TAOGLAS®

Datasheet

Part No:
FXP523.A.07.A.001

Description

Venti Flex PCB Wi-Fi® MIMO 2.4/5.8/7.1GHz Antenna with 3 ports with Wi-Fi® 6 frequency bands included

Features:

Covers Extended Wi-Fi® Frequencies of 2.4-2.5GHz, 5.8 -7.125GHz
Flex PCB MIMO Antenna
Adhesive Tape for ease of installation
Dimensions: 80*20*0.2mm
Cables: 120mm of Ø1.13mm
Connectors: I-PEX MHF® I (U.FL Compatible)
RoHS & Reach Compliant

1. Introduction

The FXP523 Venti antenna is a 3-in-1 MIMO, flexible PCB monopole type antenna designed to operate at widely used Wi-Fi® frequencies. The FXP524 is a future proof antenna as it has been proven to cover the frequencies required for Wi-Fi® 6 applications. The antenna has excellent efficiency and isolation performance for all Wi-Fi® applications. Featuring a low profile height of only 0.15mm, the FXP523 is an ideal solution for maintaining high performance while fitting into narrow spaces such as plastic enclosures for laptops, tablets, routers, and other Wi-Fi® applications.

The antenna has been designed in a flexible material with a rectangular form-factor and cable connection for an easy installation. The antenna comes with double-sided 3M tape for easy and robust "peel and stick" mounting. The antenna cables feature IPEX connectors for easy installation.

Typical applications include:
- Smart Home
- Routers and Gateways
- Smart Devices
- HD Video Streaming

Many module manufacturers specify peak gain limits for any antennas that are to be connected to that module. Those peak gain limits are based on free-space conditions. In practice, the peak gain of an antenna tested in free-space can degrade by at least 1 or 2dBi when put inside a device. So ideally you should go for a slightly higher peak gain antenna than mentioned on the module specification to compensate for this effect, giving you better performance.

Upon testing of any of our antennas with your device and a selection of appropriate layout, integration technique, or cable, Taoglas can make sure any of our antennas' peak gain will be below the peak gain limits. Taoglas can then issue a specification and/or report for the selected antenna in your device that will clearly show it complying with the peak gain limits, so you can be assured you are meeting regulatory requirements for that module.

For example, a module manufacturer may state that the antenna must have less than 2dBi peak gain, but you don't need to select an embedded antenna that has a peak gain of less than 2dBi in free-space. This will give you a less optimized solution. It is better to go for a slightly higher free-space peak gain of 3dBi or more if available. Once that antenna gets integrated into your device, performance will degrade below this 2dBi peak gain due to the effects of GND plane, surrounding components, and device housing. If you want to be absolutely sure, contact Taoglas and we will test. Choosing a Taoglas antenna with a higher peak gain than what is specified by the module manufacturer and enlisting our help will ensure you are getting the best performance possible without exceeding the peak gain limits.

The Cables and connectors are fully customizable subject to MOQ, for further information please contact your regional Taoglas customer support team for more information.

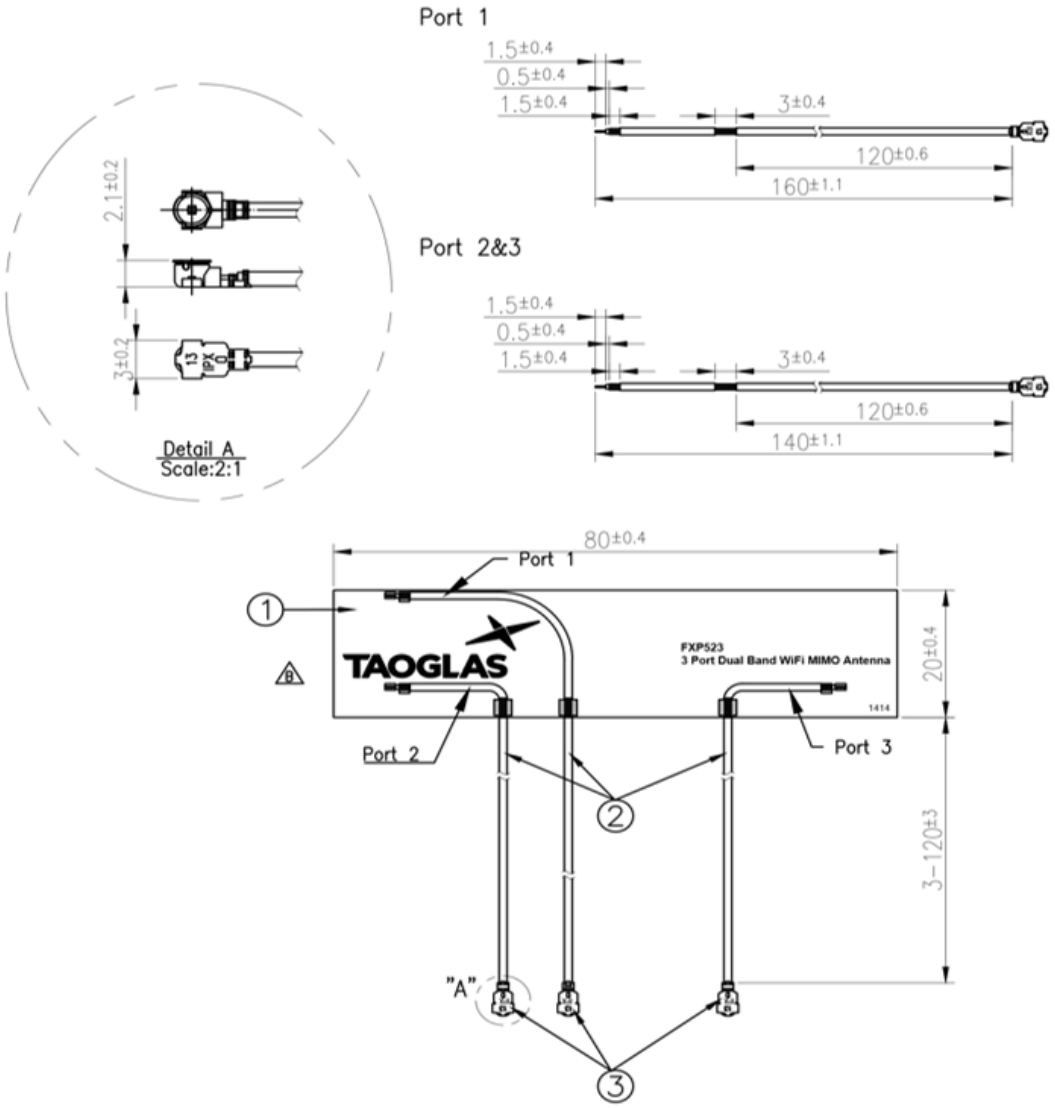
2. Specification

Electrical									
Band	Frequency (MHz)	Measurement	Efficiency (%)	Average Gain (dB)	Peak Gain (dBi)	Impedance	Polarization	Radiation Pattern	Max. input power
Wi-Fi - 2GHz	2400-2500	Antenna 1	42.5	-3.72	1.59	50 Ω	Linear	Omni Directional	2W
		Antenna 2	33.1	-4.80	1.57				
		Antenna 3	44.5	-3.51	2.21				
Wi-Fi - 5GHz	5150-5850	Antenna 1	55.4	-2.56	4.61				
		Antenna 2	53.0	-2.76	5.21				
		Antenna 3	59.8	-2.23	5.05				
Wi-Fi - 6GHz	5925-7125	Antenna 1	46.1	-3.36	4.44				
		Antenna 2	37.1	-4.30	4.83				
		Antenna 3	44.4	-3.52	4.53				

Mechanical	
Dimensions	80mm x 20mm x 0.1mm
Antenna Body Material	Polymer
Cable	3* Black 1.13mm Coaxial Cable
Cable Length	120mm
Connector	IPEX MHFHT
Weight	8g

Environmental	
Temperature Range	-40°C to 85°C
Humidity	Non-condensing 65°C 95% RH

3. Mechanical Drawing

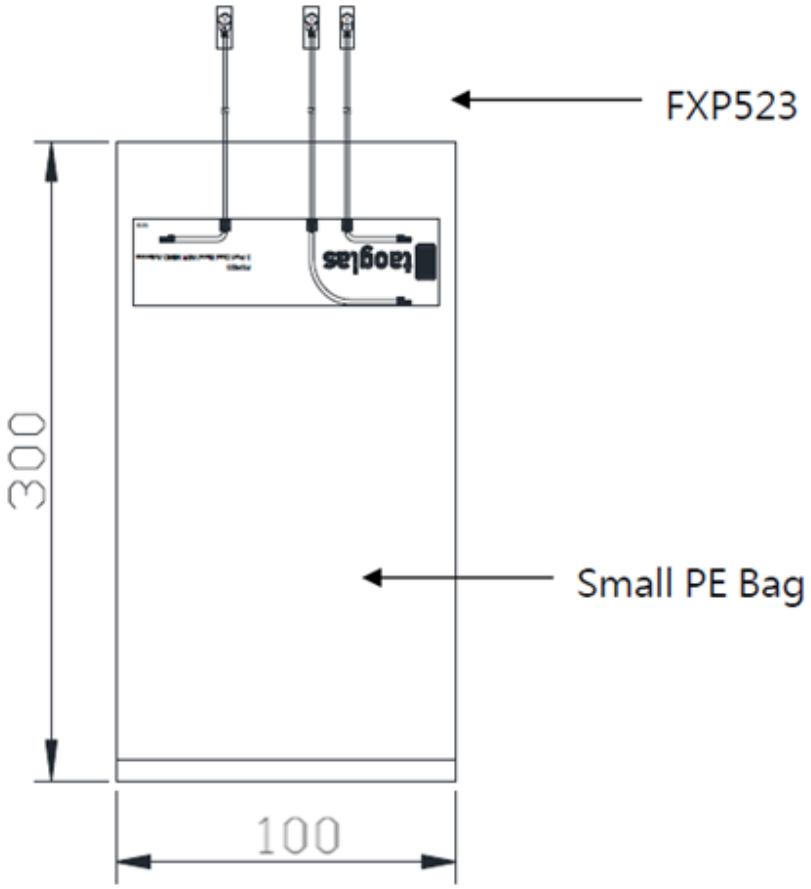


NOTES:
1. No dregs or insufficient soldering.
   Solder thickness 0.3 ~1.7mm
2. The solder must be smooth and full to the edges of the pad. The solder must not extend outside of the pad area.
3. The connector position has special orientation to the PCB as per drawing.
4. All material must be RoHS compliant.
5. Open/short, insertion loss QC required.
6. The connectors have a fixed orientation to each other.

	Name	P/N	Material	Finish	QTY
1	FXP523 FPCB	100114E010011A	Polymer 0.24t	Black	1
2	1.13 Coaxial Cable	300215C020000A	FEP	Black	3
3	IPEX MHFI	204111G000000A	Brass	Au Plated	3

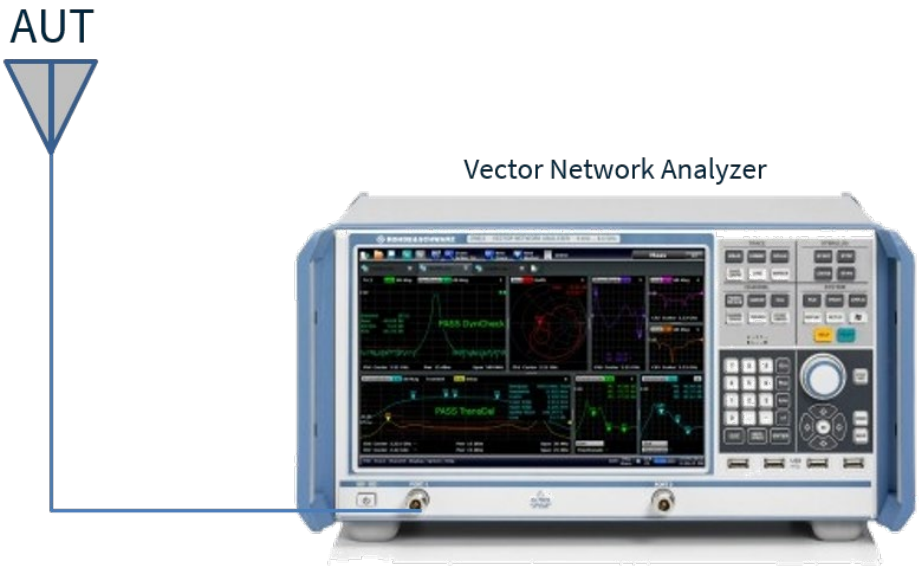
4. Packaging

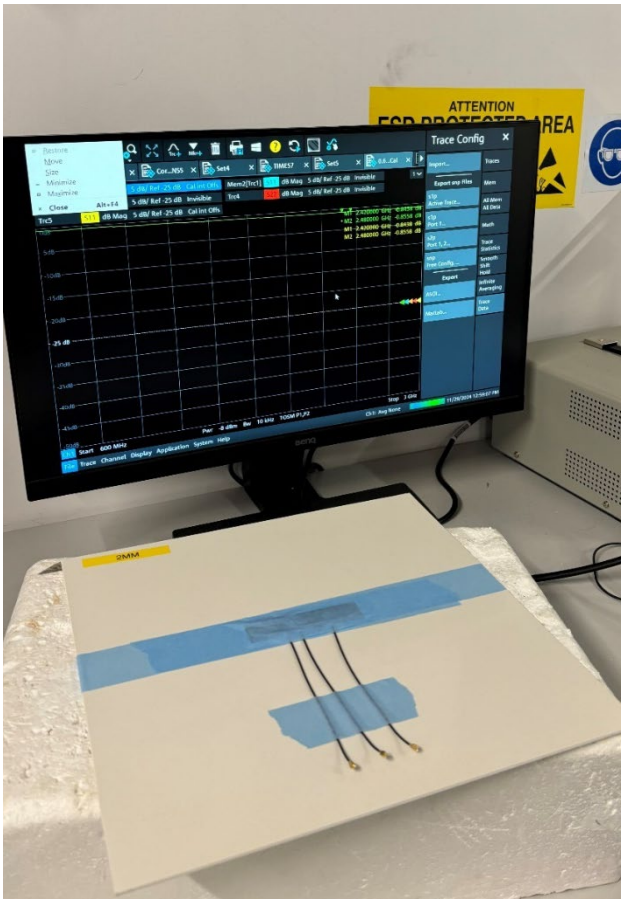
10 pcs per Small PE Bag



5. Antenna Characteristics

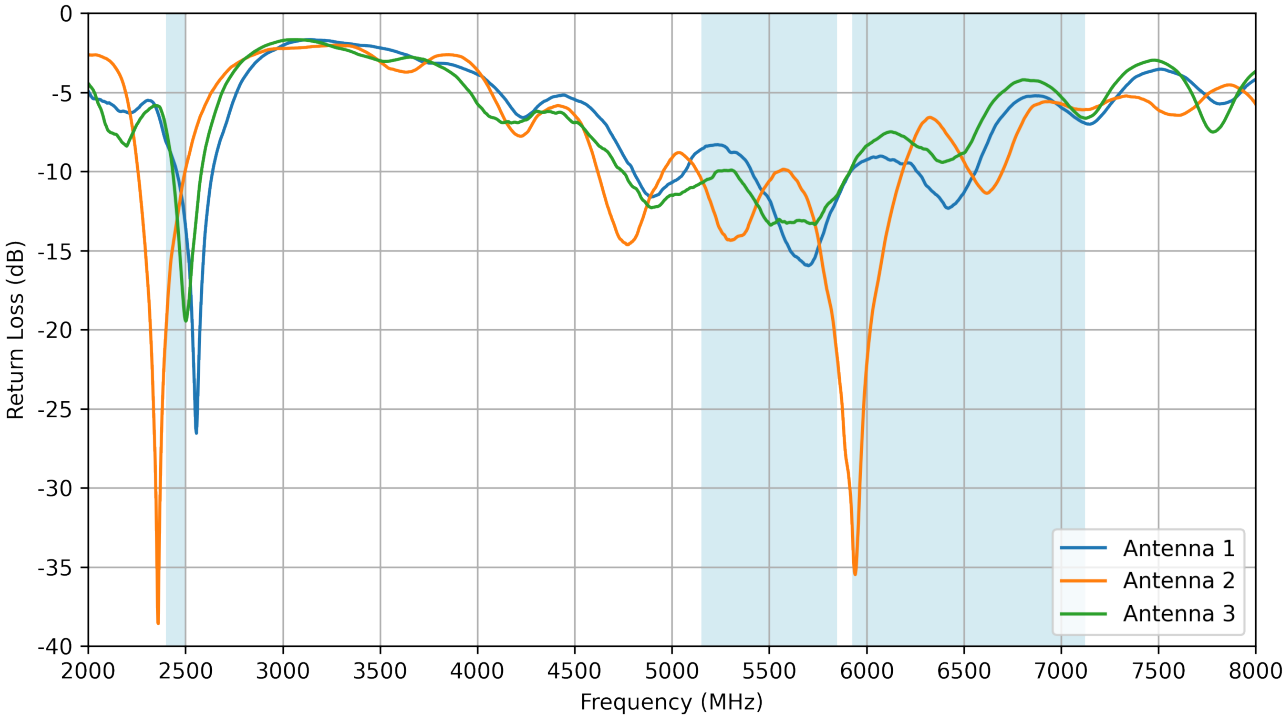
5.1 Test Setup



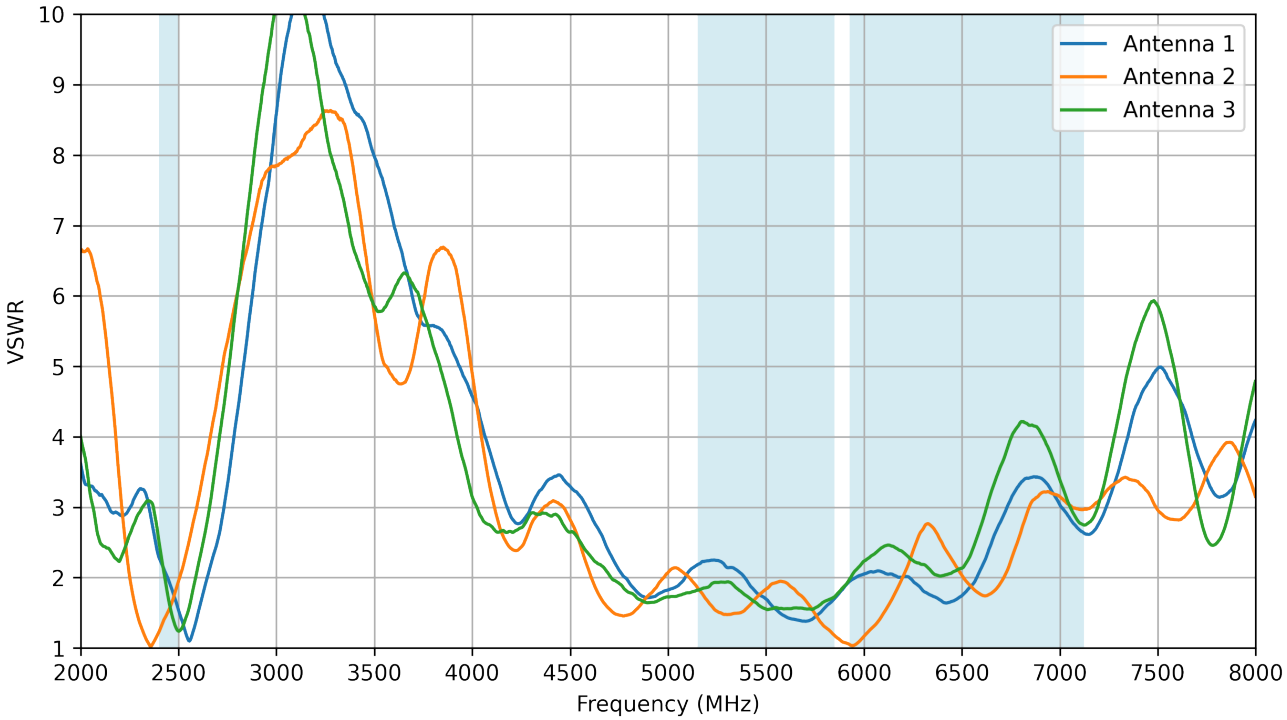


VNA Test Set-up

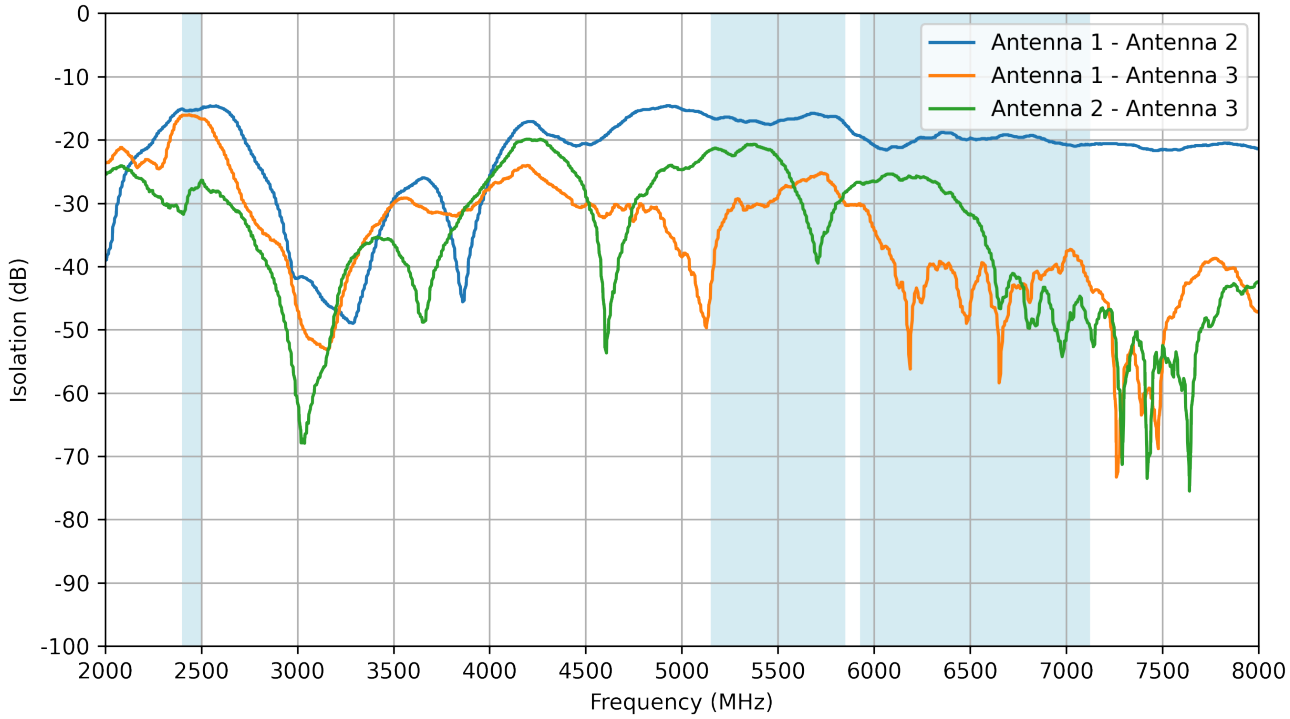
5.2 Return Loss



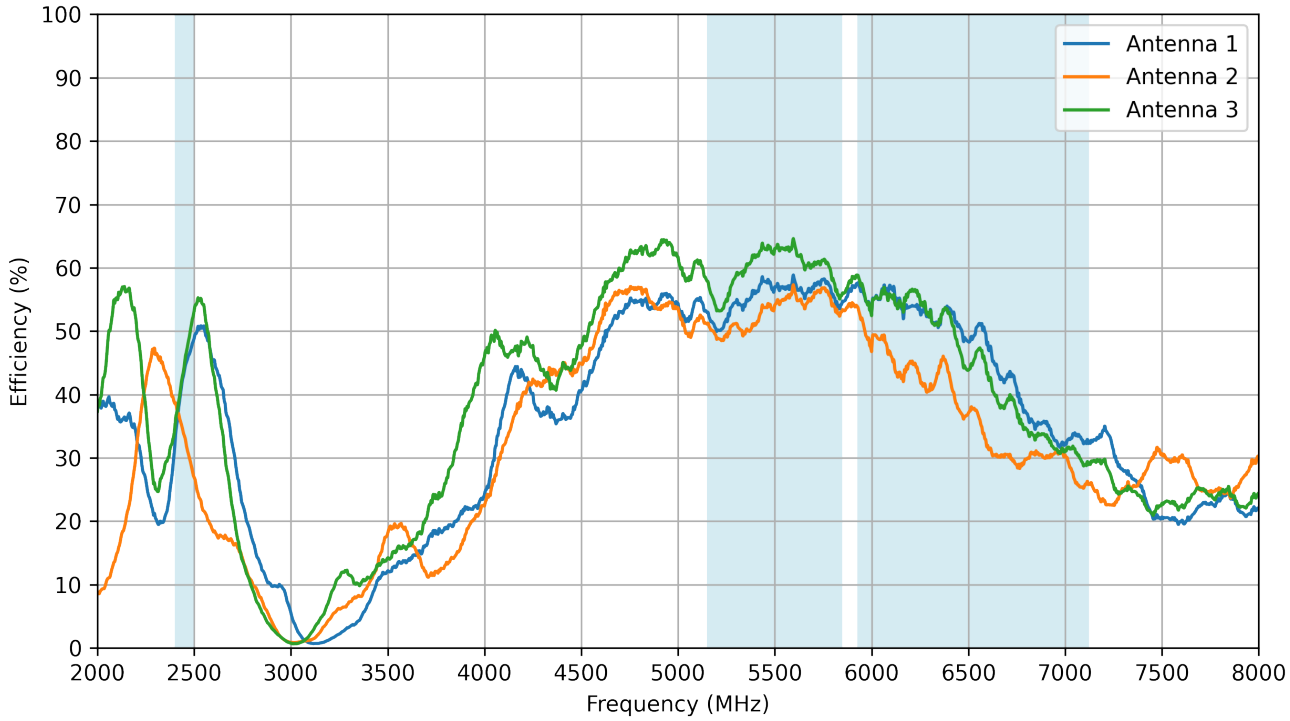
5.3 VSWR



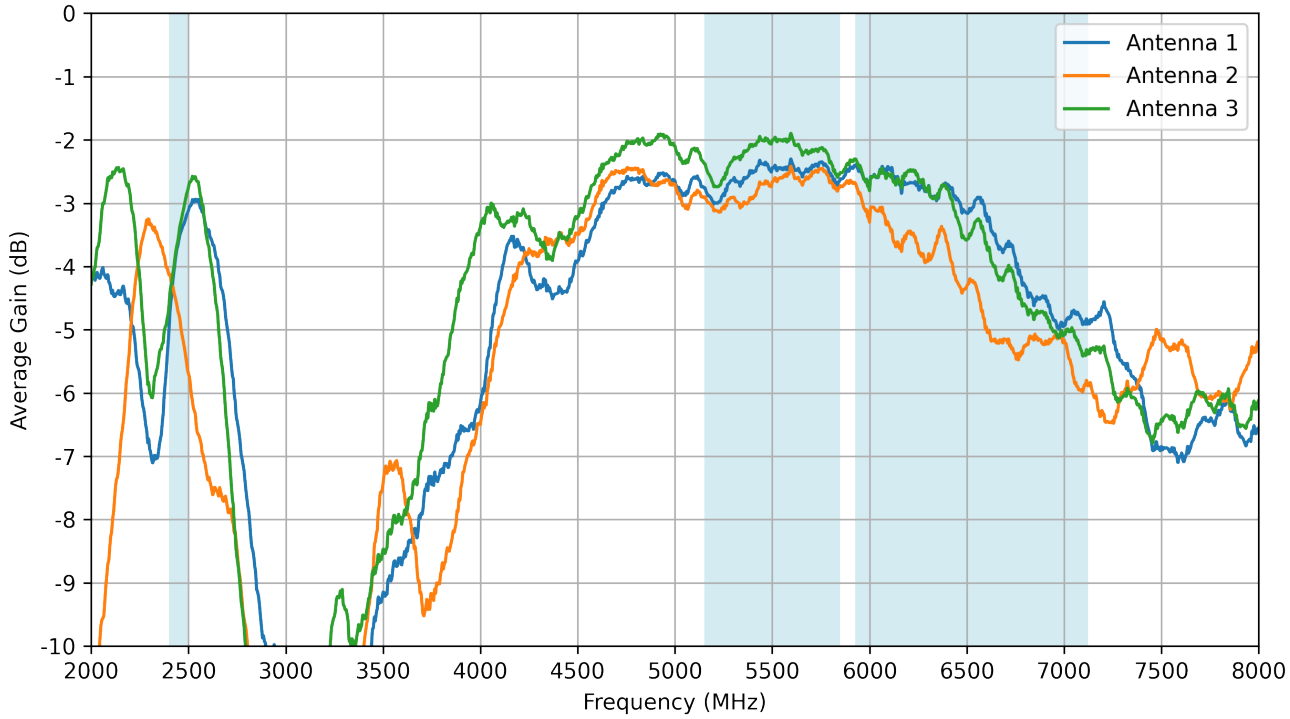
5.4 Isolation



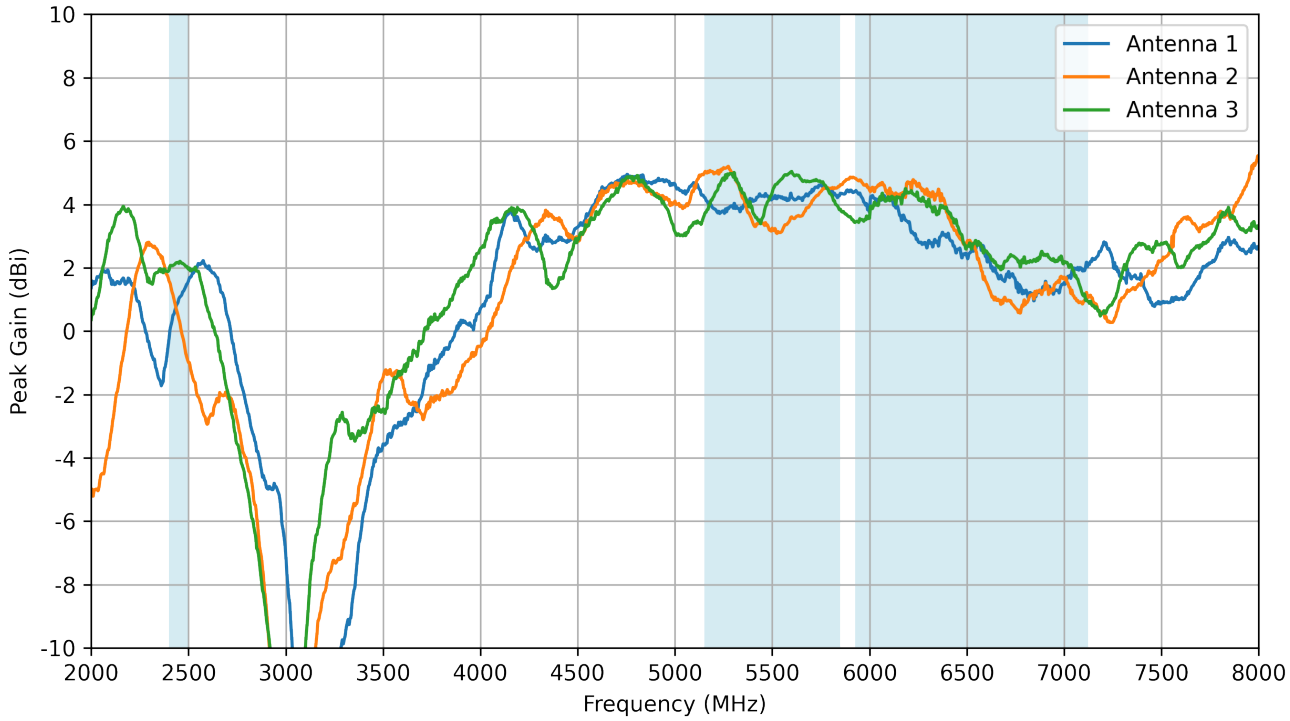
5.5 Efficiency



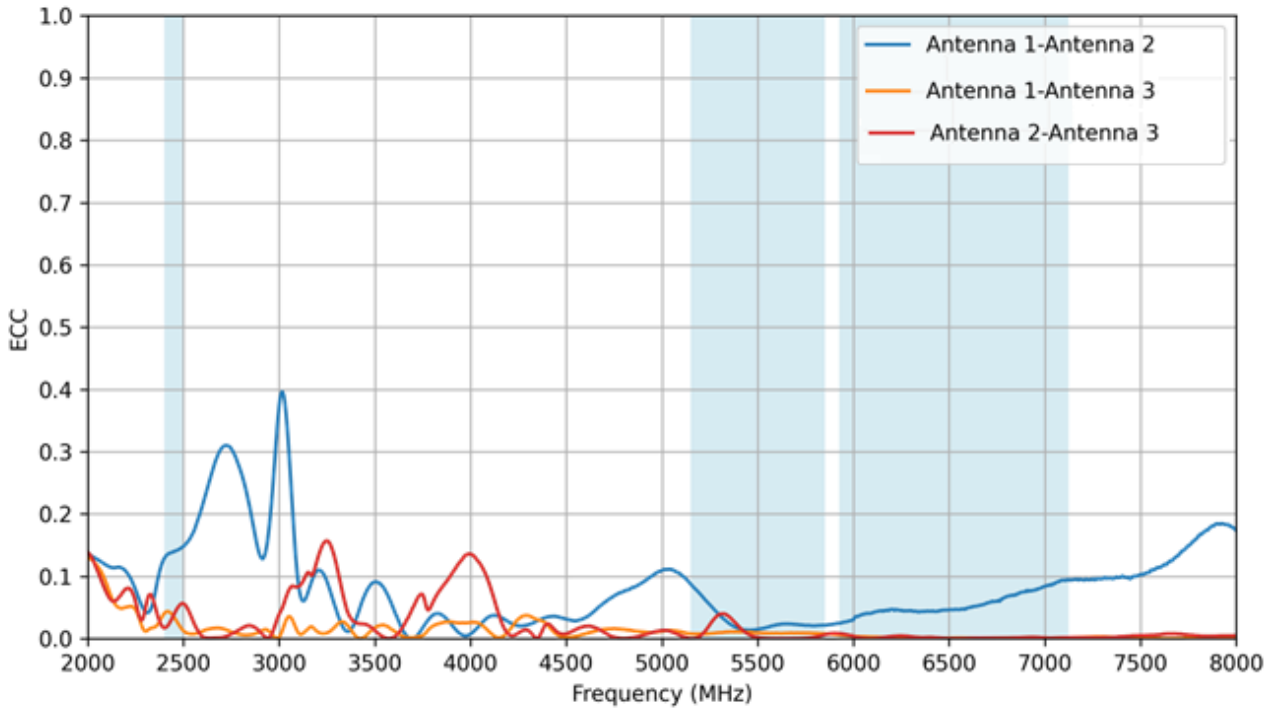
5.6 Average Gain



5.7 Peak Gain

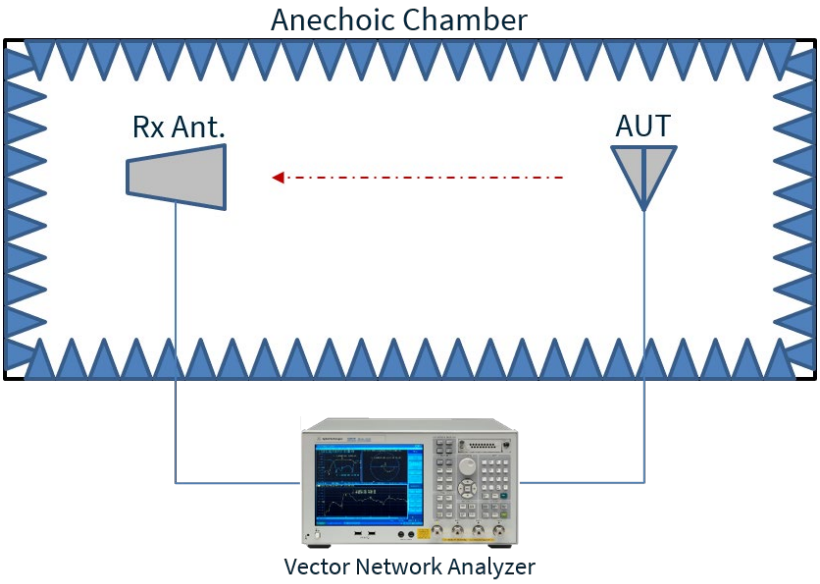


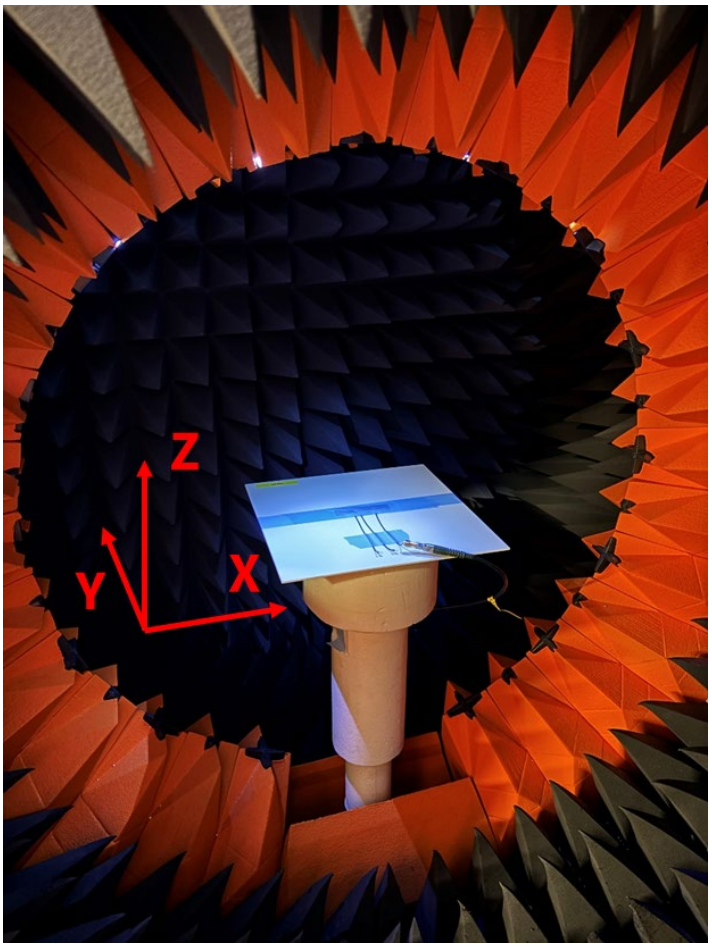
5.8 ECC


Antenna 1-Antenna 2
Antenna 1-Antenna 3
Antenna 2-Antenna 3
ECC
Frequency (MHz)
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
2000
2500
3000
3500
4000
4500
5000
5500
6000
6500
7000
7500
8000

6. Radiation Patterns

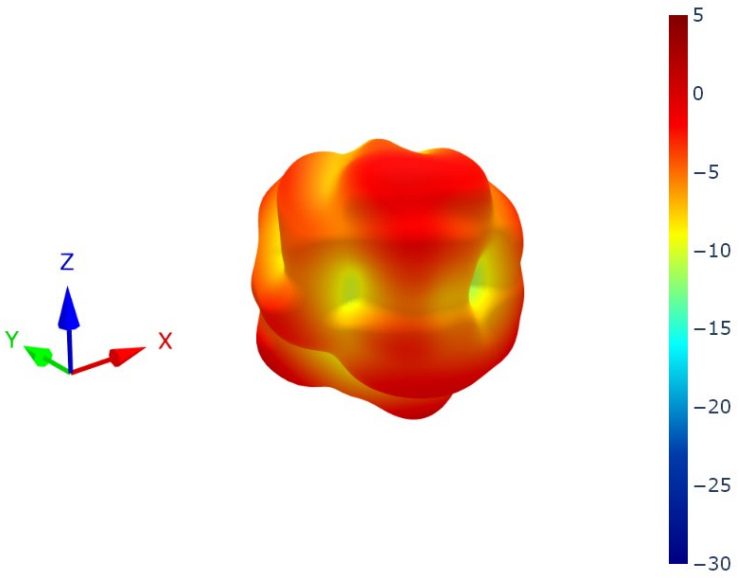
6.1 Test Setup

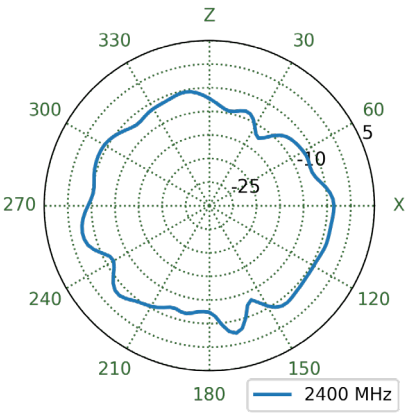
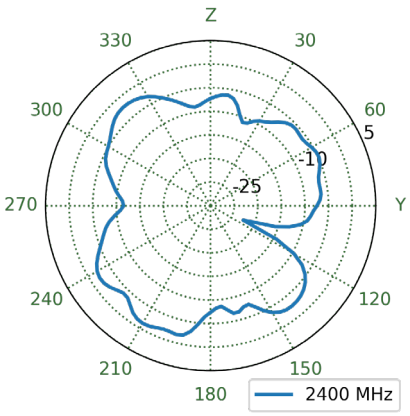
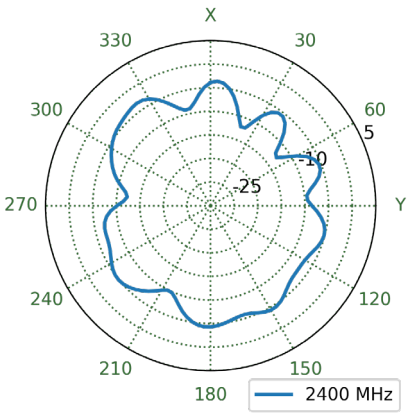




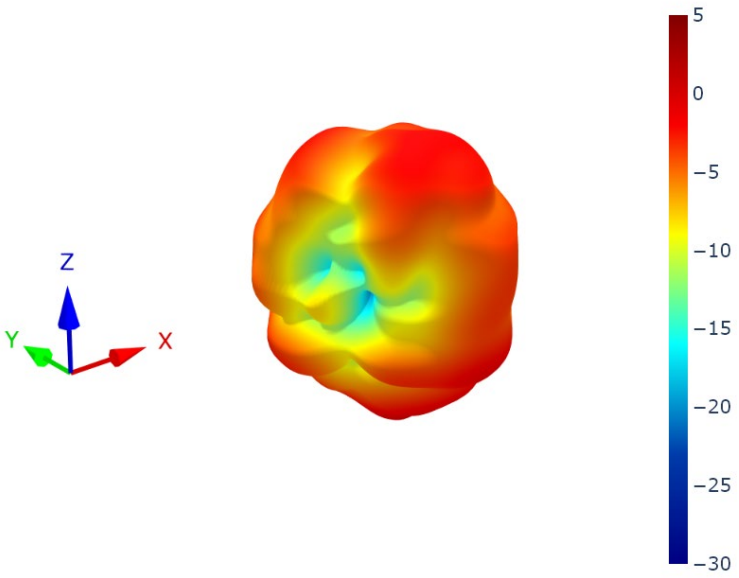
Chamber Test Set-up

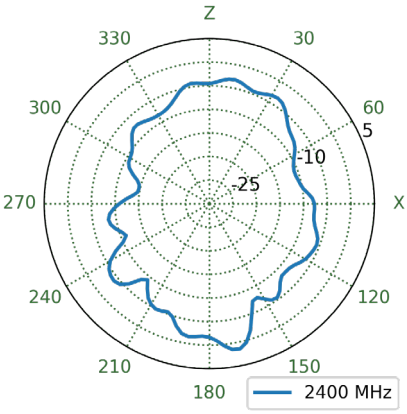
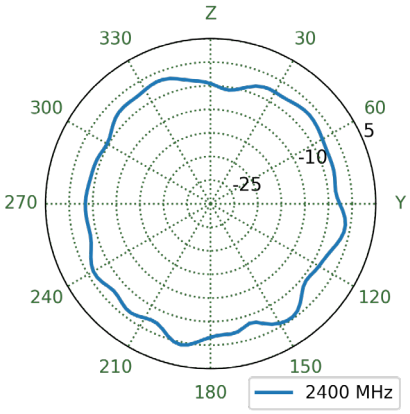
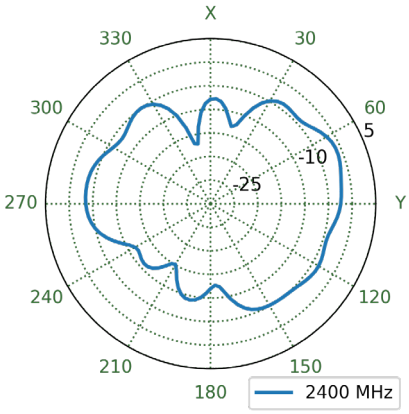
6.2 Antenna 1 Patterns at 2400 MHz



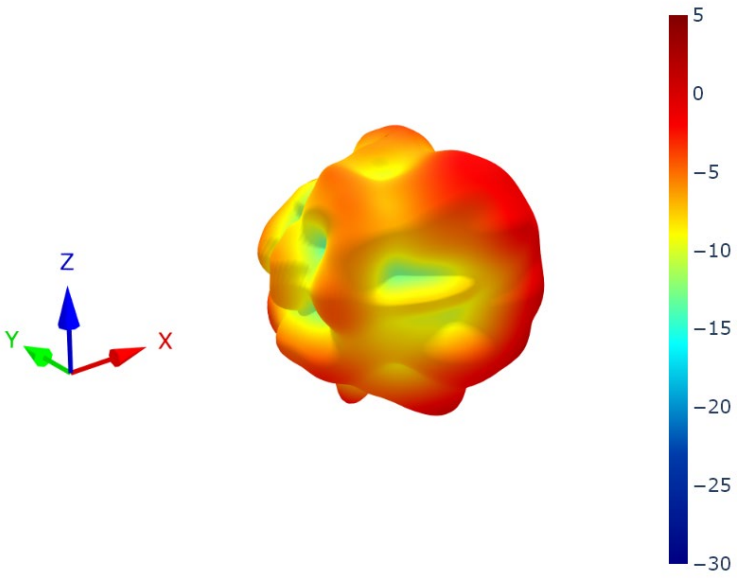
XZ Plane	YZ Plane	XY Plane
		

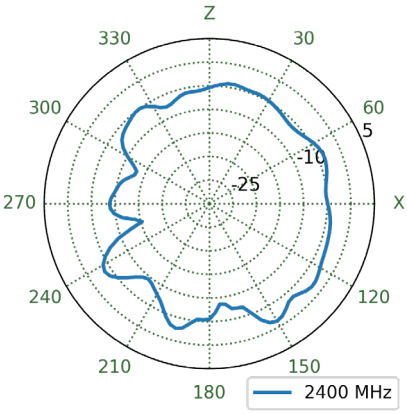
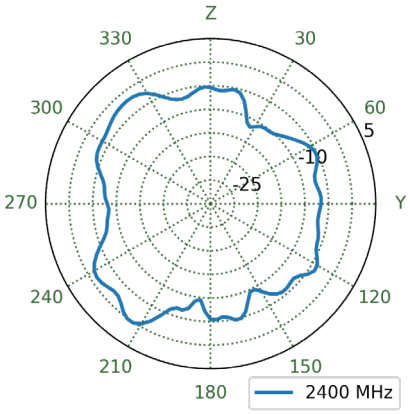
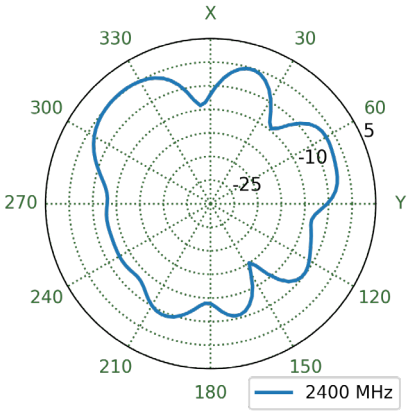
6.3 Antenna 2 Patterns at 2400 MHz



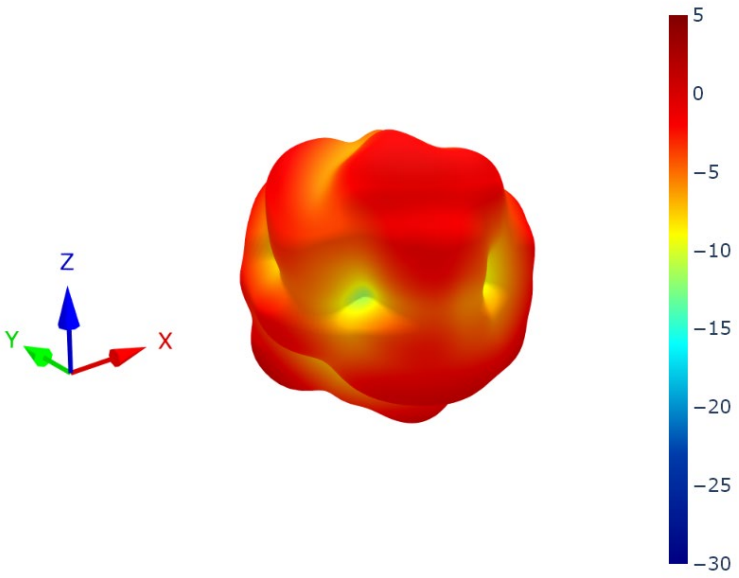
XZ Plane	YZ Plane	XY Plane
		

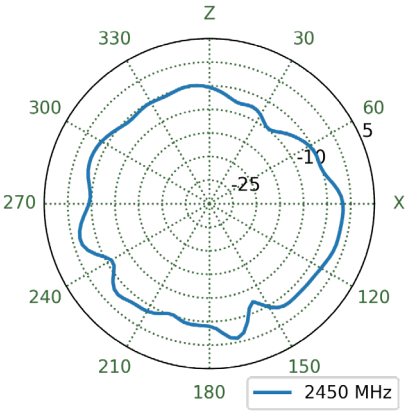
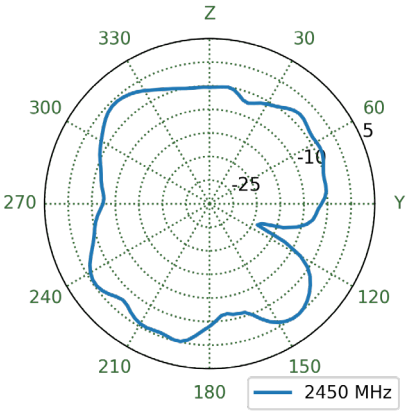
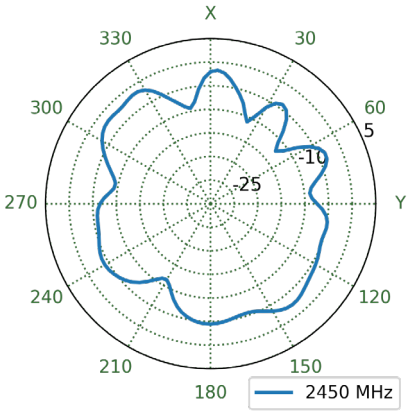
6.4 Antenna 3 Patterns at 2400 MHz



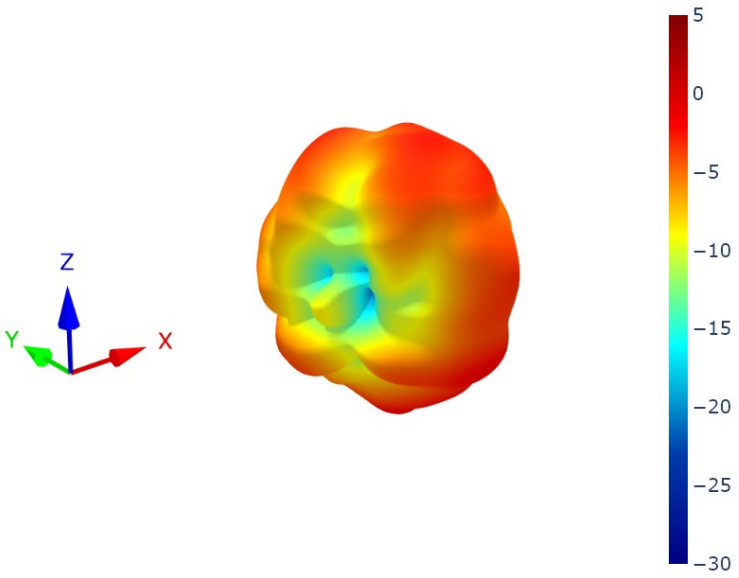
XZ Plane	YZ Plane	XY Plane
		

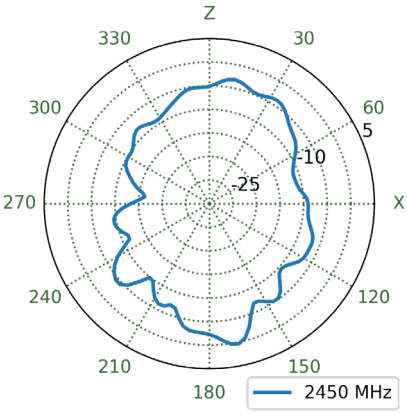
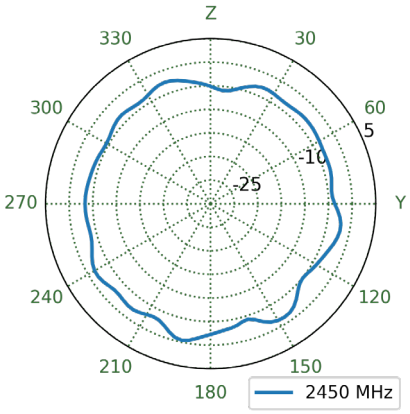
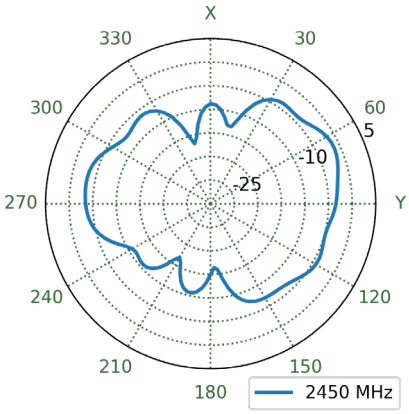
6.5 Antenna 1 Patterns at 2450 MHz



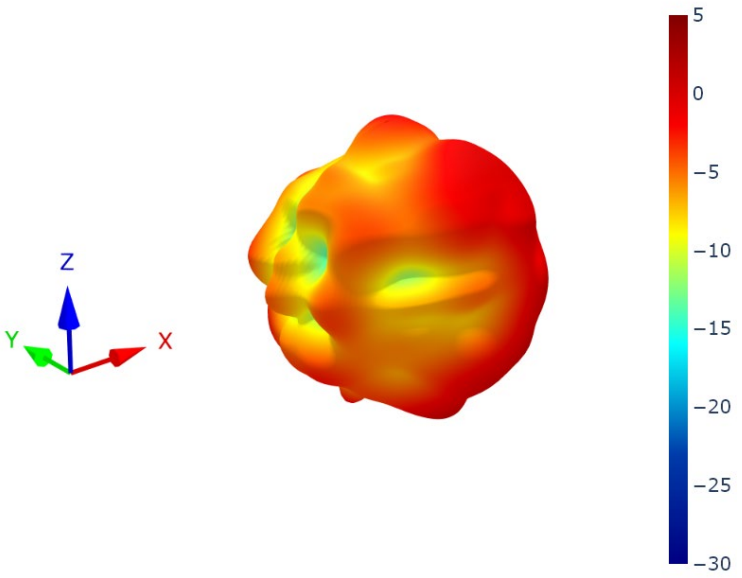
XZ Plane	YZ Plane	XY Plane
		

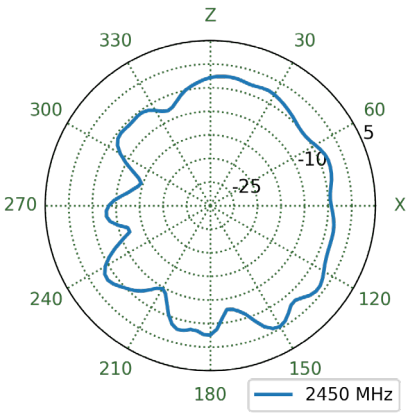
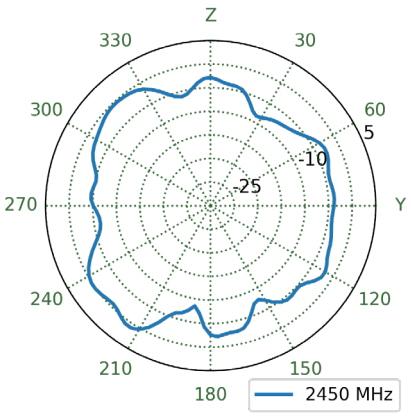
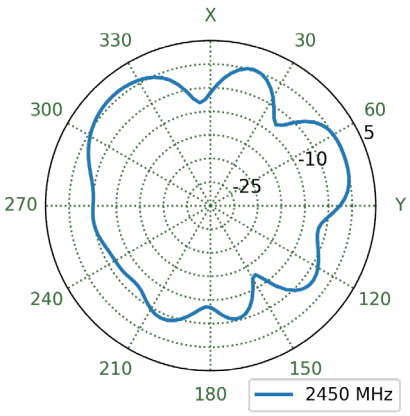
6.6 Antenna 2 Patterns at 2450 MHz



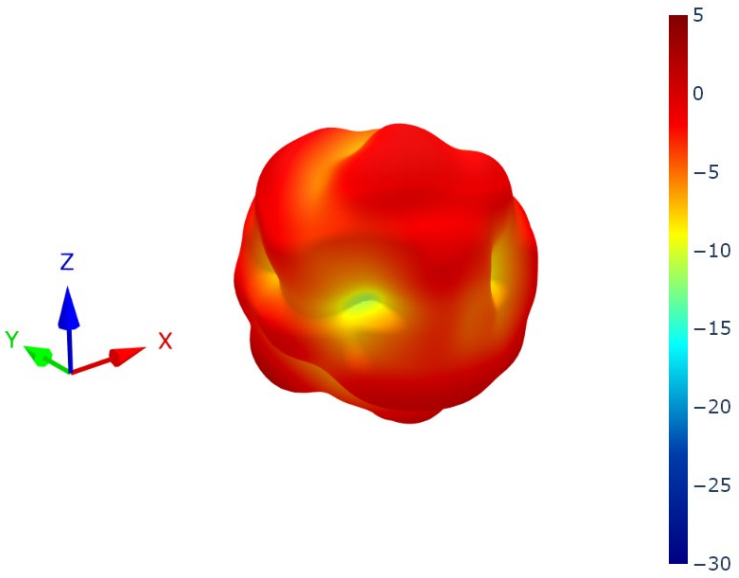
XZ Plane	YZ Plane	XY Plane
		

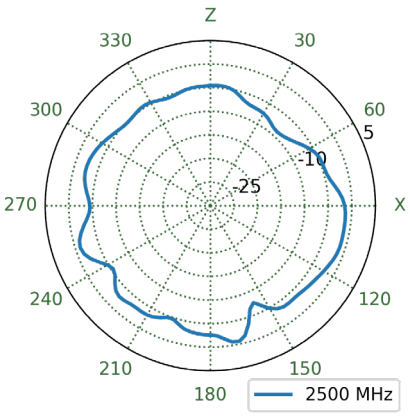
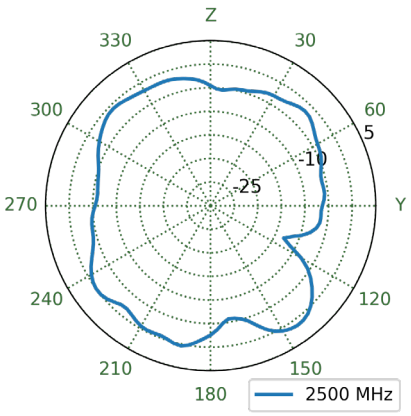
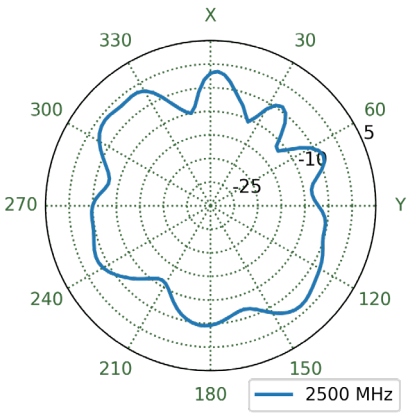
6.7 Antenna 3 Patterns at 2450 MHz



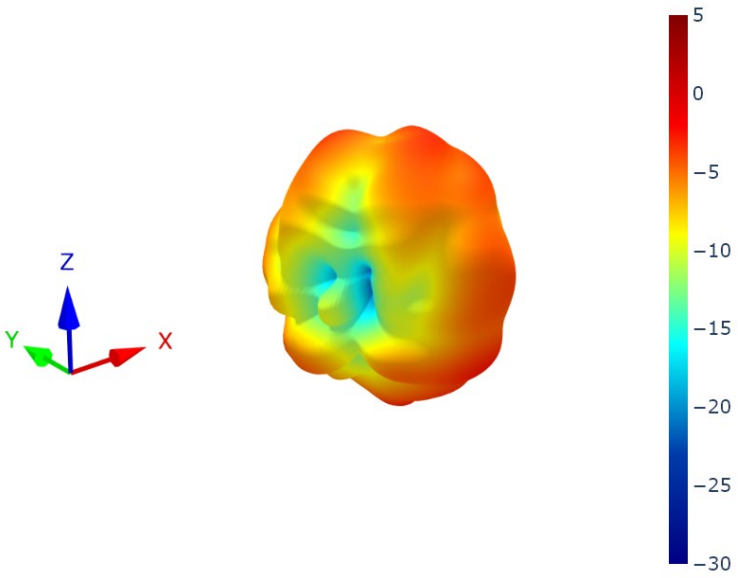
XZ Plane	YZ Plane	XY Plane
		

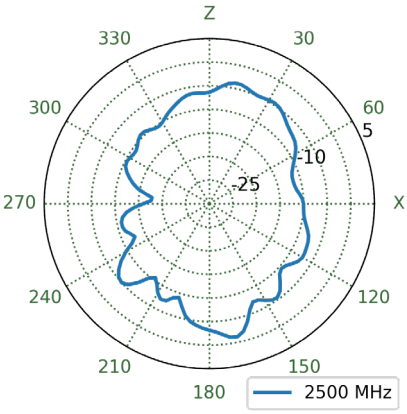
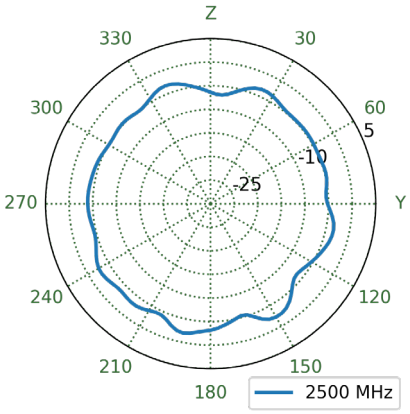
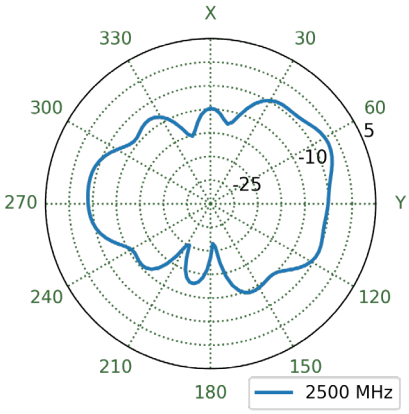
6.8 Antenna 1 Patterns at 2500 MHz



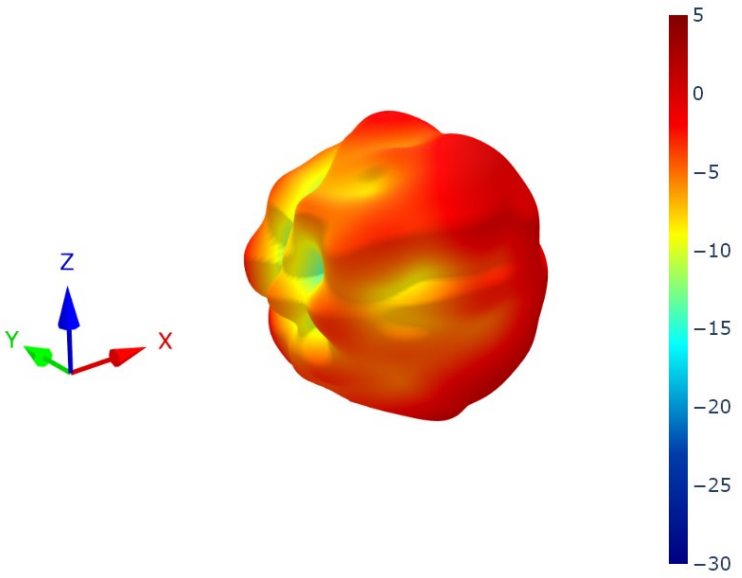
XZ Plane	YZ Plane	XY Plane
		

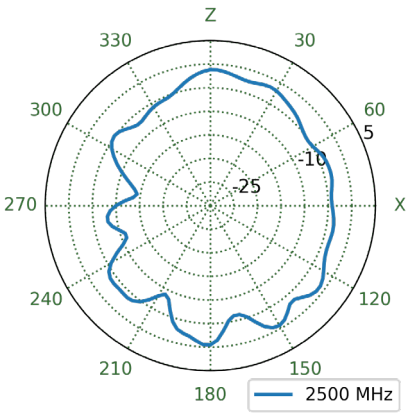
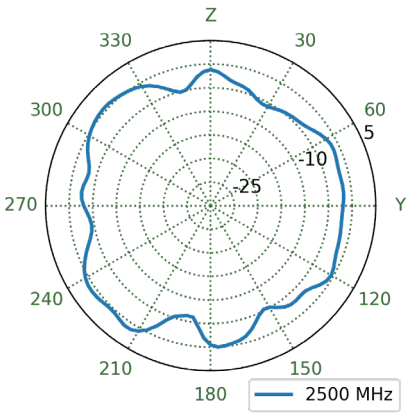
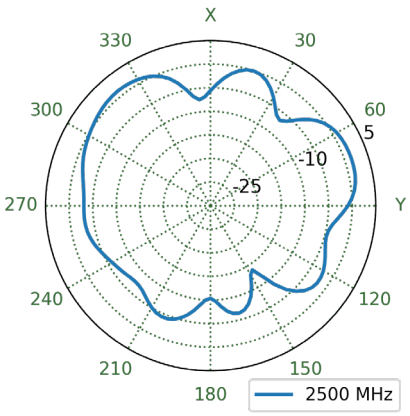
6.9 Antenna 2 Patterns at 2500 MHz



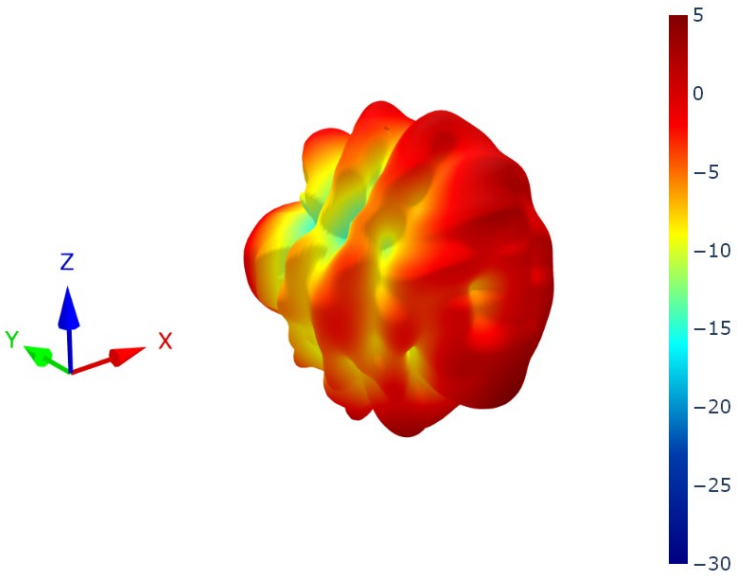
XZ Plane	YZ Plane	XY Plane
		

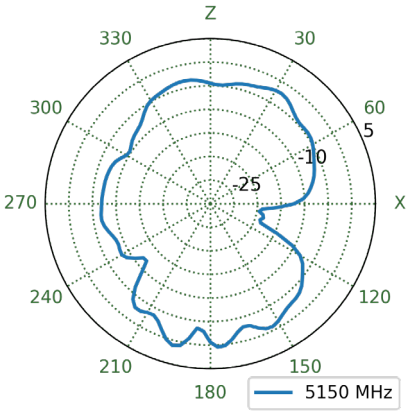
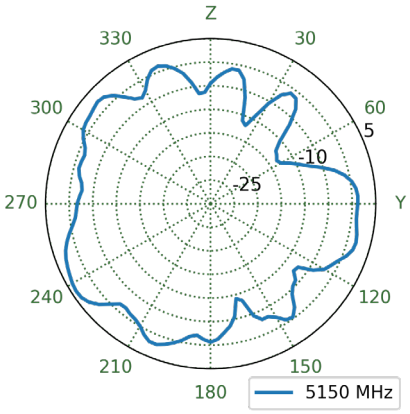
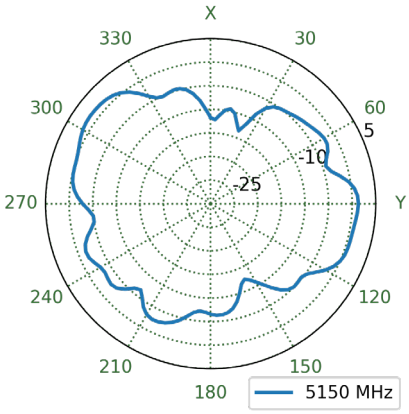
6.10 Antenna 3 Patterns at 2500 MHz



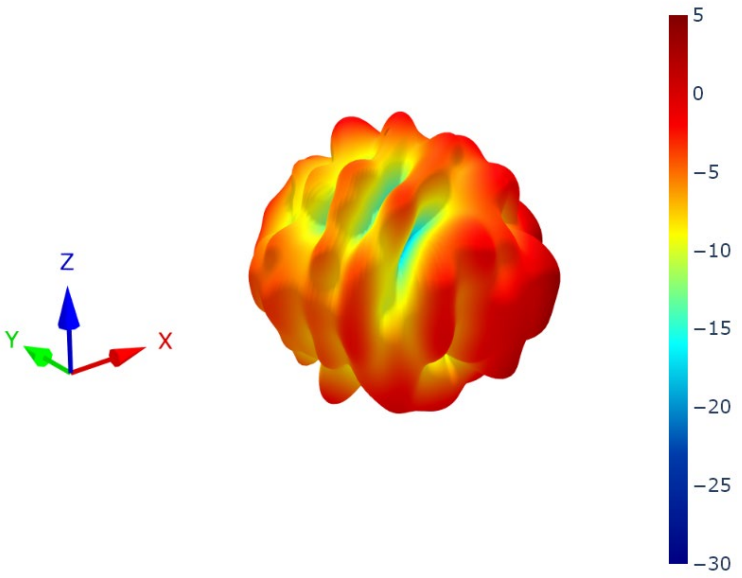
XZ Plane	YZ Plane	XY Plane
		

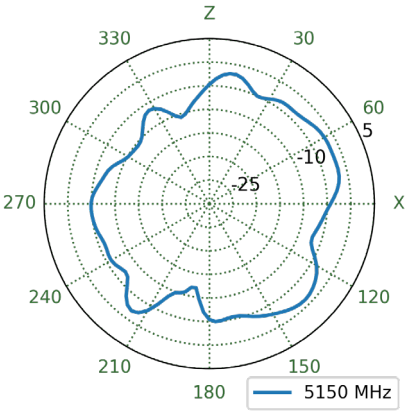
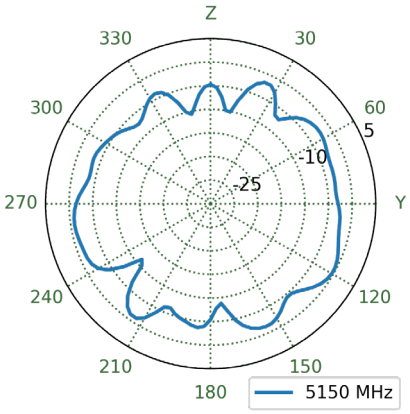
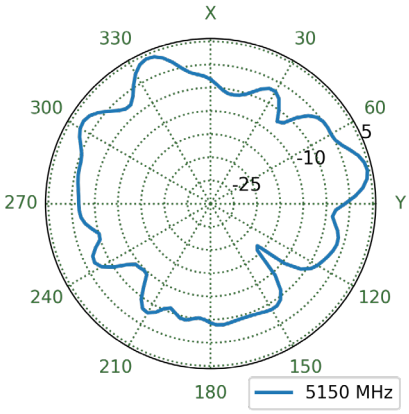
6.11 Antenna 1 Patterns at 5150 MHz



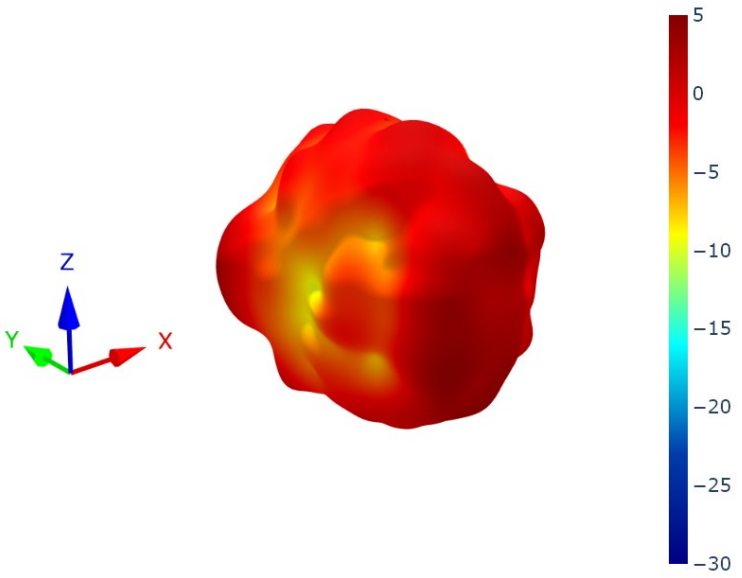
XZ Plane	YZ Plane	XY Plane
		

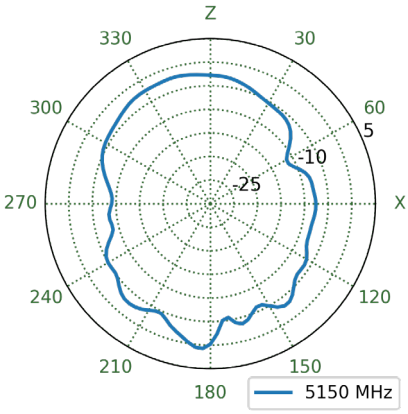
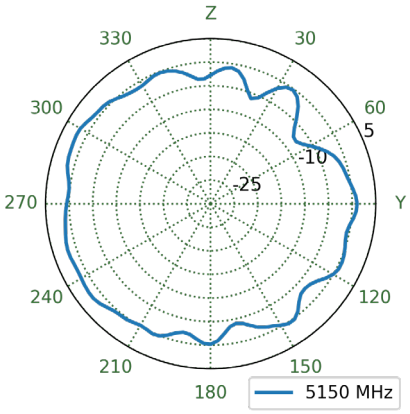
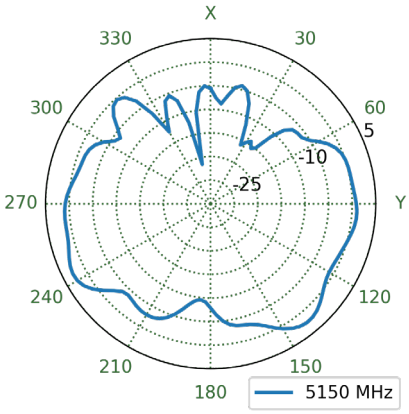
6.12 Antenna 2 Patterns at 5150 MHz



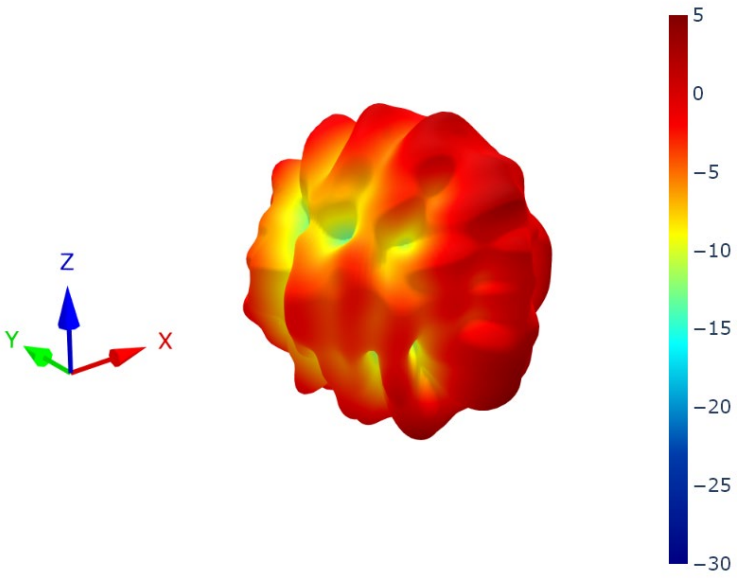
XZ Plane	YZ Plane	XY Plane
		

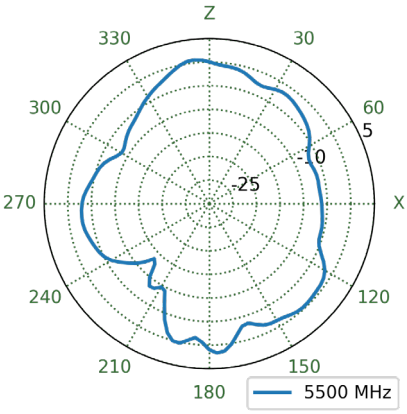
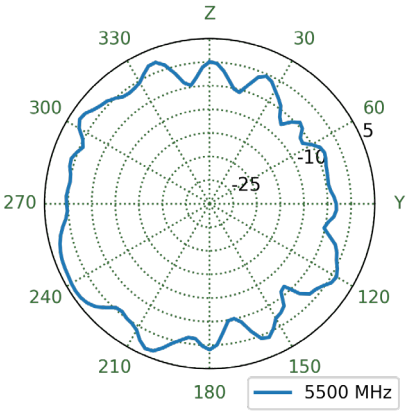
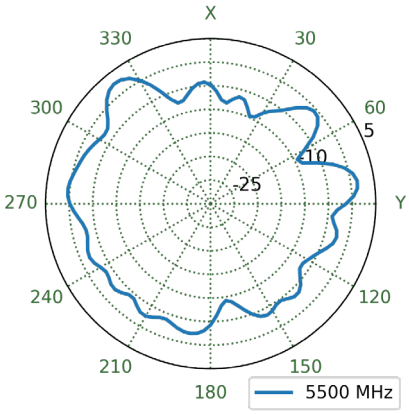
6.13 Antenna 3 Patterns at 5150 MHz



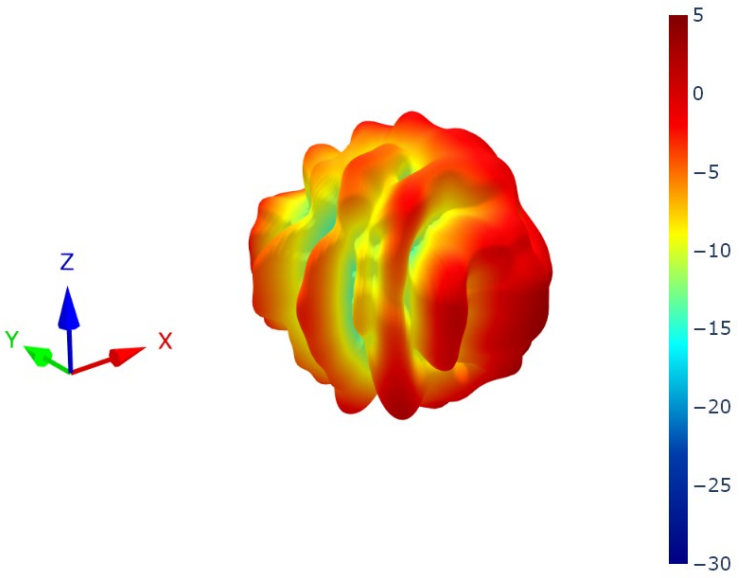
XZ Plane	YZ Plane	XY Plane
		

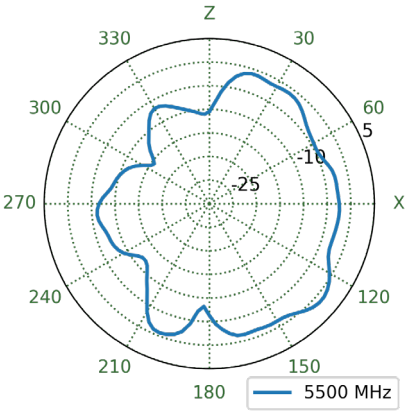
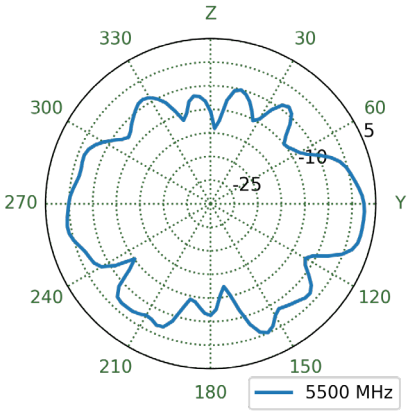
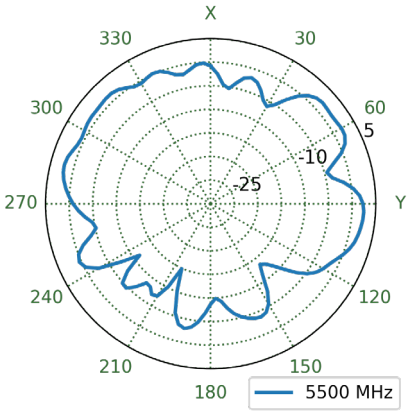
6.14 Antenna 1 Patterns at 5500 MHz



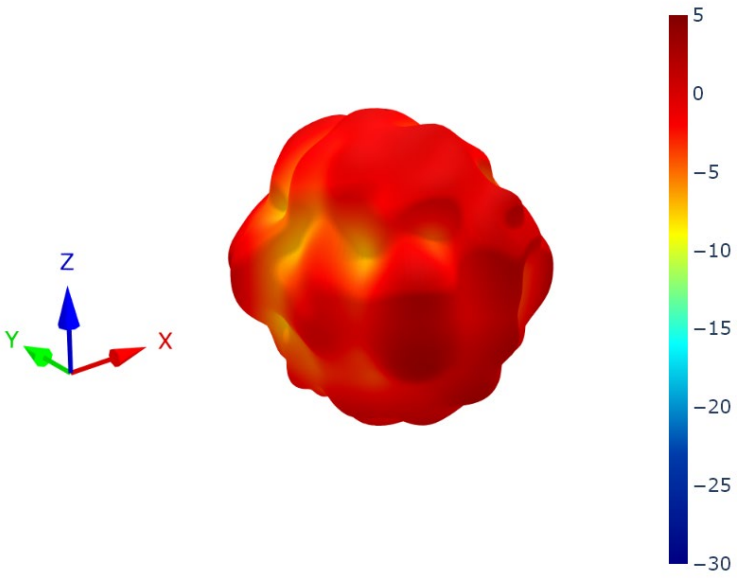
XZ Plane	YZ Plane	XY Plane
		

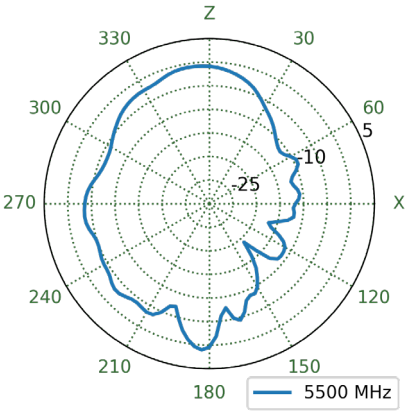
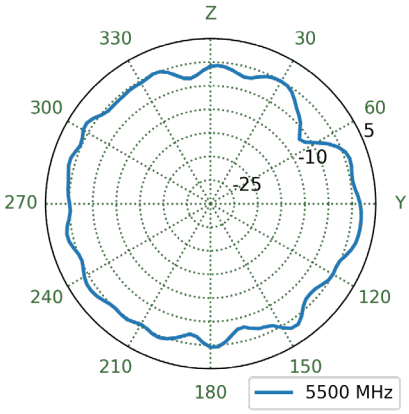
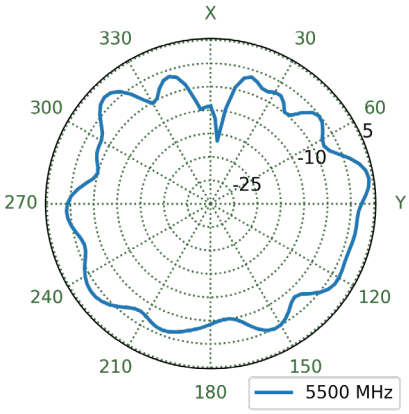
6.15 Antenna 2 Patterns at 5500 MHz



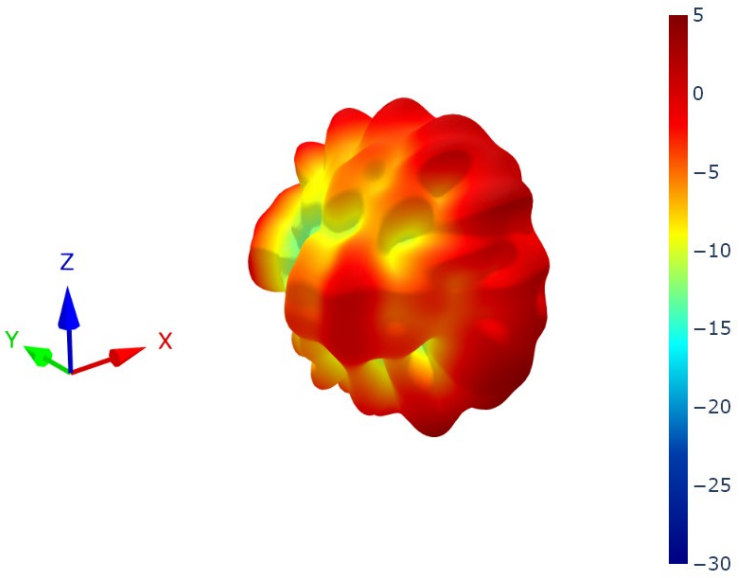
XZ Plane	YZ Plane	XY Plane
		

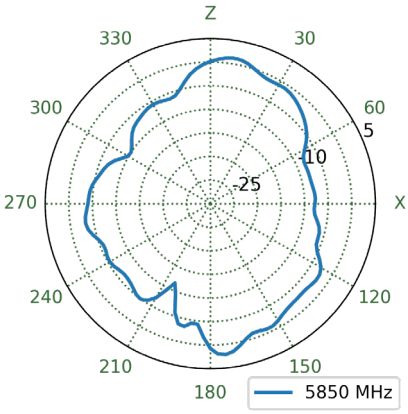
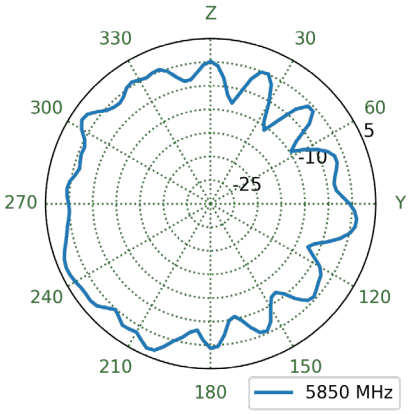
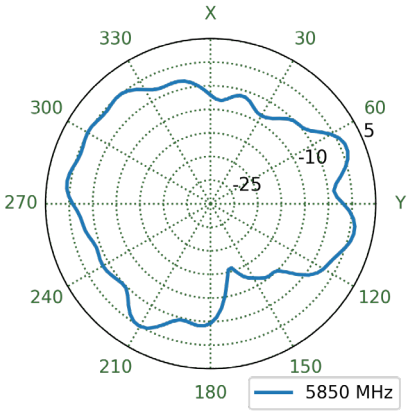
6.16 Antenna 3 Patterns at 5500 MHz



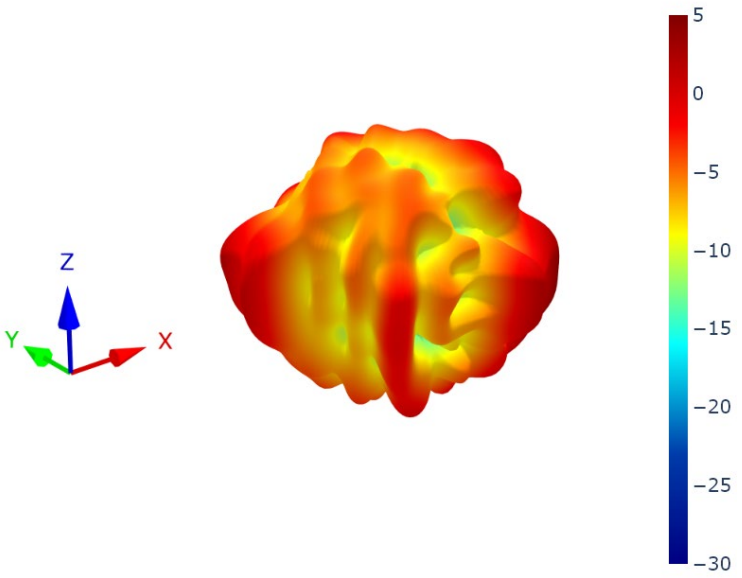
XZ Plane	YZ Plane	XY Plane
		

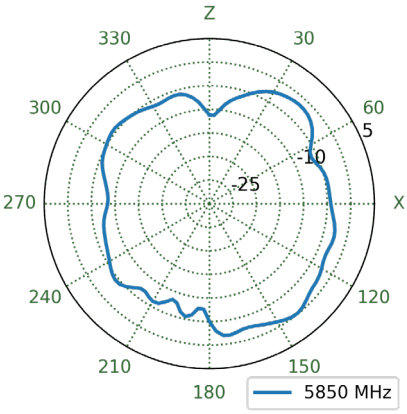
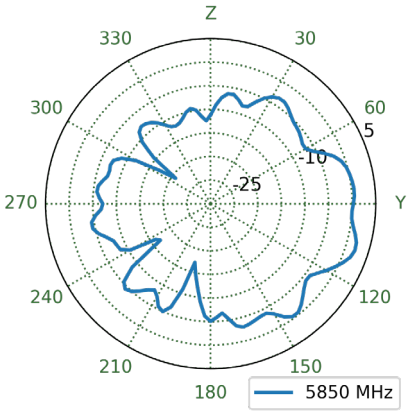
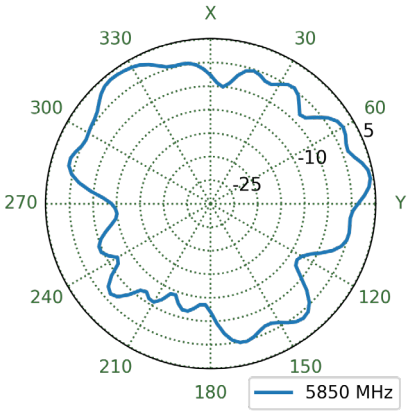
6.17 Antenna 1 Patterns at 5850 MHz



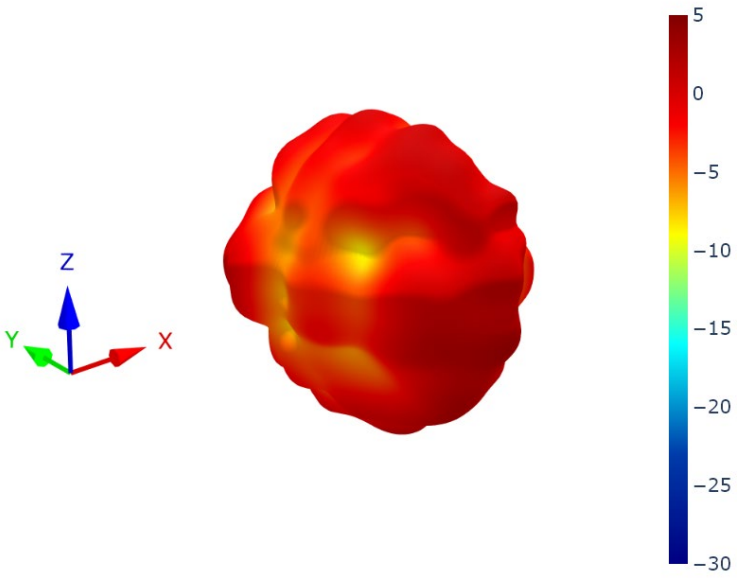
XZ Plane	YZ Plane	XY Plane
		

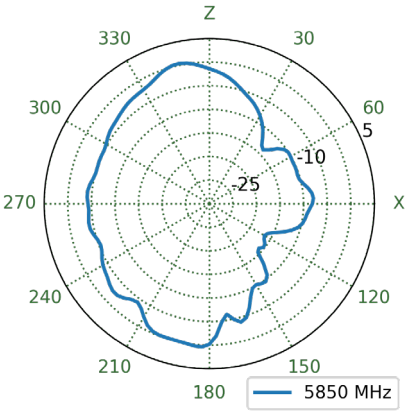
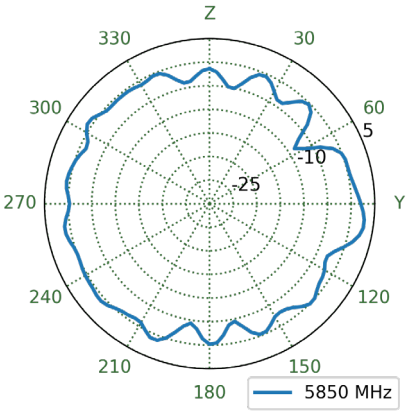
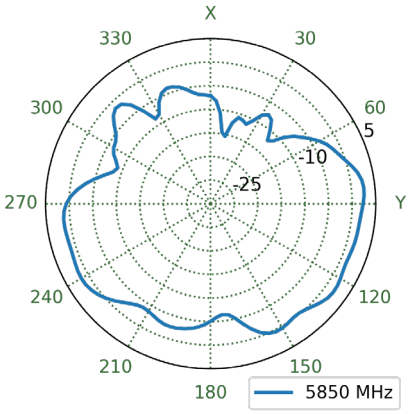
6.18 Antenna 2 Patterns at 5850 MHz



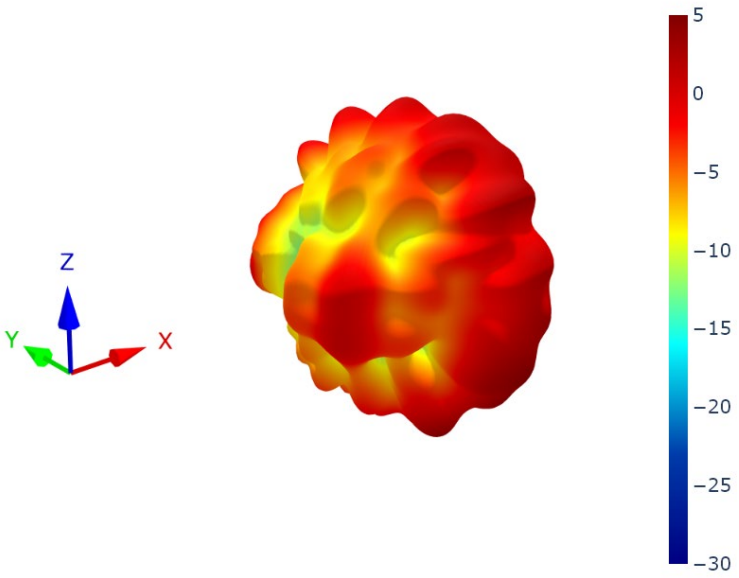
XZ Plane	YZ Plane	XY Plane
		

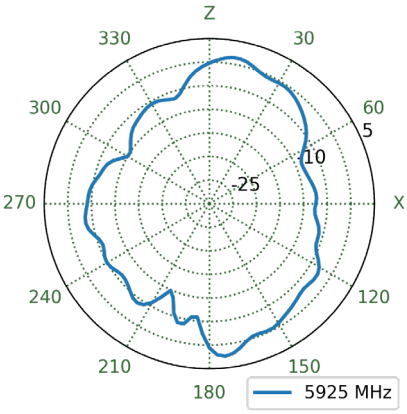
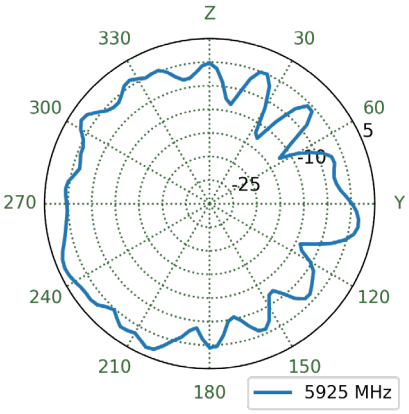
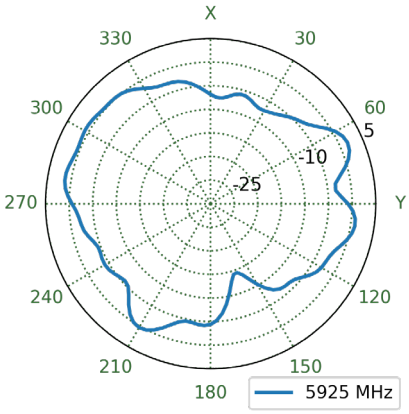
6.19 Antenna 3 Patterns at 5850 MHz



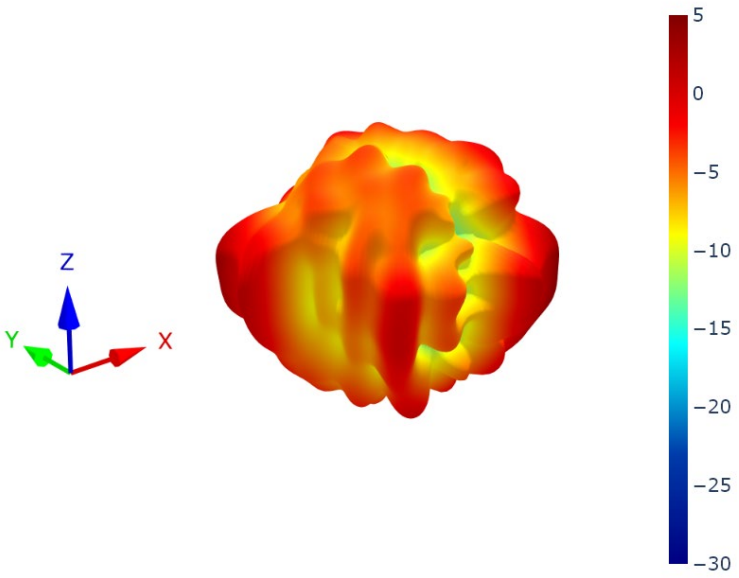
XZ Plane	YZ Plane	XY Plane
		

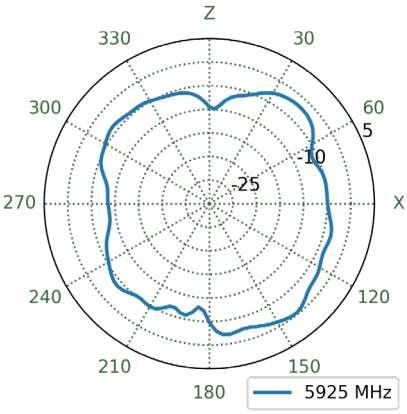
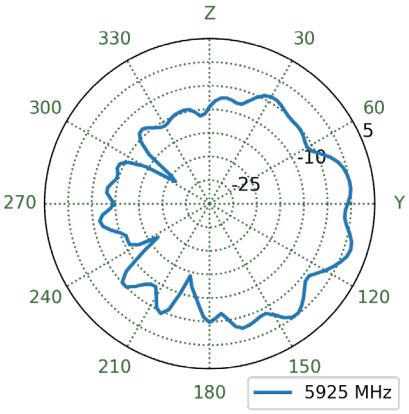
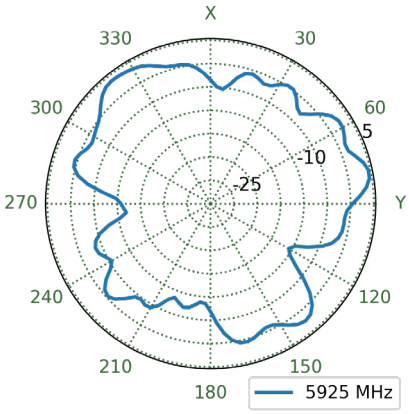
6.20 Antenna 1 Patterns at 5925 MHz



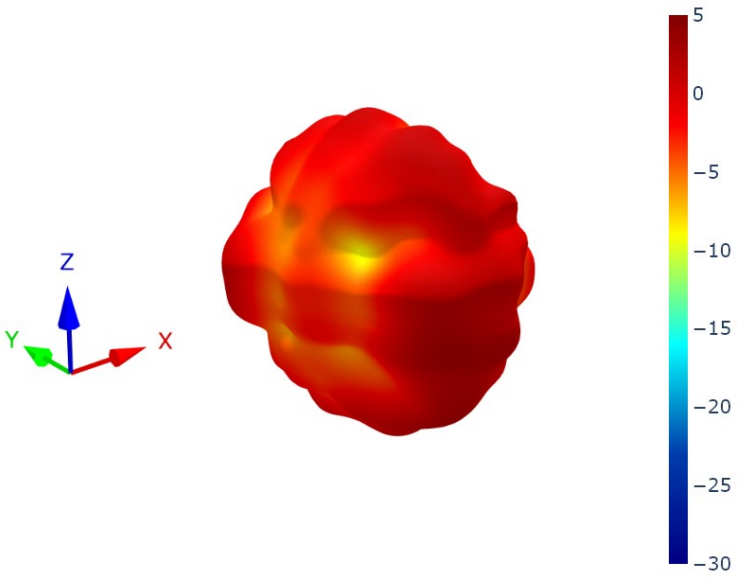
XZ Plane	YZ Plane	XY Plane
		

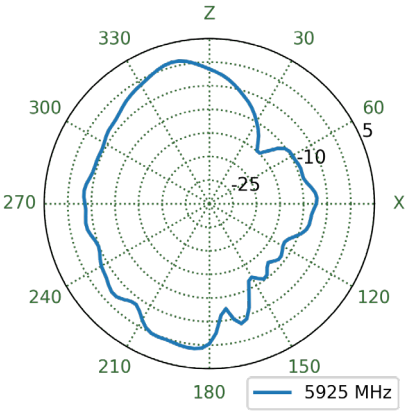
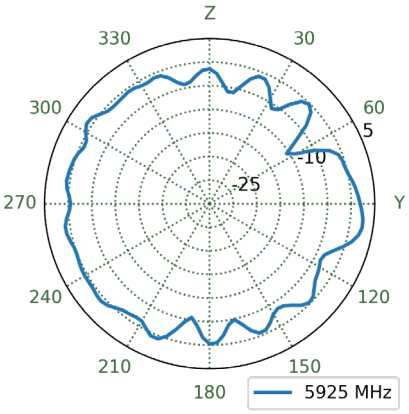
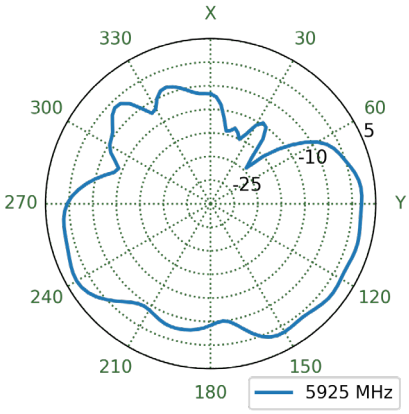
6.21 Antenna 2 Patterns at 5925 MHz



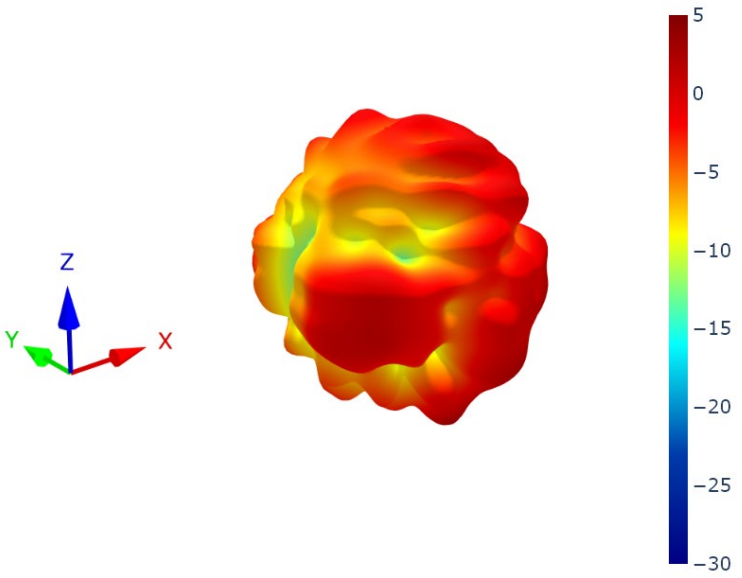
XZ Plane	YZ Plane	XY Plane
		

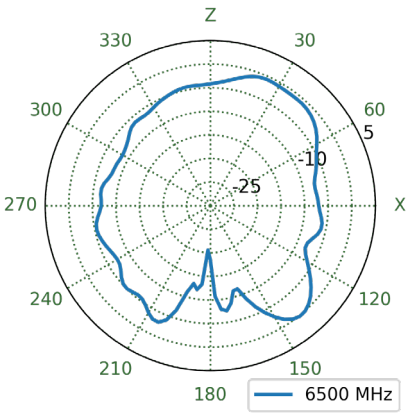
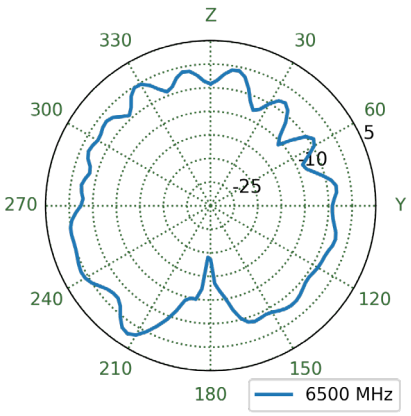
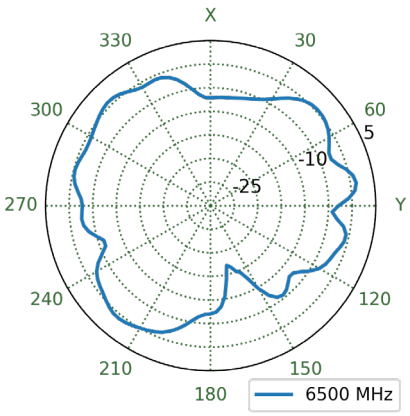
6.22 Antenna 3 Patterns at 5925 MHz



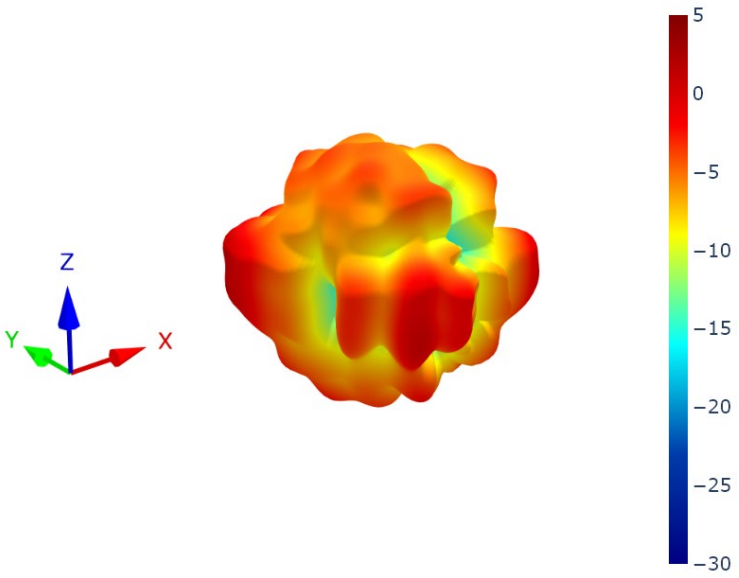
XZ Plane	YZ Plane	XY Plane
		

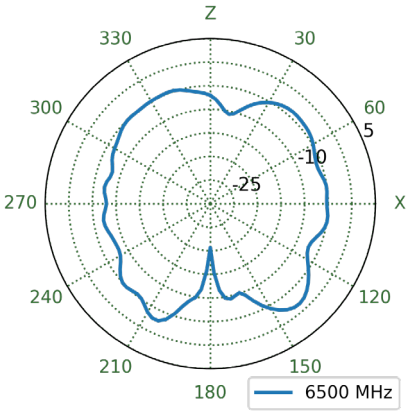
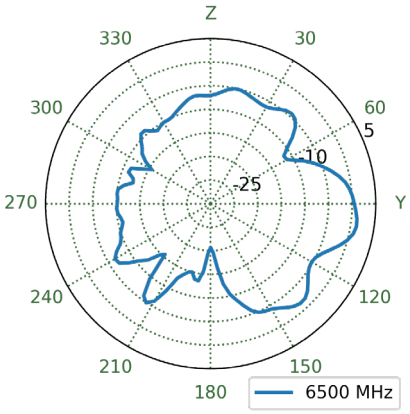
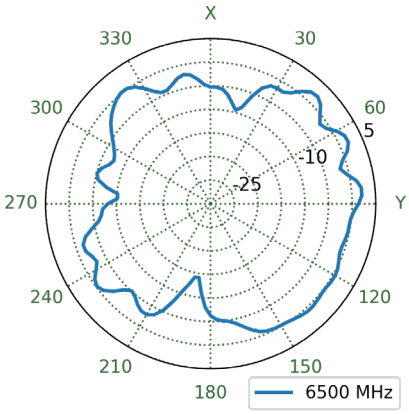
6.23 Antenna 1 Patterns at 6500 MHz



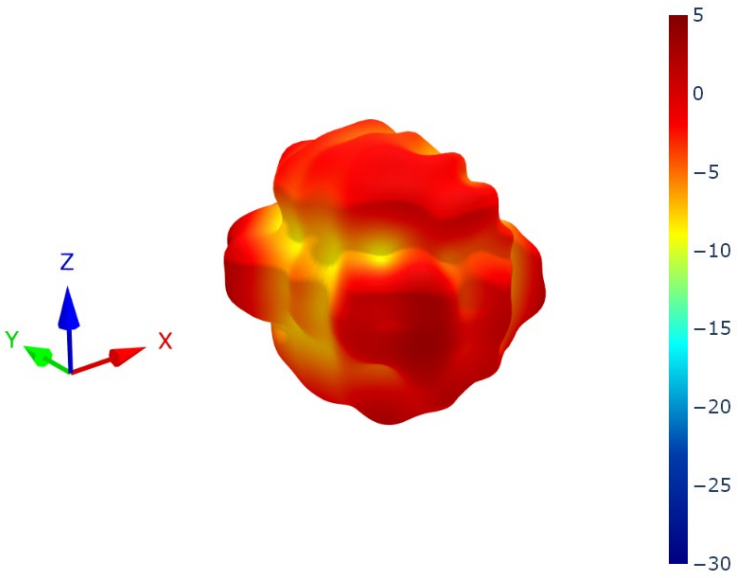
XZ Plane	YZ Plane	XY Plane
		

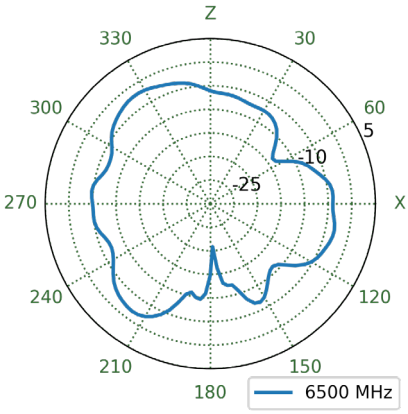
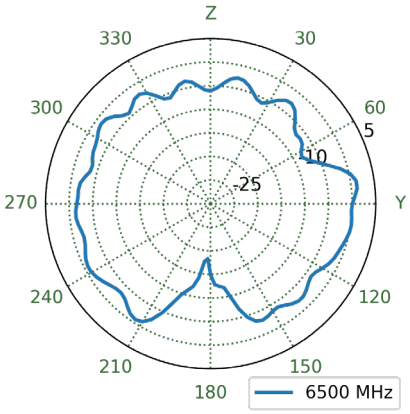
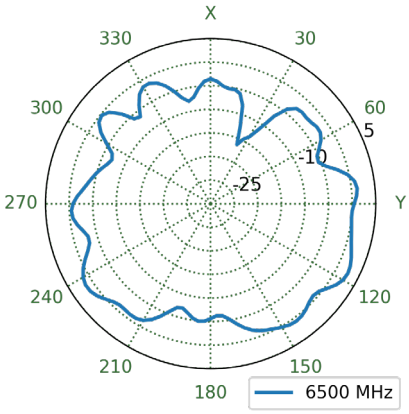
6.24 Antenna 2 Patterns at 6500 MHz



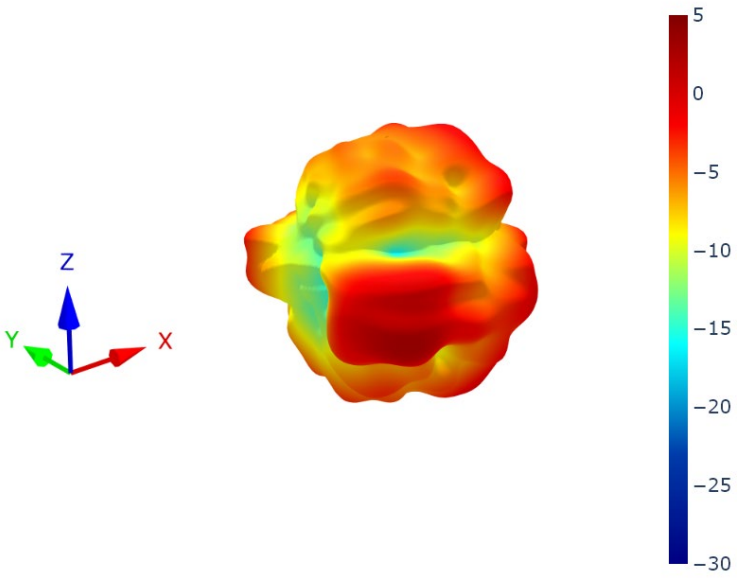
XZ Plane	YZ Plane	XY Plane
		

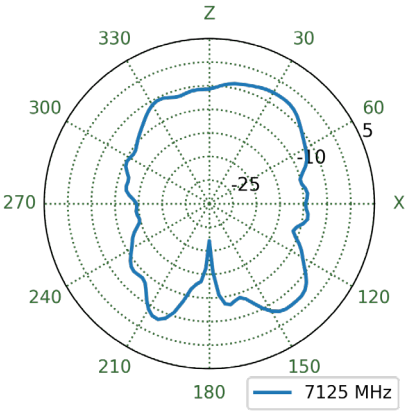
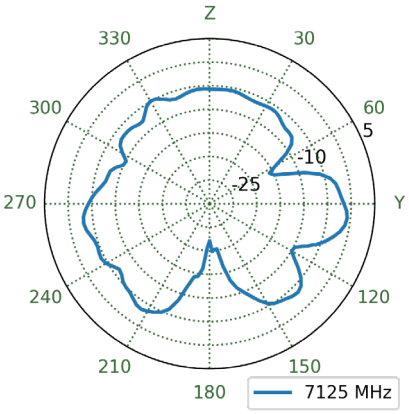
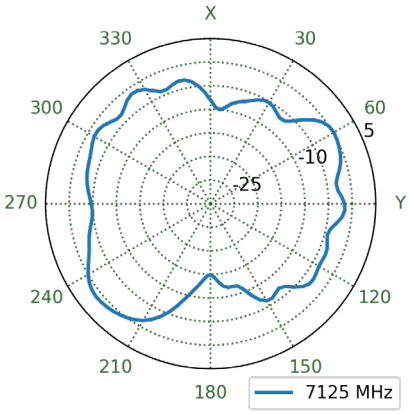
6.25 Antenna 3 Patterns at 6500 MHz



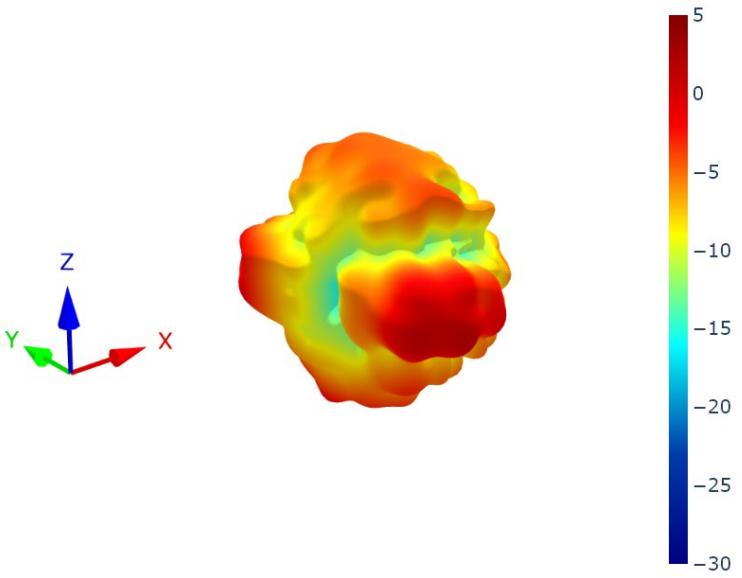
XZ Plane	YZ Plane	XY Plane
		

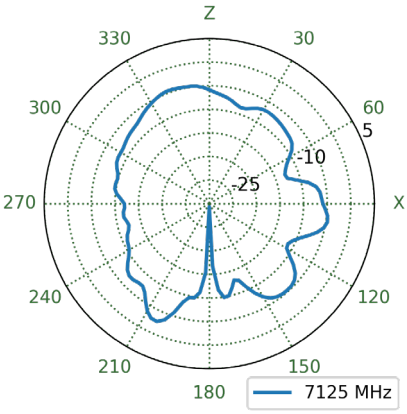
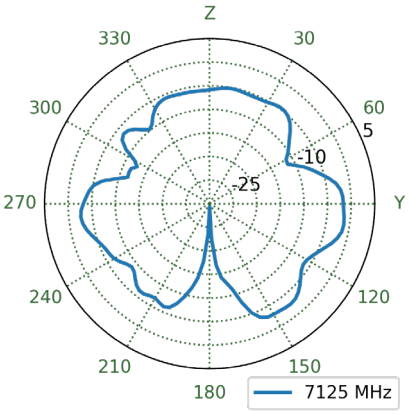
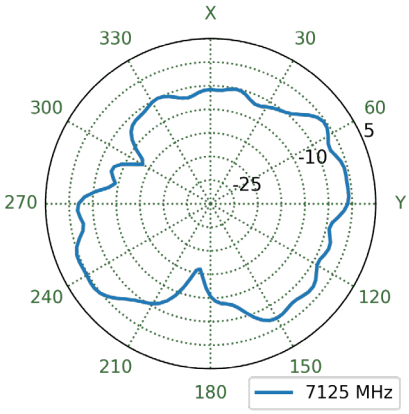
6.26 Antenna 1 Patterns at 7125 MHz



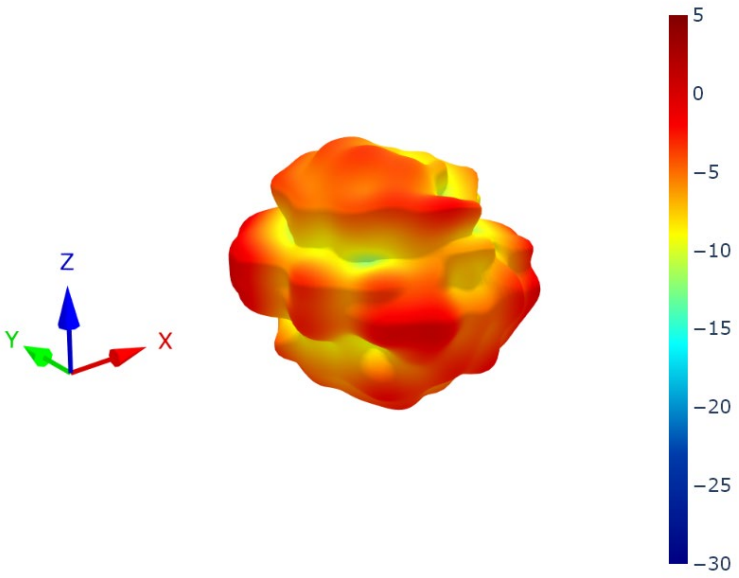
XZ Plane	YZ Plane	XY Plane
		

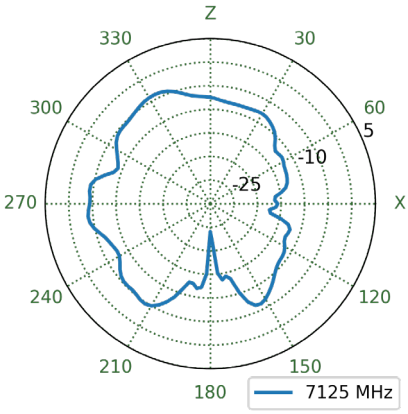
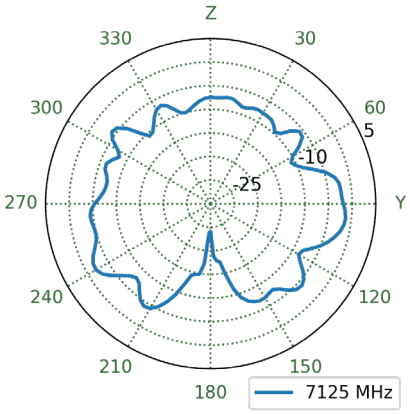
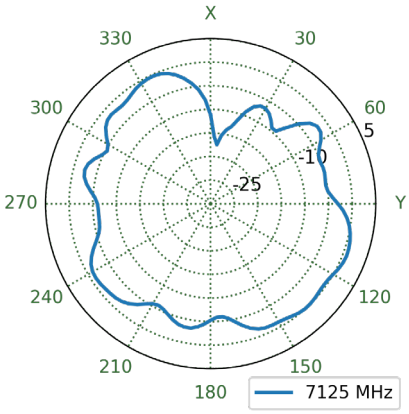
6.27 Antenna 2 Patterns at 7125 MHz



XZ Plane	YZ Plane	XY Plane
		

6.28 Antenna 3 Patterns at 7125 MHz



XZ Plane	YZ Plane	XY Plane
		

Changelog for the datasheet

SPE-14-8-107 – FXP523.A.07.A.001

Revision: F (Current Version)	
Date:	2024-12-02
Changes:	Full datasheet update, Adding ECC graph.
Changes Made by:	Gary West

Previous Revisions

Revision: E	
Date:	2022-04-26
Changes:	Updated product image
Changes Made by:	Jack Conroy

Revision: D	
Date:	2020-07-03
Changes:	Updated to Include Wi-Fi 6
Changes Made by:	Jack Conroy

Revision: C	
Date:	2015-08-14
Changes:	Amended Cable Length
Changes Made by:	Aine Doyle

Revision: B	
Date:	2015-01-14
Changes:	Added Note on Intro
Changes Made by:	Aine Doyle

Revision: A (Original First Release)	
Date:	2014-10-21
Notes:	
Author:	Technical Writer

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