



TAOGLAS®



Datasheet

Supercombo Permanent Mount 5-in-1 Antenna

Part No:
MA1045.A.ALBTX.002

Description:
MA1045 – 5-in-1 2*GPS, LTE, SiriusXM & AM/FM

Features:
Combination Antenna Vehicle Mount Antenna
2* GPS Antenna: FAKRA Code C Blue
1* LTE with fallback to 3G/2G: FAKRA Code D Bordeaux Violet
1* SiriusXM: FAKRA Code K Curry Yellow
1* AM/FM: FAKRA Code A Black
Cable: 300mm RG-174
IP67 Rated Waterproof
Manufactured in TS16949 Automotive Approved Facilities
RoHS & Reach Compliant

| | |
|----------------------------|----|
| 1. Introduction | 3 |
| 2. Specifications | 4 |
| 3. Antenna Characteristics | 6 |
| 4. Radiation Patterns | 16 |
| 5. Mechanical Drawing | 28 |
| 6. Packaging | 29 |
| <hr/> | |
| Changelog | 30 |

Taoglas makes no warranties based on the accuracy or completeness of the contents of this document and reserves the right to make changes to specifications and product descriptions at any time without notice. Taoglas reserves all rights to this document and the information contained herein.

Reproduction, use or disclosure to third parties without express permission is strictly prohibited.



1. Introduction



The MA1045 Supercombo Vehicle Mount 5in1 Antenna is the world's smallest next-generation 5in1, vehicle roof permanent mount solution. Fully IP67 waterproof with robust ABS+PC housing. The antenna is approved for use on heavy-duty trucks and meets the strictest OEM heavy-duty truck standards. It supports the following bands: Two GPS outputs, LTE (4G/3G/2G), SiriusXM, and AM/FM/WB.

The antenna is a first tier TS16949 heavy-duty truck approved and is an ideal choice for Automotive Telematic and heavy-duty plant applications.

The antenna comes with low-loss RG-174 coaxial pigtail cables as standard, terminating in FAKRA Code C for GPS, FAKRA Code A for AM/FM/WB, FAKRA Code K for SiriusXM, and with FAKRA SMB code D for LTE. The SiriusXM antenna meets the latest (Gen 3) specifications.

The LTE antenna provides the highest efficiency on all common worldwide LTE bands and also works great if the system falls back to 3G and 2G as it also covers these cellular bands. The AM/FM/WB antenna has an in-built amplifier to increase receive signal sensitivity. The antenna works in conjunction with a 12v DC wire that powers the AM/FM/WB circuits. The antenna is manufactured in TS16949 automotive approved facilities.

Contact your regional Taoglas customer service team for more information or installation guidelines.

2. Specifications

| Cellular Antenna | | | | | | | |
|-------------------|---------|---------|---------|-----------|-----------|-----------|-----------|
| Frequency (MHz) | 698~803 | 824~894 | 880~960 | 1710~1880 | 1850~1990 | 1920~2170 | 2300~2500 |
| Efficiency (%) | | | | | | | |
| | 51 | 44 | 46 | 38 | 38 | 36 | 44 |
| Peak Gain (dBi) | | | | | | | |
| | 0.6 | 2.7 | 2.7 | 4.4 | 2.2 | 1.2 | 4.6 |
| Average Gain (dB) | | | | | | | |
| | -2.7 | -3.1 | -3.3 | -4.1 | -4 | -4.3 | -3.5 |
| Impedance | 50 Ω | | | | | | |

| SiriusXM Antenna | |
|-------------------|-----------|
| Frequency (MHz) | 2320~2345 |
| Efficiency (%) | |
| 64 | |
| Peak Gain (dBi) | |
| 5.4 | |
| Average Gain (dB) | |
| -1.9 | |
| Polarization | LHCP |

| GPS Antenna(Feed 1) | |
|---------------------------------|---|
| Frequency | BeiDou : 1561.098 ± 2.046MHz. GPS : 1575.42 ± 1.023MHz |
| Return loss (GPS L1) | < -10 dB |
| Passive Gain at Zenith (GPS L1) | +3dBi typ. |
| Average Gain (GPS L1) | -4.5dB |
| Polarization | RHCP |
| Impedance | 50 Ω |

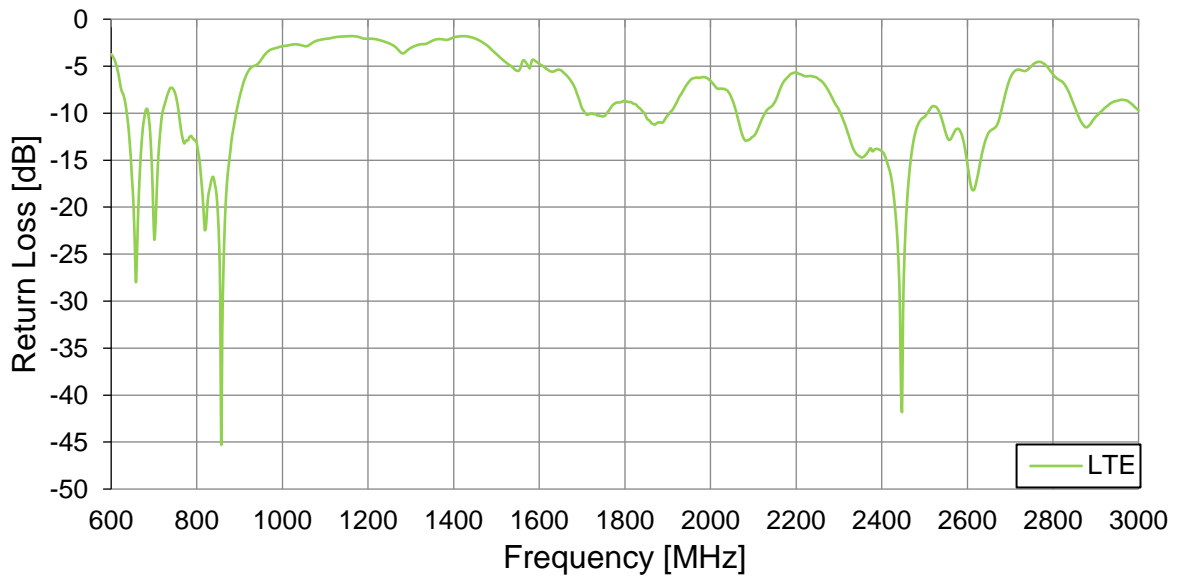
| GPS Antenna(Feed 2) | |
|---------------------------------|---|
| Frequency | BeiDou : 1561.098 ± 2.046MHz. GPS : 1575.42 ± 1.023MHz |
| Return loss (GPS L1) | < -10 dB |
| Passive Gain at Zenith (GPS L1) | +3dBi typ. |
| Average Gain (GPS L1) | -4.5dB |
| Polarization | RHCP |
| Impedance | 50 Ω |

| Mechanical | |
|-----------------------------|--|
| Dimensions | 165.45*96.61*61.45mm |
| Cable | RG-174 |
| Connector | GPS(1 & 2): FAKRA Code C Blue AM/FM/WB: BNC(F)ST SiriusXM: FAKRA Code K Curry LTE: FAKRA Code D |
| Casing | ASA+PC w/UV Stabilizer |
| Sealant | Silicone |
| Weight | 0.23kg |
| Environmental | |
| IP Rating | IP67 |
| Temperature Range | -40°C to 85°C |
| Thermal Shock | IEC 60068-2-14 |
| Humidity | Non-condensing 65°C 95% RH |
| Cable Pull | 35.59N |
| Recommended Mounting Torque | 6.78Nm |
| Maximum Mounting Torque | 8.13Nm |

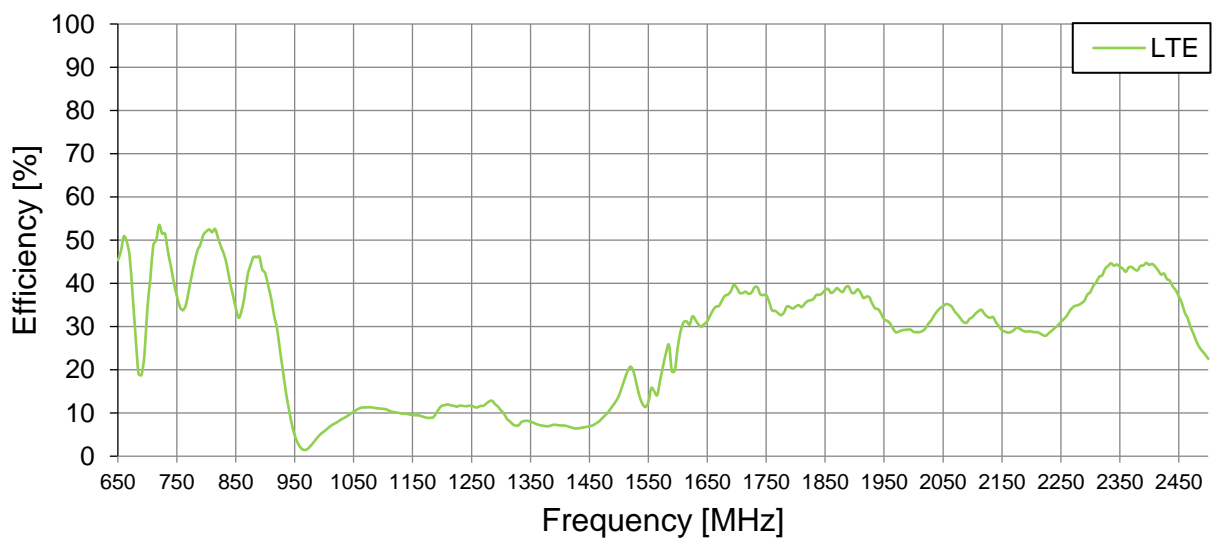
3. Antenna Characteristics

3.1 LTE

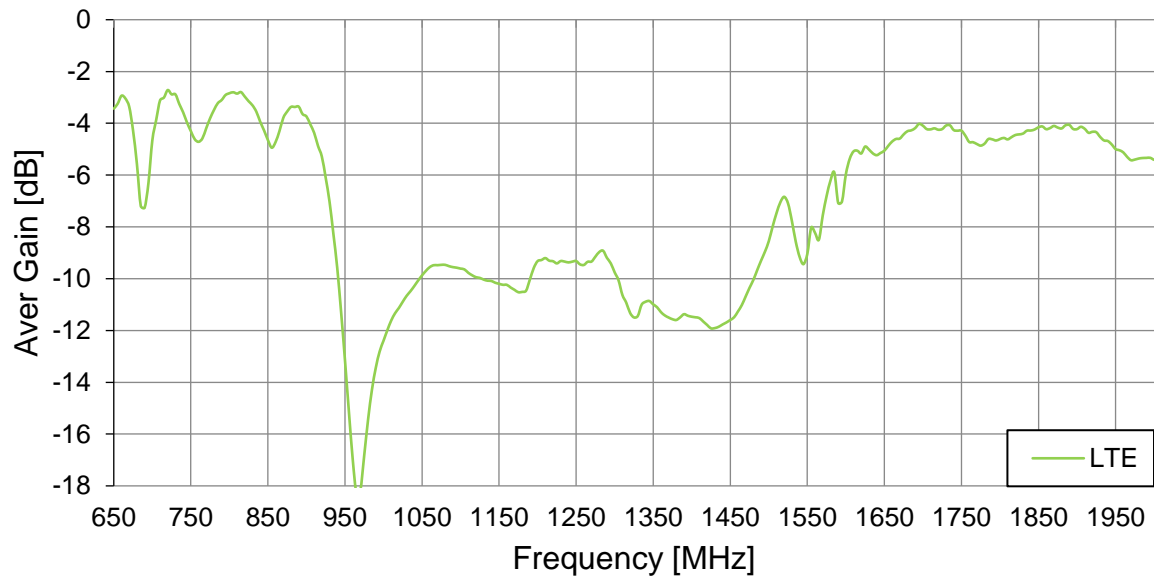
Return Loss



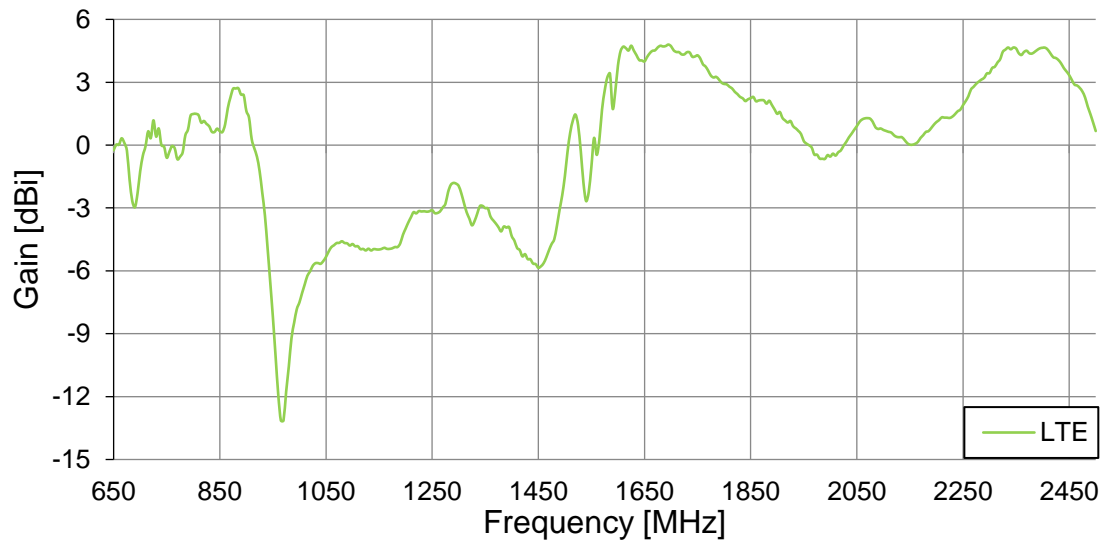
Efficiency



Average Gain

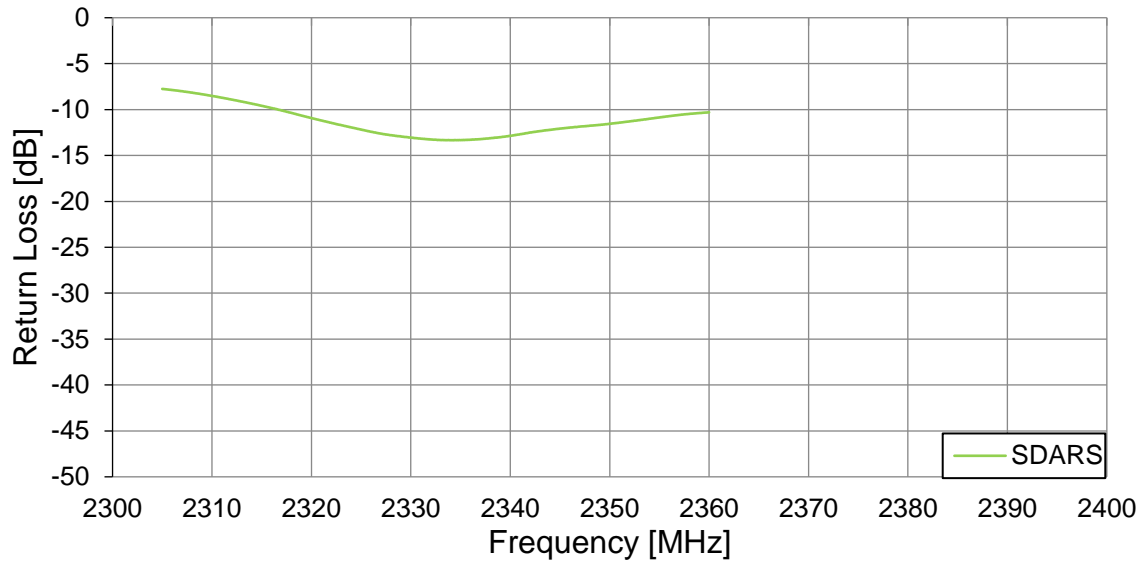


Peak Gain

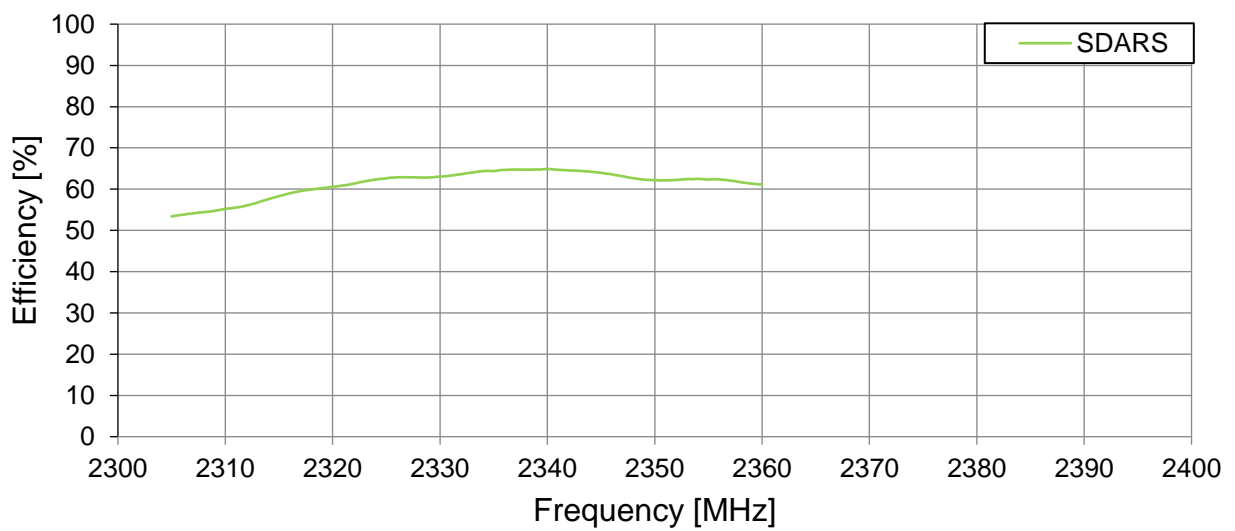


3.2 SiriusXM Antenna

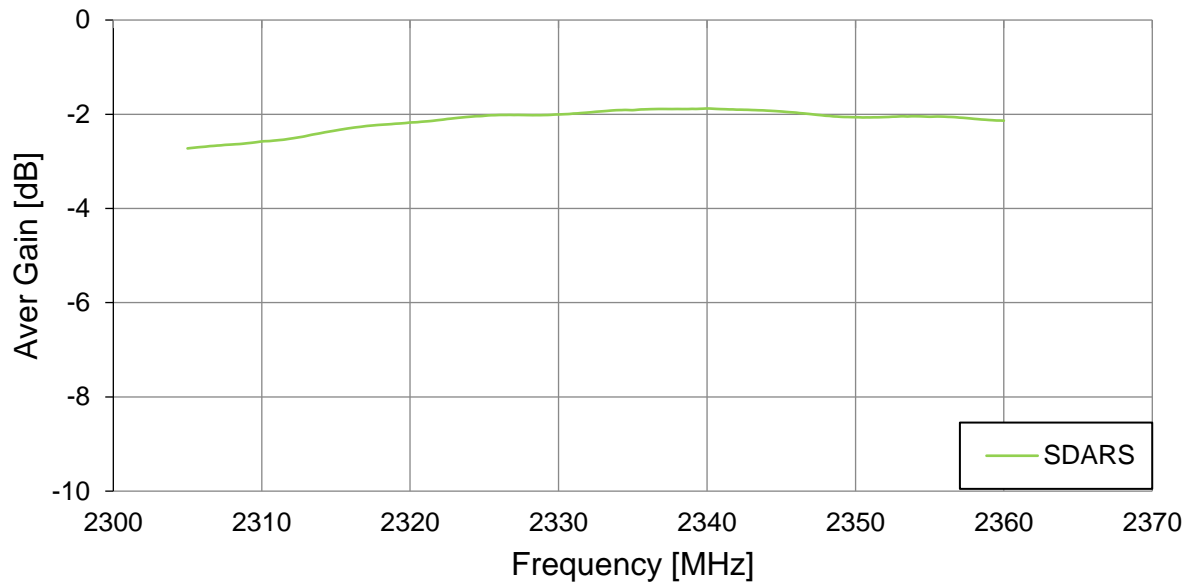
Return Loss



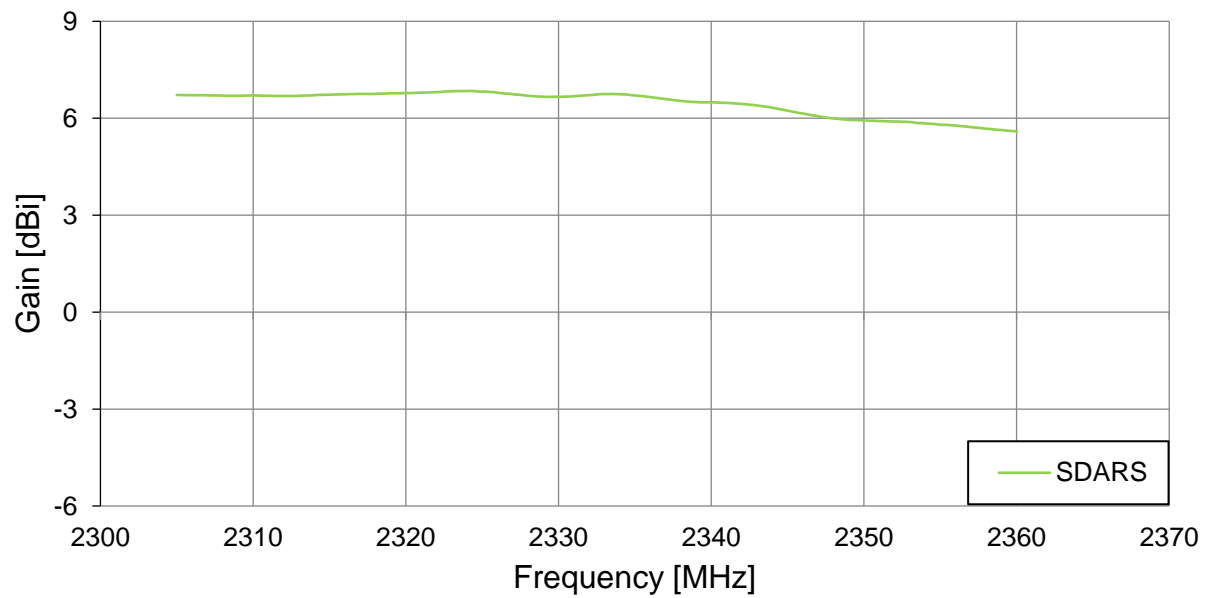
Efficiency



Average Gain

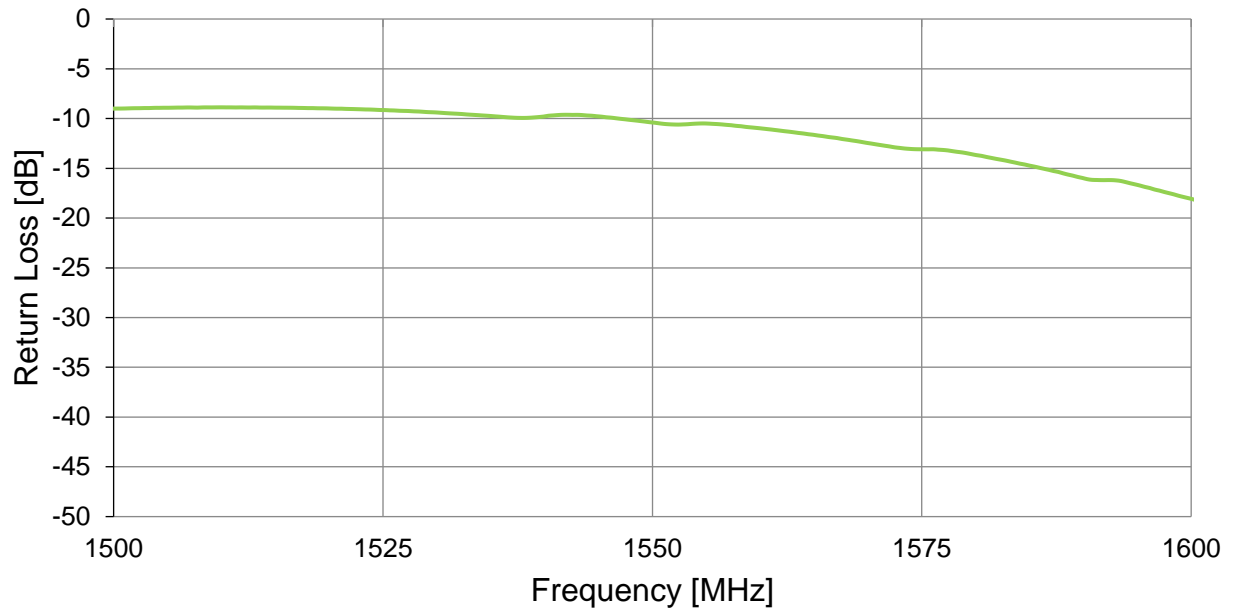


Peak Gain

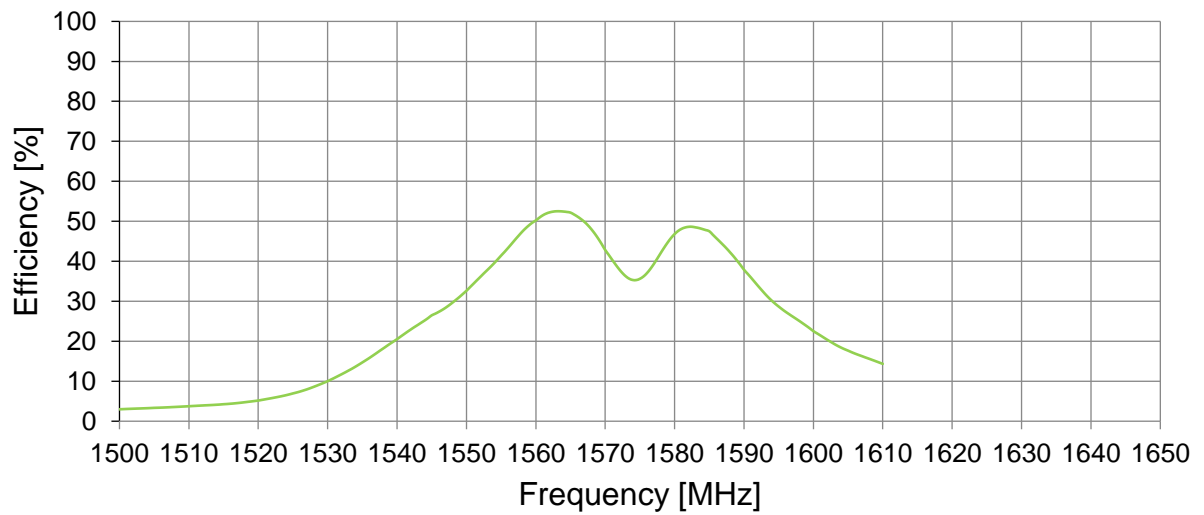


3.3 GPS Antenna Feed 1

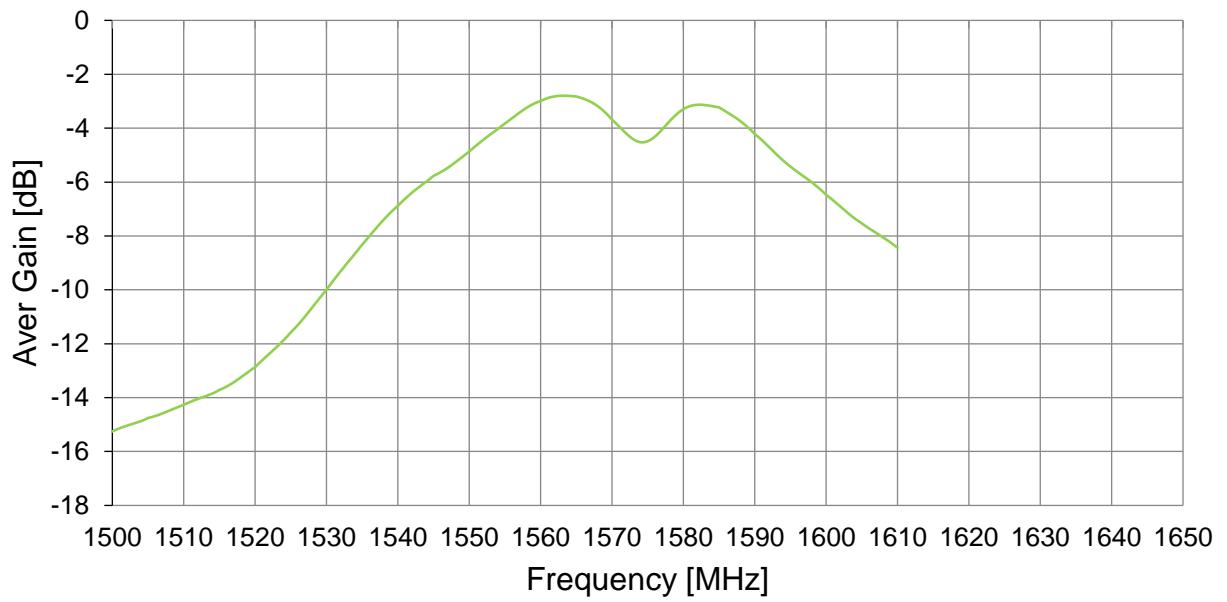
Return Loss



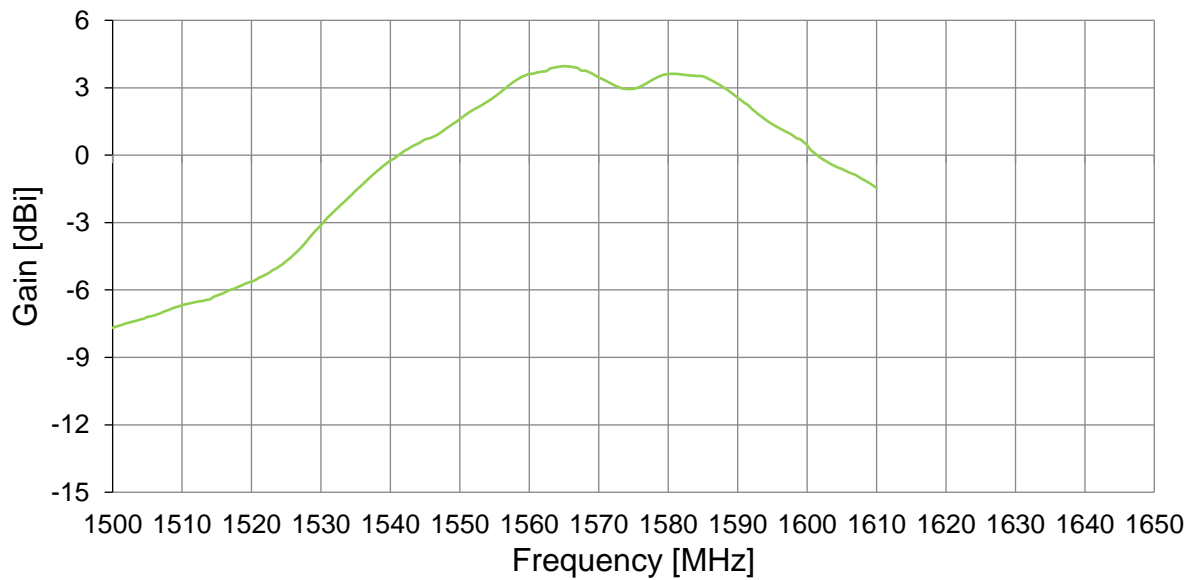
Efficiency



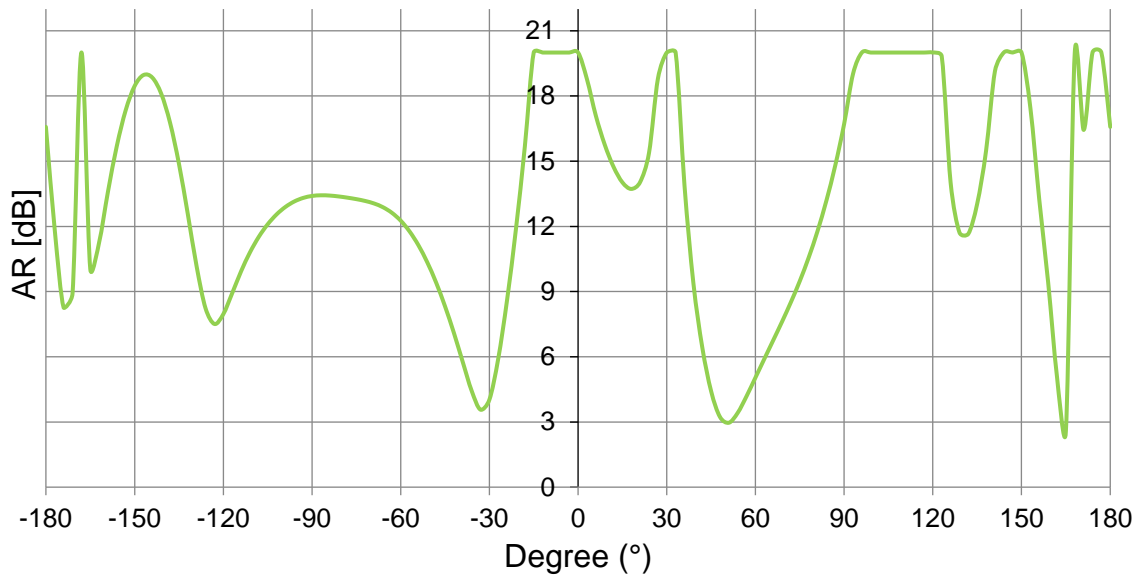
Average Gain



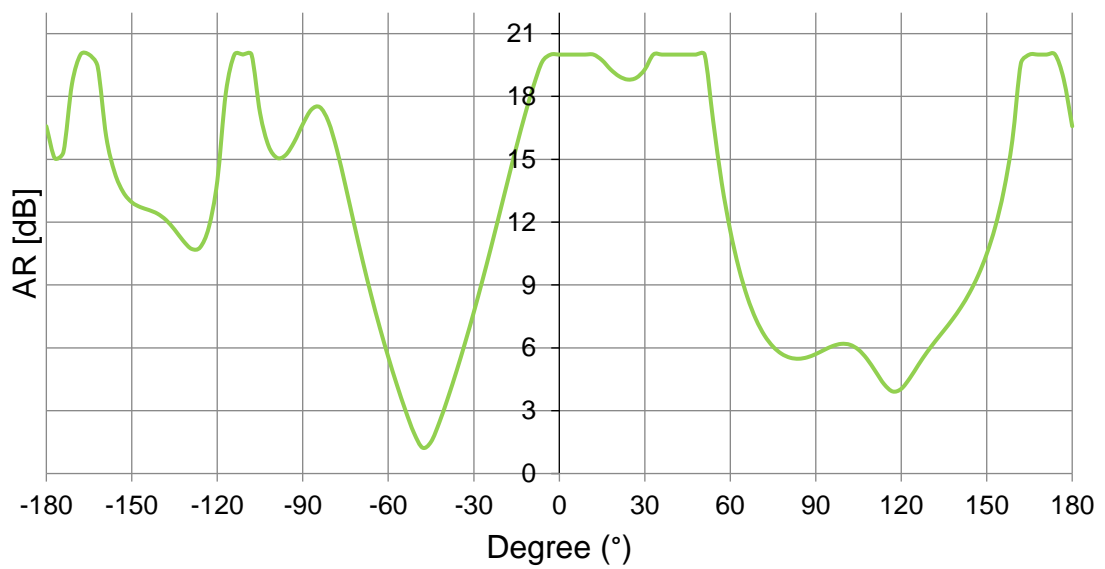
Peak Gain



Axial Ratio XZ Plane @ 1575.5MHz

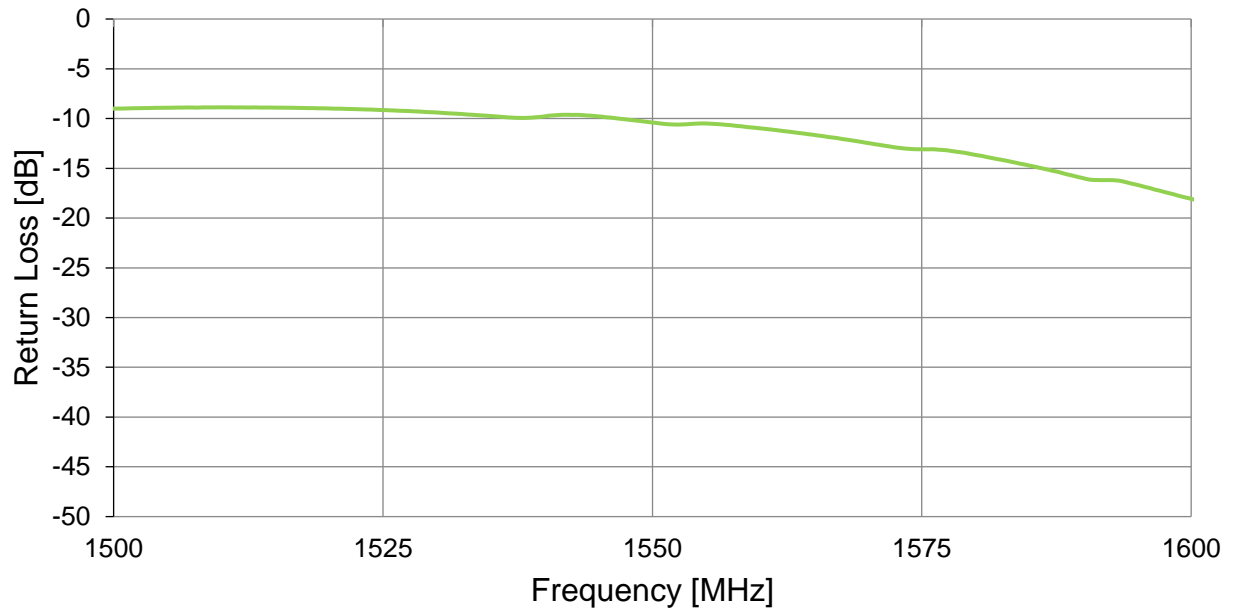


Axial Ratio YZ Plane @ 1575.5MHz

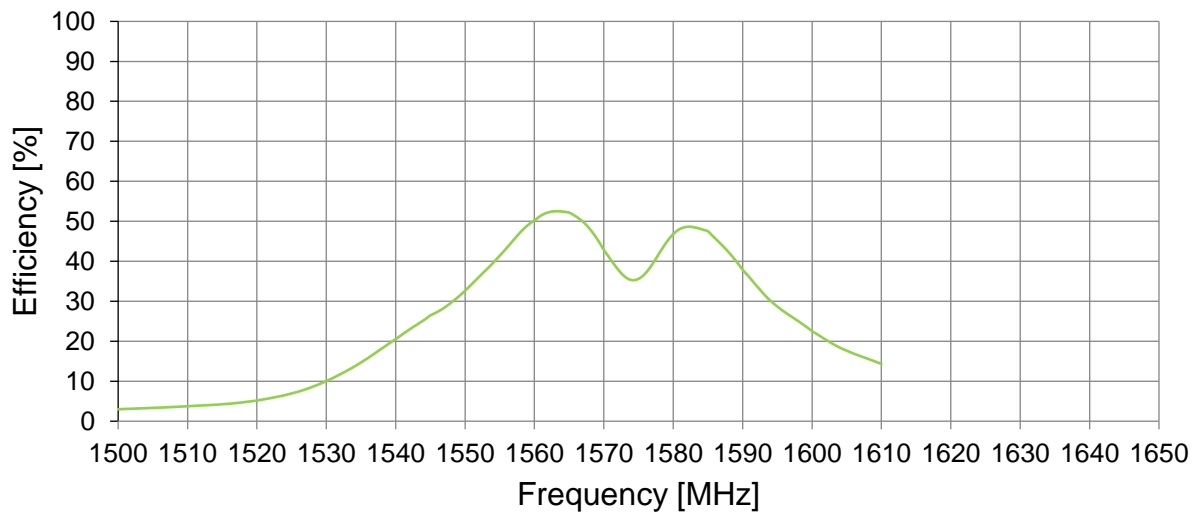


3.3 GPS Antenna Feed 2

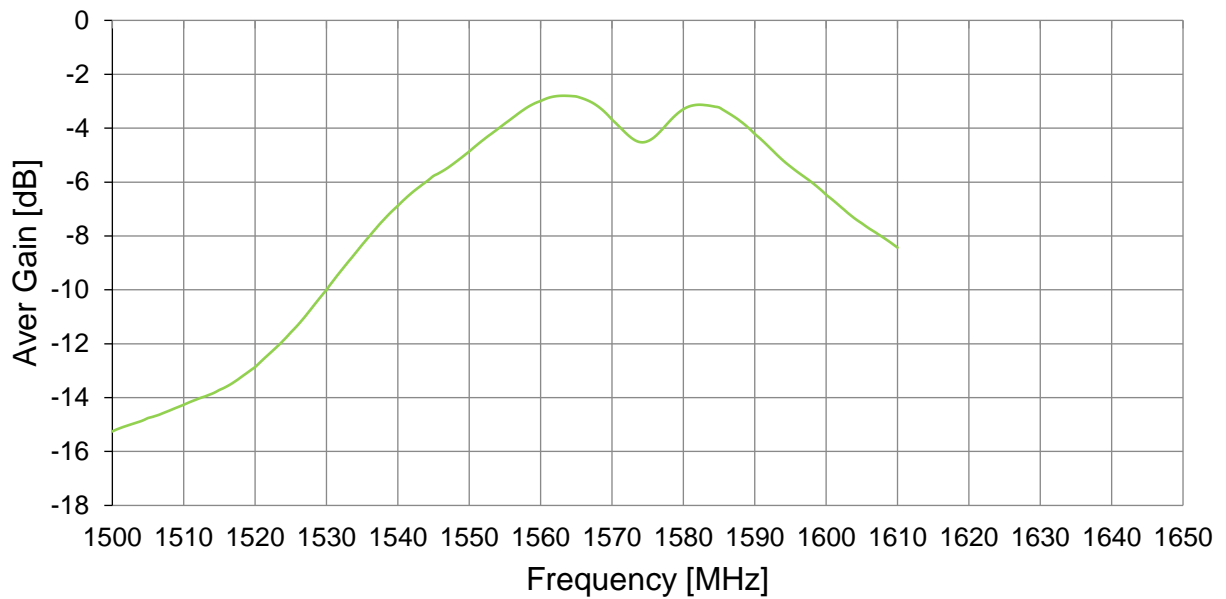
Return Loss



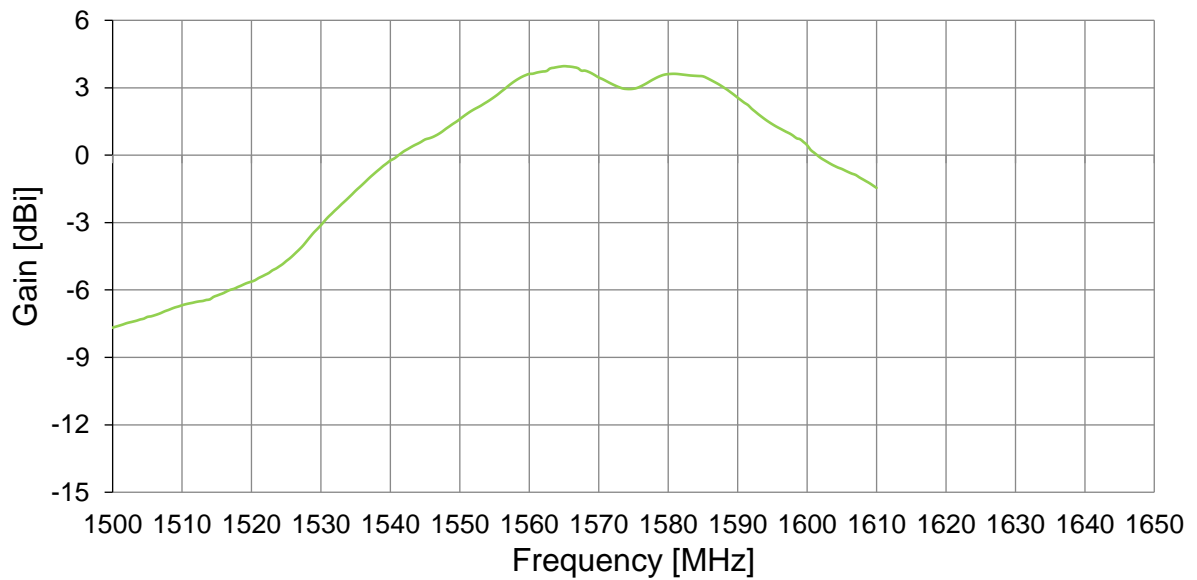
Efficiency



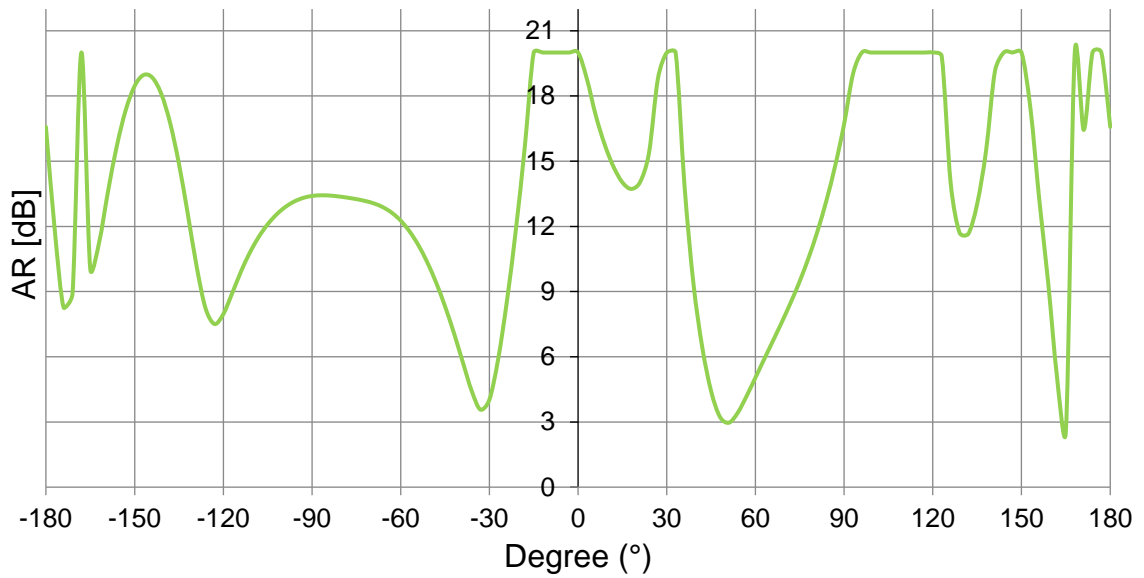
Average Gain



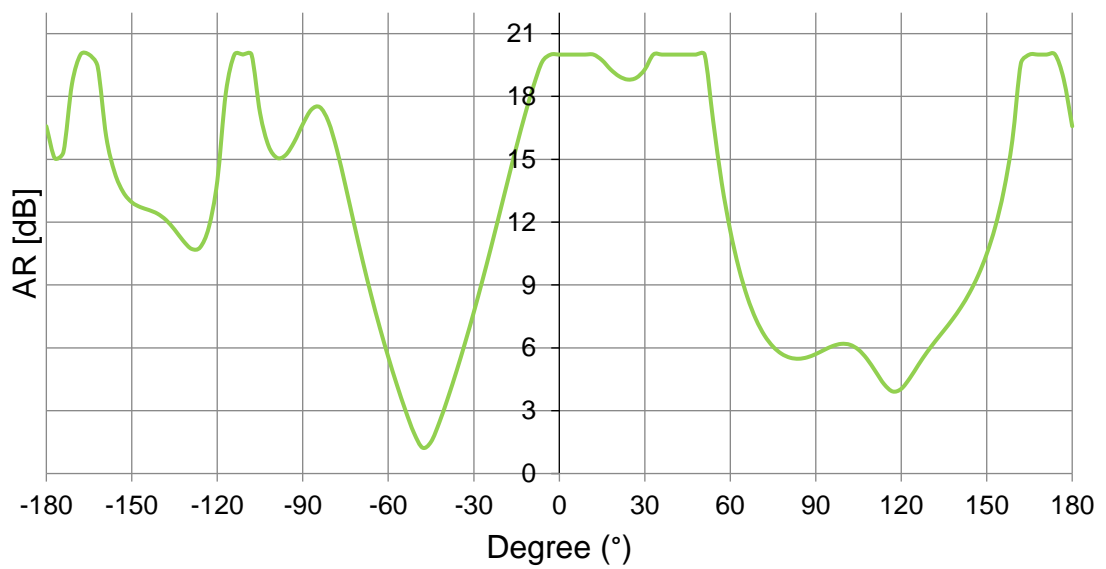
Peak Gain



Axial Ratio XZ Plane @ 1575.5MHz



Axial Ratio YZ Plane @ 1575.5MHz

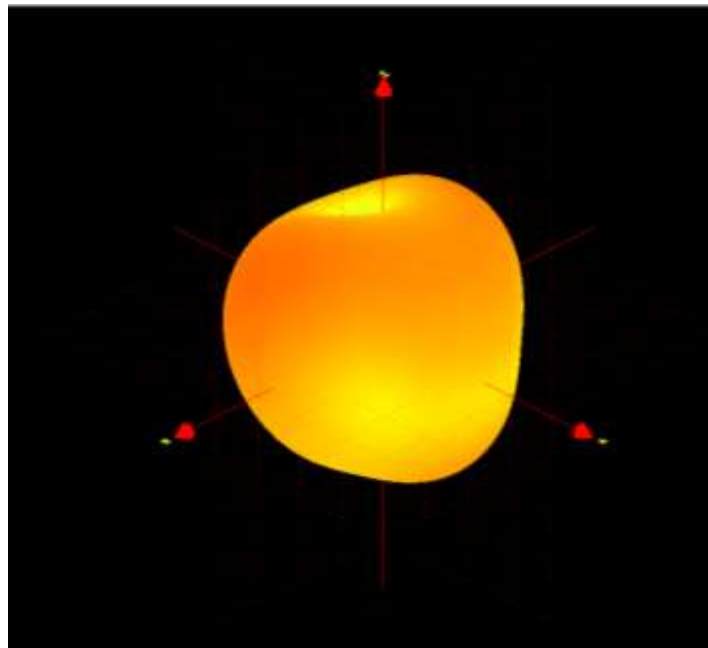


4. 2D Radiation Patterns

4.1 Test Setup



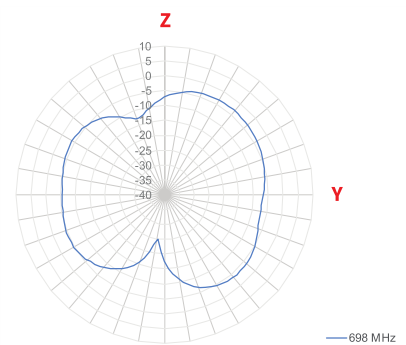
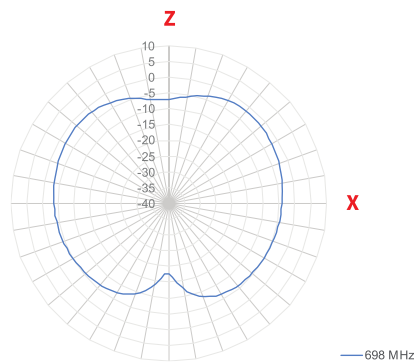
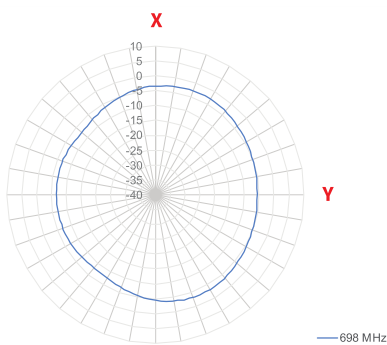
4.2 LTE 698MHz 3D and 2D Radiation Patterns



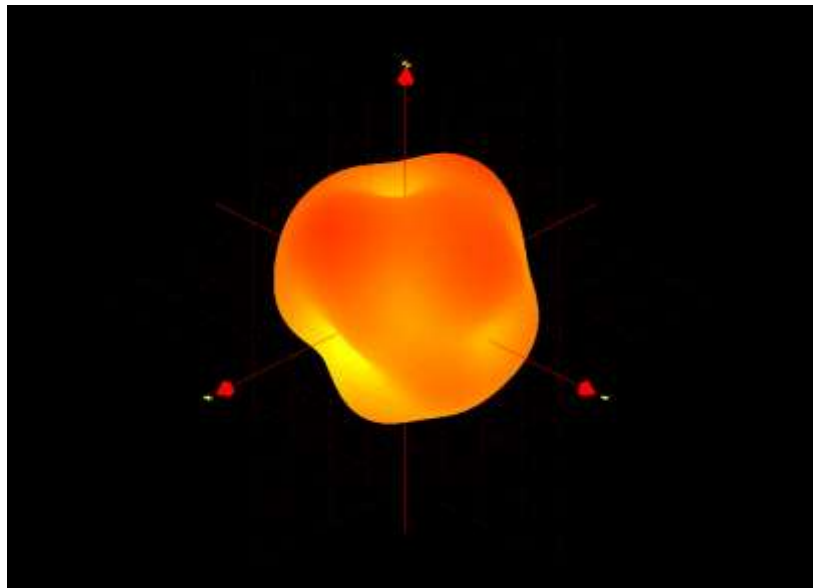
XY Plane

XZ Plane

YZ Plane



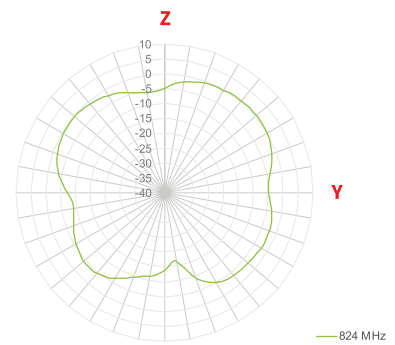
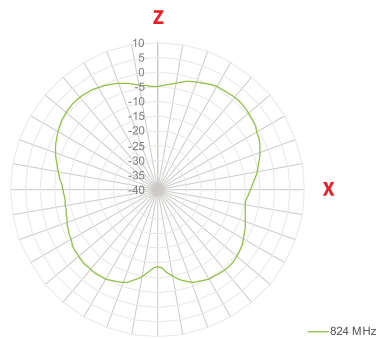
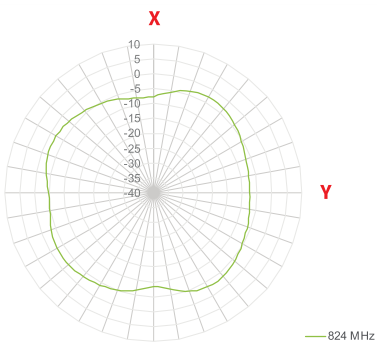
4.3 LTE 824MHz 3D and 2D Radiation Patterns



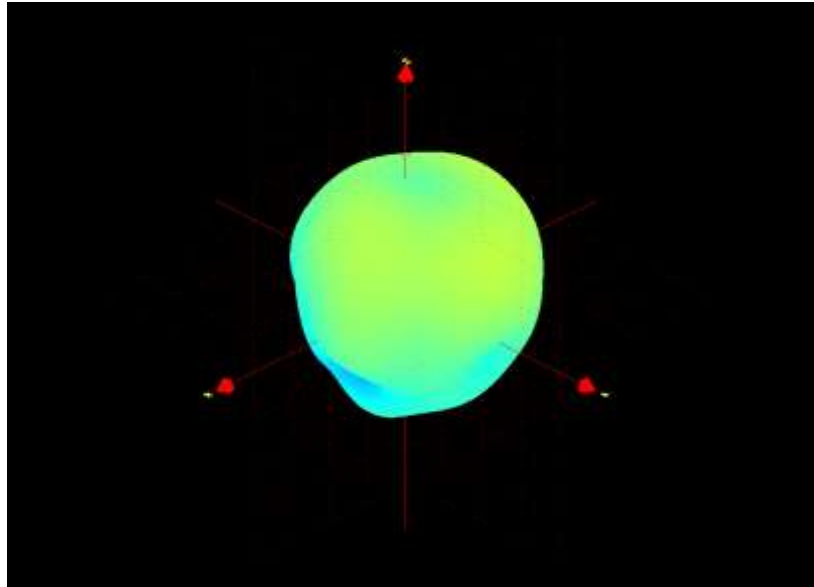
XY Plane

XZ Plane

YZ Plane



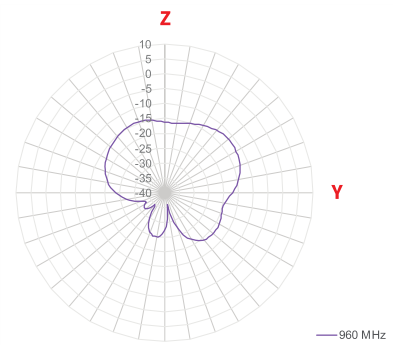
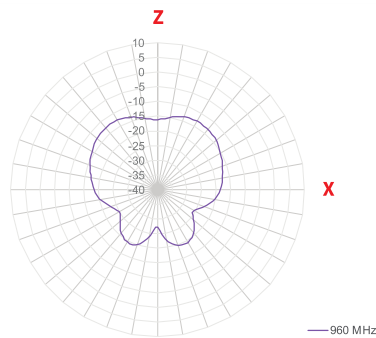
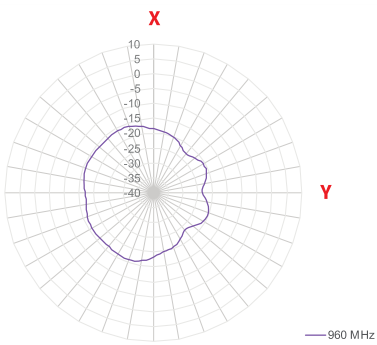
4.4 LTE 960MHz 3D and 2D Radiation Patterns



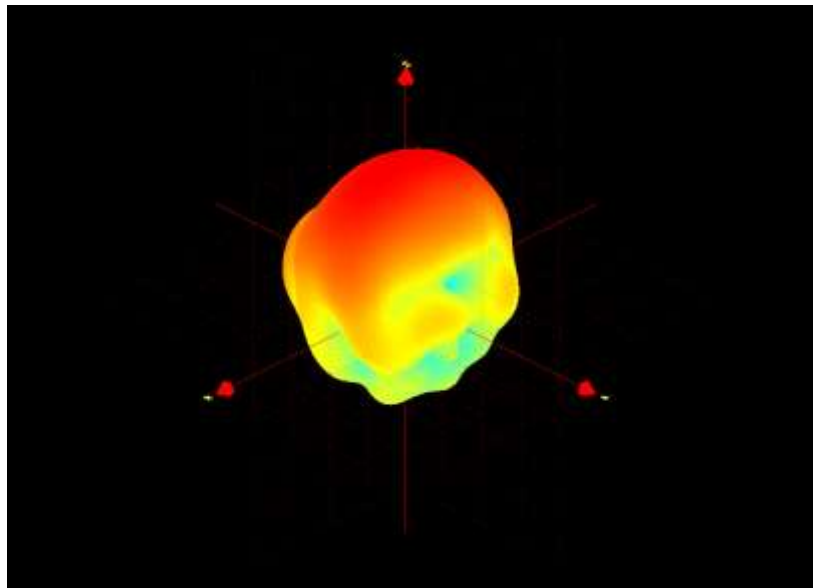
XY Plane

XZ Plane

YZ Plane



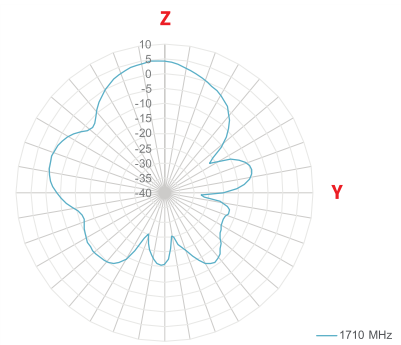
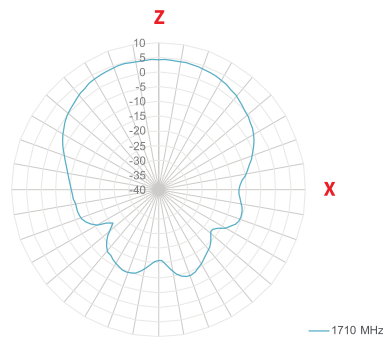
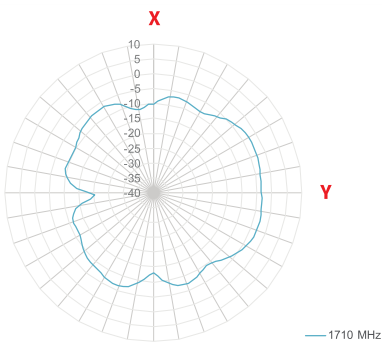
4.5 LTE 1710MHz 3D and 2D Radiation Patterns



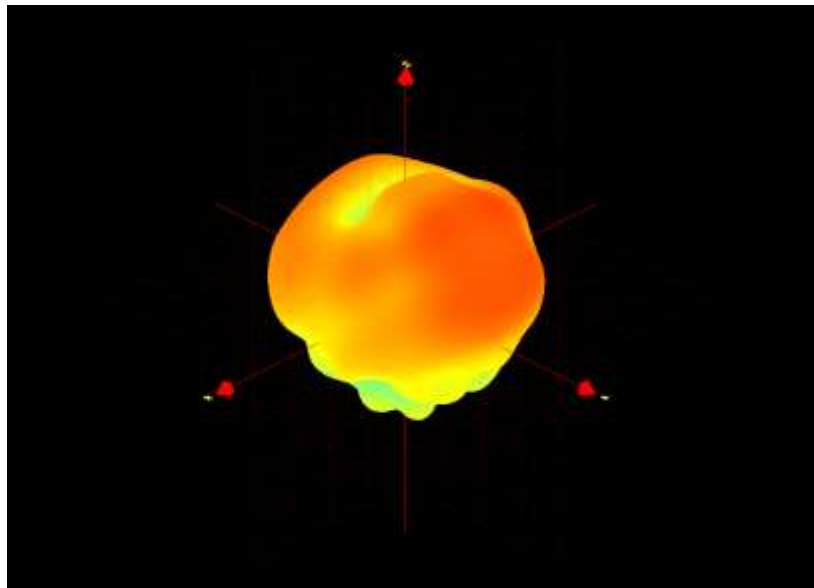
XY Plane

XZ Plane

YZ Plane



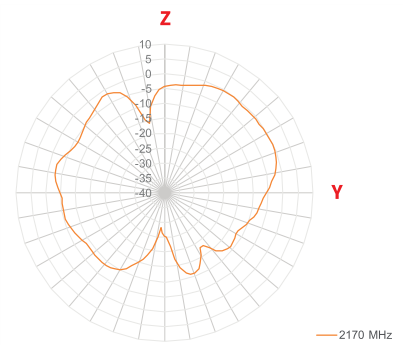
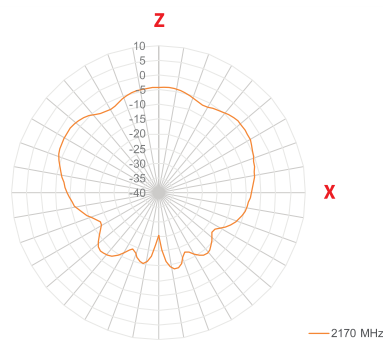
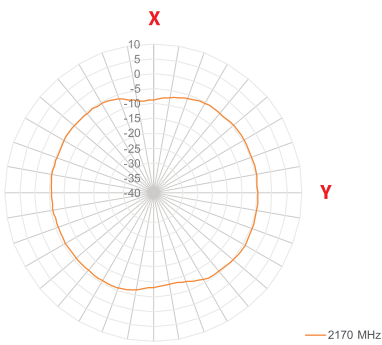
4.6 LTE 2170MHz 3D and 2D Radiation Patterns



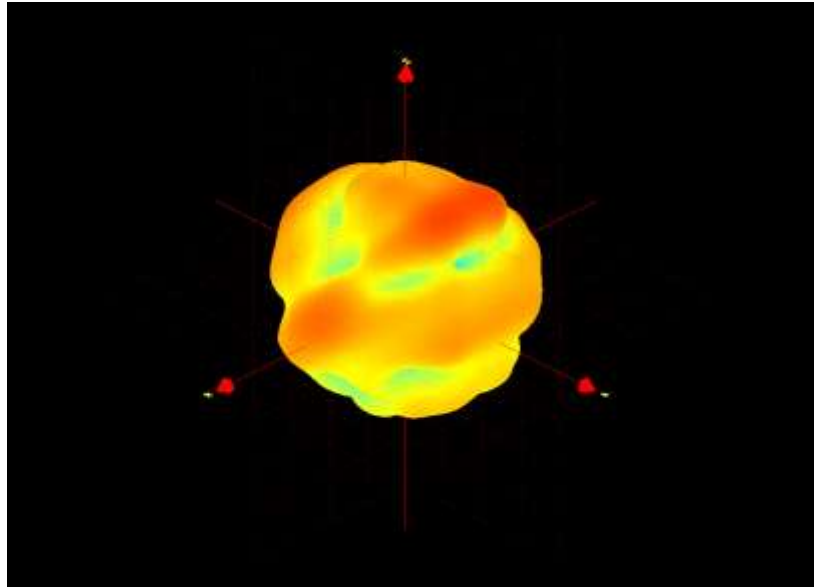
XY Plane

XZ Plane

YZ Plane



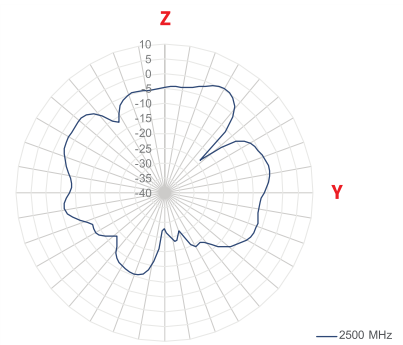
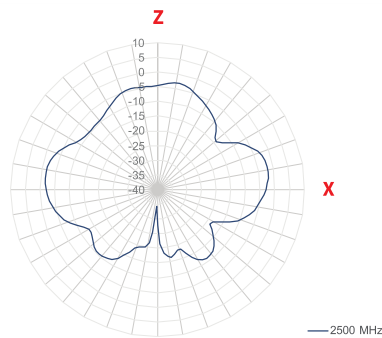
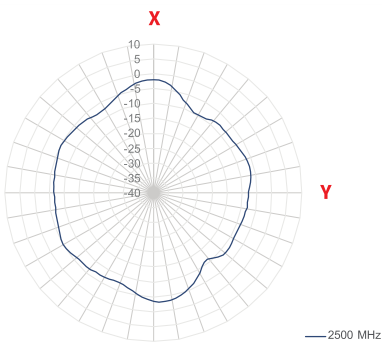
4.7 LTE 2500MHz 3D and 2D Radiation Patterns



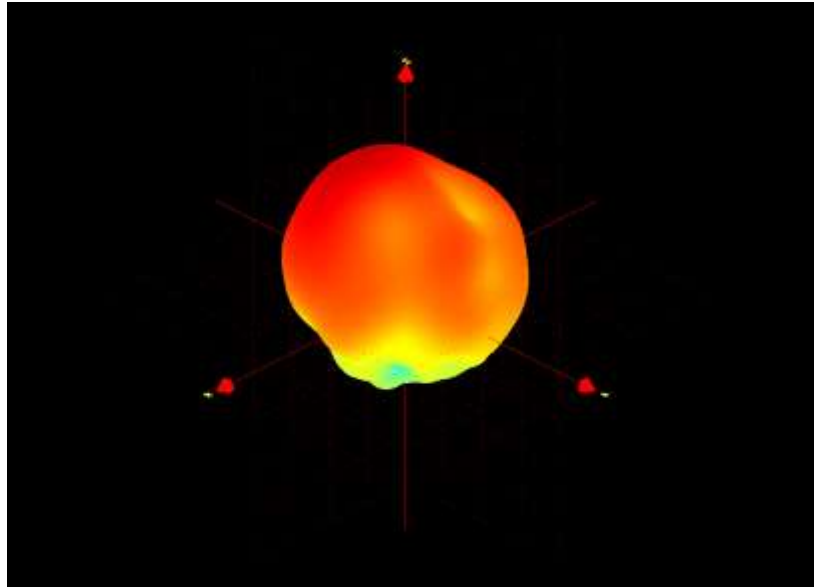
XY Plane

XZ Plane

YZ Plane



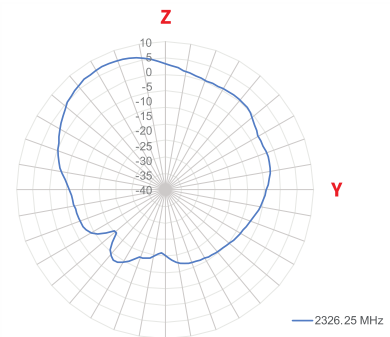
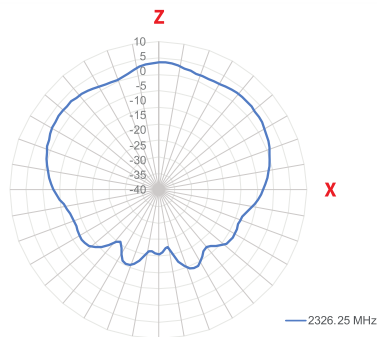
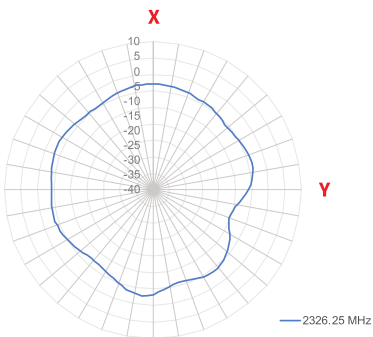
4.8 SiriusXM 2326.25MHz 3D and 2D Radiation Patterns



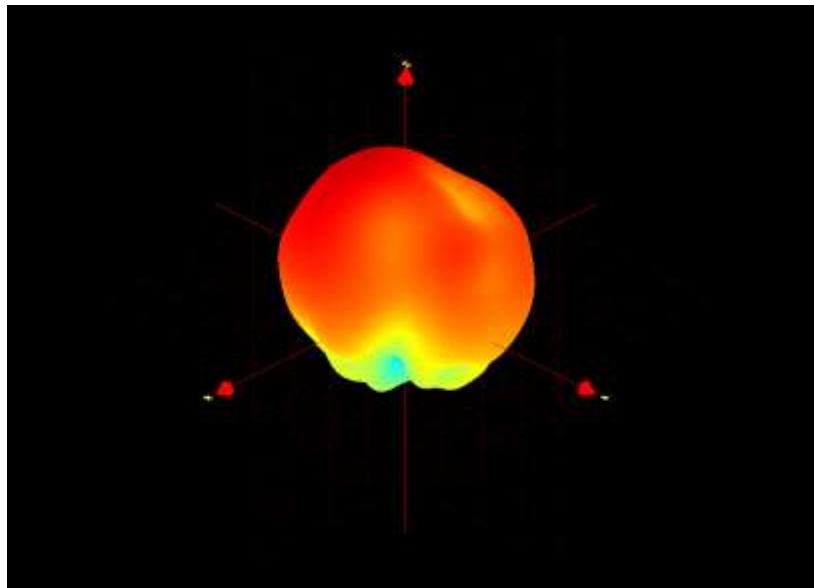
XY Plane

XZ Plane

YZ Plane



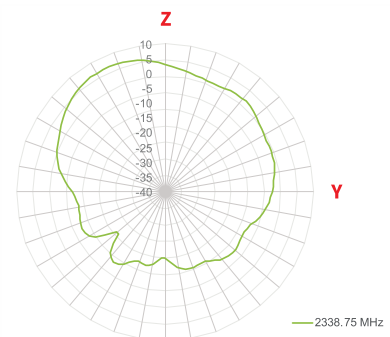
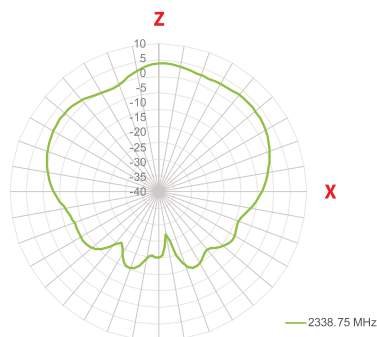
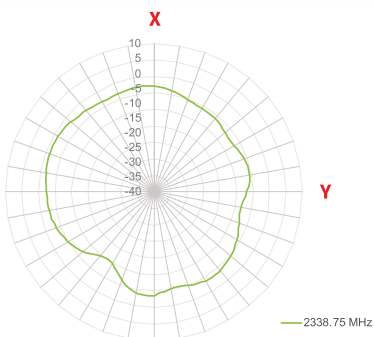
4.9 SiriusXM 2338.75MHz 3D and 2D Radiation Patterns



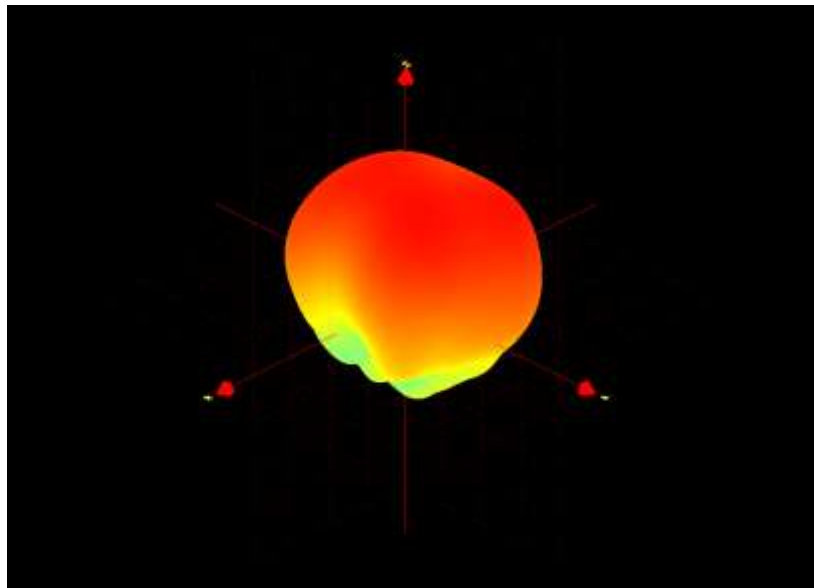
XY Plane

XZ Plane

YZ Plane



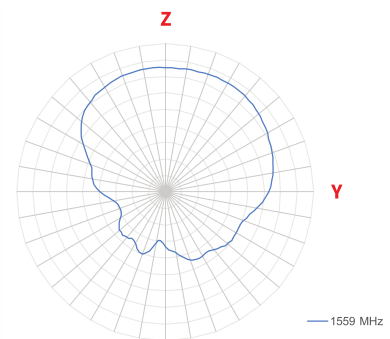
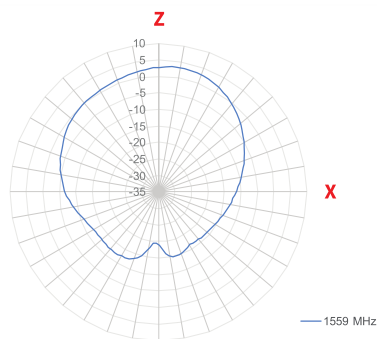
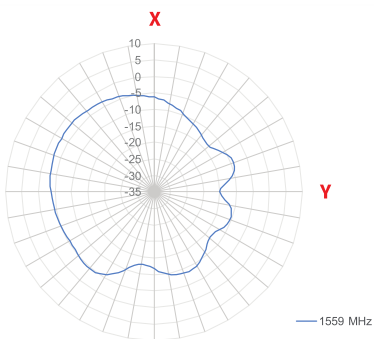
4.10 GPS(1&2) 1559MHz 3D and 2D Radiation Patterns



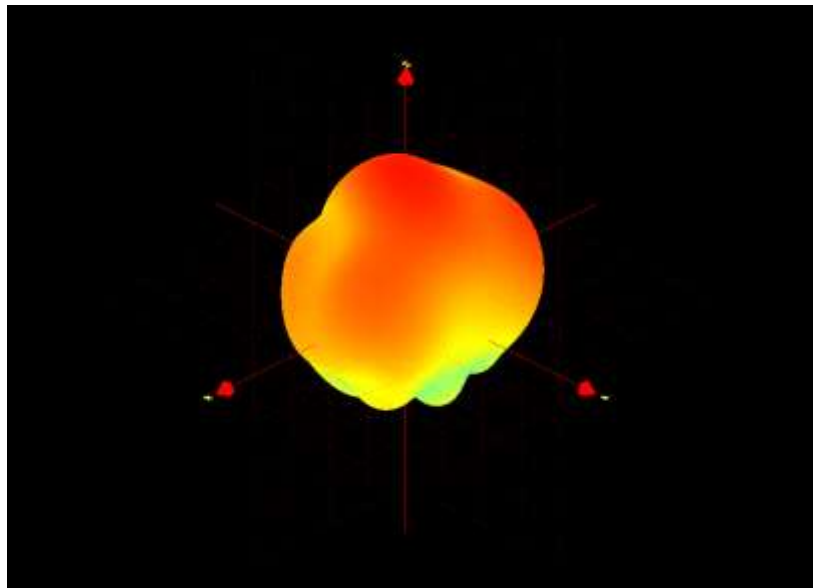
XY Plane

XZ Plane

YZ Plane



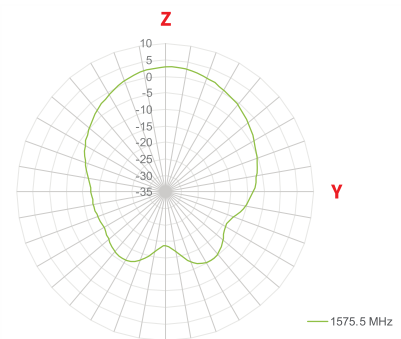
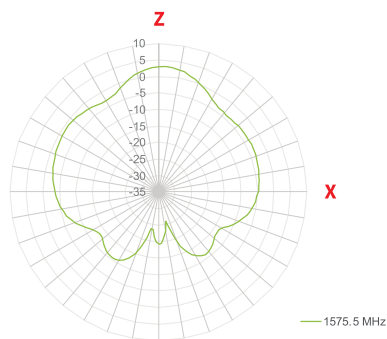
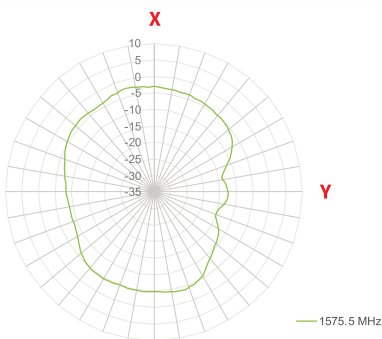
4.11 GPS(1&2) 1575.5MHz 3D and 2D Radiation Patterns



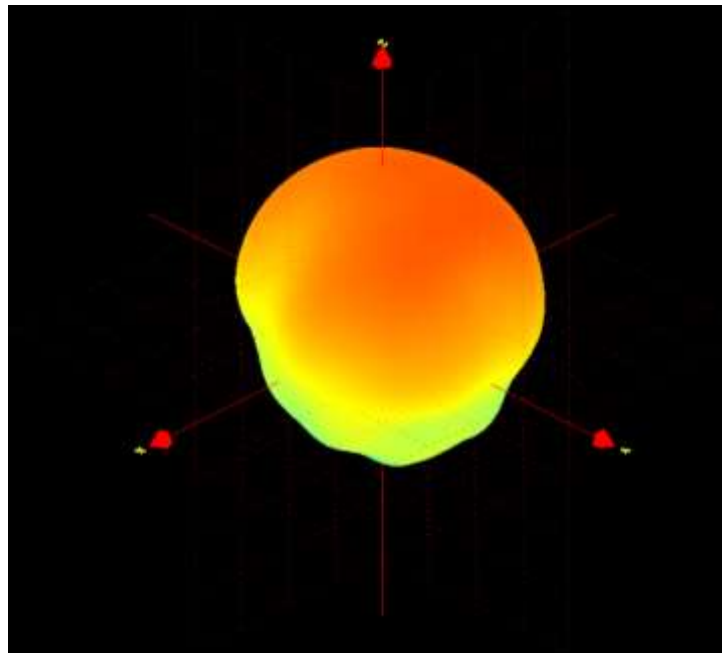
XY Plane

XZ Plane

YZ Plane



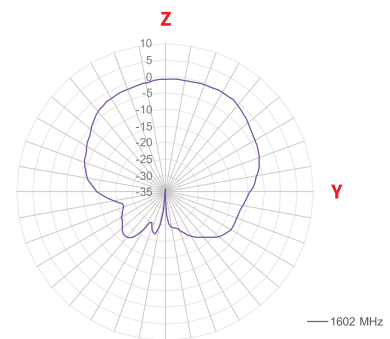
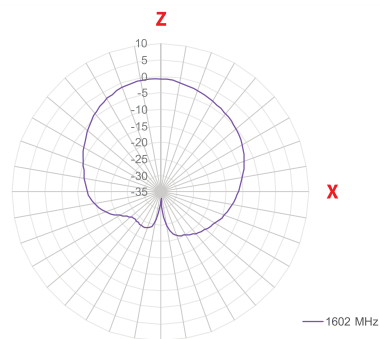
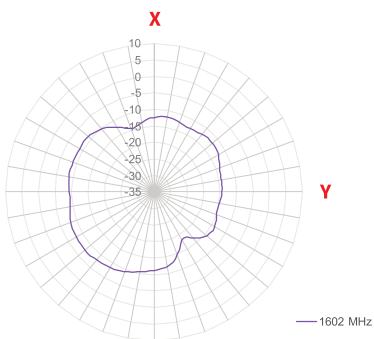
4.12 GPS(1&2) 1602MHz 3D and 2D Radiation Patterns



XY Plane

XZ Plane

YZ Plane



5. Mechanical Drawing (Units: mm)

| | | | | | | | |
|-----------------------|---|-----|----------------|-------------|-----------|----------|-------------|
| 6 | 5 | 4 | 3 | 2 | 1 | | |
| ISO NO: EDW-19-8-0920 | | REV | ZONE | DESCRIPTION | ENG | APPROVED | ISSUED DATE |
| | | ALL | Initial Design | | S.Stanton | Aaron | 2019/09/04 |

TOP VIEW

SIDE VIEW

MOUNTING HOLE CONNECTION

3D VIEW

| | |
|---|-------------|
| ⑦ | POWER CABLE |
| ⑧ | FAKRA C |
| ⑨ | FAKRA C |
| ⑩ | FAKRA D |
| ⑪ | FAKRA A |
| ⑫ | FAKRA K |

SCALE: 2/1

| Name | Material | Finish | QTY |
|---|--------------|------------------|-----|
| 1 Top Housing | PC | Black | 1 |
| 2 Rubber Base Plate | EPDM | Black | 1 |
| 3 Rod Antenna | PC | Black | 1 |
| 4 Heatshrink | PE | Black | 1 |
| 5 Retention Ring | PC | Black | 1 |
| 6 Module Label | Coated Paper | White | 1 |
| 7 Power Cable | PVC | Red & Black | 1 |
| 8 RG-174 Cable Assembly with FAKRA C (GPS 1) | PVC | Black & Blue | 1 |
| 9 RG-174 Cable Assembly with FAKRA C (GPS 2) | PVC | Black & Blue | 1 |
| 10 RG-174 Cable Assembly with FAKRA D (LTE) | PVC | Black & Bordeaux | 1 |
| 11 RG-174 Cable Assembly with FAKRA A (AM/FM) | PVC | Black & Black | 1 |
| 12 RG-174 Cable Assembly with FAKRA K (SDARS) | PVC | Black & Carry | 1 |

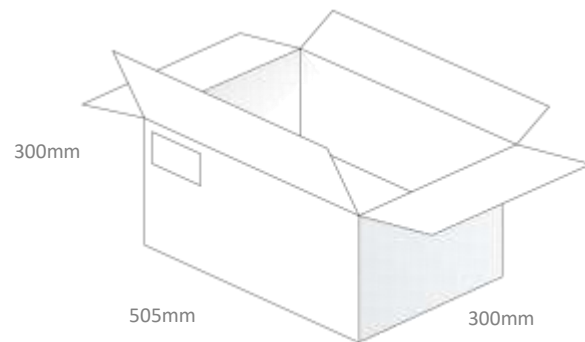
| | | | |
|--|--|---------------------------------|--|
| UNLESS OTHERWISE SPECIFIED TOLERANCES ON: X ± 0.2 XX ± 0.5 XXX ± 0.05 | DATE: 2019/09/04 UNIT: mm THIRD ANGLE PROJECTION | MAT'L: FINISH: SCALE: 1/1 | <p>TW Design Centre This drawing and its inherent design concepts are property of Taoglas, Inc. to be copied or given to third parties without the written consent of Taoglas.</p> |
| APPROVED BY: Aaron | CHECKED BY: Aaron | DRAWN BY: S.Stanton | TITLE: :5in1 300mm RG-174 GNSS FAKRA C LTE FAKRA D AM/FM FAKRA A SDARS FAKRA K PART NO.: MA1045.A.ALBTX.002 |

6. Packaging

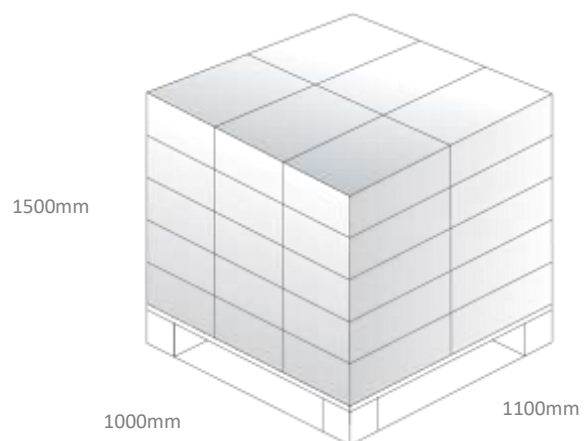
1pc MA1045.A.ALBTX.002 per Bubble Bag
Weight: 230g



50pcs MA1045.A.ALBTX.002 per Carton
Dimensions: 505*300*300mm
Weight: 13.5Kg



Pallet Dimensions:
1500*1000*1100mm
30 Cartons Per Pallet
6 Cartons Per Layer, 5 Layers





TAOGLAS®

www.taoglas.com

