

# GCA02 –HIGH GAIN L1 GNSS ACTIVE PATCH ANTENNA

## PRODUCT NAME

GCA02- HIGH GAIN GNSS L1 ACTIVE PATCH ANTENNA

## SUMMARY

The EXA GCA02 is a two-stage, 33dB gain compact GNSS active patch antenna solution that works with your GNSS card and link it to GPS and GALILEO constellations in the L1 band, It is the ideal antenna for space-grade GNSS devices to achieve good sensitivity across all bands in a small form factor.

The active patch antenna, by means of a double resonance design, has a wide-band operation over GPS/GALILEO systems from 1575.42MHz L1 band. It includes a one-stage LNA and front-end SAW filter to reduce out of band noise; this antenna offers better protection from LEO radiation and greatly reduces the probability of damaging your GNSS receiver due to nearby transmissions.

## FEATURES

- Flight heritage since 2021
- Active antenna, LNA integrated, SAW filter integrated
- Anti-AOA (Atomic Oxygen Attack) coating for long duration missions
- Suitable for mounting inside spacecraft
- Custom choice of cables and connectors
- Wide FOV of 120 degrees
- Designed for LEO missions and requirements
- Manufactured according to NASA and ESA space standards and materials
- Functional, performance, thermal bake out and vibration tests provided w/documentation.
- Compatible and compliant with standard deployers and CubeSat Standard

## PERFORMANCE

PARAMETER	GCA02
FREQUENCY	1575.42MHz L1 GPS
NOMINAL IMPEDANCE ( $\Omega$ )	50
VSWR	1.5:1
GAIN RADIATING ELEMENT	3.4dBic +/- 1 dB
GAIN LNA	33 dB +/- 2 dB
LNA NOISE FIGURE	< 3.4 dB
POLARIZATION	RCHP
OPERATING VOLTAGE	3.3-5 Vdc +/- 0.5 V
CURRENT COMSUMPTION	< 10A mA
OPERATION TEMPERATURE	-40 to +85°C
WEIGHT	13.5g
DIMENSIONS	25 mm x 25 mm
CABLE LENGTH	User TBD
MOUNTING	Glue using 3M2216 A/B
CABLE TYPE	RG316/RG178/RG174
CONNECTOR	SMA/MCX/MMCX/MMBX/Uf.I

Out of Band Rejection	
698MHz	90dB
960MHz	93dB
1710MHz	85dB
2170MHz	75dB
2400MHz	75dB
2700MHz	84dB

## PRODUCT PROPERTIES

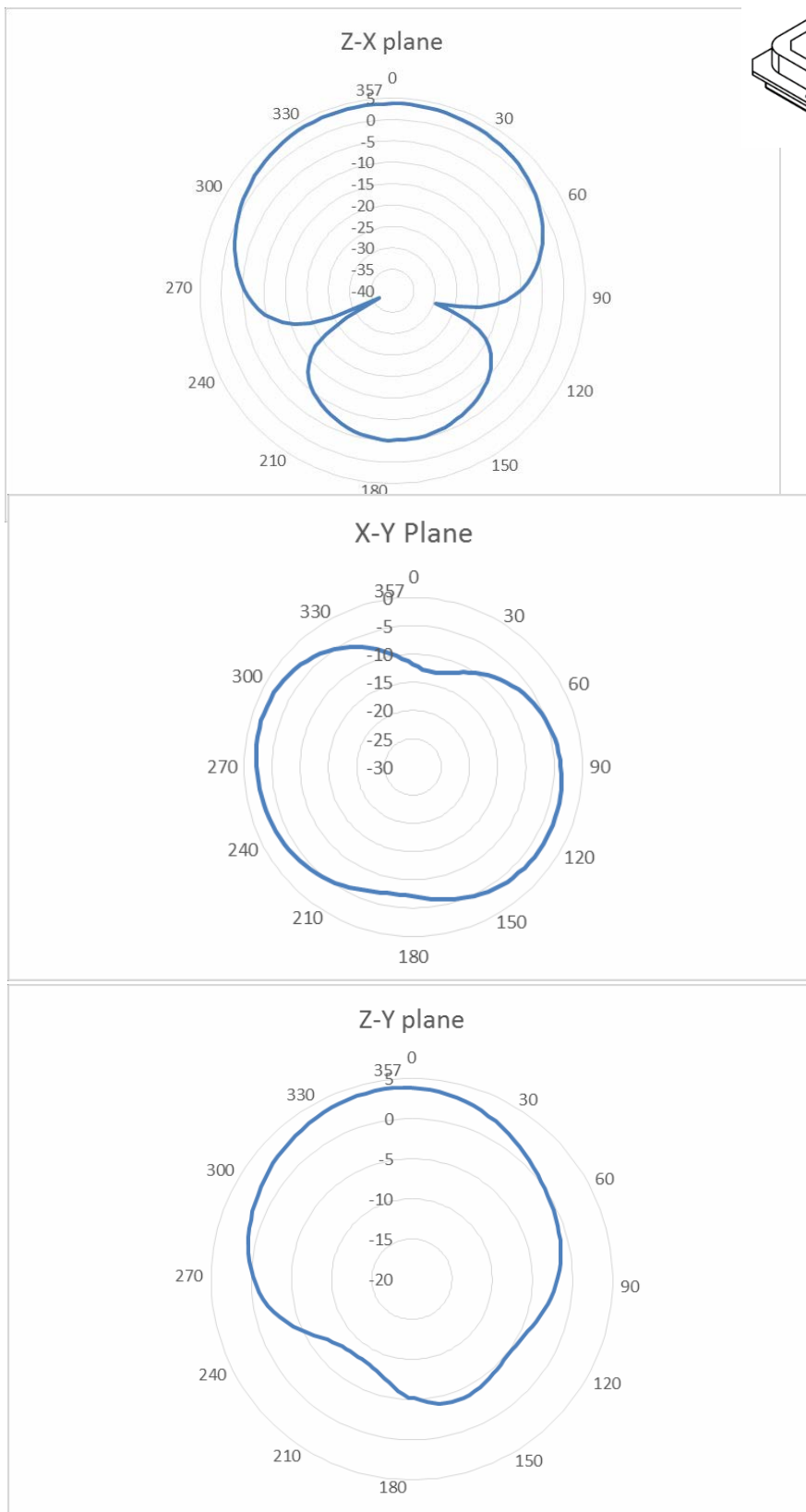
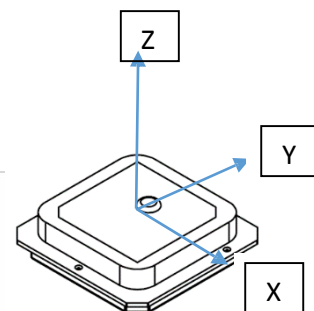
- Ceramic Dimension:
  - 25.1 x 25.1 x 4.7mm
- Total Dimension (including shielding case)
  - 25.1 x 25.1 x 7.9mm
- Connector IPEX MHFI (U.FL) / SMA / MCX / MMCX
- Cable coaxial cable: custom choice between RG316, RG178, RG174
- Mass: 13.5 grams
- Operating Temperature: -40 to +85°C
- Radiation Tolerance: 4 years minimum in LEO

## MATERIALS

- Only TML and CVCM < 1% materials used, NASA and ESA approved
- Antenna Material: Ceramic
- Connector: SMA, MCX, MMCX, MBX, MMBX or U.FL
- Anti AOA, Anti-Corona coating
- PTFE (Teflon) space grade cables, coaxial RG316, RG178, RG174

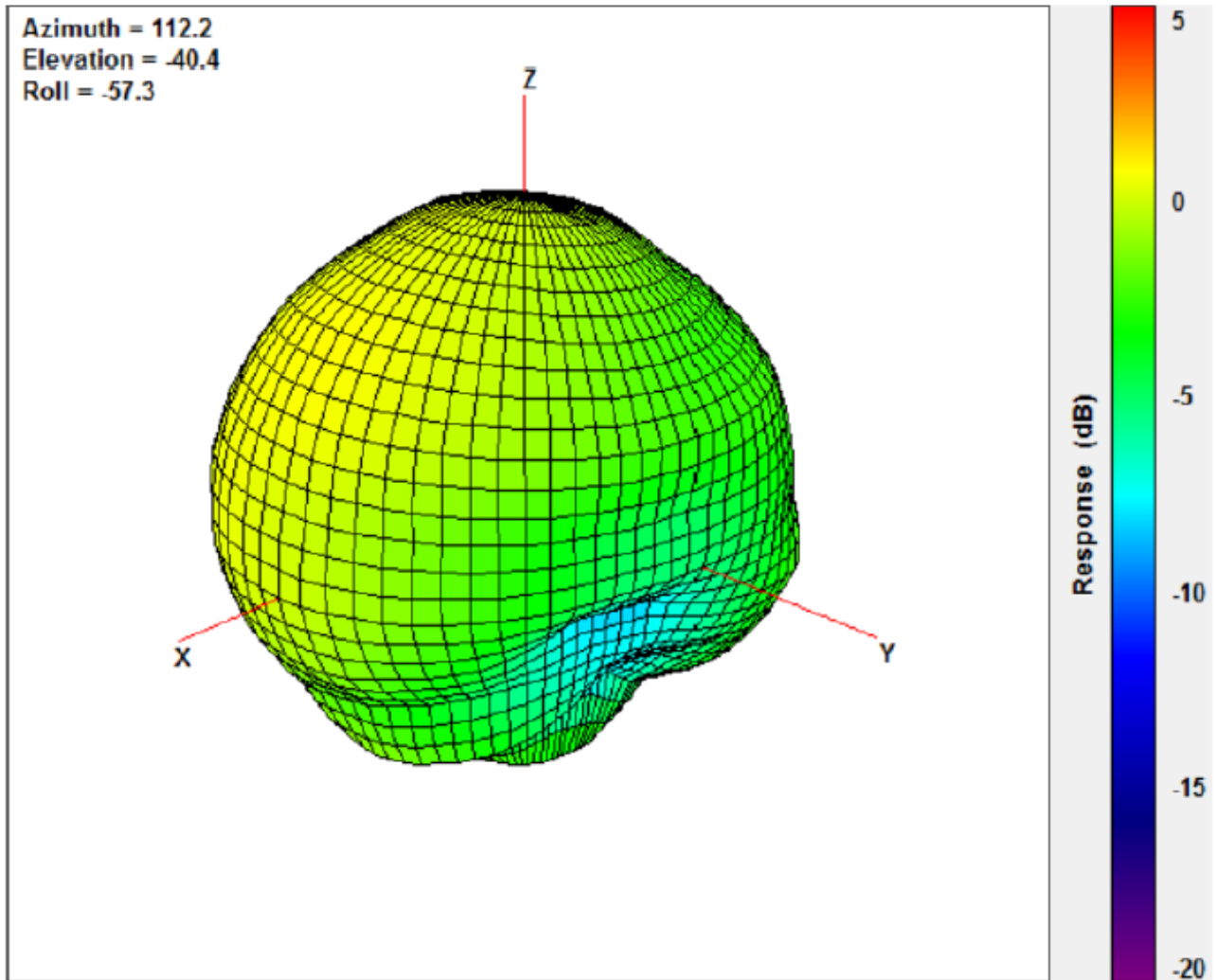
# PRODUCT CHARTS:

## 2D RADIATION PATTERN



# 3D RADIATION PATTERN

## 1575.42MHz



## TESTING

All antennas are provided with tests reports regarding:

- Thermal Bake out (10E-5 mbar @ 50C for 72 hours)
- Full vibration test for Falcon 9, Electron, Soyuz, Dnepr and Long March 2D
- QT and AT is performed on the unit to be shipped

Test	QT	AT
Functional	✓	✓
Vibration		✓
Thermal Cycling		✓
Thermal Vacuum		✓
Antenna network VSWR Test	✓	✓

# MECHANICAL INTERFACE AND DIMENSIONS

