Datasheet

MA5022 – 2 in 1 Mirror Rail Mount Antenna

Part No:
MA5022.A.AX.002

Description:

MA5022 - 2in1 GPS & SDARS Mirror Rail Mount Antenna

Features:

2 Part Housing Clamps Around Mirror Rail

31.5mm Diameter Through hole

GPS: Fakra Code C

SDARS: Fakra Code K

Cables: 300mm RG-174

IP67 Rated Waterproof

RoHS & Reach Compliant

1. Introduction

The Taoglas MA5022 is 2-in-1 GNSS & SDARS mirror rail mount antenna. The TS16949 approved antenna is manufactured with a robust ABS+PC enclosure, built to withstand the most demanding of heavy-duty plant and trucking requirements. The fully IP67 rated enclosure has been designed for mounting around a rail with max diameter of 30mm making it a perfect solution for use in aftermarket automotive applications.

The internal antennas support: GPS/GALILEO and SDARS and comes with low-loss RG-174 coaxial pigtail cables as standard, terminating in FAKRA SMB code C for GNSS and FAKRA SMB code K for SDARS. The SDARS antenna meets the latest (Gen 3) specifications. The antennas inside can be completely customized according to requirements, to work on other applications, such as ISM bands or DSRC/C-V2X.

The antenna is manufactured in TS16949 automotive approved production facility. For more information, installation guidelines or customized options, contact your local Taoglas customer service team.

2. Specifications

GNSS Antenna	
Frequency	BeiDou : 1561.098 ± 2.046MHz. GPS : 1575.42 ± 1.023MHz
Return loss (GPS L1)	< -10 dB
Efficiency	57%
Passive Gain at Zenith (GPS L1)	+3 dBi typ.
Average Gain at (GPS L1)	-2.3dB
Polarization	RHCP
Impedance	50 Ω

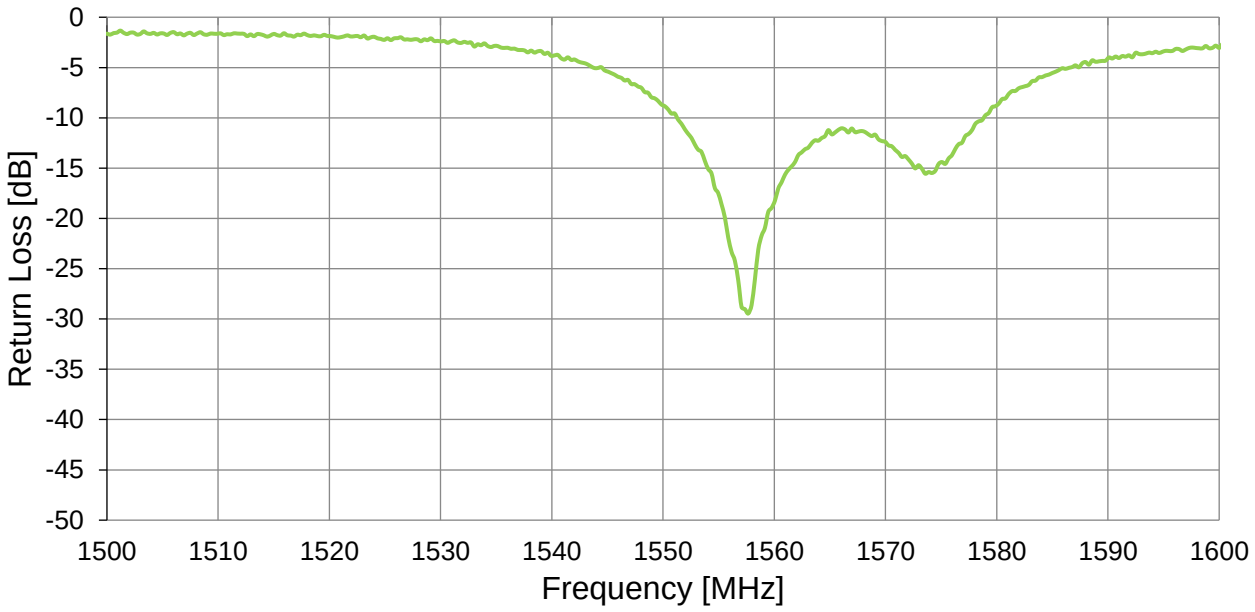
SDARS Antenna	
Frequency	2320-2345MHz
Return loss	< -10 dB
Efficiency	>50%
Passive Gain	5.4dBi typ (at zenith)
Average Gain	>-3.4dB
Polarization	LHCP
Impedance	50 Ω

Mechanical	
Dimensions	151.8*59*13 mm
Cable	RG-174
Connector	GPS: FAKRA Code C SDARS: FAKRA Code K
Casing	ASA+PC w/UV Stabilizer
Through Hole Diameter	31.5mm
Sealant	Silicone
Weight	0.22kg
Waterproof Rating	IP67
Cable Pull Force	35.59N
Environmental	
Temperature Range	-40°C to 85°C
Thermal Shock	IEC 60068-2-14
Humidity	Non-condensing 65°C 95% RH

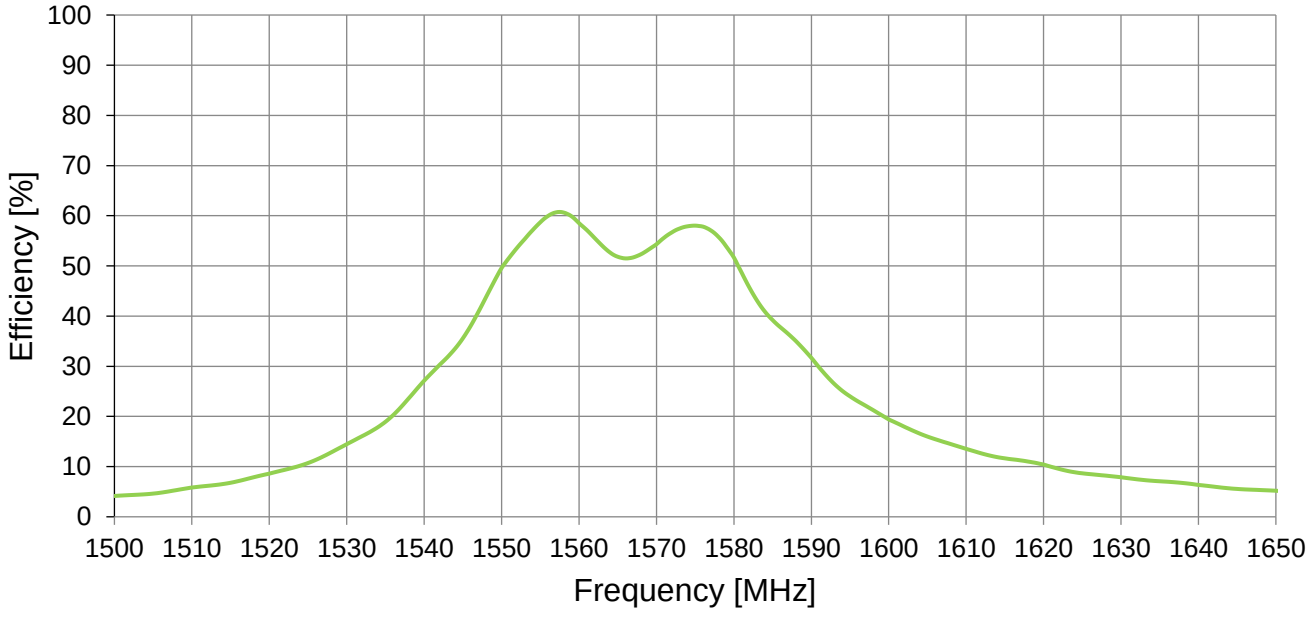
3. Antenna Characteristics

3.1 GPS

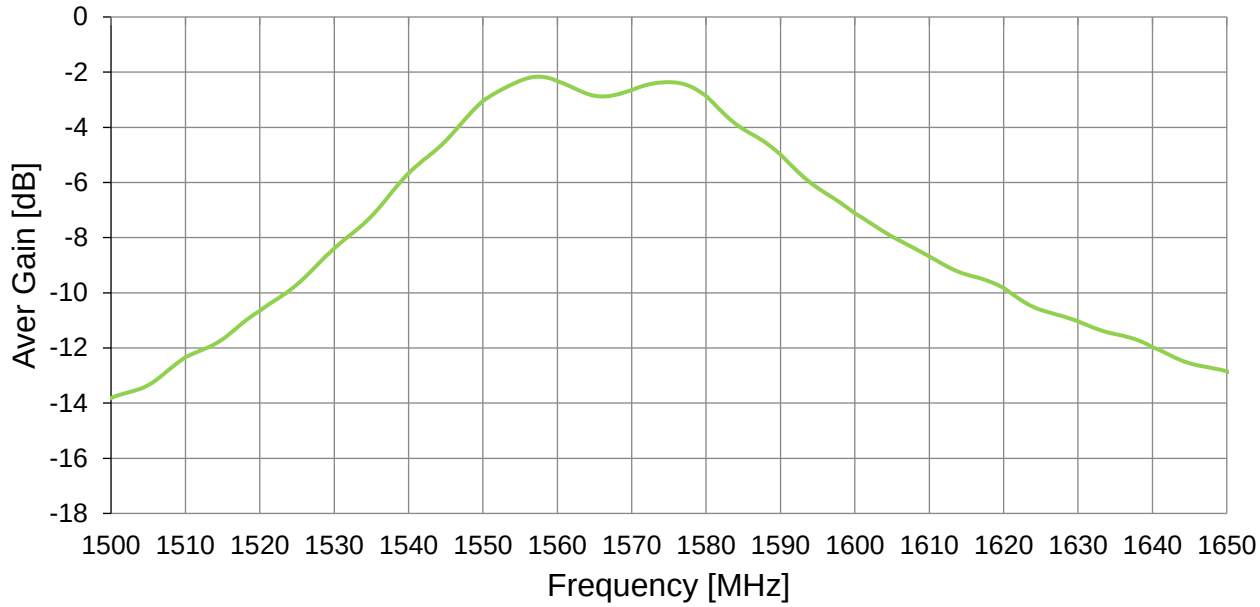
Return Loss



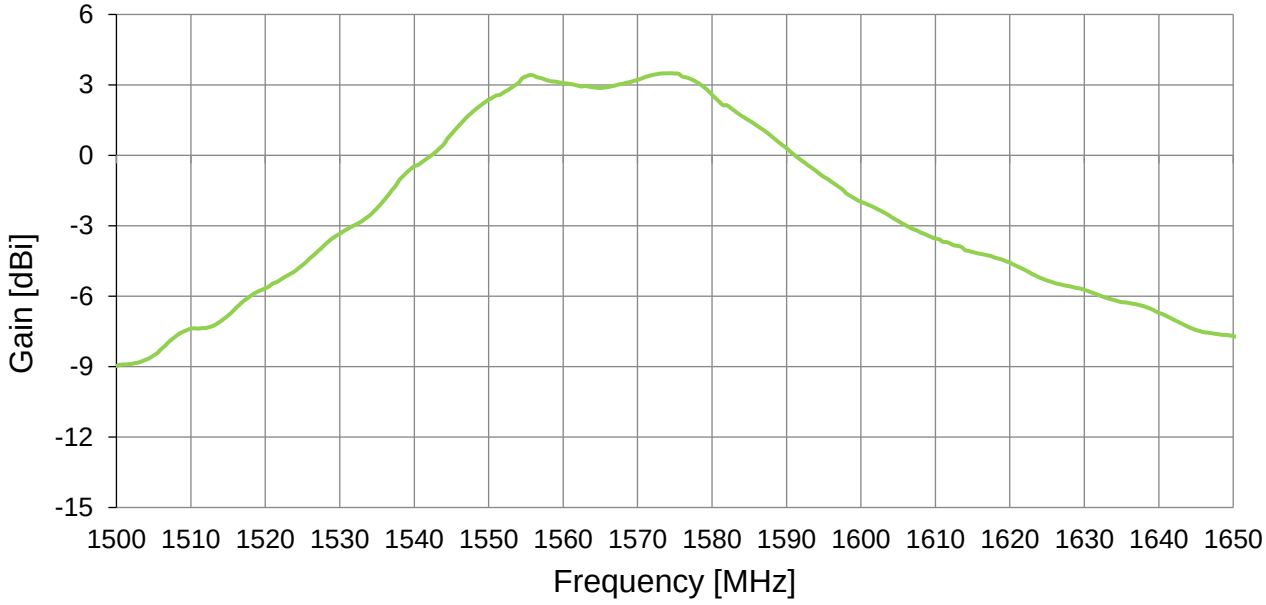
Efficiency



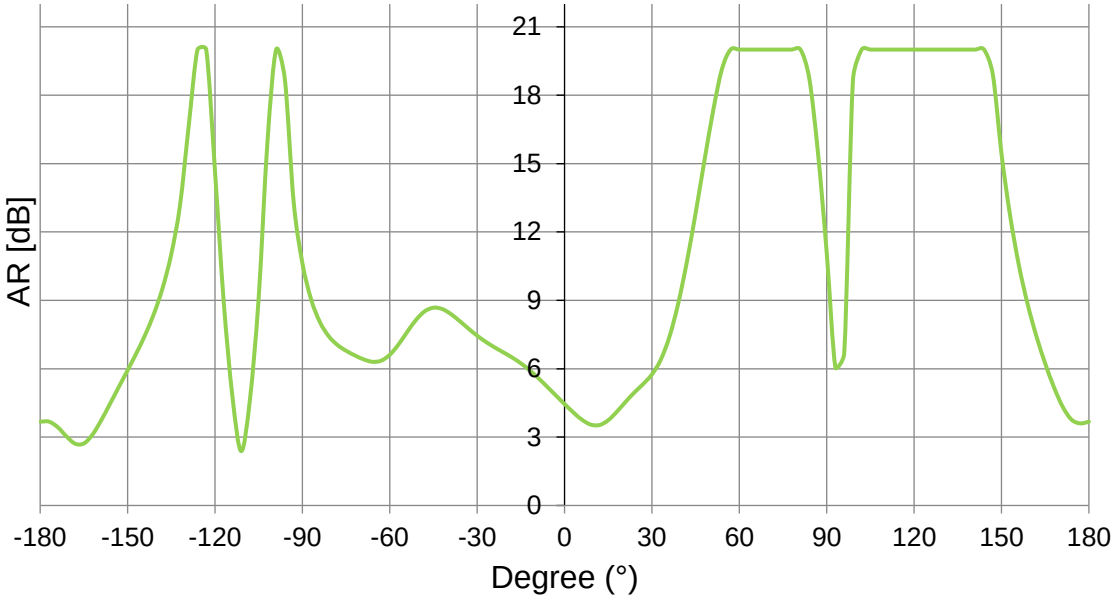
Average Gain



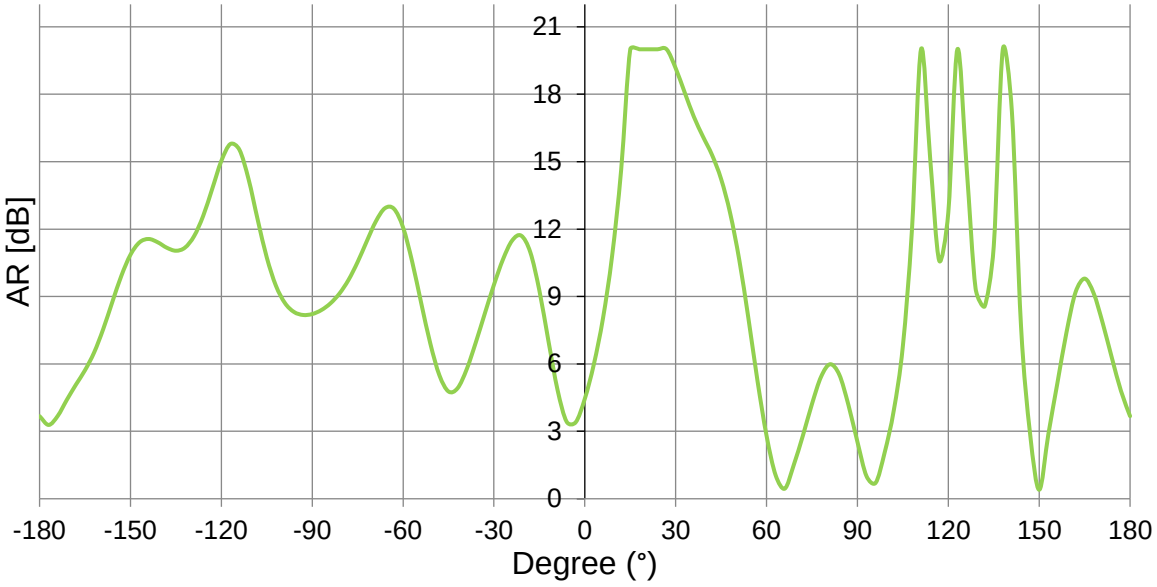
Peak Gain



Axial Ratio XZ Plane @ 1575.5MHz



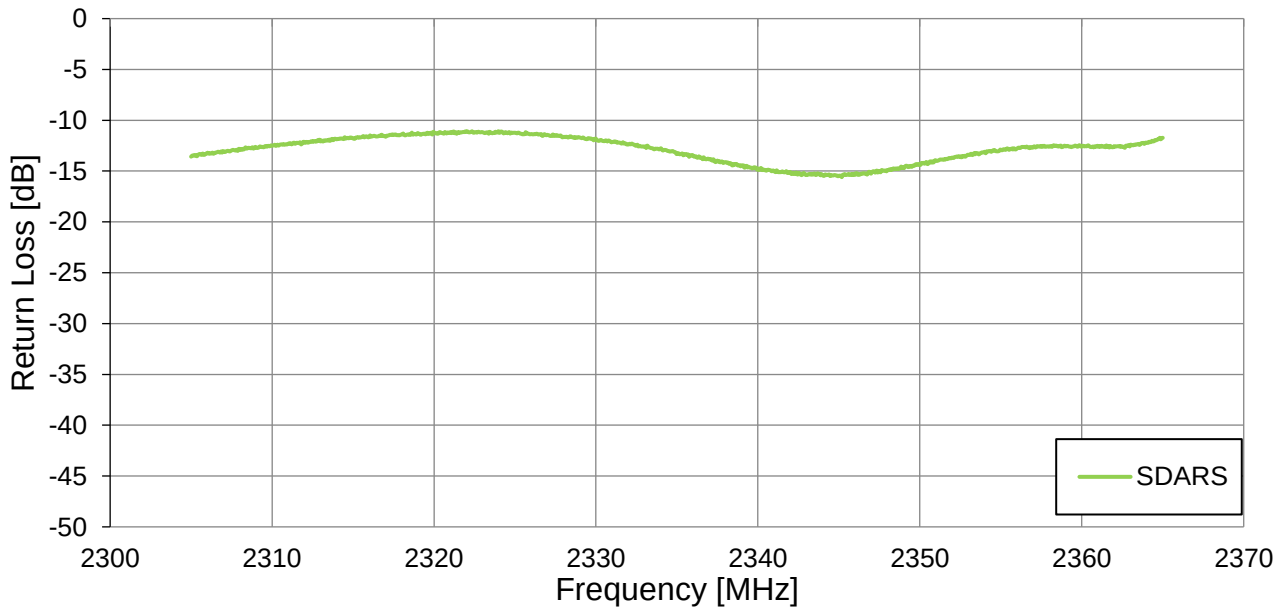
Axial Ratio YZ Plane @ 1575.5MHz



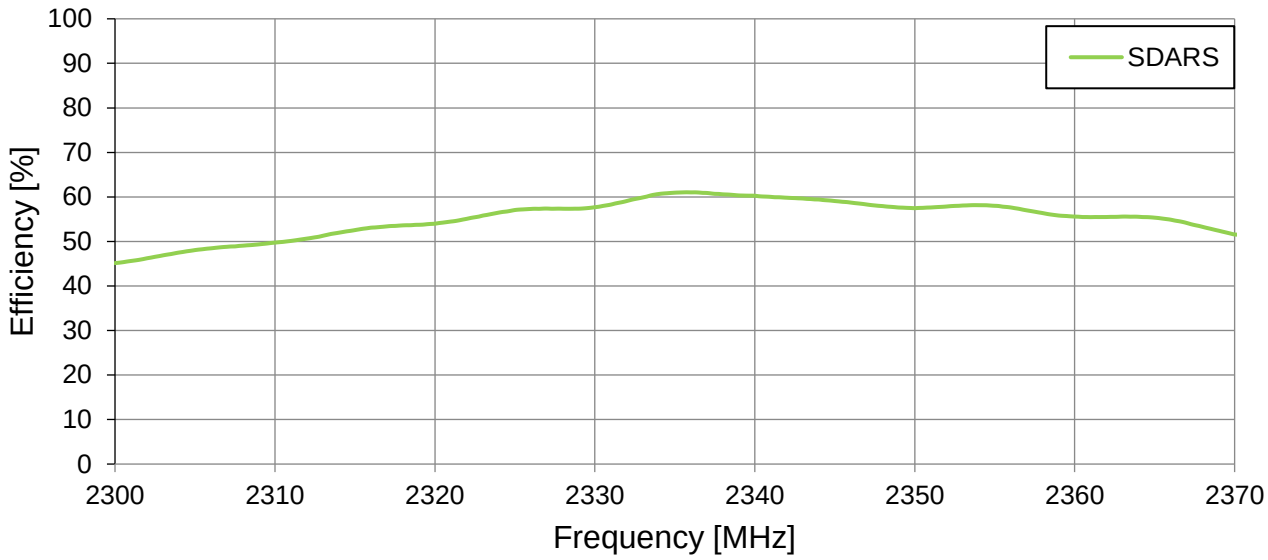
Amplifier		
LNA-10	Frequency Range	1575.42±1.023MHz
LNA-20	Gain	30dB Typ
LNA-30	Noise Figure	1.0 dB Typ
LNA-40	Output 1dB CP	10.0 dBm Typ
LNA-50	Out Band Rejection	f_0: 1575.42MHz
		f_0±20MHz 15dB Min
		f_0±50MHz 25dB Min
		f_0±100MHz 30dB Min
LNA-60	Output SWR	2:1 Max
Power		
POW-10	Input Voltage	3.5 ~ 5V
POW-20	Current	30mA Typ

3.2 SDARS Antenna

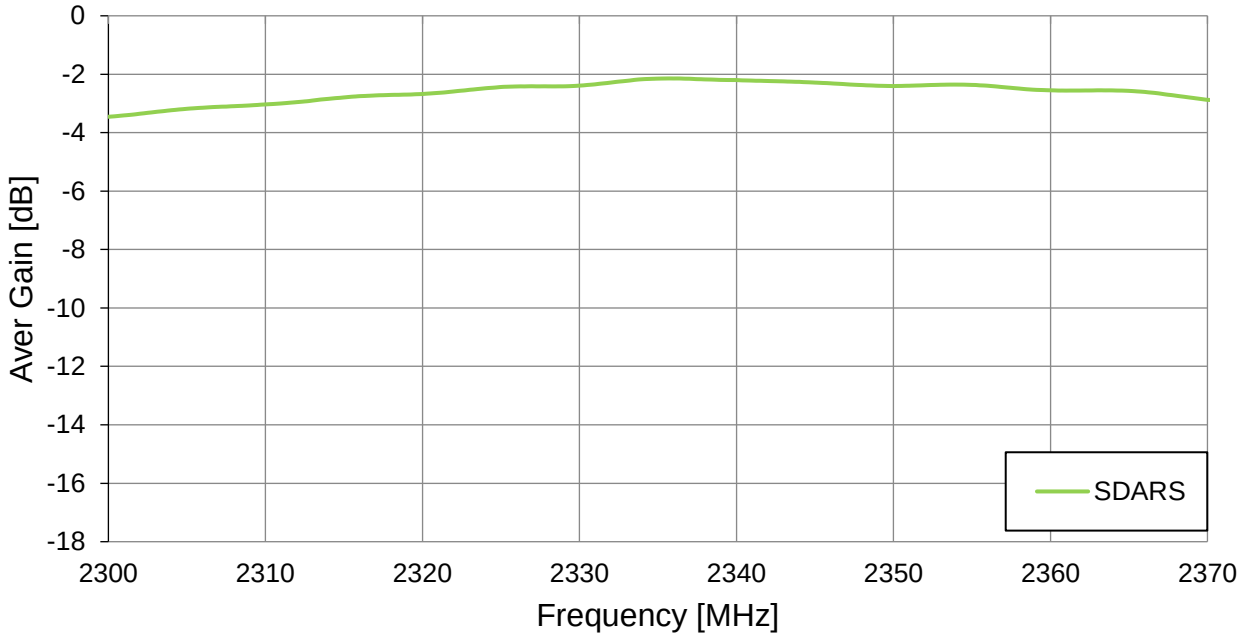
Return Loss



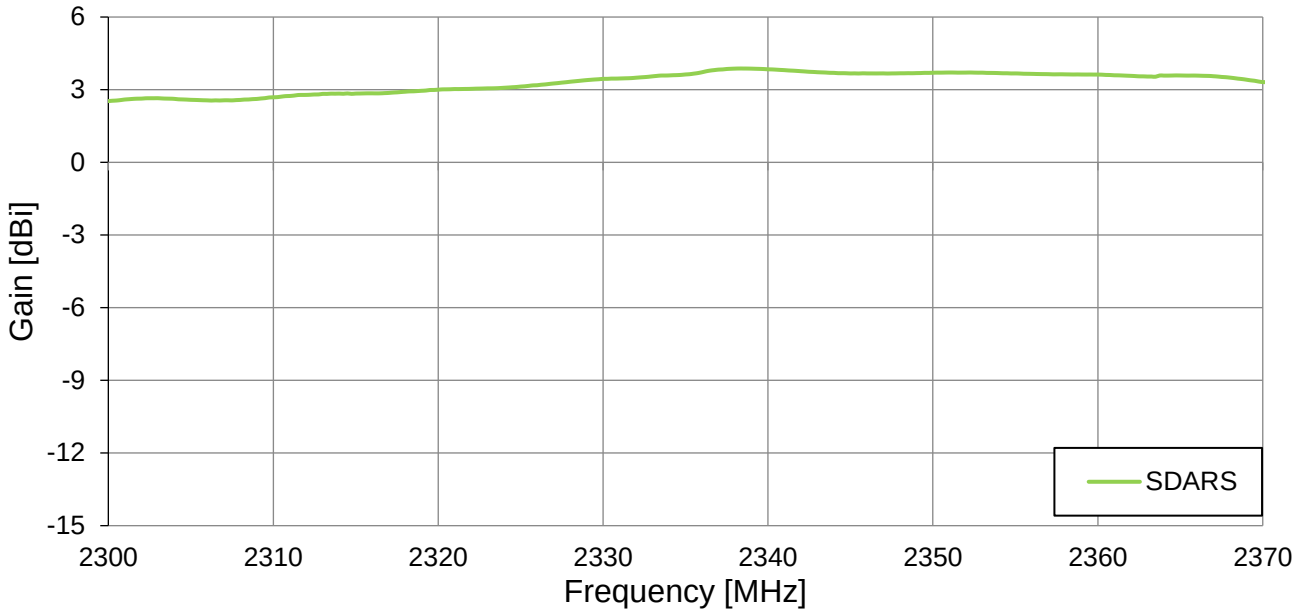
Efficiency



Average Gain



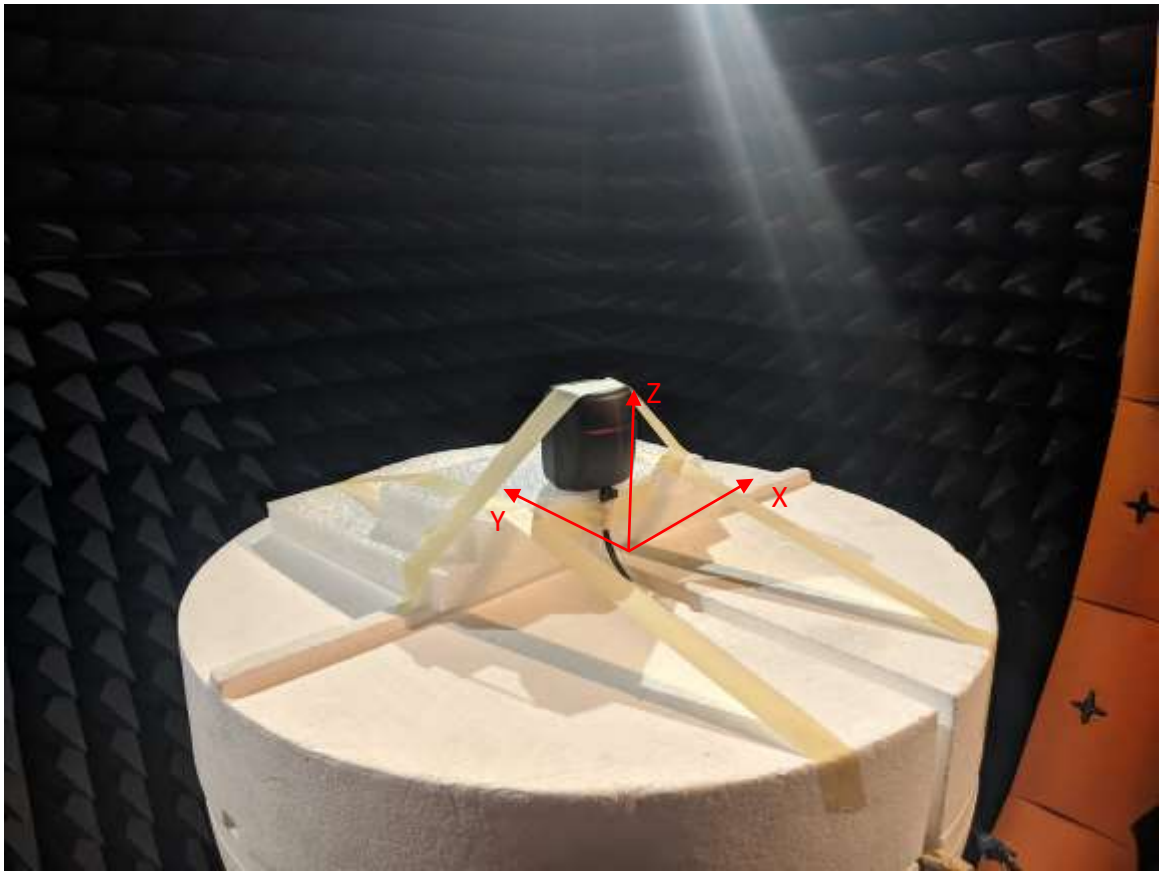
Peak Gain



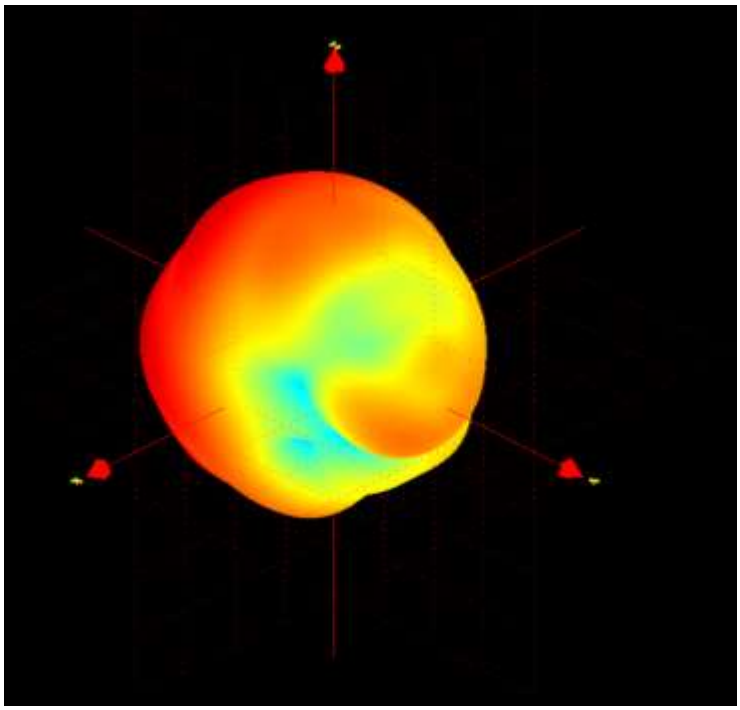
Amplifier		
LNA-10	Frequency Range	2332.5±12.5MHz
LNA-20	Gain	29dB Typ
LNA-30	Noise Figure	0.87 dB Typ
LNA-40	Output 1dB CP	18.0 dBm Typ
LNA-50	Out Band Rejection	f_0: 2332.5MHz
		High LTE/4G/3G Rejection
		WCS Rejection
		High Wi-Fi Rejection
LNA-60	Output SWR	2:1 Max
Power		
POW-10	Input Voltage	4.5 ~ 5.5V
POW-20	Current	115 mA Typ

4. Radiation Patterns

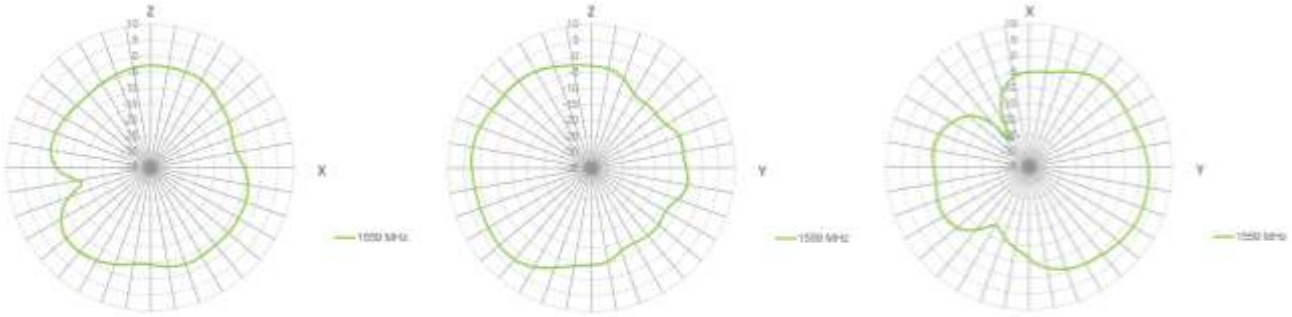
4.1 Test Setup



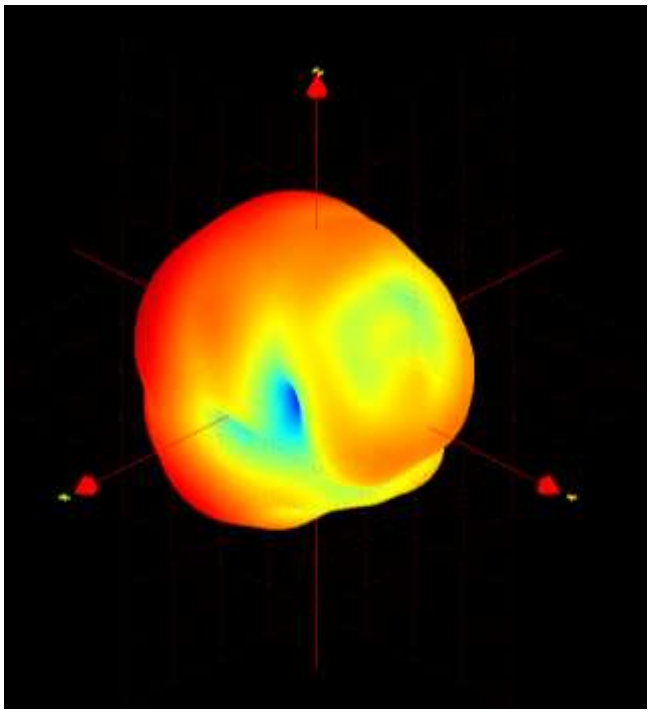
4.2 GPS 1559MHz 3D and 2D Radiation Patterns



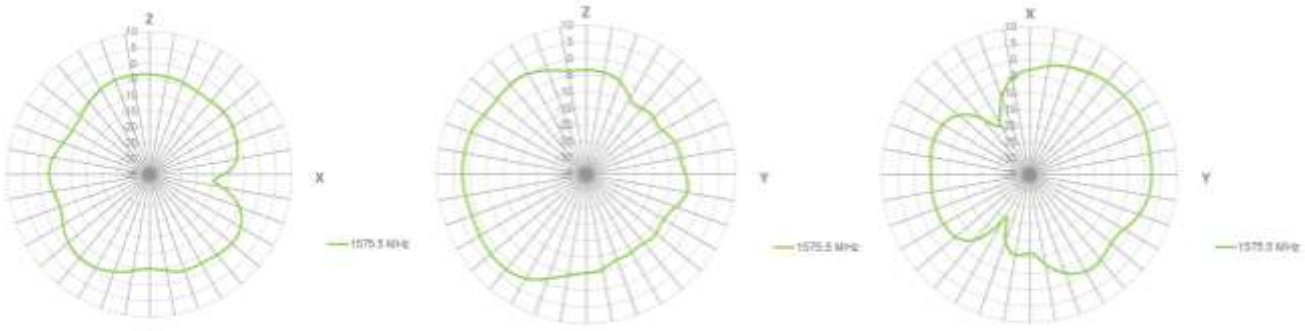
XZ Plane	YZ Plane	XY Plane



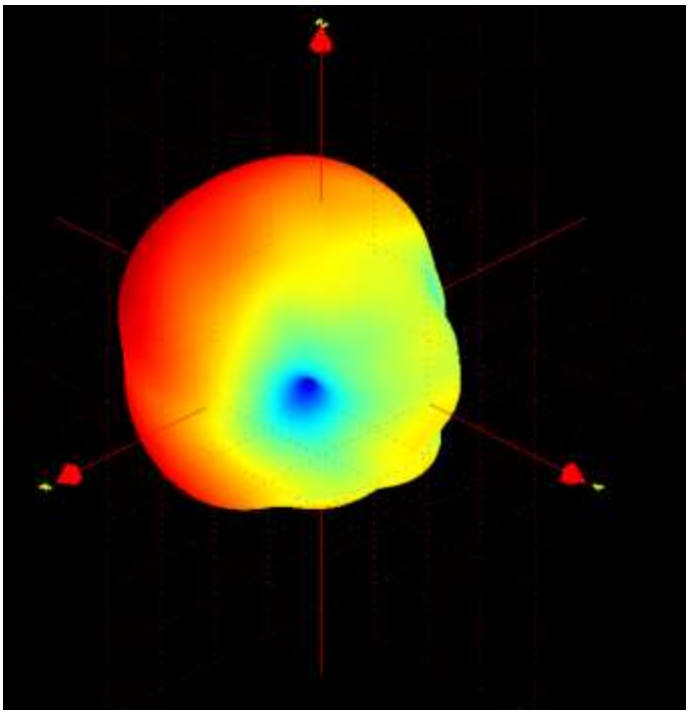
4.3 GPS 1575MHz 3D and 2D Radiation Patterns



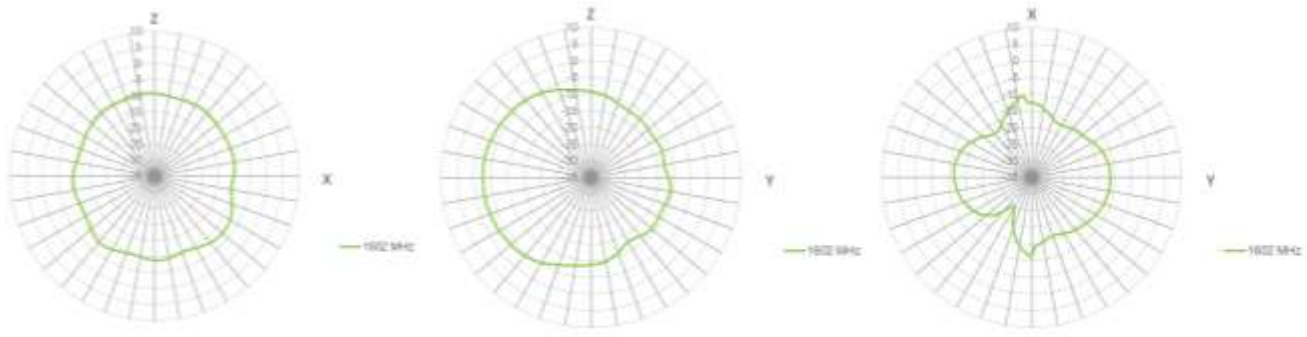
XZ Plane	YZ Plane	XY Plane



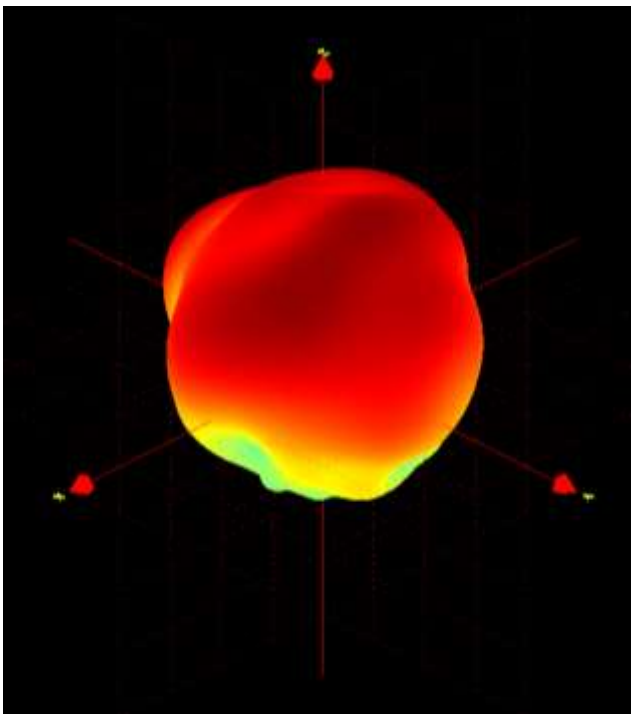
4.4 GPS 1602MHz 3D and 2D Radiation Patterns



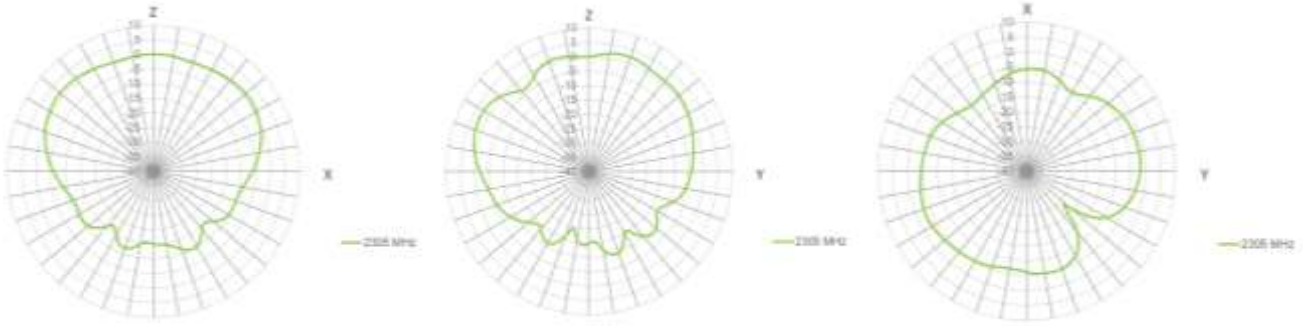
XZ Plane	YZ Plane	XY Plane



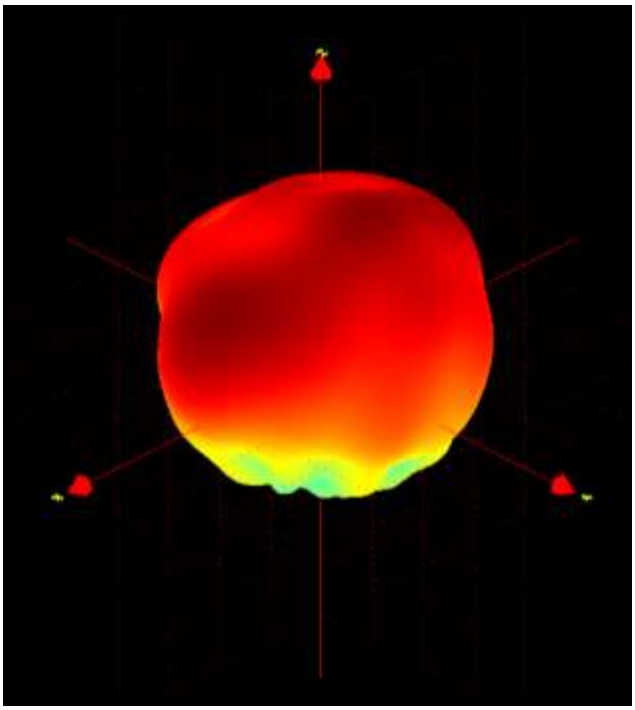
4.5 SDARS 2305 MHz 3D and 2D Radiation Patterns



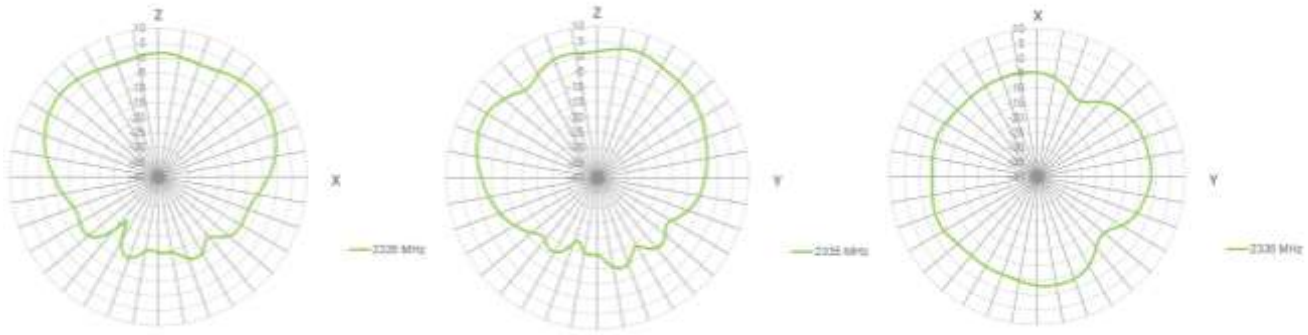
XZ Plane	YZ Plane	XY Plane



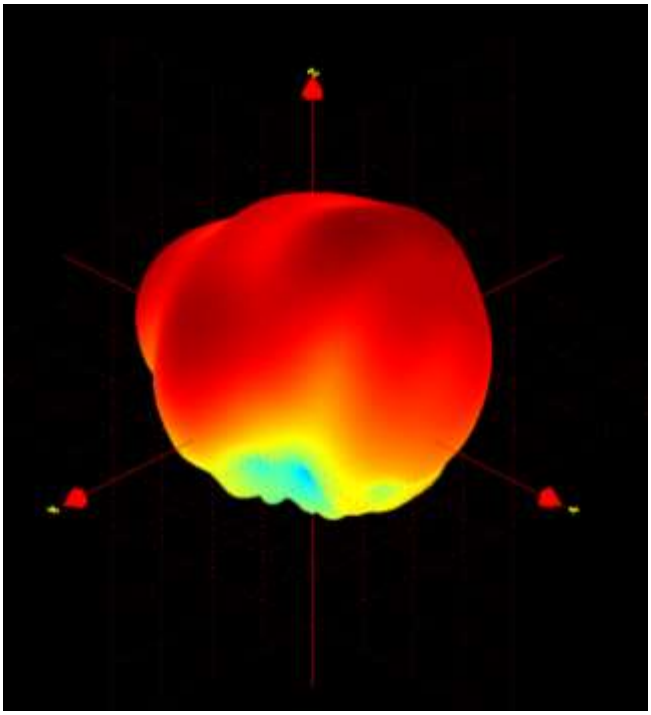
4.6 SDARS 2335MHz 3D and 2D Radiation Patterns

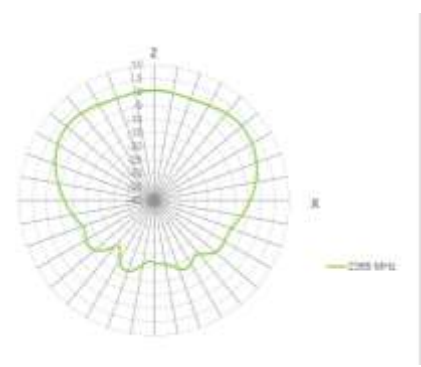
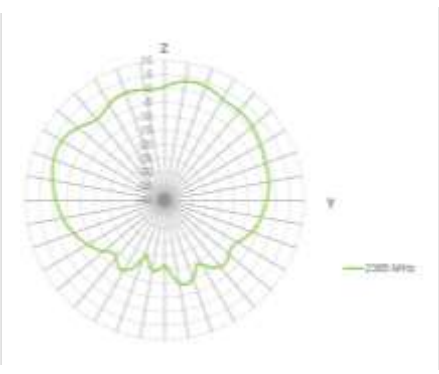
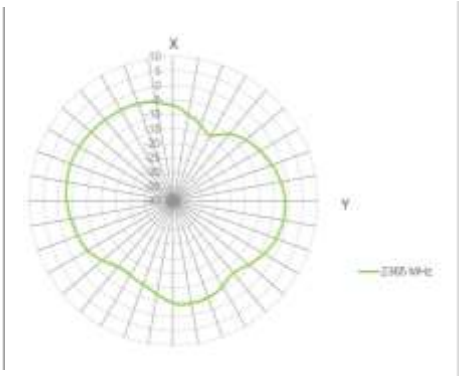


XZ Plane	YZ Plane	XY Plane

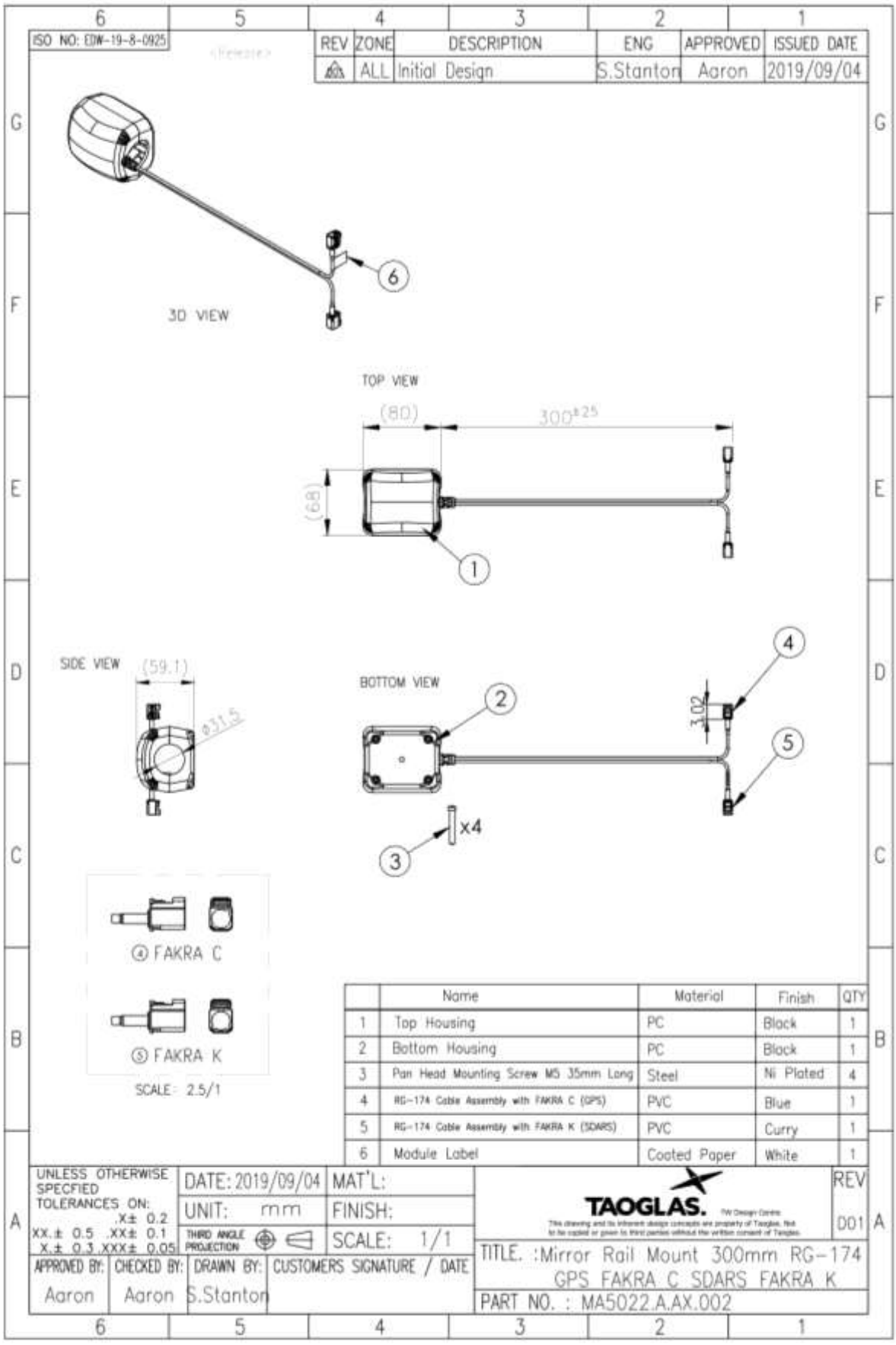


4.7 SDARS 2365 MHz 3D and 2D Radiation Patterns



XZ Plane	YZ Plane	XY Plane
		

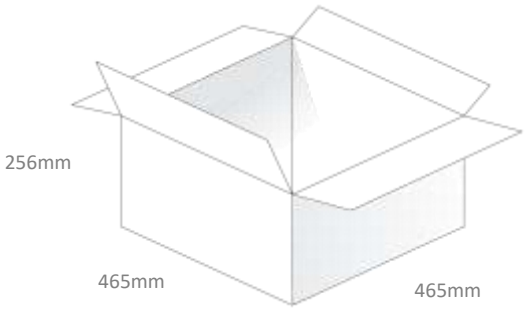
5. Mechanical Drawing (Units: mm)



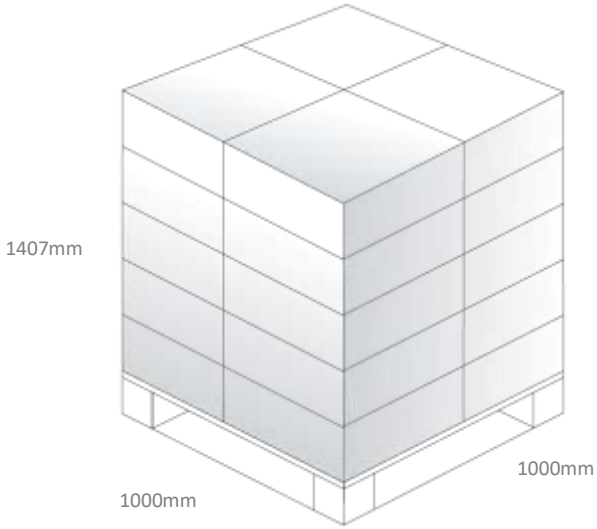
6. Packaging

1pc MA5022.A.AX.002 per Poly Bag
Weight: 220g

50pcs MA5022.A.AX.002 per Carton
Dimensions: 465*465*256mm
Weight: 11.5Kg



Pallet Dimensions:
1000*1000*1407mm
20 Cartons Per Pallet
4 Cartons Per Layer, 5 Layers



Changelog for the datasheet

SPE-19-8-113 – MA5022.A.AX.002

Revision: A (Original First Release)	
Date:	2019-08-26
Notes:	Initial Datasheet Release
Author:	Yu Kai Yeung

Previous Revisions

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