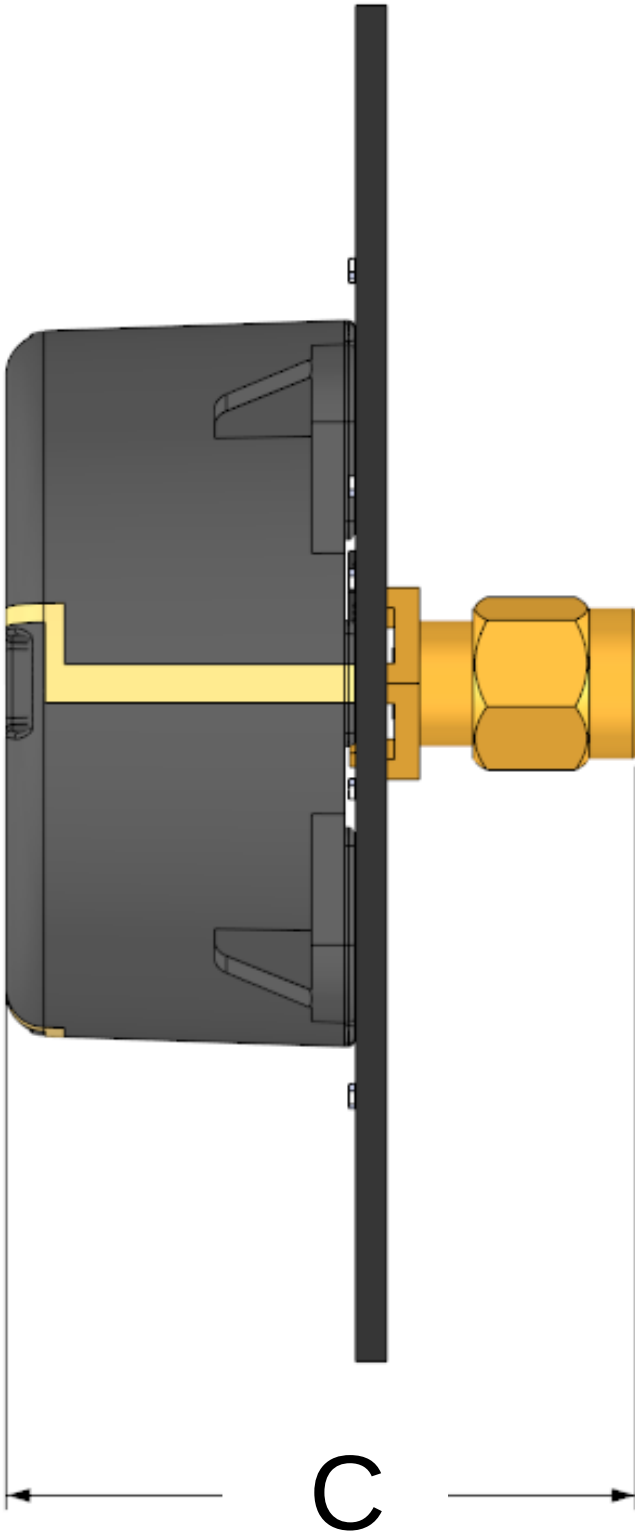
Demo Board Top and Side View

Part Number	A	B	C
9002225L0-L01-14D	70.0 mm	70.0 mm	32.5 mm

For more details, please check our Gerber file on the website.
 MHF connector Footprint for debugging purposes



Top View

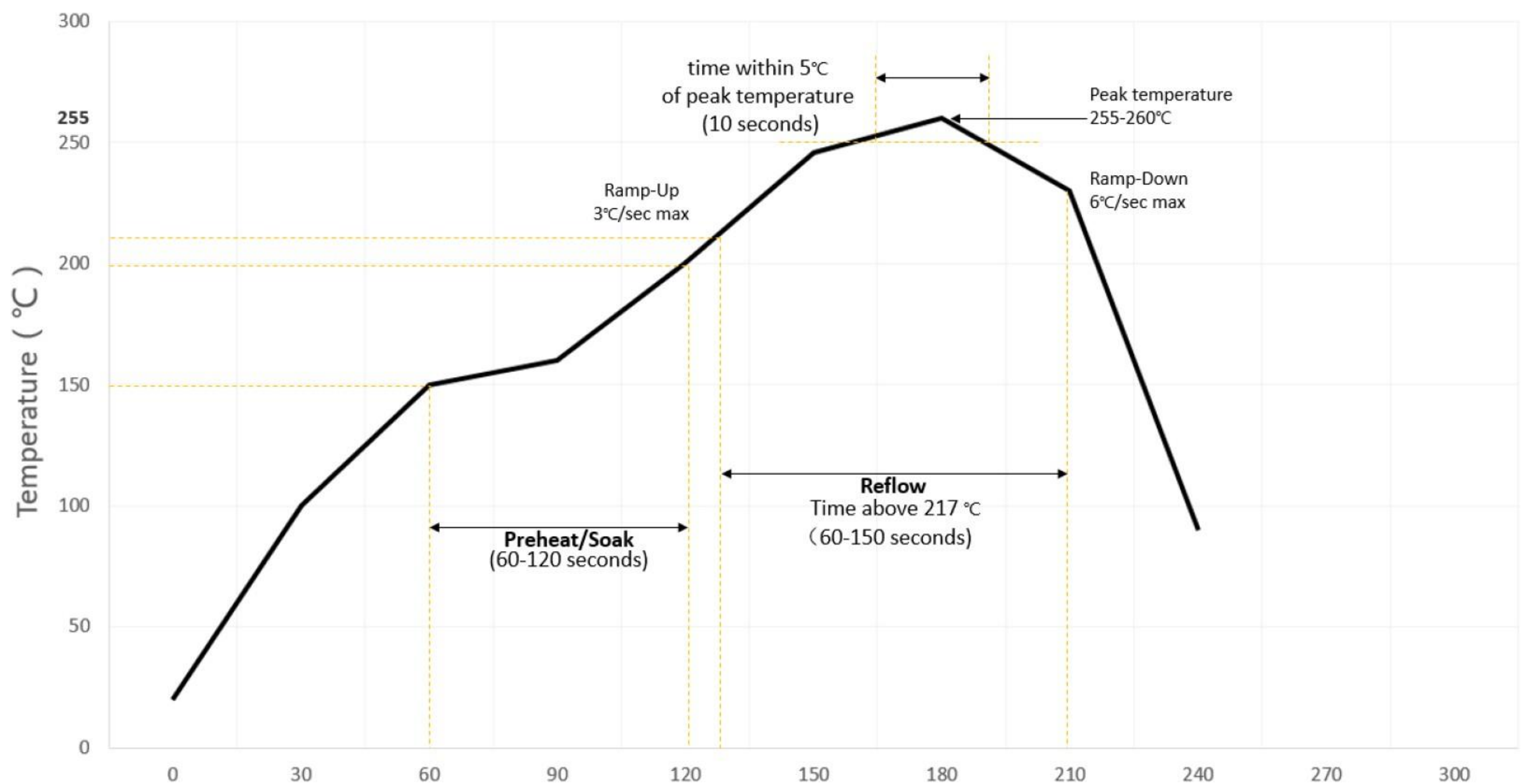


Side View

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Recommended Reflow Soldering Profile

The recommended method for soldering the antenna to the board is forced convection reflow soldering. The following suggestions provide information on how to optimize the reflow process for the LDS antenna:



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Additional Resources – 9002225L0-L01

3D FIT File:

https://www.kyocera-avx.com/download/antennas/ME-FIT/9002225L0-L01_3D-FIT.zip

DXF File:

https://www.kyocera-avx.com/download/antennas/3D-DXF/9002225L0-L01_3D-DXF.zip