



M9PLUS-HTC-A-EMB

L1: GPS, Glonass, Galileo, Beidou
 L2: GPS L2C, Galileo E5B, Glonass L30C
 L5: GPS, Galileo ESA
 L-band

Part #: 108-00099-02



Description

The M9PLUS-HTC-A-EMB 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. M9PLUS-HTC-A-EMB is an embedded antenna design, featuring an MMCX Jack connector.

Features:

- Pre-filtering
- Ultra light weight - 6 gr
- Ground plane independent
- GIS RTK applications

Passive Antenna Performance (L5)

Parameter	Specifications
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 (Ohm)	50
Polarisation	RHCP
Beamwidth	112°

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 (L2, B2, G2, G3, E5B)

Parameter	Specifications
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 (Ohm)	50
Polarisation	RHCP
Beamwidth	125°

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

Parameter	Specifications
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 (Ohm)	50
Polarisation	RHCP
Beamwidth	125°

L-band correction services

Parameter	Specifications
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 (Ohm)	50
Polarisation	RHCP
Beamwidth	145°



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RF Specifications

Parameter	Specifications
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

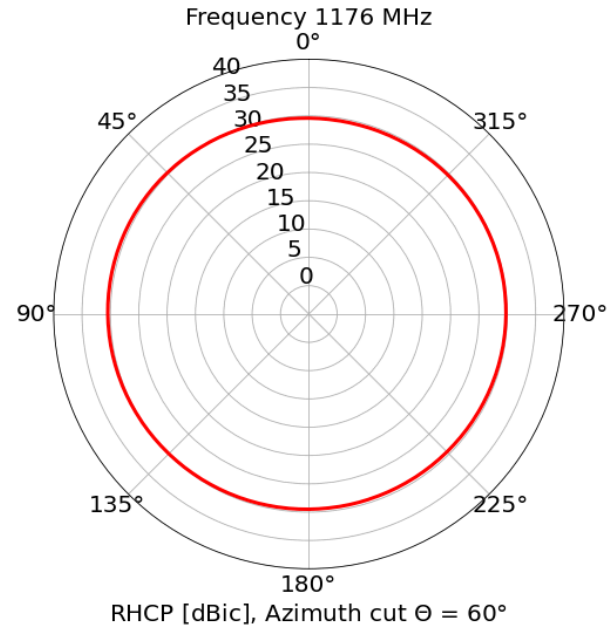
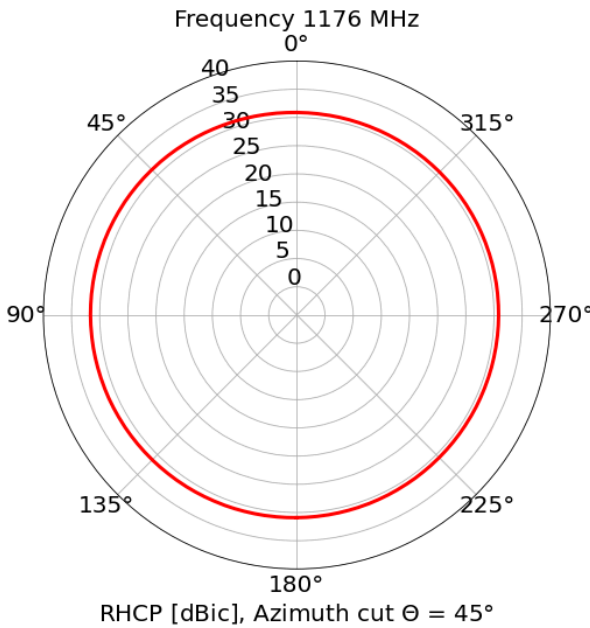
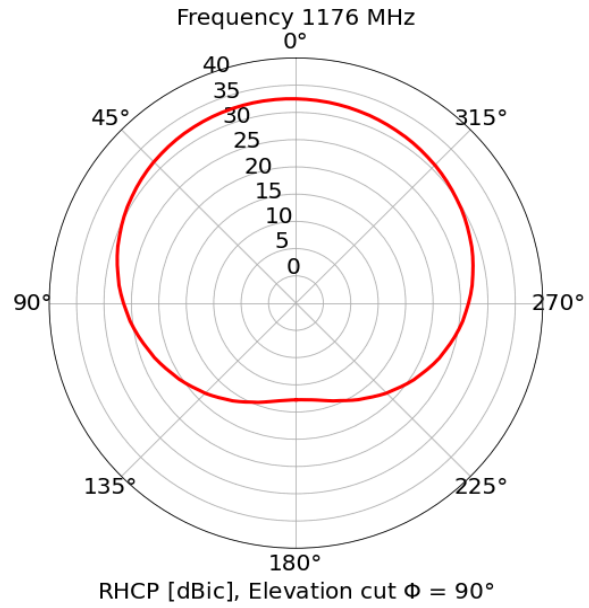
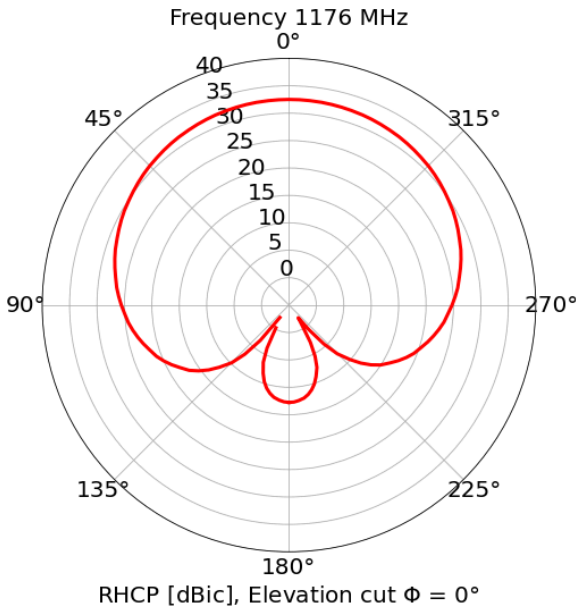
Parameter	Specifications
Antenna Dimensions	Ø28.5 x 34.6 mm (39.6 mm including connector)
Operating Temperature	-40 °C to 85 °C
Mounting Type	Connector Mount
Connector	MMCX Jack



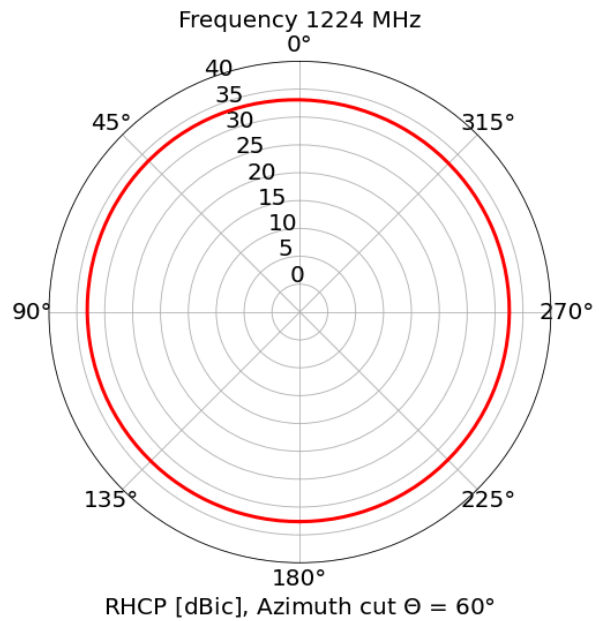
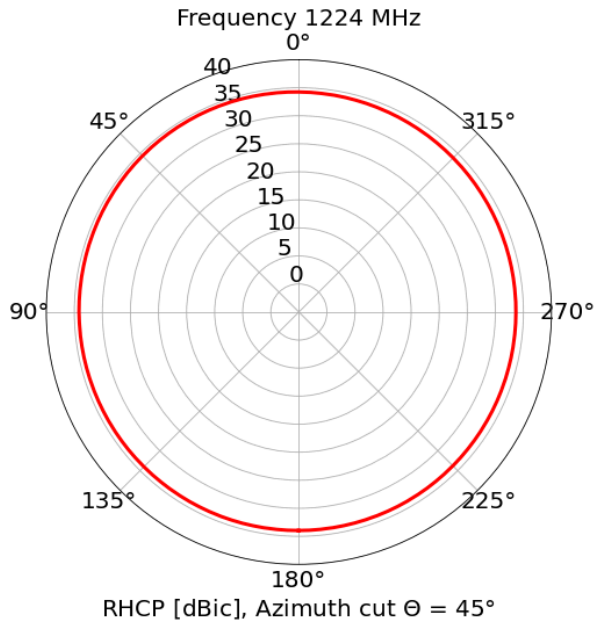
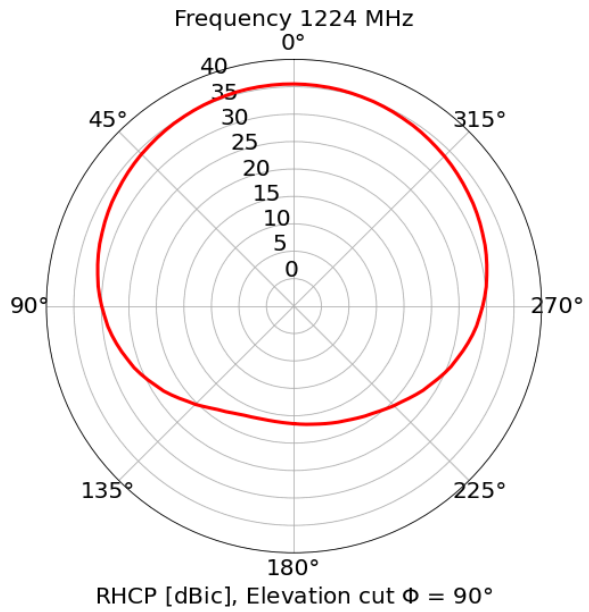
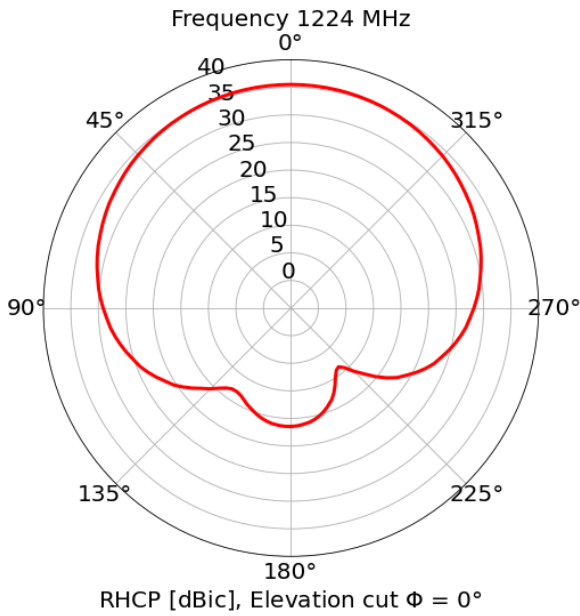
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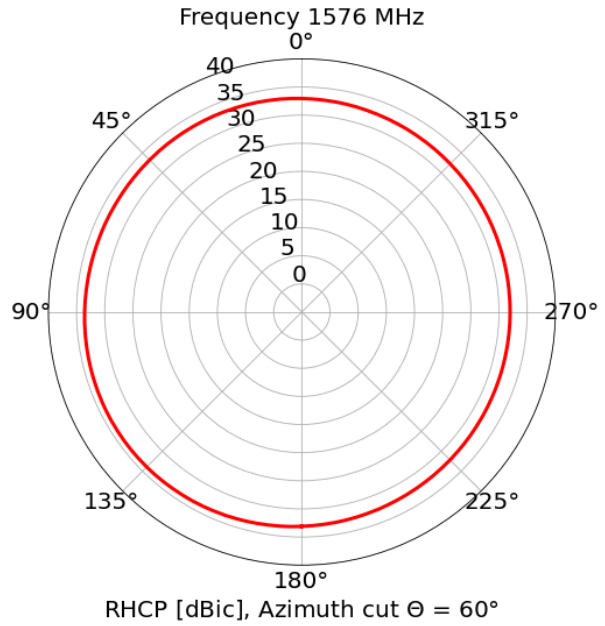
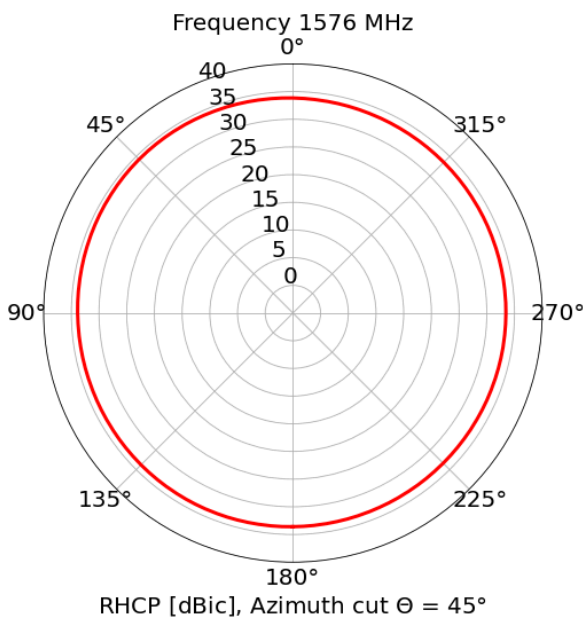
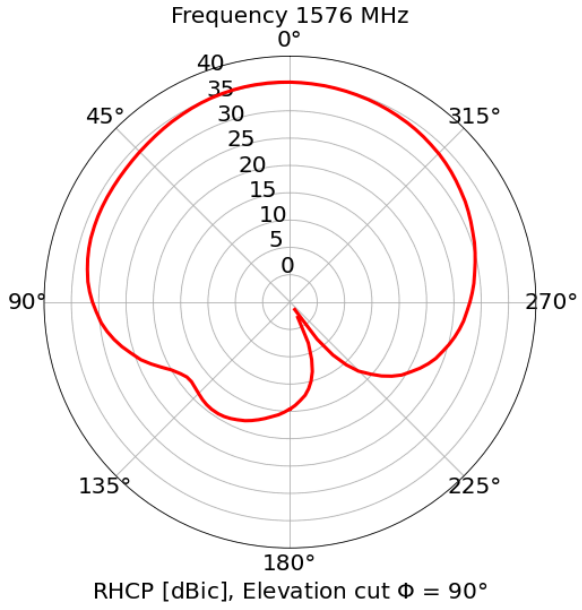
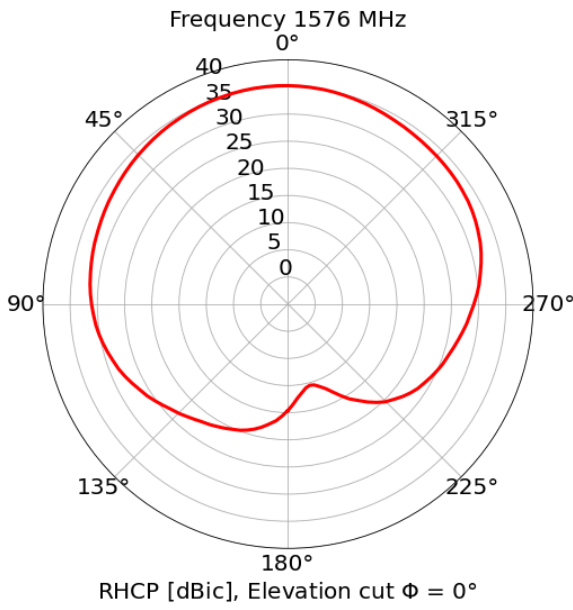
Radiation Patterns L5



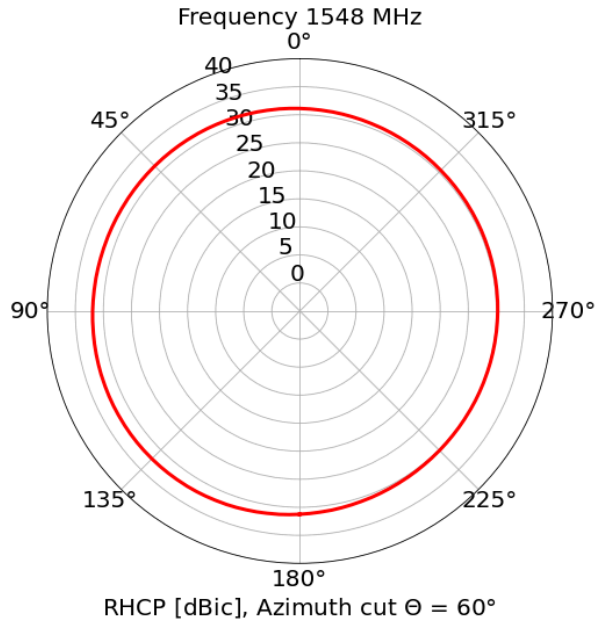
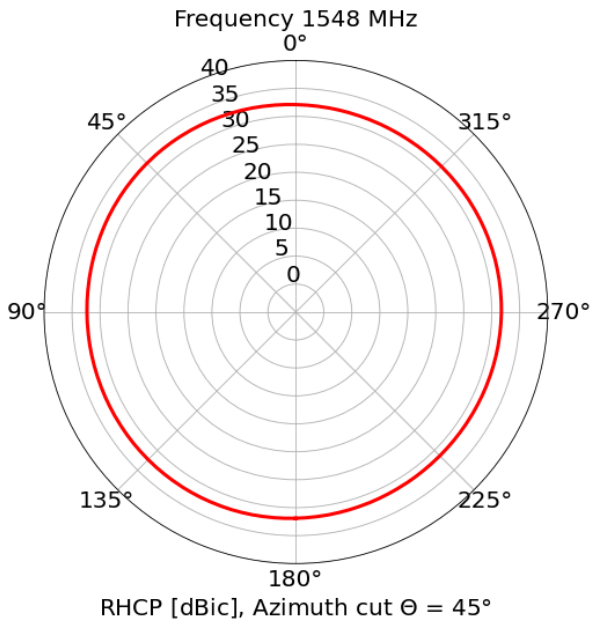
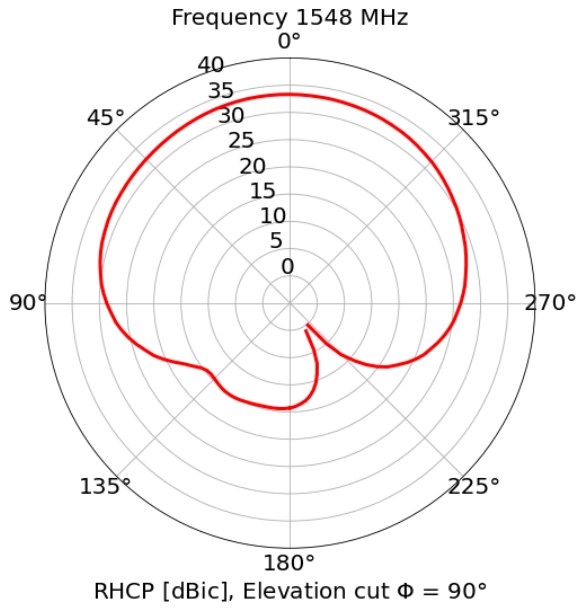
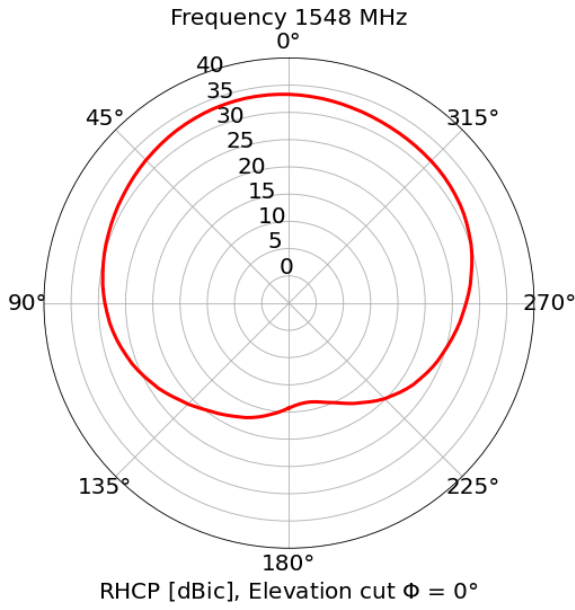
Radiation Patterns L2



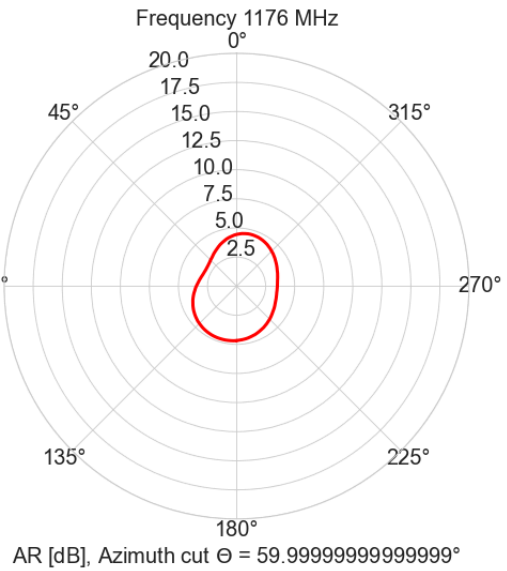
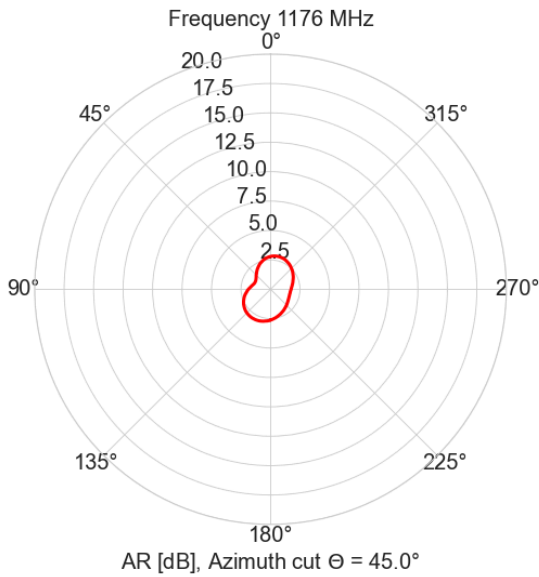
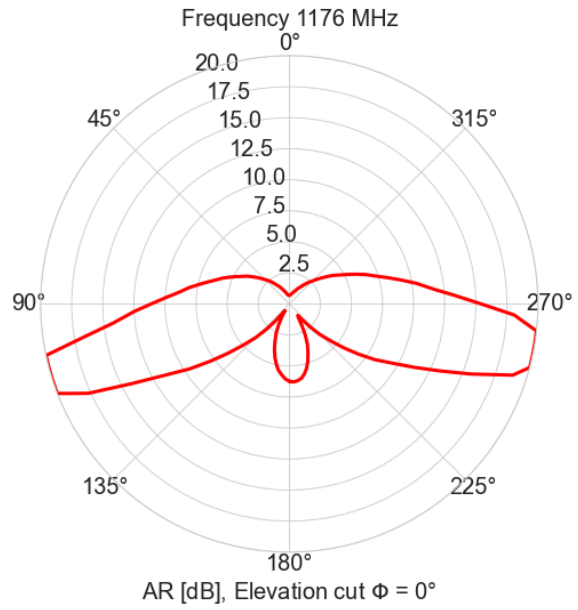
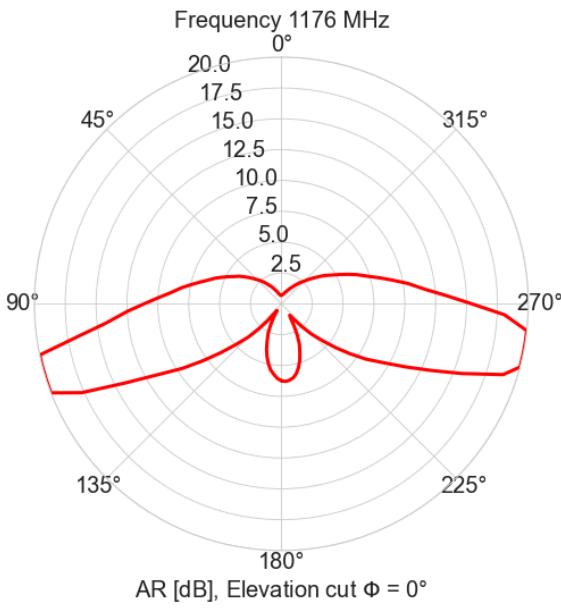
Radiation Patterns L1



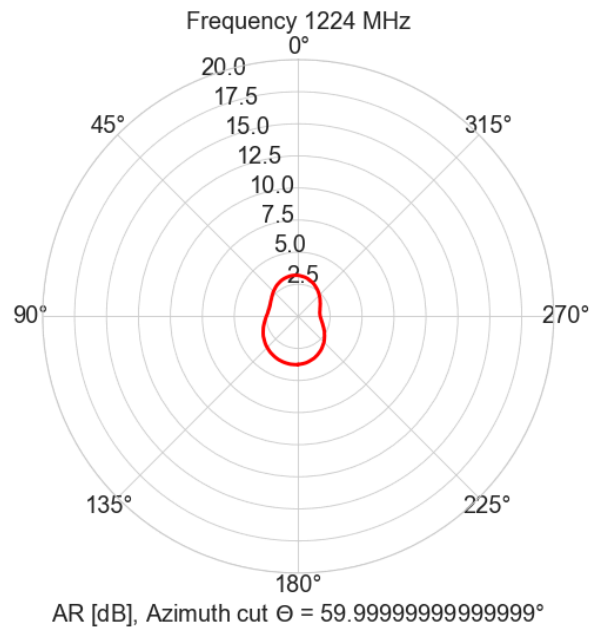
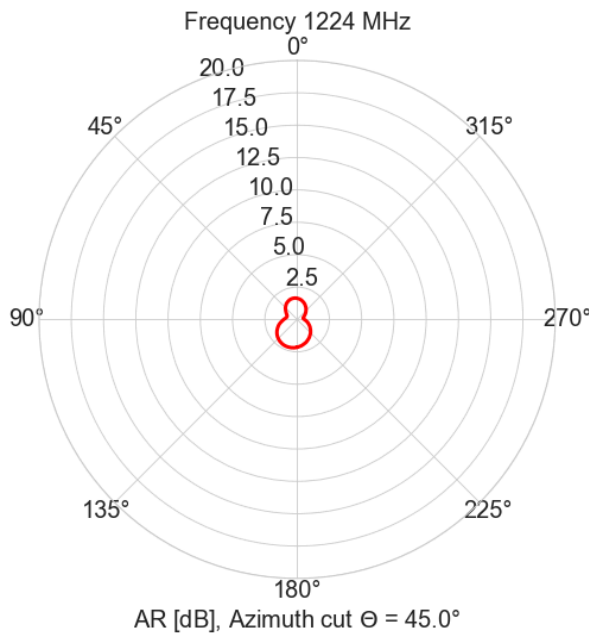
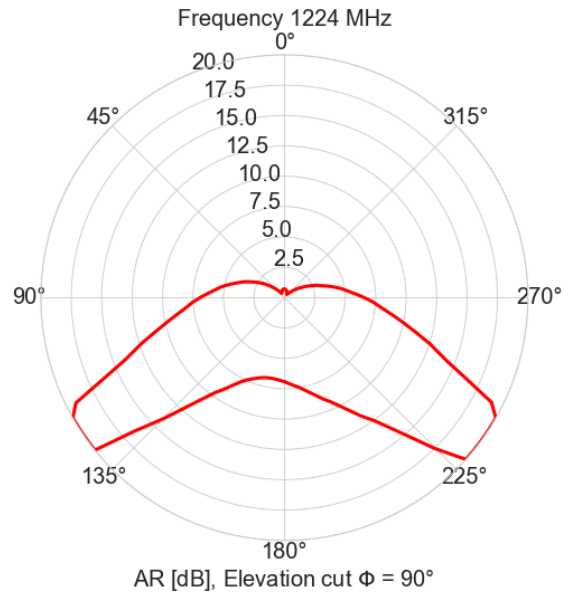
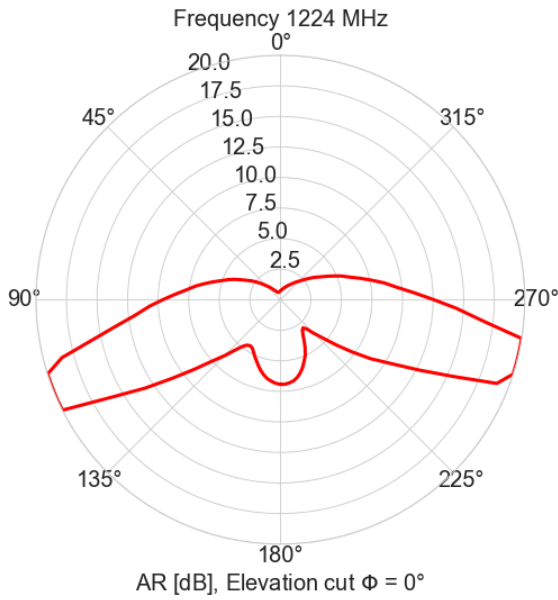
Radiation Patterns L-band correction services



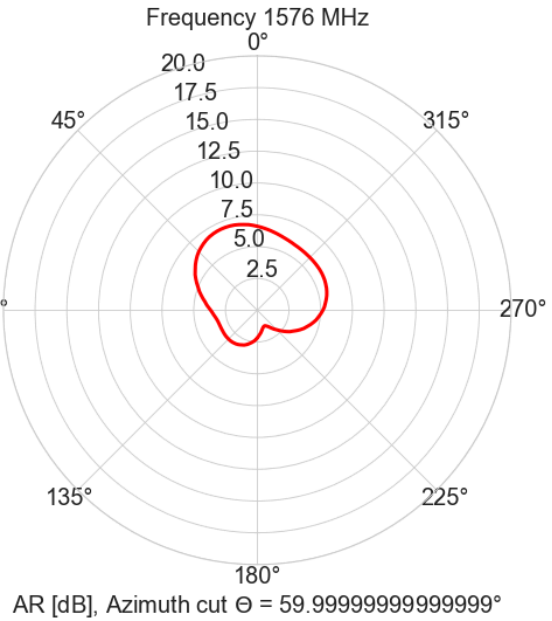
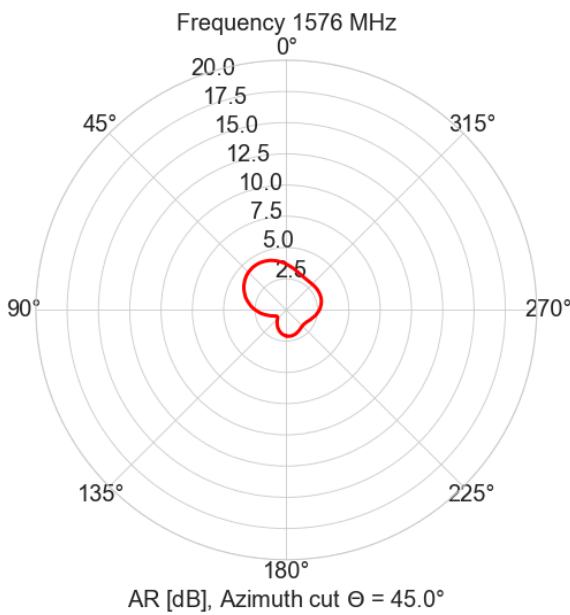
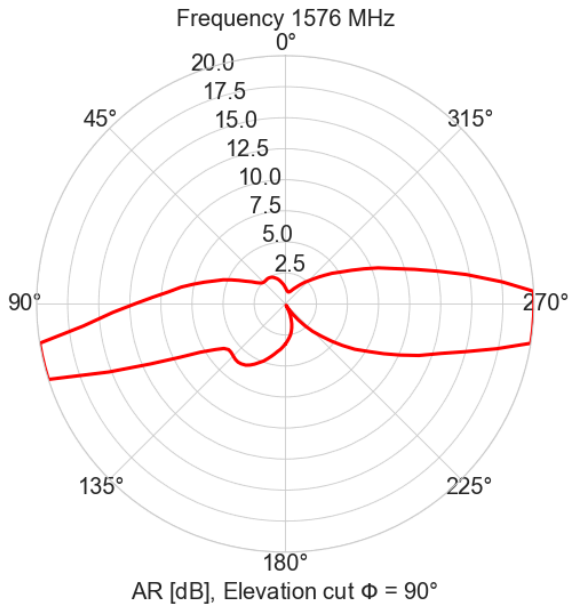
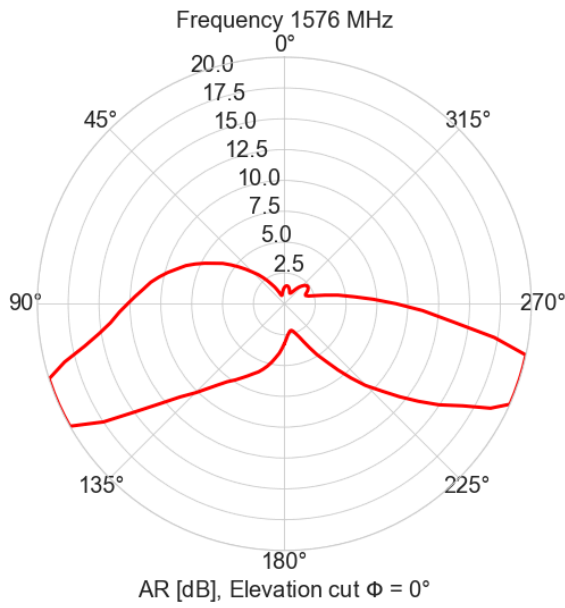
Axial Ratios L5



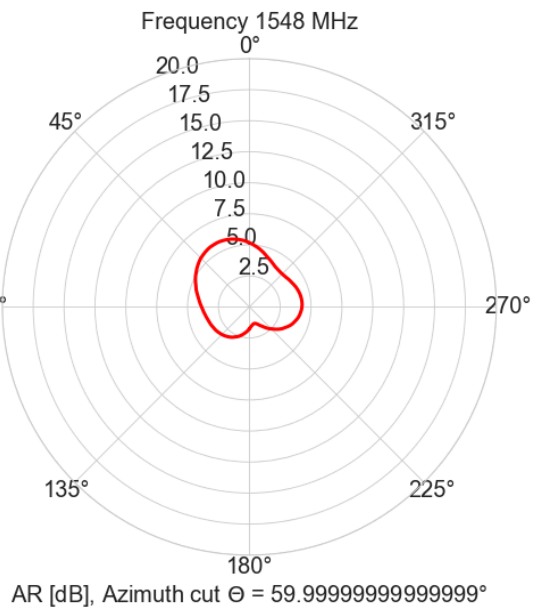
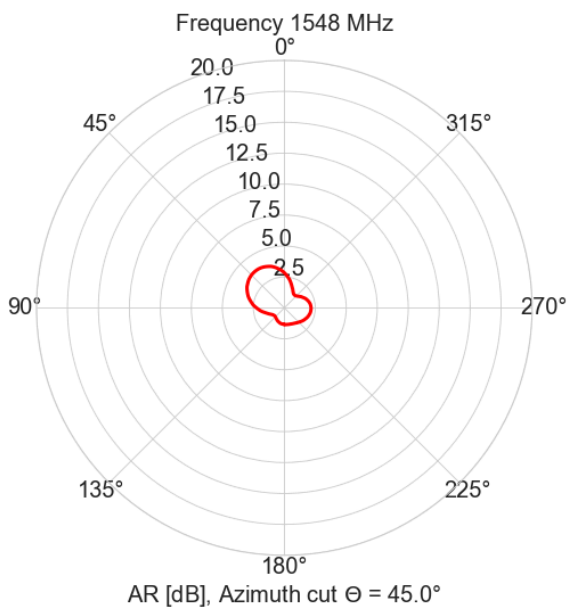
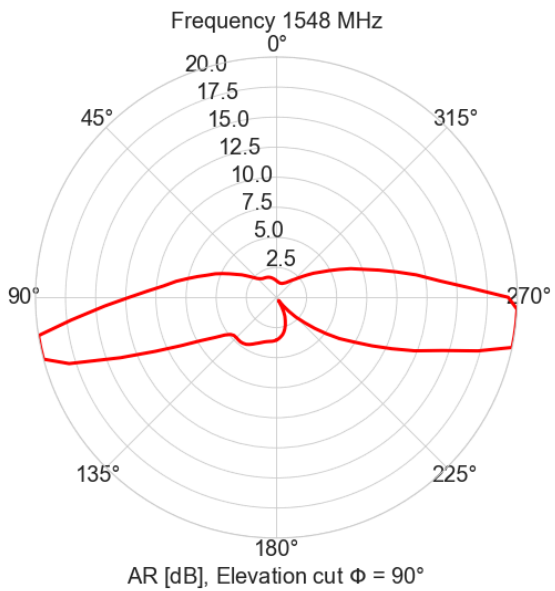
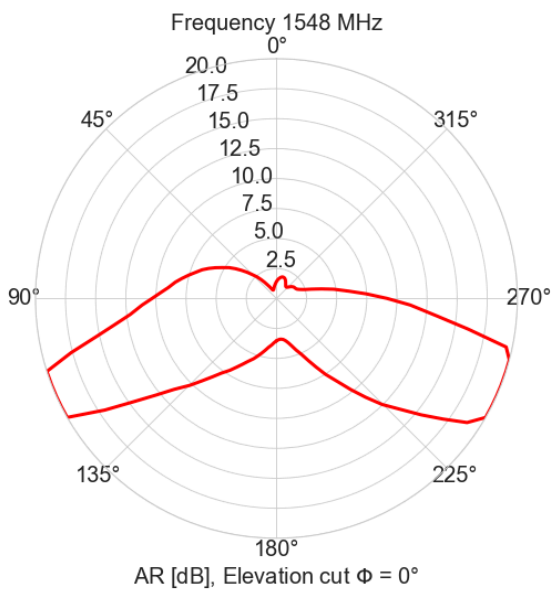
Axial Ratios L2



Axial Ratios L1

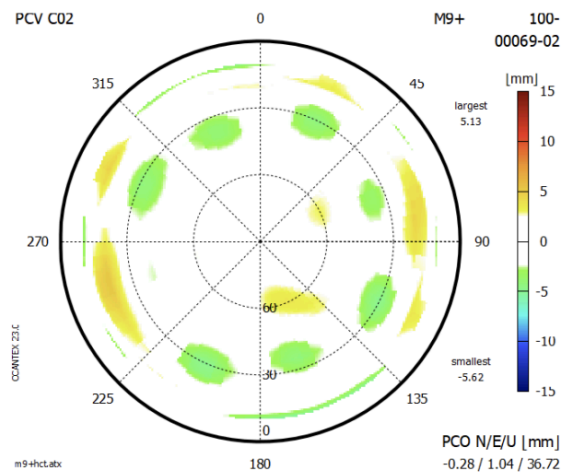
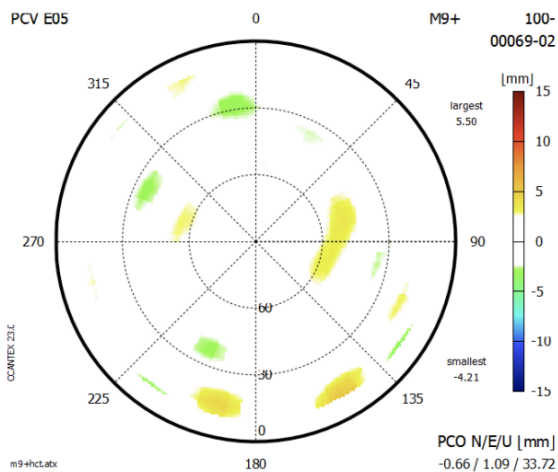
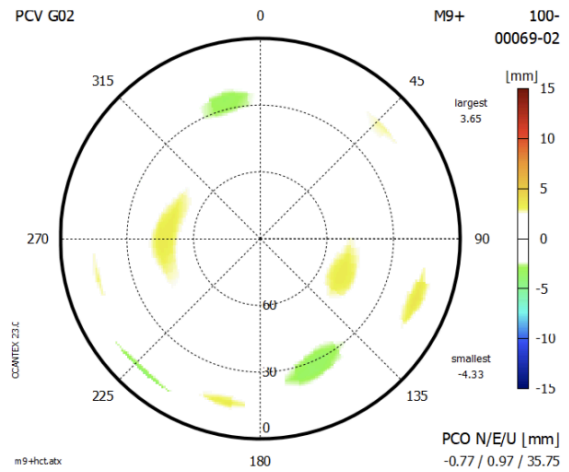
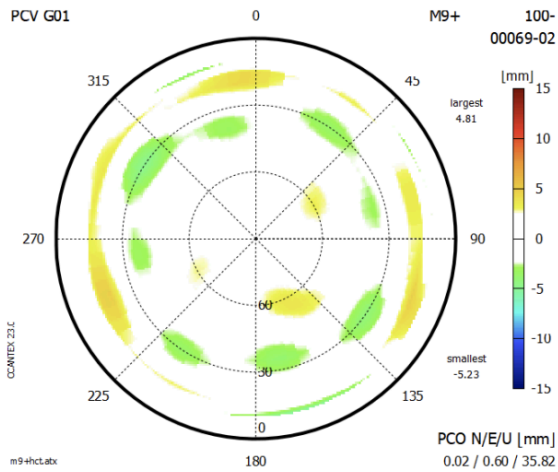


Axial Ratios L-band corrections service



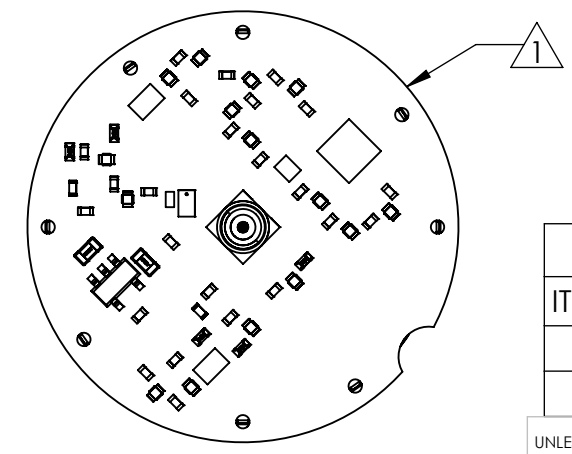
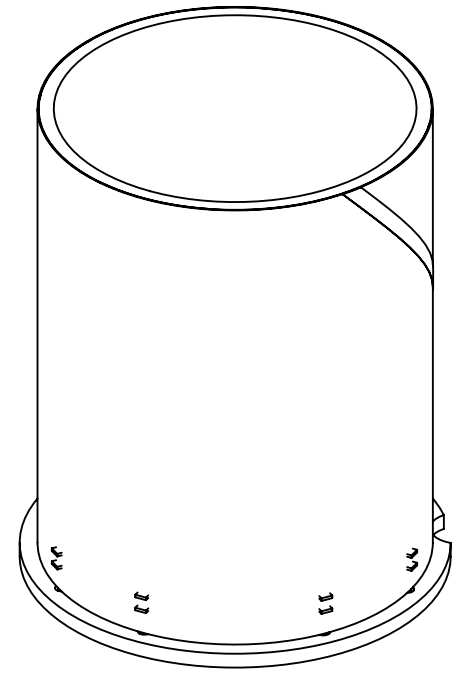
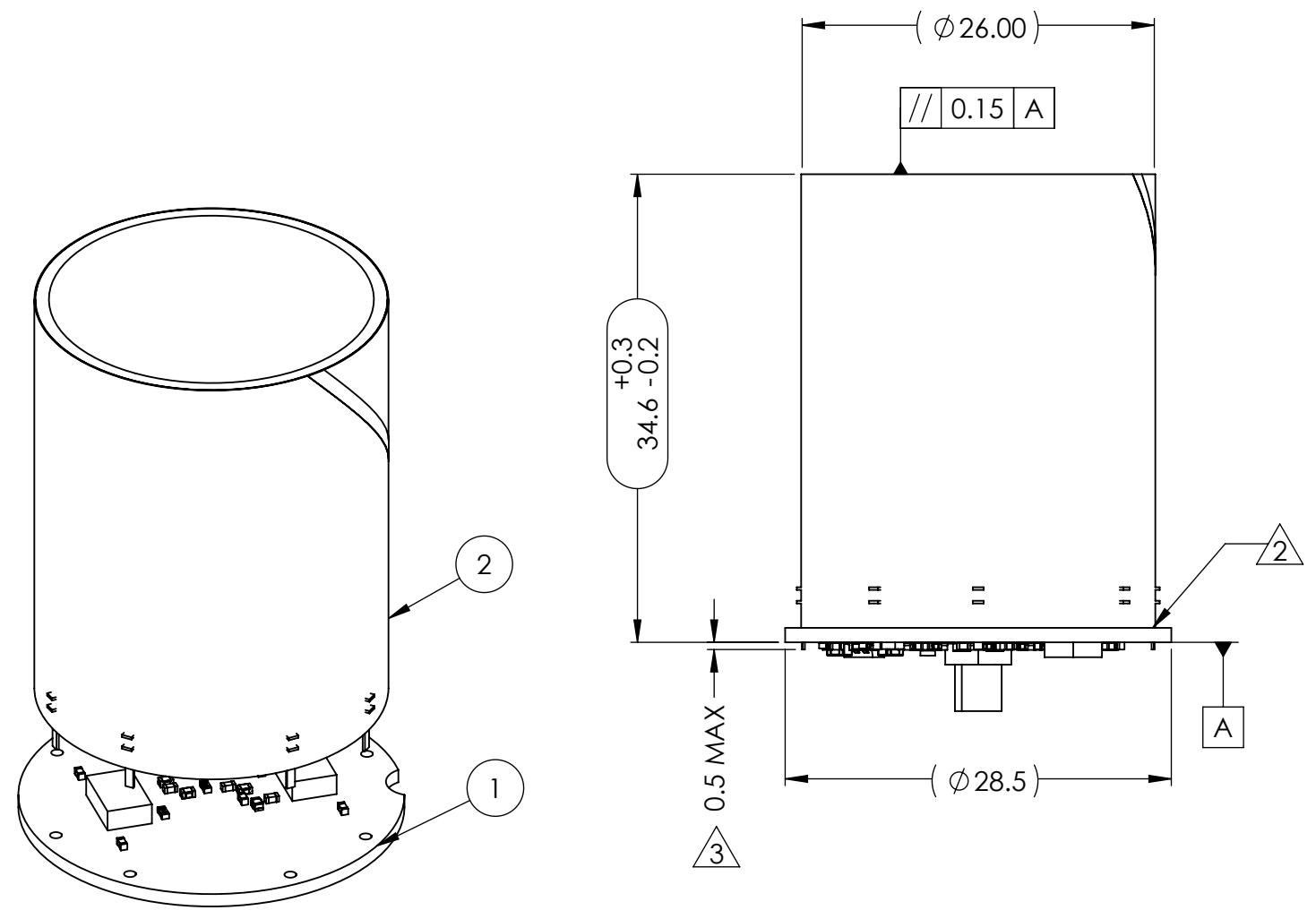
Phase Center Offset and Phase Center Variation

Parameter	Specifications
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)	+/-6mm
PCV (L2)	+/-5mm
PCV (L5)	+/-6mm



DRAWING REVISION HISTORY			
REV	DESCRIPTION	DATE	BY
1	INITIAL RELEASE	2024-03-07	MP

D
C
B
A



NOTES:

- 1. ENSURE THAT THE EDGES OF ITEM 1 ARE SMOOTH PRIOR TO ASSEMBLY.
- 2. ENSURE THAT NO GAPS EXIST BETWEEN ITEM 1 AND ITEM 2 AFTER ASSEMBLY.
- 3. TRIM PINS AFTER SOLDERING ITEM 2 TO ITEM 1.

ITEM 108-00099-02 BOM			
ITEM NO	QTY REQD	PART NO	NOMENCLATURE OR DESCRIPTION
1	1	109-00095-02	PCB SMT ASSEMBLY, EMBEDDED, FATBOY HP W/PREFILTER
2	1	102-00024-01	ELEMENT ASSY, FATBOY HP

ITEM 108-00099-02 REVISION HISTORY			
REV	DESCRIPTION	DATE	BY
1	INITIAL RELEASE	2024-03-07	MP

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN MM
TOLERANCES:
FRACTIONAL ±
ANGULAR: MACH ± .5° BEND ±
ONE PLACE DECIMAL ± .2
TWO PLACE DECIMAL ± .10

INTERPRET GEOMETRIC TOLERANCING PER:

THIRD ANGLE PROJECTION
DO NOT SCALE DRAWING

CAD MAINTAINED. CHANGES SHALL BE INCORPORATED BY THE DESIGN ACTIVITY.

NAME	DATE
DRAWN MP	2024-03-07
CHECKED BO	2024-03-11
ENG APPR. AV	2024-03-11
MFG APPR.	
Q.A.	

MAXTENA, INC

TITLE: **108-00099-02
PCB ASSEMBLY, FATBOY HP
W/PREFILTER**

SIZE **B** DWG. NO. **117-00769-01** REV **1**

CAGE CODE: 5KQH7 SCALE: NONE SHEET 1 OF 1

8 7 6 5 4 3 2 1