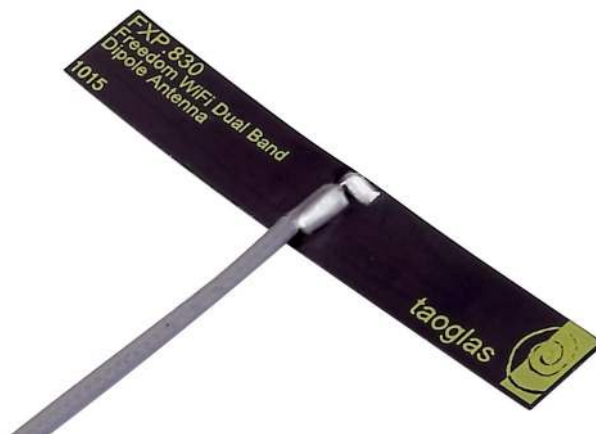


# SPECIFICATION

Patent Pending

Part No. : **FXP830.24.0100B**  
Product Name : FXP830 Freedom Wi-Fi 2.4/5 GHz Dipole  
Antenna  
Features : Very High Efficiency  
Ground-plane Independent  
IPEX MHF4 Connector (HSC compatible)  
RoHS Compliant



## 1. Introduction

The FXP830 has a peak gain of 1.8dBi at 2.4GHz and efficiencies of 50%, and 4-6dBi and 80-90% along bands 4.9GHz to 6GHz.

The FXP830 is a high efficiency, small, dual-band, dipole antenna for 2.4/4.9-6GHz band including Bluetooth and Wi-Fi. 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.

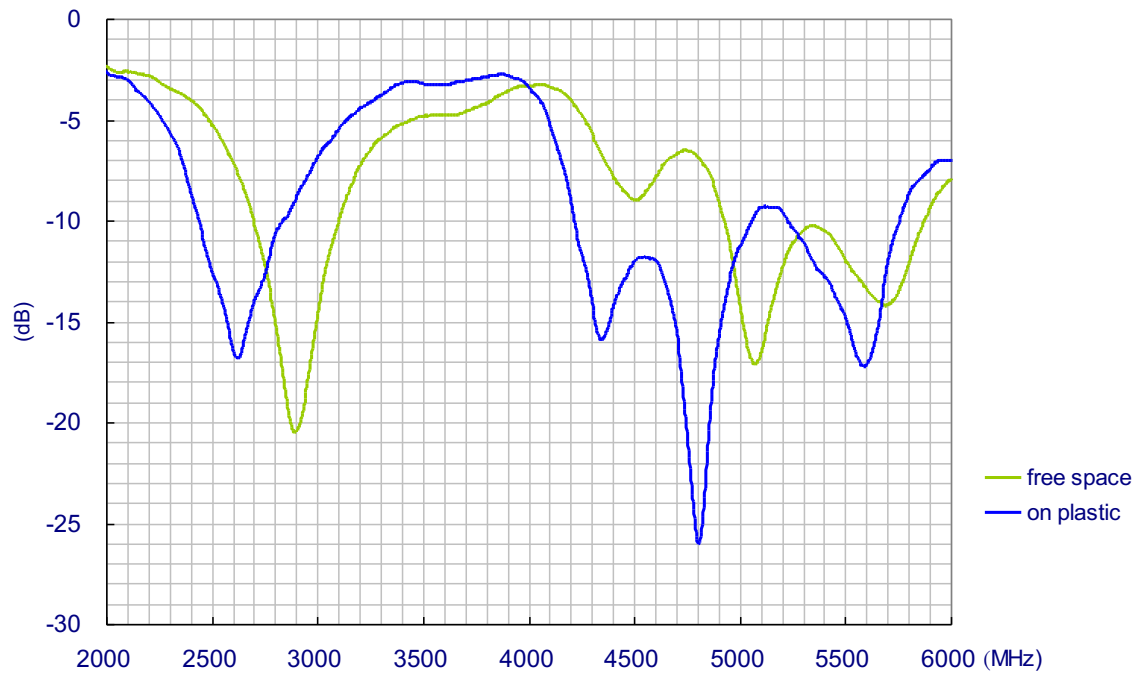
## 2. Specification

| ELECTRICAL                |                            |              |
|---------------------------|----------------------------|--------------|
| Frequency                 | 2.4 ~ 2.5GHz,              | 4.9 ~ 5.8GHz |
| Peak Gain (free space)    | 2.55dBi                    | 4.66dBi      |
| Peak Gain (on plastic*)   | 3.32dBi                    | 6.11dBi      |
| Average Gain (free space) | -3.0dBi                    | -0.6dBi      |
| Average Gain (on plastic) | -3.0dBi                    | -0.7dBI      |
| Efficiency (free space)   | 50%                        | 86%          |
| Efficiency (on plastic)   | 50%                        | 84%          |
| Polarization              | Linear                     |              |
| Impedance                 | 50 Ohms                    |              |
| Radiation Pattern         | Omnidirectional            |              |
| Input Power               | 2W max.                    |              |
| MECHANICAL                |                            |              |
| Dimensions                | 42*7mm                     |              |
| Antenna Body Material     | Polymer                    |              |
| Cable                     | Gray 100mm 0.81mm co-axial |              |
| Connector                 | IPEX MHF4(HSC comp)        |              |
| ENVIRONMENTAL             |                            |              |
| Temperature Range         | -40°C to 85°C              |              |
| Humidity                  | Non-condensing 65°C 95% RH |              |

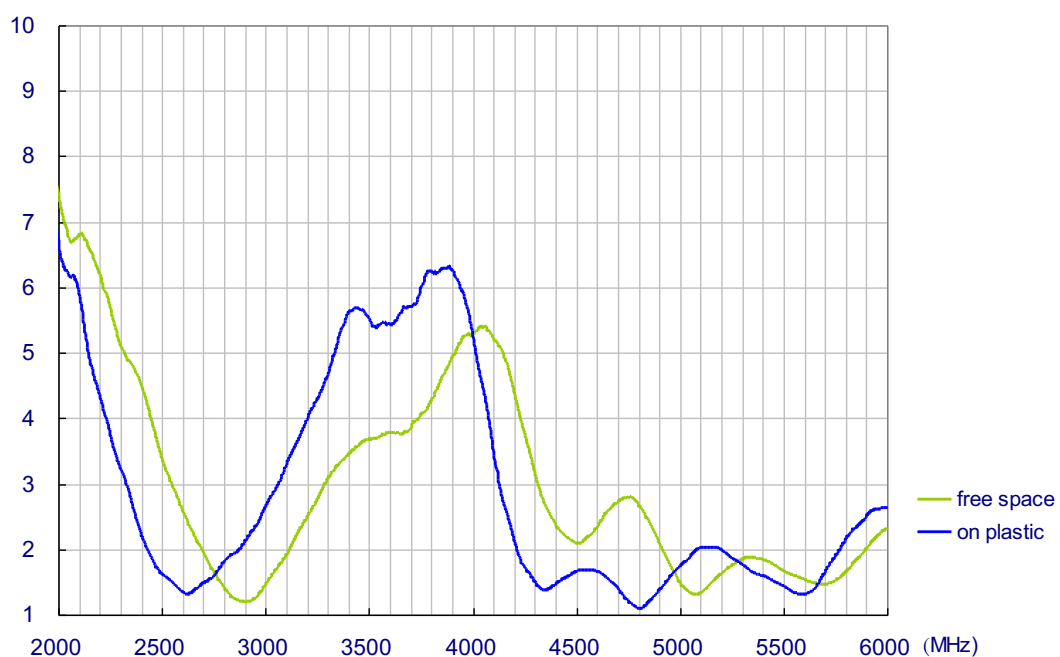
\* FXP.830 is likely to be mounted on plastic in many applications so we provide the antenna measurement in both free space and mounted on a 1mm thick plastic.

## 3. Antenna Characteristics

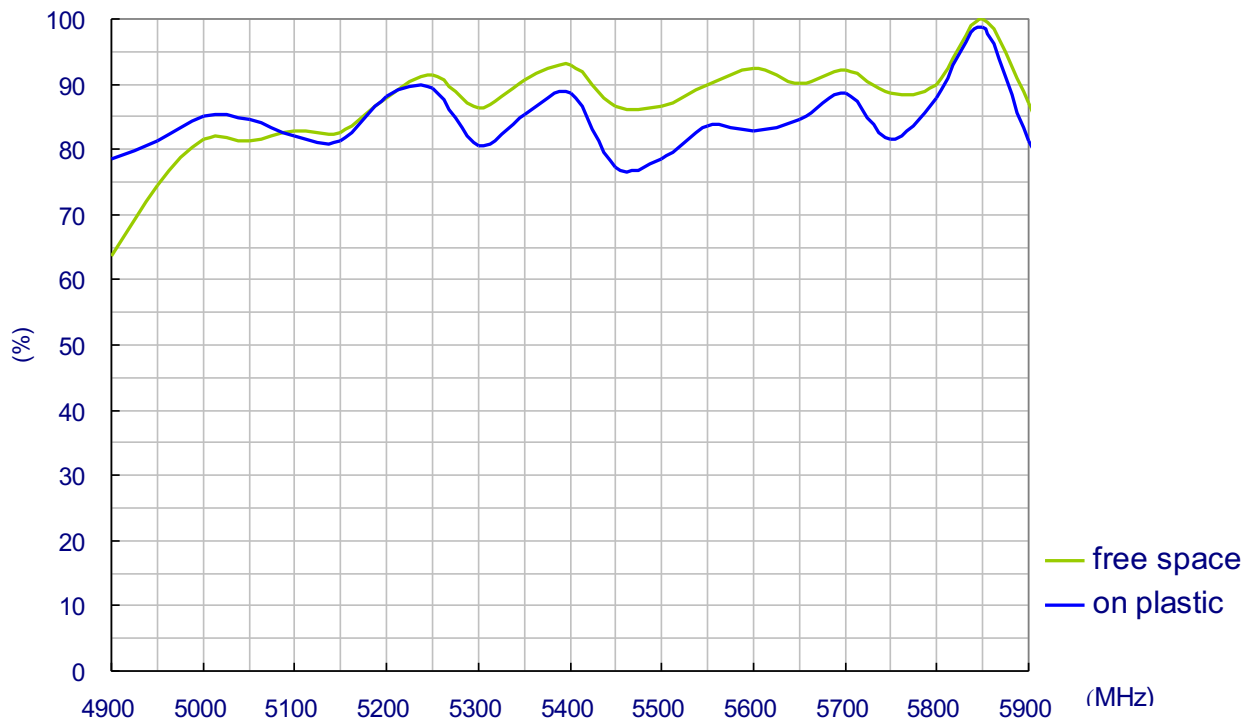
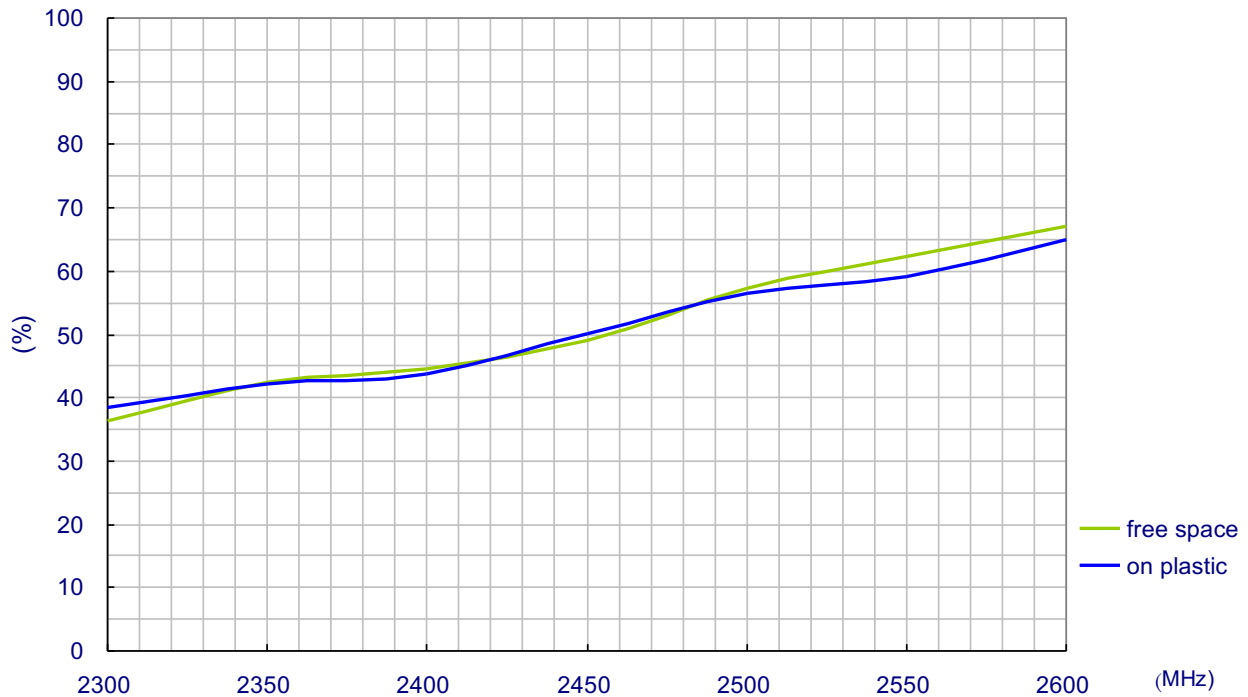
### 3.1. Return Loss



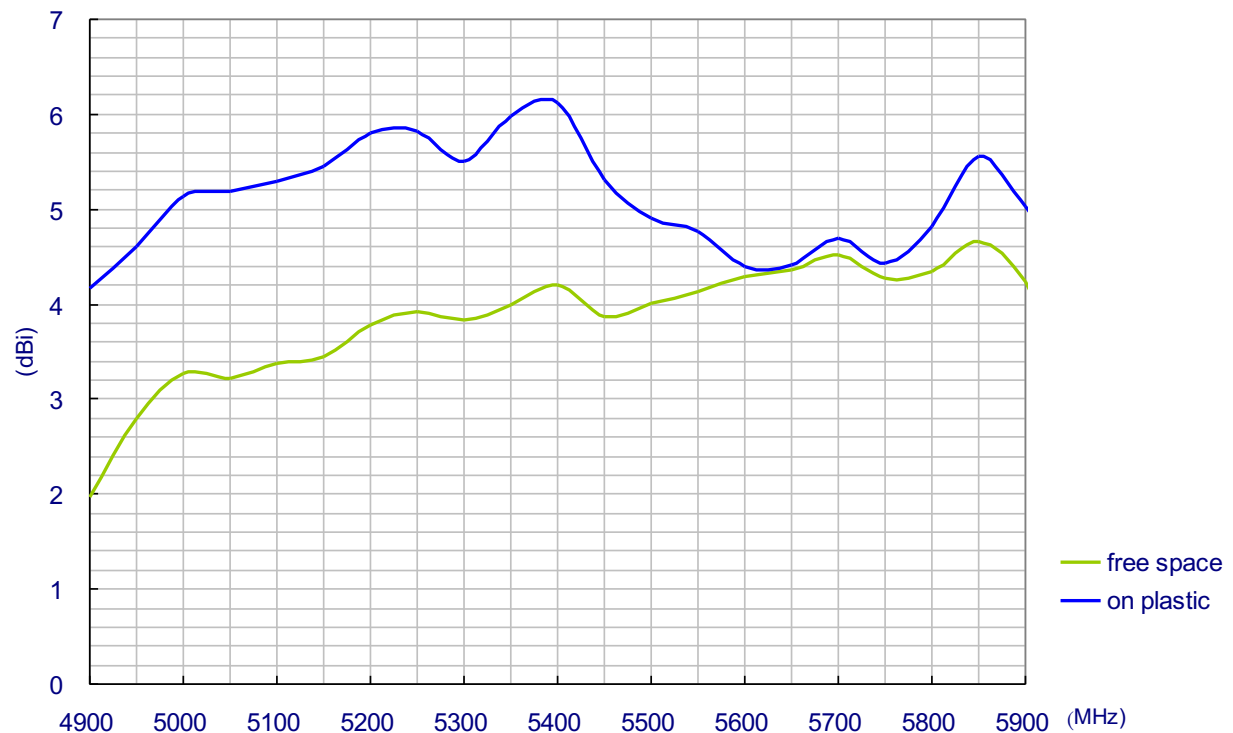
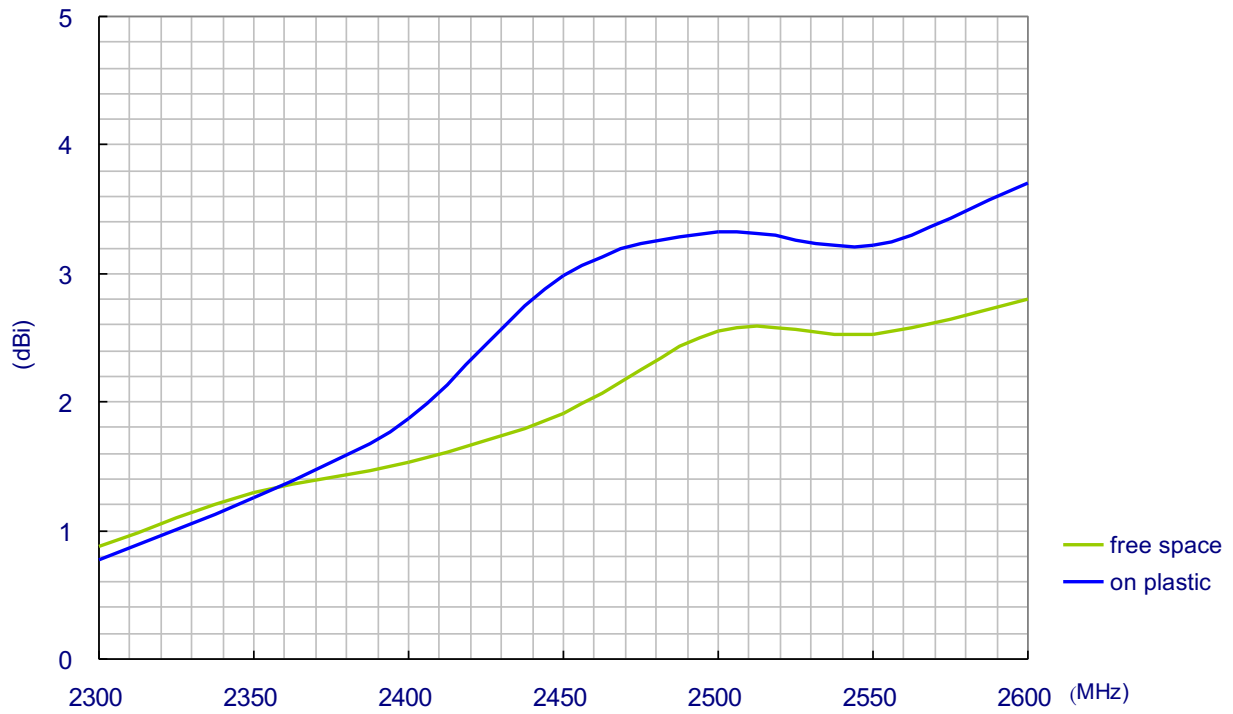
### 3.2. VSWR



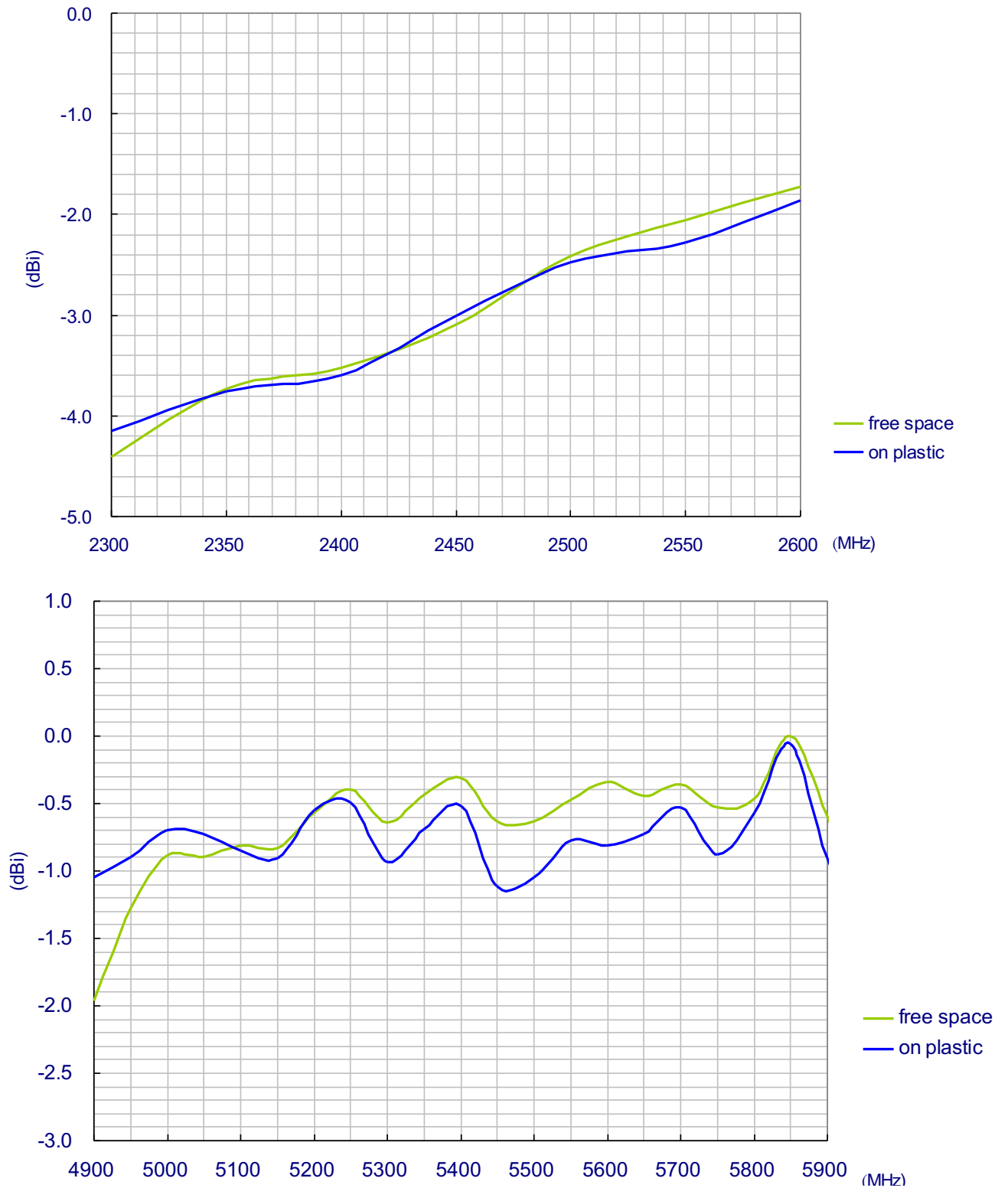
### 3.3. Antenna Efficiency



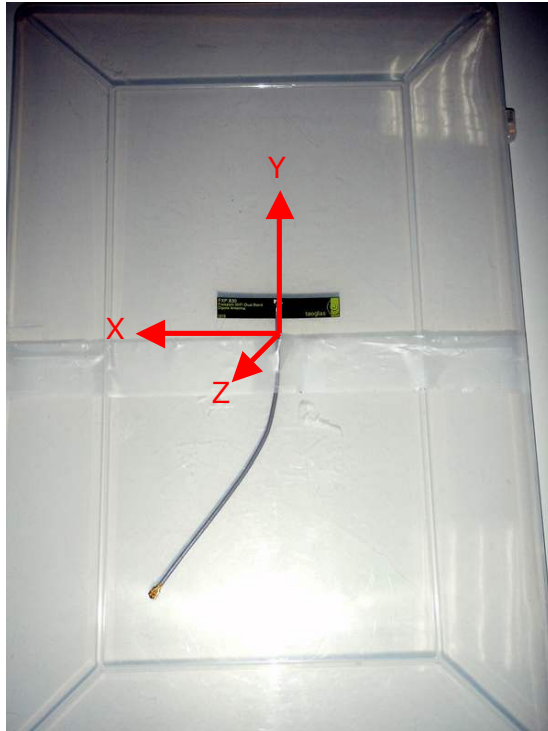
### 3.4. Antenna Peak Gain



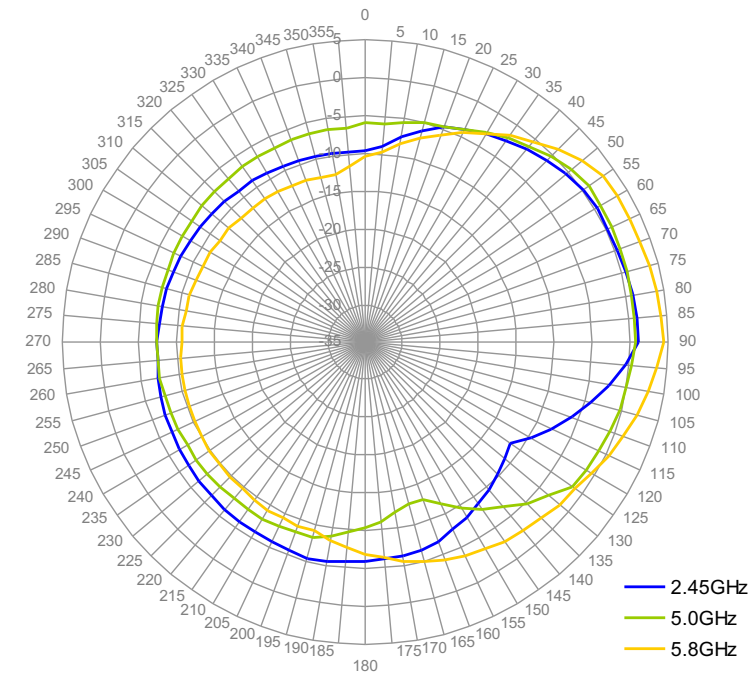
### 3.5. Antenna 3D Average Gain



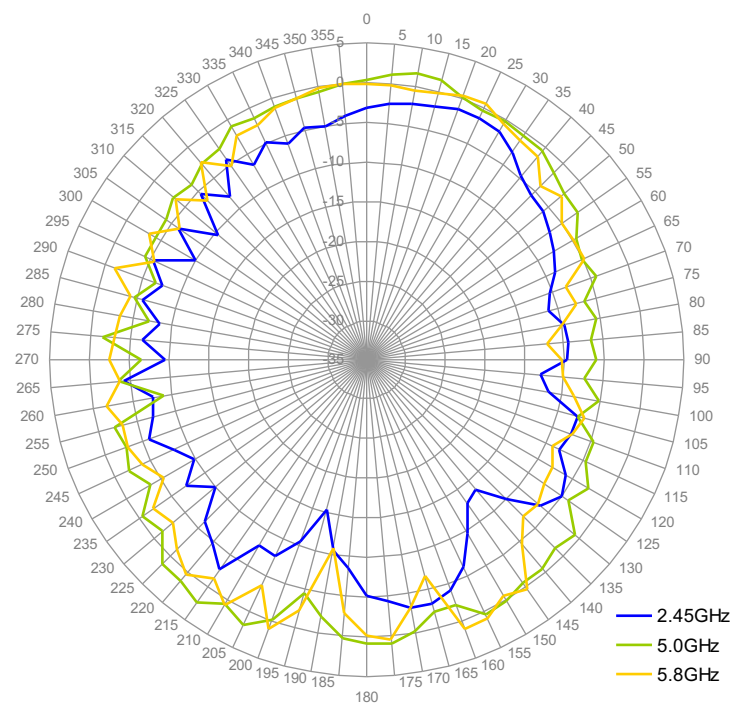
### 3.6. Radiation Pattern for FXP.830 on plastic



## XY Plane

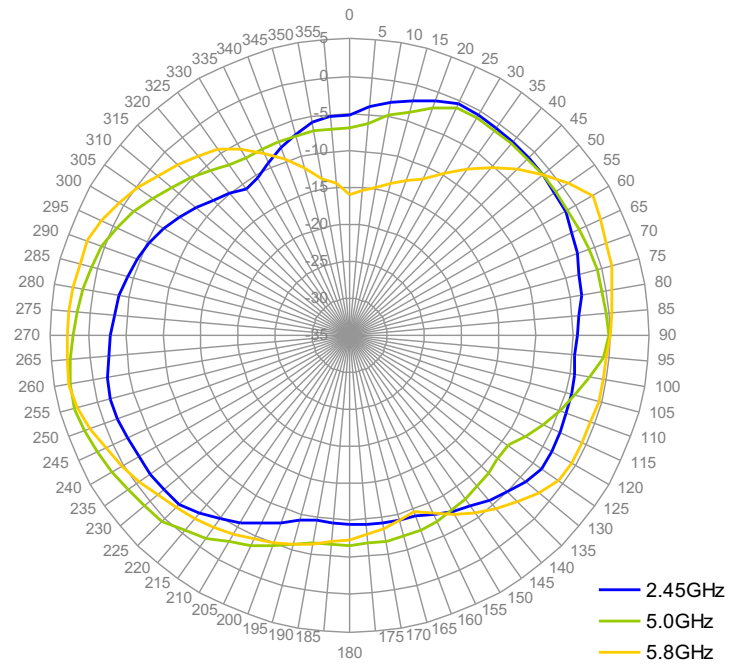


## XZ Plane

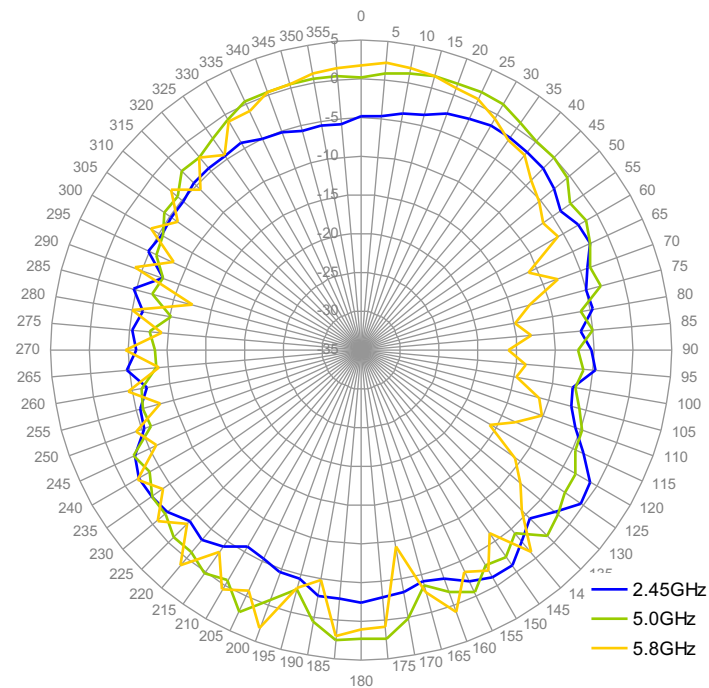


## 3.7. Free Space Radiation

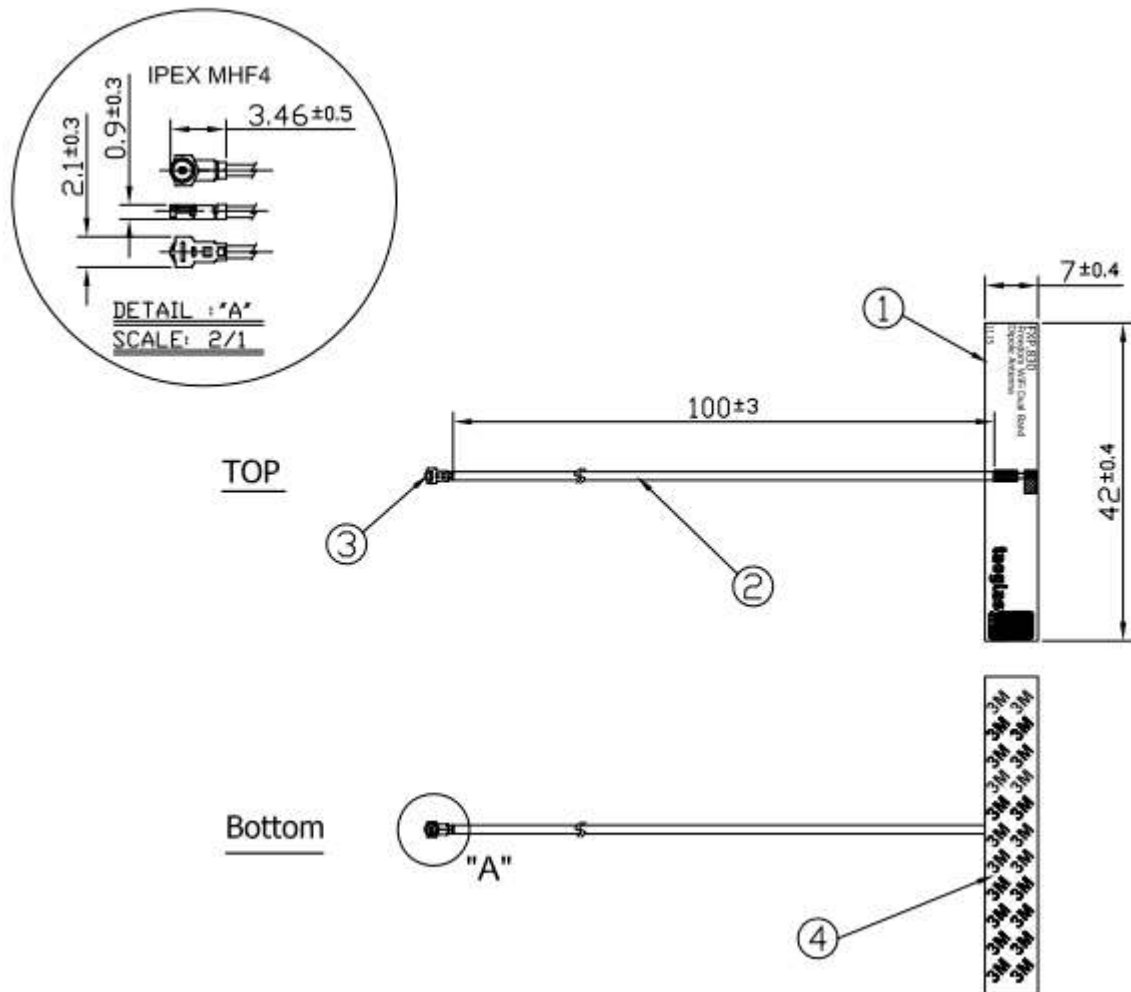
### XY Plane



### XZ Plane

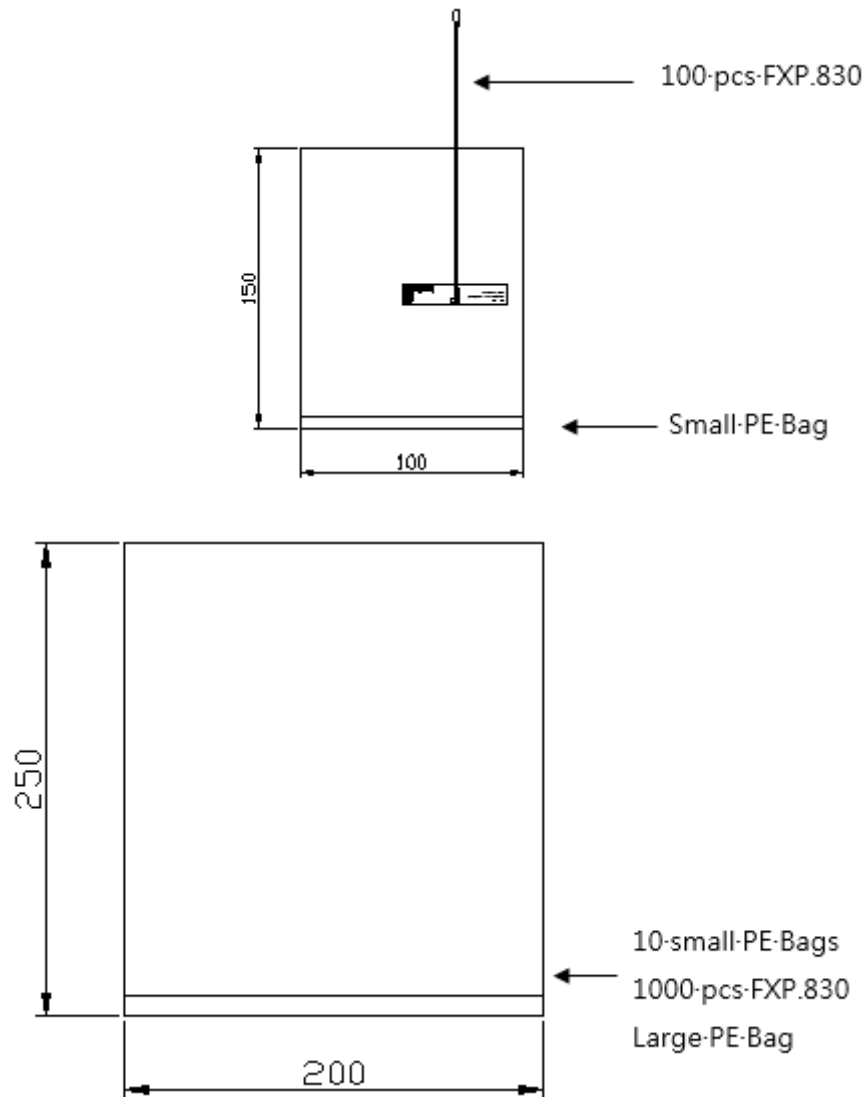


## 4. Antenna Drawing



|   | Name                  | Material  | Finish      | QTY |
|---|-----------------------|-----------|-------------|-----|
| ① | FXP830 PCB            | FPCB 0.1t | Black       | 1   |
| ② | 0.81 Coaxial Cable    | FEP       | Gray        | 1   |
| ③ | IPEX MHF4             | Brass     | Gold        | 1   |
| ④ | Double-Sided Adhesive | 3M 467    | Brown Liner | 1   |

## 5. Packaging



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