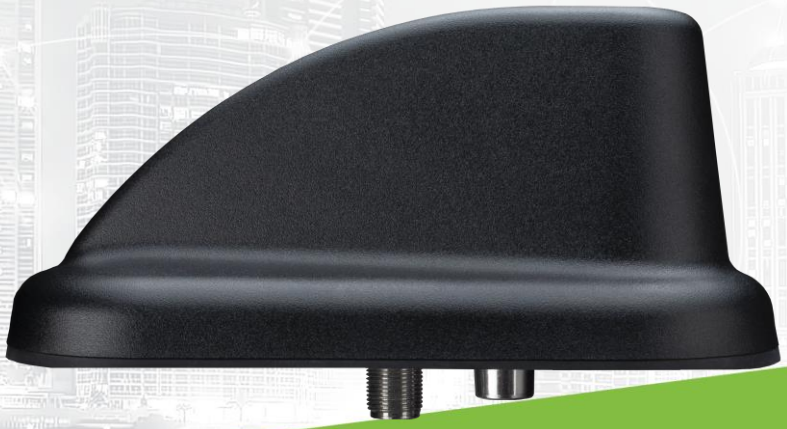
TAOGLAS



Datasheet

4 in 1 Sharkfin Antenna

Part No:
MA1044.A.ACTX.002

Description:

MA1044 - 4in1 Sharkfin Antenna GNSS, Wi-Fi, AM/FM & SDARS

Features:

Combination Sharkfin Style Antenna
Permanent Mount
1* GNSS: 300mm RG-316 with FAKRA Code C Blue
1* Wi-Fi: 300mm RG-316 with FAKRA Code I Beige
1* SDARS: 300mm RG-316 with FAKRA Code K Curry
1* AM/FM: 300mm RG-316 with FAKRA Code A Black
Cable and Connectors Customizable
IP65 Rated Waterproof
Manufactured in TS16949 Automotive Approved Facilities
RoHS & Reach Compliant

Ireland ISO 9001: 2015 Certified

Taiwan ISO 9001: 2015 Certified

1. Introduction

The Taoglas MA1044.A Sharkfin is a next generation 4in1, vehicle roof permanent mount combination antenna solution. It is a fully IP67 rated waterproof antenna manufactured with a robust ABS/PC enclosure. The antenna is approved for use on heavy-duty trucks and meets the strictest OEM heavy-duty truck standards. It supports multiple GNSS constellations, GPS, GLONASS, GALILEO & BeiDou), Dual Band Wi-Fi (2.4/5.8GHz), SDARS, and AM/FM/WB.

The antenna is first tier TS16949 heavy-duty truck approved and is an ideal choice for OEM automotive, trucking and heavy equipment applications.

The antenna comes with low-loss RG-174 coaxial pigtail cables as standard, terminating in FAKRA SMB code C for GNSS, FAKRA SMB code A for AM/FM/WB, FAKRA SMB code K for SDARS, and with FAKRA SMB code I for Wi-Fi. The SDARS antenna meets the latest (Gen 3) specifications. 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 internal antennas can be completely customized according to specific requirements, to work on other applications, such as ISM bands or C-V2X / DSRC. The antenna is manufactured in TS16949 automotive approved facilities.

Cables and connectors are customizable, contact your local Taoglas customer service team for more information or installation guidelines.

2. Specifications

GNSS Antenna	
Frequency	GPS: 1575.42 ± 1.023MHz GLONASS: 1602 ± 5MHz
Return loss (GPS L1 GLONASS L1)	<-15 dB
Efficiency	60%
Passive Gain at Zenith (GPS L1 and GLONASS L1)	+3 dBi.
Average Gain at (GPS L1 and GLONASS L1)	-2dB
Polarization	RHCP
Impedance	50 Ω

SDARS Antenna	
Frequency	2320~2345MHz
Return loss	<-5 dB
Efficiency	48%+
Peak Gain	+4dBi.
Average Gain	> -3dB
Polarization	LHCP
Impedance	50 Ω

Wi-Fi Antenna		
Frequency	2400-2500MHz	5000-5830MHz
Return loss	-15 dB	-10 dB
Efficiency	70%+	50%+
Peak Gain	4.5dBi	6dBi typ
Average Gain	-1.3dB	> -3dB
Impedance	50 Ω	

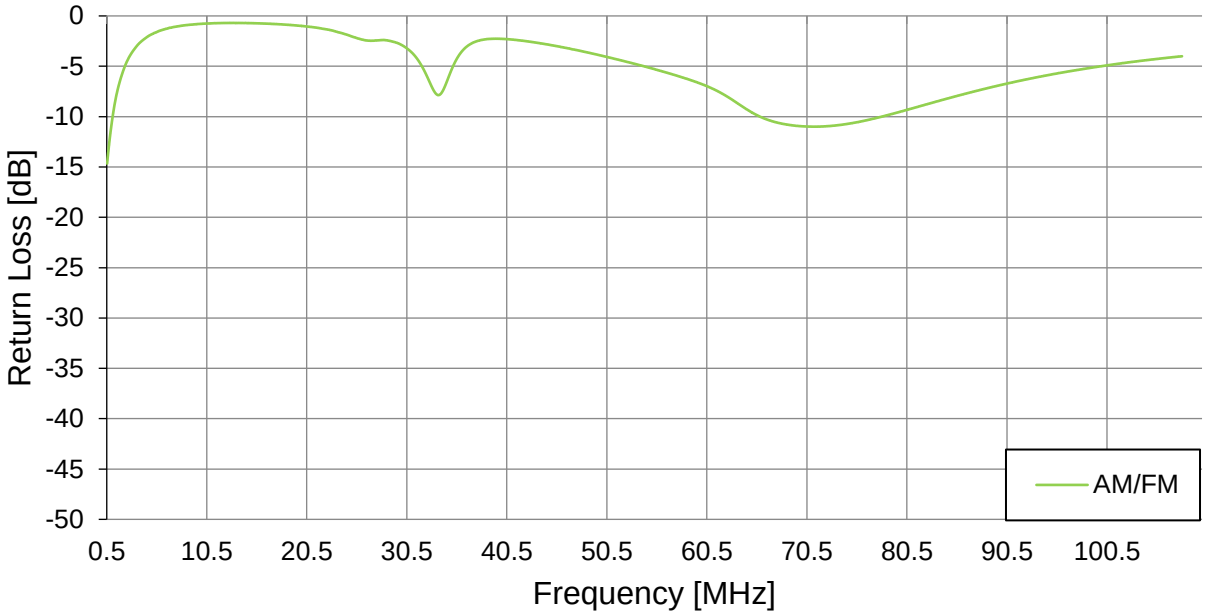
AM/FM Antenna	
AM Radio Bands	FM Radio Bands
535~1605KHz	88~108MHz

Mechanical	
Dimensions	183.64*80.91*77.27 mm
Cable	GNSS: 300mm RG-316 Wi-Fi: 300mm RG-316 SDARS: 300mm RG-316 AM/FM: 300mm RG-316
Connector	GNSS: FAKRA Code C Blue Wi-Fi: FAKRA Code I Beige SDARS: FAKRA Code K Curry AM/FM: FAKRA Code A Black
Casing	ASA+PC w/UV Stabilizer
Weight	0.44kg
Environmental	
IP Rating	IP65
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	10.17Nm +/- 20%
Maximum Mounting Torque	13.56Nm

3. Antenna Characteristics

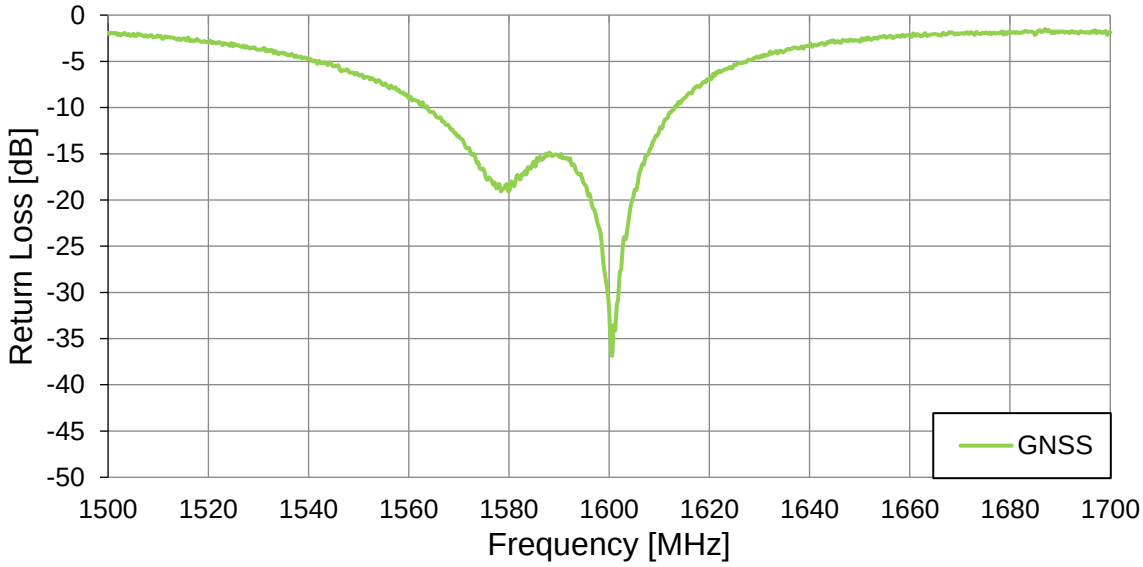
3.1 AM/FM

Return Loss

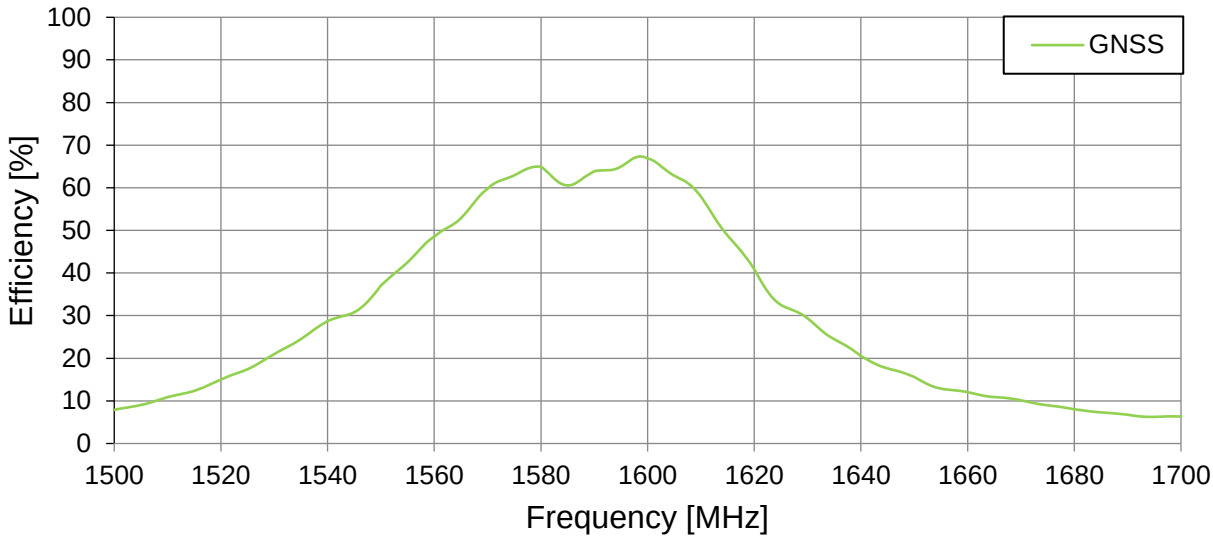


3.2 GNSS

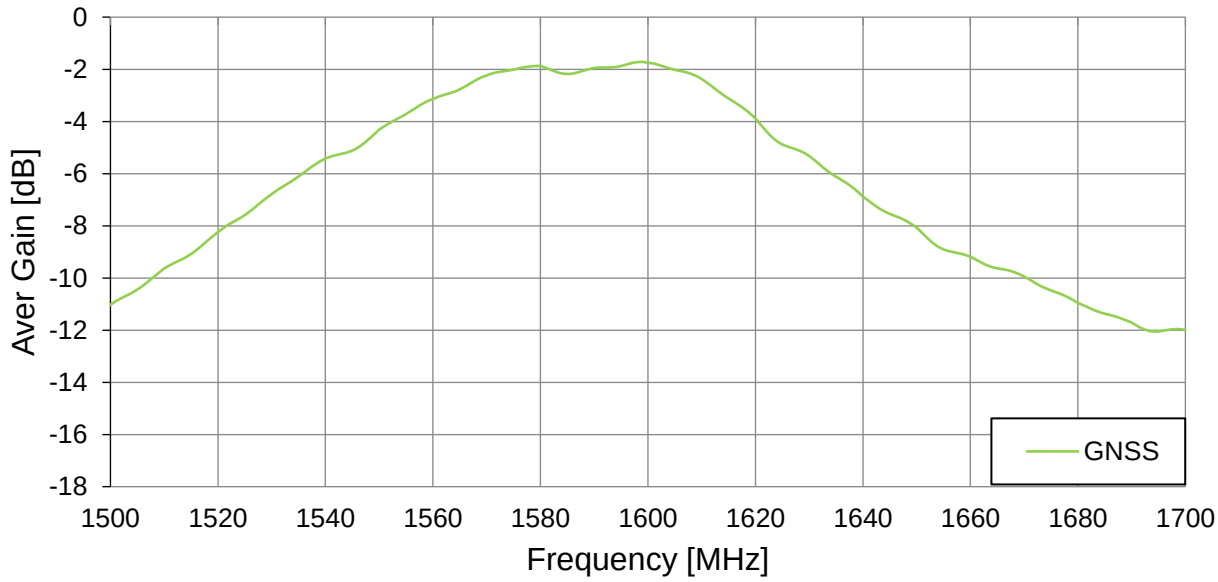
Return Loss



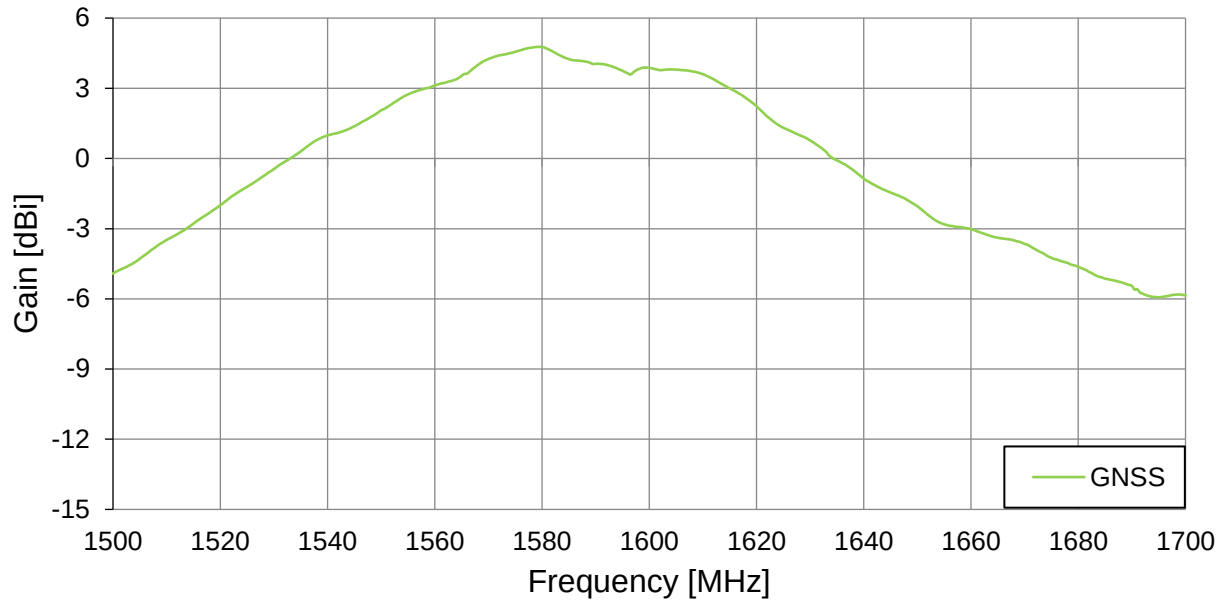
Efficiency



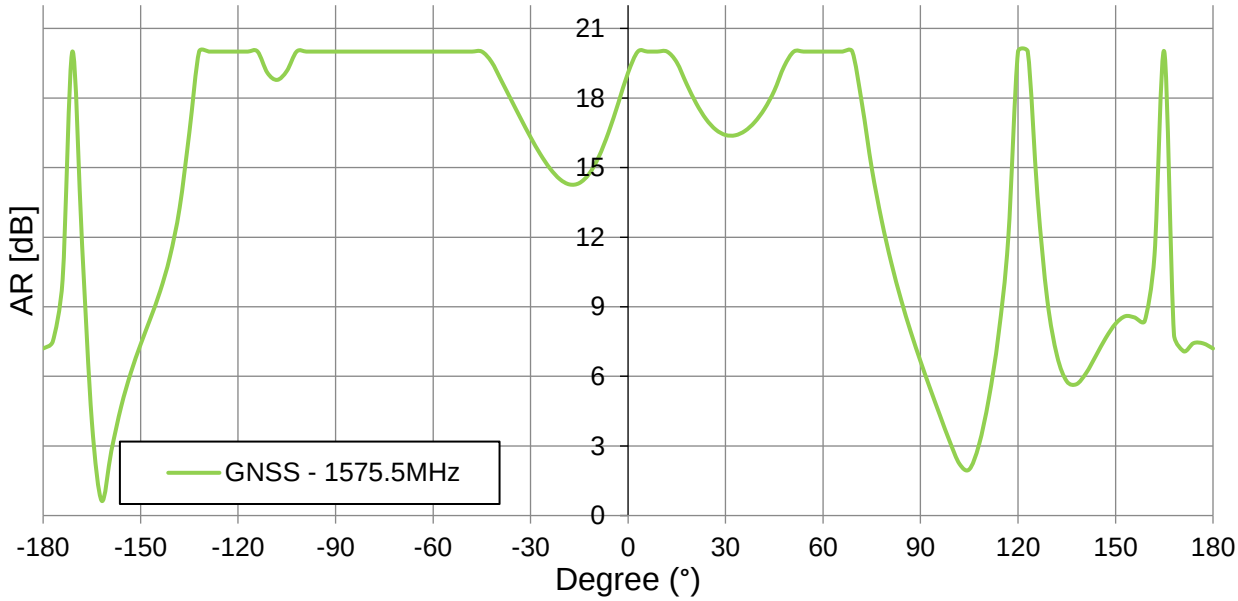
Average Gain



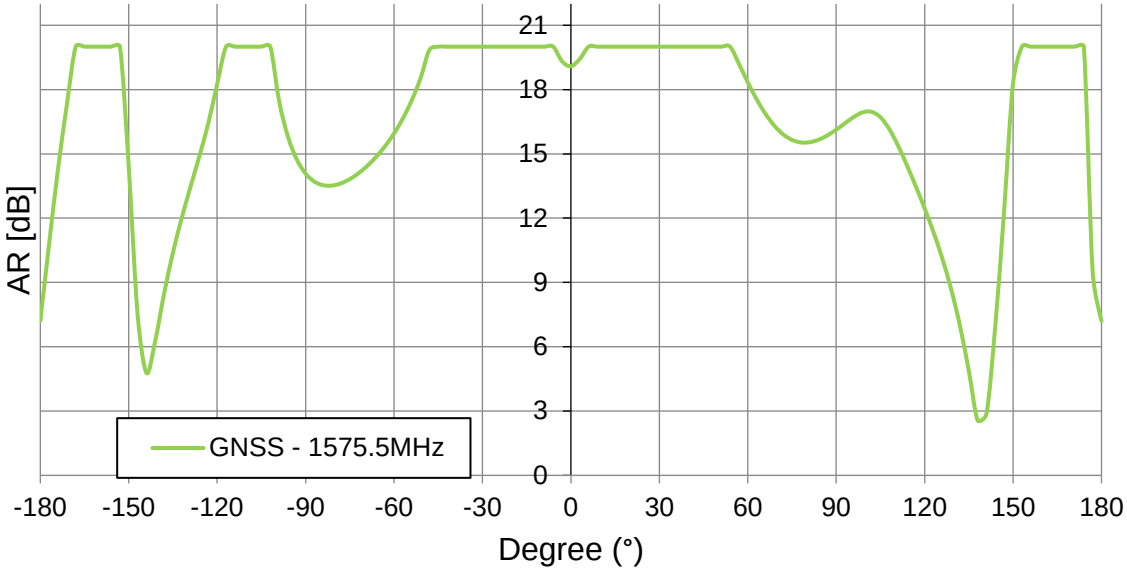
Peak Gain



Axial Ratio XZ Plane @ 1575.5MHz



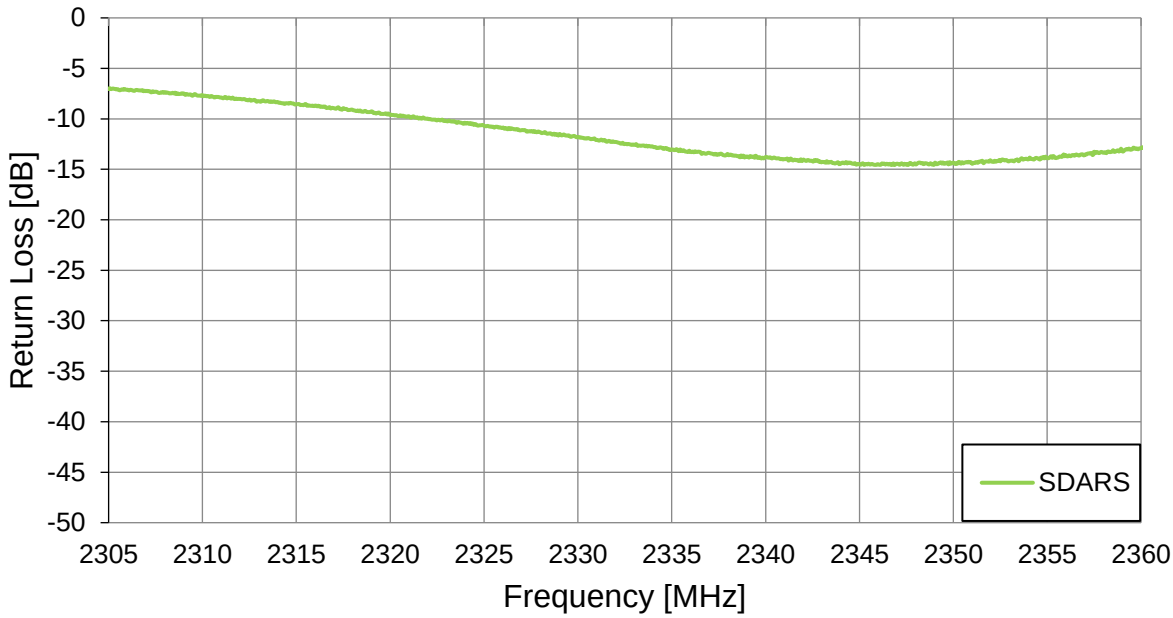
Axial Ratio YZ Plane @ 1575.5MHz



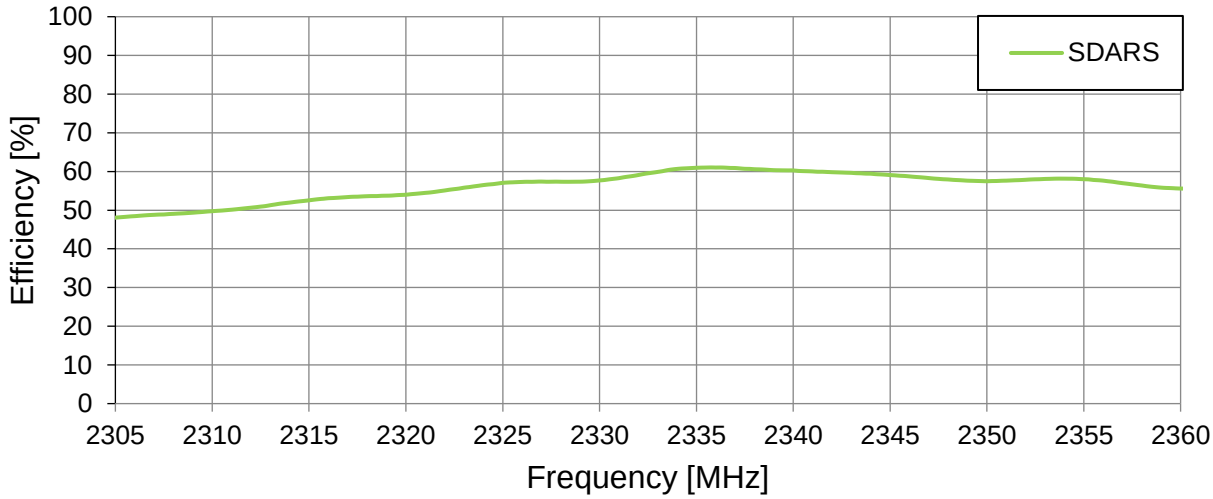
Amplifier		
LNA-10	Frequency Range	1584.5±25MHz
LNA-20	Gain	31dB Typ
LNA-30	Noise Figure	1.5dB Typ
LNA-40	Output 1dB CP	10.0 dBm Typ
LNA-50	Out Band Rejection	f_0 : 1584.5MHz
		f_0±20MHz N/A
		f_0±50MHz 30dB Min
		f_0±100MHz 40dB Min
LNA-60	Output SWR	2:1 Max
Power		
POW-10	Input Voltage	3.5 ~ 5V
POW-20	Current	30mA Typ

3.3 SDARS Antenna

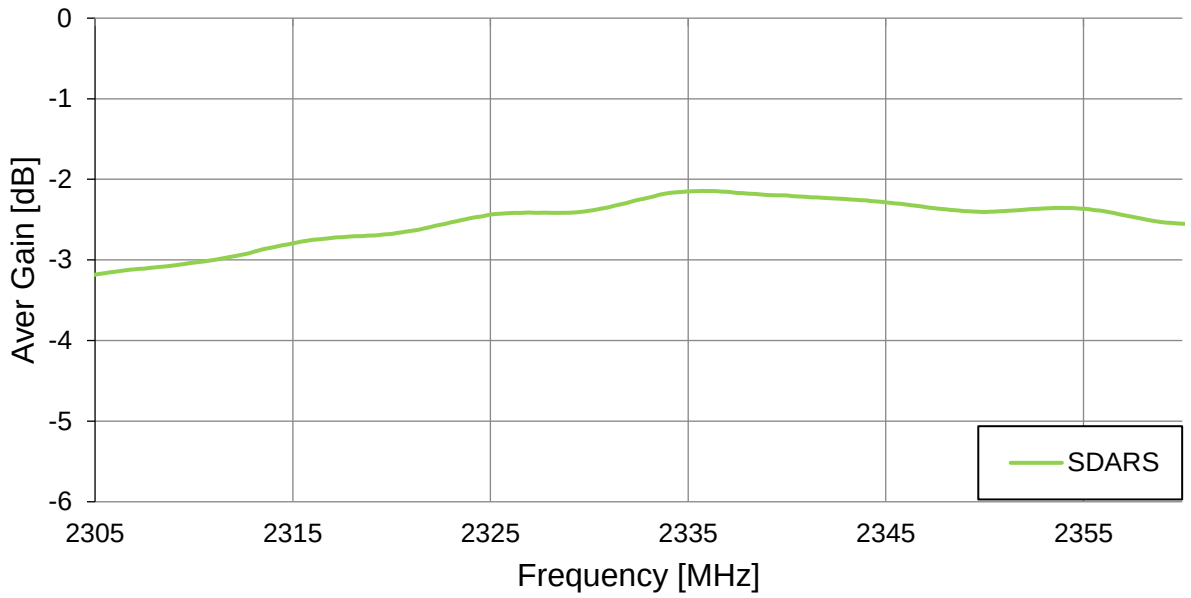
Return Loss



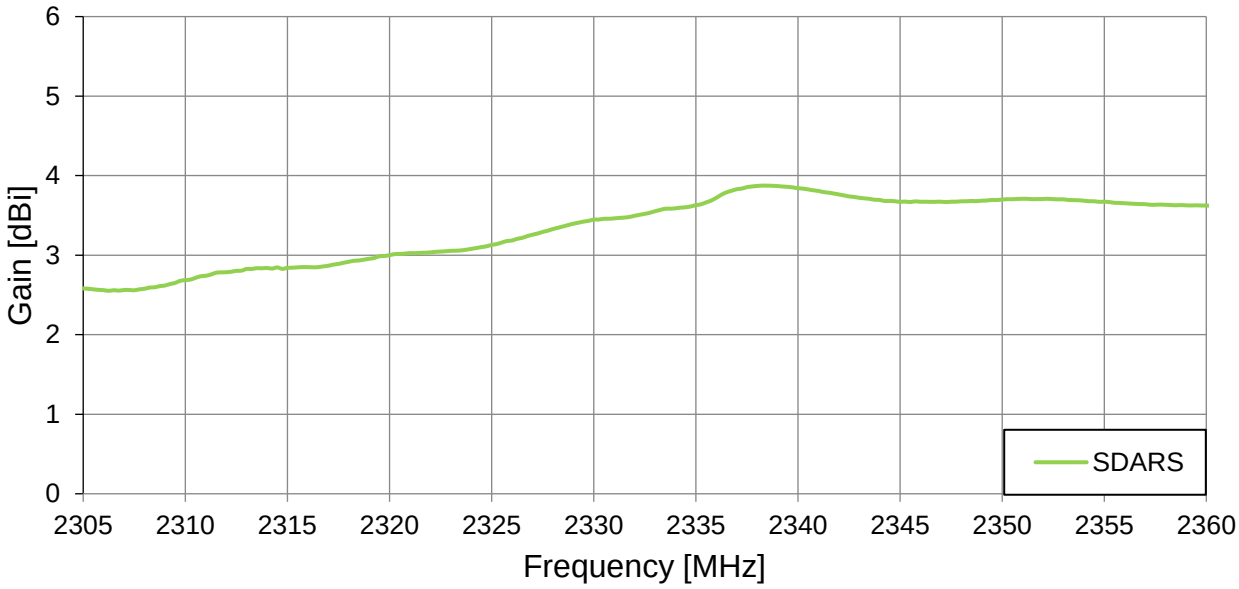
Efficiency



Average Gain



Peak Gain

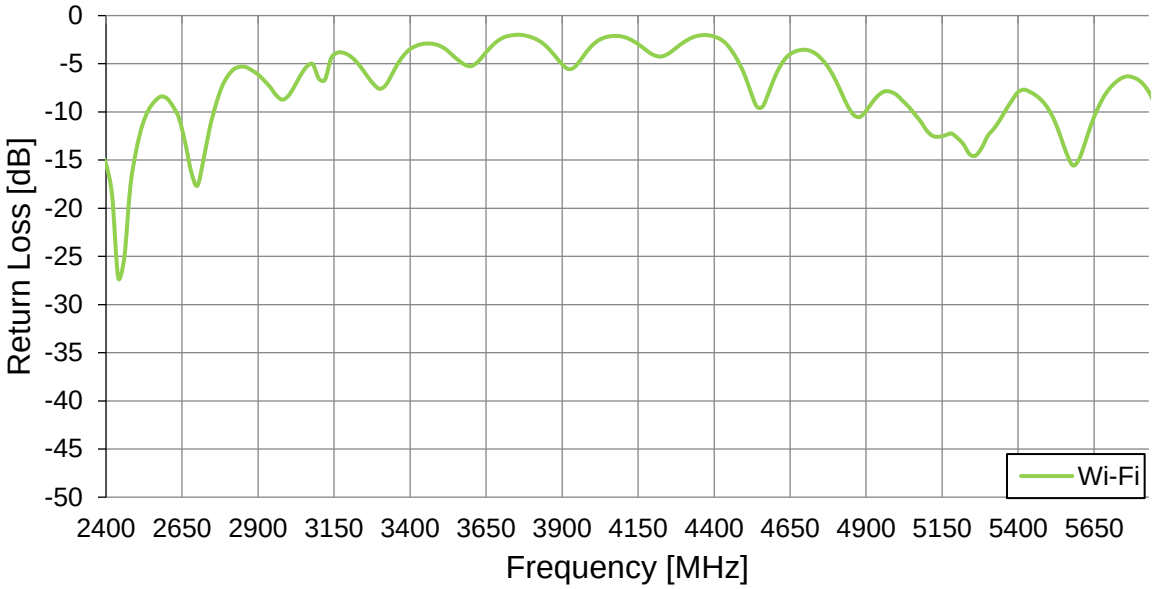


Amplifier		
LNA-10	Frequency Range	2332.5±12.5MHz
LNA-20	Gain	29dB Typ
LNA-30	Noise Figure	1.1 dB Typ
LNA-40	Output 1dB CP	18.0 dBm Typ
LNA-50	Out Band Rejection	f_0 : 2332.5MHz
		High LTE/4G/3G Rejection
		WCS Rejection
		High Wi-Fi Rejection
LNA-60	Output SWR	2:1 Max
Power		
POW-10	Input Voltage	4.5 ~ 5.5V
POW-20	Current	110 mA Typ

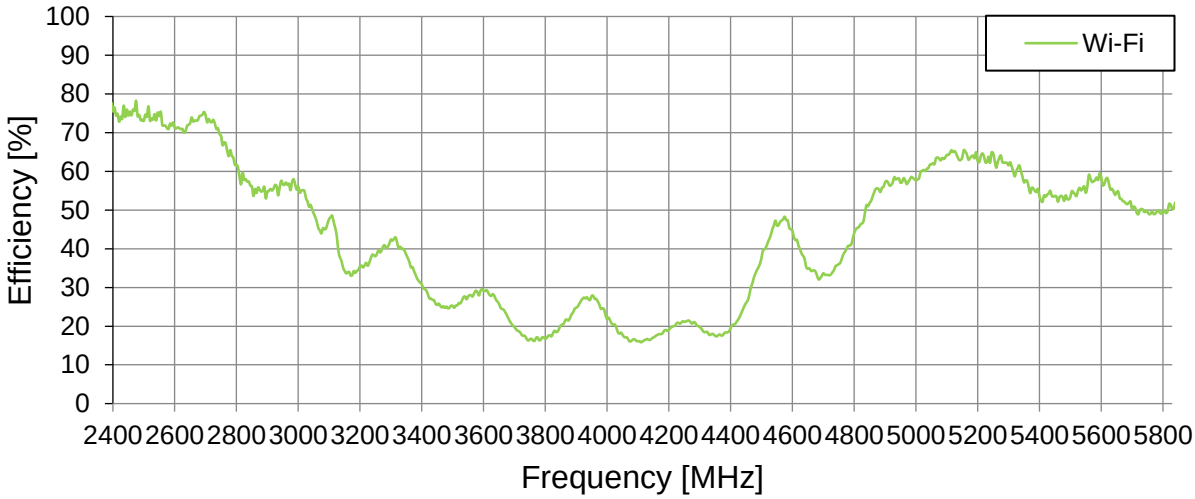
Amplifier		
LNA-10	Frequency Range	520 KHz–1610 KHz, 88-108 MHz, 162.40-162.55 MHz
LNA-20	AM Gain	0.5 dB Typ @ 50 Ohm
LNA-30	FM Gain	16 dB Typ
LNA-40	WB Gain	14 dB Typ
LNA-60	FM/WB Noise Figure	3.5dB Typ
LNA-70	AM Noise Figure	N/A
LNA-80	FM/WB Output 1dB CP	12dBm
LNA-80	AM Output 1dB CP	127dBuV typ
LNA-90	AM Output SWR	N/A
LNA-100	FM/WB Output SWR	3:1 Max
Power		
POW-10	Input Voltage	10 ~ 16V
POW-20	Current	50 mA Typ

3.4 Wi-Fi Antenna

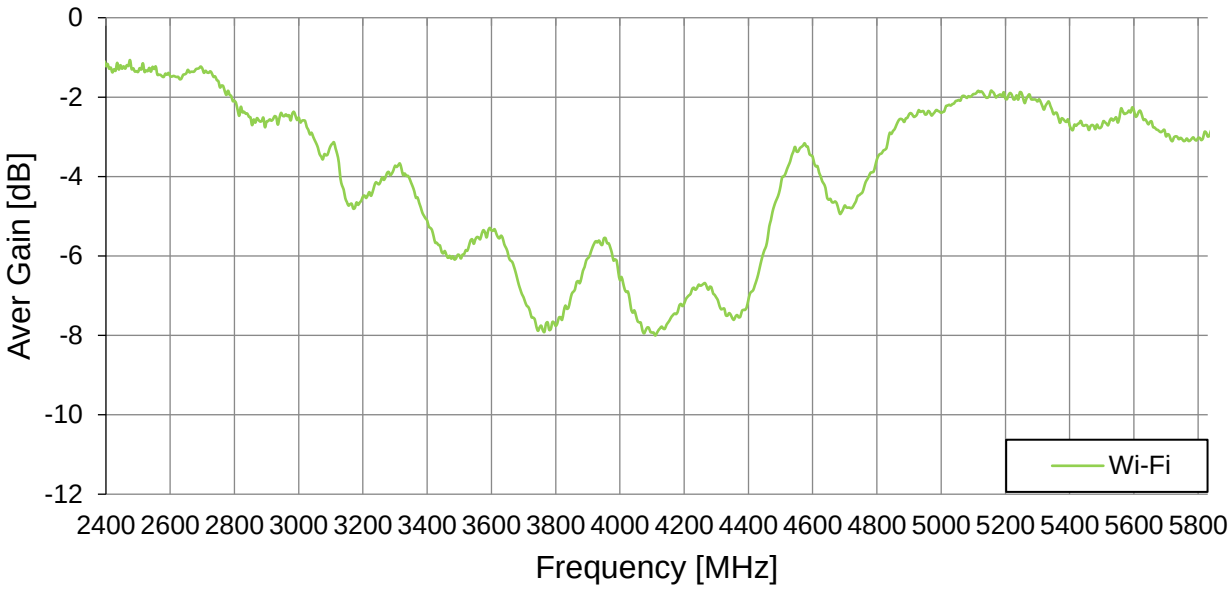
Return Loss



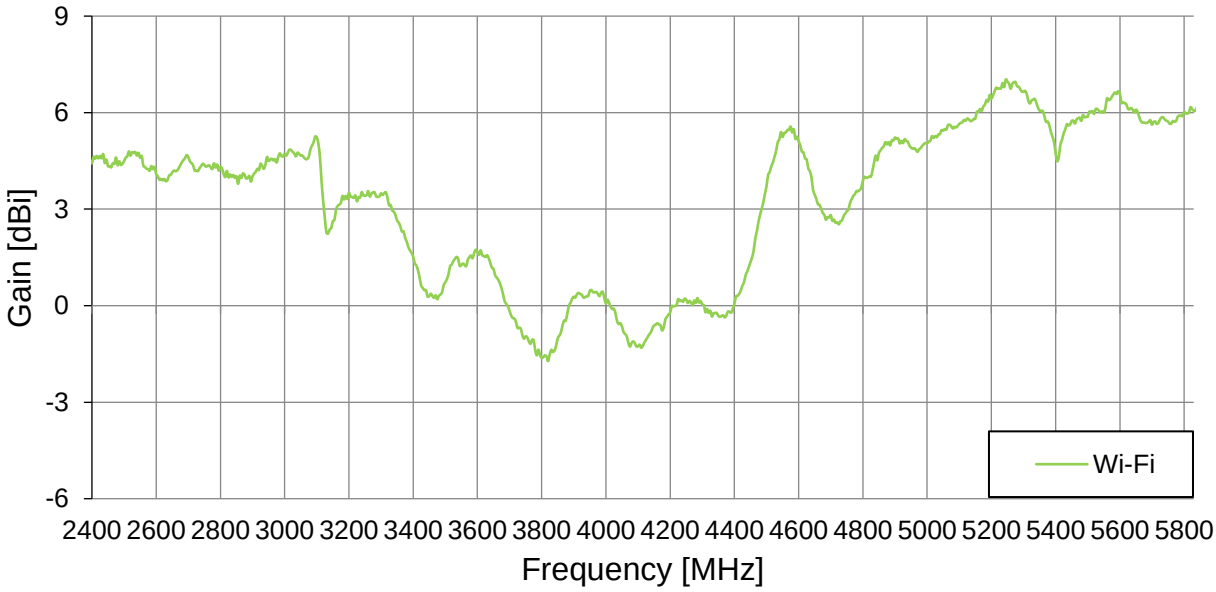
Efficiency



Average Gain

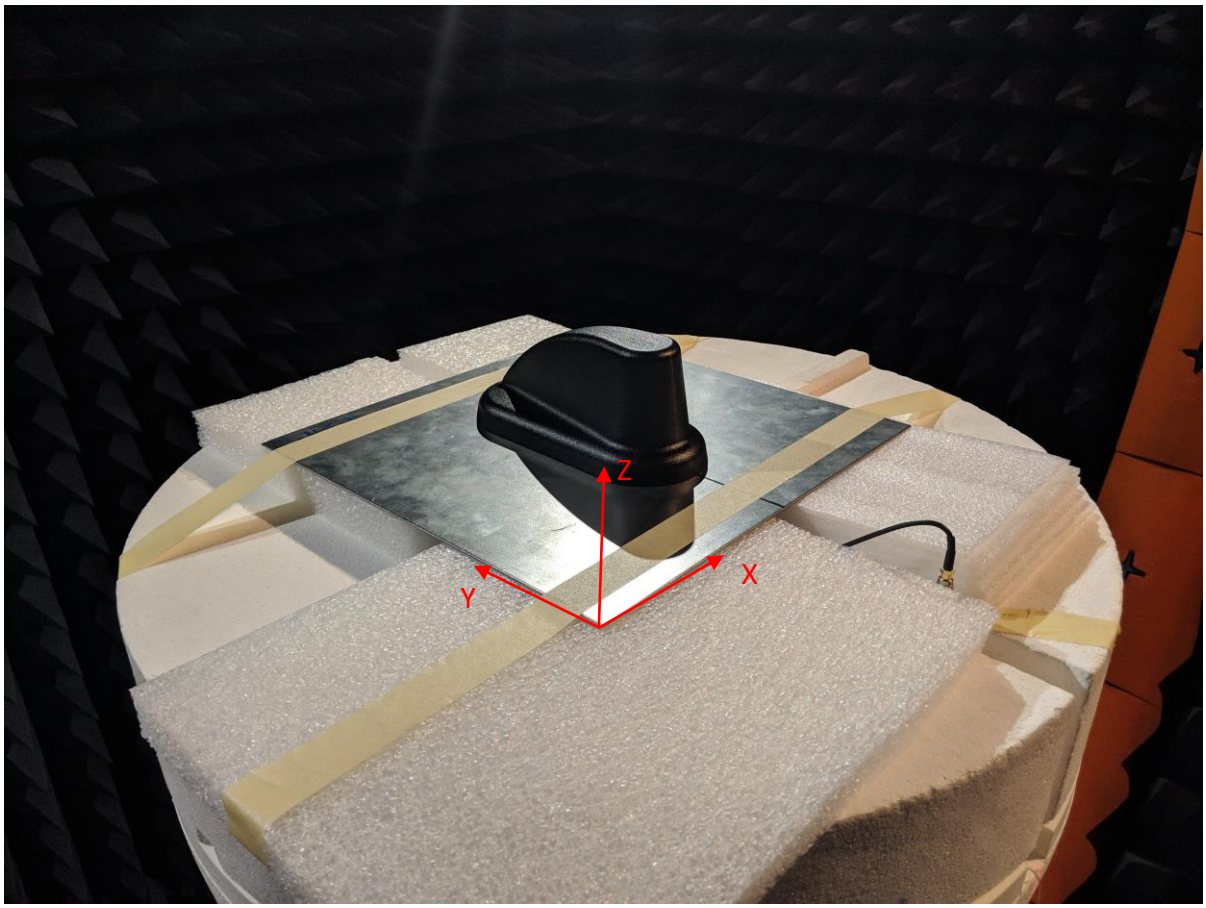


Peak Gain

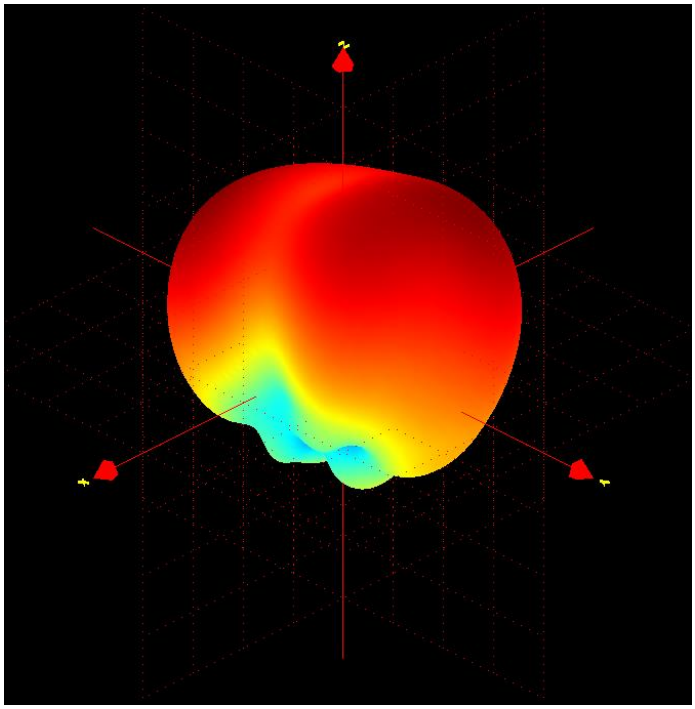


4. Radiation Patterns

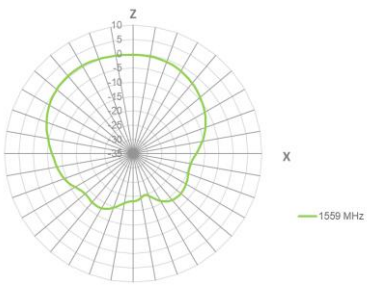
4.1 Test Setup

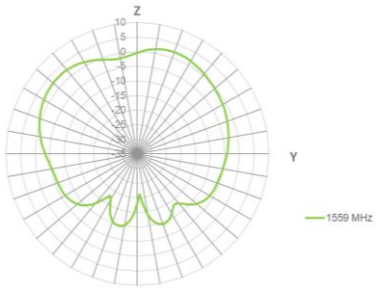


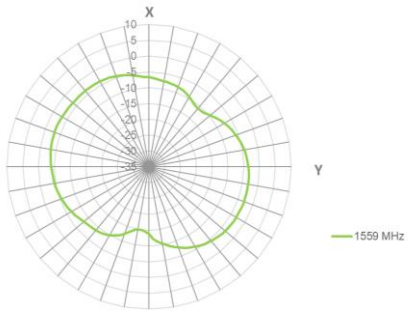
4.2 GNSS 1559MHz 3D and 2D Radiation Patterns



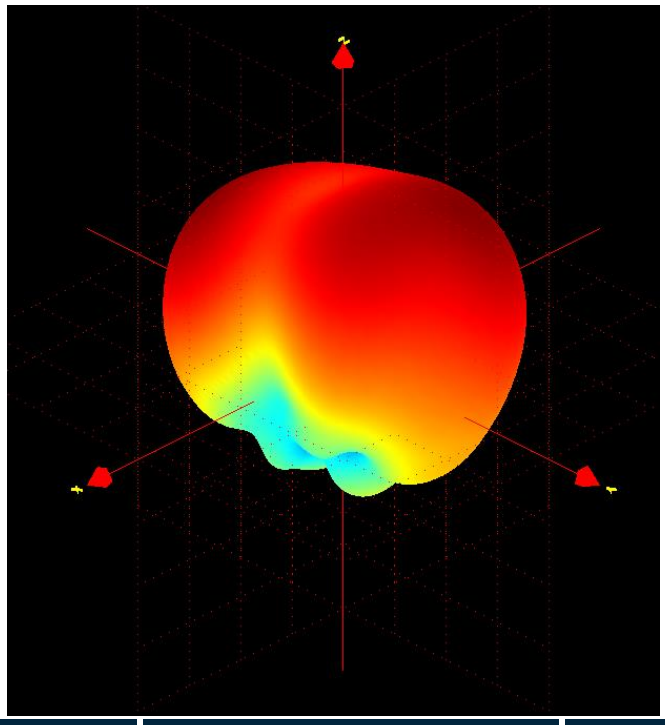
XZ Plane	YZ Plane	XY Plane



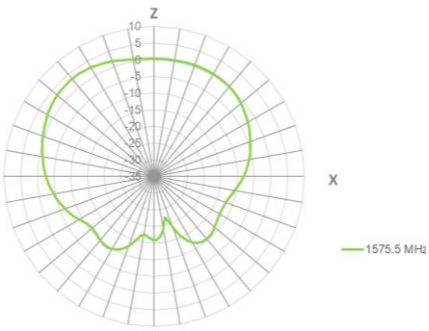


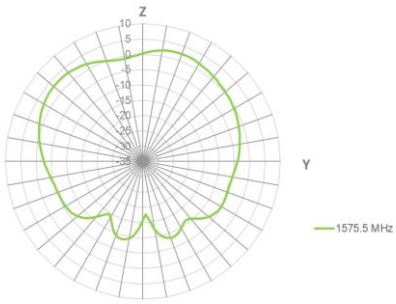


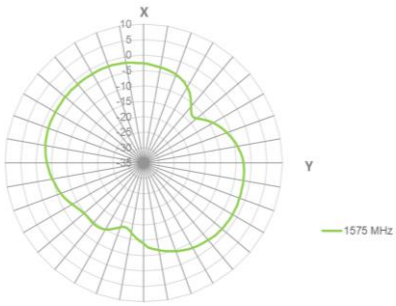
4.3 GNSS 1575MHz 3D and 2D Radiation Patterns



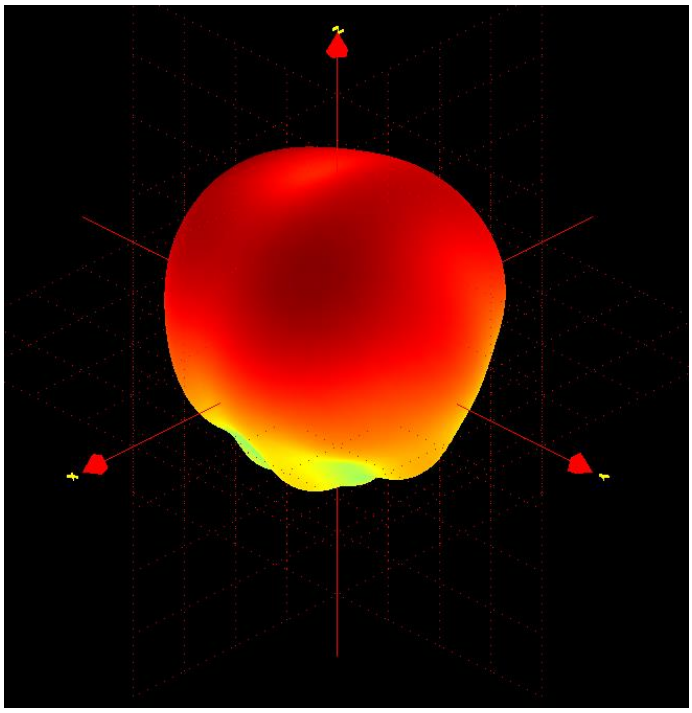
XZ Plane	YZ Plane	XY Plane



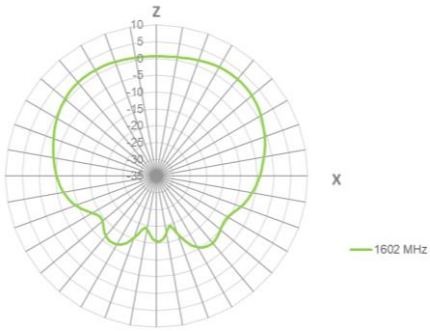


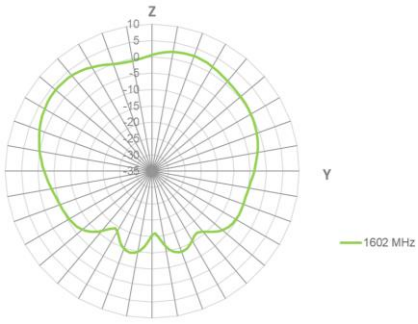


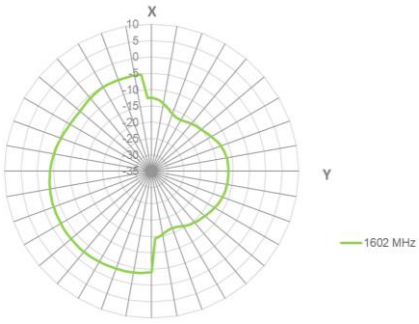
4.4 GNSS 1602MHz 3D and 2D Radiation Patterns



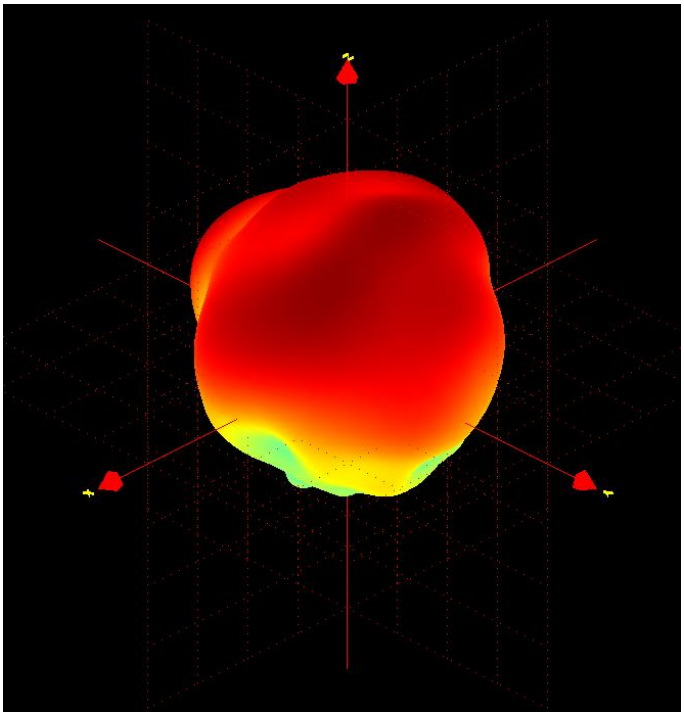
XZ Plane	YZ Plane	XY Plane



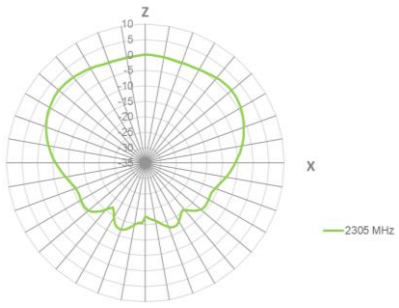


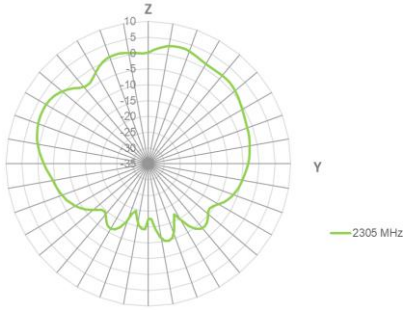


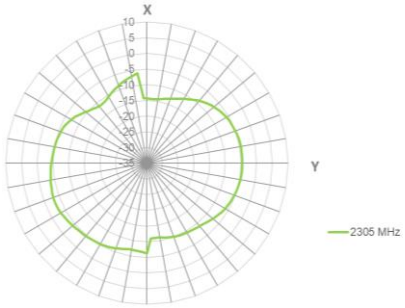
4.5 SDARS 2305MHz 3D and 2D Radiation Patterns



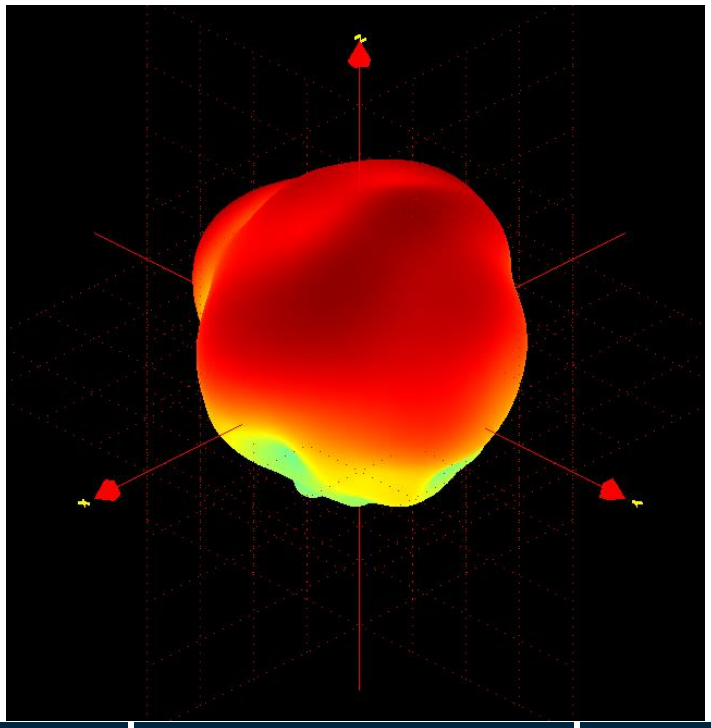
XZ Plane	YZ Plane	XY Plane



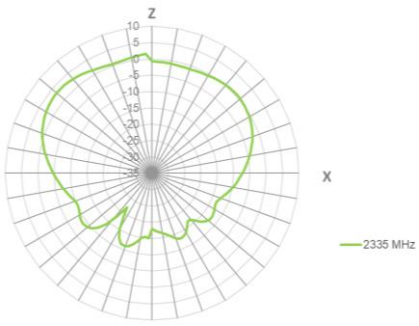


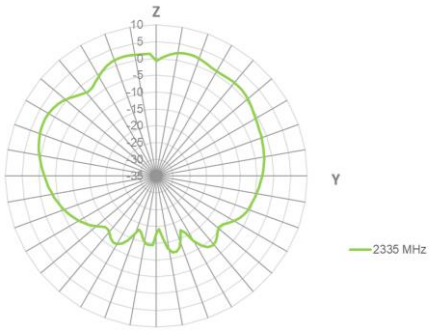


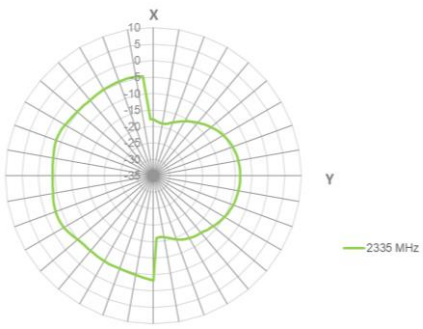
4.6 SDARS 2335MHz 3D and 2D Radiation Patterns



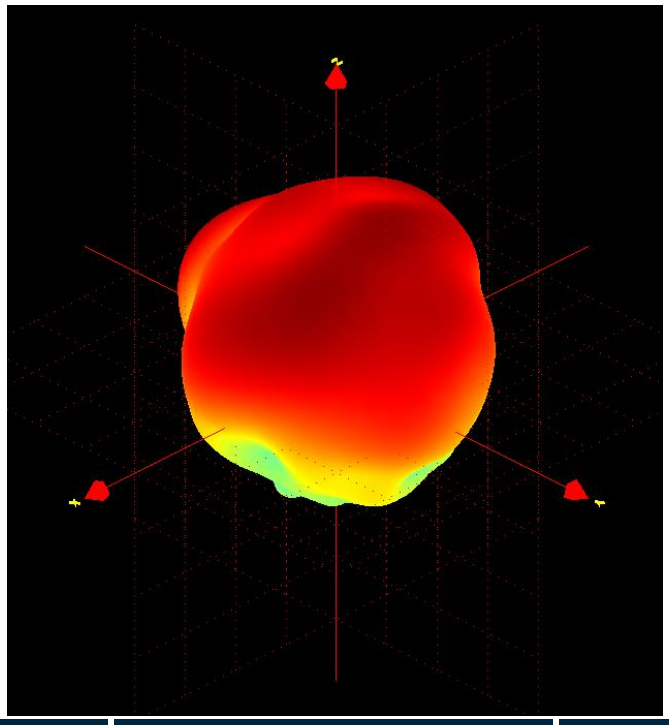
XZ Plane	YZ Plane	XY Plane



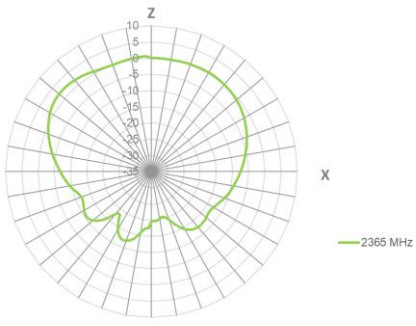


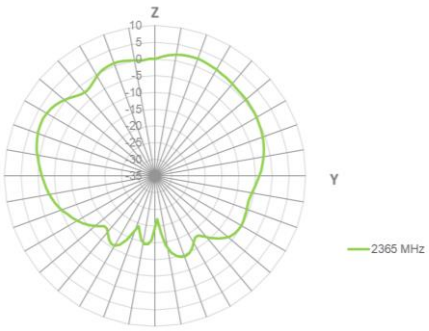


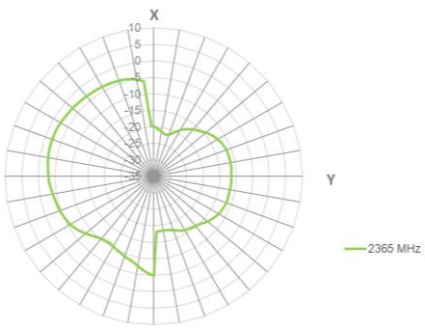
4.7 SDARS 2365MHz 3D and 2D Radiation Patterns



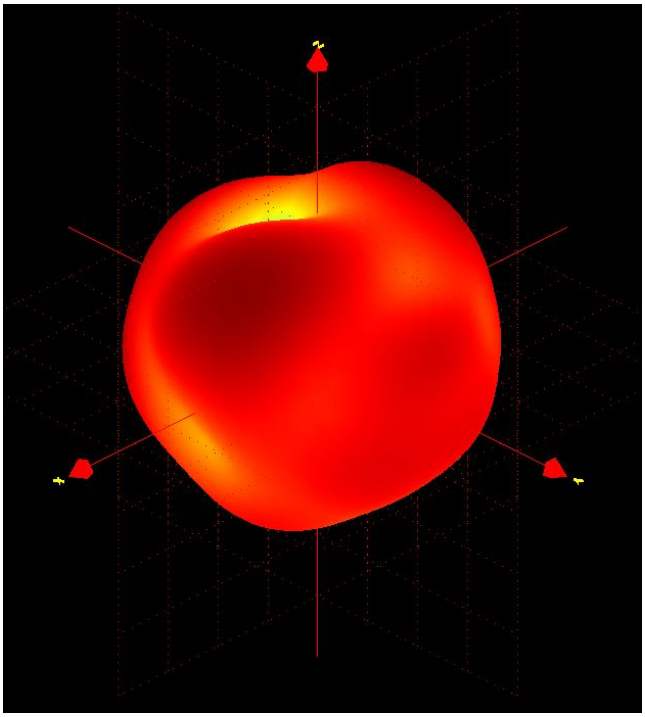
XZ Plane	YZ Plane	XY Plane



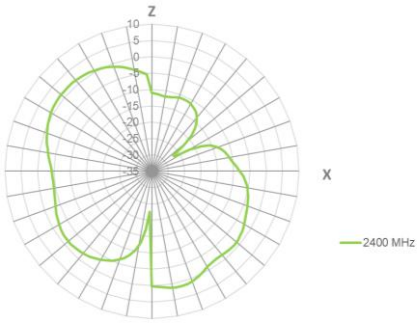


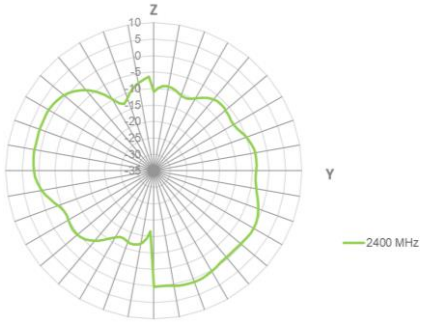


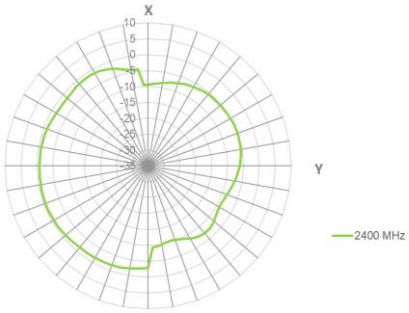
4.8 Wi-Fi 2400MHz 3D and 2D Radiation Patterns



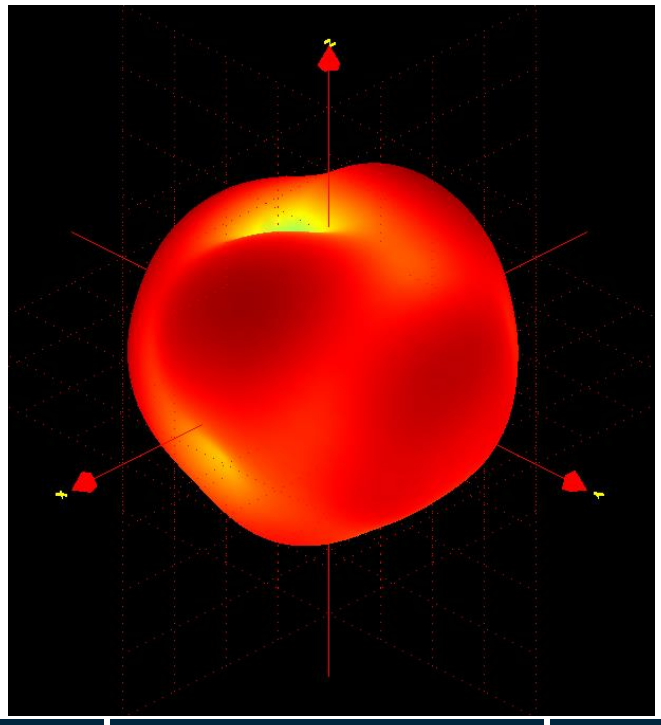
XZ Plane	YZ Plane	XY Plane



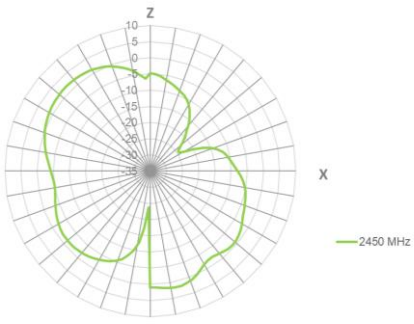


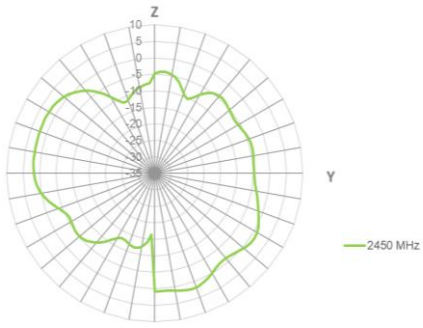


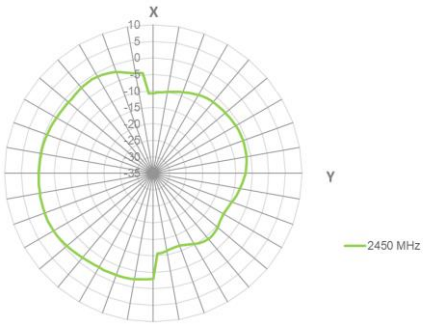
4.9 Wi-Fi 2450MHz 3D and 2D Radiation Patterns



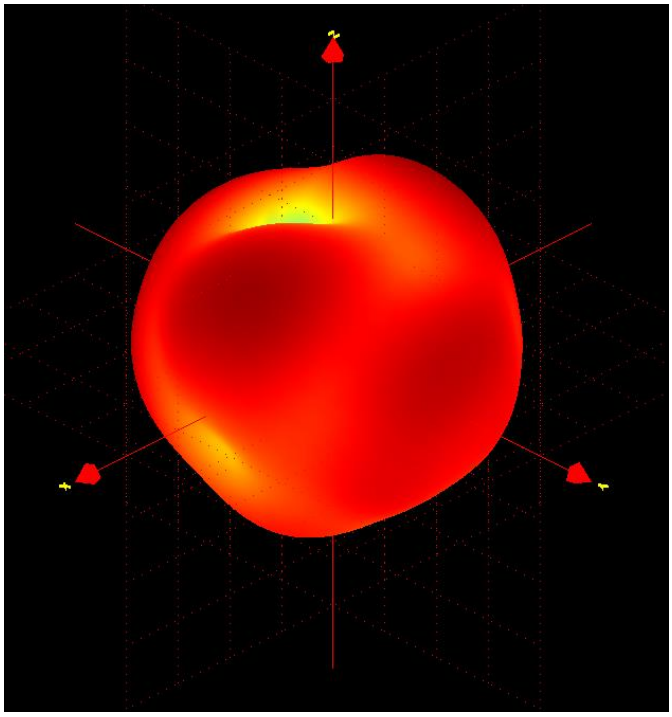
XZ Plane	YZ Plane	XY Plane



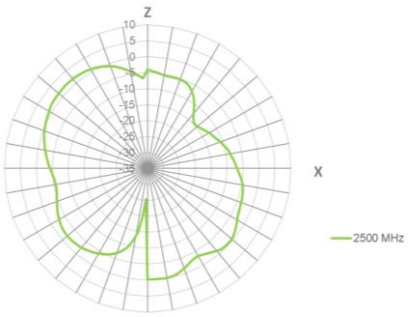


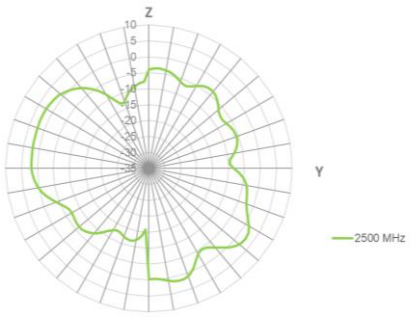


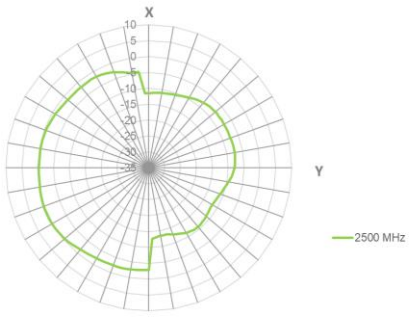
4.10 Wi-Fi 2500MHz 3D and 2D Radiation Patterns



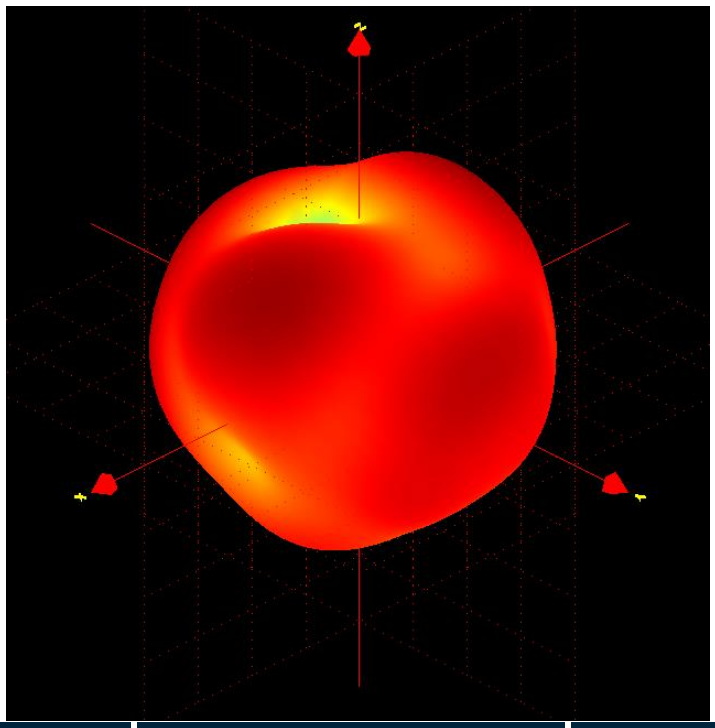
XZ Plane	YZ Plane	XY Plane



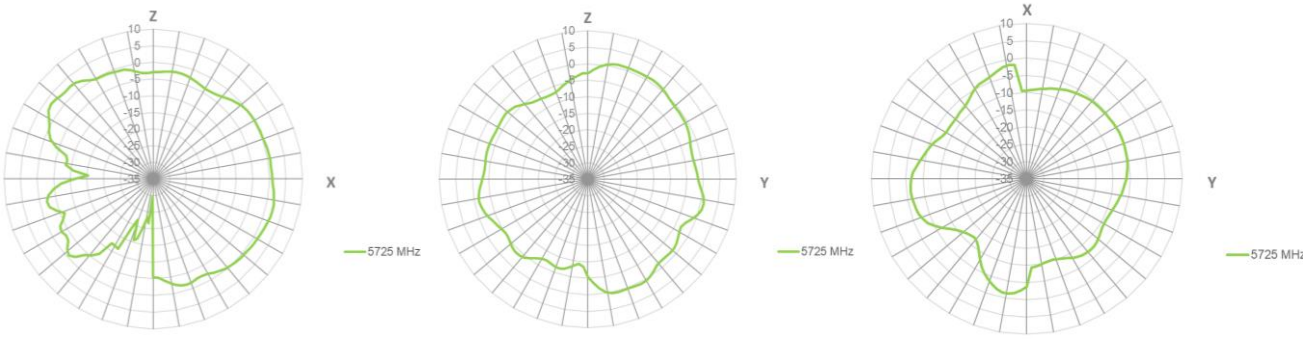




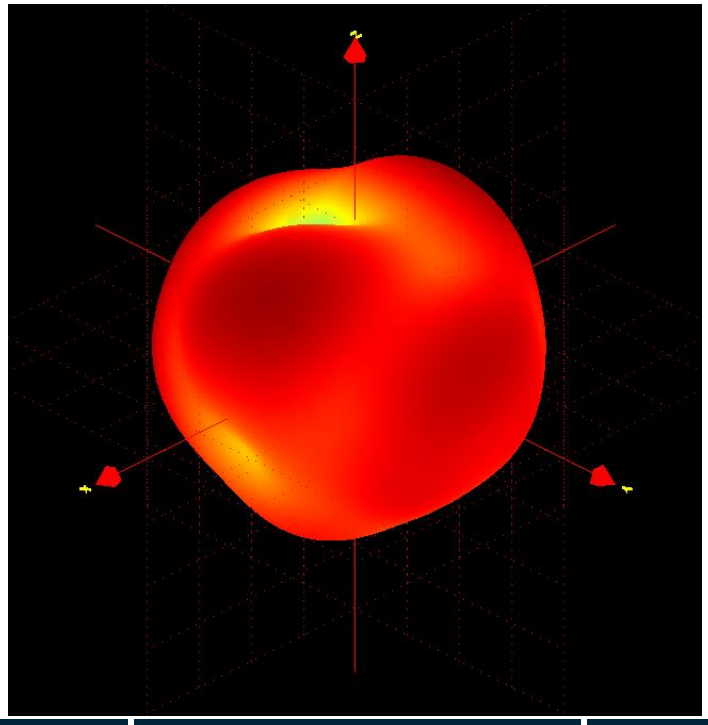
4.11 Wi-Fi 5725MHz 3D and 2D Radiation Patterns



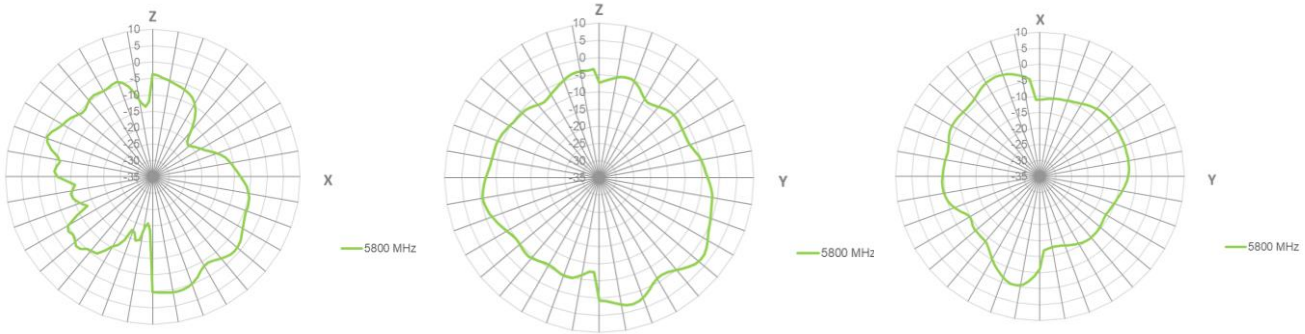
XZ Plane	YZ Plane	XY Plane



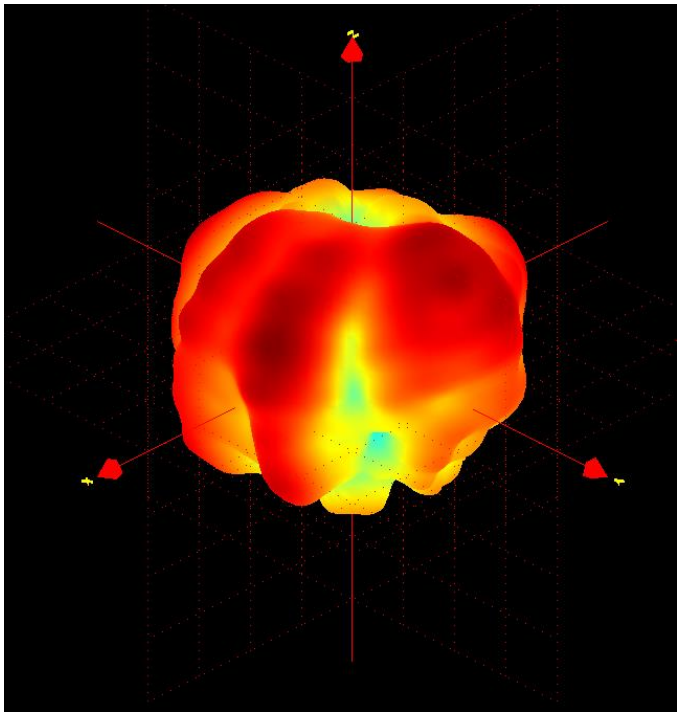
4.12 Wi-Fi 5800MHz 3D and 2D Radiation Patterns



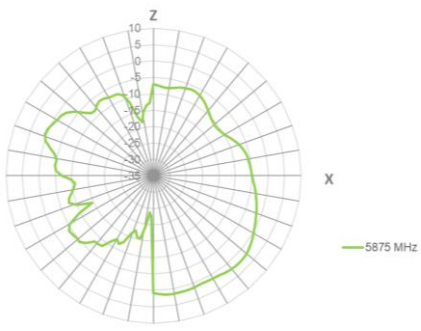
XZ Plane	YZ Plane	XY Plane

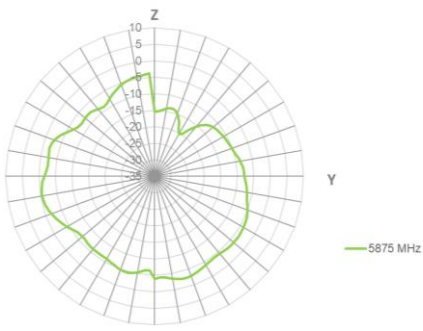


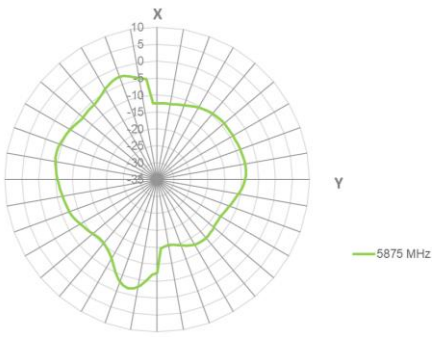
4.13 Wi-Fi 5875MHz 3D and 2D Radiation Patterns



XZ Plane	YZ Plane	XY Plane

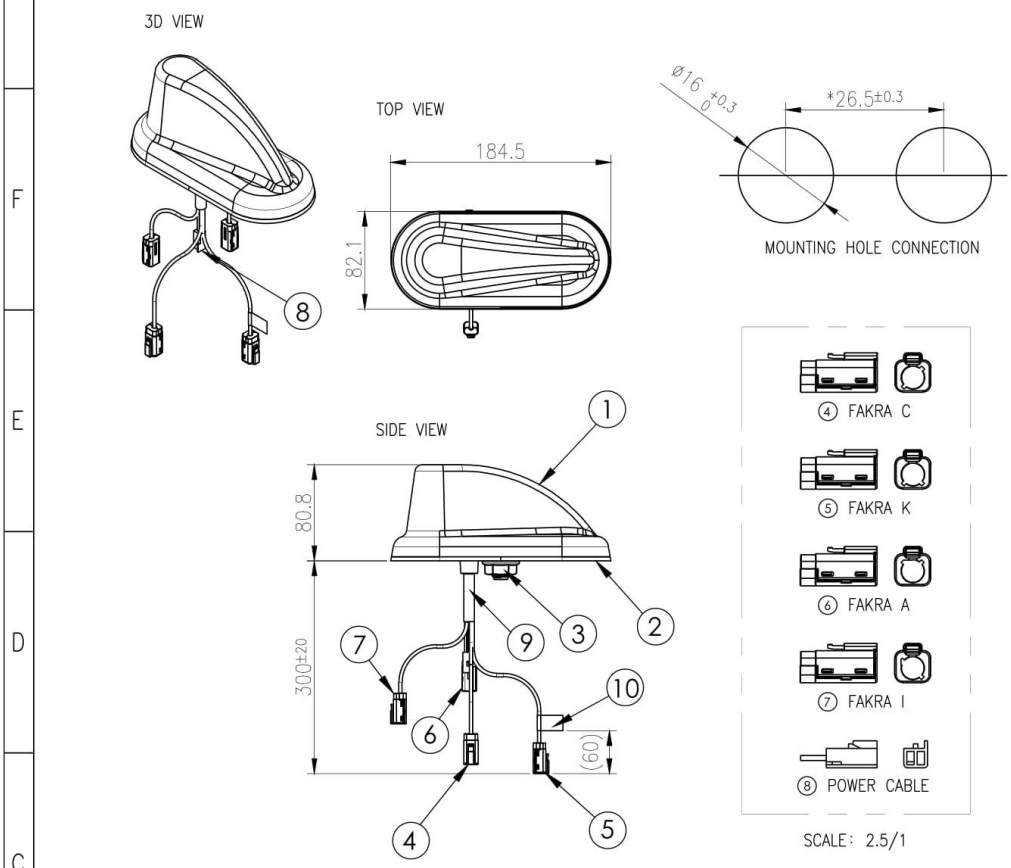






5. Mechanical Drawing (Units: mm)

ISO NO: EDW-19-8-0786	<Release>	REV	ZONE	DESCRIPTION	ENG	APPROVED	ISSUED DATE
		D01	ALL	Initial Design	S.Stanton	Aaron	2019/09/05

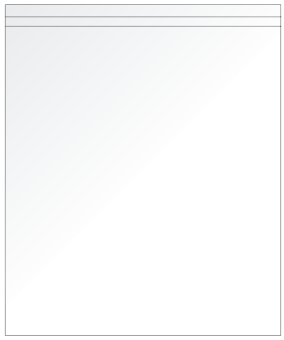


	Name	Material	Finish	QTY
1	Top Housing	PC	Black	1
2	Rubber Base Plate	EPDM	Black	1
3	Nut	Steel	Ni Plated	1
4	RG-174 Cable Assembly with FAKRA C (GPS)	PVC	Black & Blue	1
5	RG-174 Cable Assembly with FAKRA K (SDARS)	PVC	Black & Curry	1
6	RG-174 Cable Assembly with FAKRA A (AM/FM)	PVC	Black & Black	1
7	RG-174 Cable Assembly with FAKRA I (Wi-Fi)	PVC	Black & Beige	1
8	Power Cable	PVC	Red & Black	1
9	Heatshrink	PET	Black	1
10	Module Label	Coated Paper	White	1

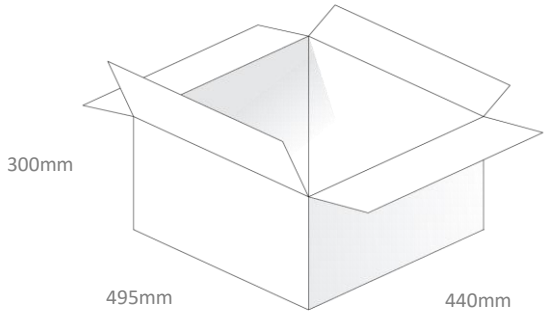
UNLESS OTHERWISE SPECFIED TOLERANCES ON: .X± 0.2 XX.± 0.5 .XX± 0.1 X.± 0.3 .XXX± 0.05	DATE: 2019/09/05	MAT'L:	TAOGLAS. TW Design Centre	REV
	UNIT: mm	FINISH:	This drawing and its inherent design concepts are property of Taoglas. Not to be copied or given to third parties without the written consent of Taoglas.	D01
	THIRD ANGLE PROJECTION	SCALE: 1/1	TITLE. : 4in1 Sharkfin 300mm RG-174 FAKRA C WiFi FAKRA I AM/FM FAKRA A SDARS FAKRA K	
APPROVED BY: Aaron	CHECKED BY: Aaron	DRAWN BY: S.Stanton	CUSTOMERS SIGNATURE / DATE	PART NO. : MA1044.A.ACTX.002

6. Packaging

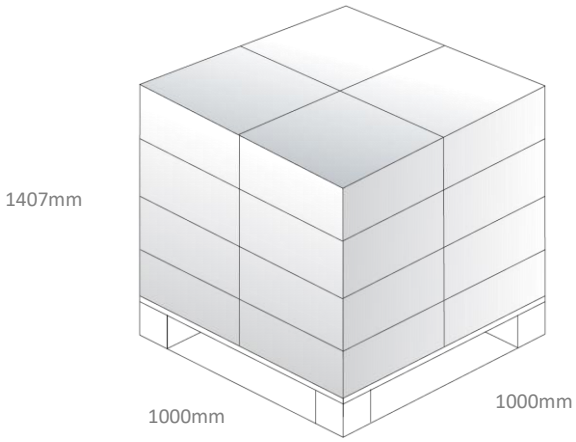
1pc MA1044.A.ACTX.002 per Poly Bag
Weight: 440g



24pcs MA1044.A.ACTX.002 per Carton
Dimensions: 495*440*300mm
Weight: 13.5Kg



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



Changelog for the datasheet

SPE-19-8-118 – MA1044.A.ACTX.002

Revision: A (Original First Release)	
Date:	2019-08-28
Notes:	Initial Datasheet Release
Author:	Yu Kai Yeung

Previous Revisions

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