

# Datasheet



## Freedom

**Part No:**  
**FXP840.54.0018B**

### Description:

FXP840 Freedom Series super small Wi-Fi 2.4/5.8 flexible monopole antenna

### Features:

- Wi-Fi 2.4-2.5, 4.9-5.8
- Flexible and Tiny - Ultra Low Profile
- Adheres directly inside of product plastic or glass housing
- Form factor and cable routing convenient for integration
- IPEX MHF 4L(HSC) Connector
- 18mm Ø 0.81mm mini-coaxial cable
- Dimensions: 14\*5\*0.1mm
- RoHS & Reach Compliant

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ISO 9001: 2015  
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Taiwan  
ISO 9001: 2015  
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QUALITY MANAGEMENT SYSTEM  
IATF16949

## 1. Introduction



The patent pending FXP840 is a super small monopole ultra-low profile antenna for 2.4/4.9-5.8GHz. This antenna is designed for C-V2X, DSRC, V2V, Wi-Fi, Bluetooth, ZigBee and other applications in these bands.

This Taoglas patent pending antenna is unique in the market because it is made from poly-flexible material, has a tiny form factor (14mm\*5.0mm\*0.1mm) and has double-sided 3M tape for easy “peel and stick” mounting.

The cable routes conveniently directly out of the bottom of the antenna, reducing the volume the antenna takes up in the device to an absolute minimum compared to other designs. The FXP840 is the ideal all-around antenna solution for fitting into narrow spaces and still maintaining high performance, for example, on the inside top or adjacent side applied directly to the plastic housing of LCD monitors, tablets, and smartphones.

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.

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

## 2. Specifications

### Wi-Fi Electrical

Band	Frequency (MHz)	Antenna	Efficiency (%)	Average Gain (dB)	Peak Gain (dBi)	Impedance	Polarization	Radiation Pattern	Max Input Power
2.4GHz Wi-Fi	2400~2500	1	10	-10.26	-3.08				
5.8GHz Wi-Fi	5150~5850	1	28	-5.73	2.84				
2.4GHz Wi-Fi	2400~2500	2	8	-11.15	-4.72	50 Ω	Linear	Omni-Directional	2W
5.8GHz Wi-Fi	5150~5850	2	29	-5.49	3.11				

### Mechanical

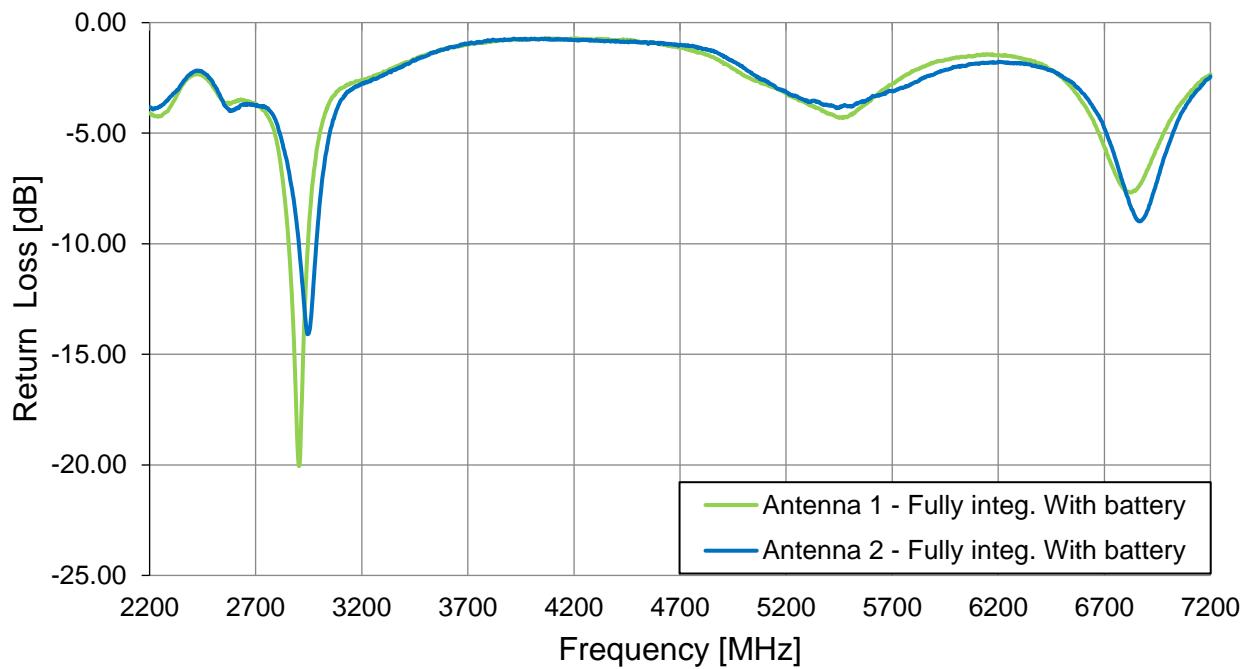
Dimensions	14 x 5 x 0.1 mm
Material	Polymer
Connector	IPEX MHF 4L(HSC) Connector
Cable	18mm of Ø0.81mm
Weight	1g

### Environmental

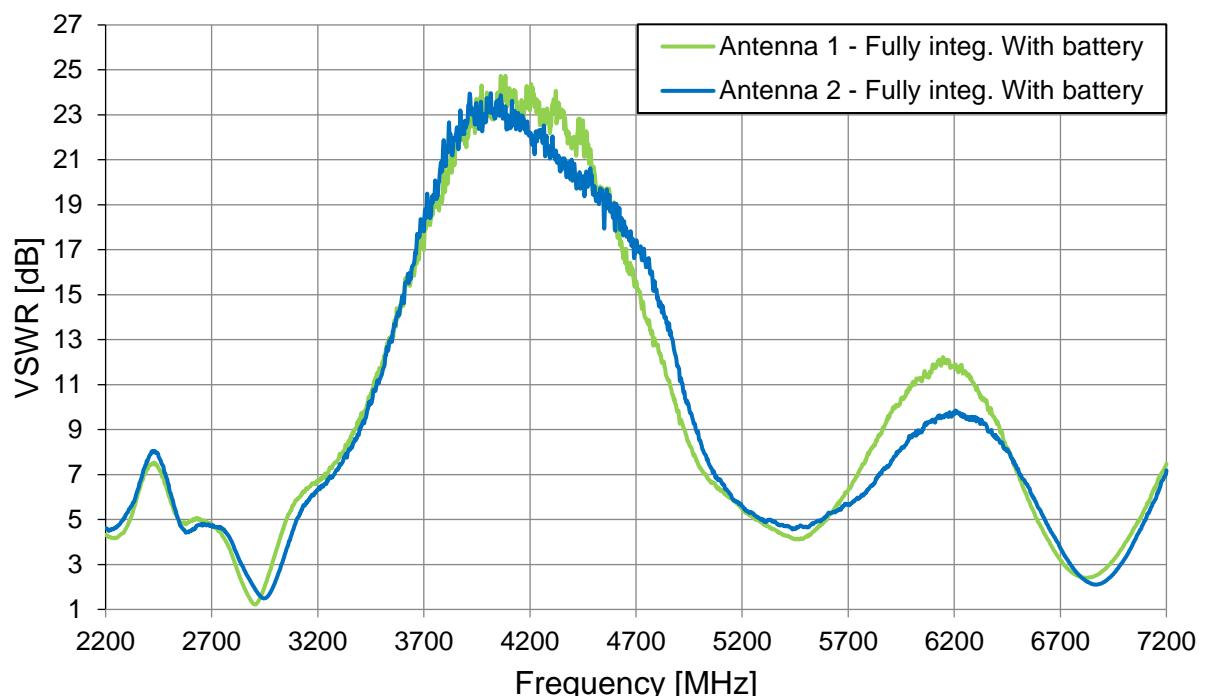
Operation Temperature	-40°C to +85°C
Storage Temperature	-40°C to +85°C
Humidity	Non-condensing 65°C 95% RH
RoHS Compliant	Yes
REACH Compliant	Yes

### 3. Antenna Characteristics

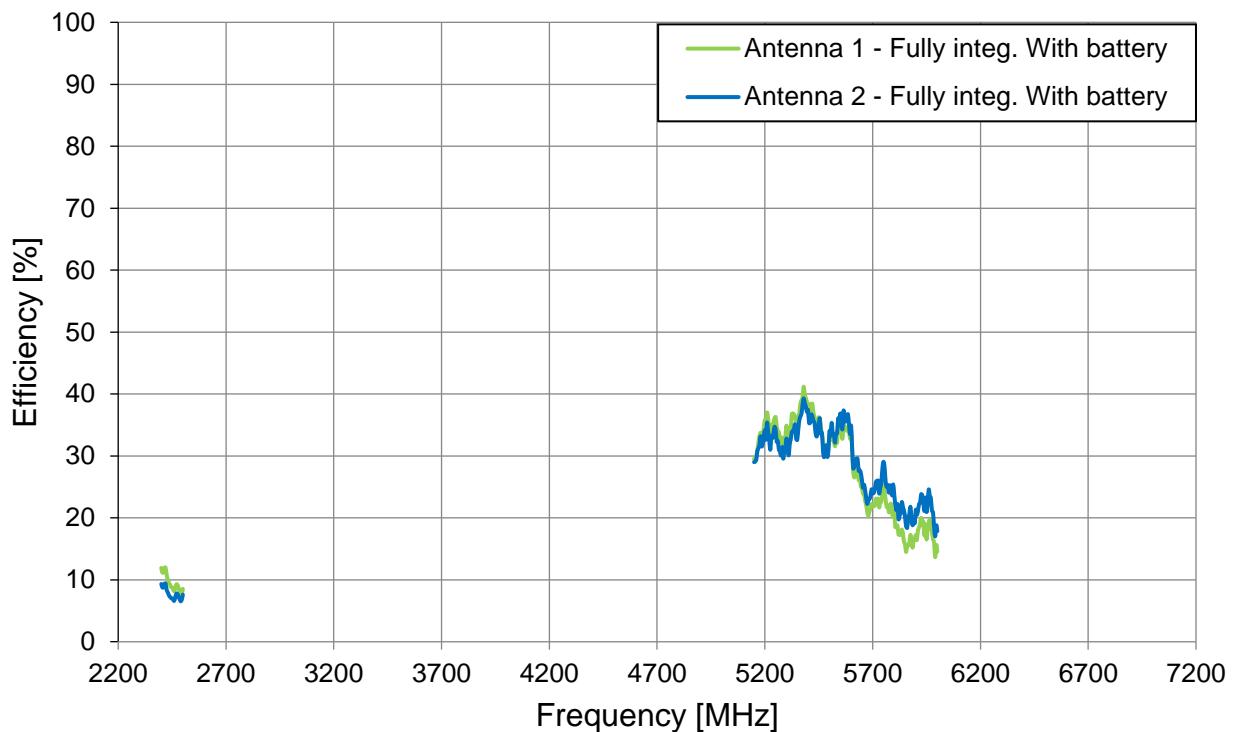
#### 3.1 Return Loss



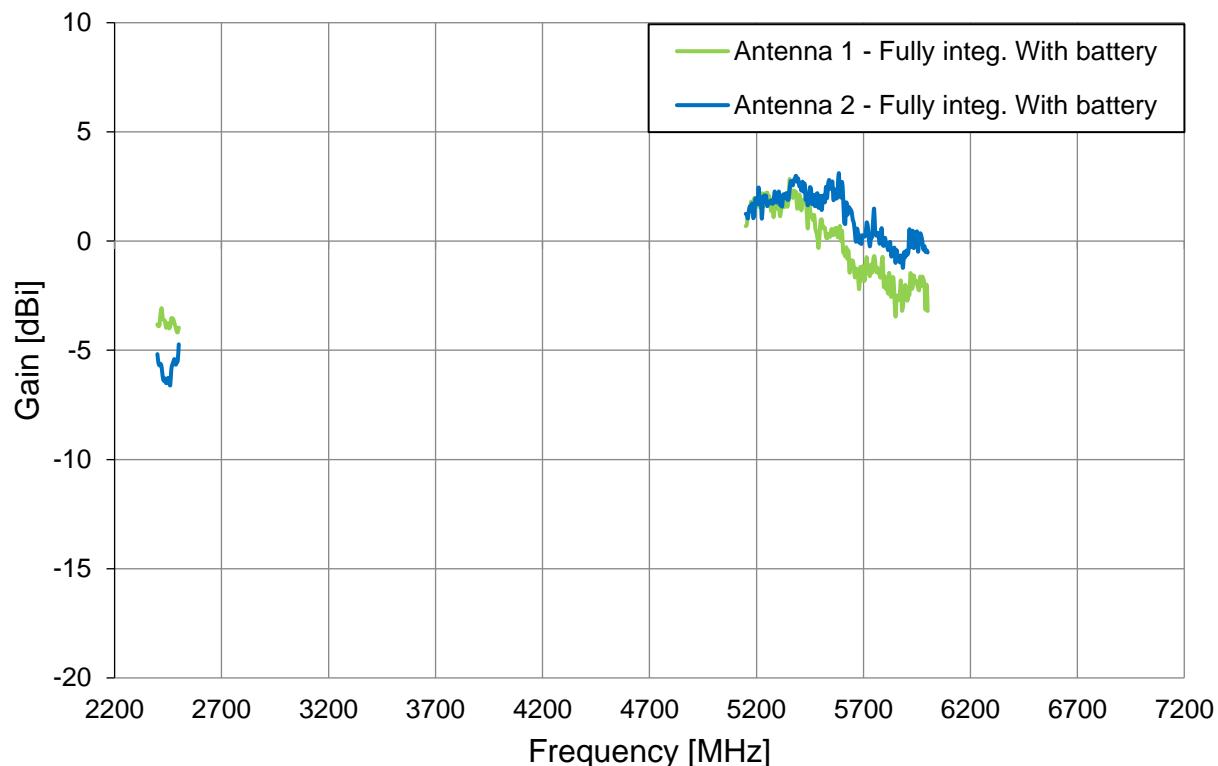
#### 3.2 VSWR



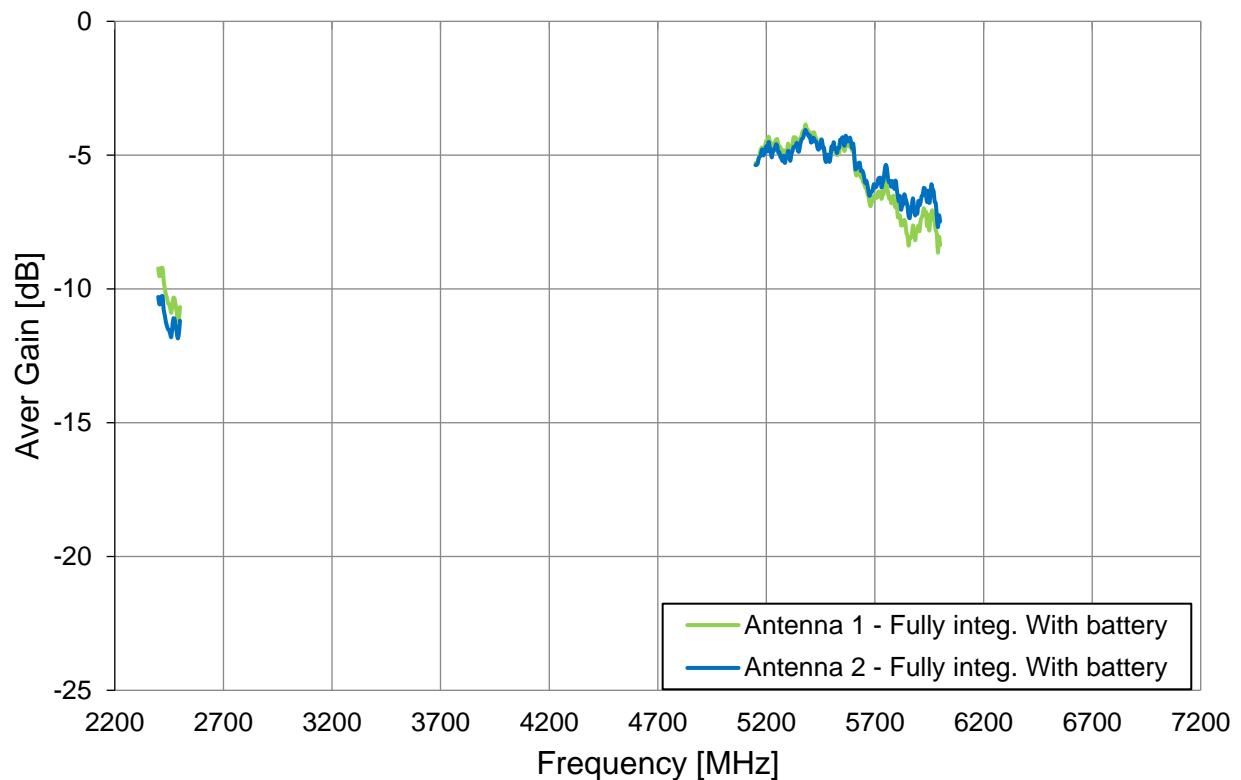
### 3.3 Efficiency



### 3.4 Peak Gain

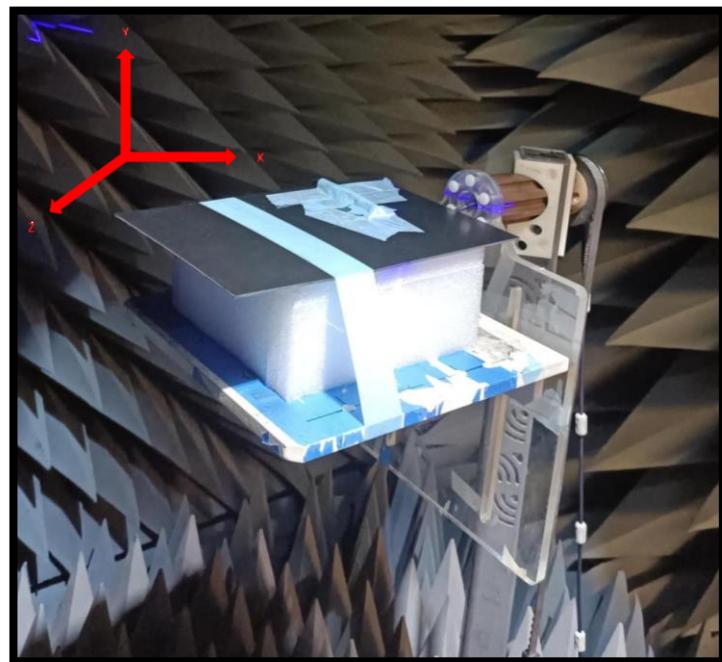


### 3.5 Average Gain

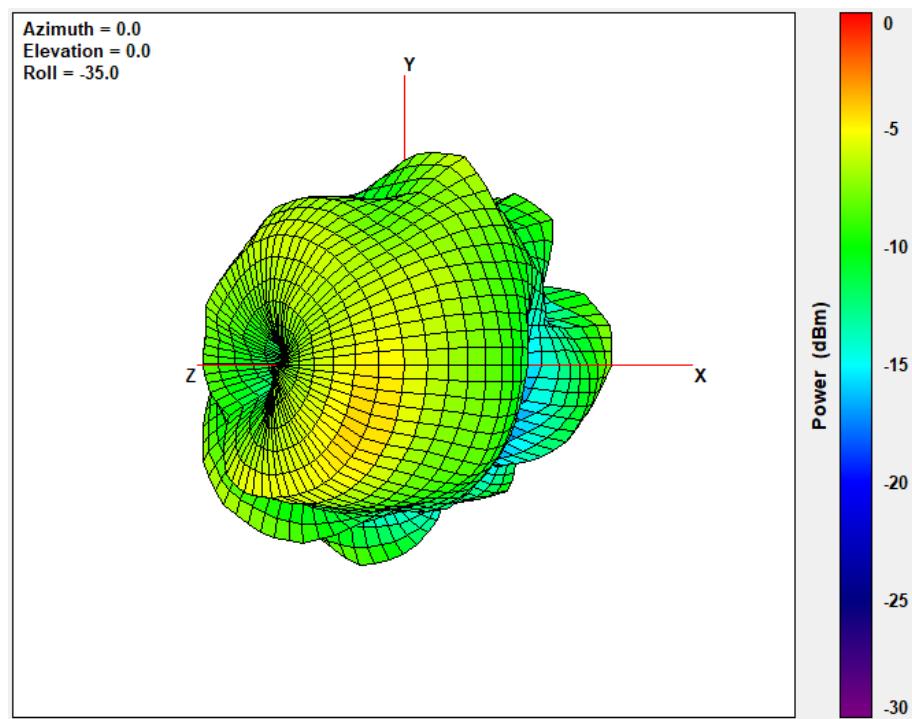


## 4. Radiation Patterns

### 4.1 Test Setup – 2mm ABS



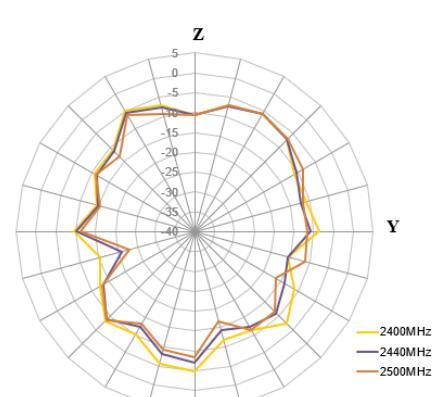
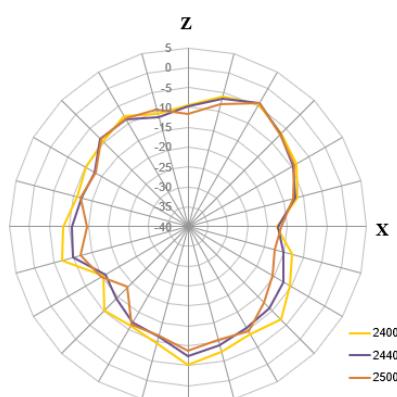
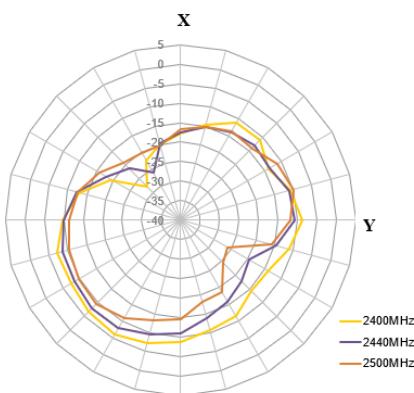
## 4.2 2400MHz – Antenna 1\_ 2D & 3D Radiation Patterns



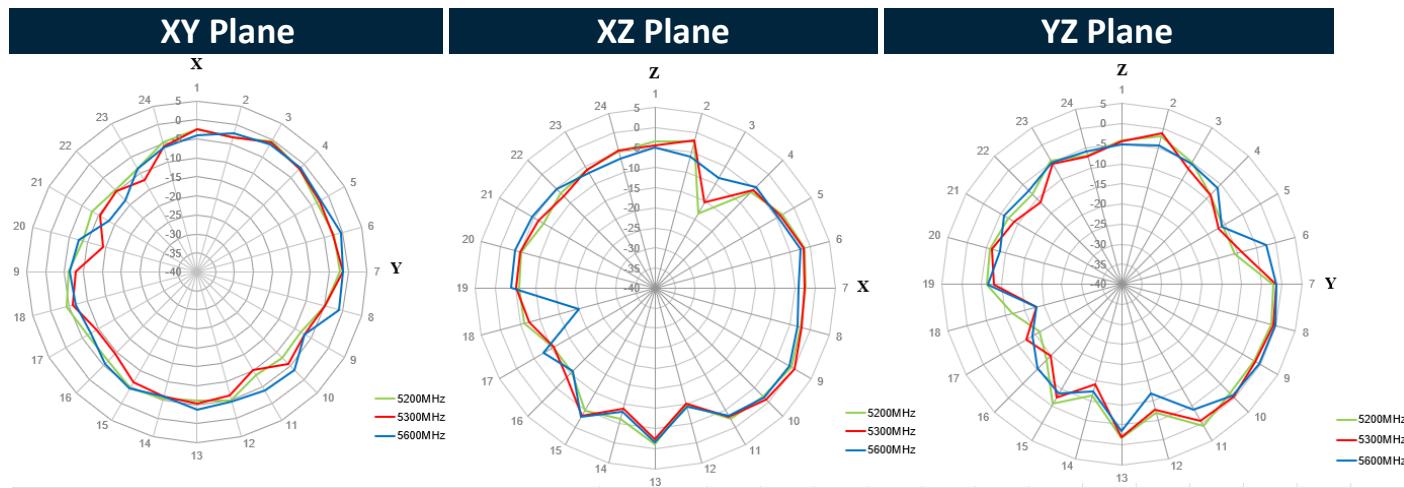
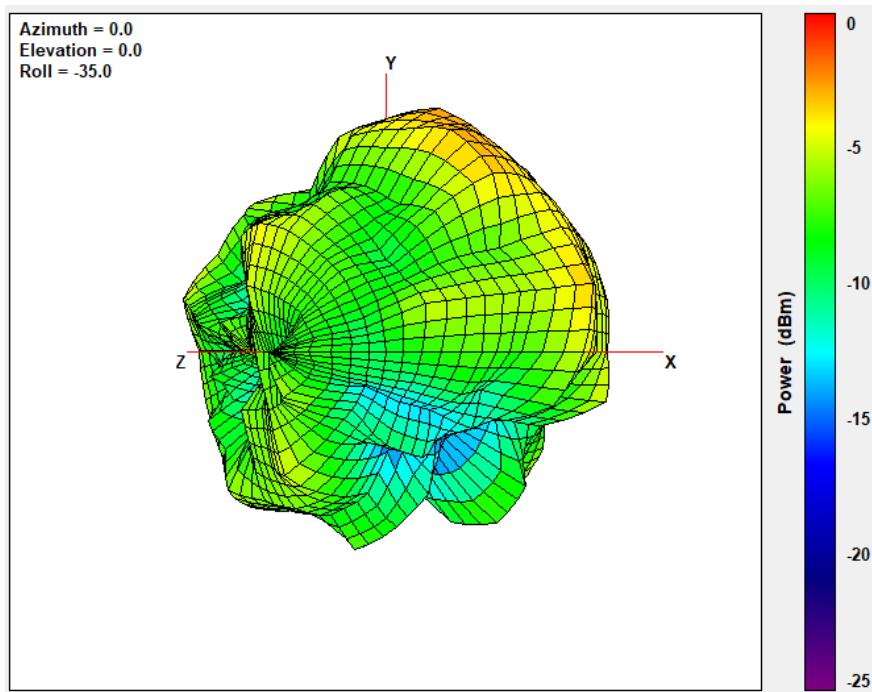
**XY Plane**

**XZ Plane**

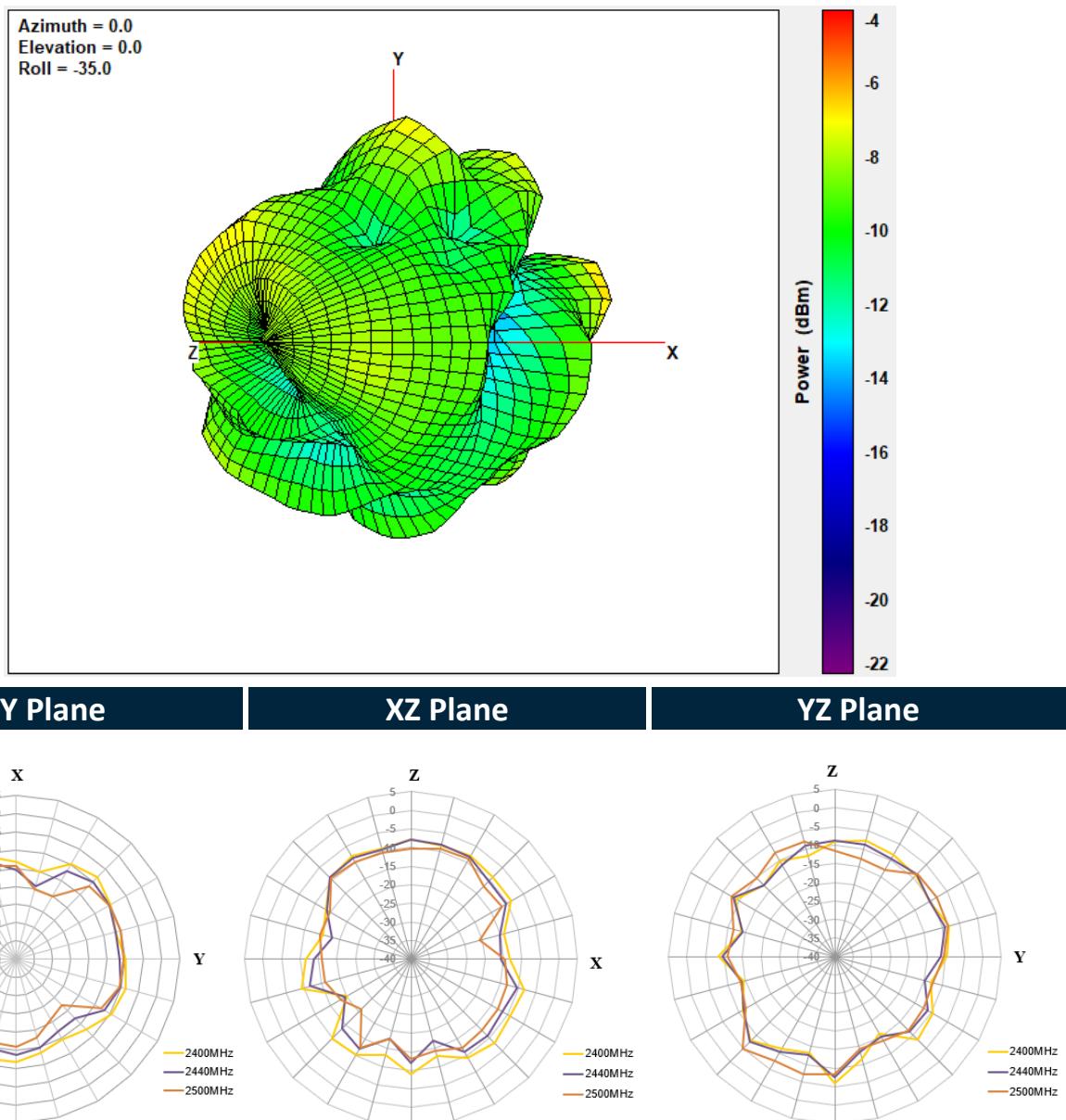
**YZ Plane**

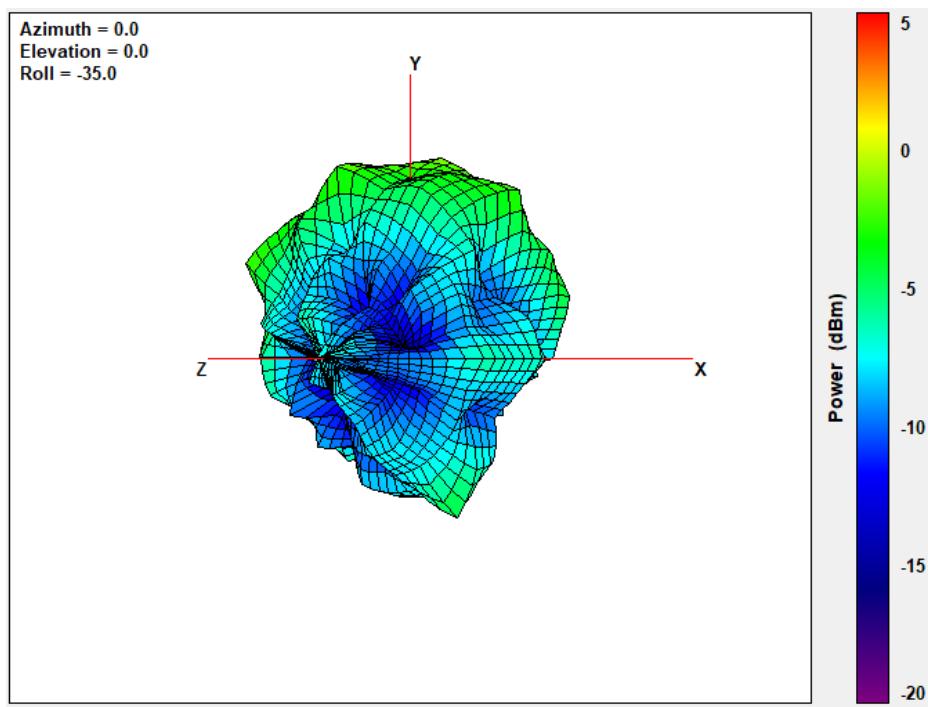
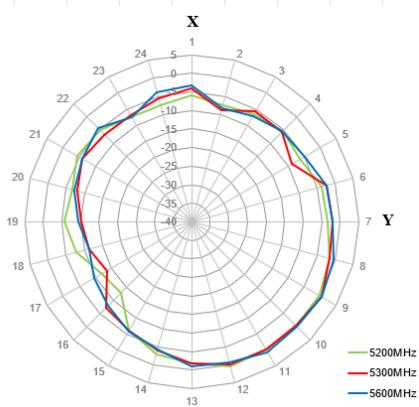
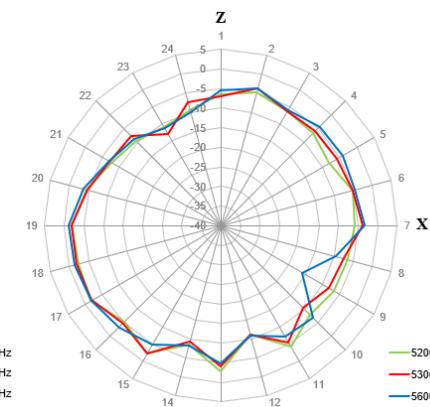
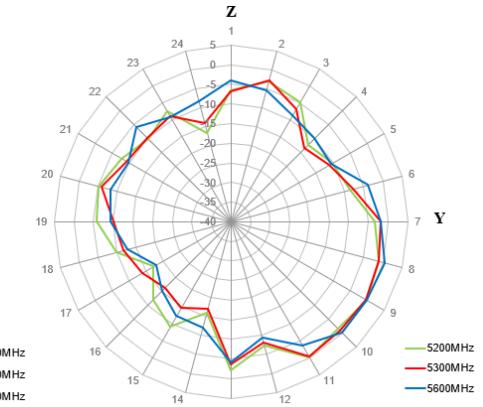


## 5800MHz



#### 4.3 2400MHz – Antenna 2\_ 2D & 3D Radiation Patterns



**5800MHz**

**XY Plane**

**XZ Plane**

**YZ Plane**


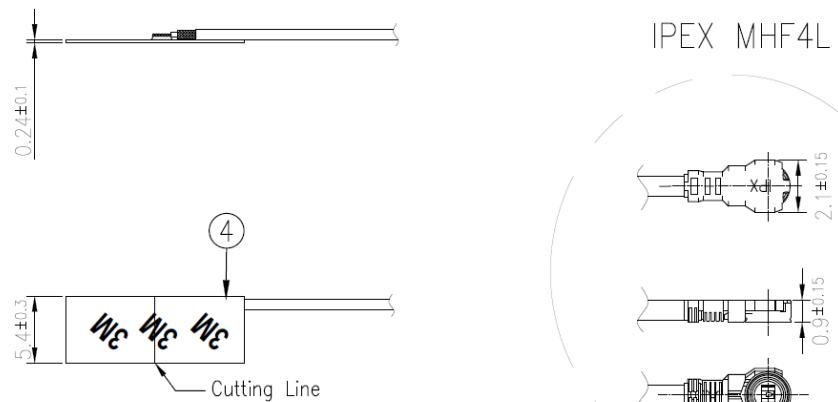
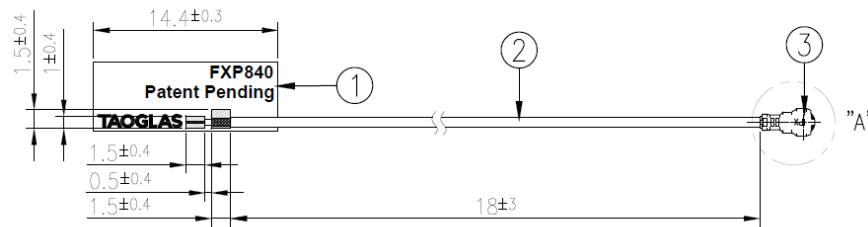
## 5. Mechanical Drawing (Units: mm)

ISO NO.: EDW-21-8-1033

STATE: Release

NOTES: 1. No dregs or insufficient soldering. Solder thickness  $0.2\sim1.7$ mm  
 2. The solder must be smooth and full to the edges of the pad.  
 The solder must not extend outside of the pad area.  
 3. The connector position has special orientation to the PCB as per drawing.  
 4. All material must be RoHS compliant.  
 5. Open/short QC, VSWR required.  
 6. Soldered area. 

REV.	DESCRIPTION	ENG.	APPROVED	DATE
	Initial Design	Chi	Aaron	2021/08/31
	Modify tolerance of solder thickness	Chi	Chozen	2021/11/10



IPEX MHF4L

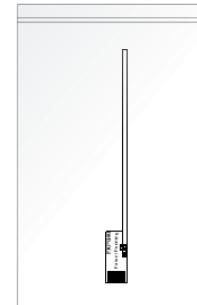
Detail A  
Scale:2:1

Name	Material	Finish	QTY
1 FXP840 PCB	Polymer 0.24t	Black	1
2 0.81 Coaxial Cable	FEP	Black	1
3 IPEX MHF4L	Copper Alloy	Au/Ni Plated	1
4 Double-Sided Adhesive	3M 467	Brown Liner	1

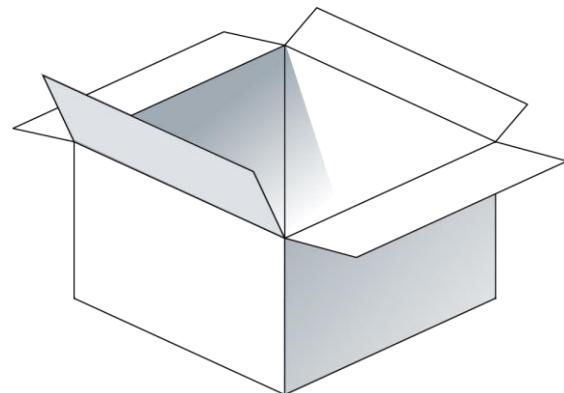
APPROVED BY: Aaron	 <b>TAOGLAS.</b> TW Design Centre <small>This drawing and its inherent design concepts are property of TAOGLAS. Not to be copied or given to third parties without the written consent of TAOGLAS.</small>		
CHECK BY: Aaron			
DRAWN BY: Chi			
DATE: 2021/08/31	<b>TITLE :</b> 2.4/5.8GHz Flex Micro PCB Antenna 18mm 0.81 IPEX MHF 4L(HSC)		
UNLESS OTHERWISE SPECIFIED TOLERANCES ON:			
XX±0.5 X±0.3 0.2 XX±0.1 XXX±0.05	<b>PART NO. :</b> FXP840.54.0018B		
THIRD ANGLE PROJECTION		UNIT: mm	SCALE: 2:1
		PAGES: 1/1	REV. D01

## 6. Packaging

1pcs FXP840.54.0018B per PE Bag  
Weight - 1g



2000pcs FXP840.54.0018B per carton  
Dimensions - 230\*160\*175mm  
Weight - 6.8Kg



## Changelog for the datasheet

### SPE-22-8-110 - FXP840.54.0018B

#### Revision: C (Updated Third Release)

Date:	2022-10-11
Notes:	Updated 2D Radiation Patterns with new frequencies for the Antennas high band
Author:	Gavin Mackey

#### Previous Revisions

#### Revision: B (Updated Second Release)

Date:	2022-09-21
Notes:	Updated Efficiency, Peak Gain and Average Gain values in Specifications section
Author:	Gavin Mackey

#### Revision: A (Original First Release)

Date:	2022-07-08
Notes:	New Custom Datasheet
Author:	Evan Murphy



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