



TAOGLAS®



Datasheet

Minima

Part No:
FXUB65.07.0180C

Description

Embedded Flexible 4G LTE Wide Band Antenna
700-960MHz, 1700-2700MHz

Features:

Flexible Wideband Antenna
Covers worldwide 4G/3G/2G Bands
Isotropic Radiation Pattern
Highest efficiency in smallest size
Dimensions: 67.0 x 58.0 x 0.2 mm
Cable: 180mm 1.37
Connector: IPEX MHFI U.FL
RoHS & Reach Compliant

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1. Introduction



The patent granted Minima FXUB65 flexible antenna has been designed to cover 4G bands in the 700-2700MHz spectrum, but also optimally covers 3G and 2G. The antenna has a compact, flexible, modern design, with excellent efficiencies on all target bands.

The Minima comes standard with 180mm IPEX cable and connector for easy installation and can also be configured for different cable lengths and terminations. The 67x58x0.2mm FXUB65 is made from flexible polymer material, which is ultra-thin, compact and highly efficient across the 4G and 3G bands. It is installed by a simple “peel and stick” process, attaching securely to non-metal surfaces via adhesive backing.

The Minima has been designed with excess bandwidth so that performance is not affected by thicker or thinner plastic surfaces to which it is adhered. It enables designers to use only one antenna that covers all cellular communication frequencies in the IoT market.

The Minima antenna has a unique compact geometric design, which has excellent efficiency for its size and isotropic pattern at both low and high bands. This antenna if integrated optimally with enough clearance, can in most cases pass US operator requirements.

The antenna performs well at a reasonable distance, typically 20mm, from a ground and has demonstrated ease of integration into complex end user equipment.

The FXUB65 Minima antenna has a typical efficiency of more than 50% across the low bands and 64% across the high bands. The Minima is designed to be mounted directly onto a plastic or glass cover. 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.

Cable and connector can be customized, 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
LTE 700	698-803	Full Wrap Cable 2mm ABS	42.8	-3.68	2.63	50 Ω	Linear	Omni directional	10W
		Half Wrap Cable 2mm ABS	59.3	-2.27	2.86				
		Straight Cable 2mm ABS	49.8	-3.03	2.68				
GSM 850	824-894	Full Wrap Cable 2mm ABS	57.4	-2.41	2.39				
		Half Wrap Cable 2mm ABS	66.9	-1.75	3.27				
		Straight Cable 2mm ABS	54.0	-2.68	2.76				
GSM 900	880-960	Full Wrap Cable 2mm ABS	47.1	-3.27	2.00				
		Half Wrap Cable 2mm ABS	58.4	-2.34	2.77				
		Straight Cable 2mm ABS	48.1	-3.17	3.33				
DCS	1710-1880	Full Wrap Cable 2mm ABS	70.9	-1.49	4.11				
		Half Wrap Cable 2mm ABS	63.0	-2.01	3.37				
		Straight Cable 2mm ABS	57.4	-2.41	3.65				
PCS	1850-1990	Full Wrap Cable 2mm ABS	74.3	-1.29	4.15				
		Half Wrap Cable 2mm ABS	67.2	-1.72	4.55				
		Straight Cable 2mm ABS	68.7	-1.63	4.18				
UMTS1	1920-2170	Full Wrap Cable 2mm ABS	64.8	-1.89	4.08				
		Half Wrap Cable 2mm ABS	61.8	-2.09	4.63				
		Straight Cable 2mm ABS	64.2	-1.92	4.25				
Wi-Fi	2400-2480	Full Wrap Cable 2mm ABS	60.2	-2.21	5.10				
		Half Wrap Cable 2mm ABS	55.4	-2.57	5.26				
		Straight Cable 2mm ABS	59.4	-2.26	4.71				
LTE 2600	2490-2690	Full Wrap Cable 2mm ABS	49.0	-3.10	3.62				
		Half Wrap Cable 2mm ABS	51.4	-2.89	3.29				
		Straight Cable 2mm ABS	54.6	-2.62	3.41				

5G/4G Bands					
Band Number	5G NR / FR1 / LTE / LTE-Advanced / WCDMA / HSPA / HSPA+ / TD-SCDMA / NTN				
	Uplink	Downlink	Full Wrap Cable 2mm ABS	Half Wrap Cable 2mm ABS	Straight Cable 2mm ABS
B1	1920 to 1980	2110 to 2170	✓	✓	✓
B2	1850 to 1910	1930 to 1990	✓	✓	✓
B3	1710 to 1785	1805 to 1880	✓	✓	✓
B4	1710 to 1755	2110 to 2155	✓	✓	✓
B5	824 to 849	869 to 894	✓	✓	✓
B7	2500 to 2570	2620 to 2690	✓	✓	✓
B8	880 to 915	925 to 960	✓	✓	✓
B9*	1749.9 to 1784.9	1844.9 to 1879.9	✓	✓	✓
B11	1427.9 to 1447.9	1475.9 to 1495.9	✓	✓	✓
B12	699 to 716	729 to 746	✓	✓	✓
B13	777 to 787	746 to 756	✓	✓	✓
B14	788 to 798	758 to 768	✓	✓	✓
B17	704 to 716	734 to 746	✓	✓	✓
B18	815 to 830	860 to 875	✓	✓	✓
B19	830 to 845	875 to 890	✓	✓	✓
B20	832 to 862	791 to 821	✓	✓	✓
B21	1447.9 to 1462.9	1495.9 to 1510.9	✓	✓	✓
B22*	3410 to 3490	3510 to 3590	✗	✗	✗
B23 / n23	2000 to 2020	2180 to 2200	✓	✓	✓
B24 / n255	1626.5 to 1660.5	1525 to 1559	✓	✓	✓
B25	1850 to 1915	1930 to 1995	✓	✓	✓
B26	814 to 849	859 to 894	✓	✓	✓
B27*	807 to 824	852 to 869	✓	✓	✓
B28	703 to 748	758 to 803	✓	✓	✓
B29	717 to 728		✓	✓	✓
B30	2305 to 2315	2350 to 2360	✓	✓	✓
B31	452.5 to 457.5	462.5 to 467.5	✗	✗	✗
B32	1452 to 1496		✓	✓	✓
B34	2010 to 2025		✓	✓	✓
B35	1850 to 1910		✓	✓	✓
B36	1930 to 1990		✓	✓	✓
B37	1910 to 1930		✓	✓	✓
B38	2570 to 2620		✓	✓	✓
B39	1880 to 1920		✓	✓	✓
B40	2300 to 2400		✓	✓	✓
B41	2496 to 2690		✓	✓	✓
B42	3400 to 3600		✗	✗	✗
B43	3600 to 3800		✗	✗	✗
B45	1447 to 1467		✓	✓	✓
B46	5150 to 5925		✗	✗	✗
B47	5855 to 5925		✗	✗	✗
B48	3550 to 3700		✗	✗	✗
B49	3550 to 3700		✗	✗	✗
B50	1432 to 1517		✓	✓	✓
B51	1427 to 1432		✓	✓	✓
B52	3300 to 3400		✗	✗	✗
B53	2483.5 to 2495		✓	✓	✓
B65	1920 to 2010	2110 to 2200	✓	✓	✓
B66	1710 to 1780	2110 to 2200	✓	✓	✓
B68	698 to 728	753 to 783	✓	✓	✓
B69	2570 to 2620		✓	✓	✓
B70	1695 to 1710	1995 to 2020	✓	✓	✓
B71	663 to 698	617 to 652	✓	✓	✓
B72	451 to 456	461 to 466	✗	✗	✗
B73	450 to 455	460 to 465	✗	✗	✗
B74	1427 to 1470	1475 to 1518	✓	✓	✓
B75	1432 to 1517		✓	✓	✓
B76	1427 to 1432		✓	✓	✓
B77	3300 to 4200		✗	✗	✗
B78	3300 to 3800		✗	✗	✗
B79	4400 to 5000		✗	✗	✗
B85	698 to 716	728 to 746	✓	✓	✓
B87	410 to 415	420 to 425	✗	✗	✗
B88	412 to 417	422 to 427	✗	✗	✗
n256	1980 to 2010	2170 to 2200	✓	✓	✓

Mechanical	
Dimensions (mm)	67 x 58 x 0.2 mm
Material	Flexible Polymer
Connector	IPEX MHFI
Cable	180mm 1.37

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



	Name	P/N	Material	Finish	QTY
1	FXUB65 FPCB	100115D000000A	Polymer 0.24t	Black	1
2	1.37 Coaxial Cable	300515C010000A	FEP	Black	1
3	IPEX MHFHT	204511G000000A	Brass	Au Plated	1
4	Double-Sided Adhesive	100115D000000A	3M 467	Brown Liner	1

4. Packaging

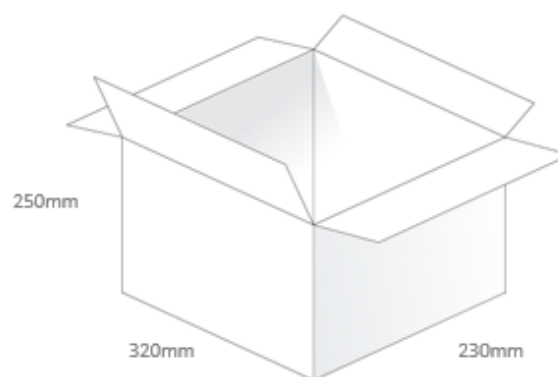
100pcs FXUB65.07.0180C per PE Bag
Weight: 241g



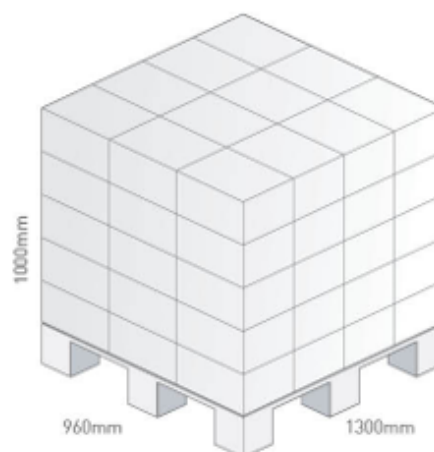
1000pcs FXUB65.07.0180C per Large PE Bag
Bag Dimensions: 380*280 mm
Weight: 2.6Kg



5000pcs FXUB65.07.0180C per carton
Dimensions: 320*250*230mm
Weight: 13.5Kg



Pallet Dimensions: 960*1000*1300mm
60 Cartons per Pallet
12 Cartons per Pallet
5 Layers.

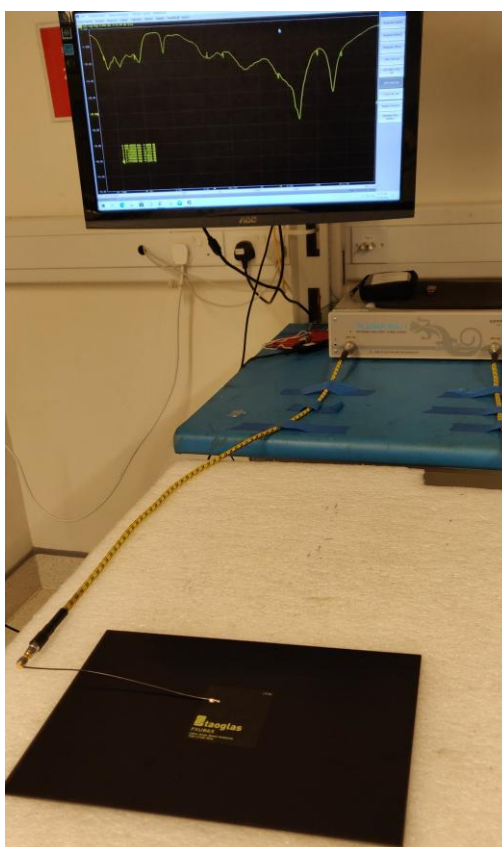


5. Antenna Characteristics

5.1 Test Setup

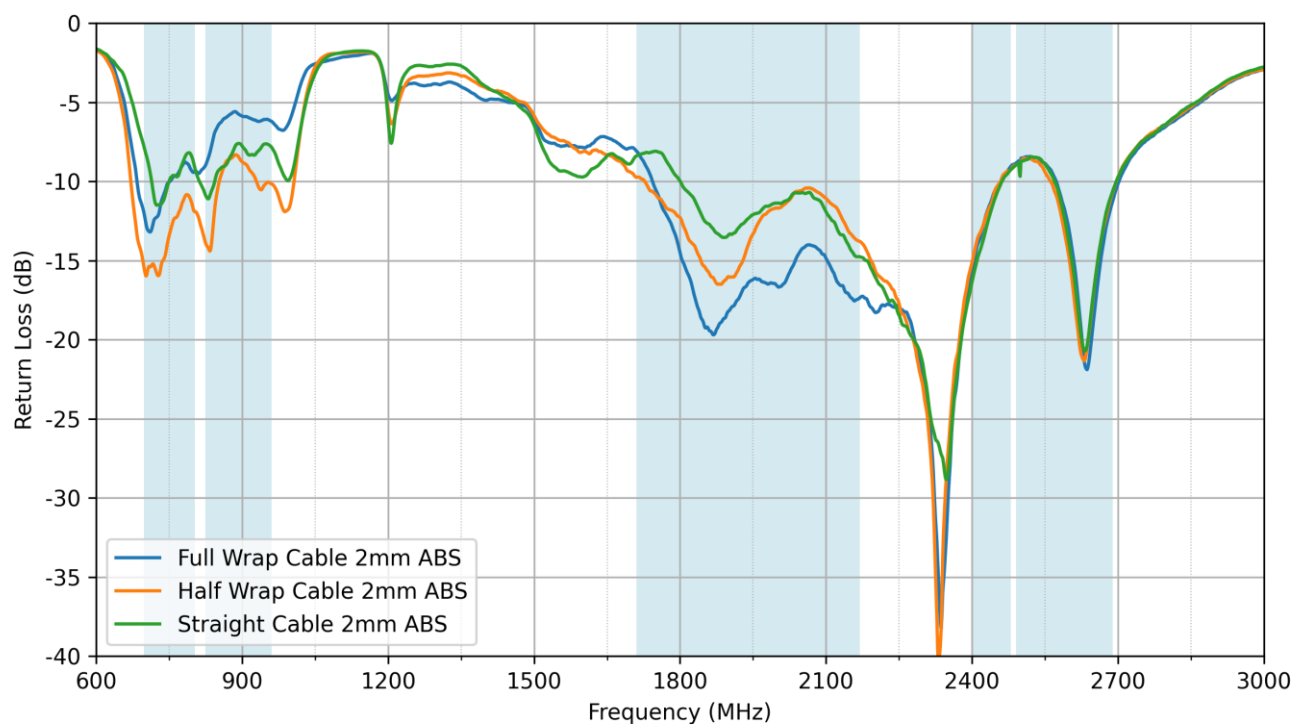


Vector Network Analyzer

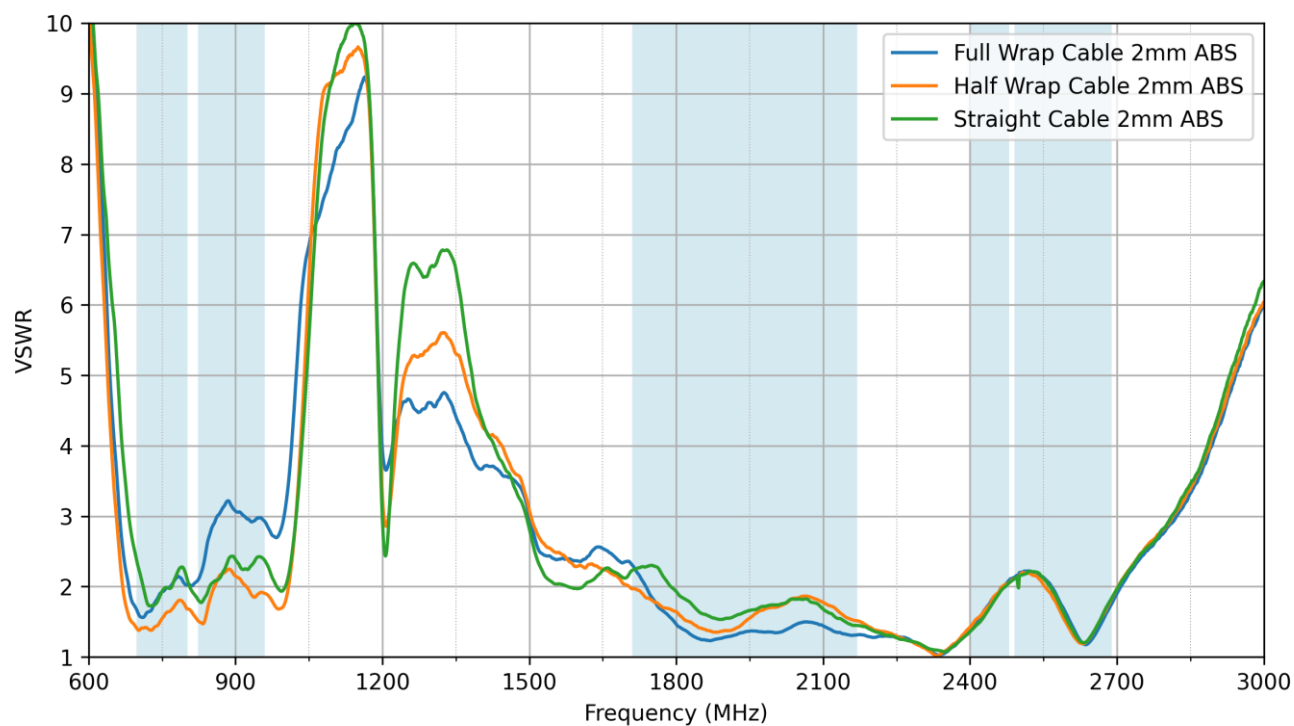


VNA Test Set-up on 2mm ABS

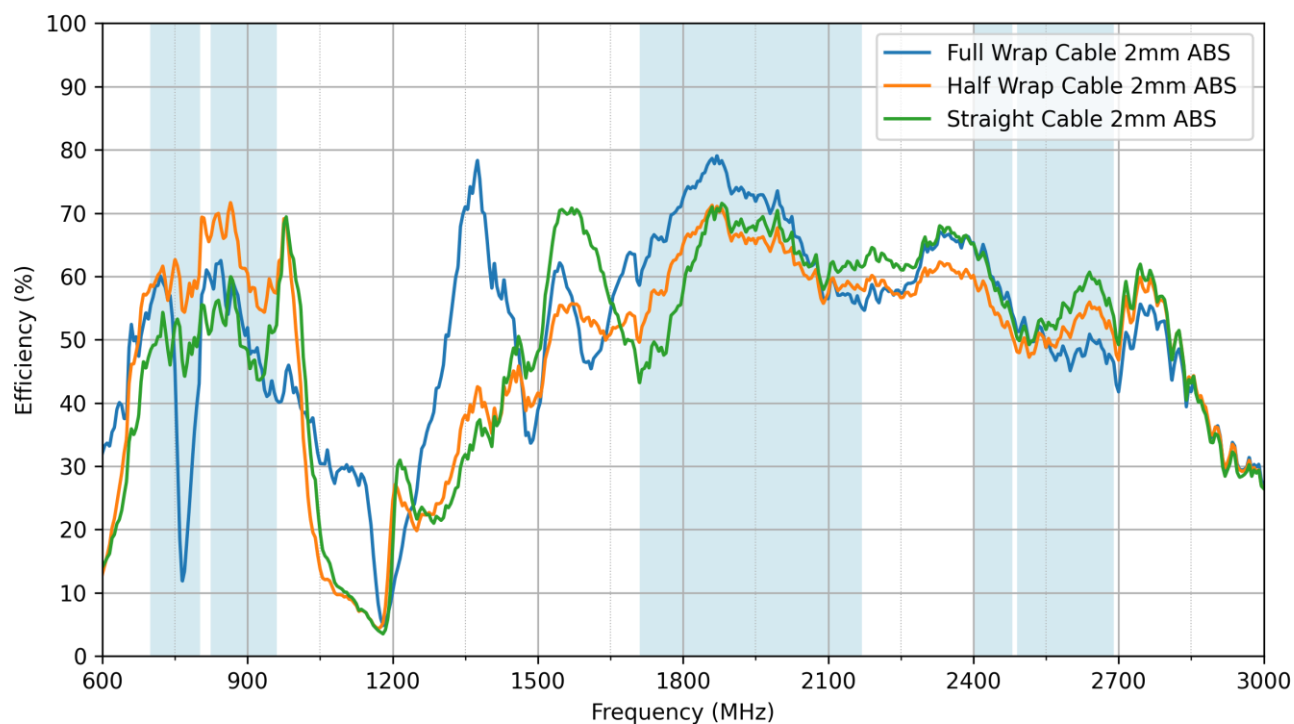
5.2 Return Loss



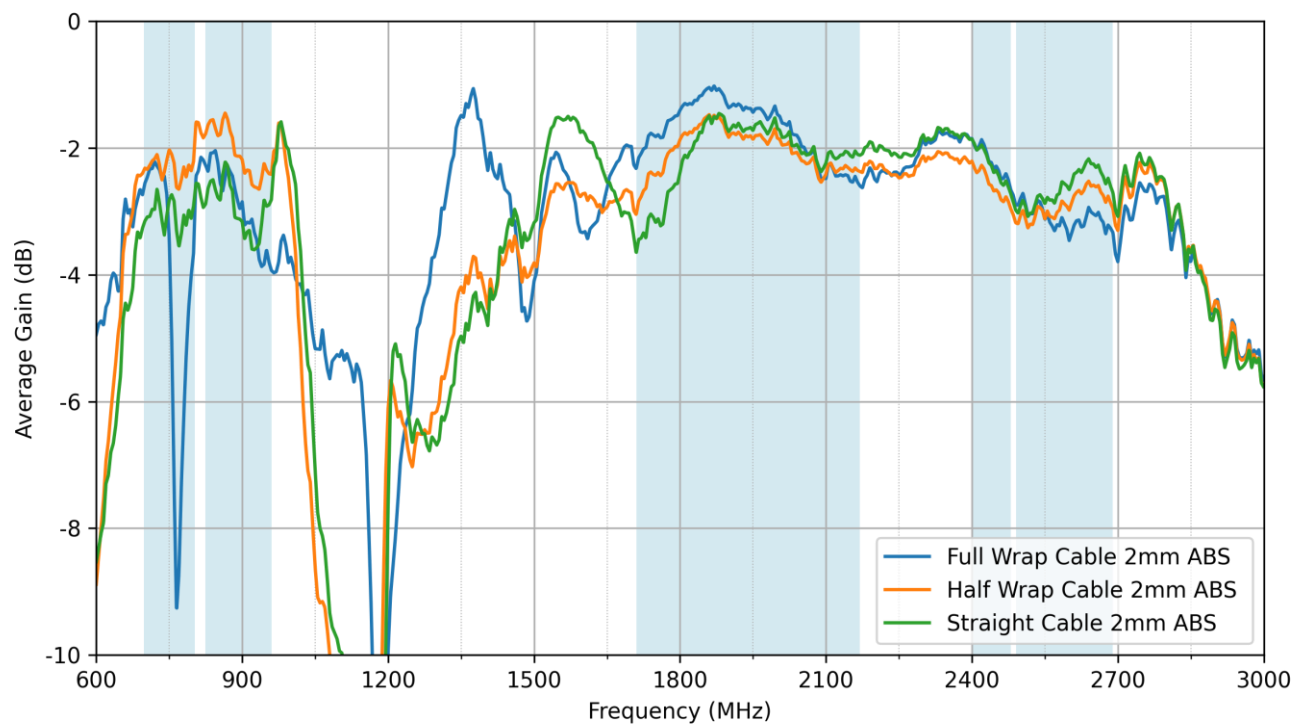
5.3 VSWR



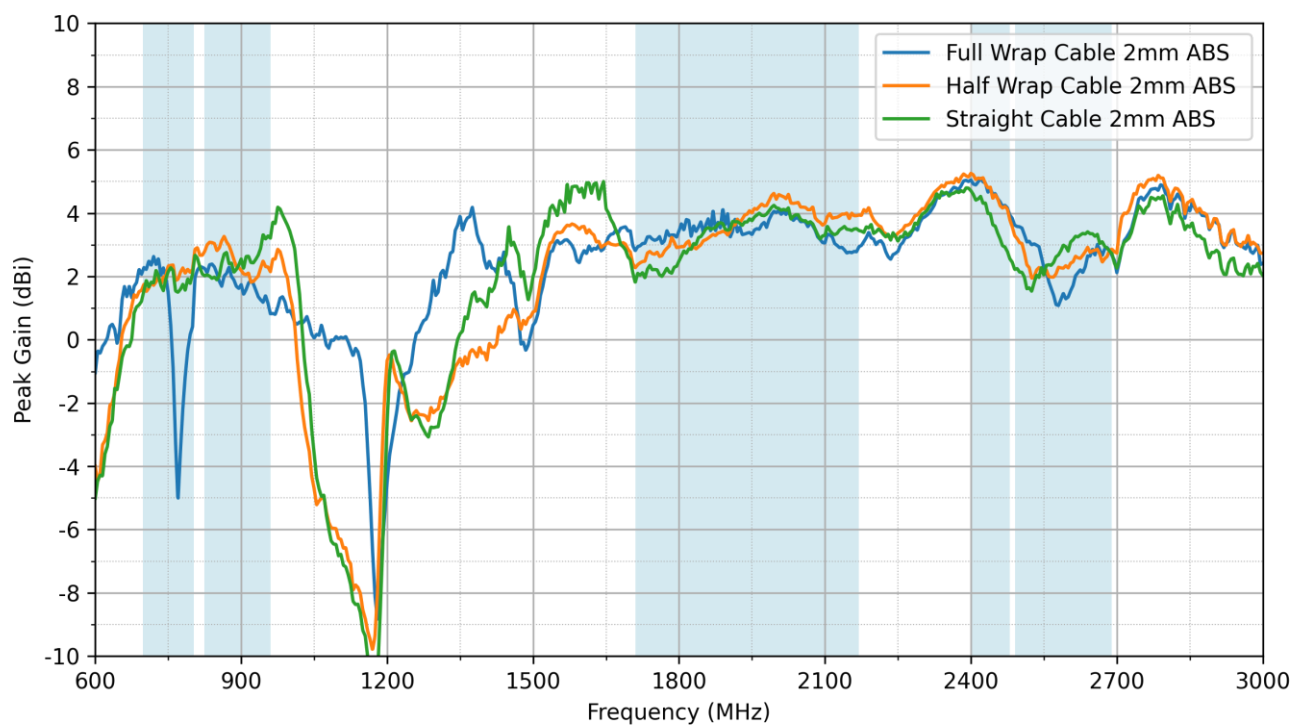
5.4 Efficiency



5.5 Average Gain



5.6 Peak Gain



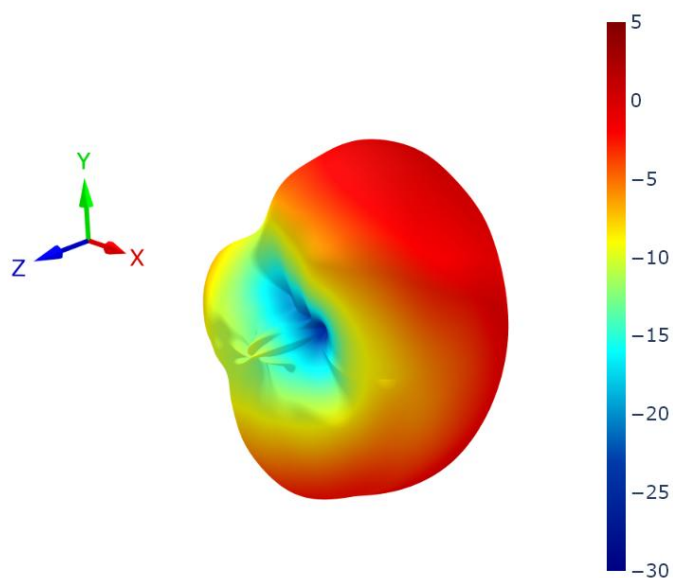
6. Radiation Patterns

6.1 Test Setup

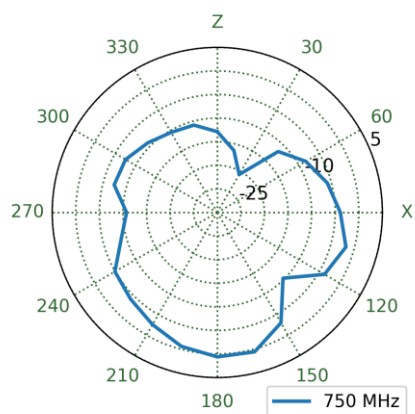


Chamber Test Set-up on 2mm ABS

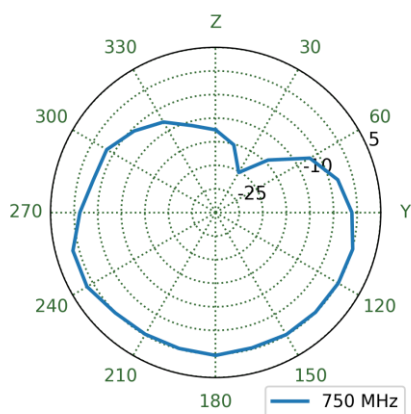
6.2 Full Wrap Cable 2mm ABS - Patterns at 750 MHz



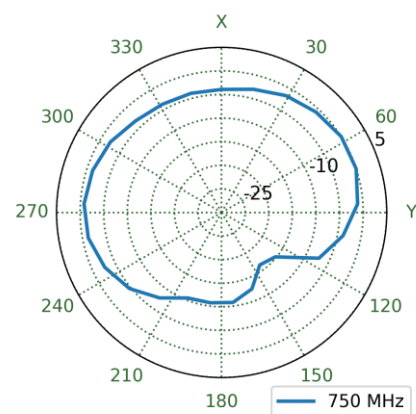
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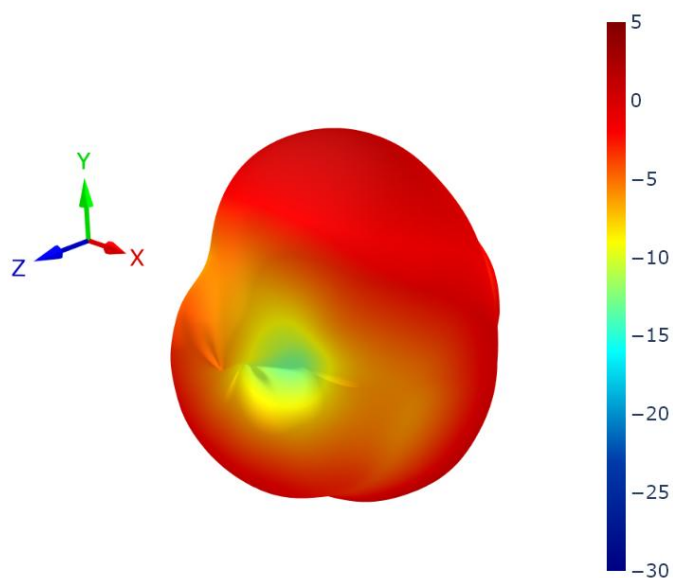
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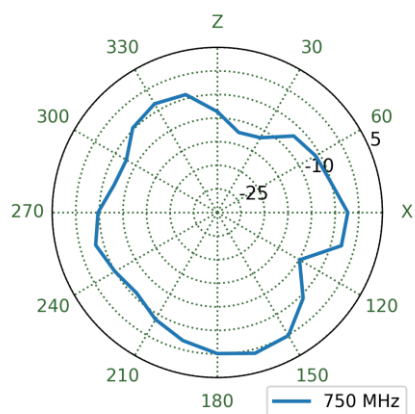
XY Plane



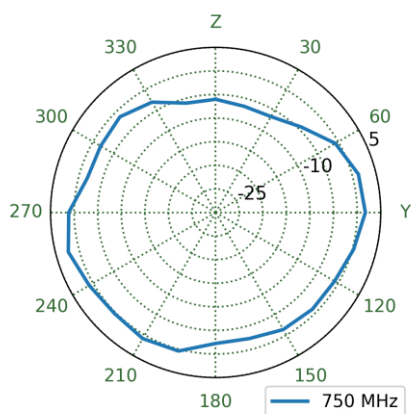
6.3 Half Wrap Cable 2mm ABS - Patterns at 750 MHz



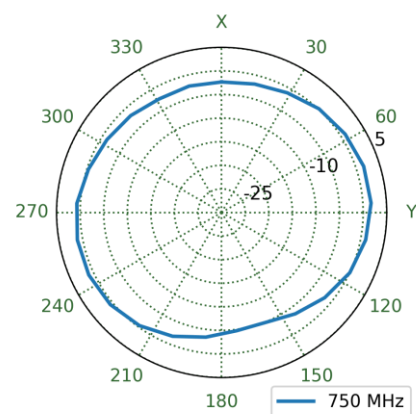
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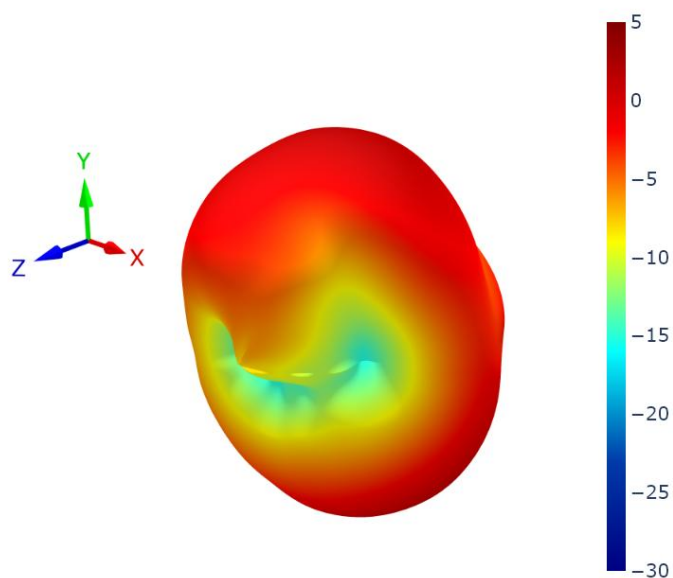
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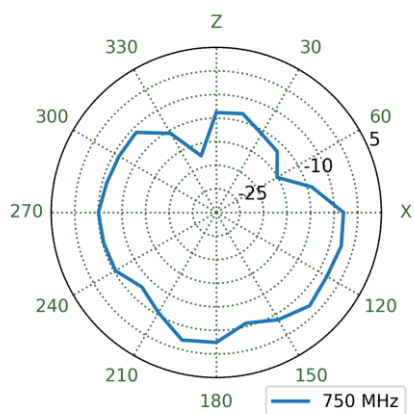
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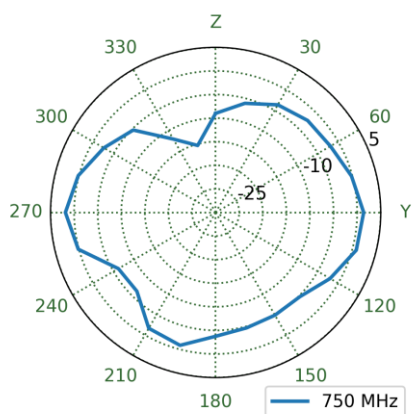
6.4 Straight Cable 2mm ABS - Patterns at 750 MHz



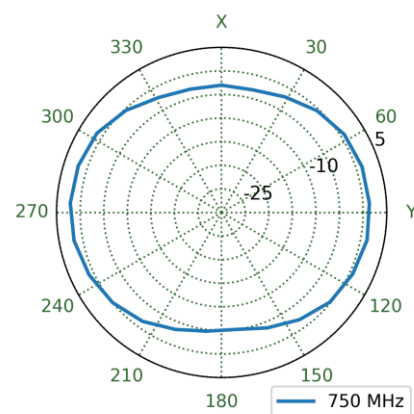
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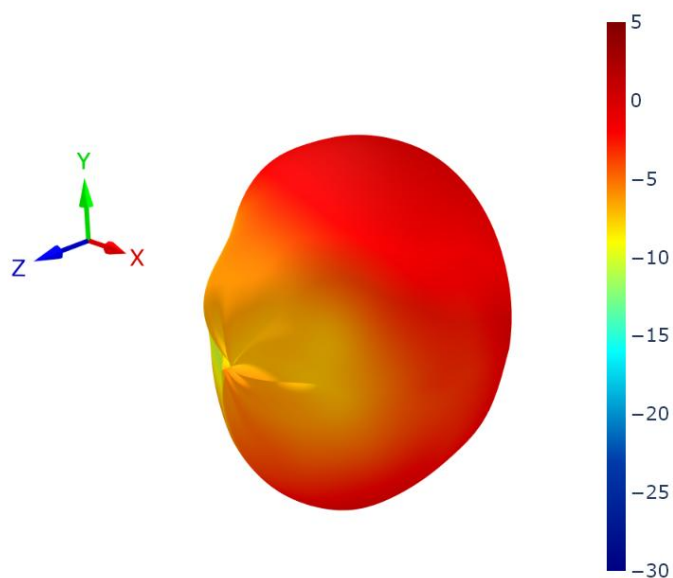
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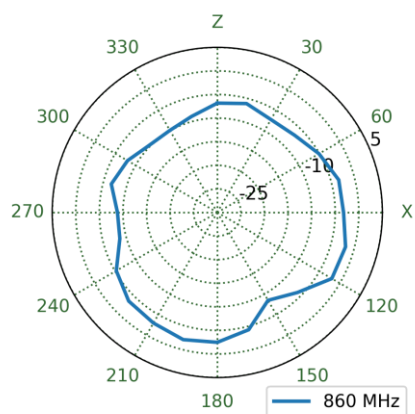
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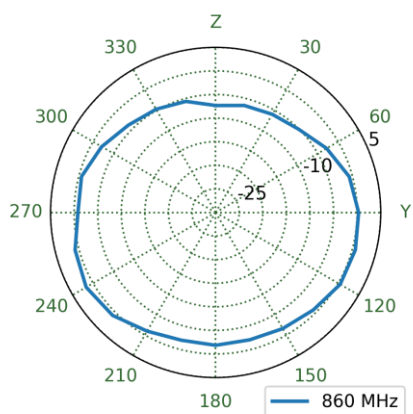
6.5 Full Wrap Cable 2mm ABS - Patterns at 860 MHz



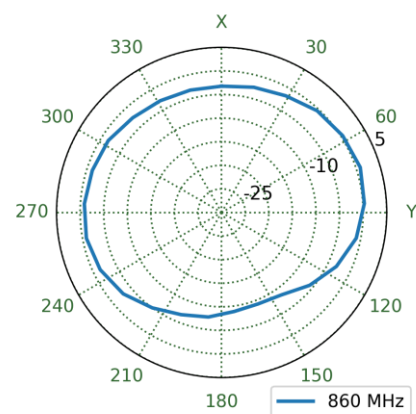
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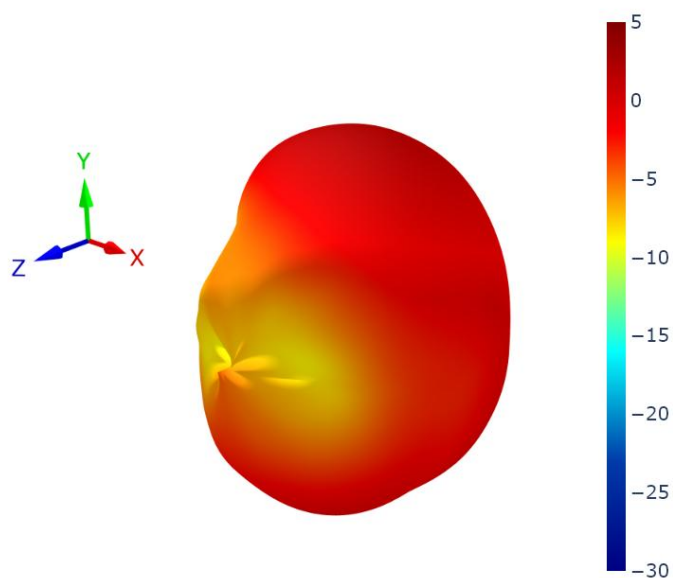
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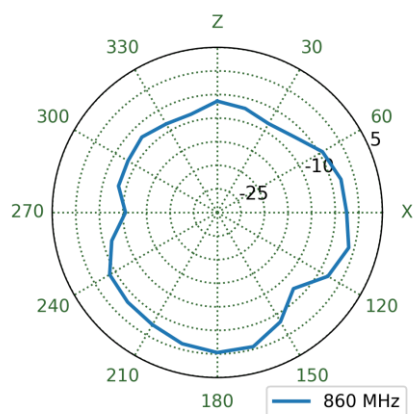
XY Plane



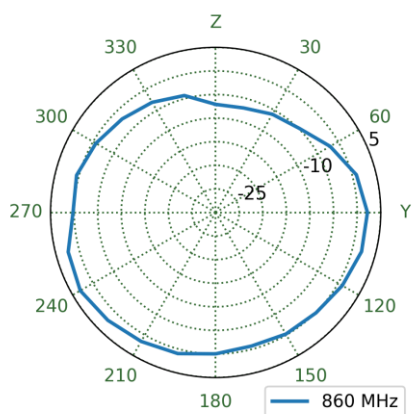
6.6 Half Wrap Cable 2mm ABS - Patterns at 860 MHz



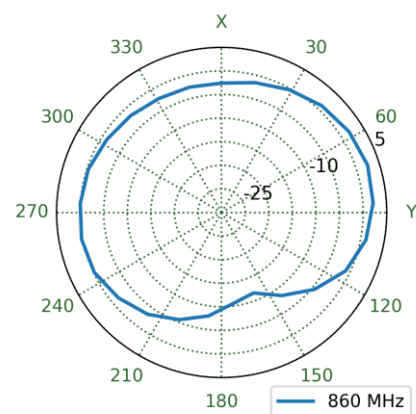
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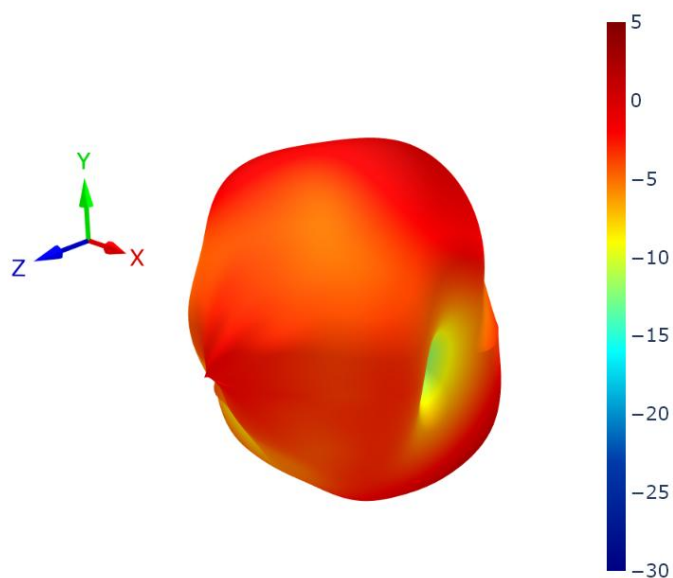
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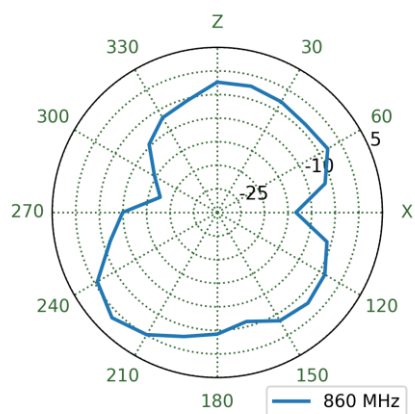
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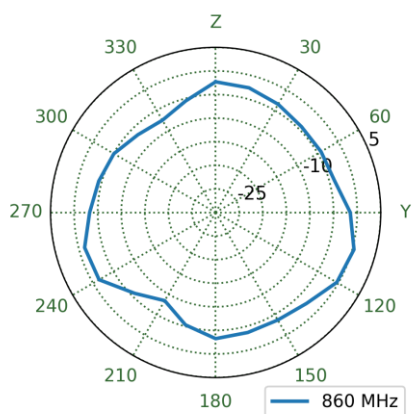
6.7 Straight Cable 2mm ABS - Patterns at 860 MHz



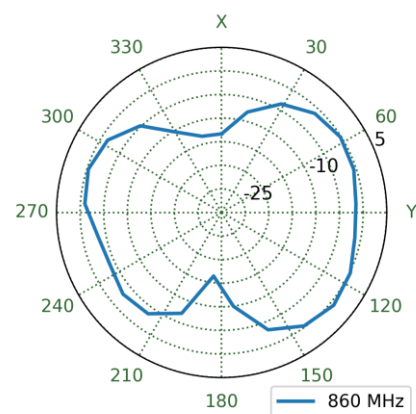
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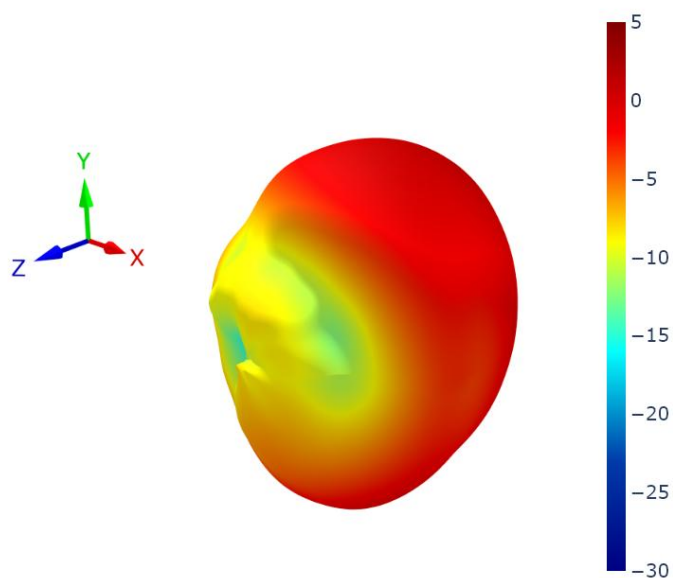
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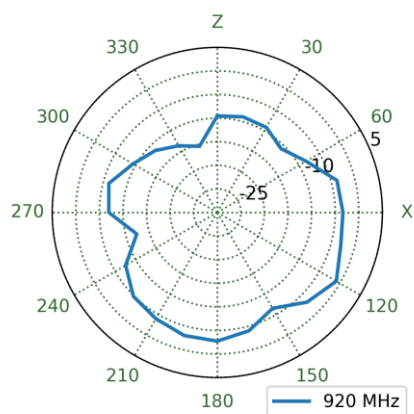
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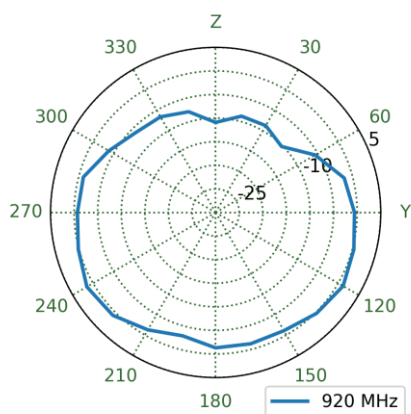
6.8 Full Wrap Cable 2mm ABS - Patterns at 920 MHz



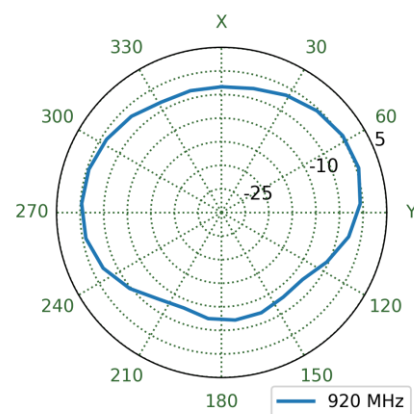
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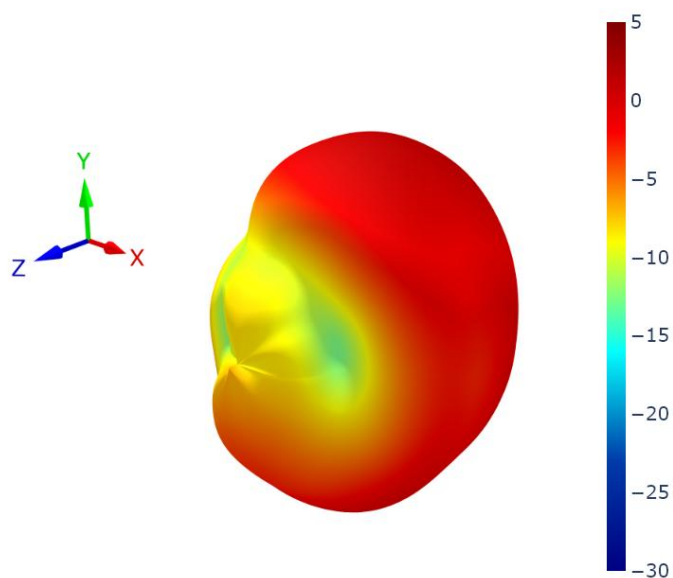
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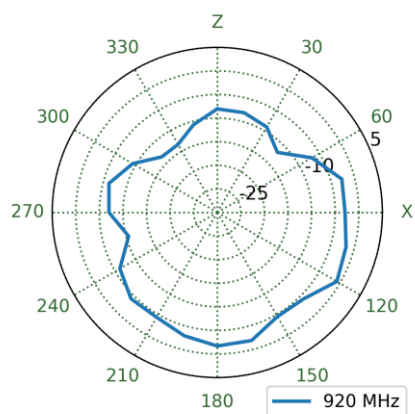
XY Plane



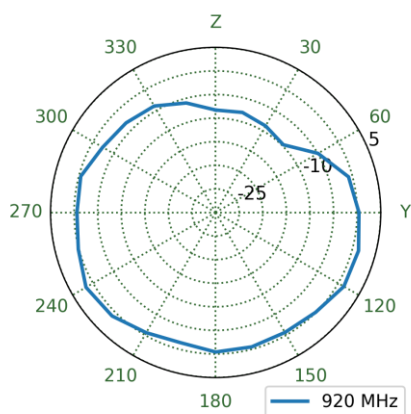
6.9 Half Wrap Cable 2mm ABS - Patterns at 920 MHz



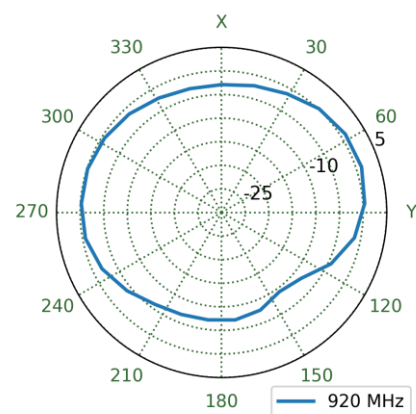
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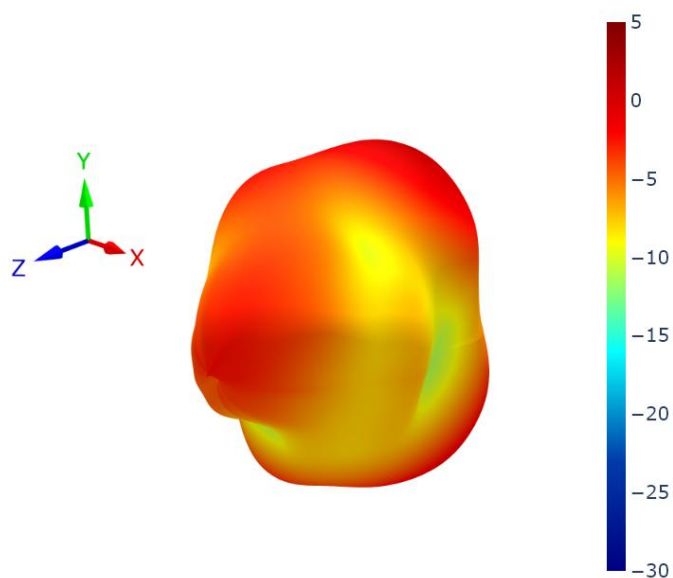
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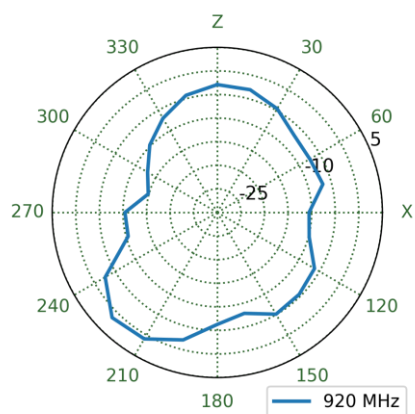
XY Plane



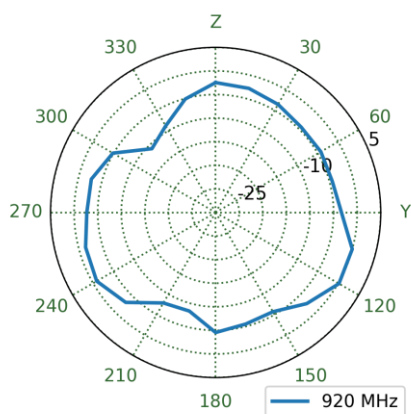
6.10 Straight Cable 2mm ABS - Patterns at 920 MHz



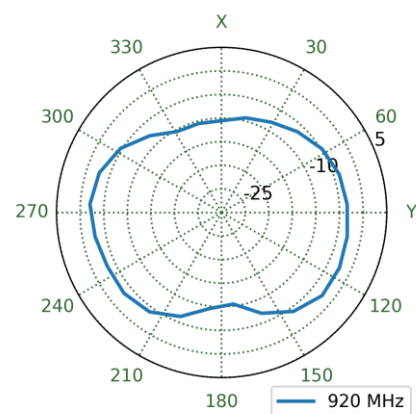
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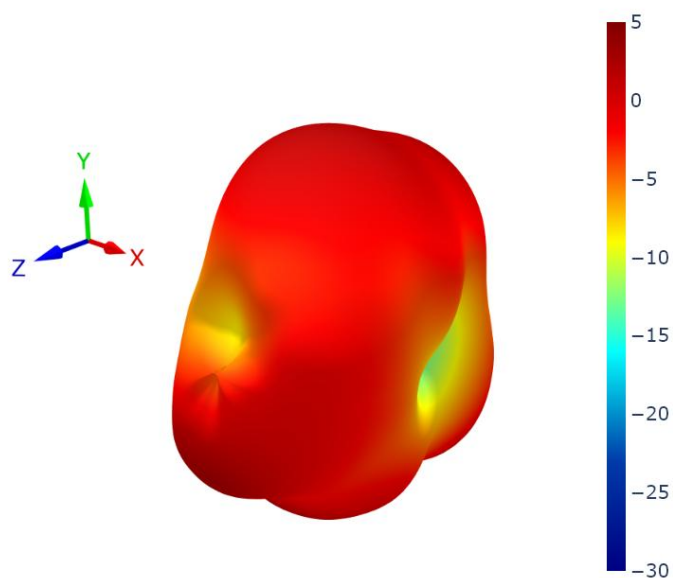
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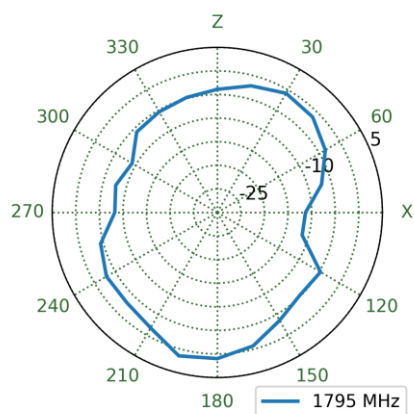
XY Plane



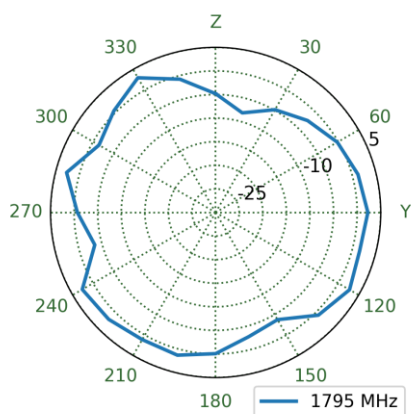
6.11 Full Wrap Cable 2mm ABS - Patterns at 1795 MHz



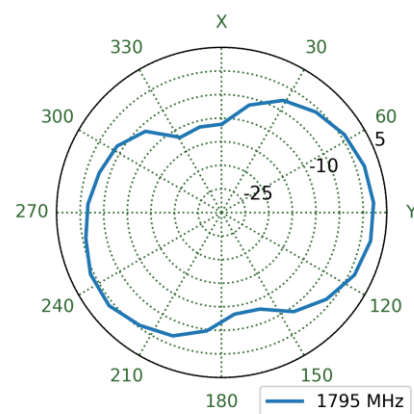
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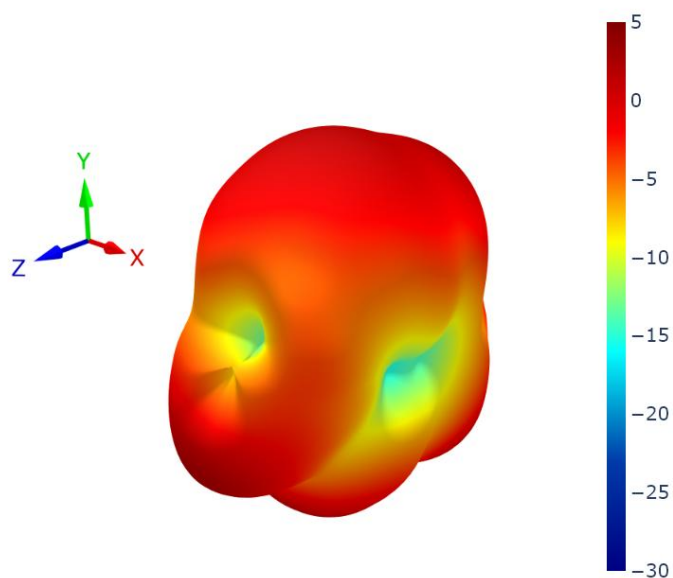
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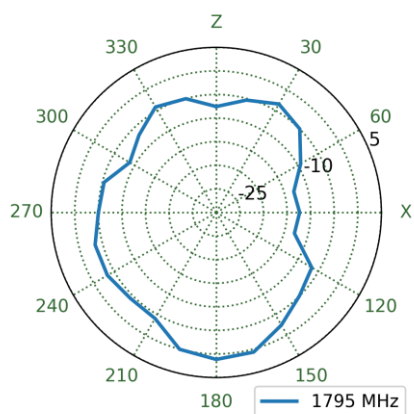
XY Plane



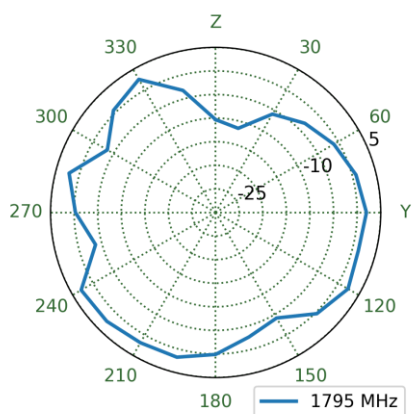
6.12 Half Wrap Cable 2mm ABS - Patterns at 1795 MHz



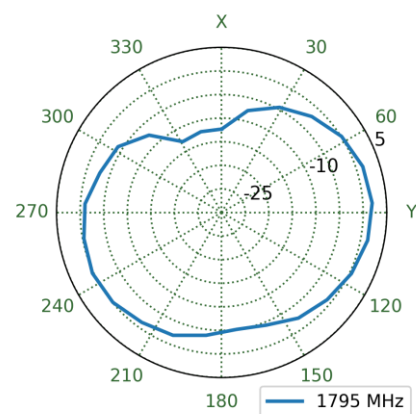
XZ Plane



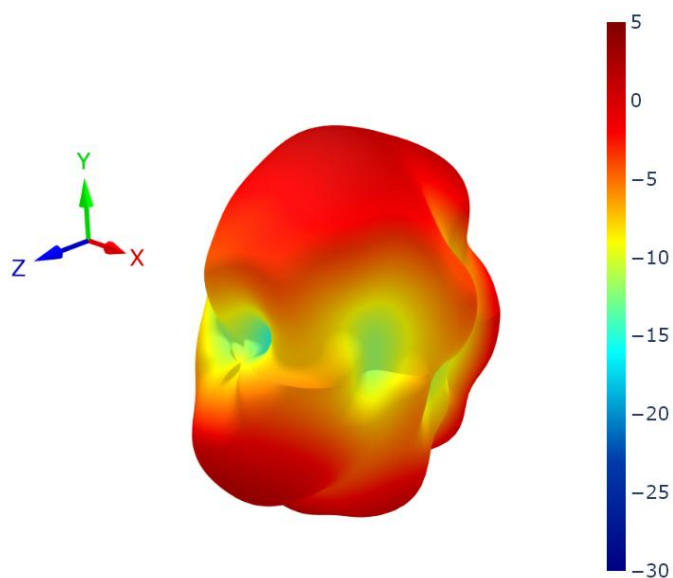
YZ Plane



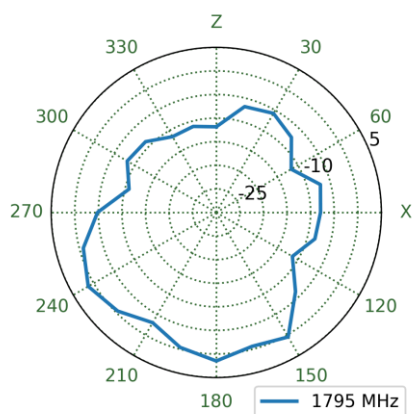
XY Plane



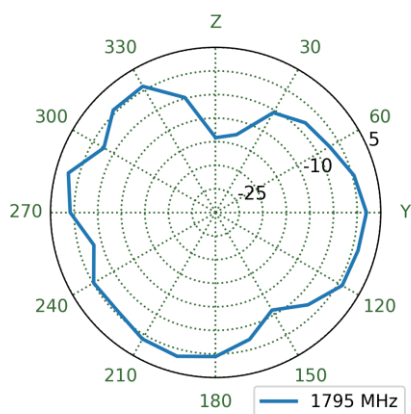
6.13 Straight Cable 2mm ABS - Patterns at 1795 MHz



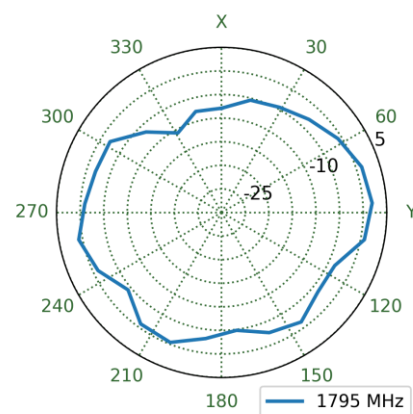
XZ Plane



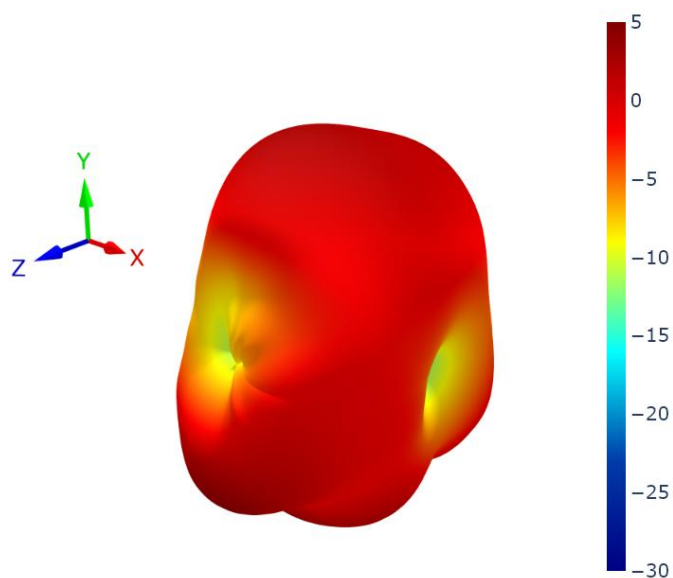
YZ Plane



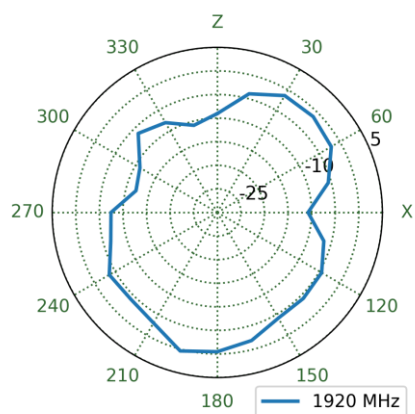
XY Plane



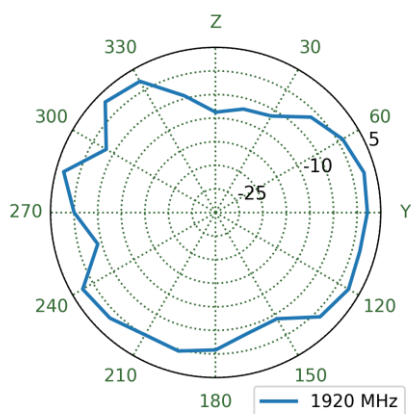
6.14 Full Wrap Cable 2mm ABS - Patterns at 1920 MHz



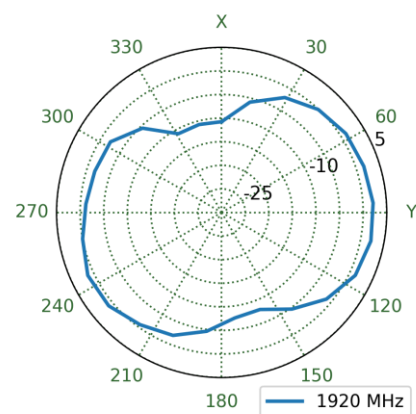
XZ Plane



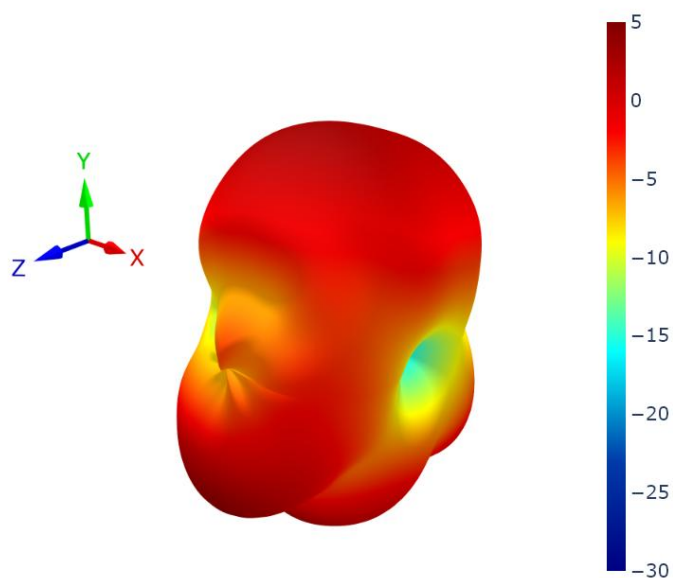
YZ Plane



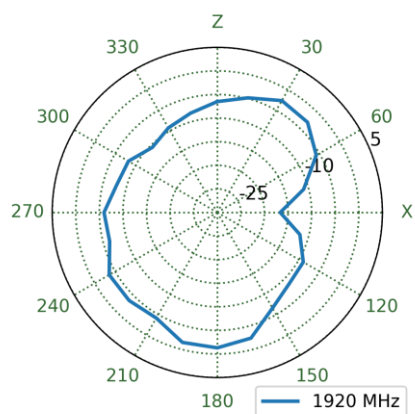
XY Plane



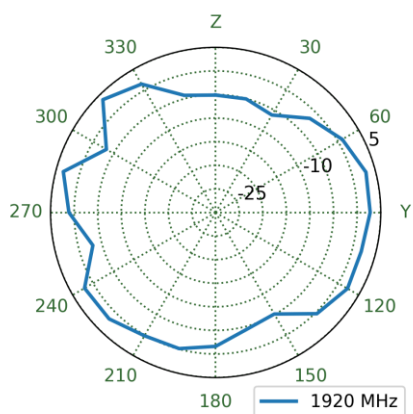
6.15 Half Wrap Cable 2mm ABS - Patterns at 1920 MHz



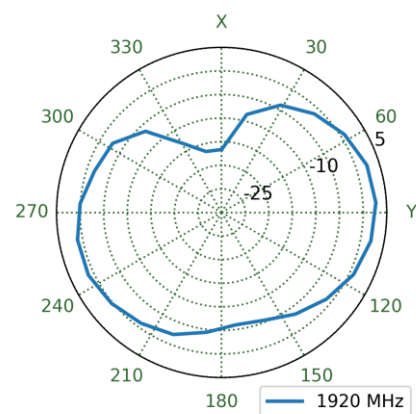
XZ Plane



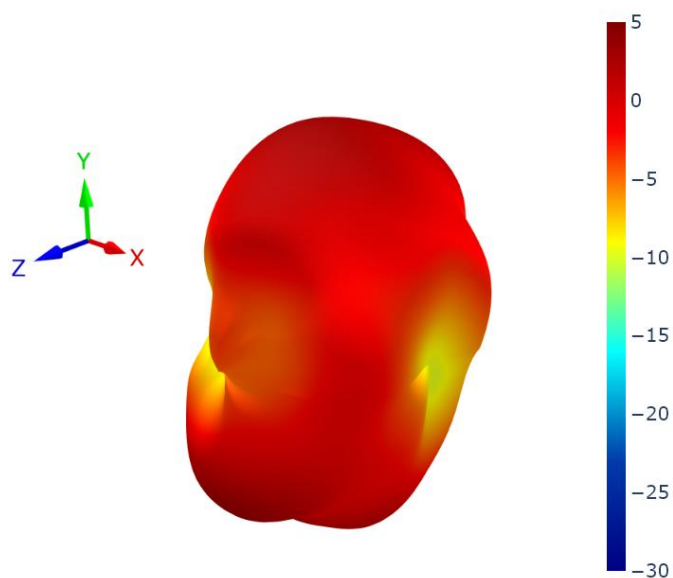
YZ Plane



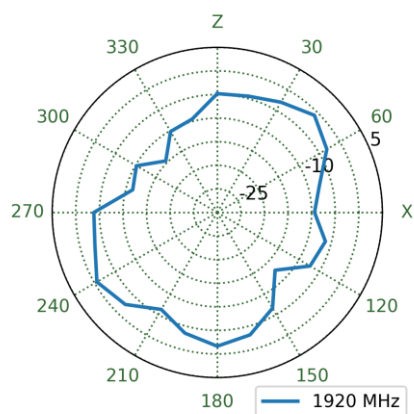
XY Plane



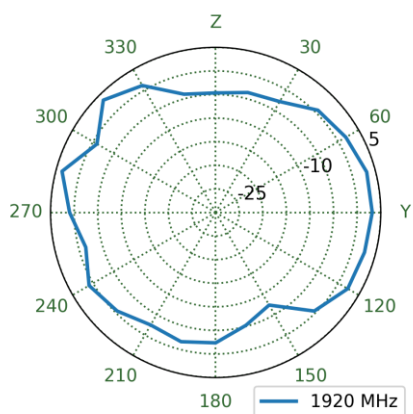
6.16 Straight Cable 2mm ABS - Patterns at 1920 MHz



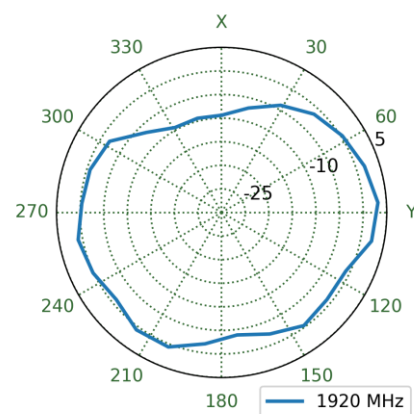
XZ Plane



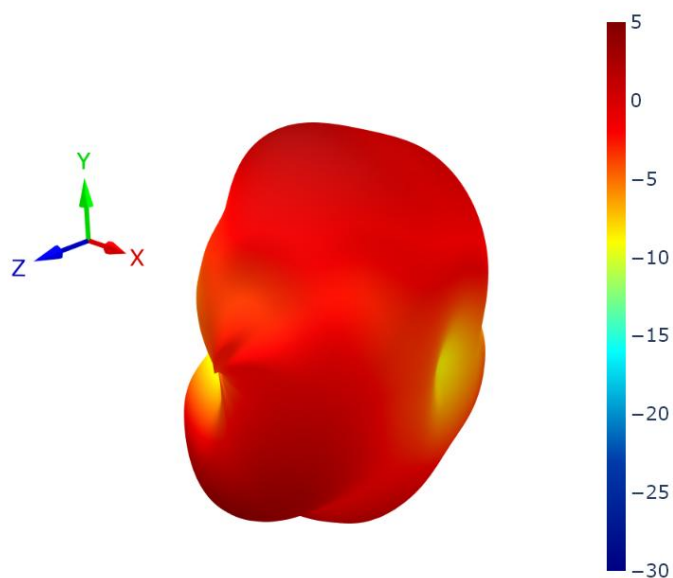
YZ Plane



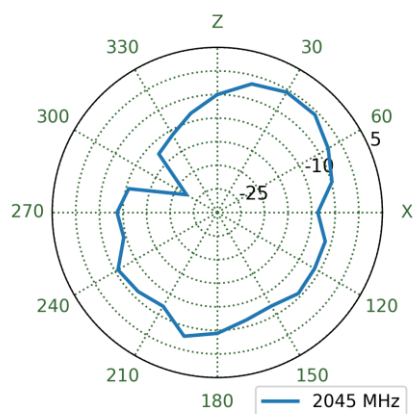
XY Plane



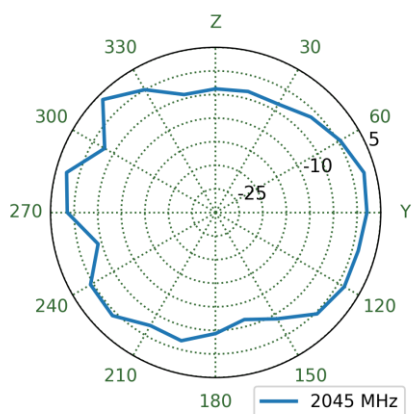
6.17 Full Wrap Cable 2mm ABS - Patterns at 2045 MHz



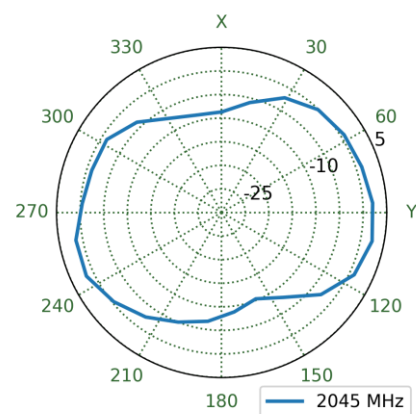
XZ Plane



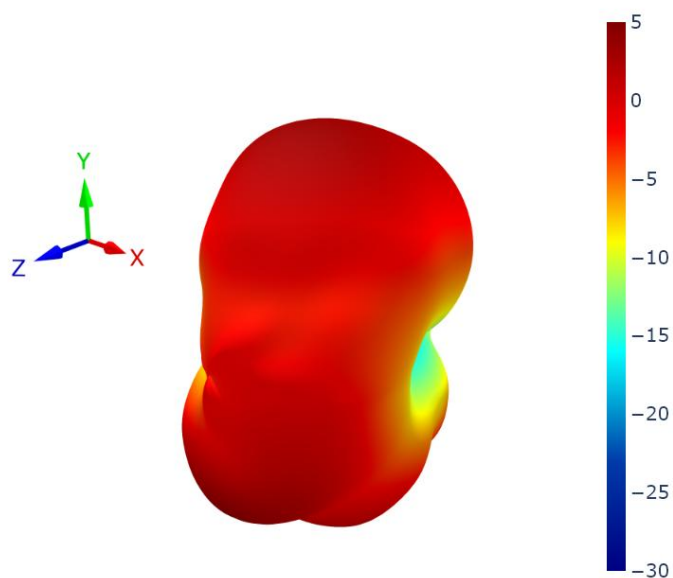
YZ Plane



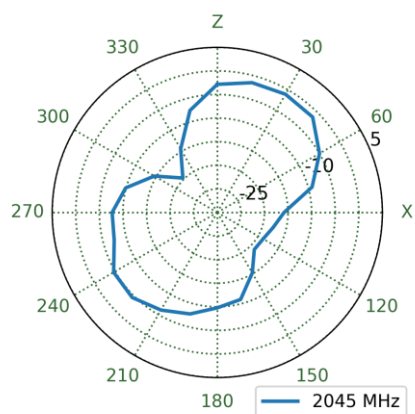
XY Plane



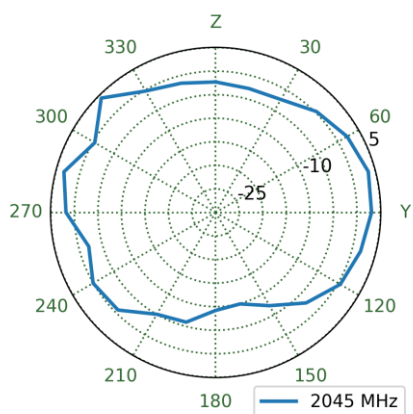
6.18 Half Wrap Cable 2mm ABS - Patterns at 2045 MHz



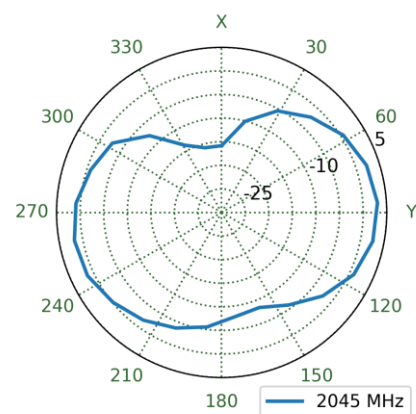
XZ Plane



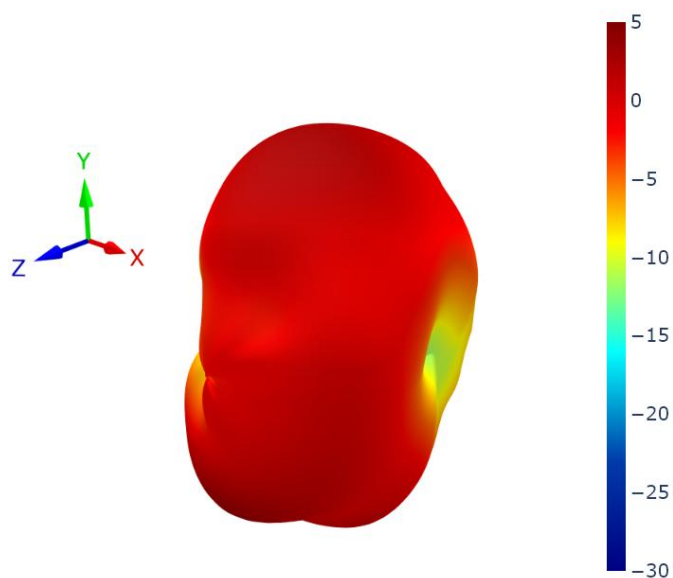
YZ Plane



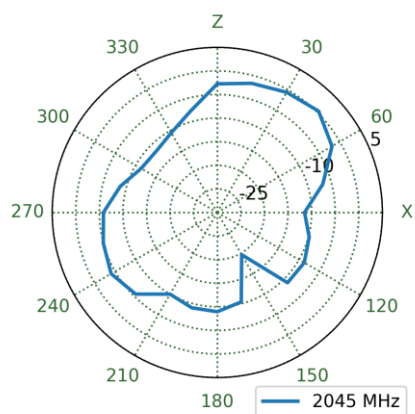
XY Plane



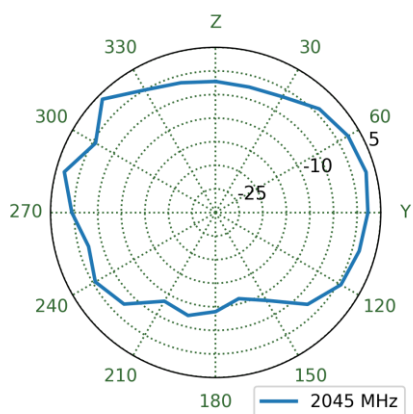
6.19 Straight Cable 2mm ABS - Patterns at 2045 MHz



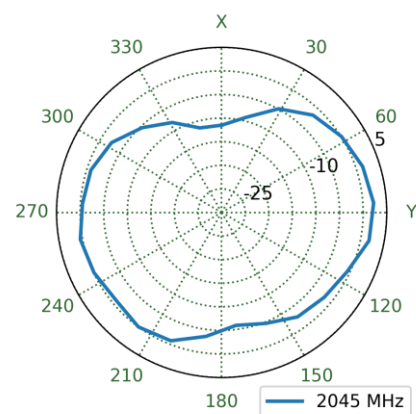
XZ Plane



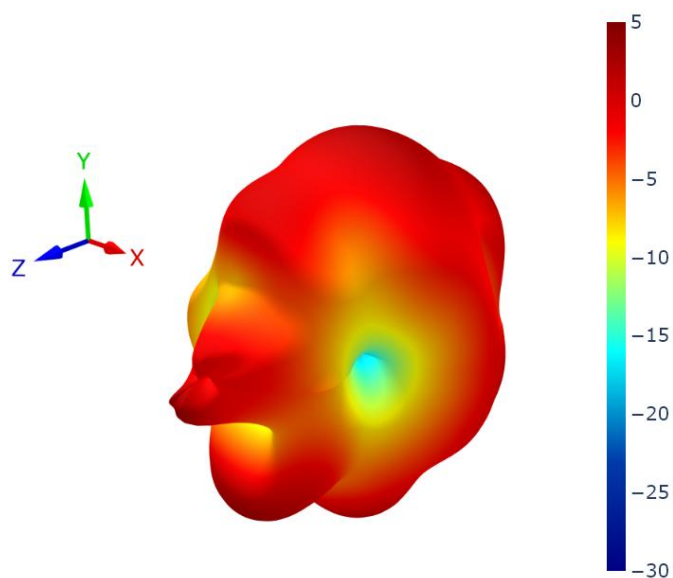
YZ Plane



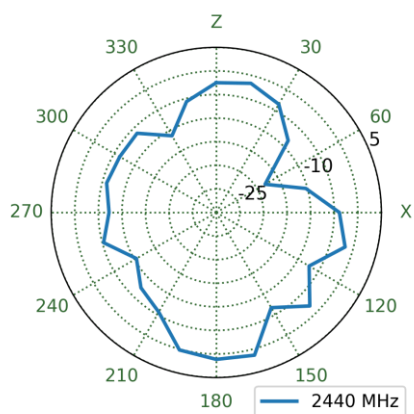
XY Plane



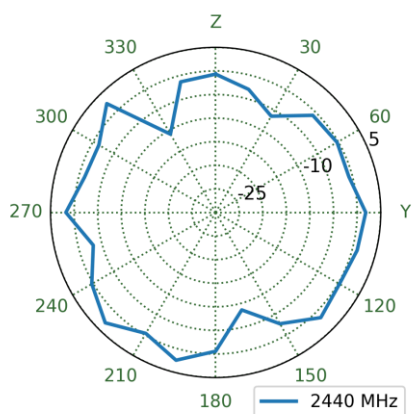
6.20 Full Wrap Cable 2mm ABS - Patterns at 2440 MHz



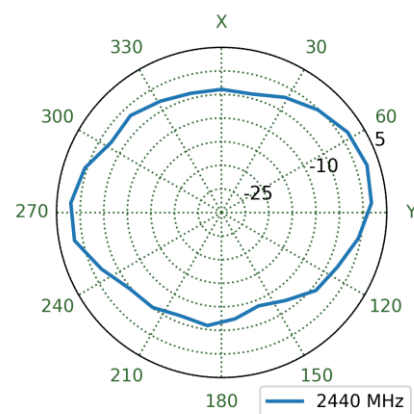
XZ Plane



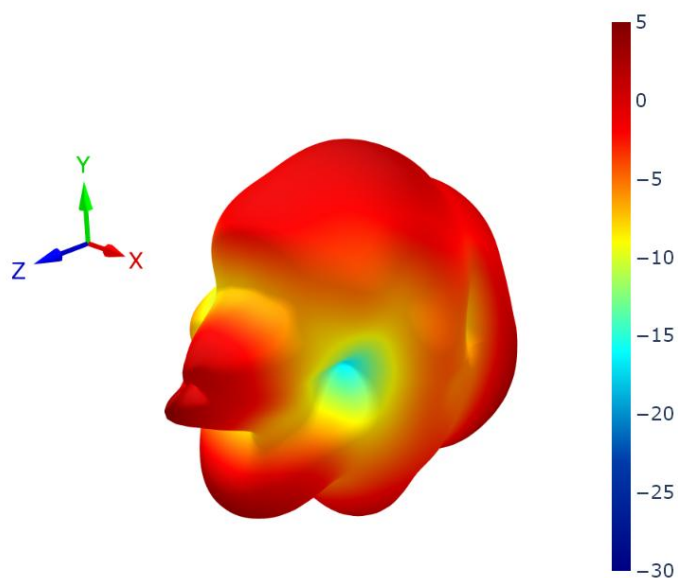
YZ Plane



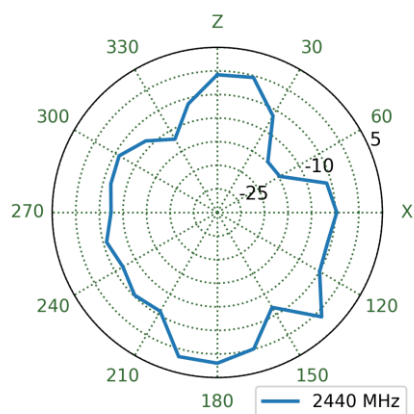
XY Plane



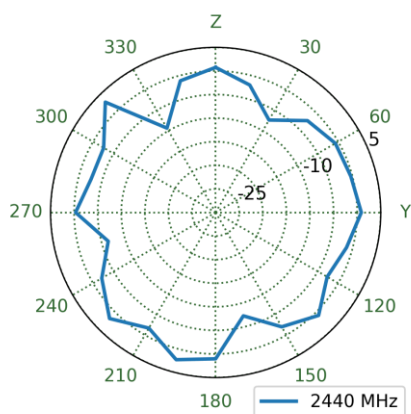
6.21 Half Wrap Cable 2mm ABS - Patterns at 2440 MHz



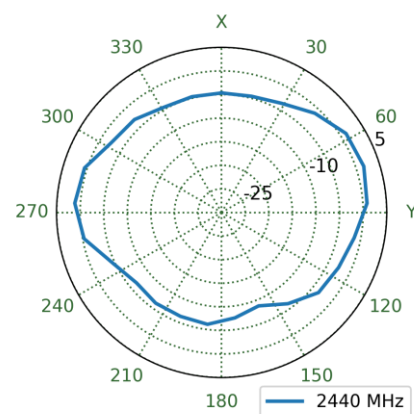
XZ Plane



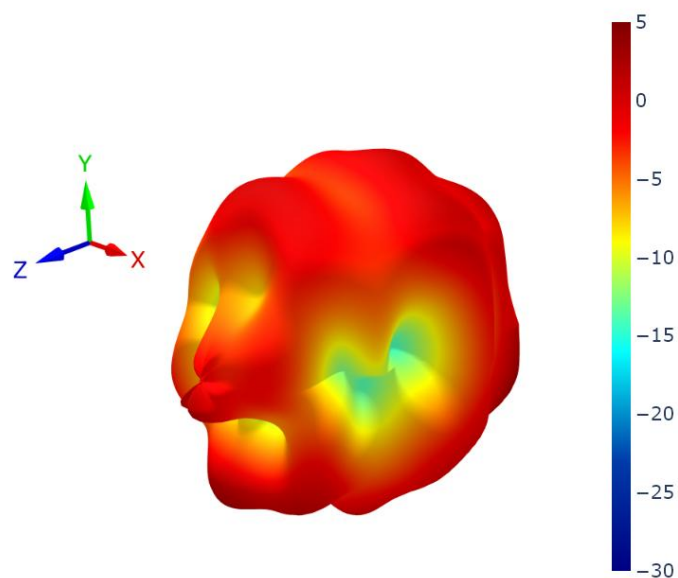
YZ Plane



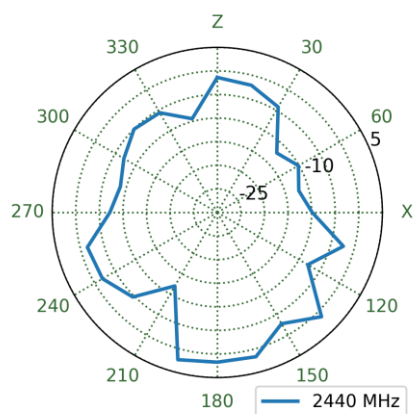
XY Plane



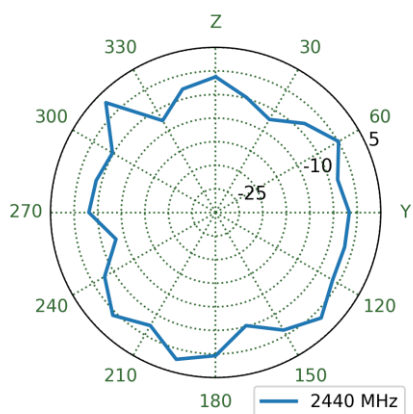
6.22 Straight Cable 2mm ABS - Patterns at 2440 MHz



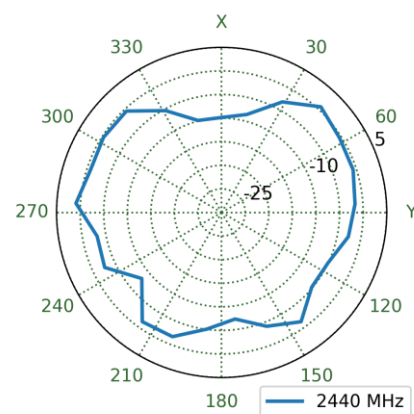
XZ Plane



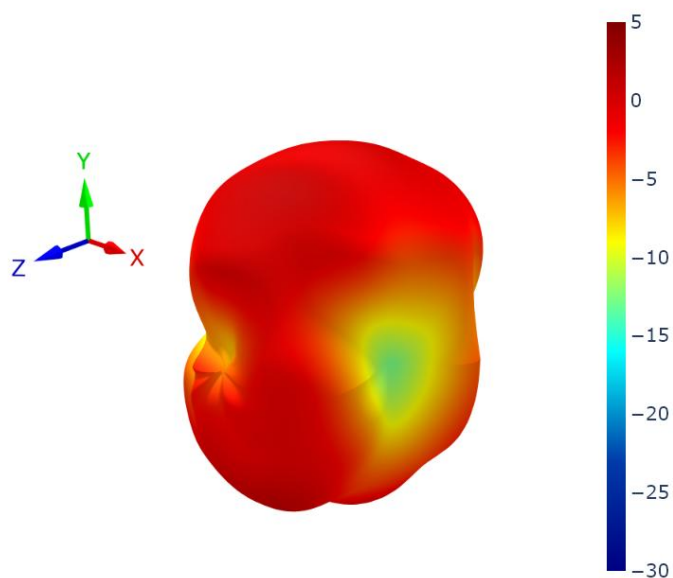
YZ Plane



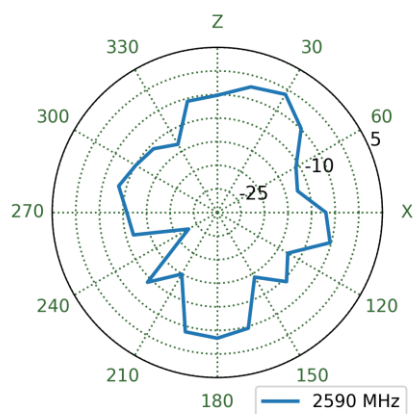
XY Plane



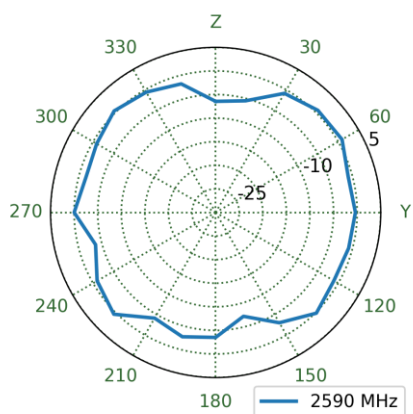
6.23 Full Wrap Cable 2mm ABS - Patterns at 2590 MHz



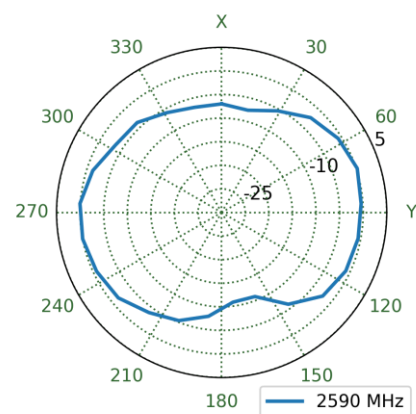
XZ Plane



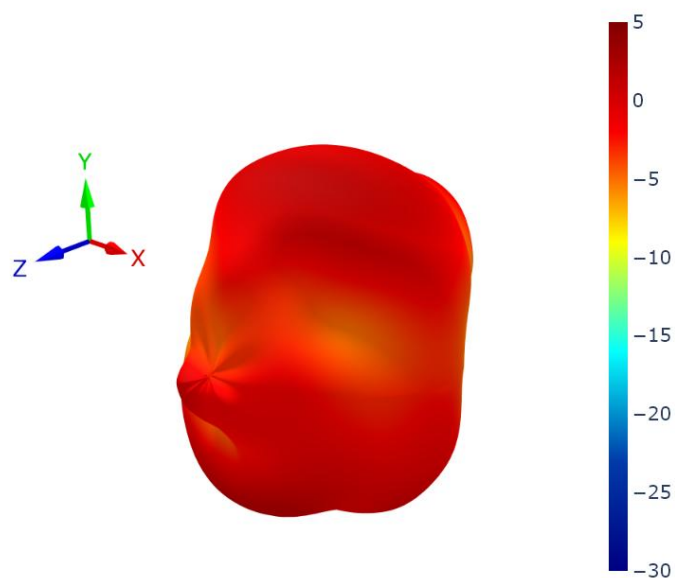
YZ Plane



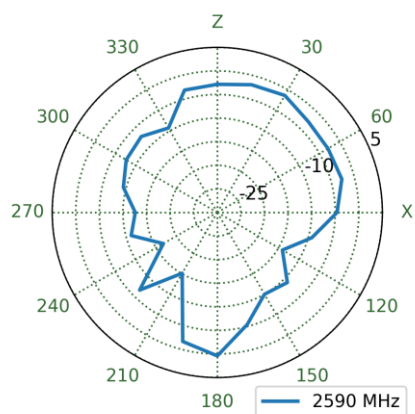
XY Plane



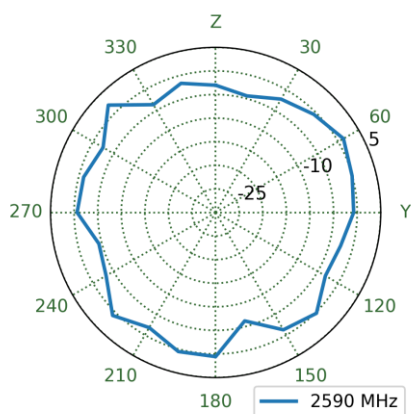
6.24 Half Wrap Cable 2mm ABS - Patterns at 2590 MHz



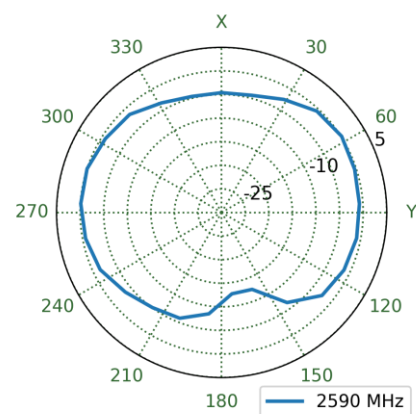
XZ Plane



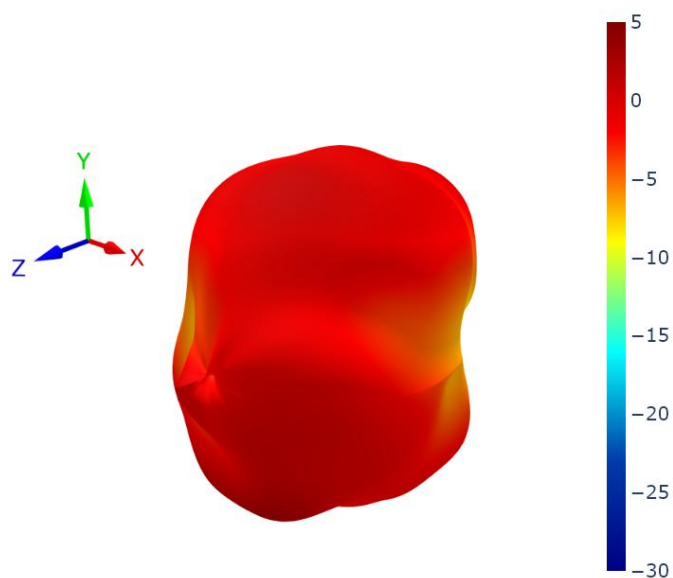
YZ Plane



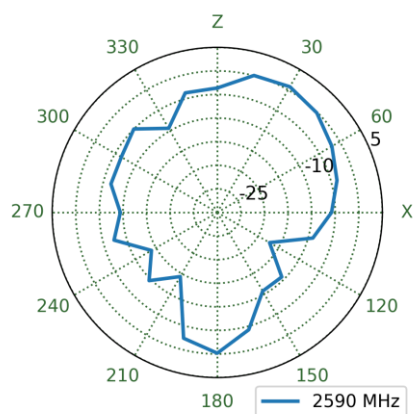
XY Plane



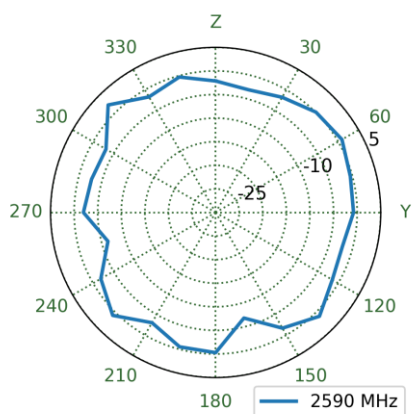
6.25 Straight Cable 2mm ABS - Patterns at 2590 MHz



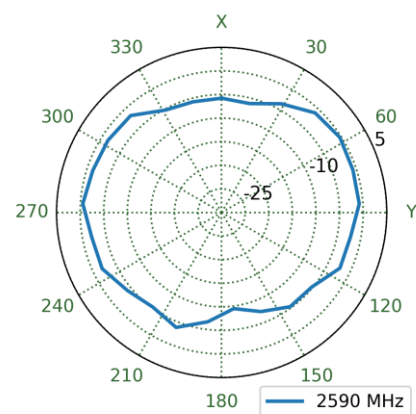
XZ Plane



YZ Plane



XY Plane

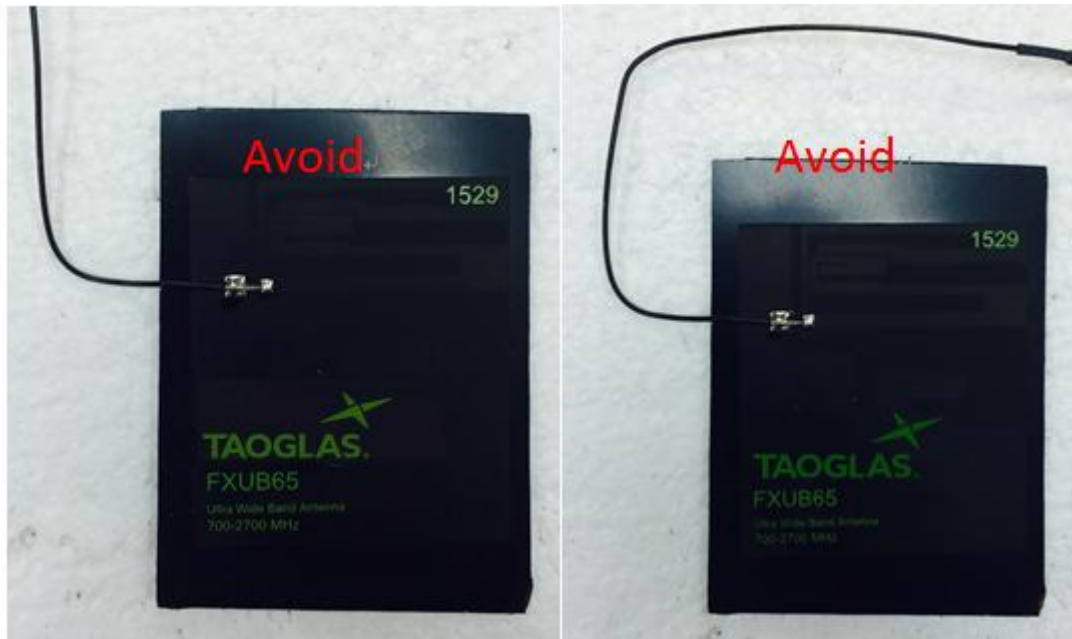


7. Application Note

Like all flex antennas, the FXUB65 Minima antenna performance is somewhat sensitive to the routing of the cable during integration. The preferred routing is a “full wrap” or “half wrap”, as shown below where the cable is routed around the long side of the device. Routing over the lower part of the device as shown will also work well. An integration where the cable runs straight off will work, but the performance in the 900MHz band may not be optimal. Avoid running the cable up along the short side or wrapping it around the short side, as these will not work. If a longer cable is needed to wrap around the long side and still reach the module, this is ok, and a longer cable can be easily built. Keep the antenna at least 20mm away from conductors in the end user device.

The FXUB65 can be integrated into assemblies over a small ground plane such as a PCB. The efficiency in these cases can sometimes be higher than the antenna alone.





Changelog for the datasheet

SPE-16-8-023 – FXUB65.07.0180C

Revision: D (Current Version)

Date:	2025-08-28
Changes:	Full datasheet update
Changes Made by:	Gary West

Previous Revisions

Revision: D

Date:	2020-12-04
Changes:	Updated RF Data, Mechanical Drawing and Packaging Info.
Changes Made by:	Gary West

Revision: C

Date:	2019-10-15
Changes:	Updated drawing for ECR-18-8-259
Changes Made by:	Jack Conroy

Revision: B

Date:	2017-03-30
Changes:	Updated LTE bands table
Changes Made by:	Andy Mahoney

Revision: A (Original First Release)

Date:	2016-03-25
Notes:	
Author:	Jack Conroy



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