TAOGLAS®

Datasheet

Freedom

Part No:
FXP830.24.0100B

Description

FXP830 Freedom Wi-Fi® 2.4/5.8/7.1GHz Dipole Antenna, Wi-Fi® 6 included with 100mm of 0.81mm cable and IPEX MHF4 Connector (HSC compatible)

Features:

Flexible Polymer Antenna
Covers Newly established Wi-Fi® 6 bands
Covers 2.4/5.8/7.1GHz Wi-Fi® Bands
Operates in Free Space (Ground Plane Independent)
Cable: 100mm of Ø0.81mm
Connector: IPEX MHF4 Connector (HSC compatible)
RoHS & Reach Compliant

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*7*.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.

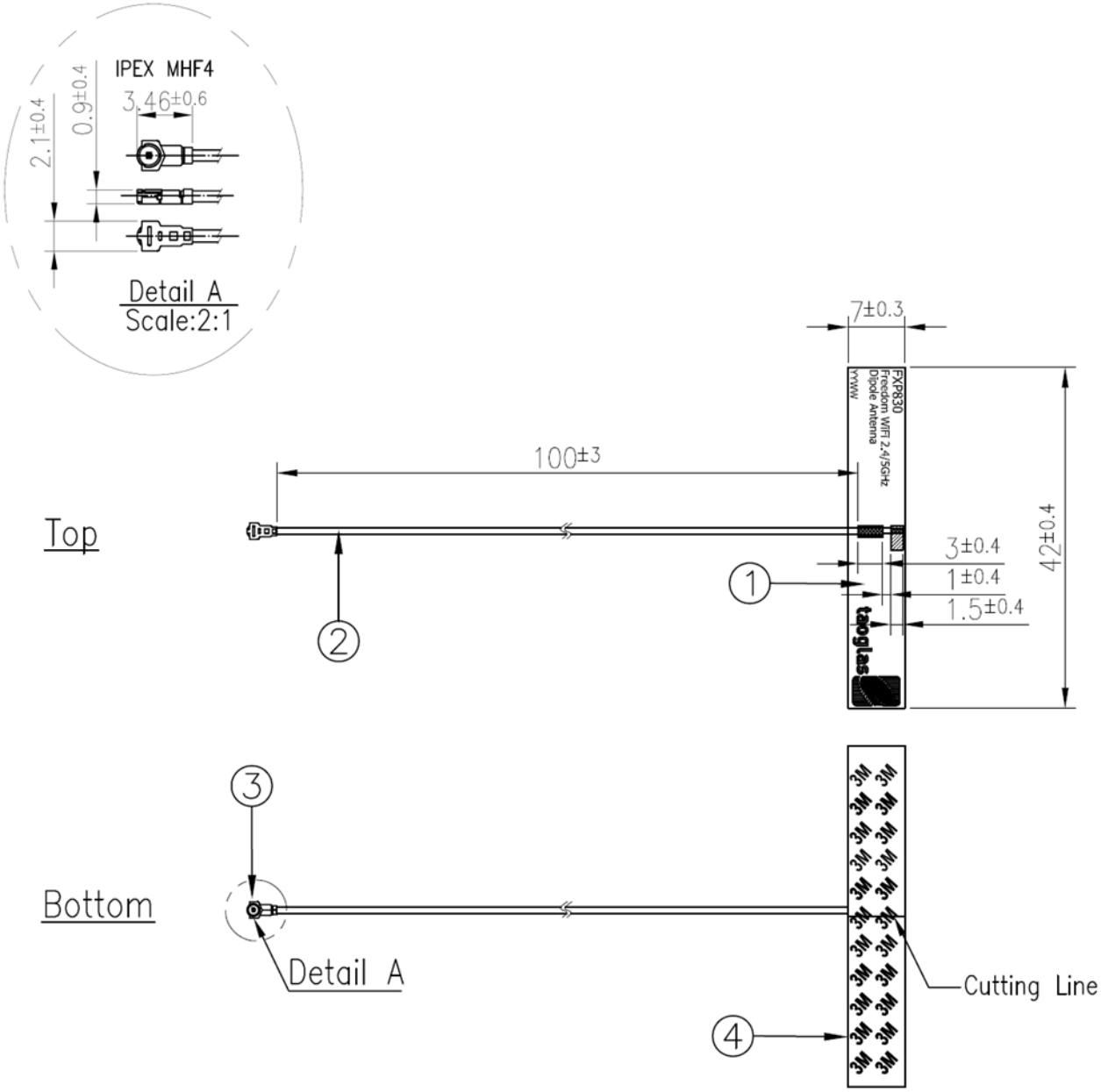
2. Specifications

Wi-Fi 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	79.0	-1.02	3.46	50 Ω	Linear	Omni directional	10W
		Free Space	52.7	-2.78	2.14				
Wi-Fi - 5GHz	5150-5850	2mm ABS	63.4	-1.98	6.86				
		Free Space	65.4	-1.84	5.33				
Wi-Fi - 6GHz	5925-7125	2mm ABS	70.7	-1.51	8.09				
		Free Space	63.1	-2.00	6.49				

Mechanical	
Dimensions	42 x 7 x mm
Antenna Body Material	Polymer
Cable	Gray 100mm 0.81 coaxial
Connector	IPEX MHF4 Connector (HSC compatible)
Weight	7g

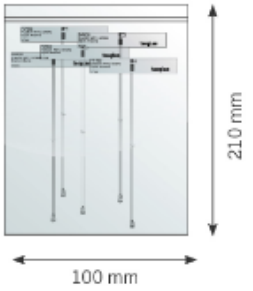
Environmental	
Operation Temperature	-40°C to 85°C
Storage Temperature	-40°C to 85°C
Relative Humidity	Non-condensing 65°C 95% RH

3. Mechanical Drawing

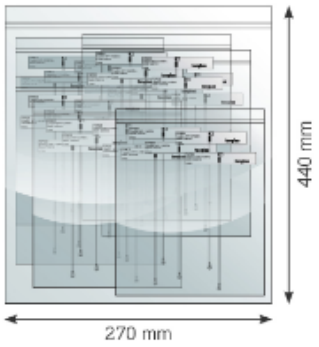


	Name	P/N	Material	Finish	QTY
1	FXP830 FPCB	100111A010011A	Polymer	Black	1
2	0.81 Coaxial Cable	300715C000000A	FEP	Gray	1
3	IPEX MHF4	204411I000013A	Brass	Gold	1
4	Double-Sided Adhesive	100111A010011A	3M 467	Brown Liner	1

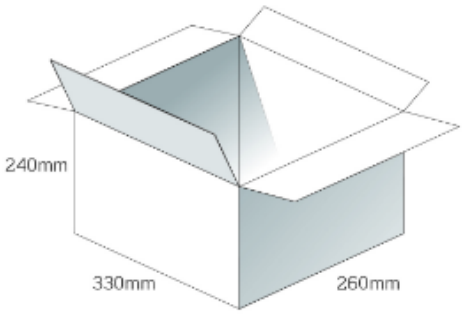
4. Packaging



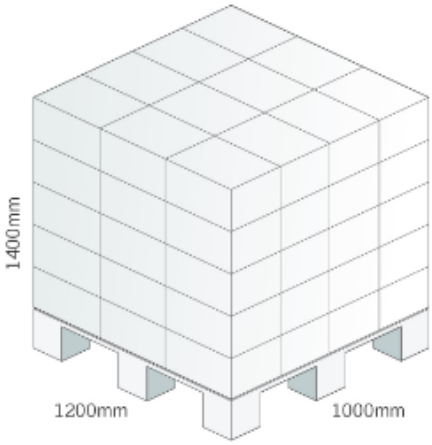
100pcs FXP830.24.0100B per PE Bag
Bag Dimensions - 210 x 100mm
Weight - 34.07g



1000pcs FXP830.24.0100B per PE Large Bag
Bag Dimensions - 440 x 270 x 80mm
Weight - 0.35kg



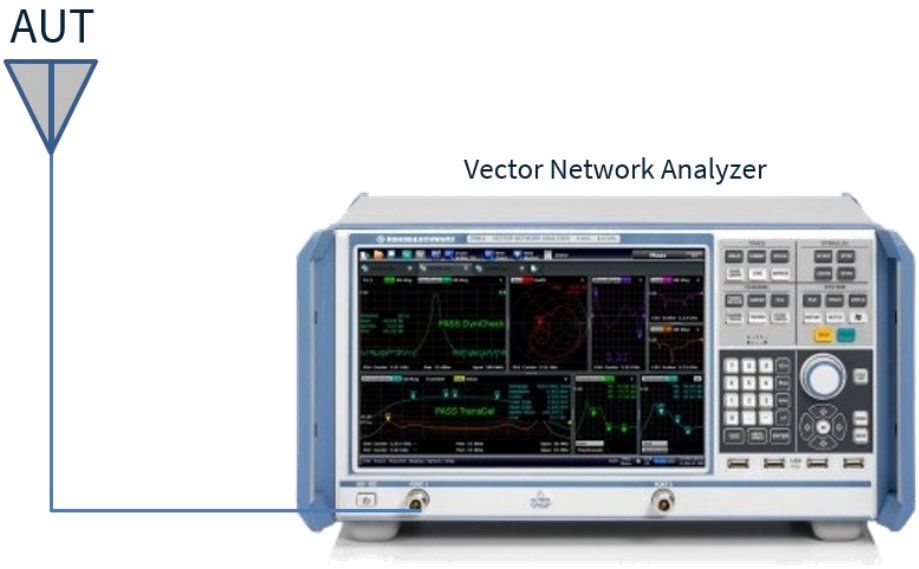
5,000 pcs FXP830.24.0100B per carton
Carton - 330 x 260 x 240mm
Weight - 2.3Kg

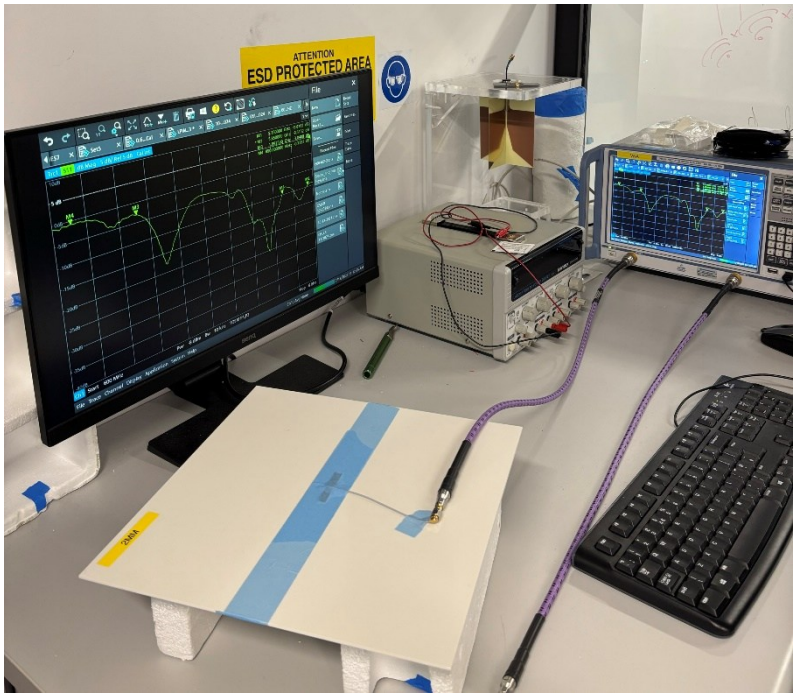


Pallet Dimensions 1200x 1000 x 1400mm
60 Cartons per Pallet
12 Cartons per layer
5 Layers

5. Antenna Characteristics

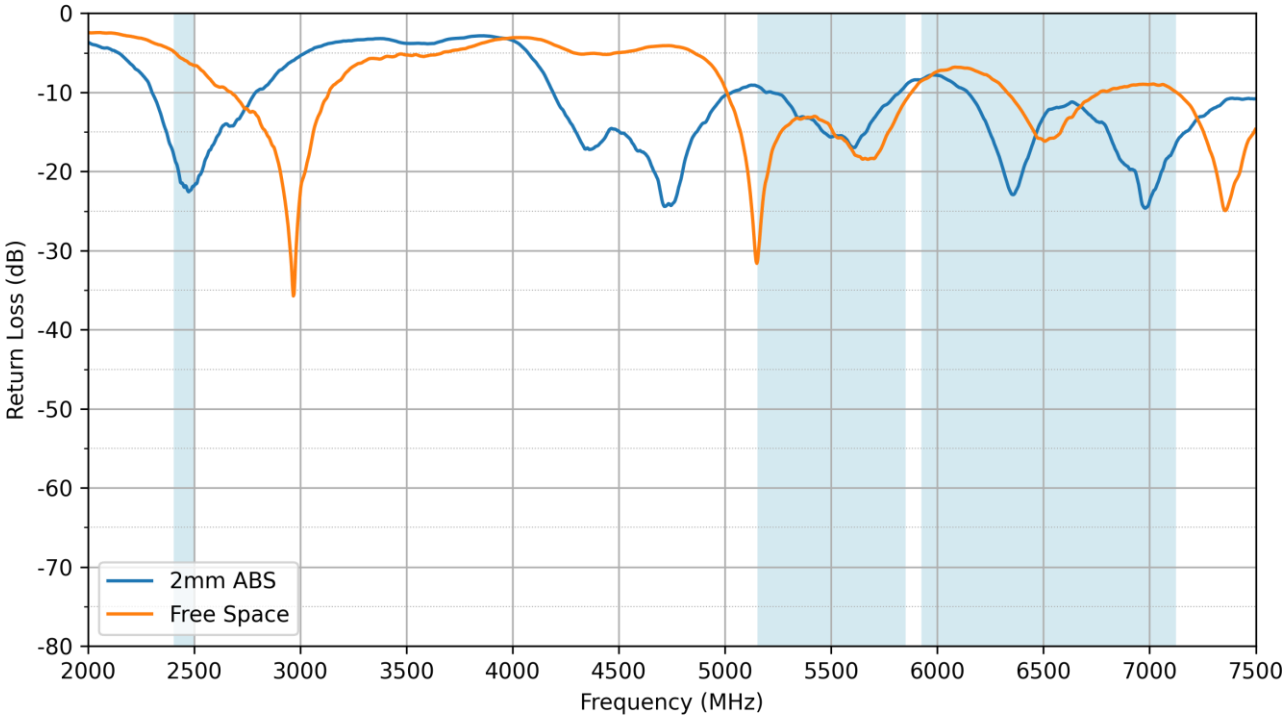
5.1 Test Setup



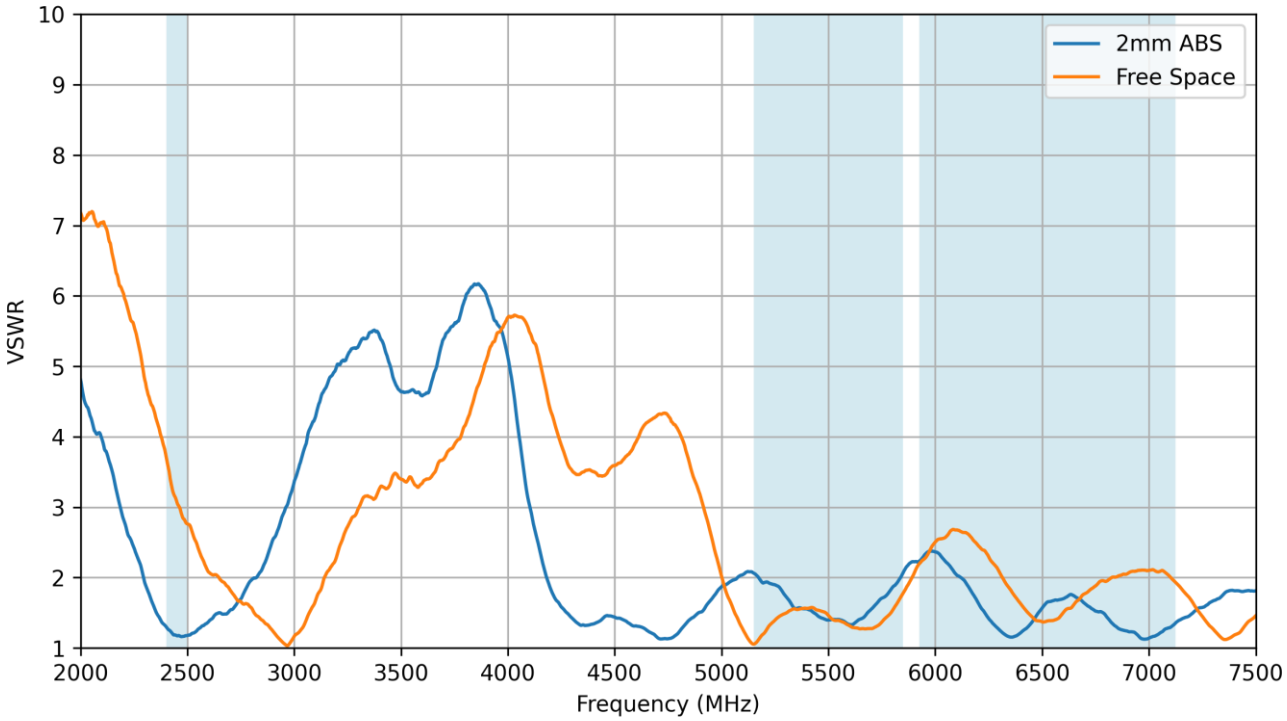


VNA Test Set-up on 2mm ABS

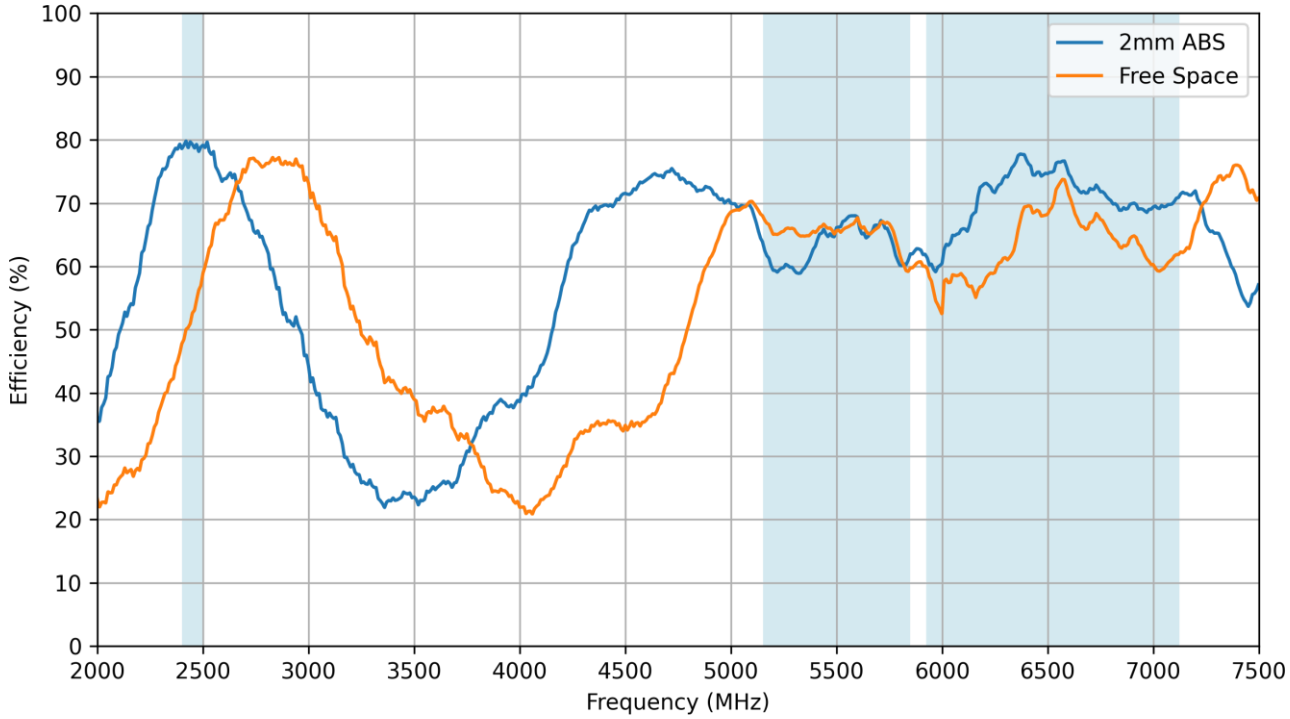
5.2 Return Loss



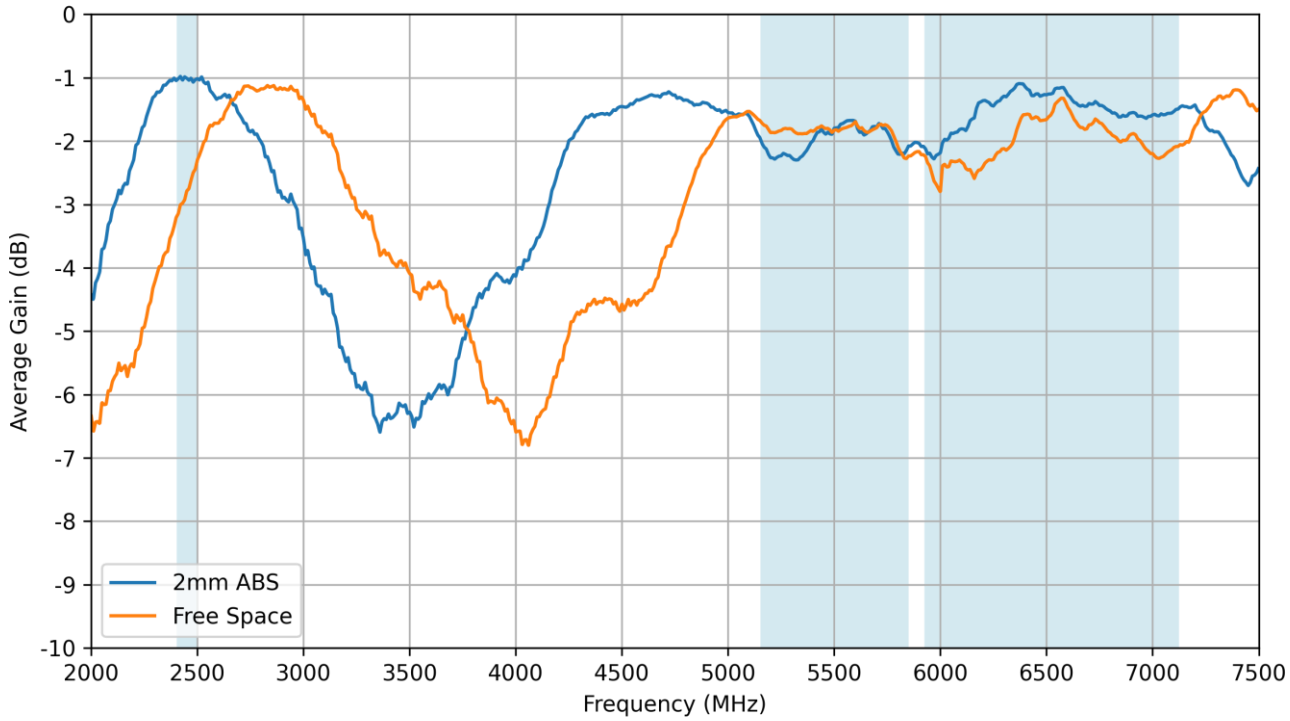
5.3 VSWR



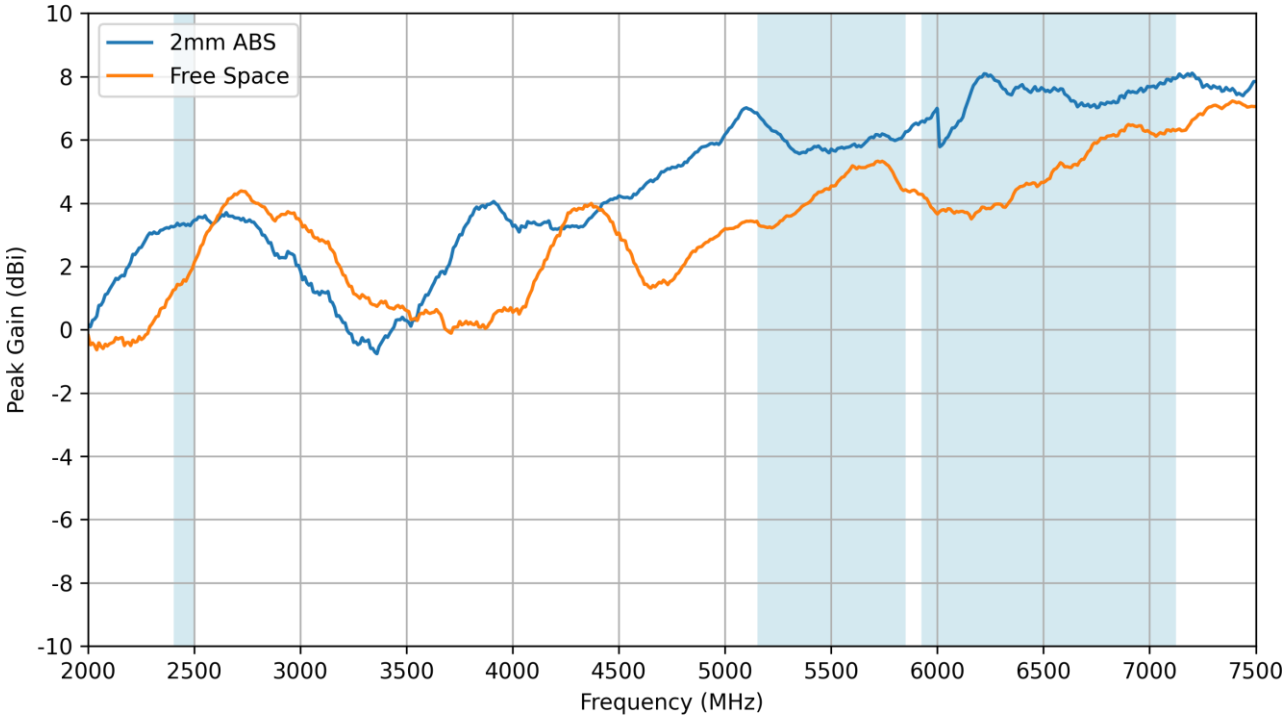
5.4 Efficiency



5.5 Average Gain

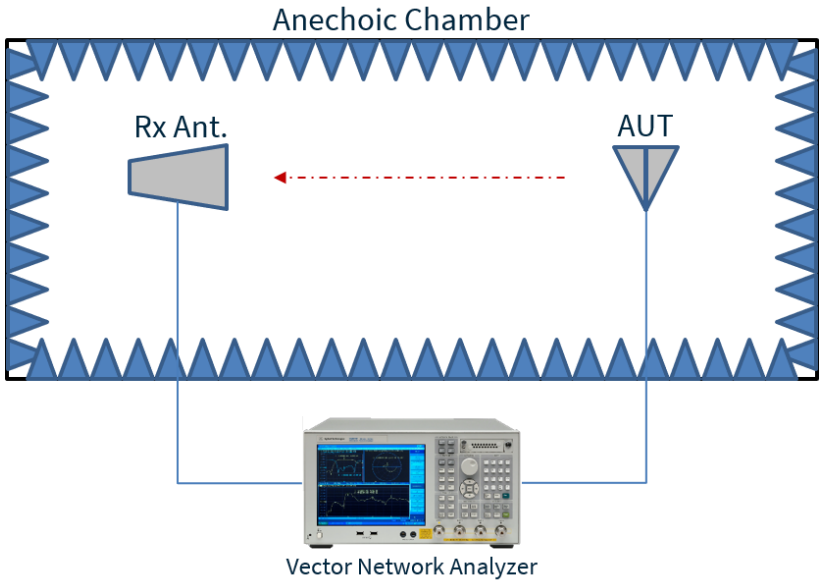


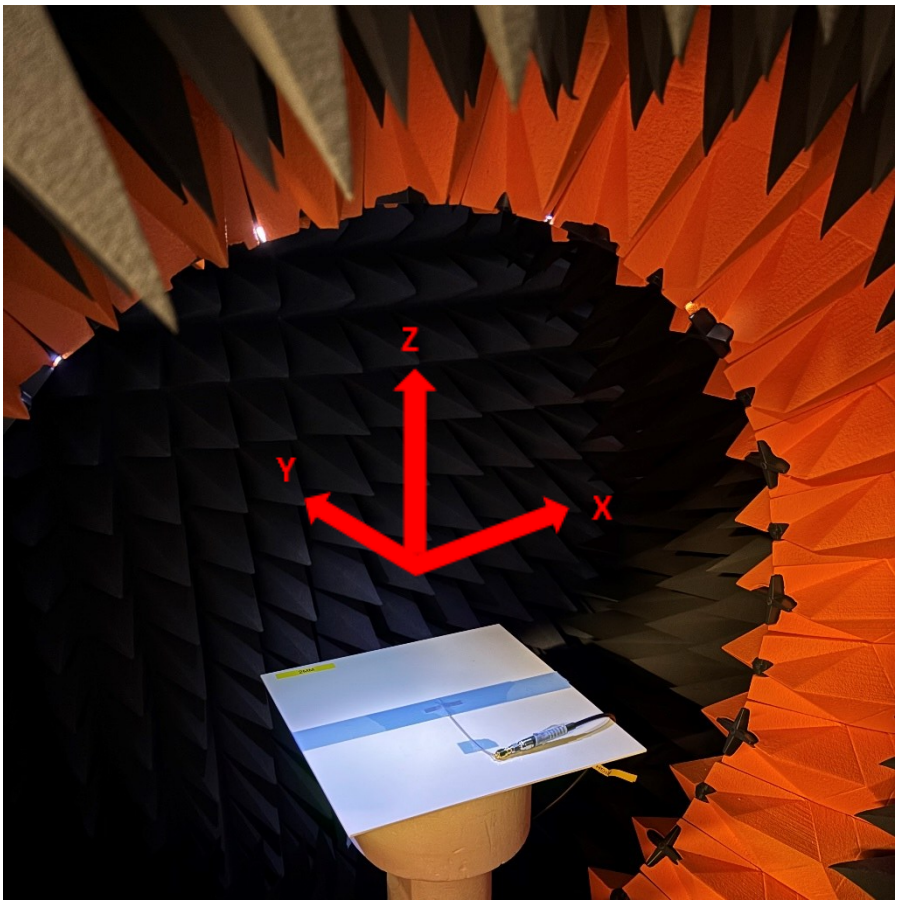
5.6 Peak Gain


2mm ABS
Free Space
Peak Gain (dBi)
Frequency (MHz)
10
8
6
4
2
0
-2
-4
-6
-8
-10
2000
2500
3000
3500
4000
4500
5000
5500
6000
6500
7000
7500

6. Radiation Patterns

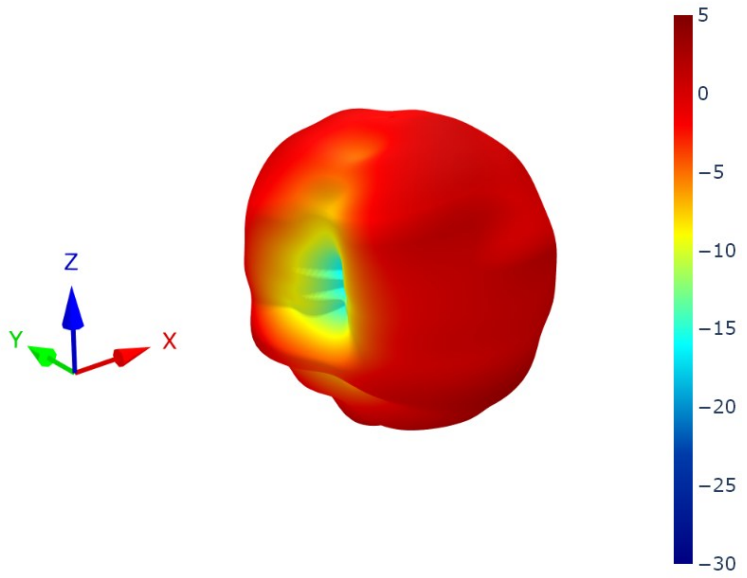
6.1 Test Setup

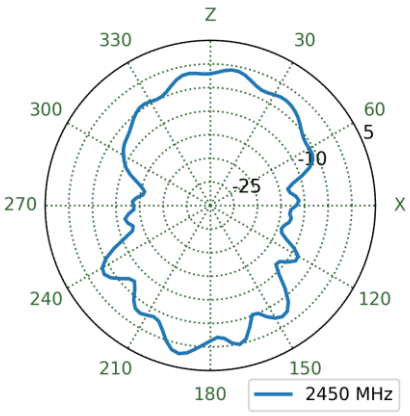
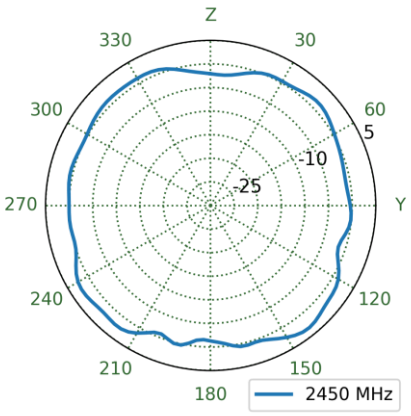
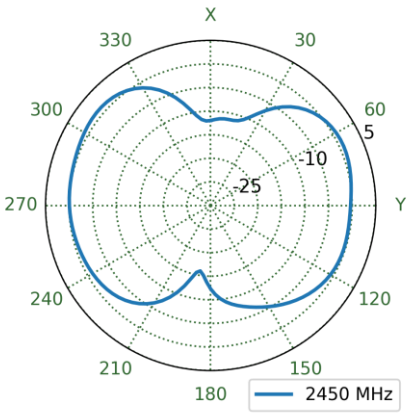




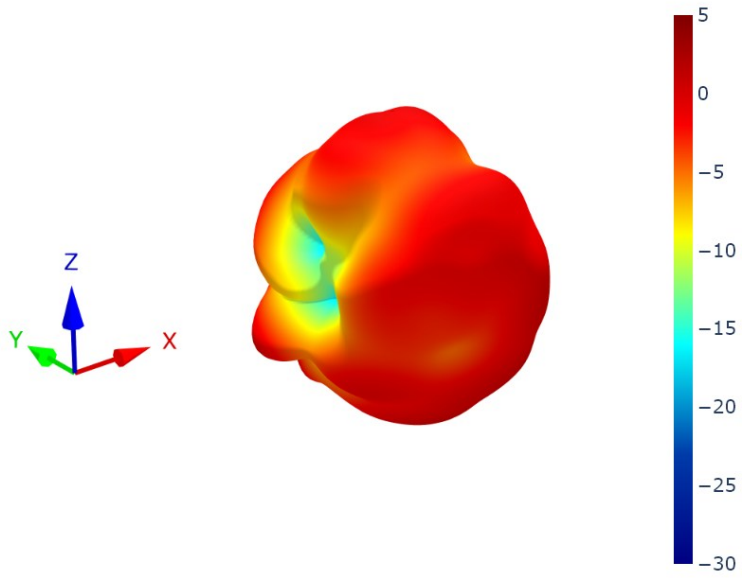
Chamber Test Set-up on 2mm ABS

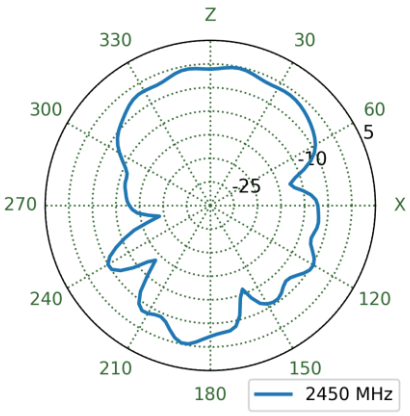
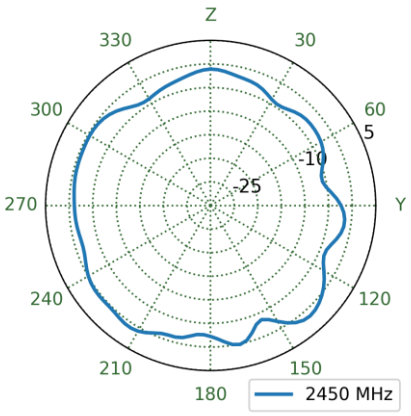
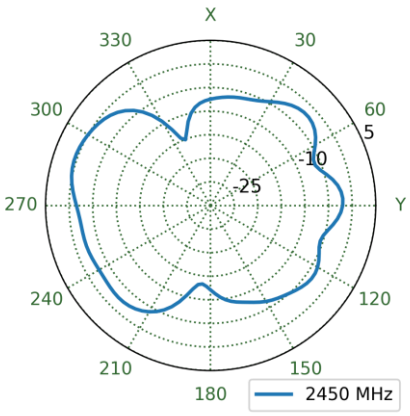
6.2 2mm ABS Patterns at 2450 MHz



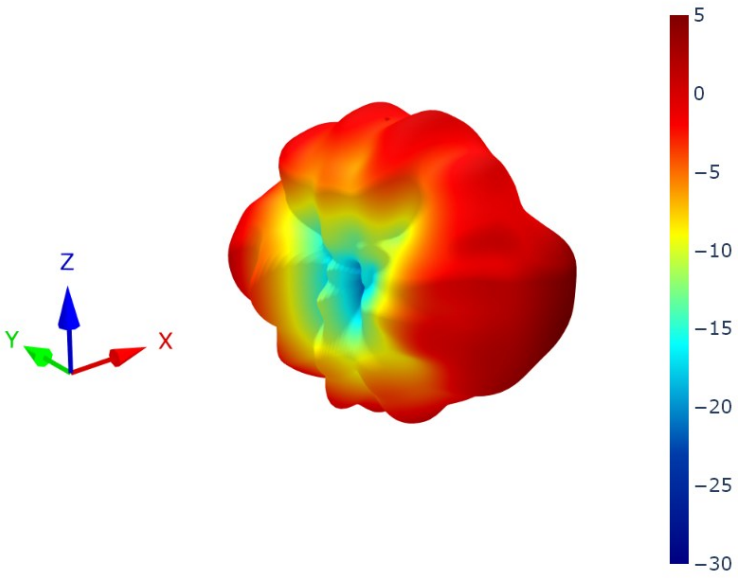
XZ Plane	YZ Plane	XY Plane
		

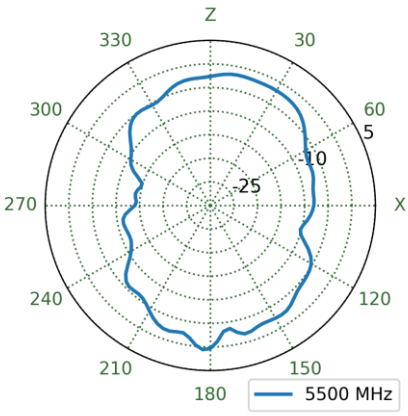
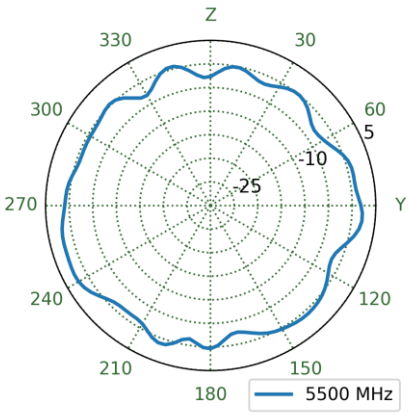
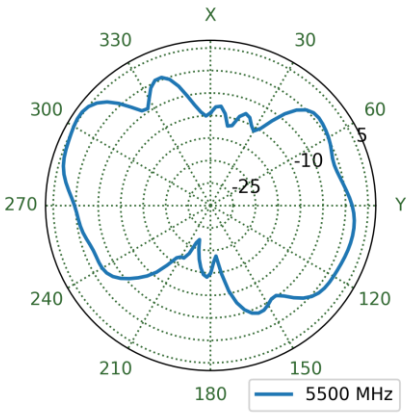
6.3 Free Space Patterns at 2450 MHz



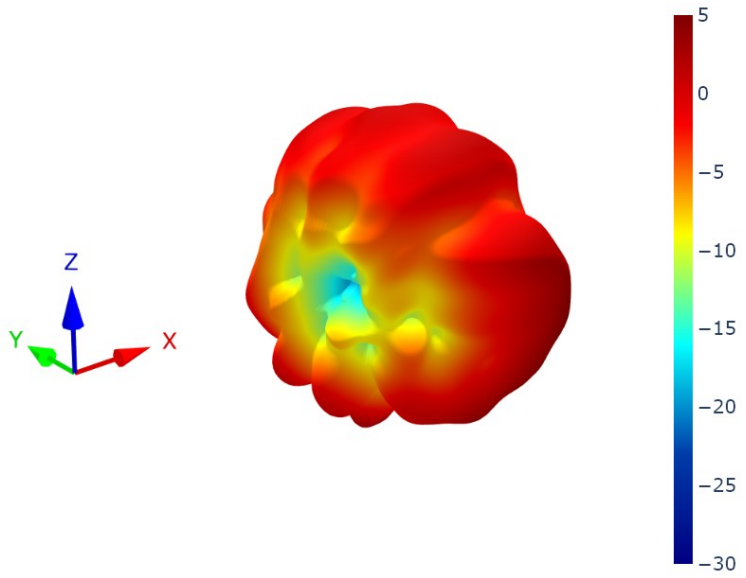
XZ Plane	YZ Plane	XY Plane
		

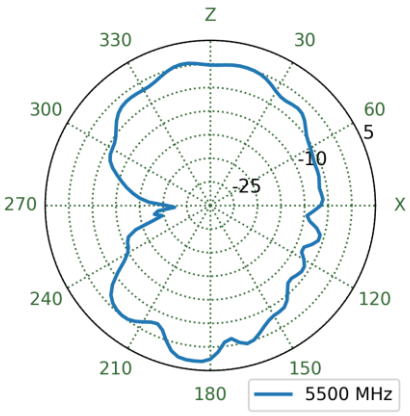
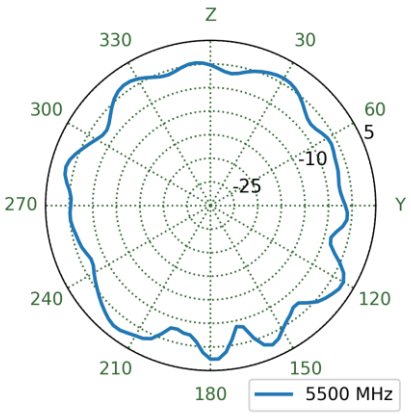
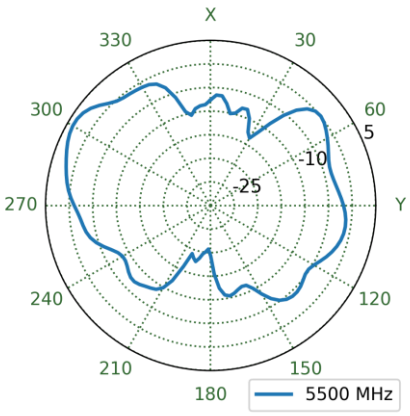
6.4 2mm ABS Patterns at 5500 MHz



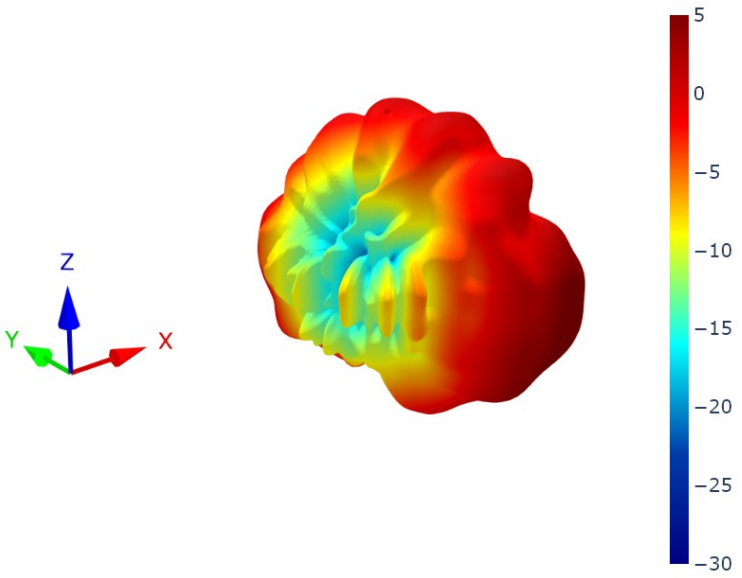
XZ Plane	YZ Plane	XY Plane
		

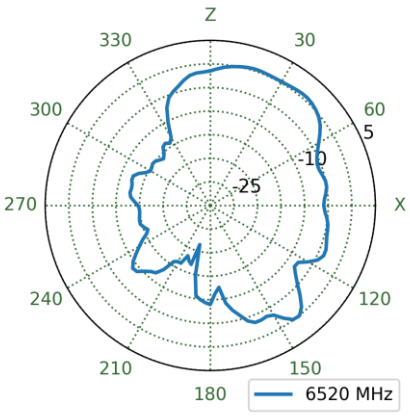
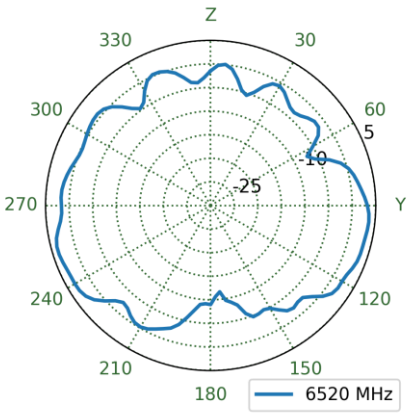
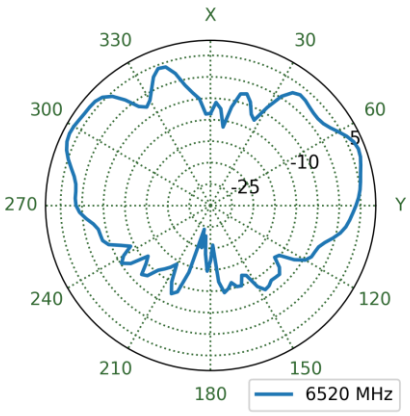
6.5 Free Space Patterns at 5500 MHz



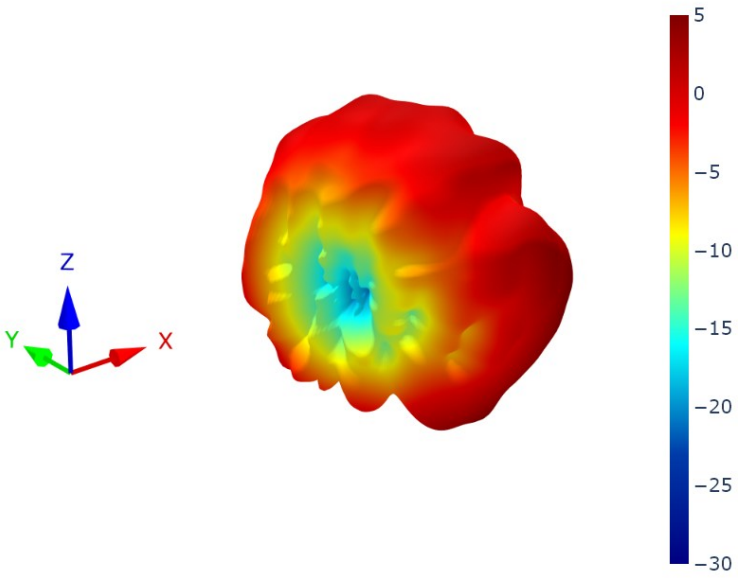
XZ Plane	YZ Plane	XY Plane
		

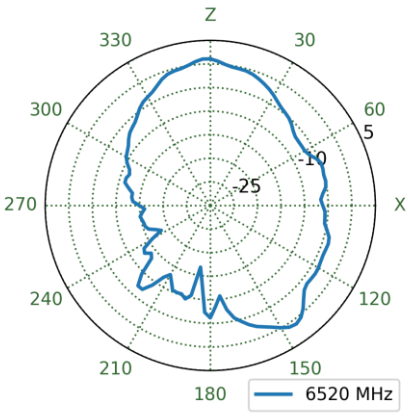
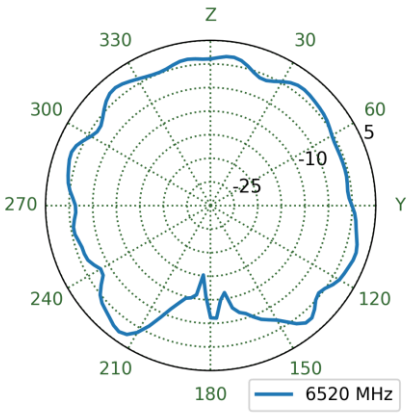
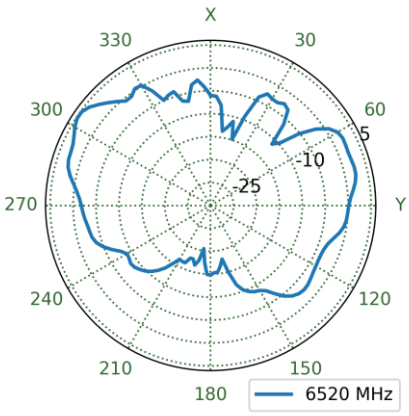
6.6 2mm ABS Patterns at 6520 MHz



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-14-8-022 - FXP830.24.0100B

Revision: G (Current Version)	
Date:	2025-04-28
Changes:	Full datasheet update, Adding Wi-Fi 6 data.
Changes Made by:	Gary West

Previous Revisions

Revision: F	
Date:	2017-07-03
Changes:	Formatted, added disclaimer and revised packaging spec.
Changes Made by:	Andy Mahoney

Revision: A (Original First Release)	
Date:	2014-03-12
Notes:	
Author:	Technical Writer

Revision: E	
Date:	2016-11-01
Changes:	Updated Peak Gain Figures to accurately match the graph.
Changes Made by:	Andy Mahoney

Revision: D	
Date:	2016-02-12
Changes:	Updated Peak gain and added disclaimer.
Changes Made by:	Andy Mahoney

Revision: C	
Date:	2015-09-01
Changes:	
Changes Made by:	Aine Doyle

Revision: B	
Date:	2015-01-15
Changes:	Added note on Intro.
Changes Made by:	Aine Doyle

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