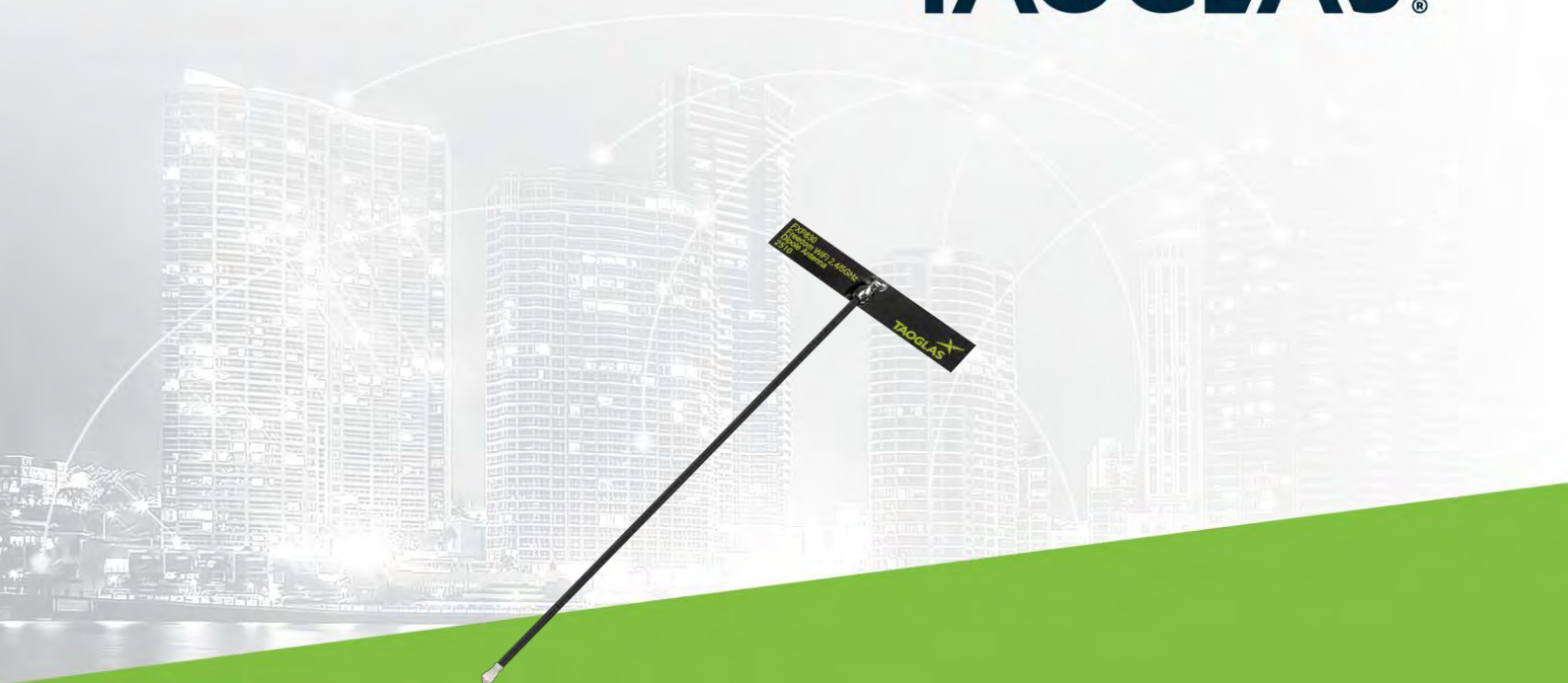




TAOGLAS®



Datasheet

Freedom

Part No:
FXP830.54.0250C

Description

Freedom FXP830 Wi-Fi Flexible PCB Dipole Antenna, 250mm 1.37 Micro Coax
Black IPEX MHF4L

Features:

- Flexible Polymer Antenna
- Covers Newly established Wi-Fi 6
- Covers 2.4/5.8/7.1GHz Wi-Fi Bands
- Dipole Antenna
- Operates in Free Space (Ground Plane Independent)
- Cable: 250mm of Ø1.37mm
- Connector: IPEX MHF4L (HSC)
- CE Certified
- RoHS & Reach Compliant

Name : Taoglas Limited.

Address : No.2-2, Ln. 66, ZhongShan 1st Rd., Bade Dist., TaoYuan City 33454, Taiwan)

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Ireland & USA
ISO 9001:2015
Certified



Taiwan
ISO 9001:2015
Certified



1. Introduction



The FXP830 is a high efficiency, small, dipole antenna covering 2.4/5.8/7.1GHz bands including Bluetooth, Wi-Fi and the newly established Wi-Fi 6/Wi-Fi 6E, making this an ideal solution for future-proofing an IoT device. This Taoglas patent pending antenna is unique in the market because it is made from poly-flexible material, has a tiny form factor (42 x 7 x 0.01mm) and has double-sided 3M tape for easy “peel and stick” mounting.

The FXP830 is the ideal all-round antenna solution for squeezing into narrow spaces and still maintaining high performance, for example at the top of LCD devices.

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 cable and connector are fully customizable, for further information contact your regional Taoglas customer support team.

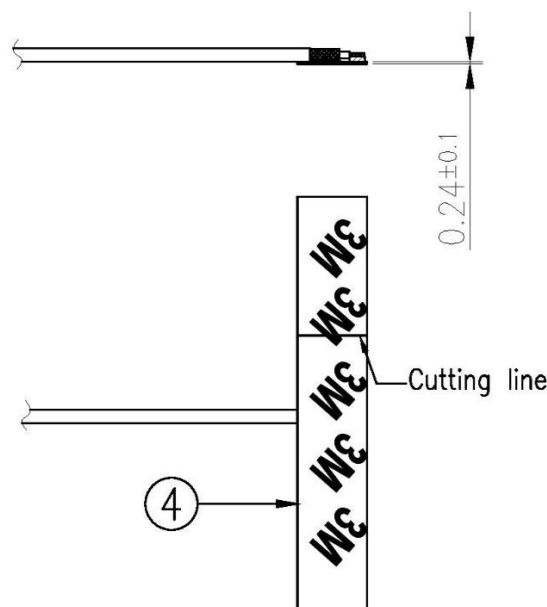
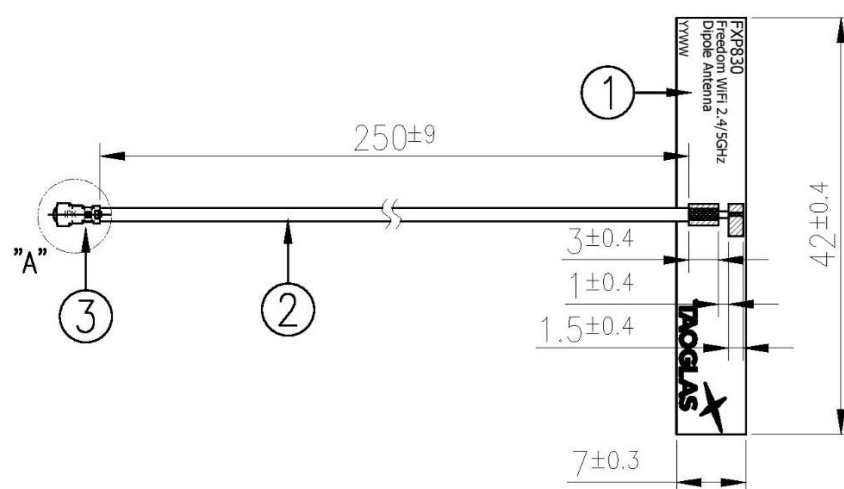
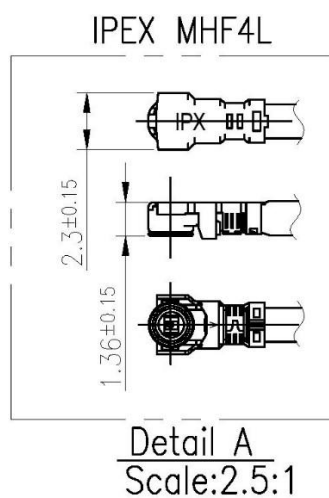
2. Specification

Electrical									
Band	Frequency (MHz)	Measurement	Efficiency (%)	Average Gain (dB)	Peak Gain (dBi)	Impedance	Polarization	Radiation Pattern	Max. input power
Wi-Fi - 2GHz	2400-2500	2mm ABS	73.6	-1.33	3.10	50 Ω	Linear	Omni directional	2W
		Free Space	56.7	-2.46	3.29				
Wi-Fi - 5GHz	5150-5850	2mm ABS	47.6	-3.22	6.08				
		Free Space	48.8	-3.12	4.16				
Wi-Fi - 5GHz Low	5150~5350	2mm ABS	47.4	-3.29	4.80				
		Free Space	51.2	-3.03	2.98				
Wi-Fi - 5GHz Mid	5470~5725	2mm ABS	47.7	-3.24	6.08				
		Free Space	47.8	-3.22	3.42				
Wi-Fi - 5GHz High	5725~5850	2mm ABS	50.4	-3.01	6.07				
		Free Space	50.6	-2.92	4.16				
Wi-Fi - 6GHz	5925-7125	2mm ABS	59.7	-2.24	7.88				
		Free Space	54.6	-2.63	5.21				

Mechanical	
Dimensions	42 x 7mm
Antenna Body Material	Polymer
Cable	250mm $\varnothing$ 1.37 Black
Connector	I-PEX MHF®4L (HSC Compatible)
Weight	1.4g

Environmental	
Operation Temperature	-40°C to 85°C
Storage Temperature	-40°C to 85°C
Relative Humidity	Non-condensing 65°C 95% RH

3. Mechanical Drawing



	Name	Material	Finish	QTY
1	FXP830 PCB	Polymer 0.24t	Black	1
2	1.37 Coaxial Cable	FEP	Black	1
3	IPEX MHF4L	Copper Alloy	Au/Ni Plated	1
4	Double-Sided Adhesive	3M 467	Brown Liner	1

4. Packaging



- ☑ 1 PCS / Protective cover



- ☑ 100 PCS / PE Bag
- ☑ PE bag (mm): 200x320
- ☑ Weight (g): 141.6 ±3%
- ☑ SPQ Label



- ☑ 4000 PCS / Carton
- ☑ Carton(mm): 360x310x160
- ☑ Weight (Kg): 6.19 ±3%
- ☑ Carton Label

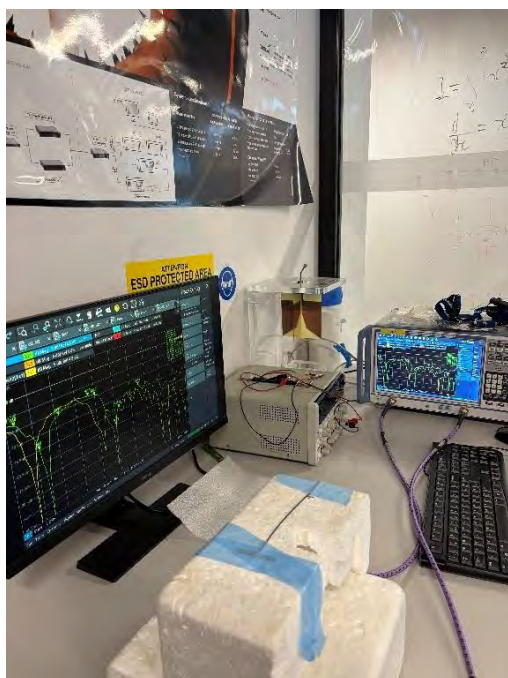
5. Antenna Characteristics

5.1 Test Setup

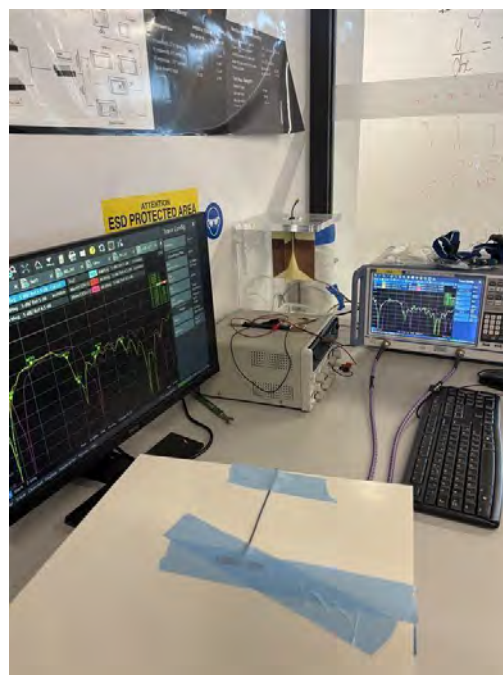
AUT



Vector Network Analyzer

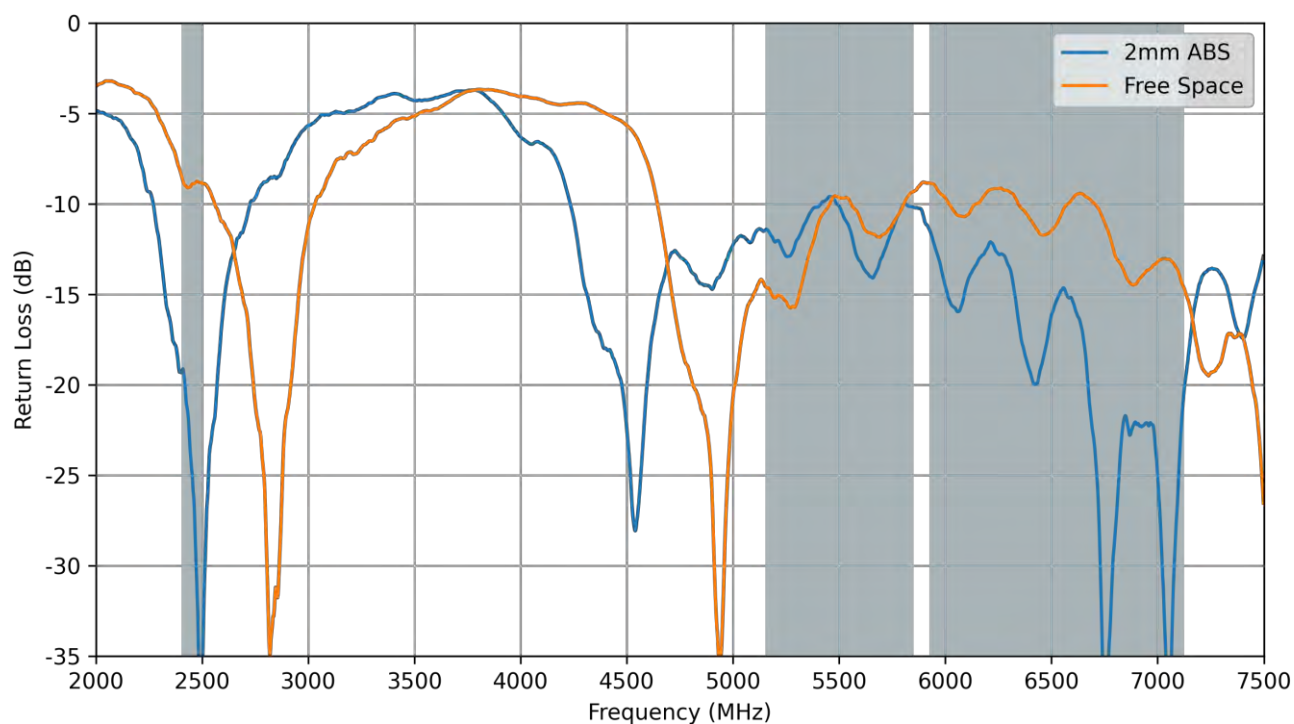


Chamber Set-up in Free Space

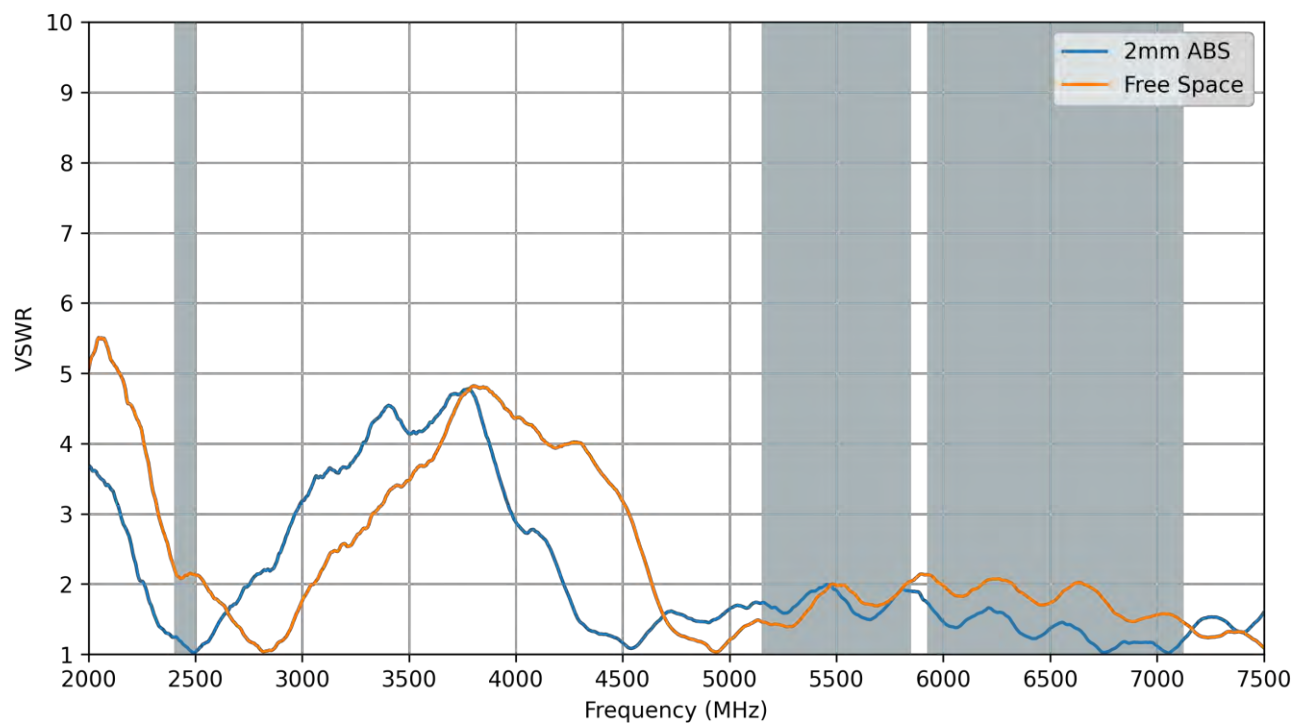


Chamber Set-up on 2mm ABS

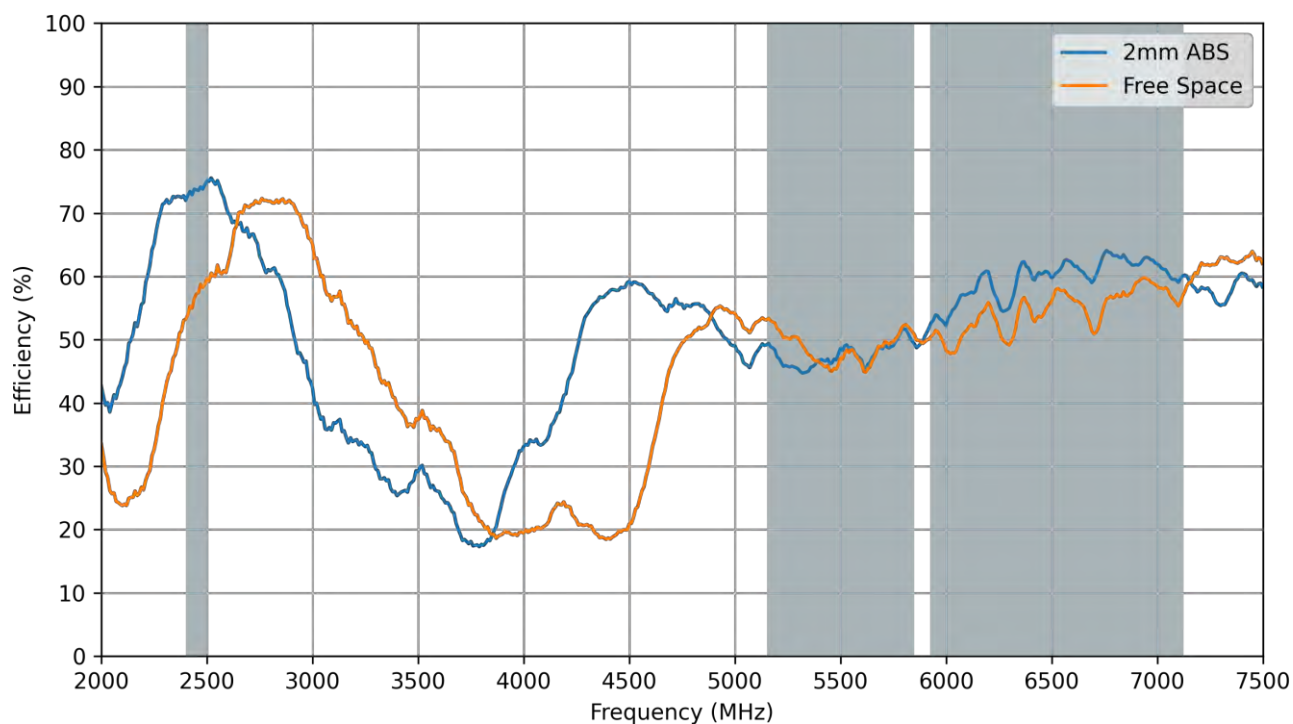
5.2 Return Loss



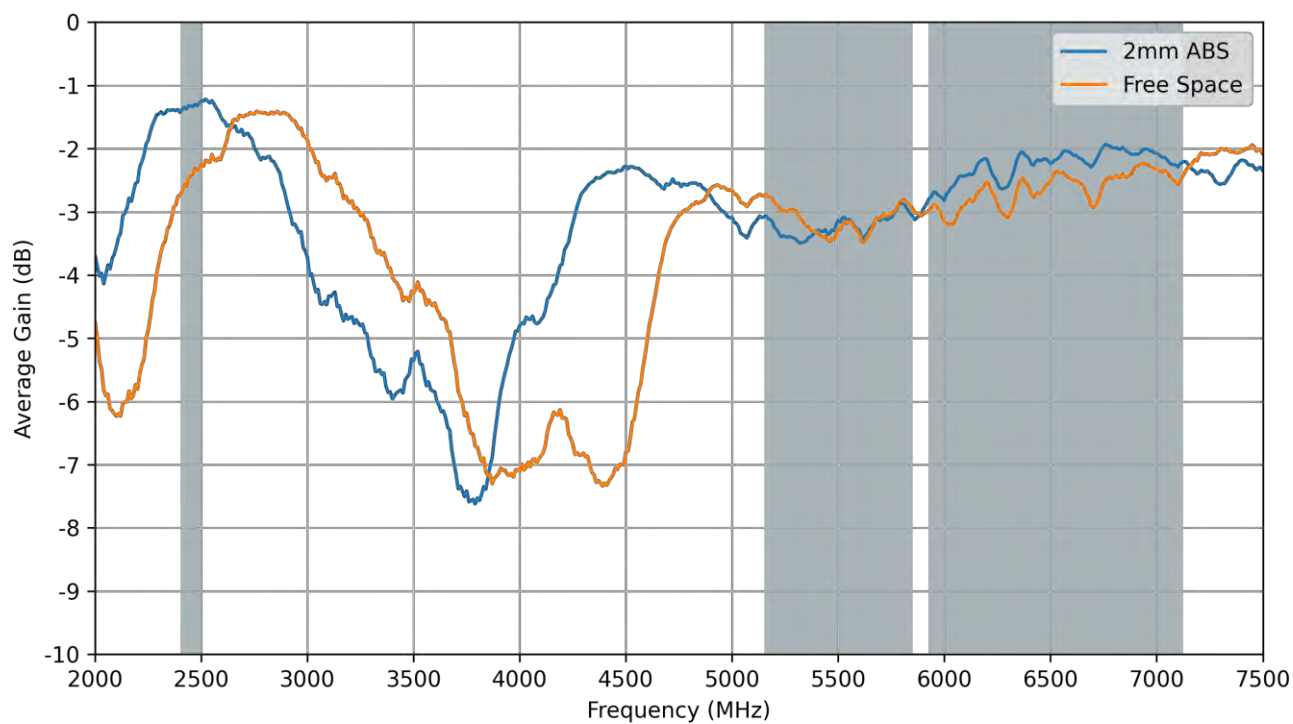
5.3 VSWR



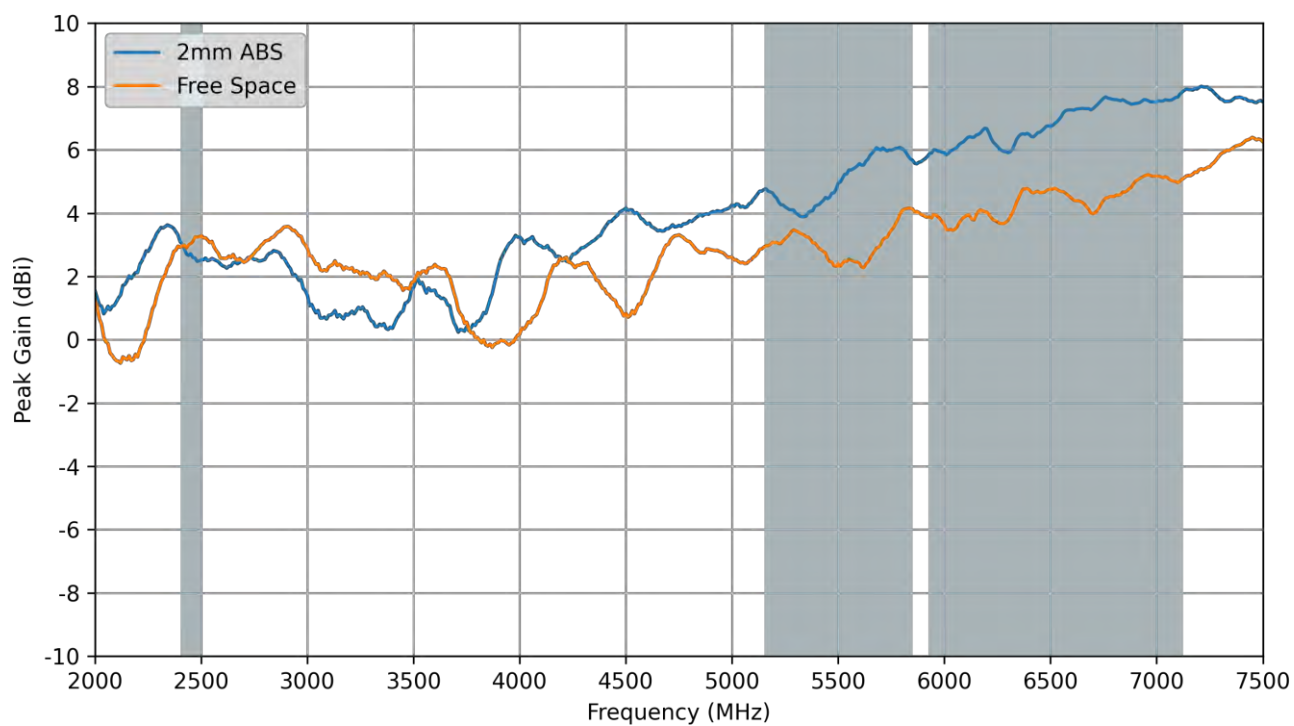
5.4 Efficiency



5.5 Average Gain

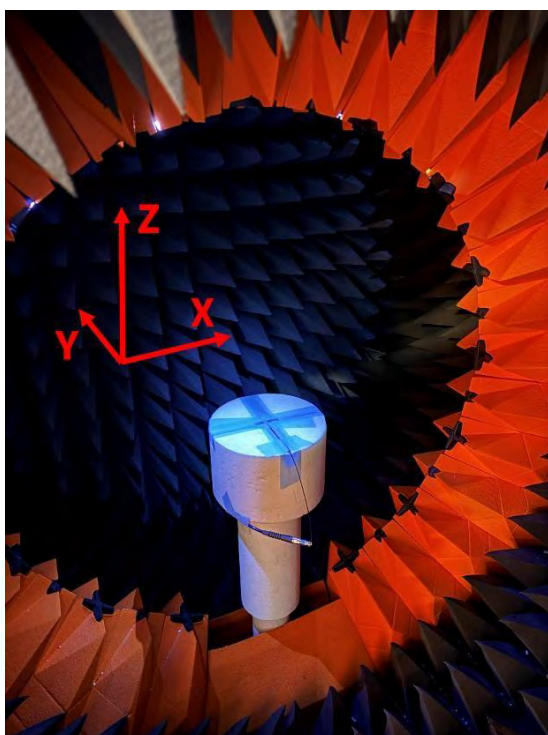
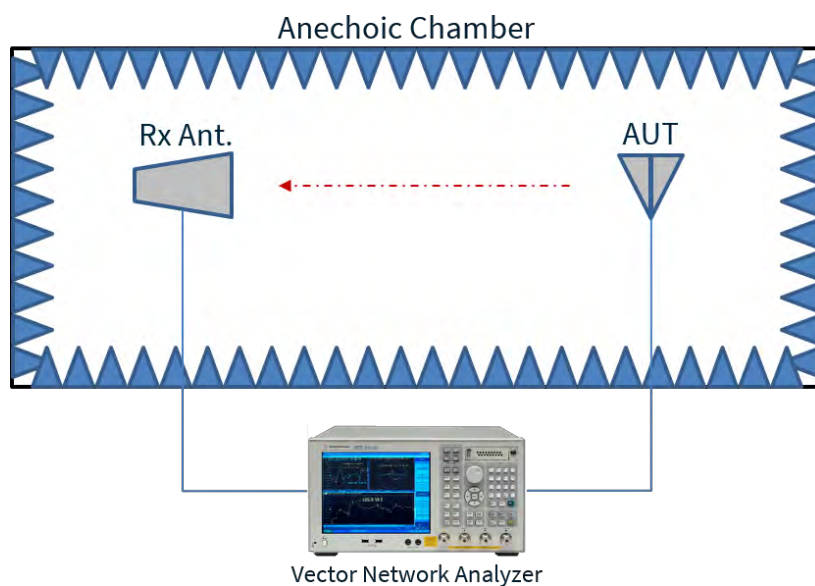


5.6 Peak Gain

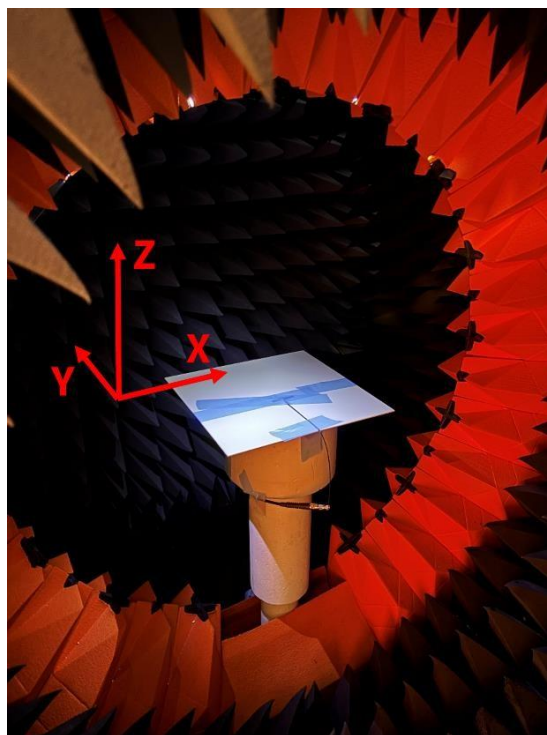


6. Radiation Patterns

6.1 Test Setup

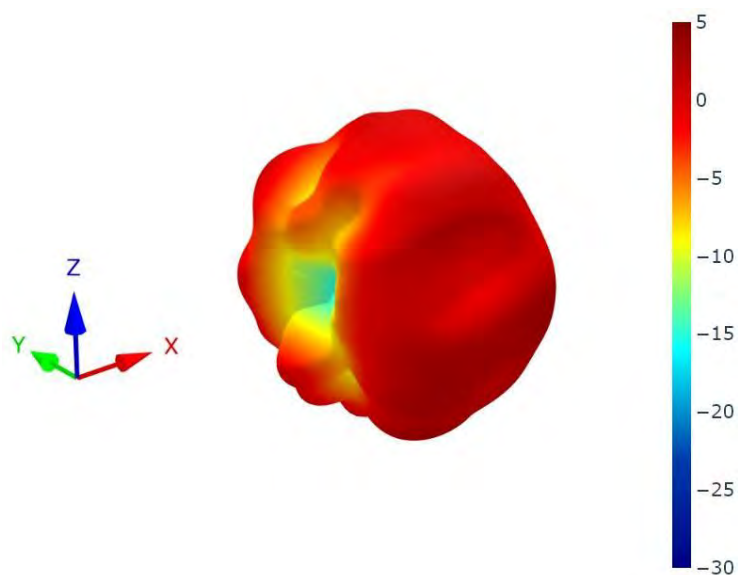


Chamber Set-up in Free Space

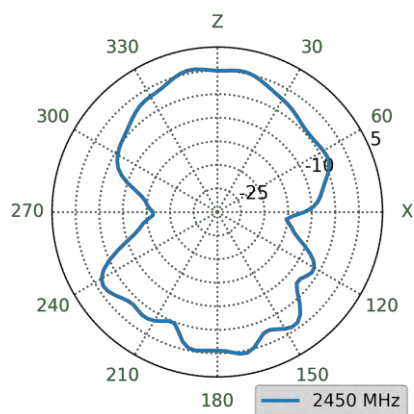


Chamber Set-up on 2mm ABS

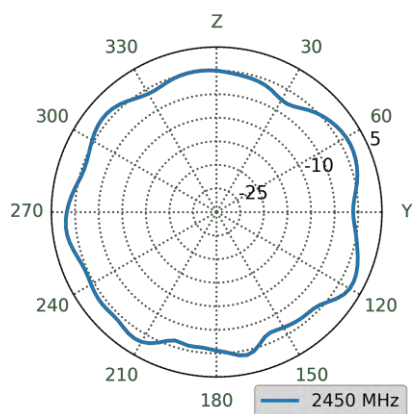
6.2 2mm ABS Patterns at 2450 MHz



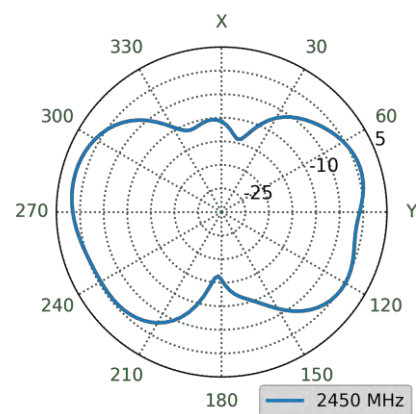
XZ Plane



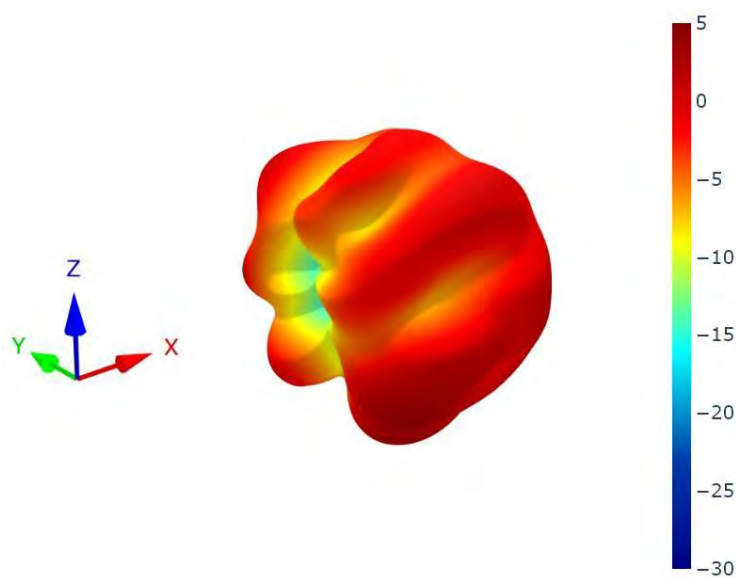
YZ Plane



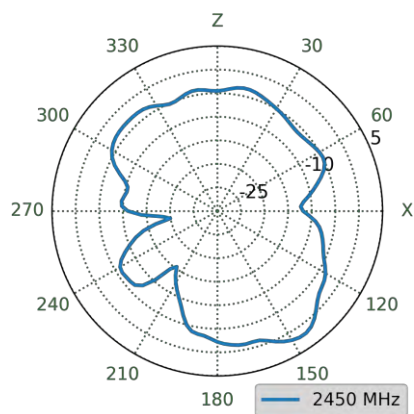
XY Plane



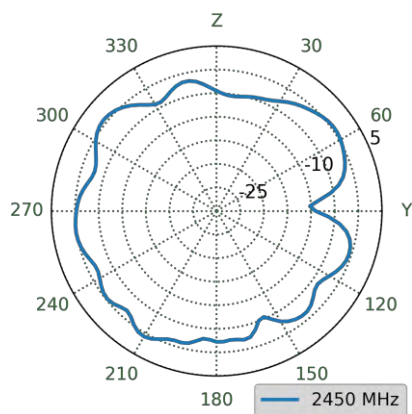
6.3 Free Space Patterns at 2450 MHz



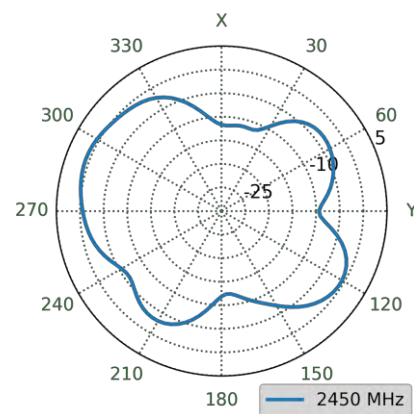
XZ Plane



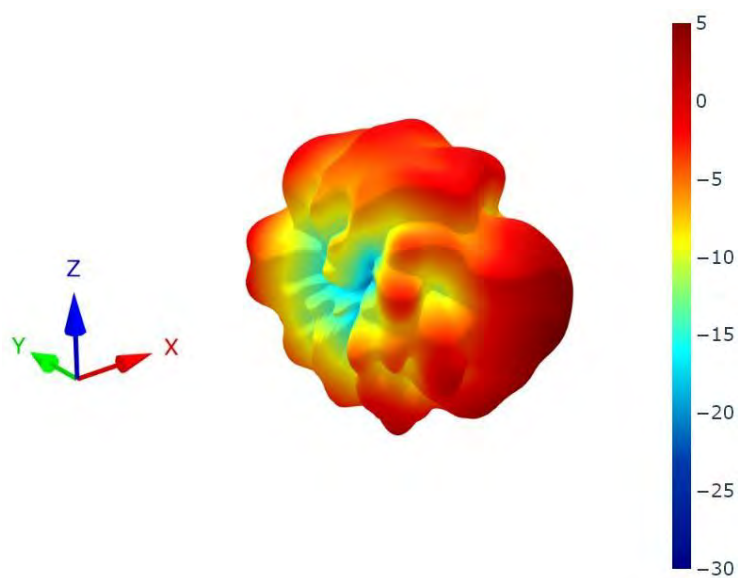
YZ Plane



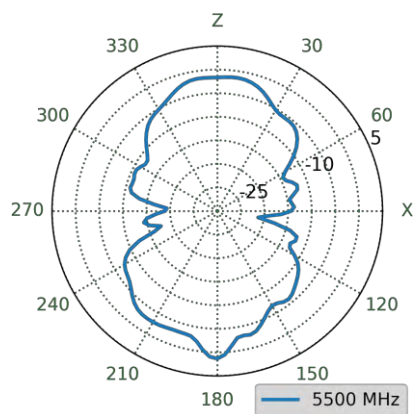
XY Plane



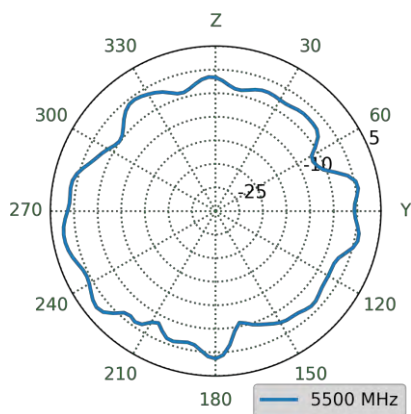
6.4 2mm ABS Patterns at 5500 MHz



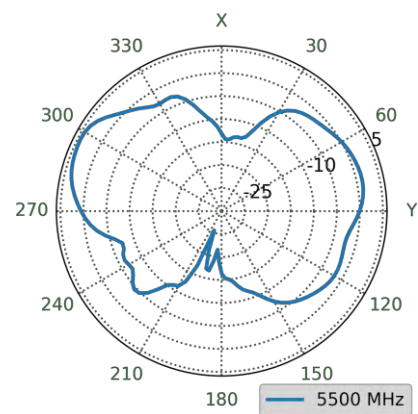
XZ Plane



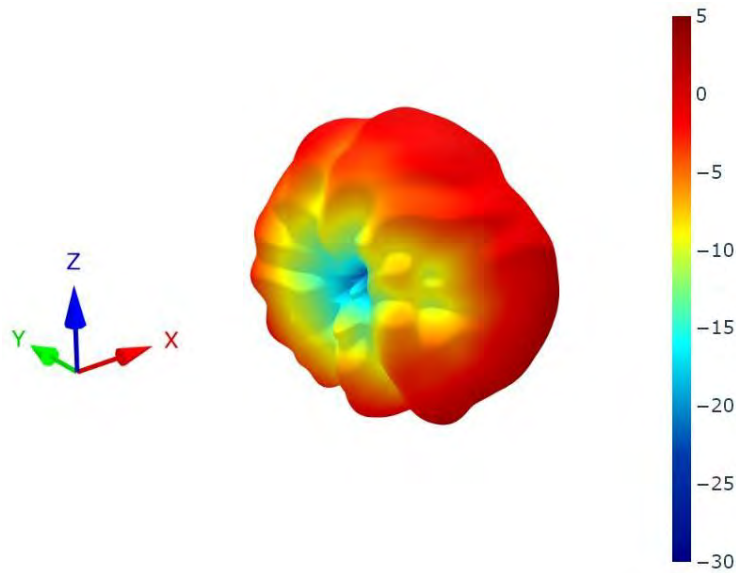
YZ Plane



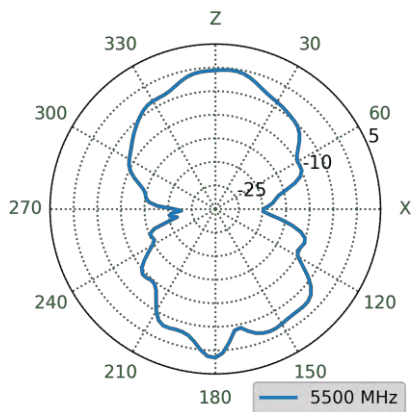
XY Plane



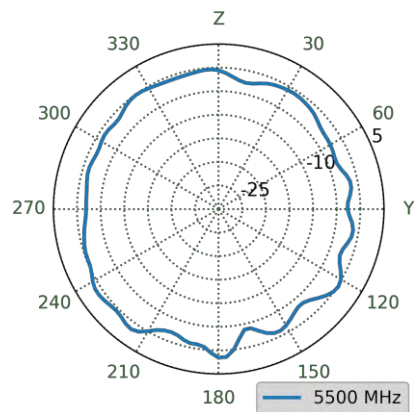
6.5 Free Space Patterns at 5500 MHz



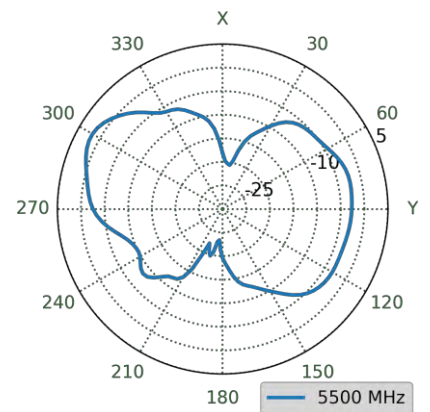
XZ Plane



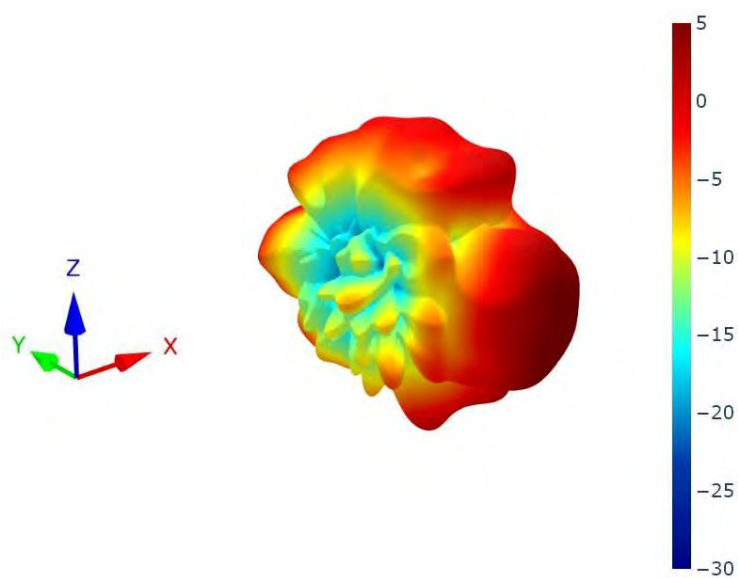
YZ Plane



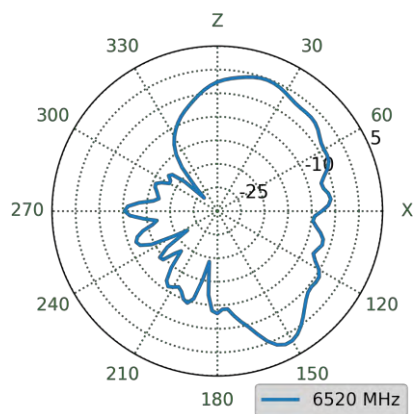
XY Plane



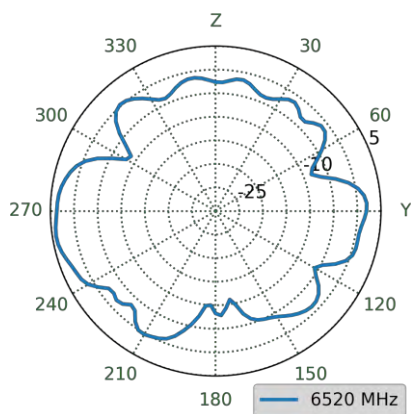
6.6 2mm ABS Patterns at 6520 MHz



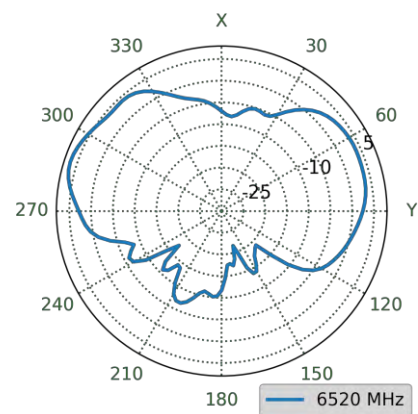
XZ Plane



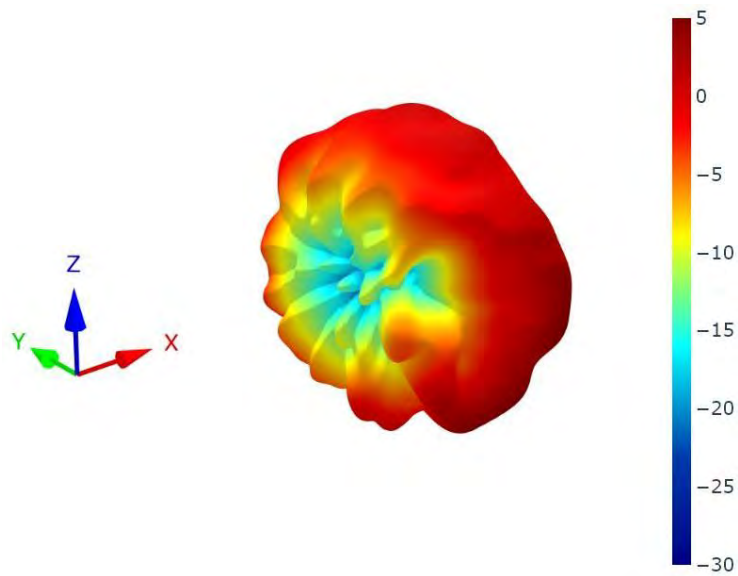
YZ Plane



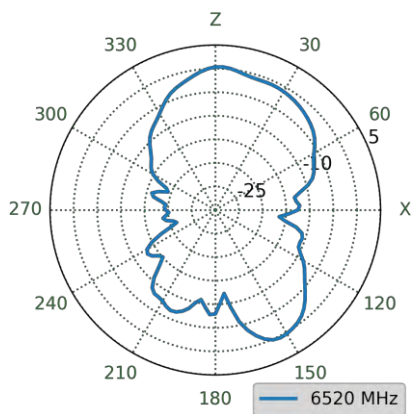
XY Plane



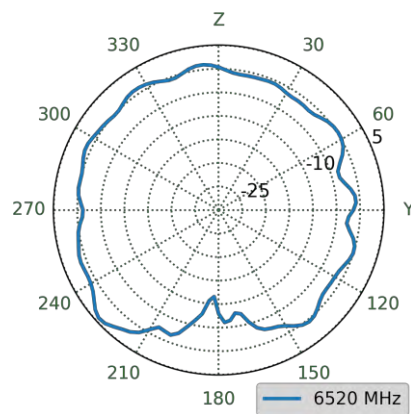
6.7 Free Space Patterns at 6520 MHz



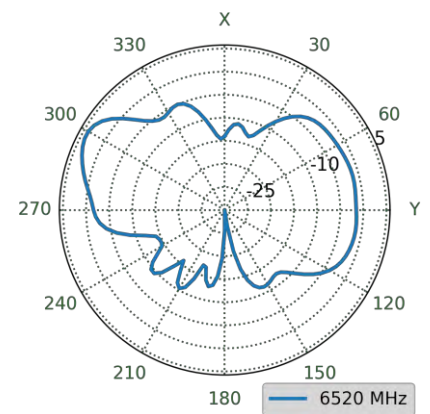
XZ Plane



YZ Plane



XY Plane



Changelog for the datasheet

SPE-25-8-142 – FXP830.54.0250C

Revision: A (Original First Release)	
Date:	2025-05-21
Notes:	Initial Release
Author:	Gary West

Previous Revisions



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