



M9PLUS-HCT-A-SMA

L1: GPS, GLONASS, GALILEO, BEIDOU

L2: GPS L2C, GALILEO E5B, GLONASS L30C

L5: GPS

L-band

Part #: 100-00069-02

Description

The M9PLUS-HCT-A-SMA is an active multi-frequency, high-accuracy GNSS antenna designed to support L1/L2/L5 GPS, Galileo, Beidou, GLONASS bands, as well as L-band correction services. Built on Maxtena's proprietary Helicore® technology, the antenna offers exceptional pattern control, polarization purity, and high efficiency in a compact form factor. The integrated pre-filter in this GNSS antenna is specifically designed to mitigate LTE interference, which is crucial for maintaining signal integrity in high-performance GNSS applications. LTE signals can often overlap with or interfere with GNSS frequencies, particularly near urban areas or in environments with dense mobile communication networks. By incorporating a pre-filter, the antenna effectively blocks out-of-band LTE signals, reducing the risk of intermodulation and maintaining clear, precise GNSS signal reception. This enhanced filtering improves signal-to-noise ratio (SNR) and enables more reliable satellite tracking, even in challenging RF environments, which is essential for applications requiring high accuracy and dependability. The antenna includes an integrated SMA connector and rugged, IP67 automotive-grade components, making it ideal for applications that demand high precision and minimal integration effort or for retrofitting existing products. The M9PLUS-HCT-A-SMA also features an O-ring for enhanced environmental sealing.

Passive Antenna Performance (L5)

Parameter	Specification
Frequency Range	1164 -1189 MHz
Antenna element peak gain	0.5 dBic
Efficiency	40%
Axial Ratio	0.5 dB (max) @ Zenith
VSWR	2.2:1 (max)
Impedance	50 Ω
Polarization	RHCP
Beamwidth	112°

Passive Antenna Performance(L2, B2, G2, G3, E5B)

Parameter	Specification
Frequency Range	1192 -1231 MHz
Antenna element peak gain	1.1 dBic
Efficiency	46 %
Axial Ratio	0.5 dB (max) @Zenith
VSWR	2.0:1 (max)
Impedance	50 Ω
Polarization	RHCP
Beamwidth	125°



Features

- Pre-filtering
- Rugged IP-67 rating
- Ground plane independent
- GIS RTK applications
- Ultra light weight - 24 grams (typical)

Applications

- Autonomous unmanned aerial vehicles (UAVs)
- GNSS positioning
- GNSS timing
- Sea and land container tracking
- Fleet management and asset tracking
- Marine and avionics systems
- Law enforcement
- Public safety



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Passive Antenna Performance (L1, E1, B1, B1-2, G1)

Parameter	Specification
Frequency Range	1559-1606 MHz
Antenna element peak gain	0.5 dBic
Efficiency	49%
Axial Ratio	1 dB @ Zenith(max)
VSWR	1.5:1 (max)
Impedance	50 Ω
Polarization	RHCP
Beamwidth	125°

L-band correction services

Parameter	Specification
Frequency Range	1535-1559 MHz
Antenna element peak gain	1.5 dBic
Efficiency	43%
Axial Ratio	0.8 dB (max) @Zenith
VSWR	1.5:1 (max)
Impedance	50 Ω
Polarization	RHCP
Beamwidth	145°



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RF Specifications

Parameter	RF Specification
Conducted Gain	33 +/- 2 dB
Noise Figure	< 3 dB
Voltage	3.0 to 5.0 V
Current	22 mA (max)
Out-of-band rejection	Low band: ≥ 55 dB @ ≤ 1000 MHz ≥ 35 @ ≤ 1125 MHz ≥ 45 dB @ ≥ 1300 MHz High band: ≥ 40 dB @ ≤ 1500 MHz ≥ 35 dB @ ≥ 1650 MHz ≥ 45 dB @ ≥ 1750 MHz
Group Delay	15ns/15ns/5ns/5ns
P1 Output	11 dBm typ.

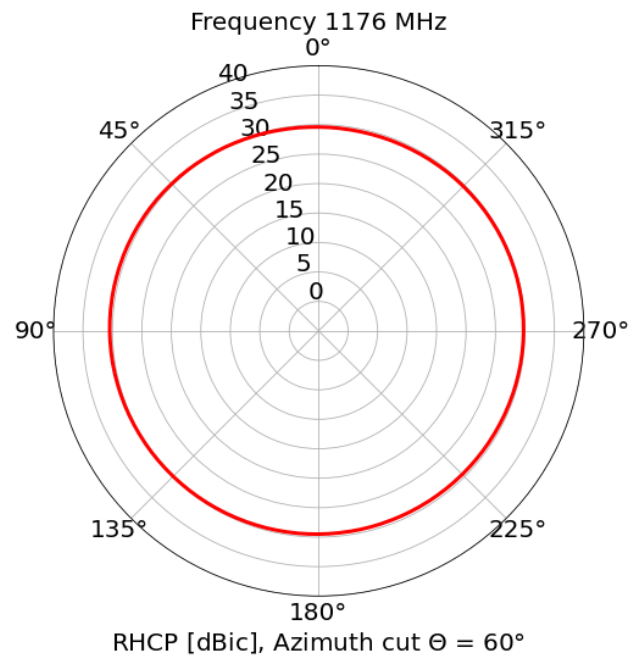
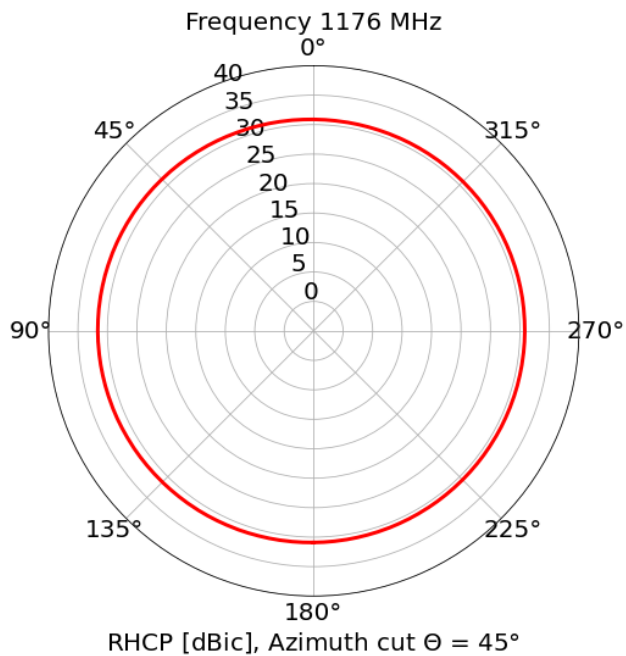
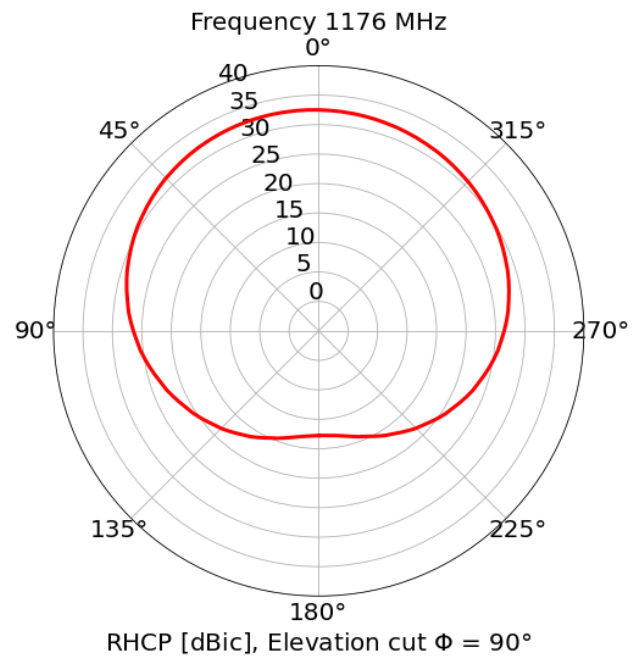
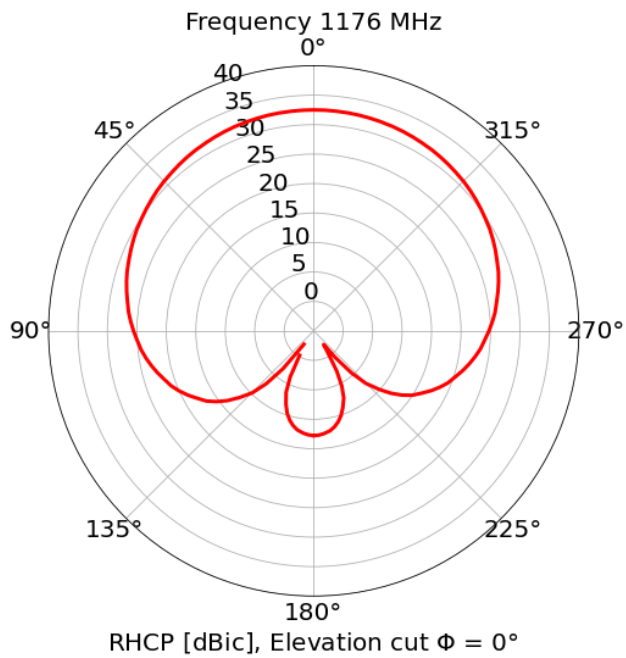
Mechanical Specification

Parameter	Specification
Antenna Dimensions	Ø34 x 51 mm
Operating Temperature	-40 °C to 85 °C
Mounting Type	Connector Mount
Connector	SMA male
Radome/Color	Black
Housing material	ABS/PC
Certificates	IP67

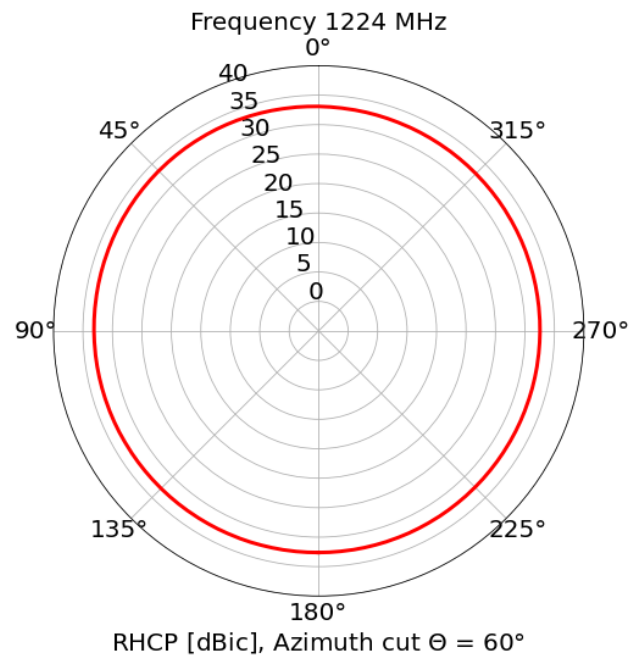
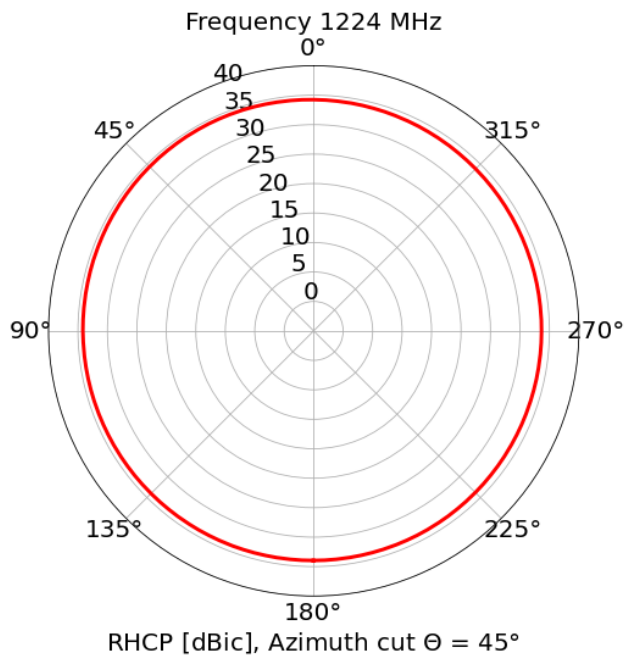
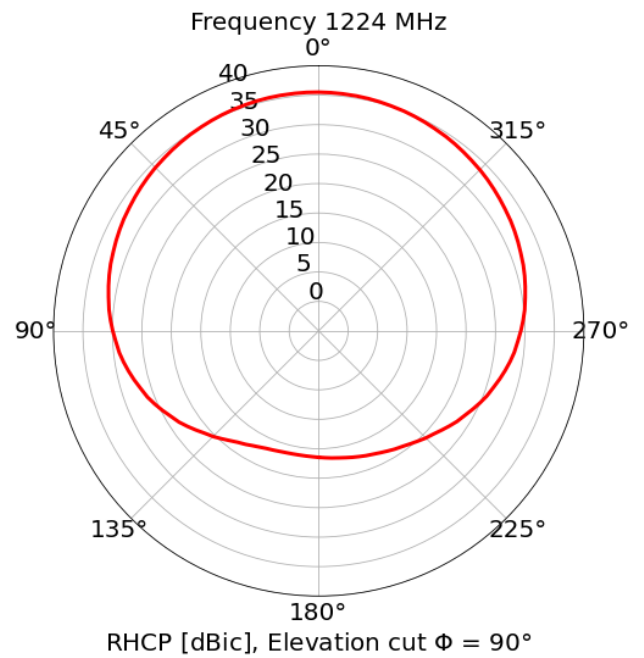
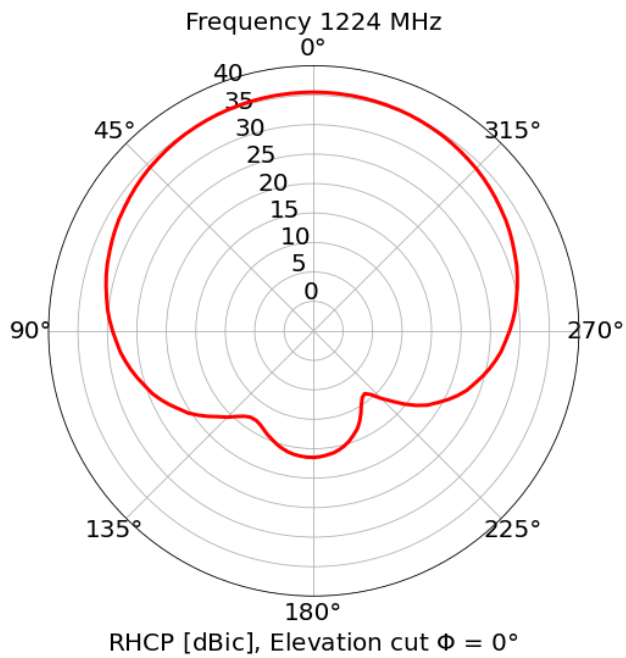


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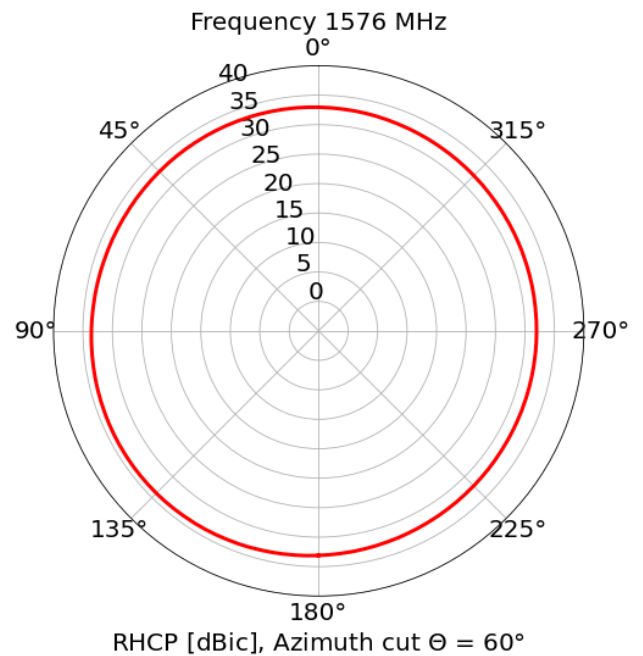
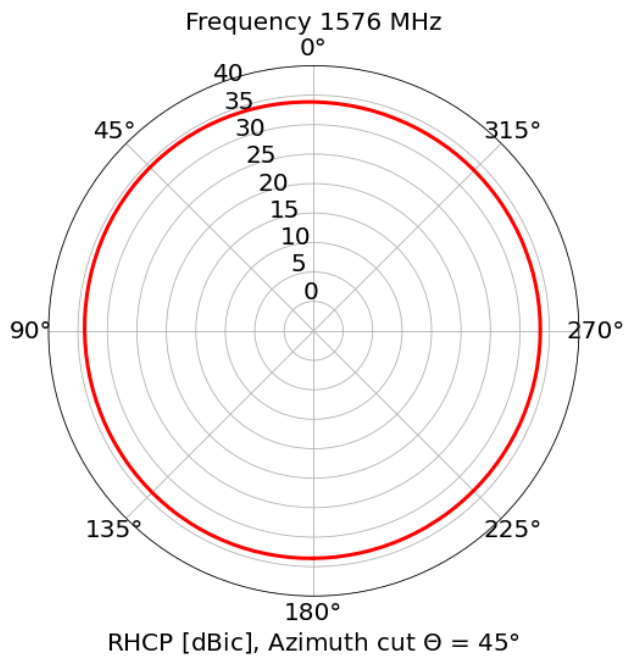
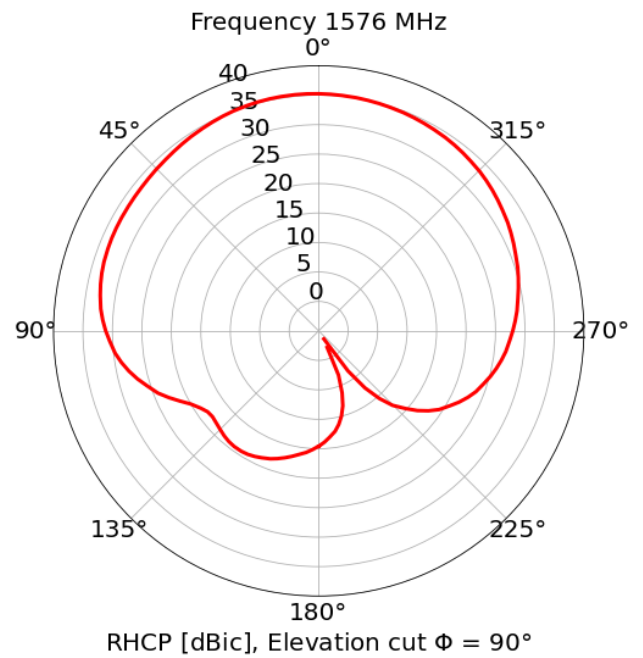
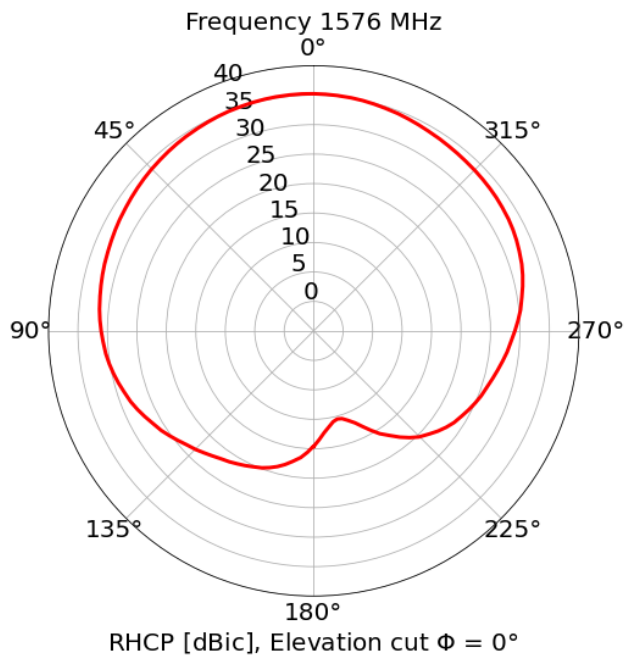
Radiation Patterns L5



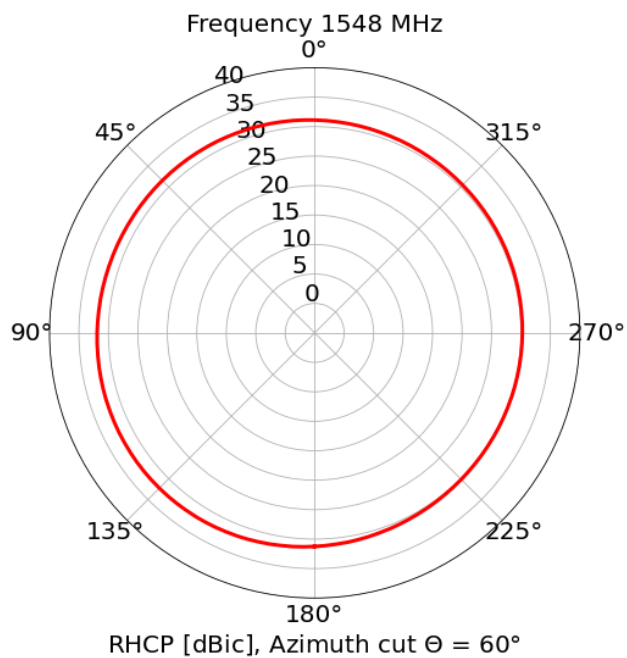
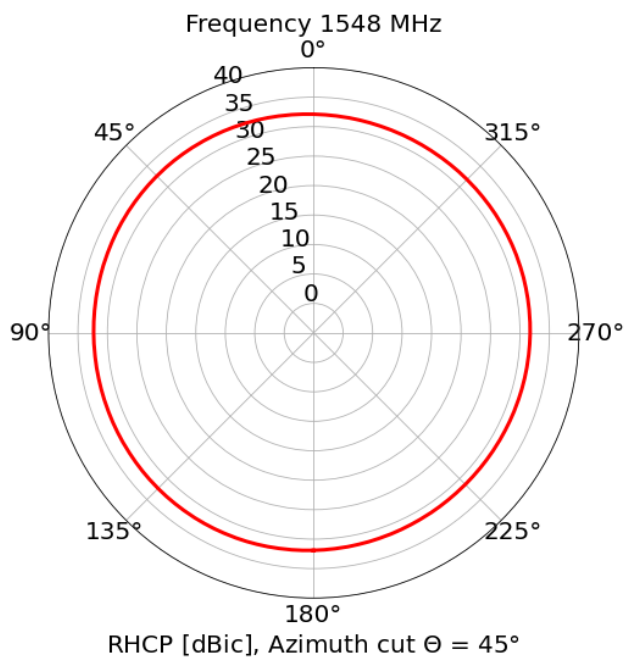
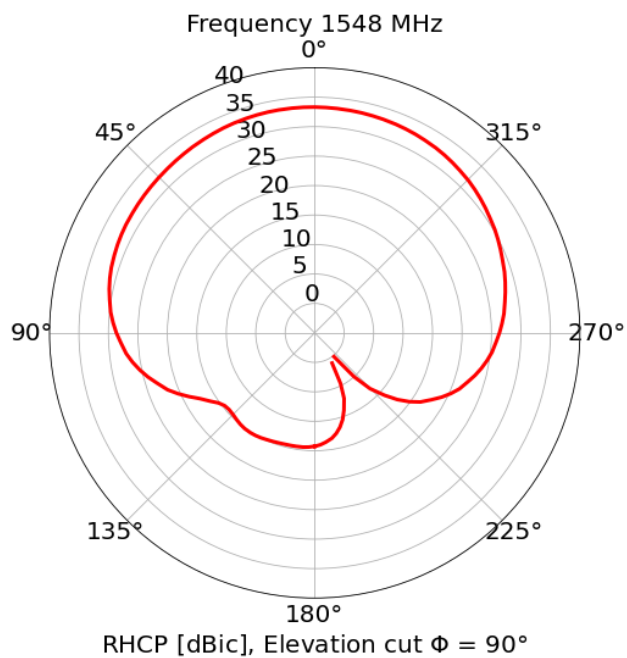
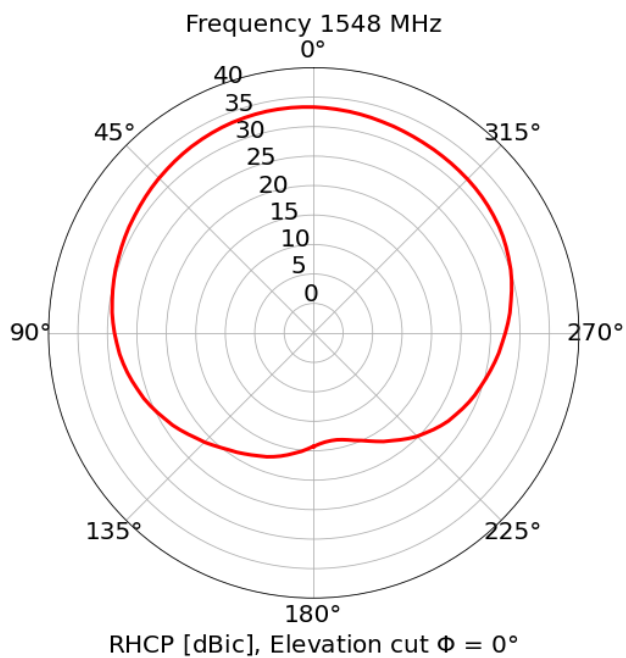
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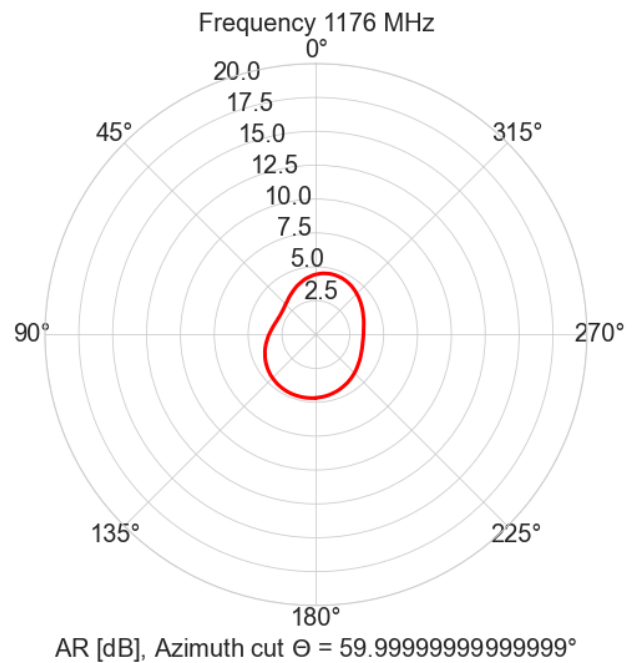
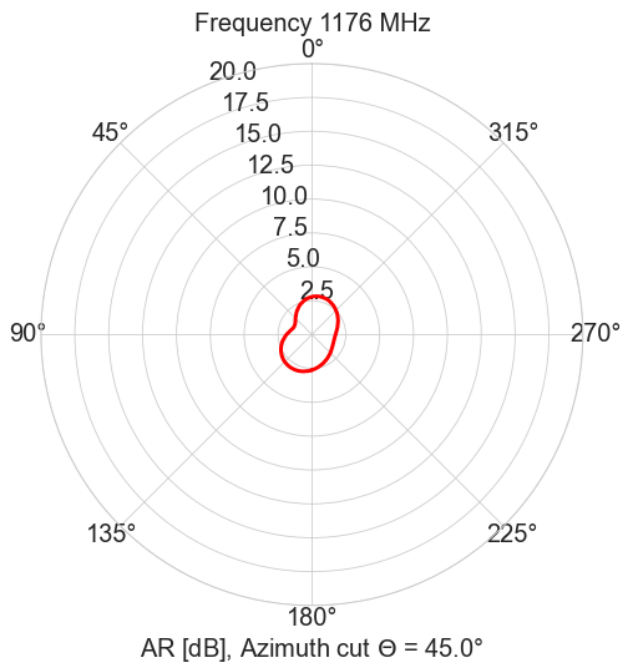
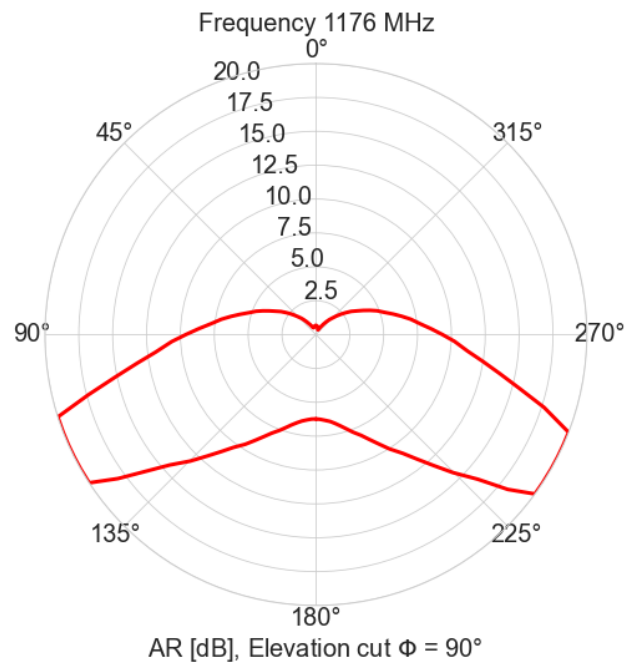
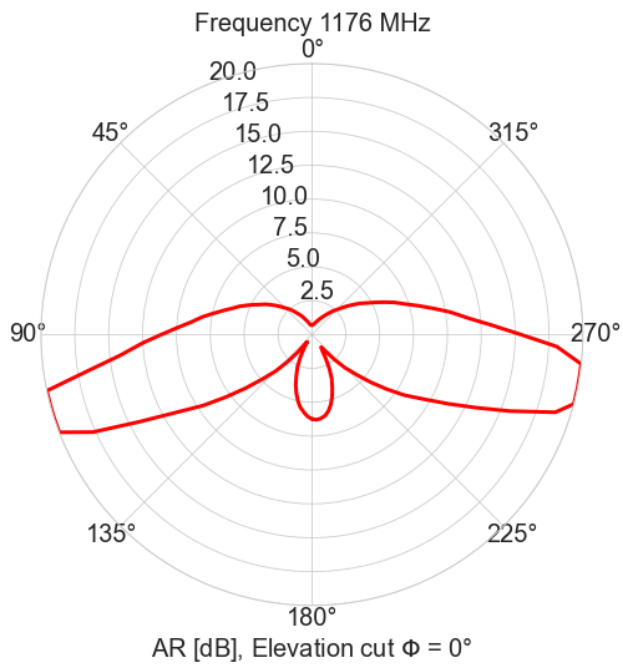
Radiation Patterns L1



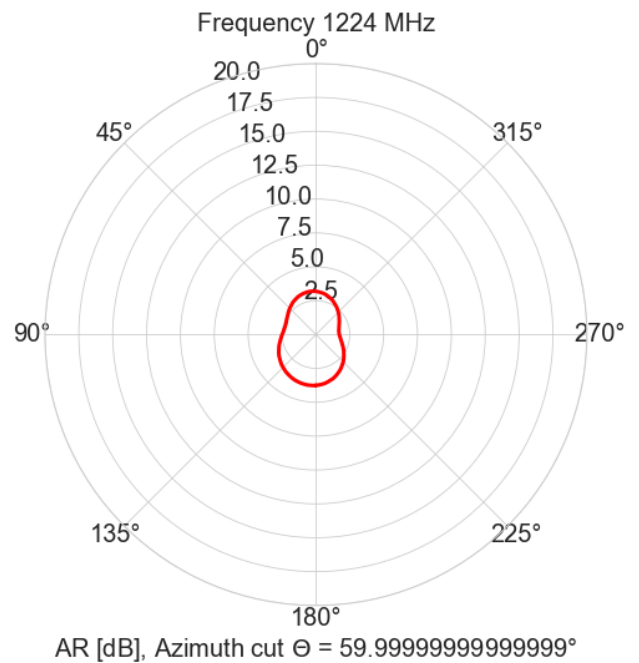
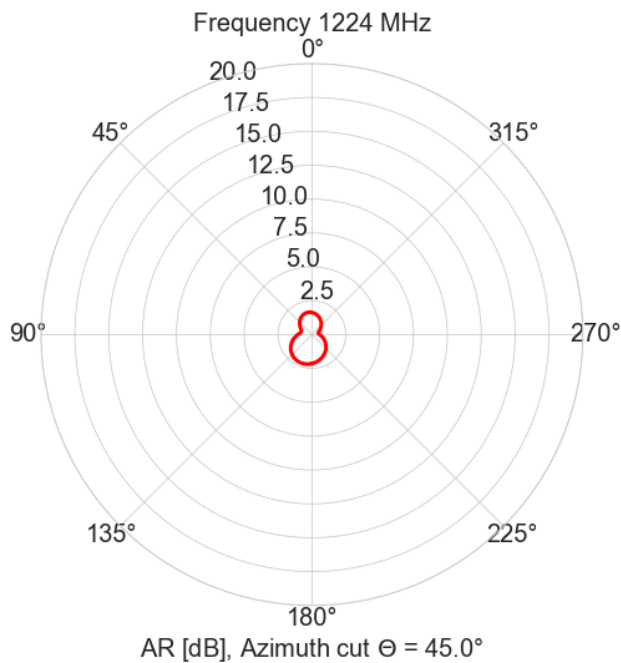
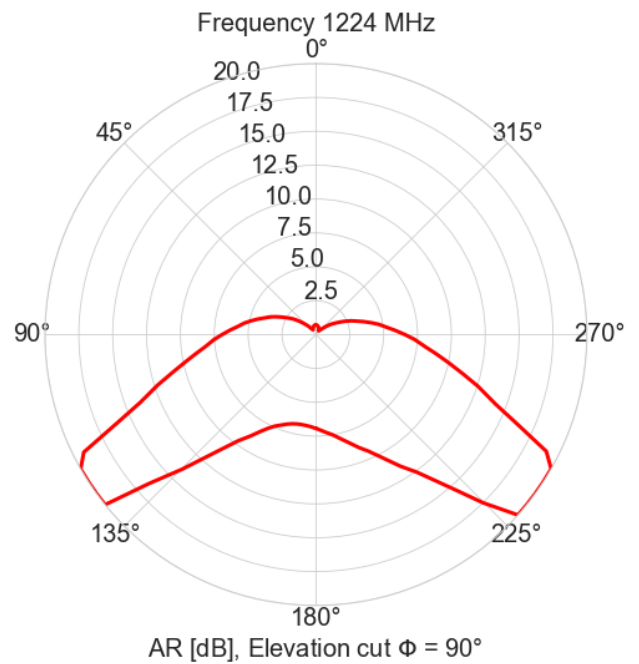
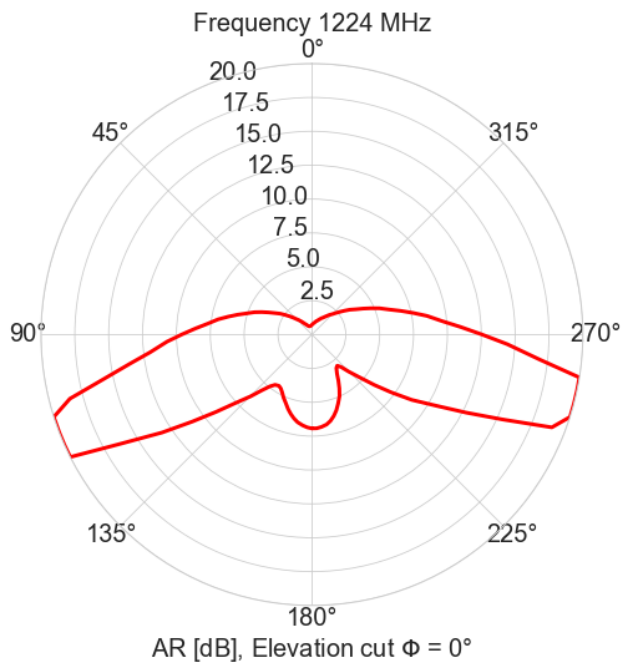
Radiation Patterns L-band correction services



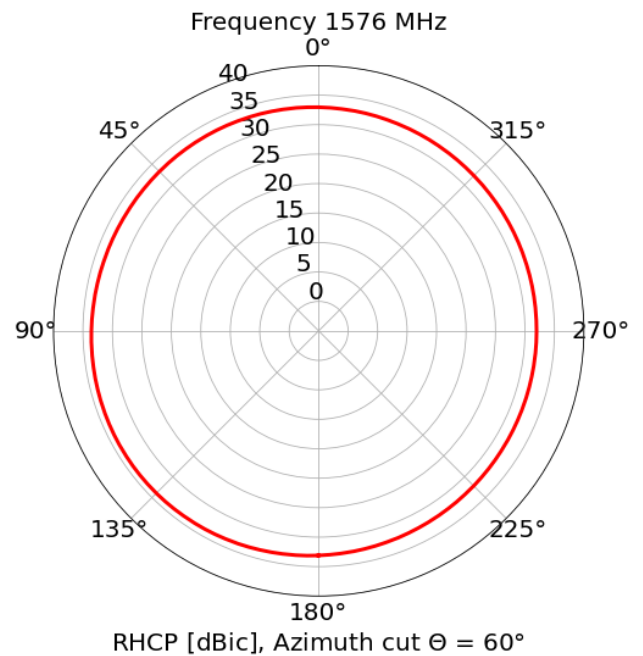
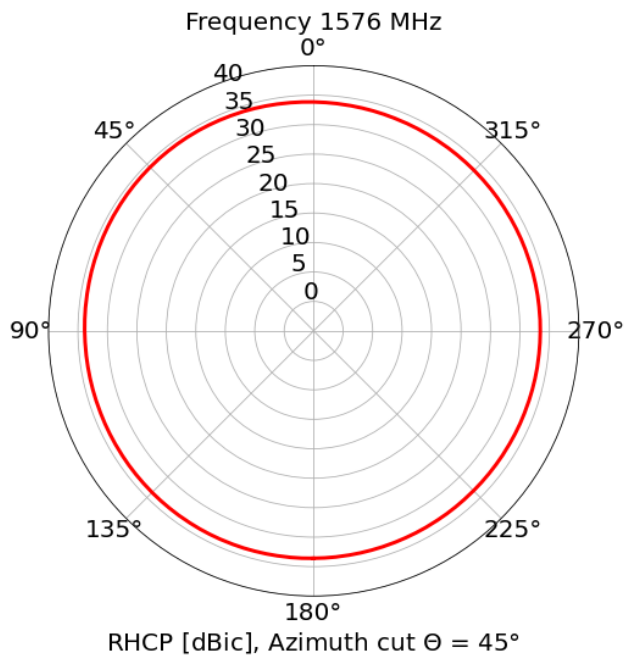
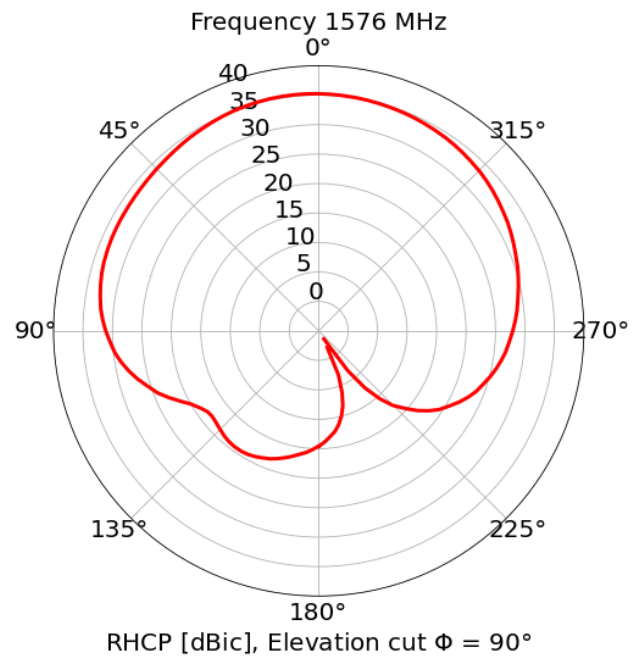
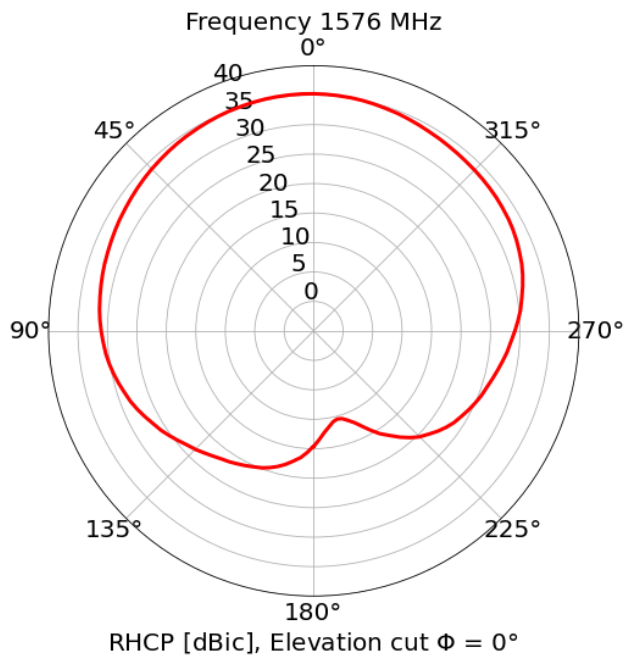
Axial Ratios L5



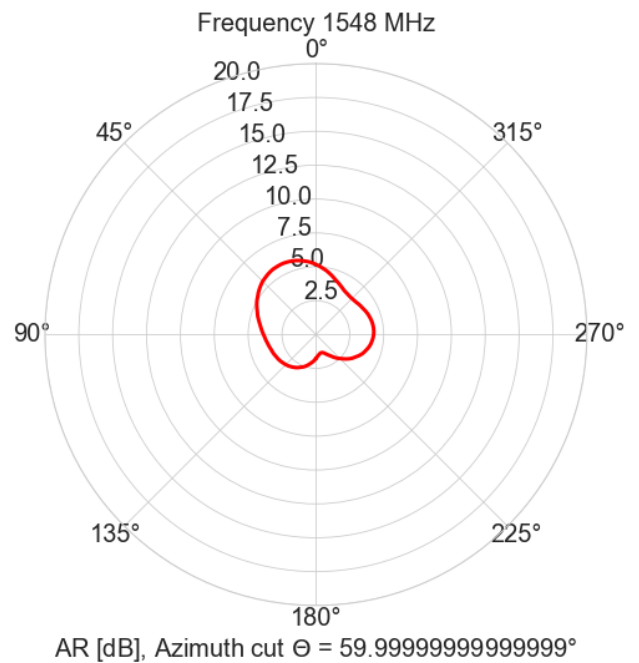
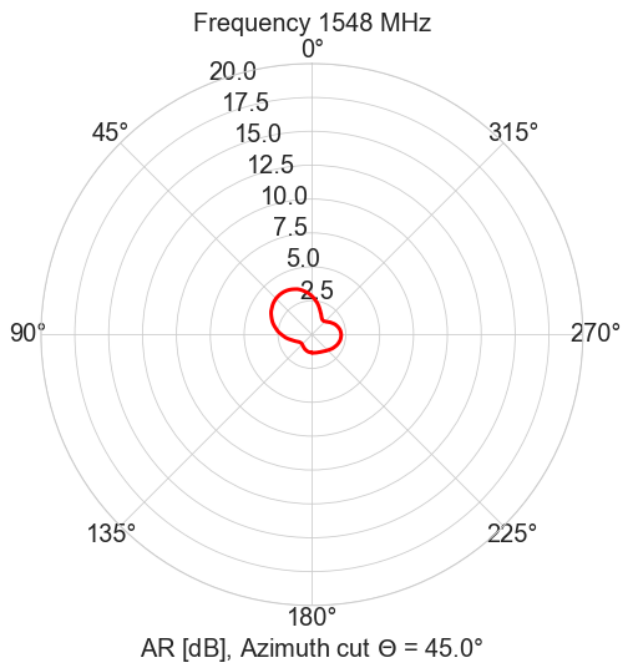
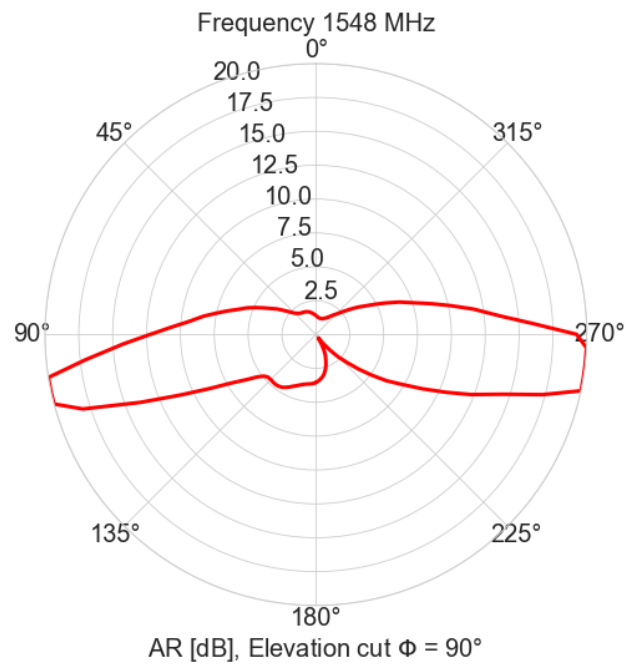
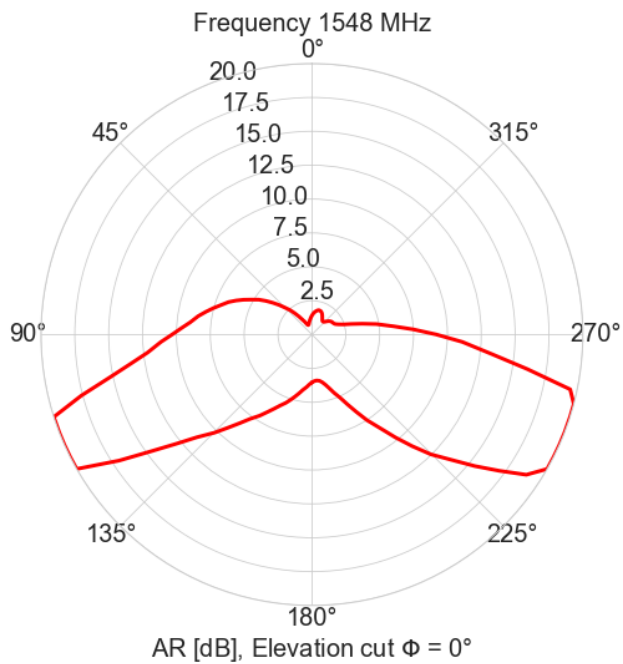
Axial Ratios L2



Radiation Patterns L1

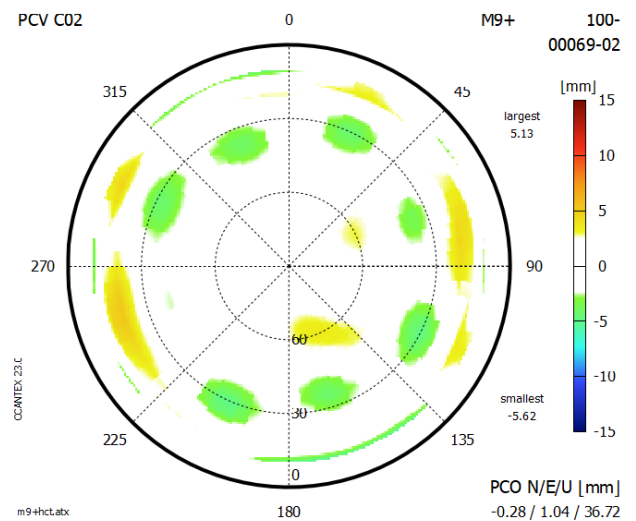
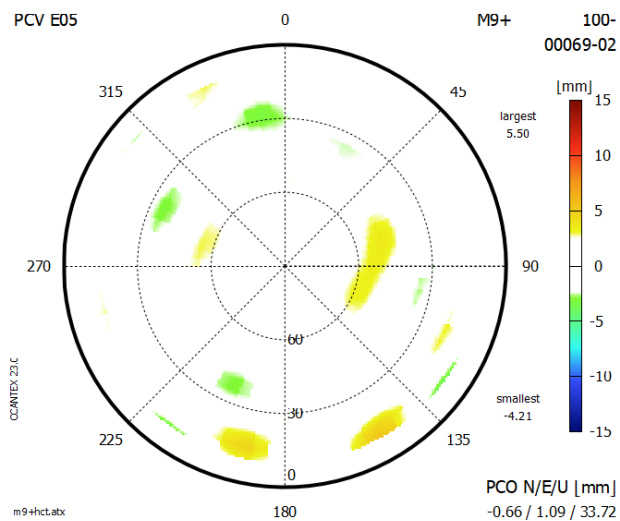
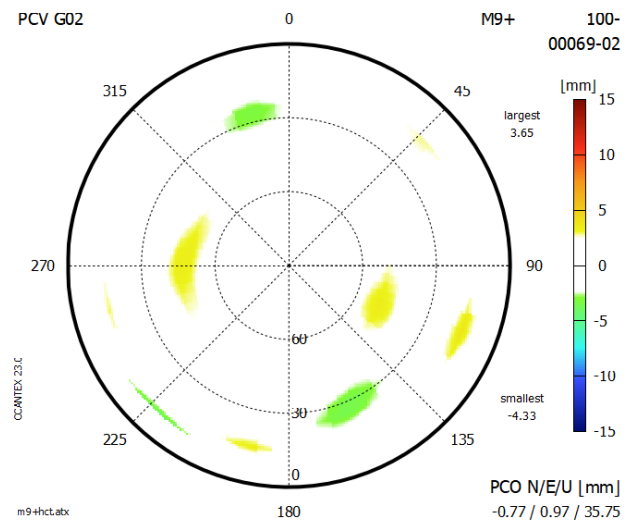
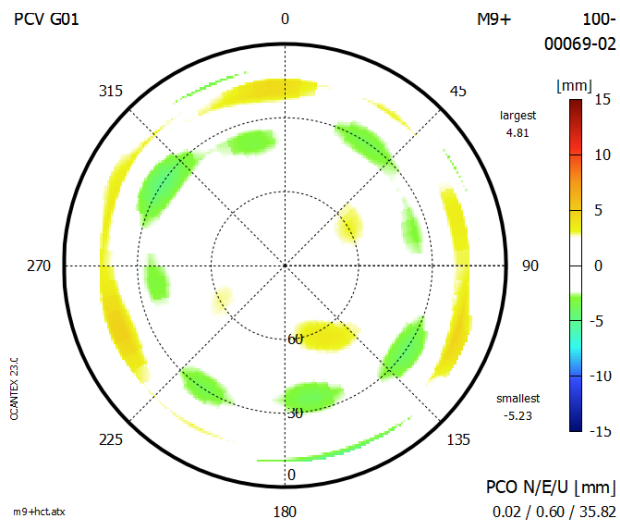


Axial Ratios L-band corrections service

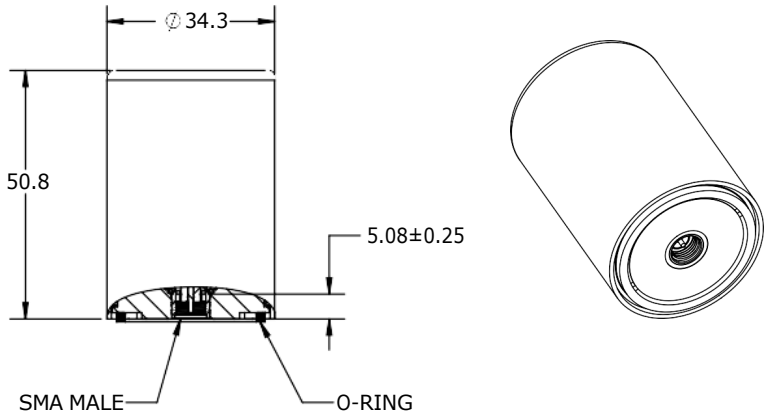


Phase Center Offset and Phase Center Variation

Parameter	Specification
PCO (L1)	North: 0.02 mm; East: 0.60 mm; Up: 35.82 mm
PCO (L2)	North: -0.77 mm; East: 0.97 mm; Up: 35.75 mm
PCO (L5)	North: -0.66 mm; East: 1.09 mm; Up: 33.72 mm
PCV (L1)	+/- 6 mm
PCV (L2)	+/- 5 mm
PCV (L5)	+/- 6 mm

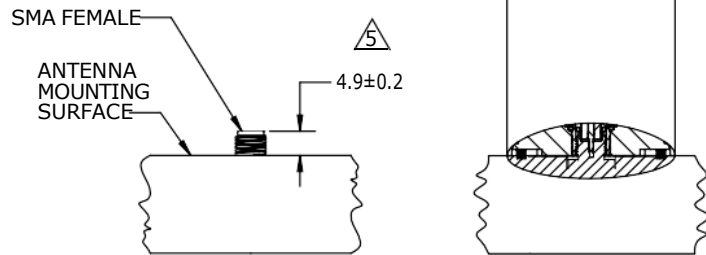


DRAWING REVISION HISTORY			
REV	DESCRIPTION	DATE	BY
1	INITIAL RELEASE	16 DEC 2024	MR



NOTES:

1. CONNECTOR TYPE: SMA MALE
2. HOUSING MATERIAL: PC-ABS
3. COLOR: BLACK
4. DUST AND WATER RESISTANCE: IP67
5. RECOMMENDED 4.9 MM LENGTH OF MATING SMA CONNECTOR ON MOUNTING SURFACE TO ENSURE SEALING AND ELECTRICAL CONNECTION
6. MAX ASSEMBLY TORQUE 8.0 IN-LB



MOUNTING INTERFACE

ITEM 100-00069-02 REVISION HISTORY			
REV	DESCRIPTION	DATE	BY
1	INITIAL RELEASE	16 DEC 2024	MR

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DIMENSIONS ARE IN MM TOLERANCES: FRACTIONAL ANGULAR: MACH ϕ 5° BEND ϕ 4° ONE PLACE DECIMAL $\pm$ 0.2 TWO PLACE DECIMAL $\pm$ 0.10	DRAWN	MR	16 DEC 2024
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