TAOGLAS®

Datasheet

Pylon

Part No:
FXUB85.54.0150C

Description:

Ultra Wide Band Flex Antenna, 600MHz to 8GHz with 150mm 1.37 I-PEX MHF 4L Connector (HSC compatible)

Features:

Ultra-wide bandwidth, covering all 5G/4G/3G applications from 600 MHz – 8 GHz

Small form factor

High efficiency

Excellent radiation pattern quality

Cable: 150mm of 1.37mm coaxial cable

Connector: I-PEX MHF®4L (HSC compatible)

RoHS & Reach Compliant

1. Introduction

The Taoglas Pylon FXUB85 is an ultra-wideband flexible PCB antenna designed for the next generation of connectivity. The Pylon FXUB85 provides best-in-class performance for all 5G sub 6 GHz (FR1) and Wi-Fi 6 applications. Covering the entire spectrum from 600 MHz – 8 GHz, the Pylon allows for coverage in the 3.5 GHz CBRS bands, the 1400 MHz 5G NR bands 74,75,76, and the 3.6-4.6 GHz Japan 5G NR bands 77,78,79. It maintains excellent performance in all the traditional 4G LTE bands, including 4G LTE band 71 and allows for fallback to 3G/2G bands when necessary.

The Pylon FXUB85 PCB has been expertly designed by Taoglas, to be the smallest size possible. At just 163 x 21 x 0.3mm, it can be neatly placed in the next generation of connected devices. As devices become more compact, the Pylon alleviates size constraint issues. The antenna performs well at a reasonable distance, typically 20mm, from a ground and has demonstrated ease of integration into complex end user equipment.

Typical Applications Include:

- IoT and Connected Devices
- UAVs and Autonomous Vehicles
- Precision Tracking
- Industrial Robotics and Factory Automation
- Field and Body Sensors and Wearables

The Pylon FXUB85 antenna has a typical efficiency of more than 70% across both low and high frequency bands. The Pylon is designed to be mounted directly onto a plastic or glass enclosures. It is an ideal choice for any device maker that desires ease of integration and needs to keep manufacturing costs down over the lifetime of a product without compromising performance.

The FXUB63 uses a future proof I-PEX MHF® 4L connector for 5G applications to match the many module providers new 5G modules who utilize this smaller receptacle. Cable and connector are fully customizable, contact your regional Taoglas customer support team for more information.

2. Specifications

5G/4G Bands			
Band Number	5GNR / FR1 / LTE / LTE-Advanced / WCDMA / HSPA / HSPA+ / TD-SCDMA		
	Uplink	**Downlink**	**Covered**
1	UL: 1920 to 1980	DL: 2110 to 2170	✓
2	UL: 1850 to 1910	DL: 1930 to 1990	✓
3	UL: 1710 to 1785	DL: 1805 to 1880	✓
4	UL: 1710 to 1755	DL: 2110 to 2155	✓
5	UL: 824 to 849	DL: 869 to 894	✓
7	UL: 2500 to 2570	DL:2620 to 2690	✓
8	UL: 880 to 915	DL: 925 to 960	✓
9	UL: 1749.9 to 1784.9	DL: 1844.9 to 1879.9	✓
11	UL: 1427.9 to 1447.9	DL: 1475.9 to 1495.9	✓
12	UL: 699 to 716	DL: 729 to 746	✓
13	UL: 777 to 787	DL: 746 to 756	✓
14	UL: 788 to 798	DL: 758 to 768	✓
17	UL: 704 to 716	DL: 734 to 746	✓
18	UL: 815 to 830	DL: 860 to 875	✓
19	UL: 830 to 845	DL: 875 to 890	✓
20	UL: 832 to 862	DL: 791 to 821	✓
21	UL: 1447.9 to 1462.9	DL: 1495.9 to 1510.9	✓
22	UL: 3410 to 3490	DL: 3510 to 3590	✓
23	UL:2000 to 2020	DL: 2180 to 2200	✓
24	UL:1625.5 to 1660.5	DL: 1525 to 1559	✓
25	UL: 1850 to 1915	DL: 1930 to 1995	✓
26	UL: 814 to 849	DL: 859 to 894	✓
27	UL: 807 to 824	DL: 852 to 869	✓
28	UL: 703 to 748	DL: 758 to 803	✓
29	UL: - N/A	DL: 717 to 728	✓
30	UL: 2305 to 2315	DL: 2350 to 2360	✓
31	UL: 452.5 to 457.5	DL: 462.5 to 467.5	✗
32	UL: - N/A	DL: 1452 - 1496	✓
35	1850 to 1910		✓
38	2570 to 2620		✓
39	1880 to 1920		✓
40	2300 to 2400		✓
41	2496 to 2690		✓
42	3400 to 3600		✓
43	3600 to 3800		✓
48	3550 to 3700		✓
66	UL: 1710-1780	DL: 2110-2200	✓
71	617 to 698		✓
74/75/76	1427 to 1518		✓
78	3300 to 3800		✓
79	4400 to 5000		✓
85	698-716	728-746	✓

Electrical									
Band	**Frequency (MHz)**	**Return Loss (dB)**	**Efficiency (%)**	**Average Gain (dB)**	**Peak Gain (dBi)**	**Max Input Power**	**Impedance**	**Polarization**	**Radiation Pattern**
5GNR/4G Band 5,8,12,13,14,17,18,20, 26,27,28, 29,71	617~960	-8	69	-1.7	2.1	5	50 Ω	Linear	Omni
5GNR/4G Band 21,32,74,75,76	1427~1518	-7	62	-2.1	2.4				
4G/3G Band 1,2,3,4,9,23,25,35,39,66	1710~2200	-6	65	-1.9	1.9				
4G/3G Band 7,30,38,40,41	2300~2690	-8	62	-2.1	1.8				
5GNR/4G Band 22,42,43,48,77,78,79	3300~5000	-15	80	-1	5.3				
LTE5200/ Wi-Fi 5800	5150~5925	-11	72	-1.4	5.6				
Wi-Fi 6	5925~7125	-8	59	-2.3	4.5				

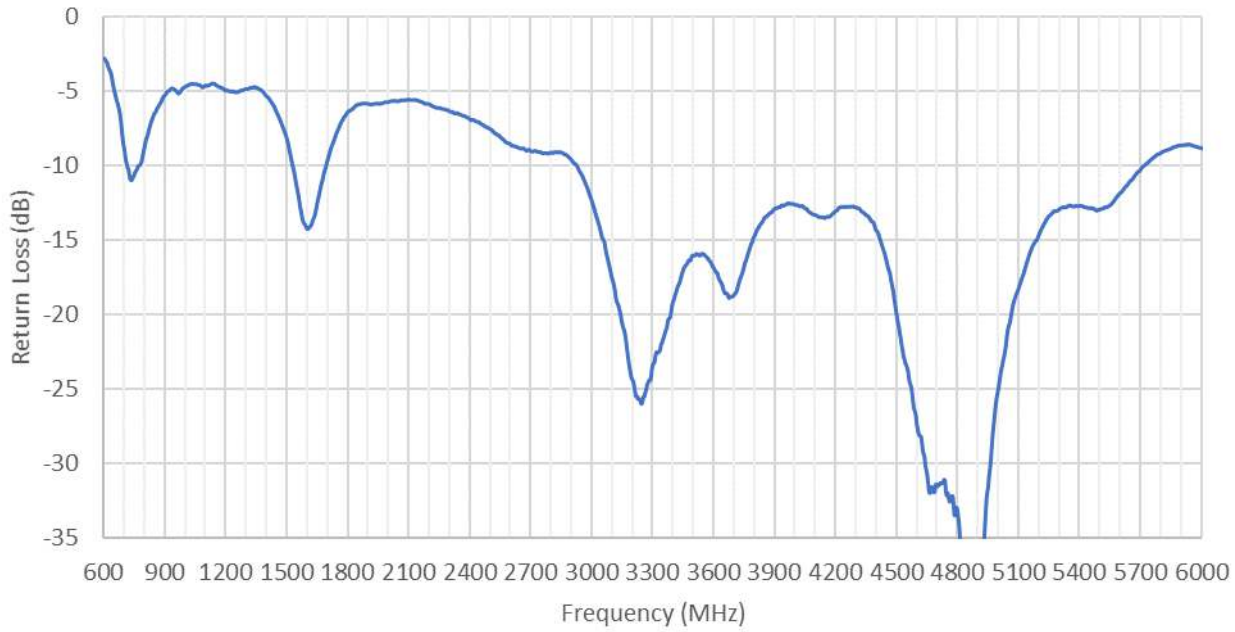
Mechanical	
Dimensions	163 x 21 x .3mm
Connector	I-PEX MHF 4L Connector (HSC compatible)
Cable	150mm of 1.37 mm Coax
Weight	1.9 g

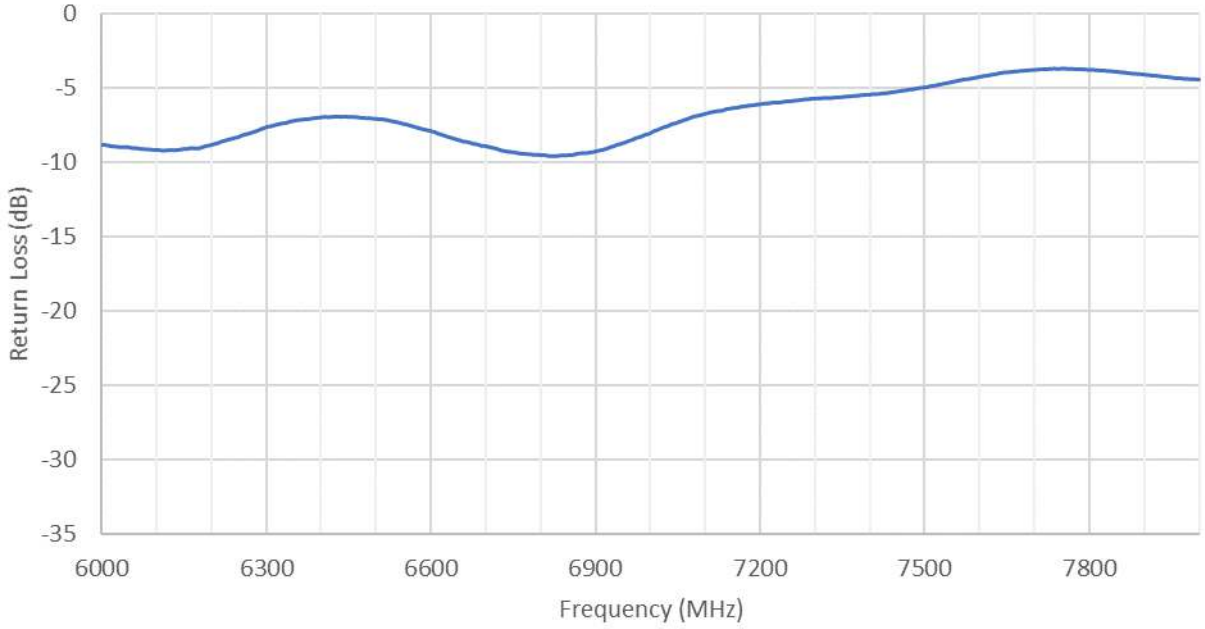
Environmental	
Operation Temperature	-40°C to 85°C
Storage Temperature	-40°C to 85°C
Relative Humidity	Non-condensing 65°C 95% RH
RoHs & REACH Compliant	Yes

*All testing done on 1.5mm of Polycarbonate Plastic
*Cable and connector are fully customizable

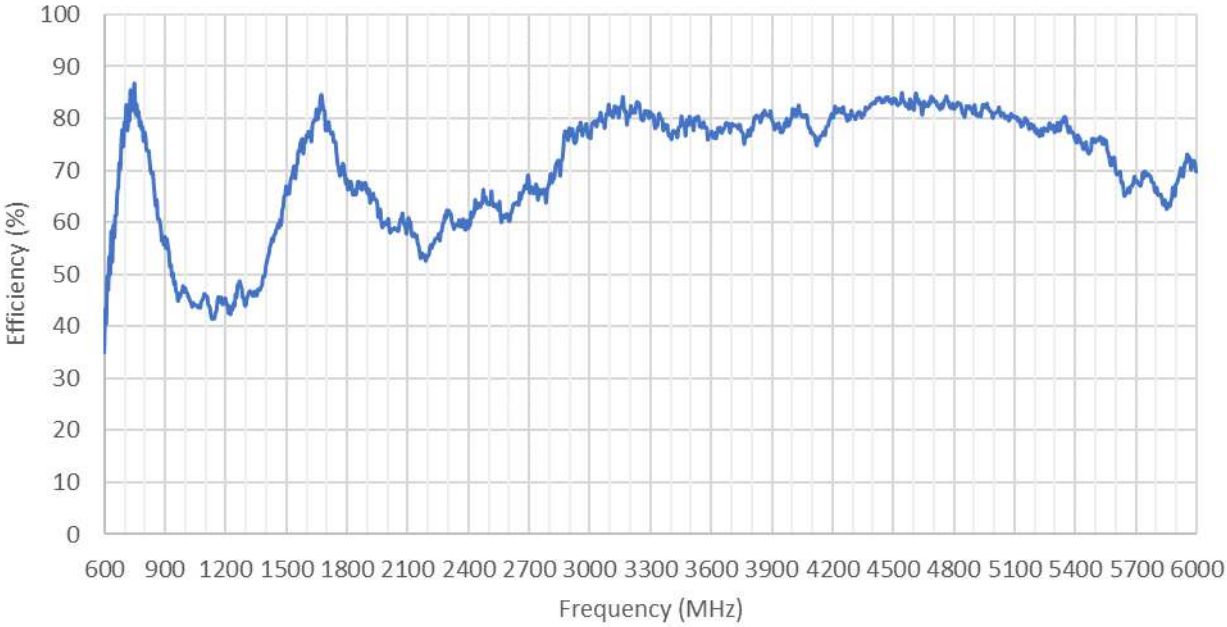
3. Antenna Characteristics

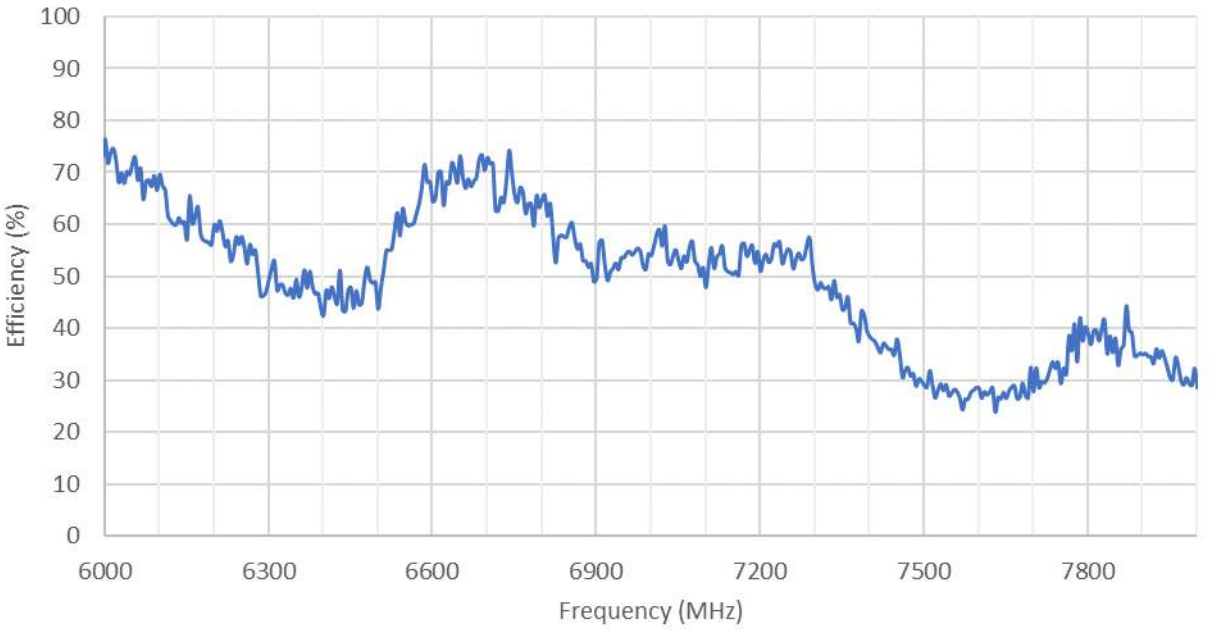
3.1 Return Loss



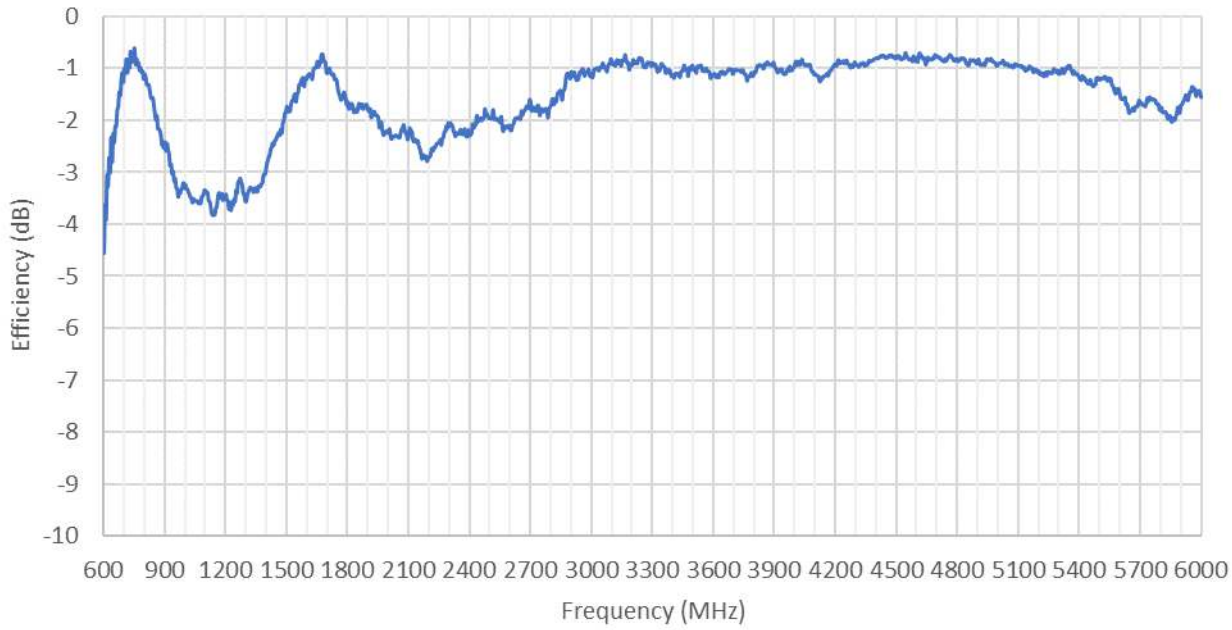


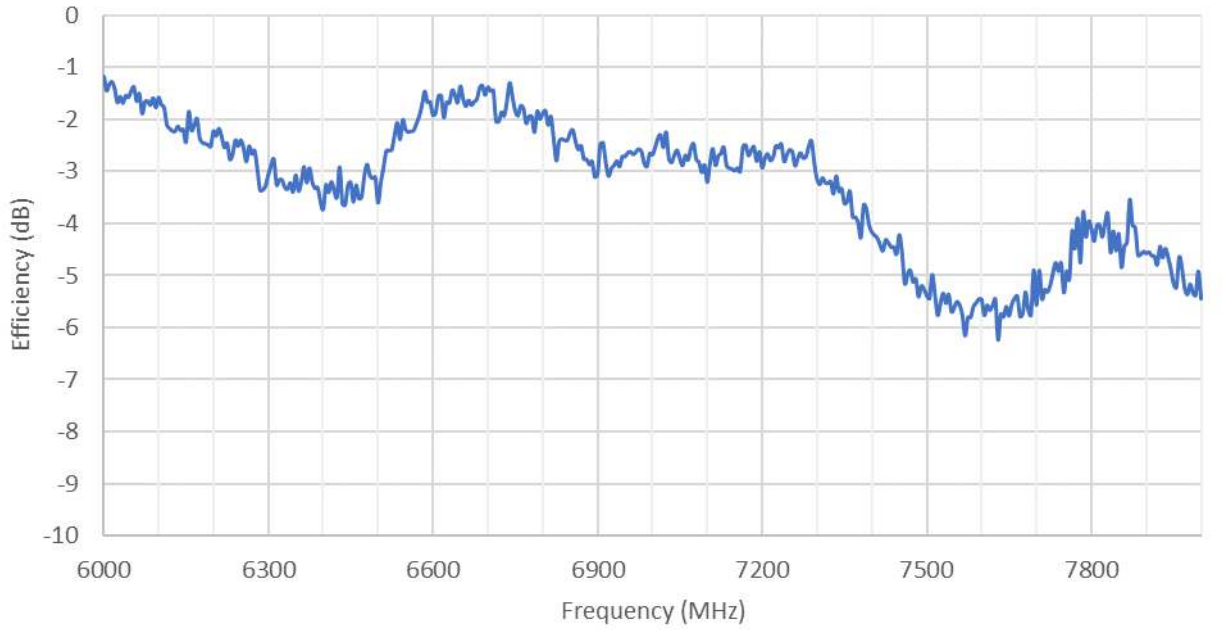
3.2 Efficiency



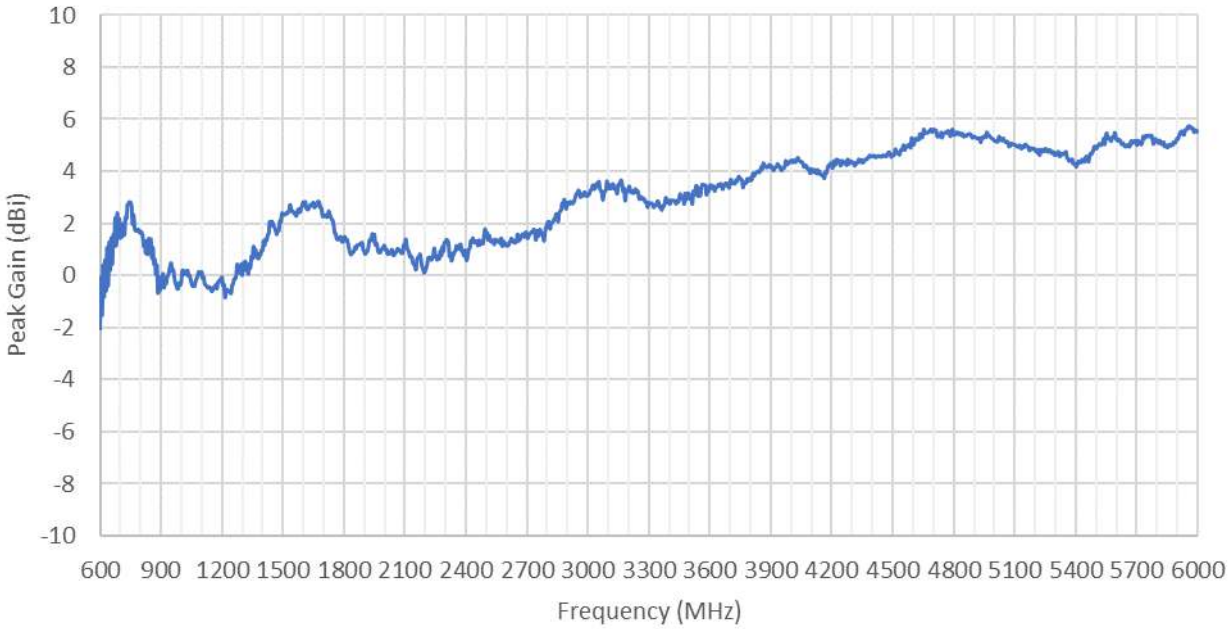


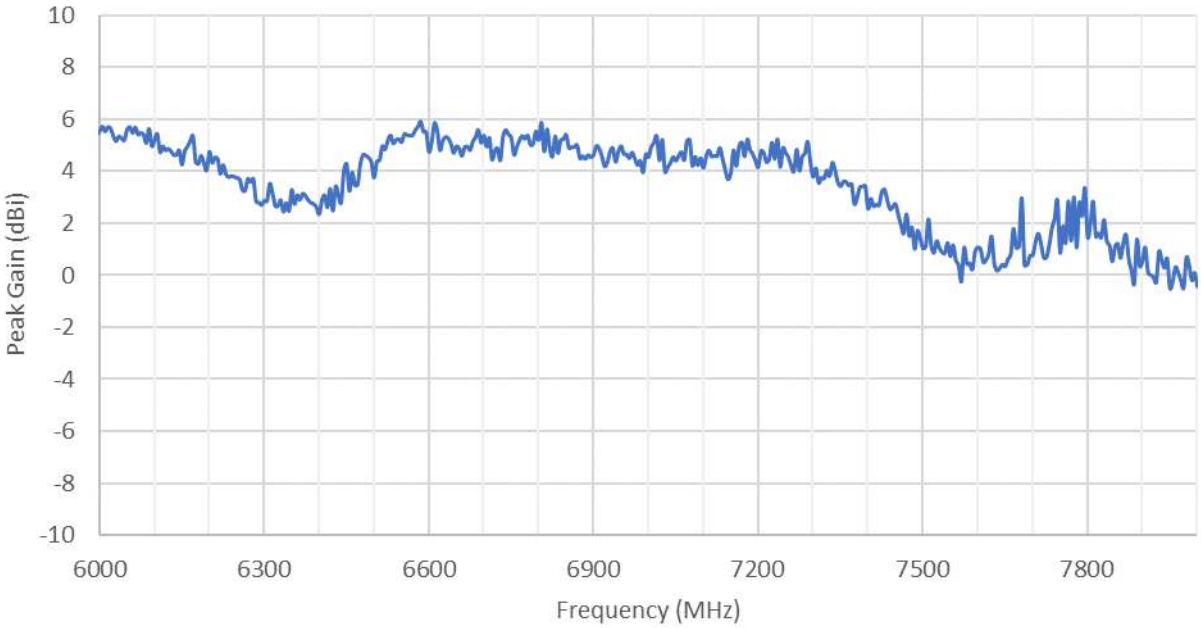
3.3 Average Gain



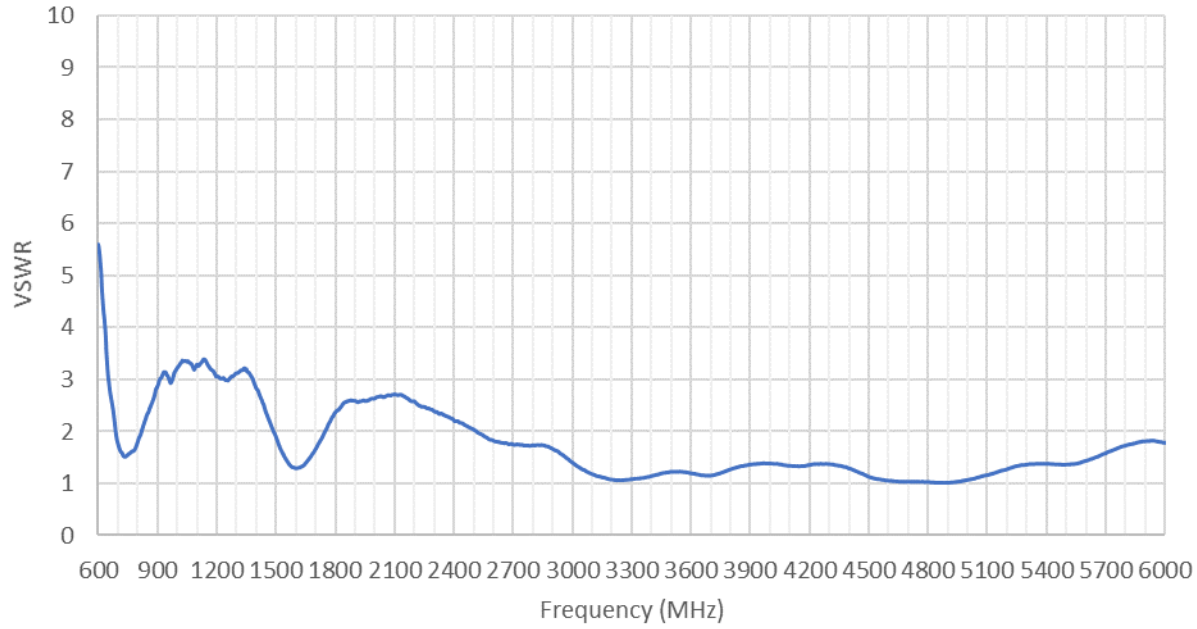


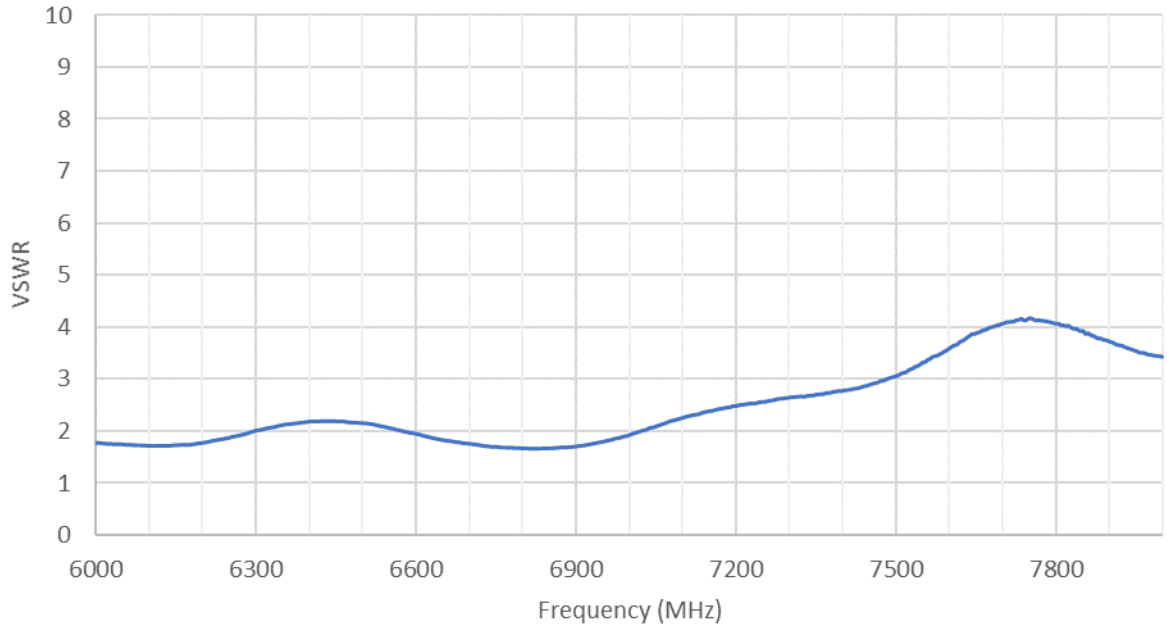
3.4 Peak Gain


10
8
6
4
2
0
-2
-4
-6
-8
-10
Peak Gain (dBi)
600 900 1200 1500 1800 2100 2400 2700 3000 3300 3600 3900 4200 4500 4800 5100 5400 5700 6000
Frequency (MHz)


10
8
6
4
2
0
-2
-4
-6
-8
-10
Peak Gain (dBi)
6000 6300 6600 6900 7200 7500 7800
Frequency (MHz)

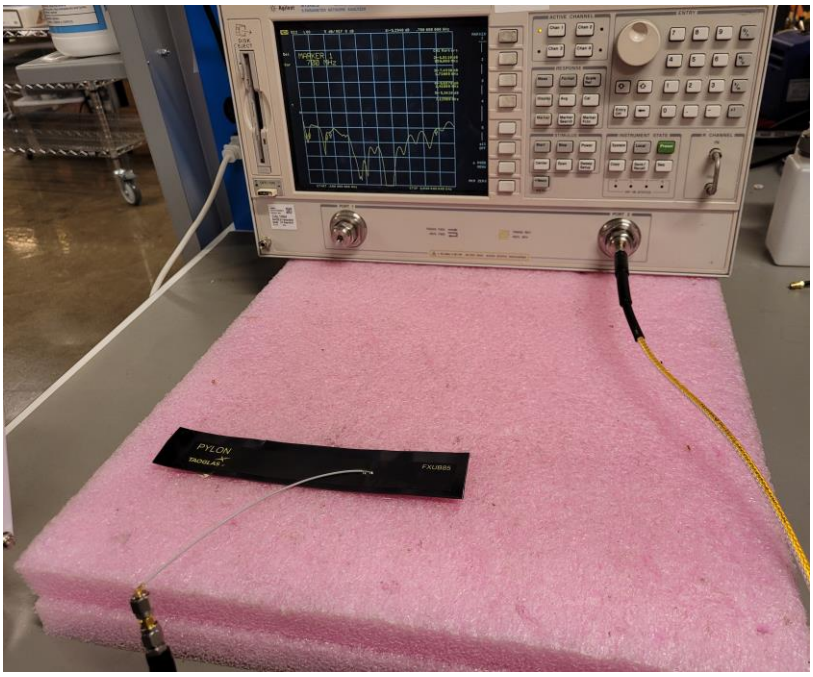
3.5 VSWR


10
9
8
7
6
5
4
3
2
1
0
VSWR
600 900 1200 1500 1800 2100 2400 2700 3000 3300 3600 3900 4200 4500 4800 5100 5400 5700 6000
Frequency (MHz)

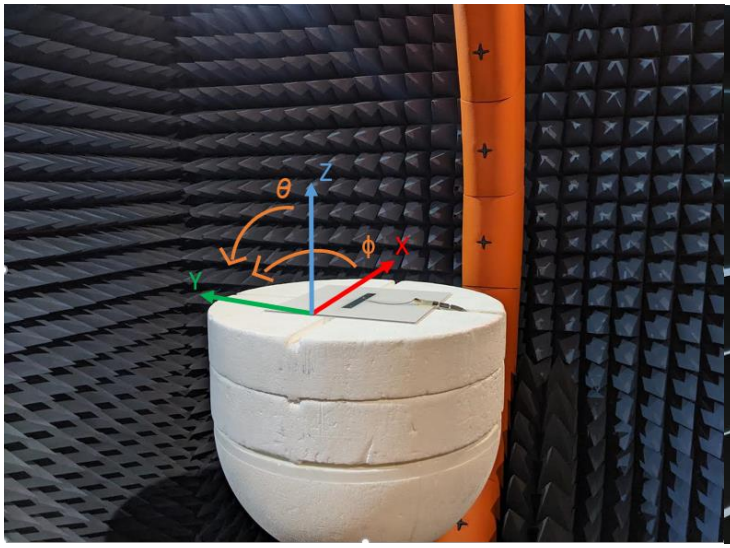

10
9
8
7
6
5
4
3
2
1
0
VSWR
6000 6300 6600 6900 7200 7500 7800
Frequency (MHz)

4. Radiation Patterns

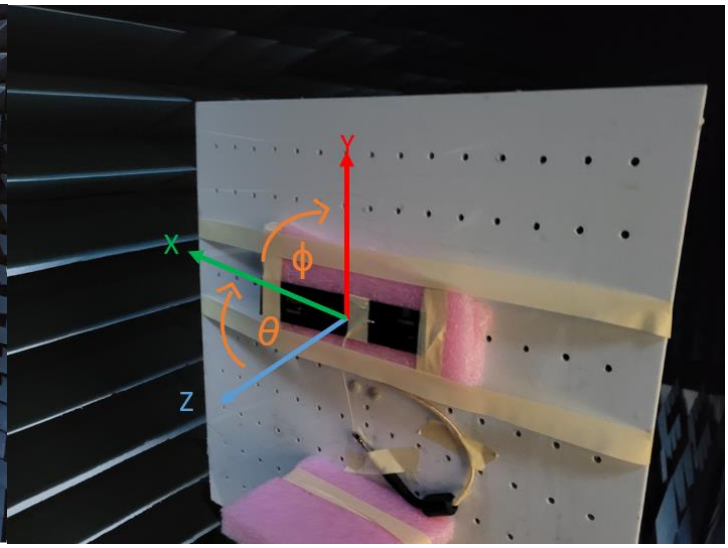
4.1 Test Set-Up



Return loss Test Setup of the FXUB85.54.0150C



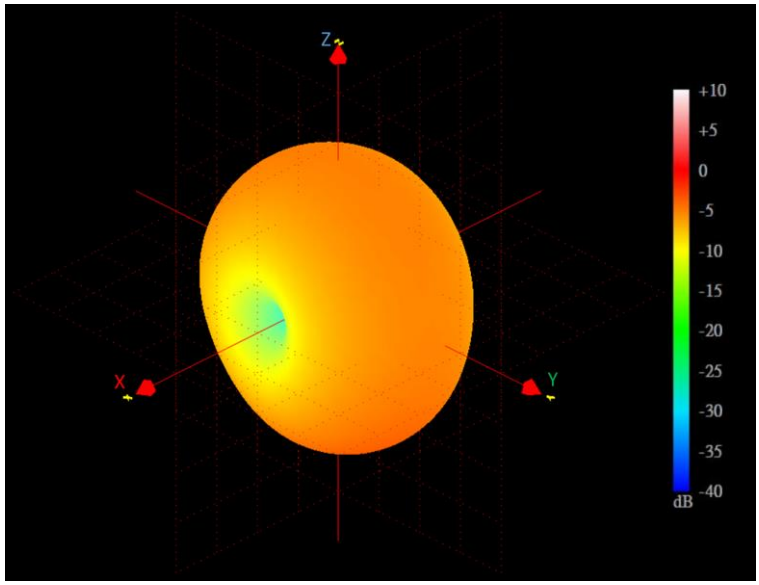
OTA Setup of the FXUB85.54.0150C in the SG24-L Satimo Test System
For 600 MHz – 6 GHz Testing

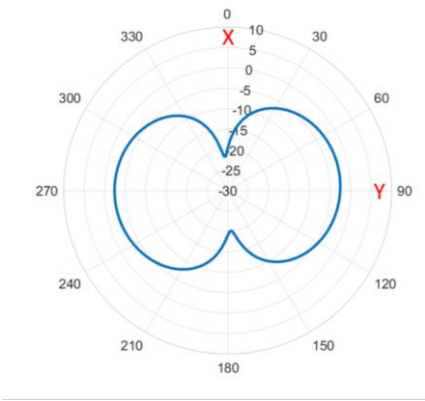
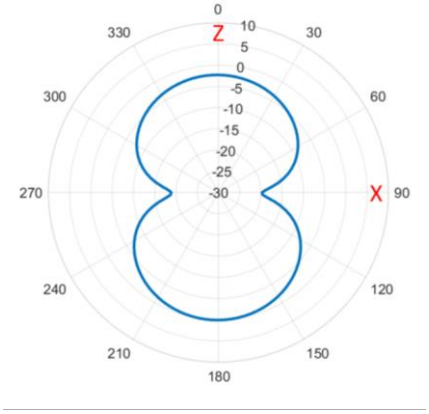
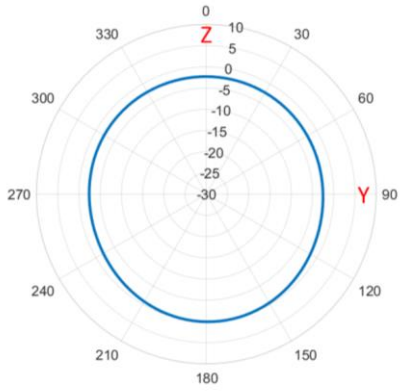


OTA Setup of the FXUB85.54.0150C in the ETS AMS-8500 Test System
For 6 GHz – 8 GHz Testing

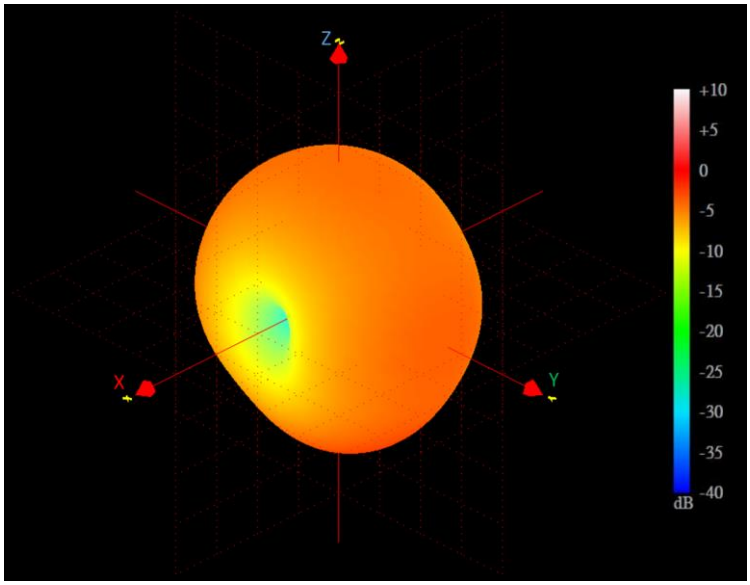
4.2 2D and 3D Radiation Patterns

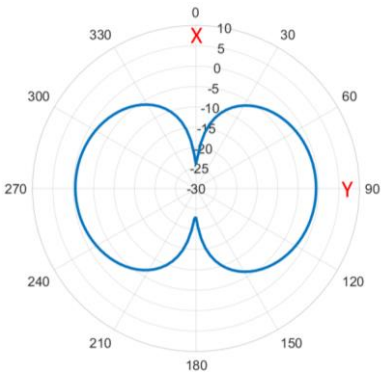
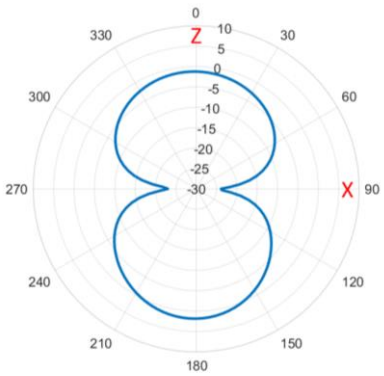
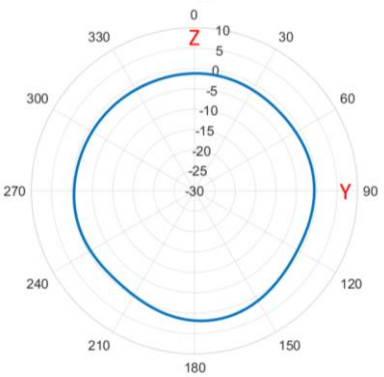
650 MHz



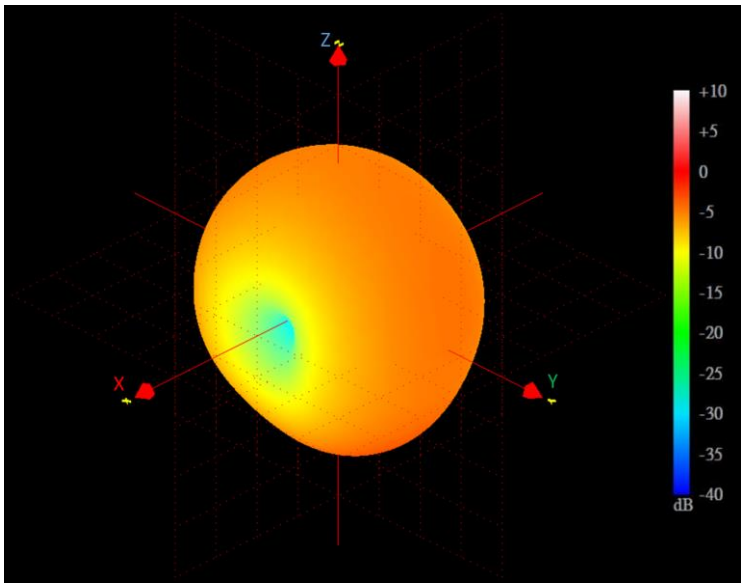
XY Plane	XZ Plane	YZ Plane
		

750 MHz

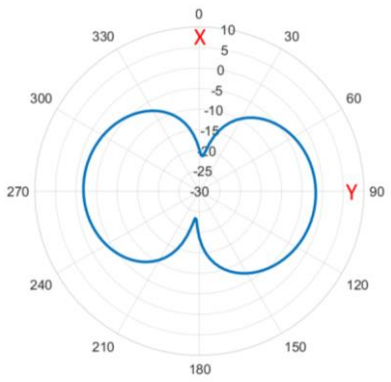


XY Plane	XZ Plane	YZ Plane
		

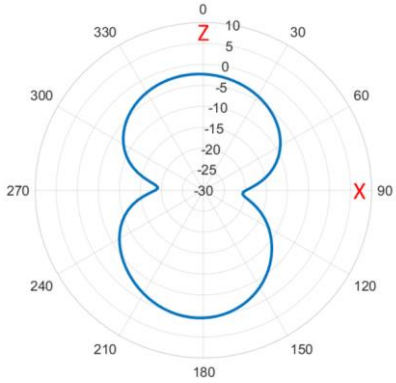
850 MHz



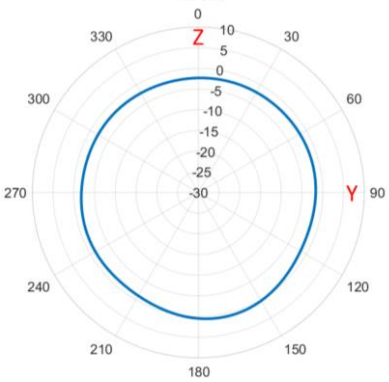
XY Plane



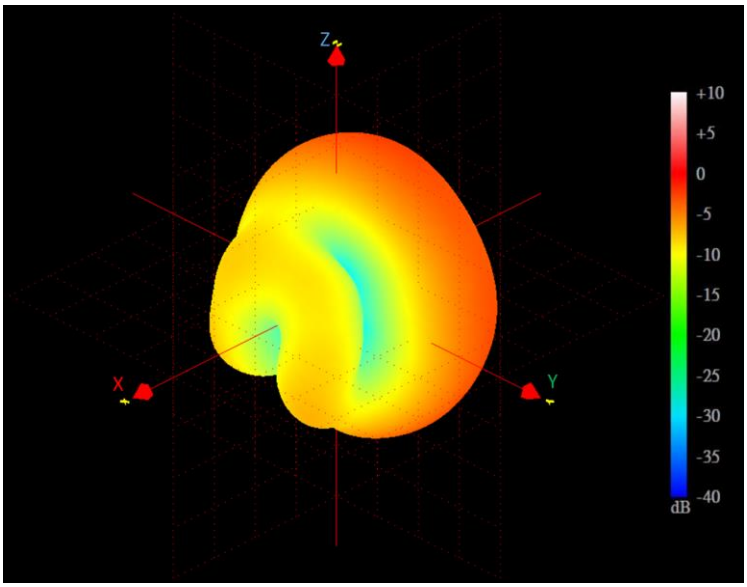
XZ Plane

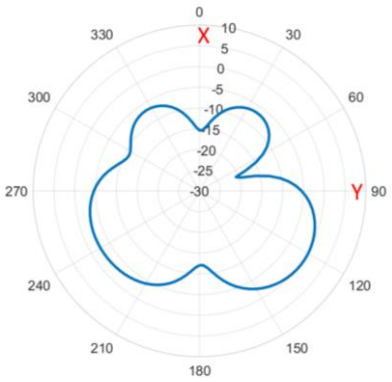
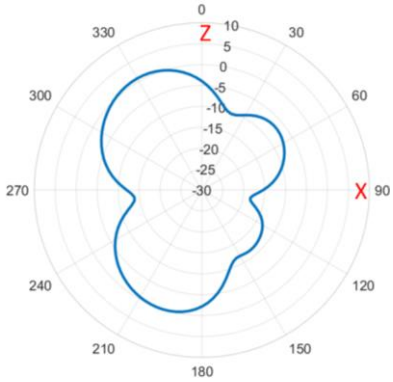
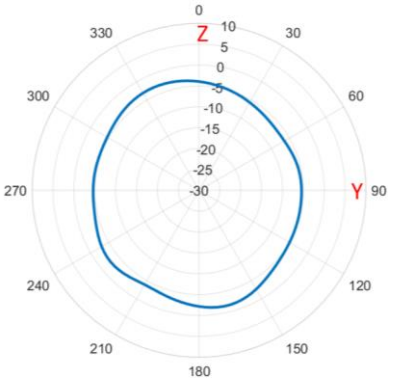


YZ Plane

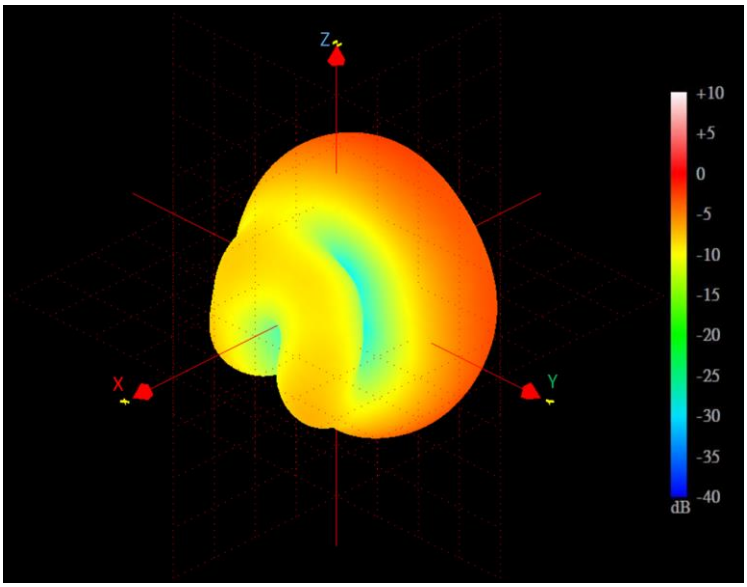


1470 MHz

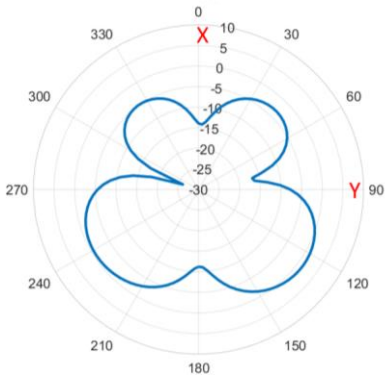


XY Plane	XZ Plane	YZ Plane
		

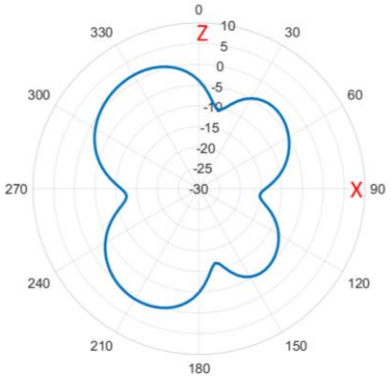
1575 MHz



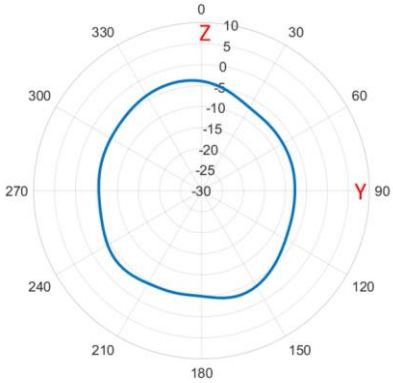
XY Plane



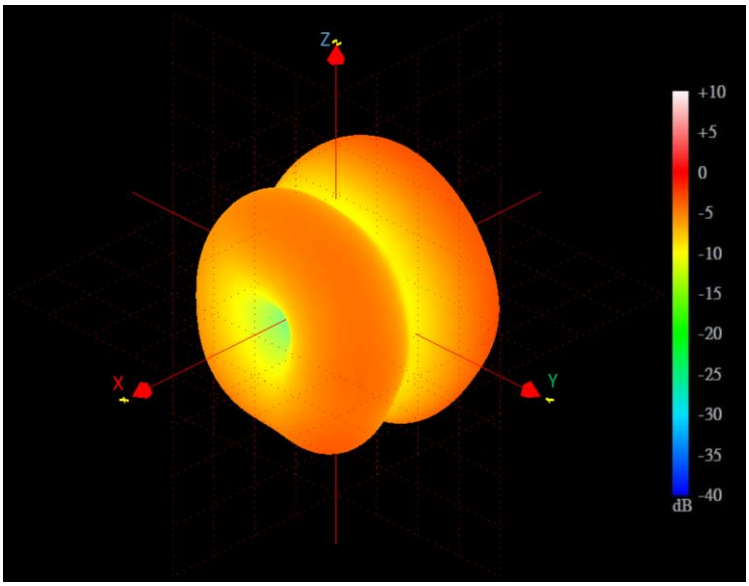
XZ Plane

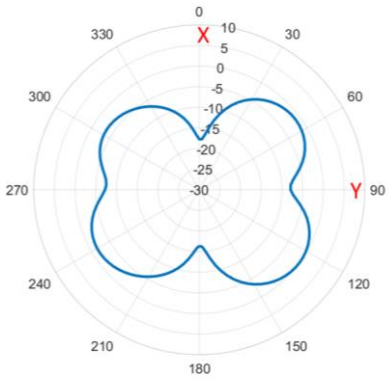
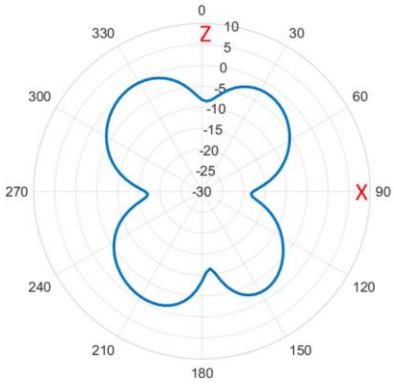
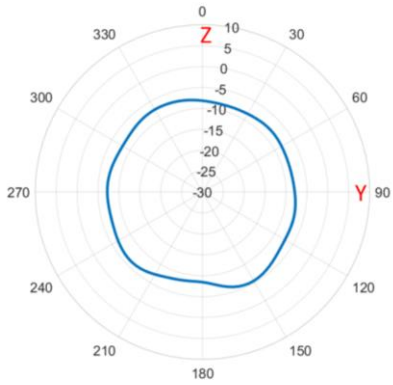


YZ Plane

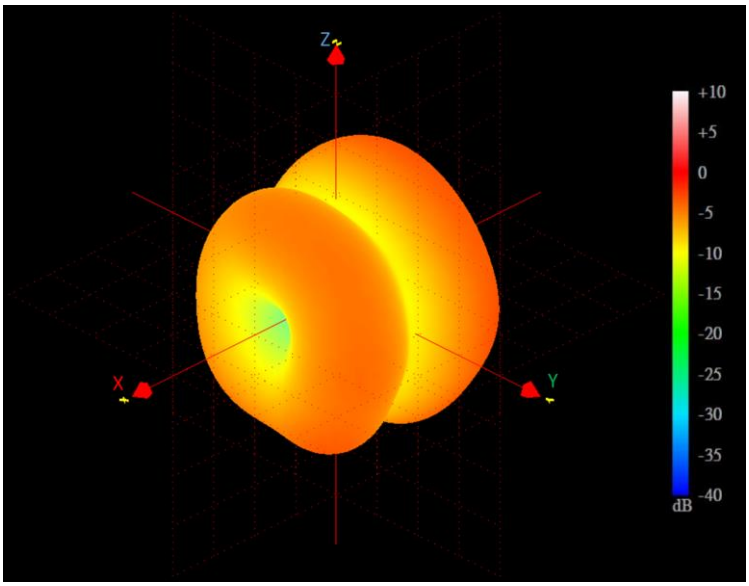


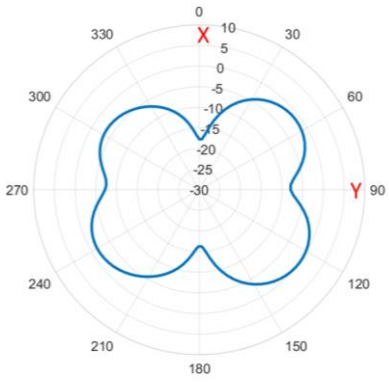
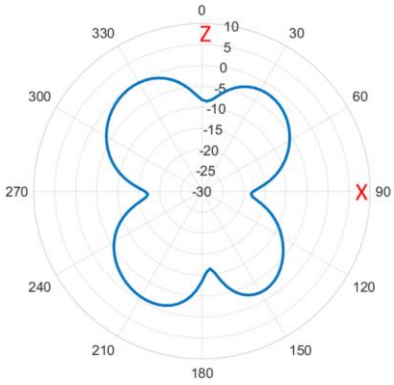
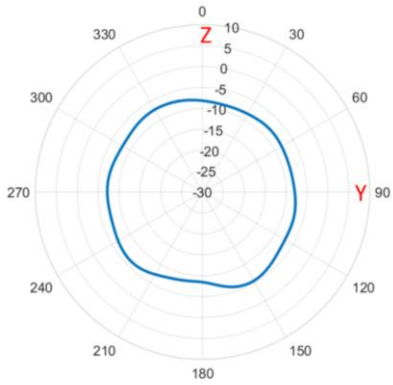
1850 MHz



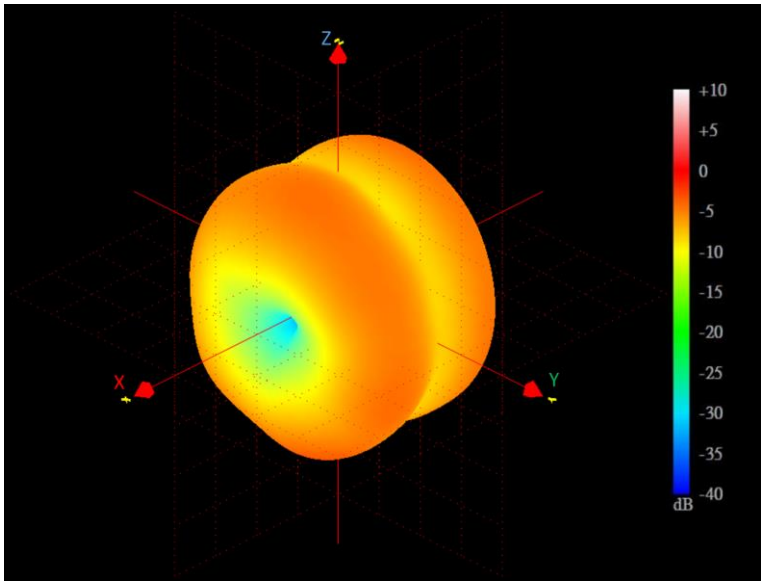
XY Plane	XZ Plane	YZ Plane
		

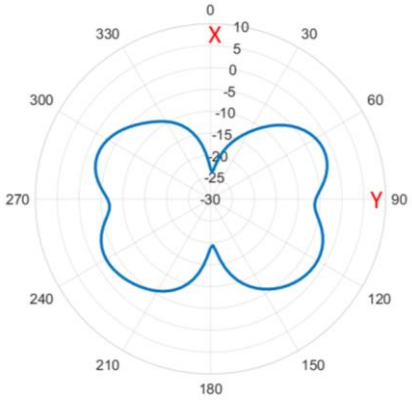
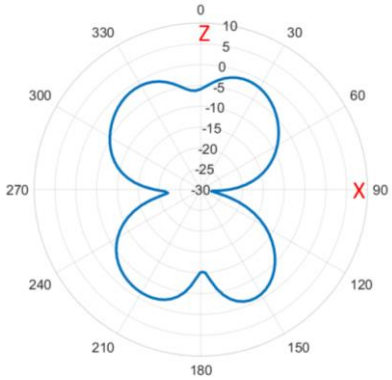
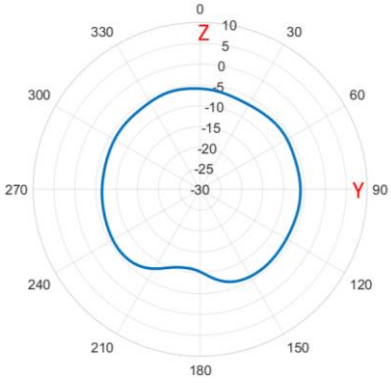
1850 MHz



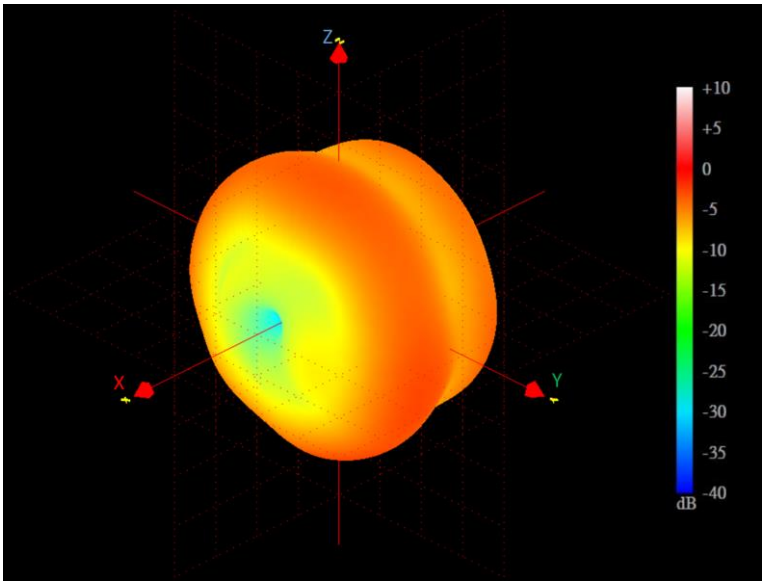
XY Plane	XZ Plane	YZ Plane
		

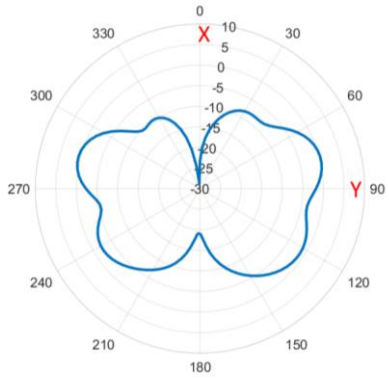
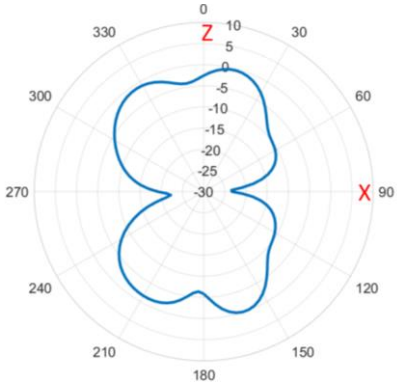
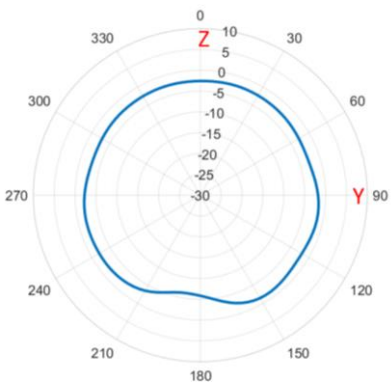
2155 MHz



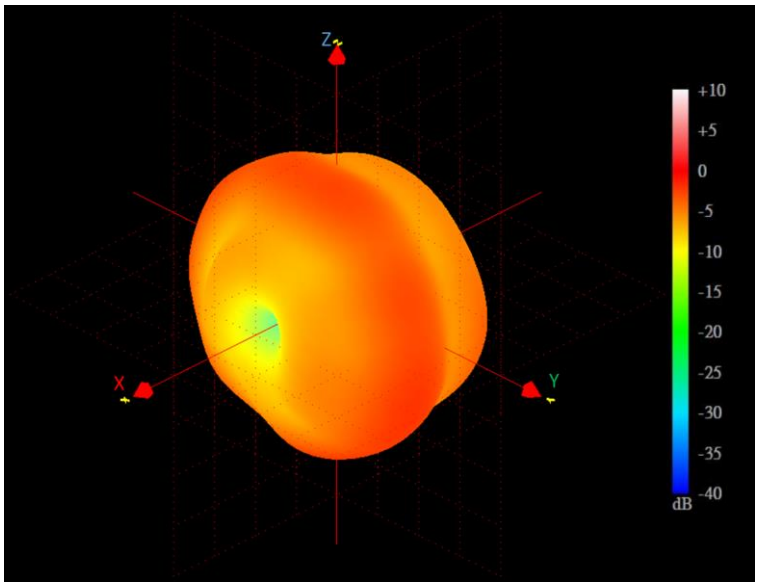
XY Plane	XZ Plane	YZ Plane
		

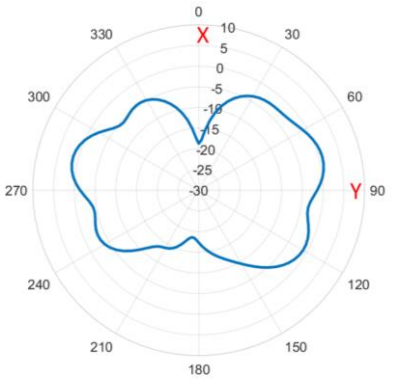
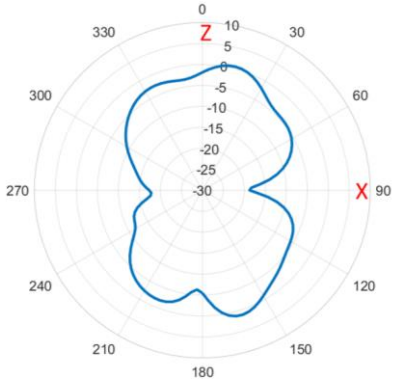
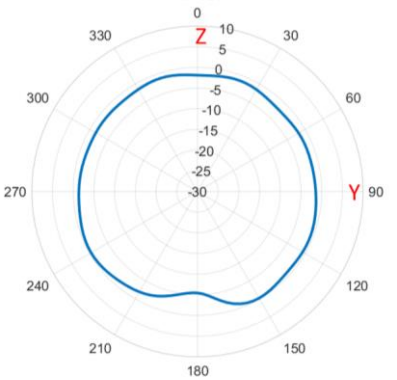
2450 MHz



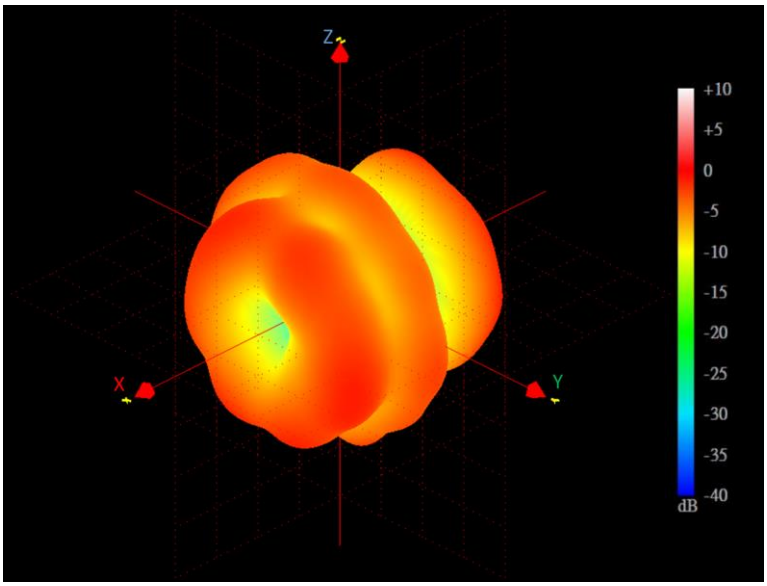
XY Plane	XZ Plane	YZ Plane
		

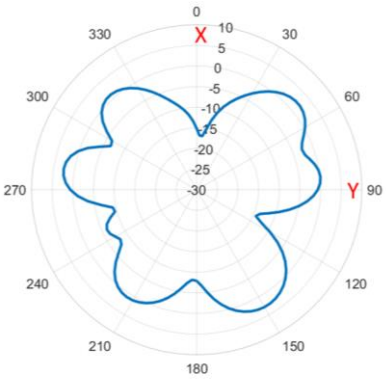
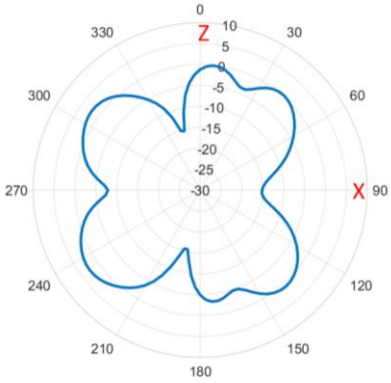
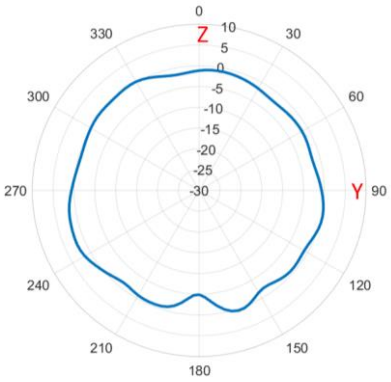
2700 MHz



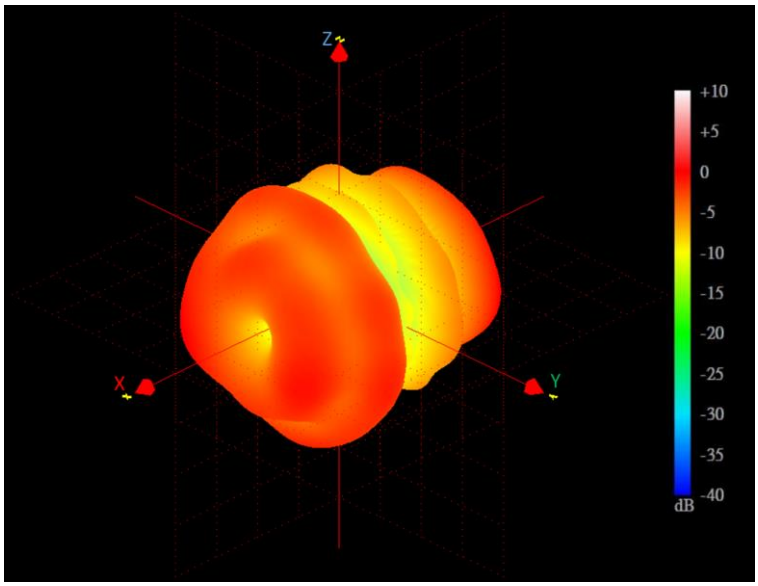
XY Plane	XZ Plane	YZ Plane
		

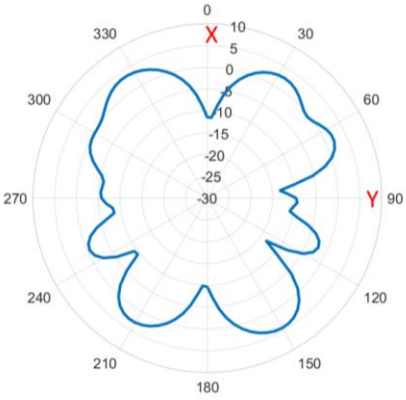
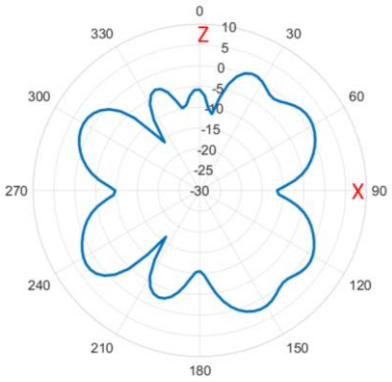
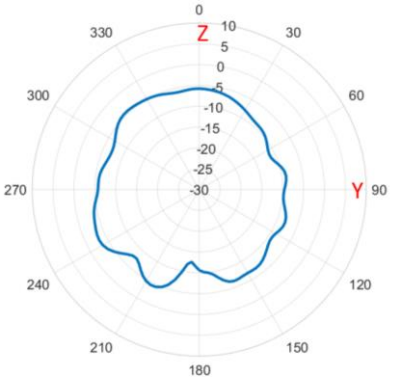
3400 MHz



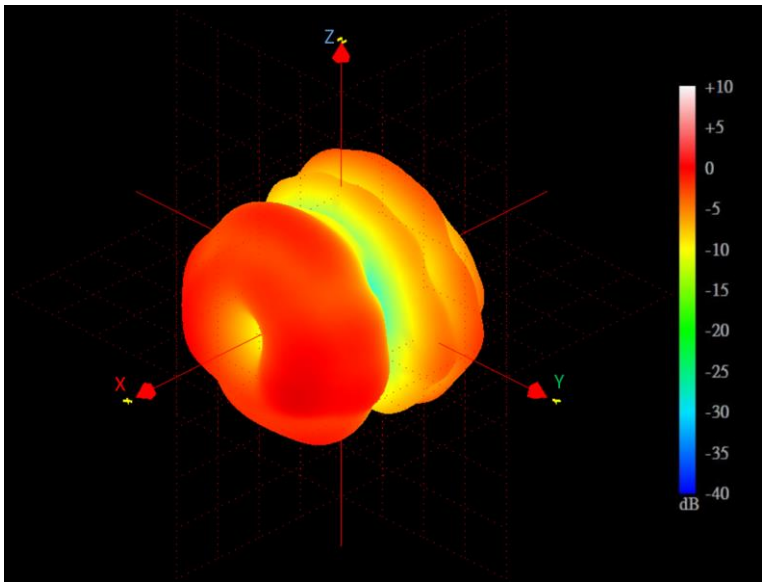
XY Plane	XZ Plane	YZ Plane
		

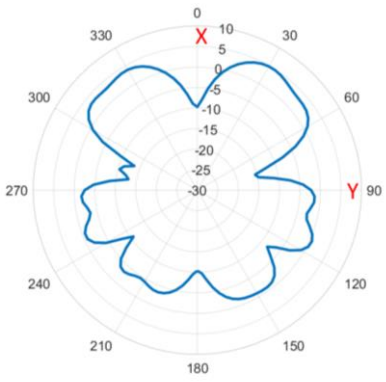
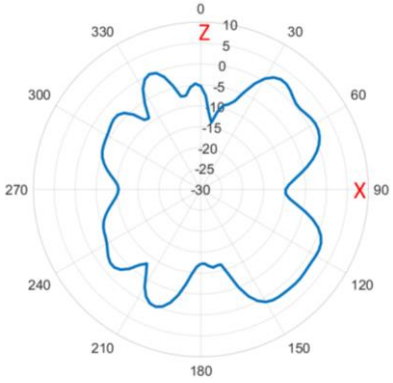
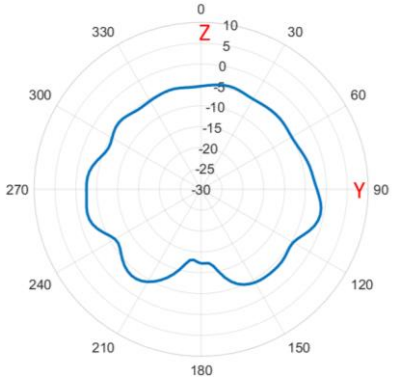
4100 MHz



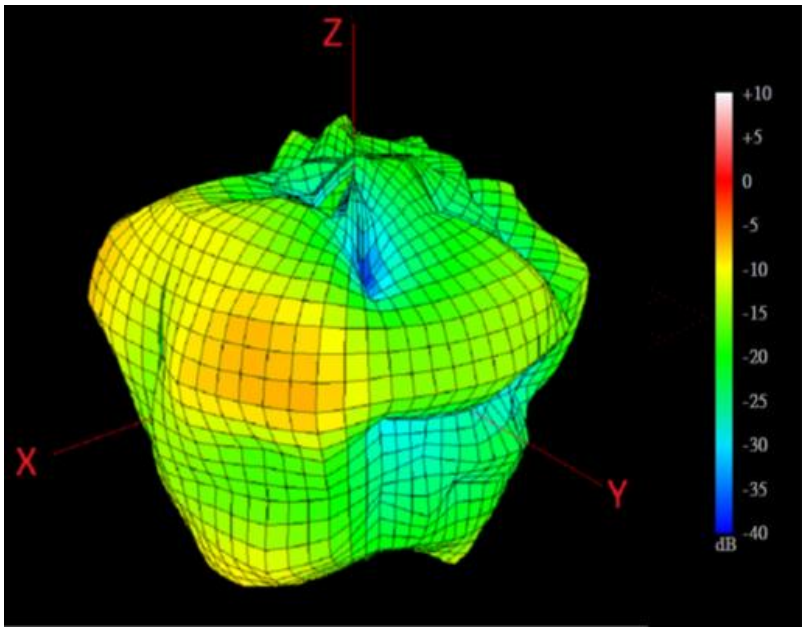
XY Plane	XZ Plane	YZ Plane
		

5500 MHz

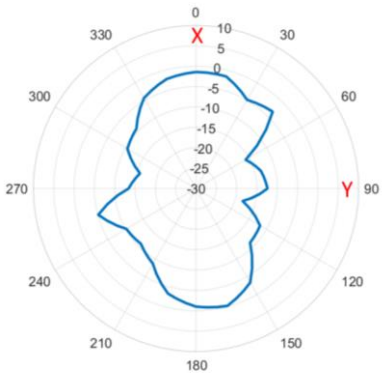


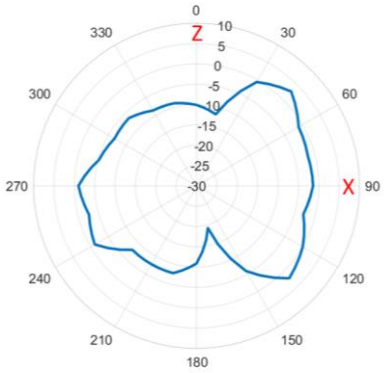
XY Plane	XZ Plane	YZ Plane
		

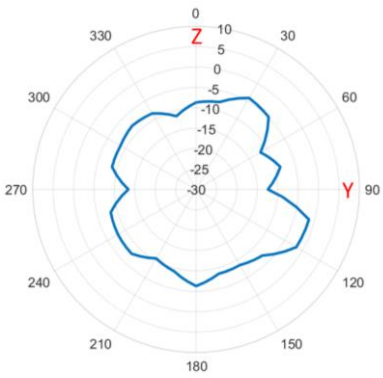
6525 MHz



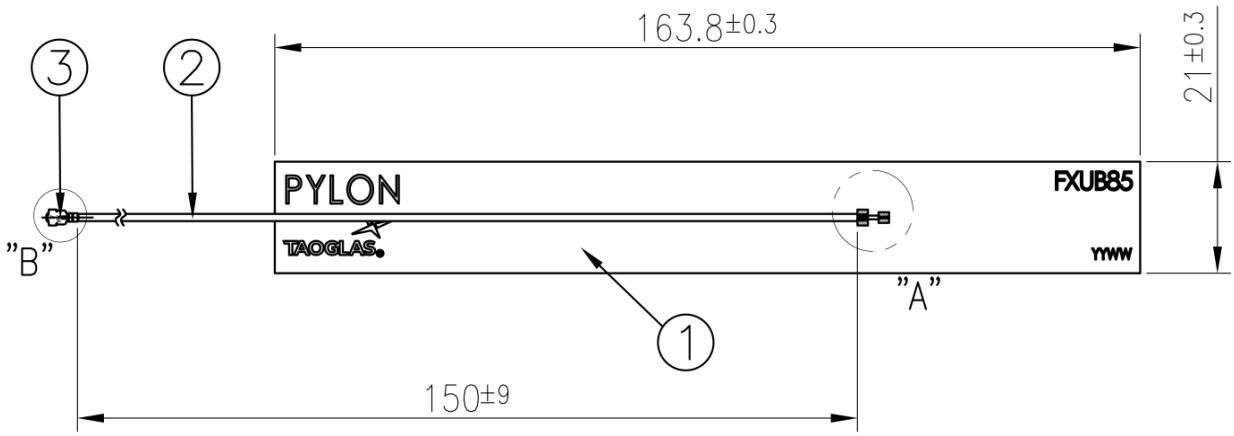
XY Plane	XZ Plane	YZ Plane

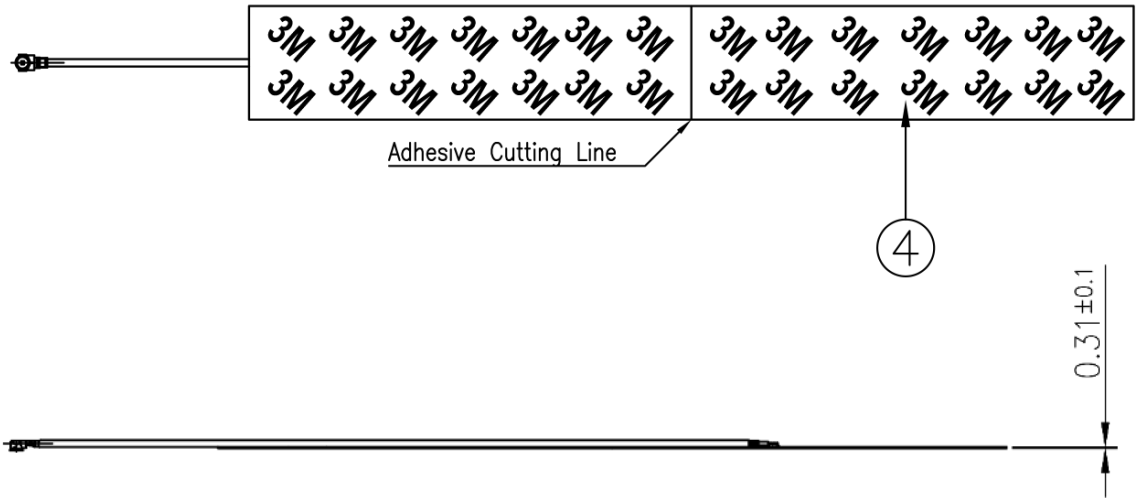




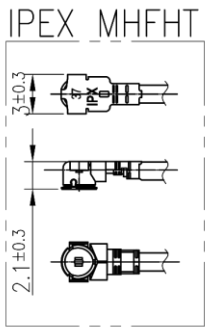


5. Mechanical Drawing (Units: mm)

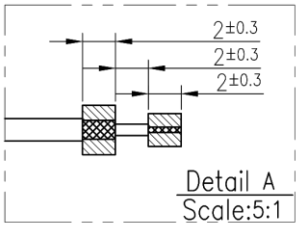




	Name	Material	Finish	QTY
1	FXUB85 FPCB	Polymer 0.31t	Black	1
2	1.37 Coaxial Cable	FEP	Gray	1
3	IPEX MHFHT	Brass	Au Plated	1
4	Double-Sided Adhesive	3M 467MP	Brown Liner	1



Detail B
Scale:4:1



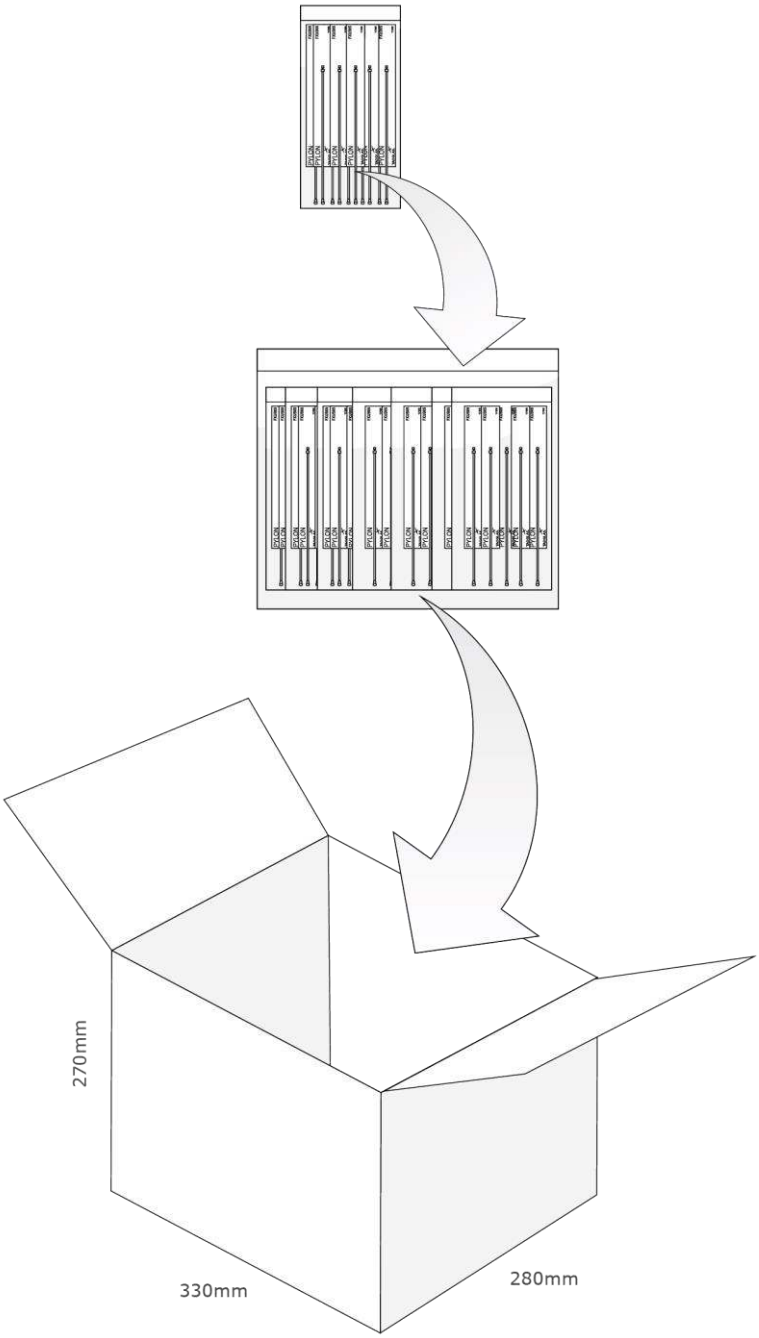
Detail A
Scale:5:1

6. Packaging

10pcs FXUB85.54.0150C per PE Bag
Weight - 20 g

100 pcs FXUB85.54.0150C per PE Bag
Weight - 200g

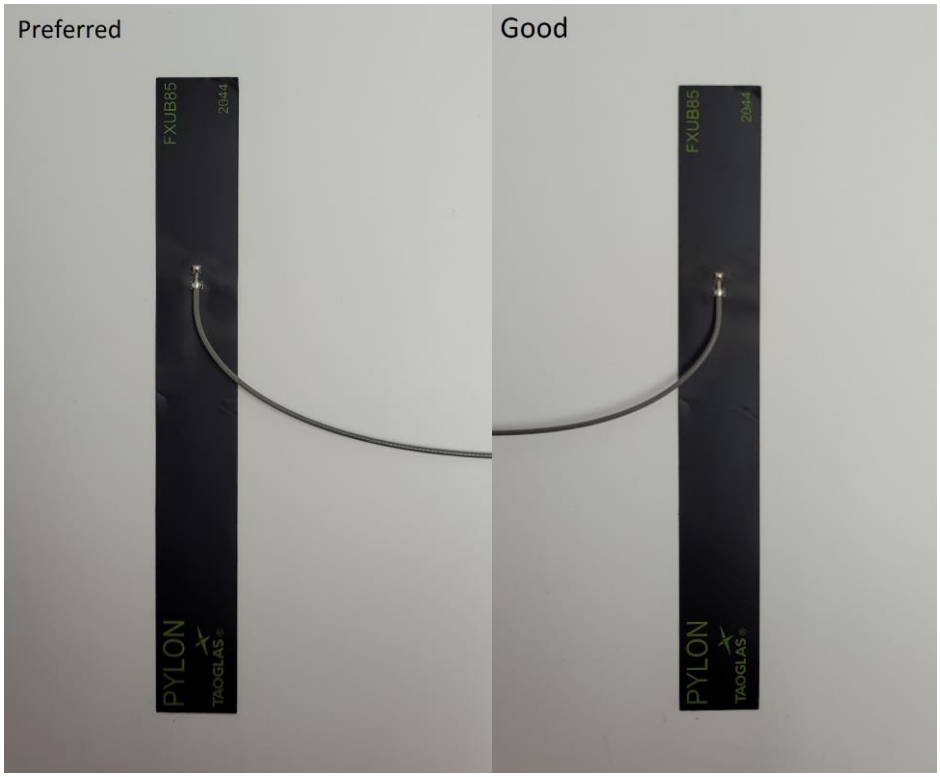
5000 pcs FXUB85.54.0150C per Carton
Carton Dimensions - 330 x 280 x 270mm
Weight - 10Kg



7. Application Note

Like all flex antennas, the FXUB85 Pylon antenna performance is somewhat sensitive to the routing of the cable during integration. The preferred routing is to the right, as shown in the photo below. All data presented here was taken in the “Preferred” configuration.

Routing the cable to the left also works, but routing the cable down the centre along the ground plane of the antenna is suboptimal.



Changelog for the datasheet

SPE-21-8-020 - FXUB85.54.0150C

Revision: A (Original First Release)	
Date:	2021-03-25
Changes:	First Release
Changes Made by:	Gary West

Previous Revisions

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