CA05-1339

ME Approval: M Stephens 15/12/22

CQA Approval B.Wilson 16/12/2022

EE Approval Daniel Farr 16/12/2022

TAOGLAS®

Datasheet

Freedom

Part No:
FXP830.07.0085C.db

Description:

FXP830 Freedom Wi-Fi 2.4/5.8/7.1GHz Dipole Antenna, Wi-Fi 6 included with 85mm of 1.37mm cable and I-PEX MHF® I (U.FL) connector

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: 85mm of Ø1.37mm
Connector: IPEX MHFI (U.FL)
CE Certified
RoHS & Reach Compliant

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Ireland 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*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.

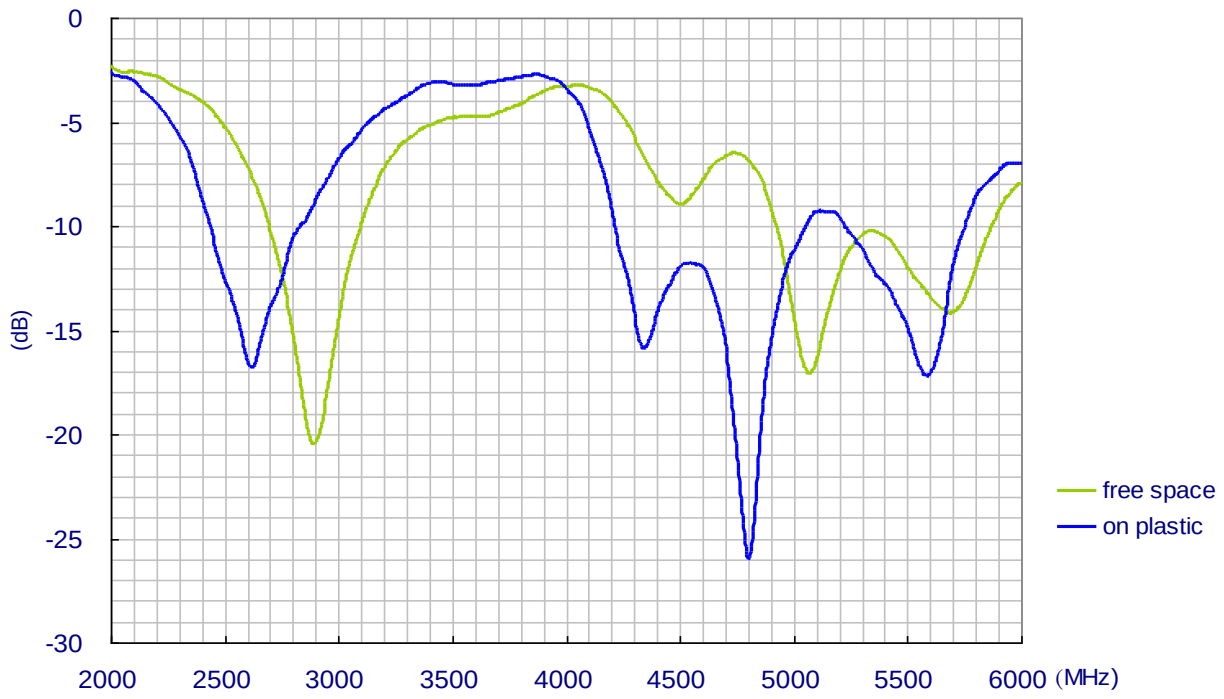
2. Specifications

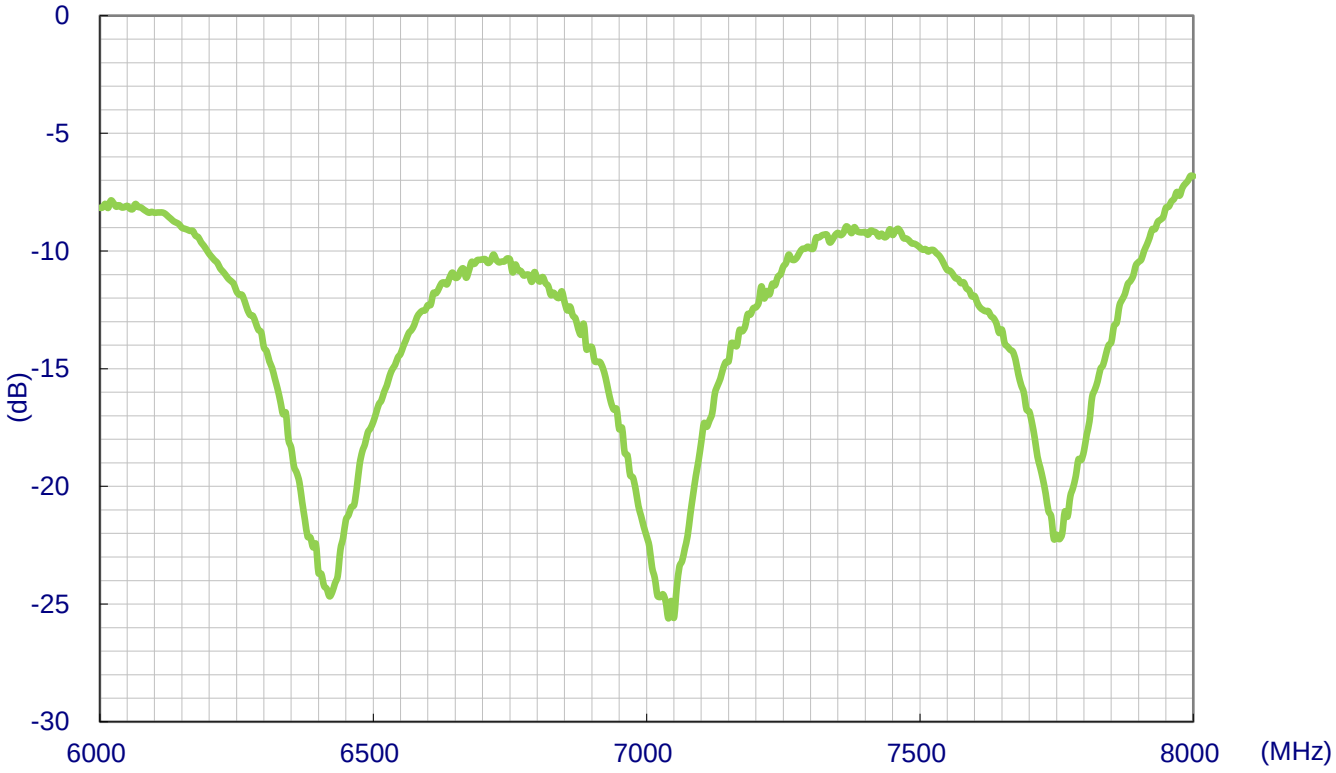
Wi-Fi Electrical								
Band	**Frequency (MHz)**	**Efficiency (%)**	**Average Gain (dB)**	**Peak Gain (dBi)**	**Impedance**	**Max Power Input**	**Polarization**	**Radiation Pattern**
2.4GHz Wi-Fi	2400~2500	50	-3	2.5	50Ω	2W	Linear	Omnidirectional
5.8GHz Wi-Fi	5150~5850	86	-3	4.7				
7.1GHz Wi-Fi 6	5925~7125	65	-1.8	3.1				

Mechanical	
Dimensions	42*7mm
Antenna Body Material	Polymer
Cable	Gray 85mm 1.37 co-axial
Connector	I-PEX MHF® I (U.FL Compatible)
Weight	7g
Temperature Range	-40°C to 85°C
Humidity	Non-condensing 65°C 95% RH

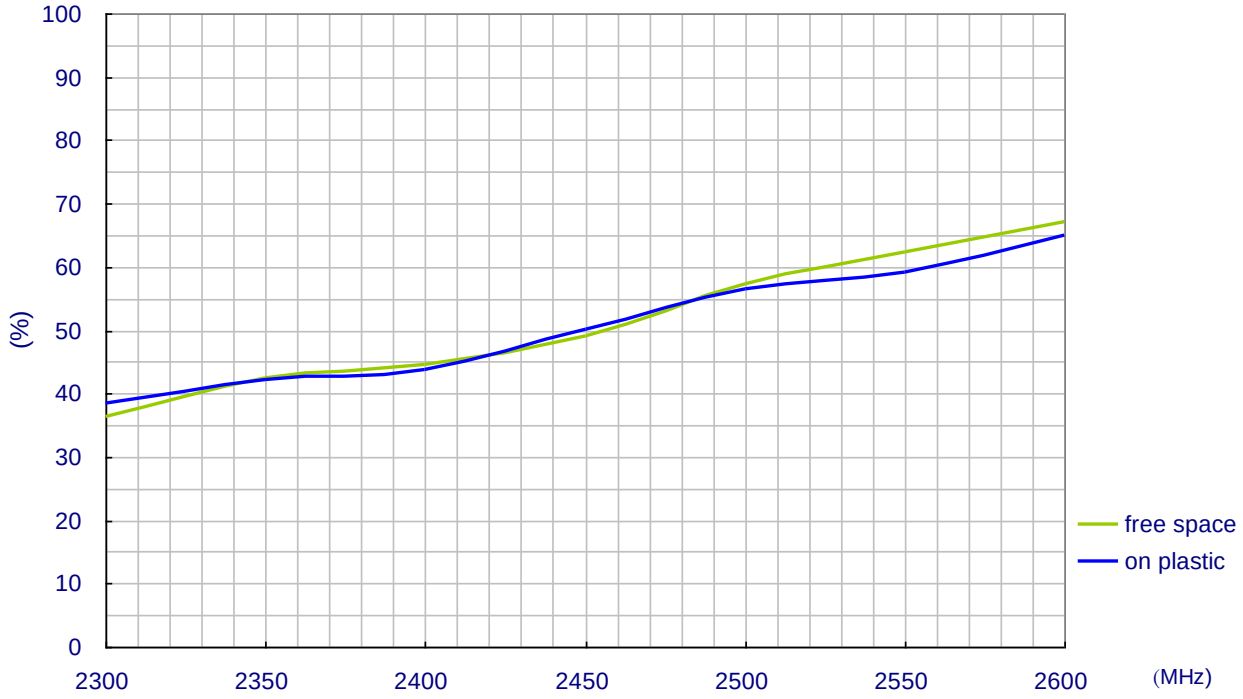
3. Antenna Characteristics

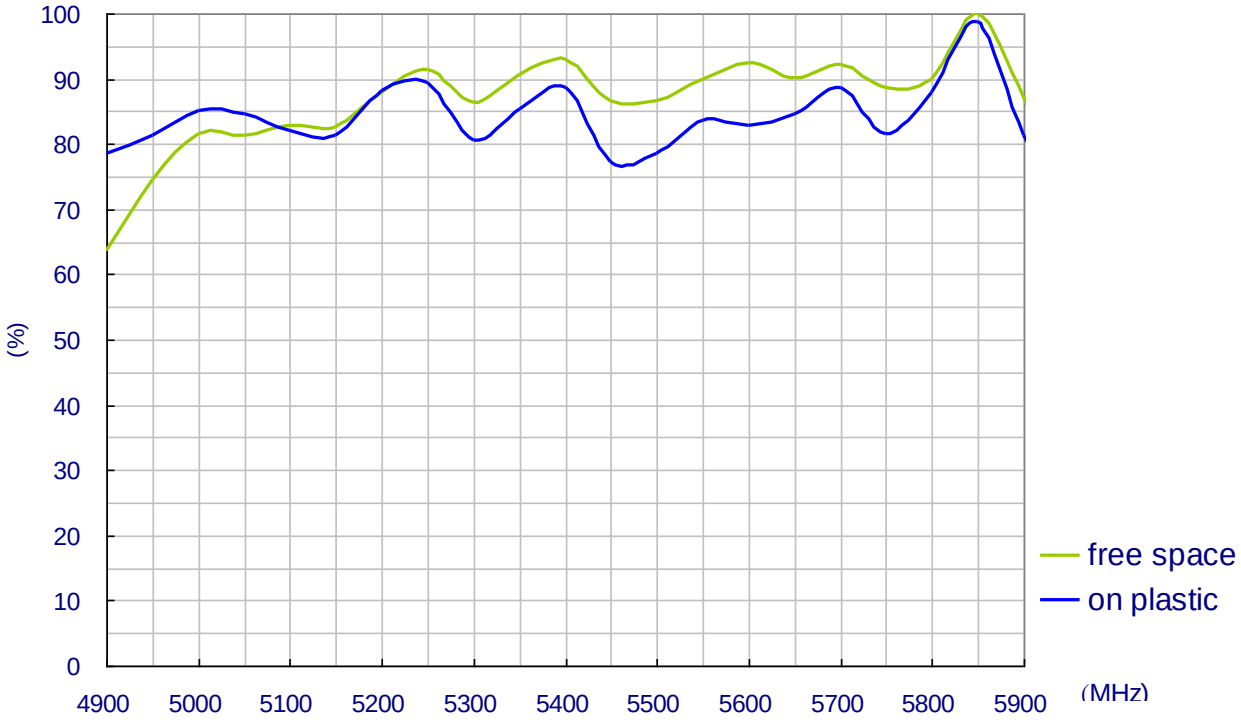
3.1 Return Loss

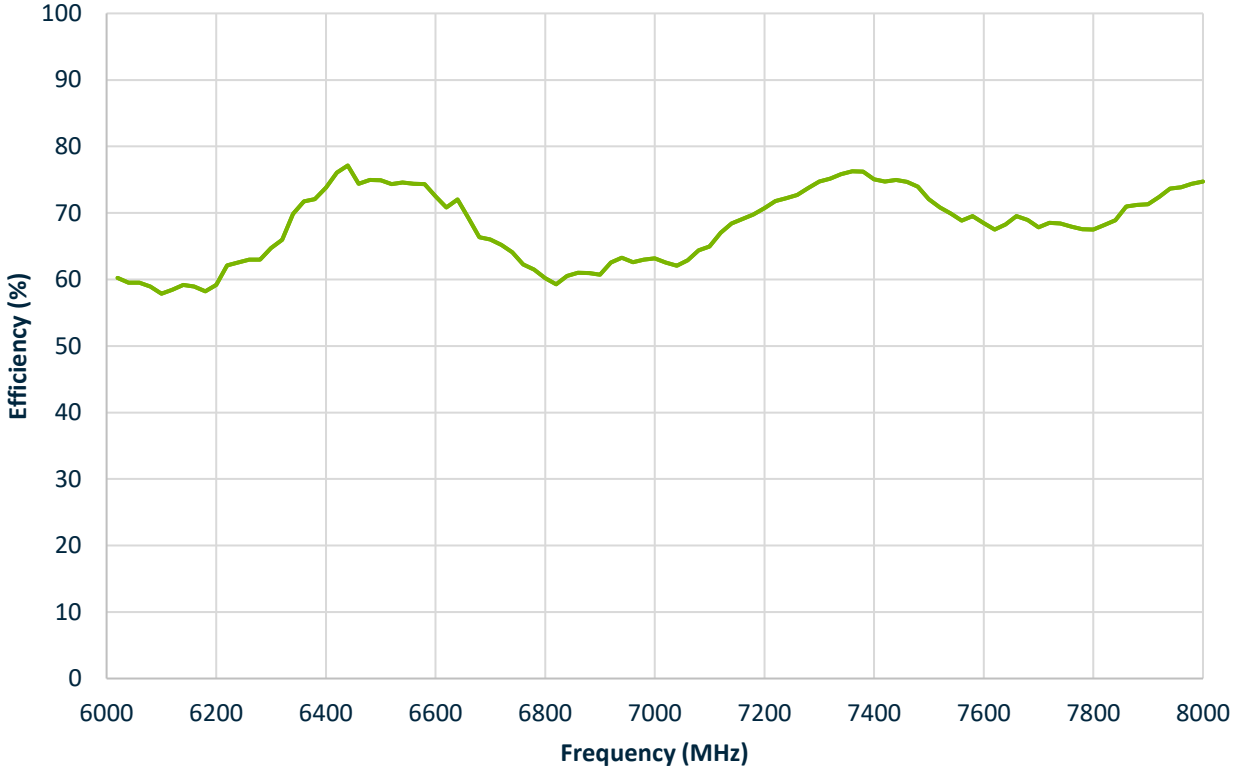




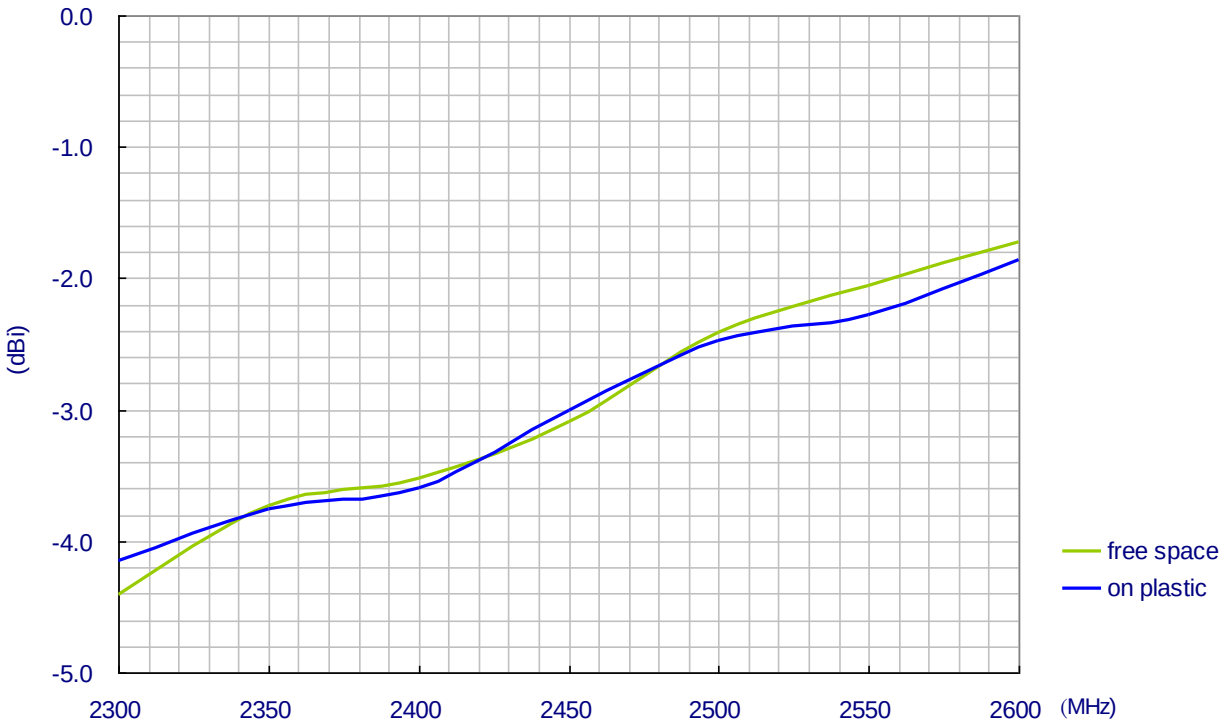
3.2 Efficiency

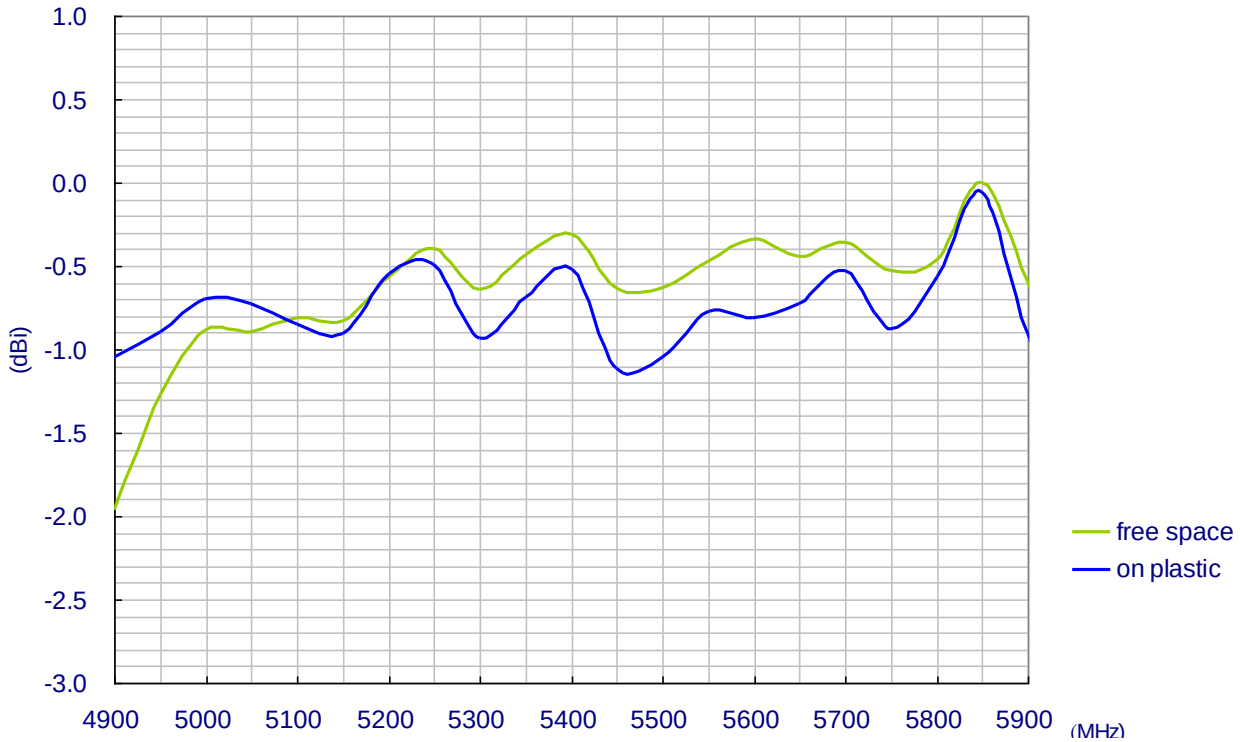


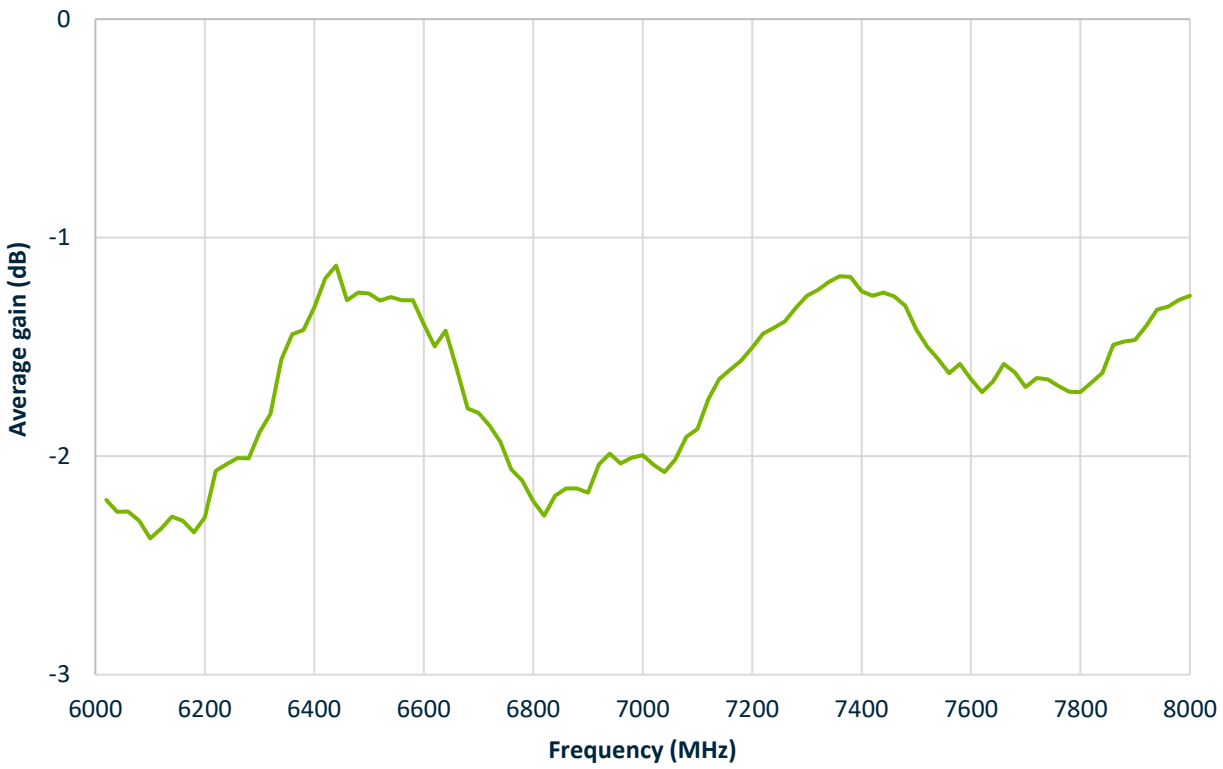




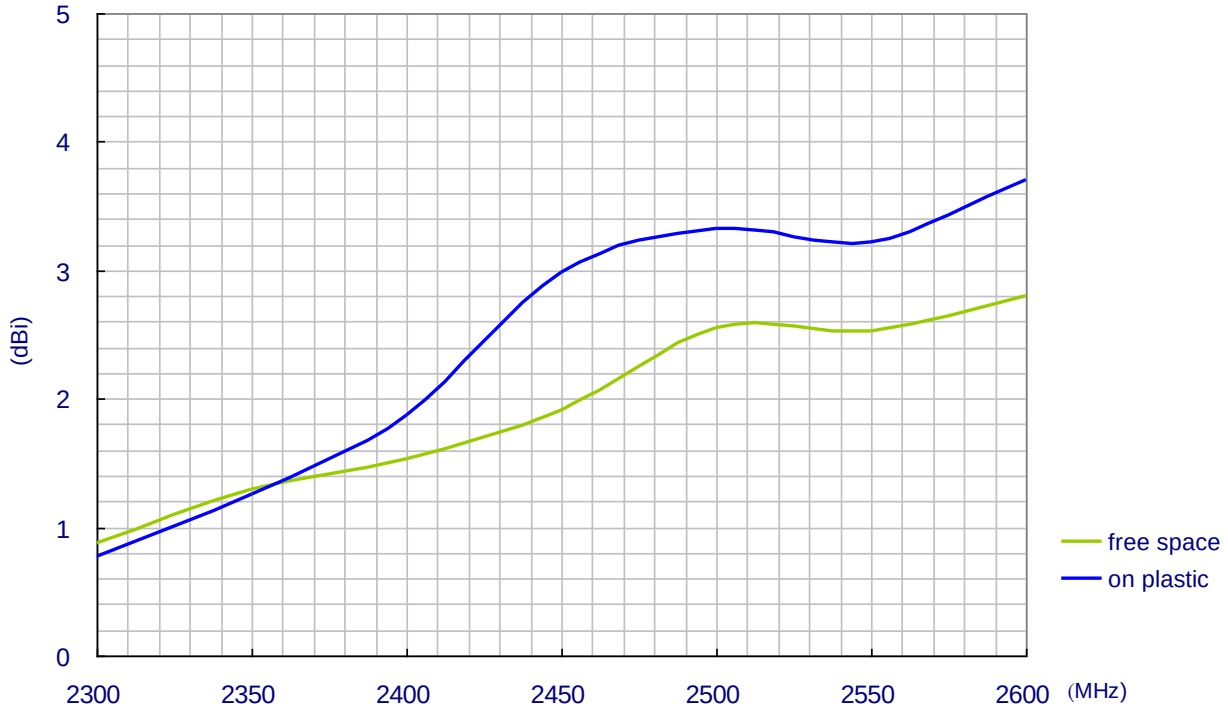
3.5 Average Gain

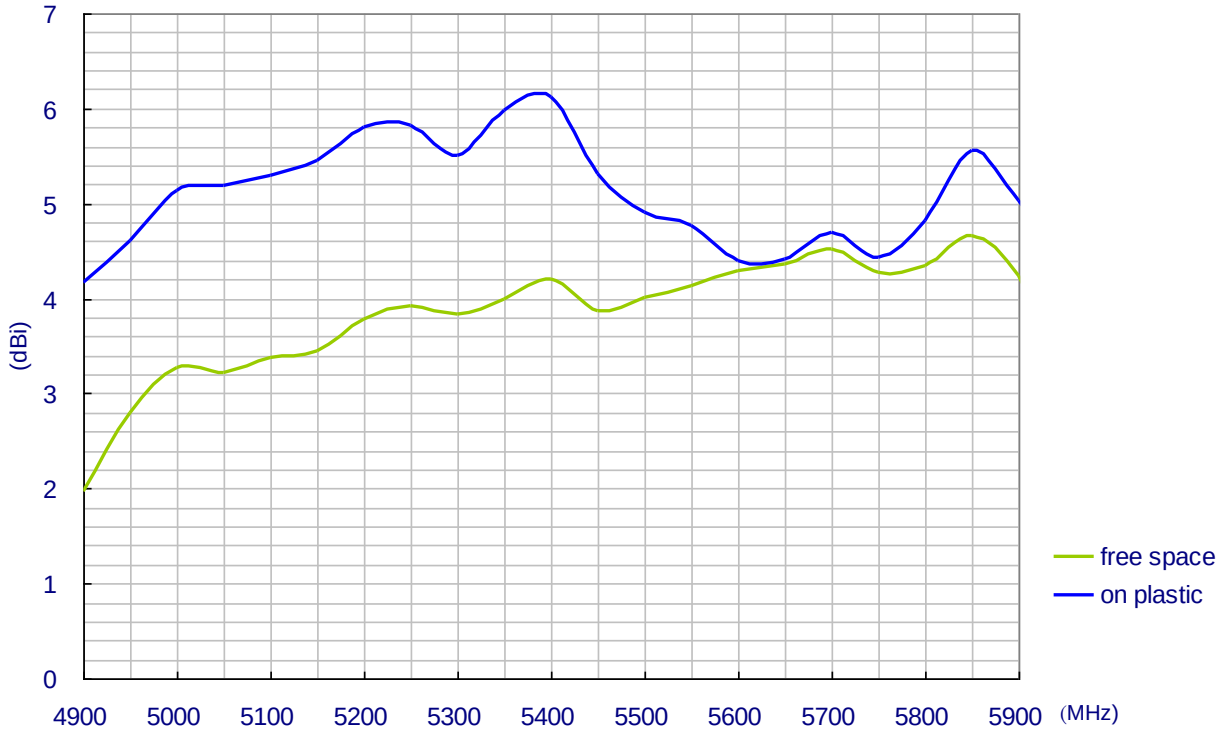


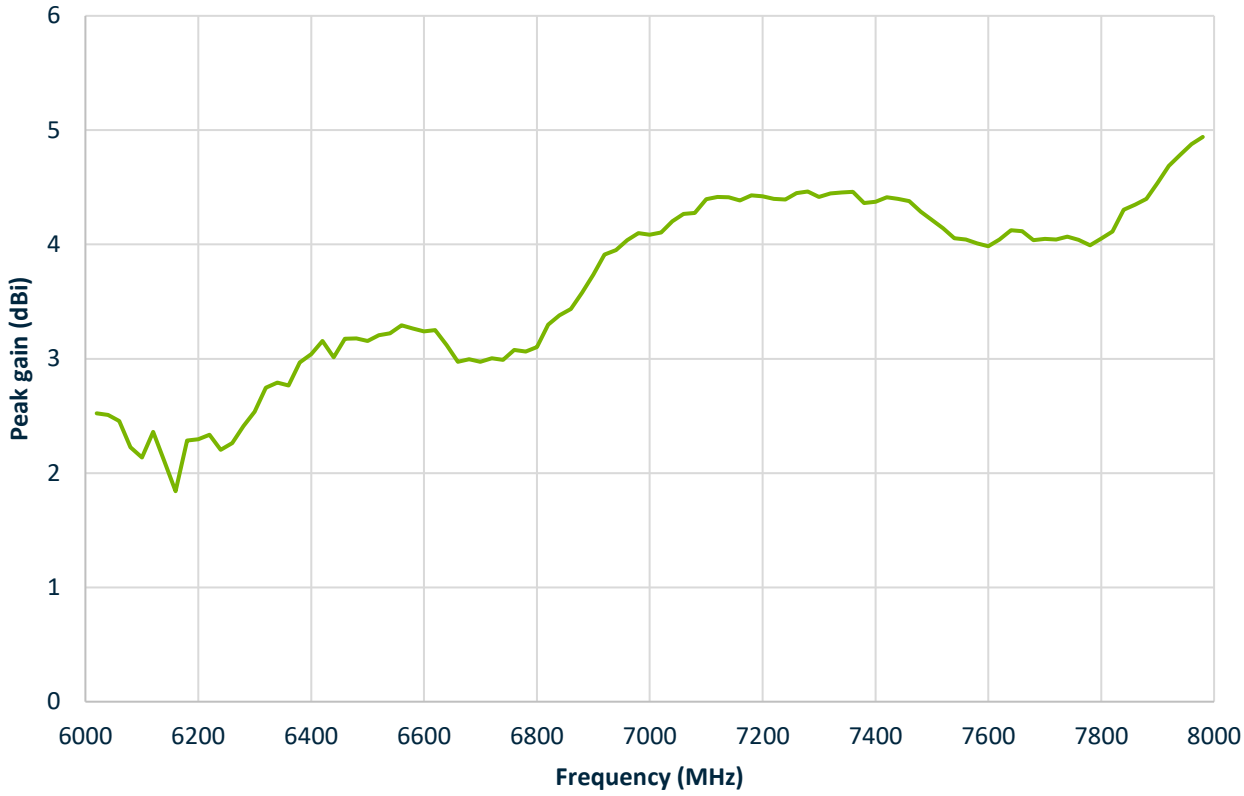

1.0
0.5
0.0
-0.5
-1.0
-1.5
-2.0
-2.5
-3.0
(dBi)
4900
5000
5100
5200
5300
5400
5500
5600
5700
5800
5900
(MHz)
free space
on plastic


0
-1
-2
-3
Average gain (dB)
6000
6200
6400
6600
6800
7000
7200
7400
7600
7800
8000
Frequency (MHz)

3.5 Peak Gain

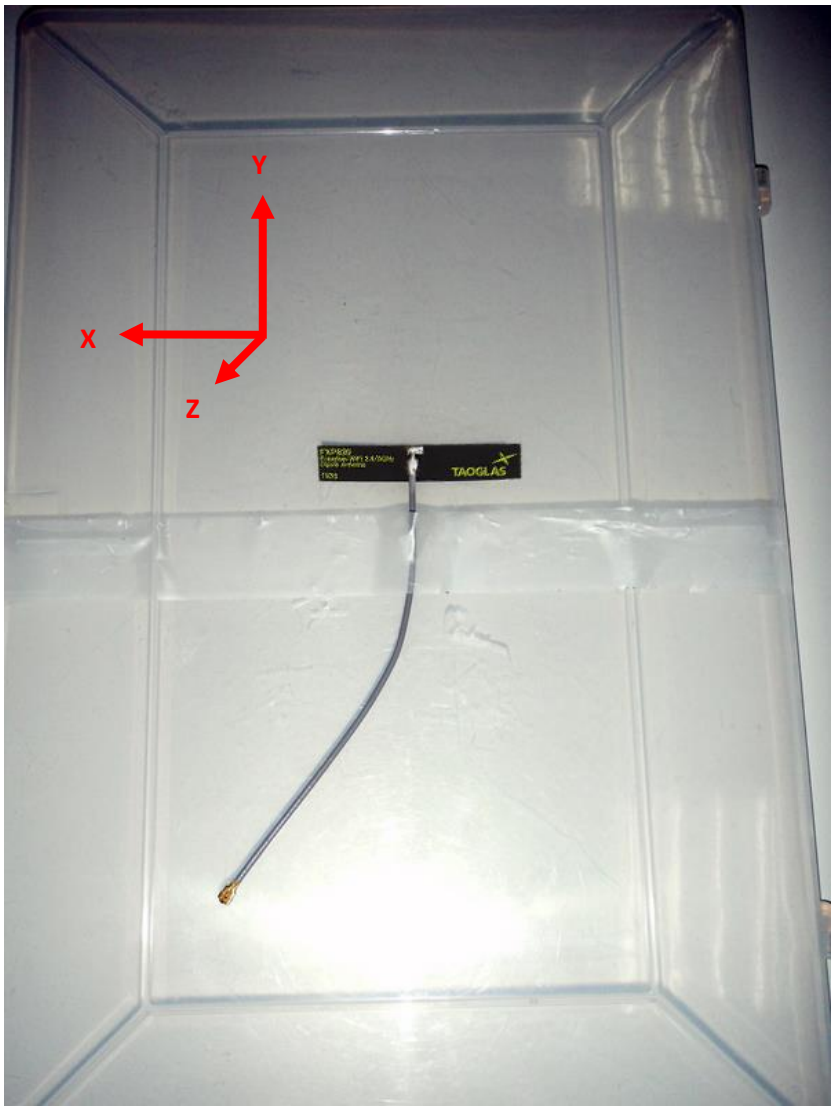

5
4
3
2
1
0
(dBi)
2300
2350
2400
2450
2500
2550
2600
(MHz)
free space
on plastic


7
6
5
4
3
2
1
0
(dBi)
4900
5000
5100
5200
5300
5400
5500
5600
5700
5800
5900
(MHz)
free space
on plastic


6
5
4
3
2
1
0
Peak gain (dBi)
6000
6200
6400
6600
6800
7000
7200
7400
7600
7800
8000
Frequency (MHz)

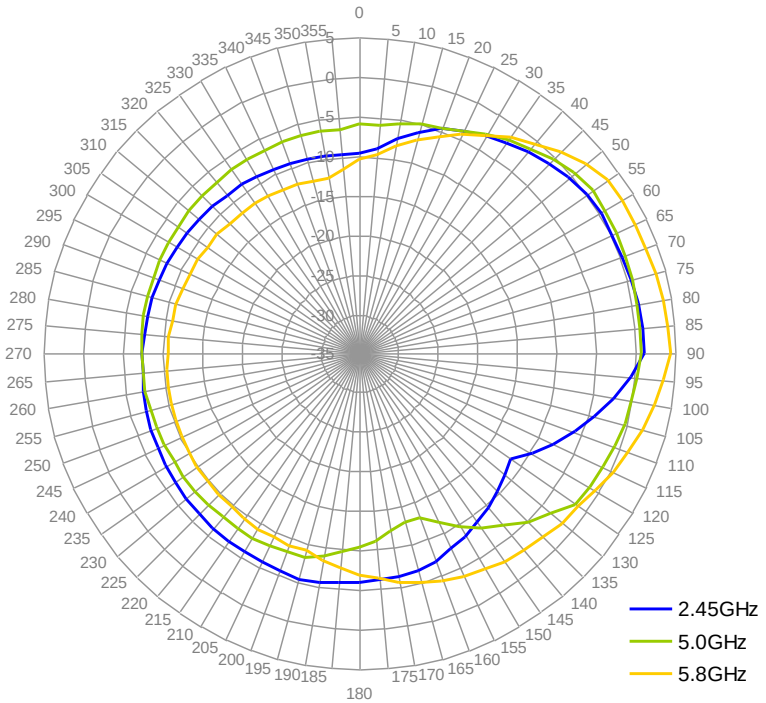
4. Radiation Patterns

4.1 Test Setup

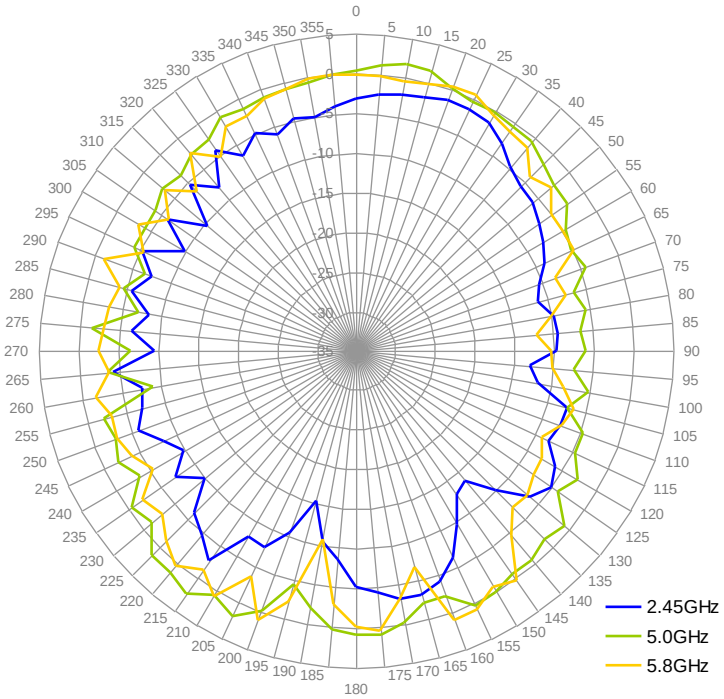


4.2 2D Radiations Patterns on Plastic

XY Plane

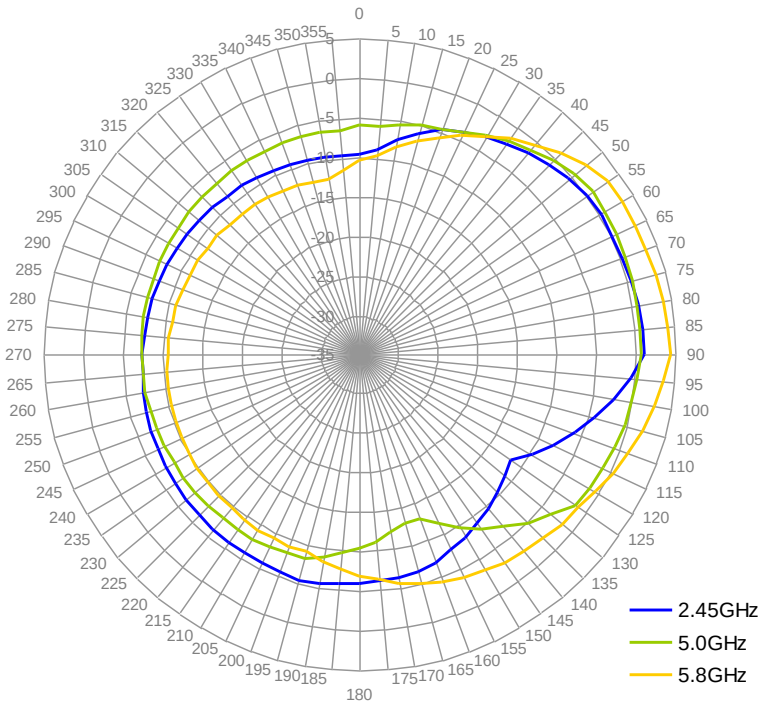


XZ Plane

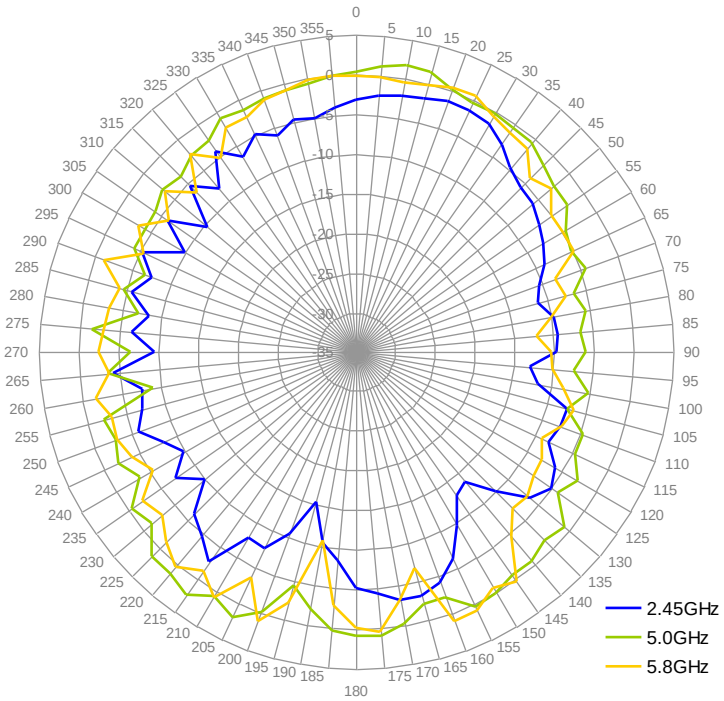


4.3 2D Radiations Patterns in Free Space

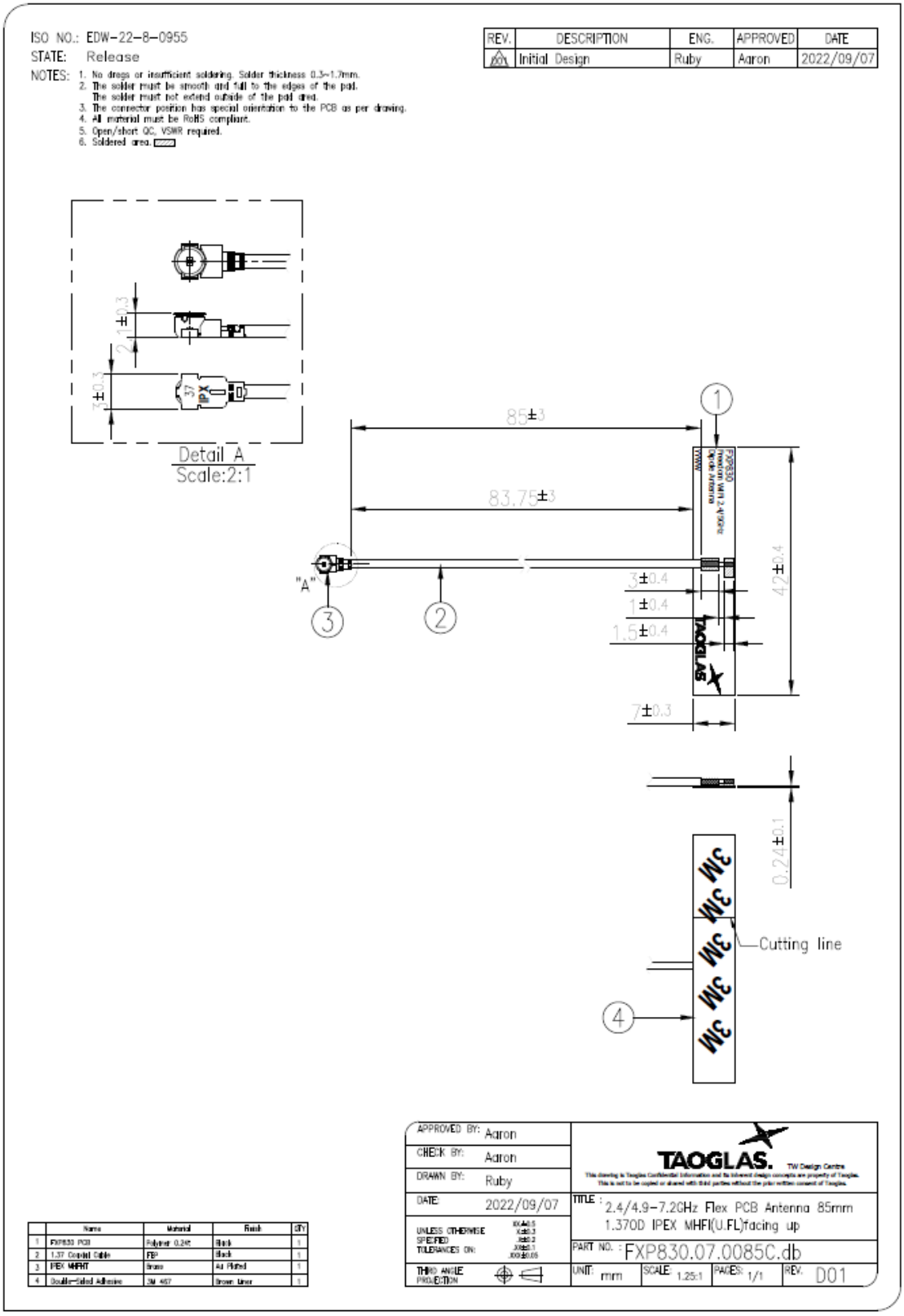
XY Plane



XZ Plane

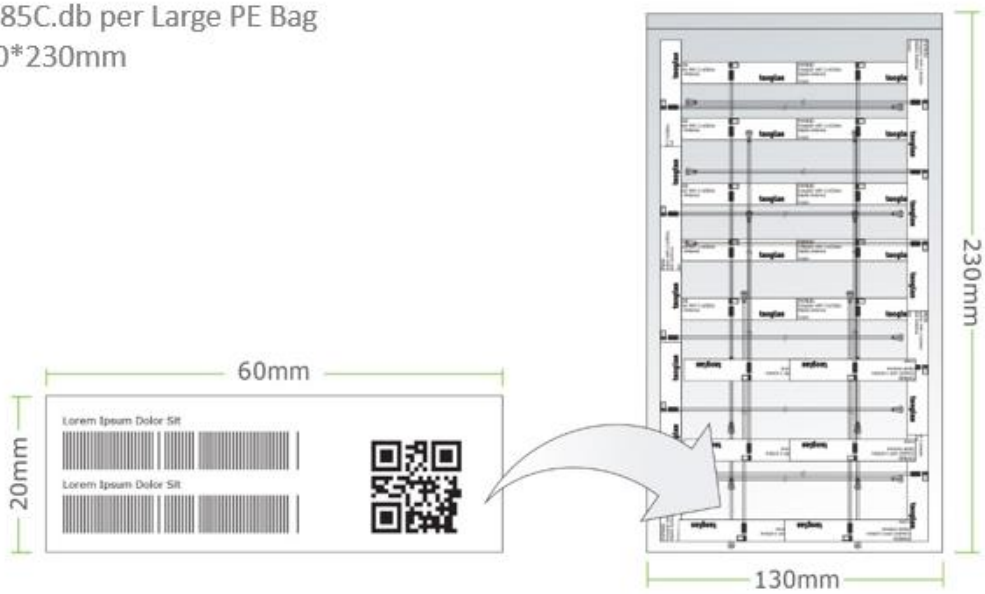


5. Mechanical Drawing (Units: mm)

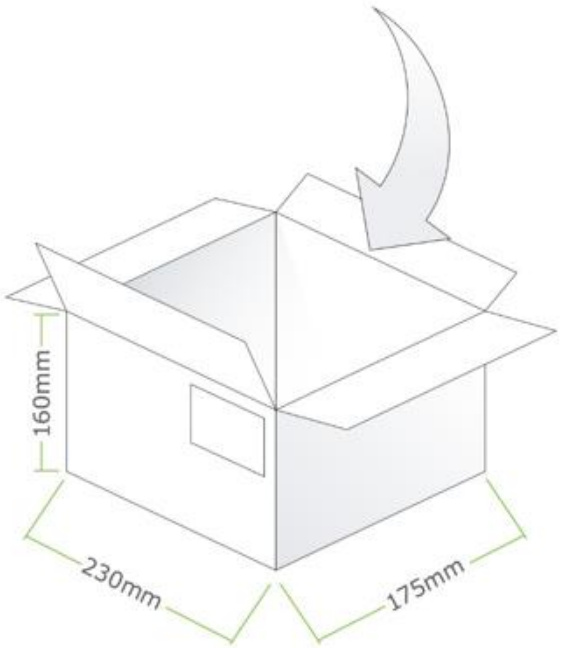


6. Packaging

100pcs FXP830.07.0085C.db per Large PE Bag
Bag Dimensions – 130*230mm
Weight – 72g



2,000pcs FXP830.07.0085C.db per carton
Carton Dimensions – 230*175*160mm
Weight – 1.6Kg



Changelog for the datasheet

SPE-22-8-152 – FXP830.07.0085C.db

Revision: A (Original First Release)	
Date:	2022-09-21
Notes:	
Author:	Gary West

Previous Revisions

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