SPECIFICATION

Patent Granted

FXP74 Black Diamond 2.4GHz Band Antenna

Part No. : **FXP74.07.0100A**

Product Name : FXP74 Black Diamond 2.4GHz Antenna

Feature : 4dBi Peak Gain
Flexible, Ultra Low Profile
I-PEX MHF® I Connector (U.FL compatible)
100mm 1.13 Mini-Coaxial Cable
47*7*0.1 mm
CE Certified
RoHS & Reach Compliant

1. Introduction

The FXP74 Black Diamond is a small ultra-low profile antenna for 2.4GHz band that includes Bluetooth®, Zigbee® and Wi-Fi® single band application. The FXP74 has a peak gain of 4dBi at 2.4GHz and efficiencies of above 50%.

This Taoglas patent granted antenna is unique in the market with exceptionally stable performance different applications. It is made from a flexible polymer, has a tiny form factor (14mm*7.0mm*0.1mm) and has double-sided 3M tape for easy and robust "peel and stick" mounting.

The FXP74 is the ideal all-round 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, smartphones, small AP routers, etc.

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.

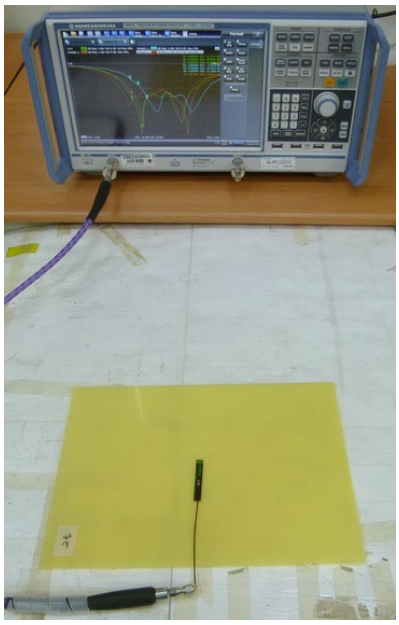
2. Specification

Communication System	Bluetooth	Wi-Fi	ZigBee	2.4GHz ISM
	2401-2480	2412-2462	2410-2480	2400-2483.5
Efficiency	50%			
Gain	4dBi			
Return Loss	< -10dB			
Impedance	50 Ohms			
VSWR	≤ 2:1			
Polarization	Linear			
Power Handled	5 W			
MECHANICAL				
Dimensions	47*7*0.1 mm			
Weight	1.2 g			
Connector	I-PEX MHF® I (U.FL Compatible)			
Cable Standard	Mini-Coax 1.13 mm			
Cable Length and color	100mm, Black			
Adhesive tape	3M 467			
ENVIRONMENTAL				
Operation Temperature	-40 ºC ~ +85 ºC			
Storage Temperature	-40 ºC ~ +85 ºC			
RoHS Compliant	Yes			

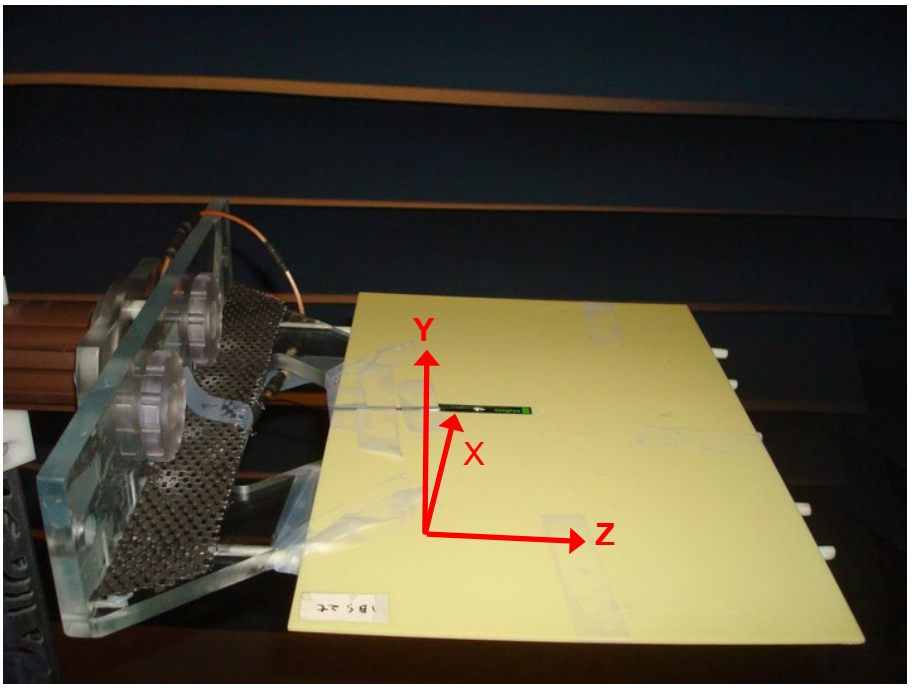
3. Antenna Characteristics

3.1. Test Setup

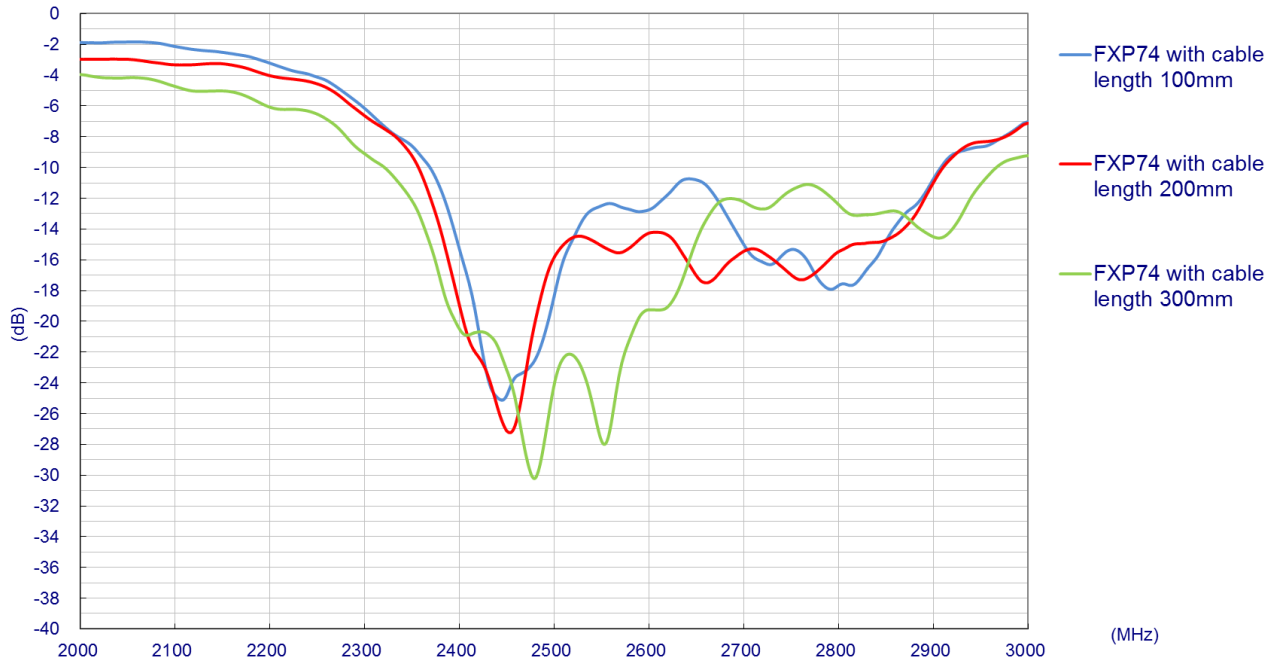
Rohde & Schwarz ZNB 8 Vector Network Analyzer



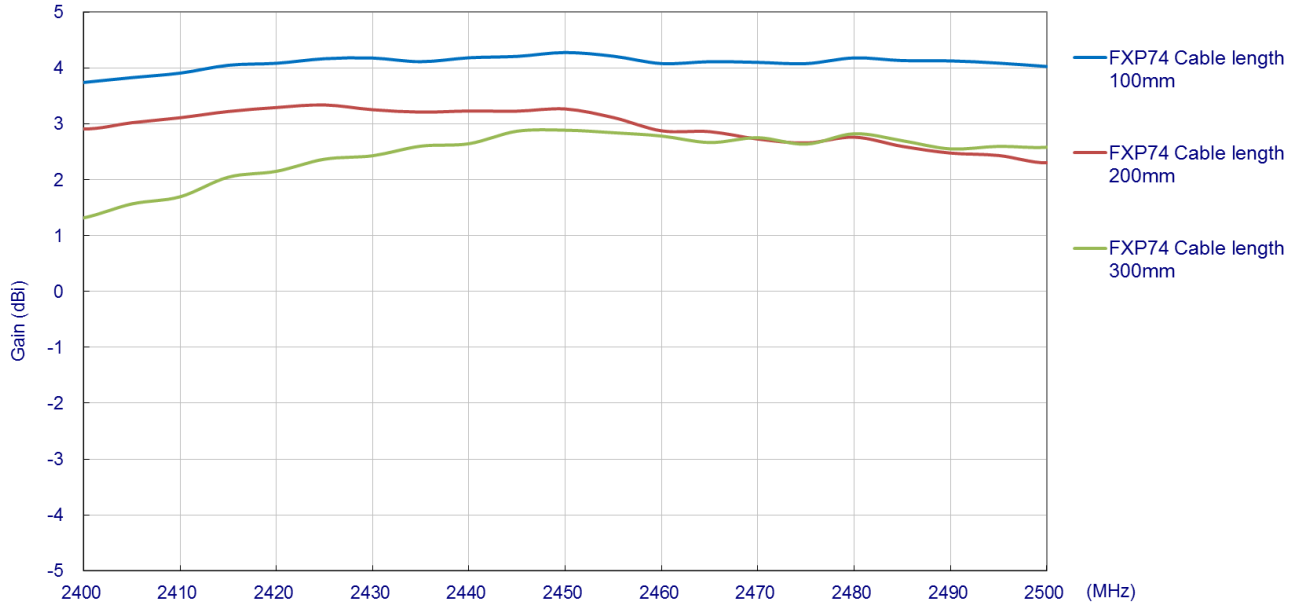
ETS 3D Radiation Scan System with Anechoic Chamber



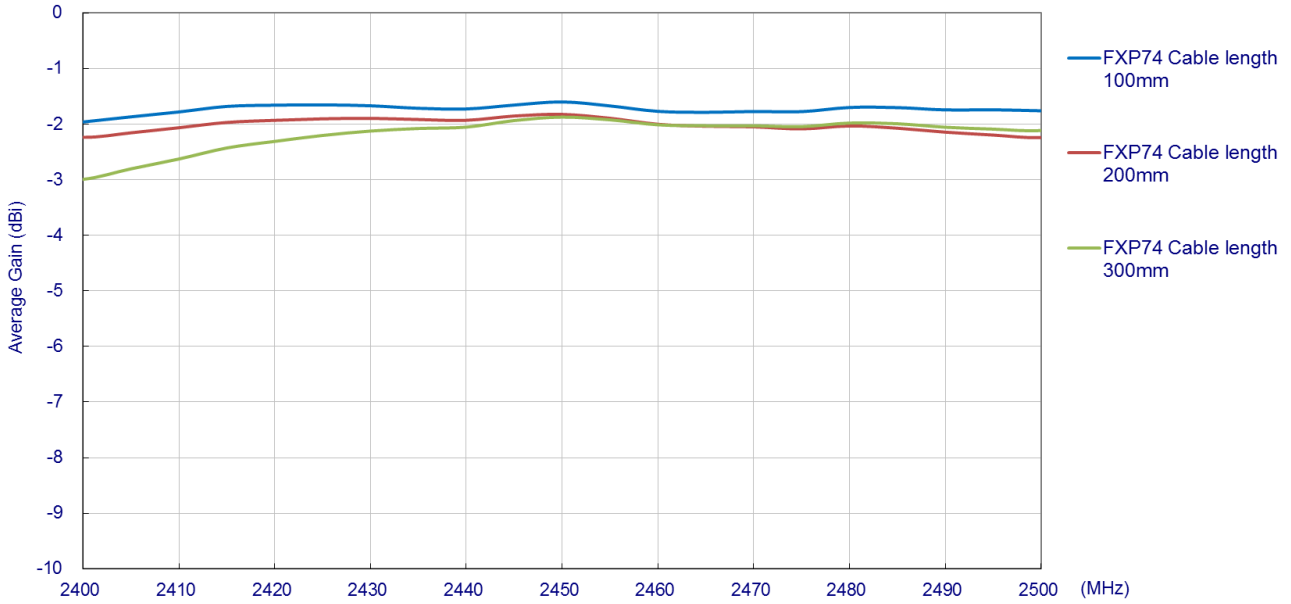
3.2. Return Loss



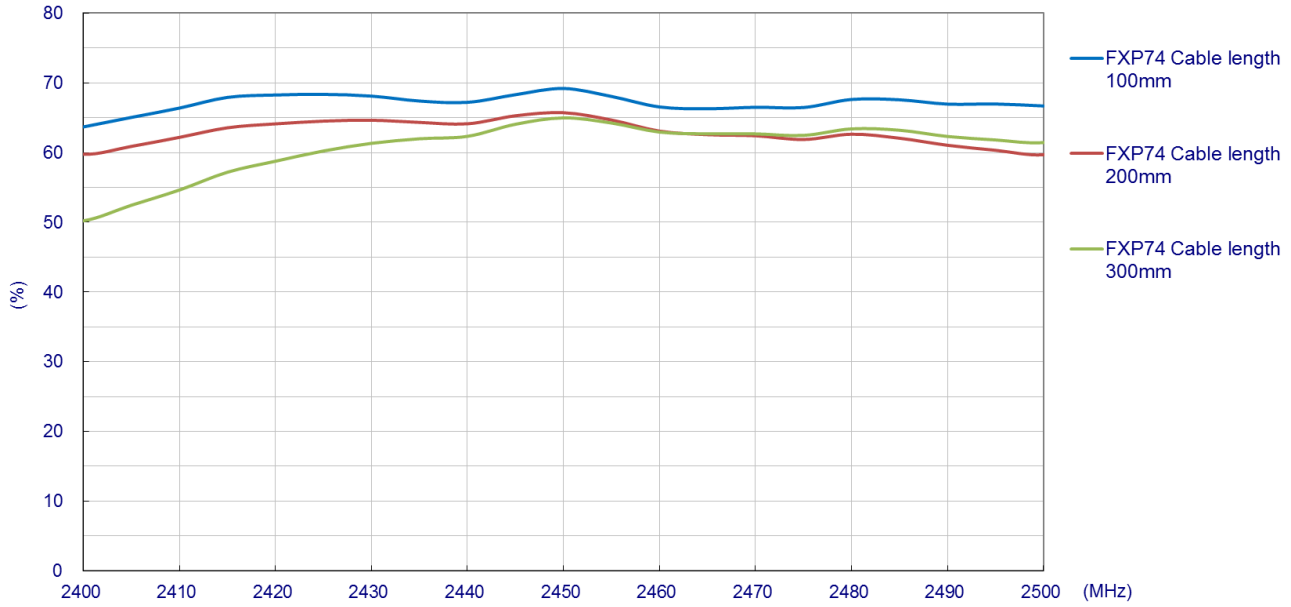
3.3. Peak Gain



3.4. Average Gain

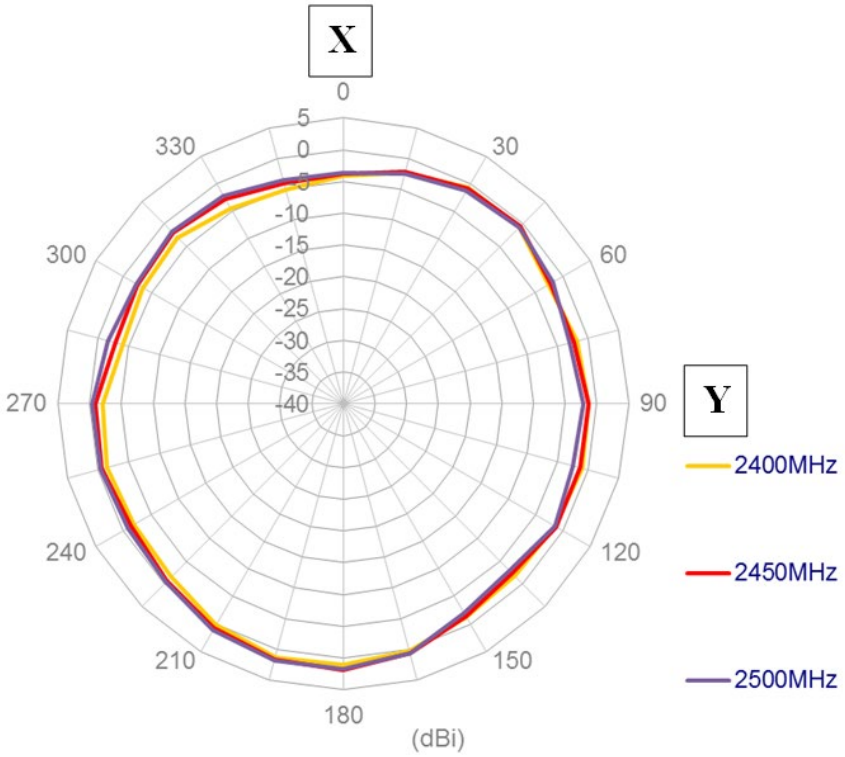


3.5. Efficiency

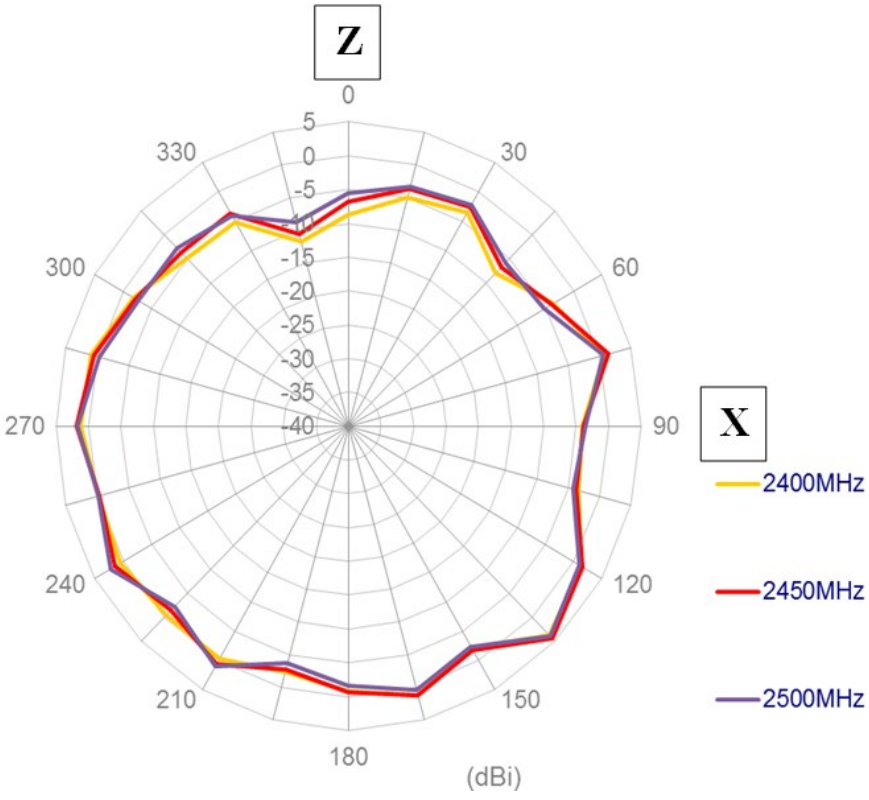


4. Antenna Radiation Pattern

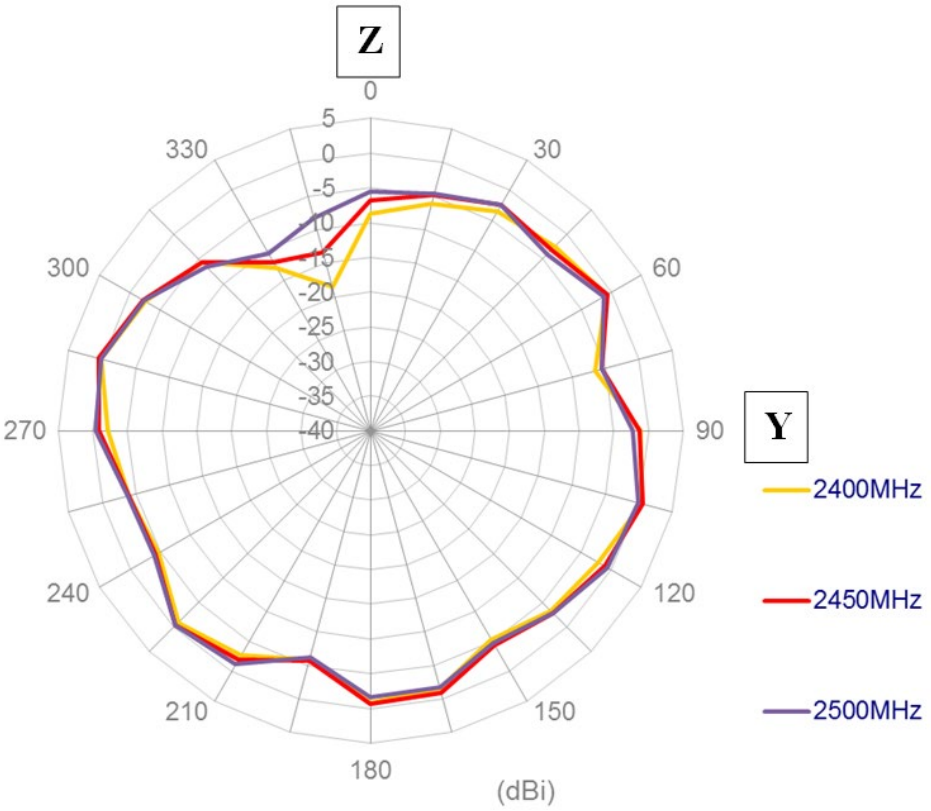
XY-plane



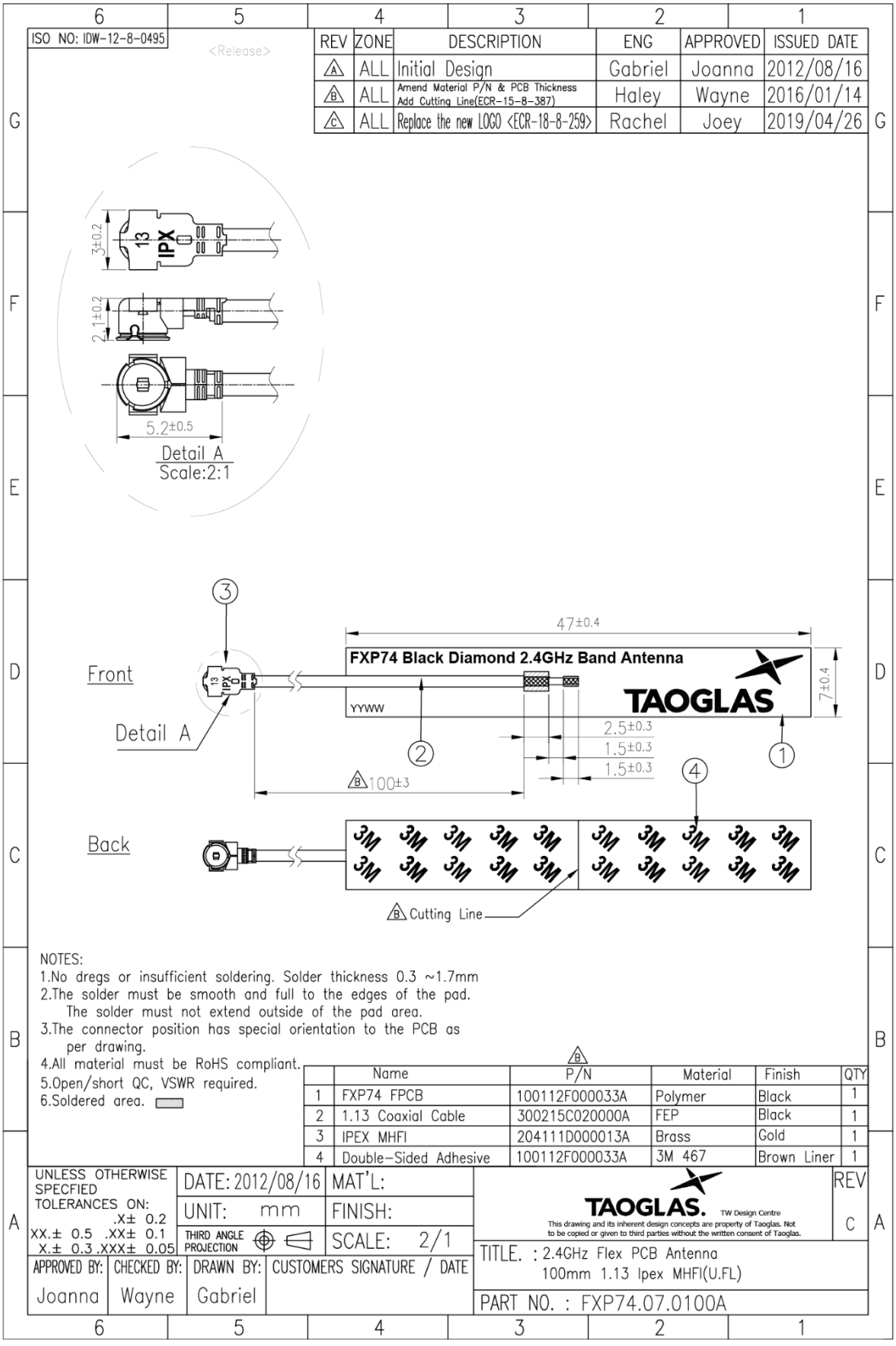
XZ-plane



YZ-plane

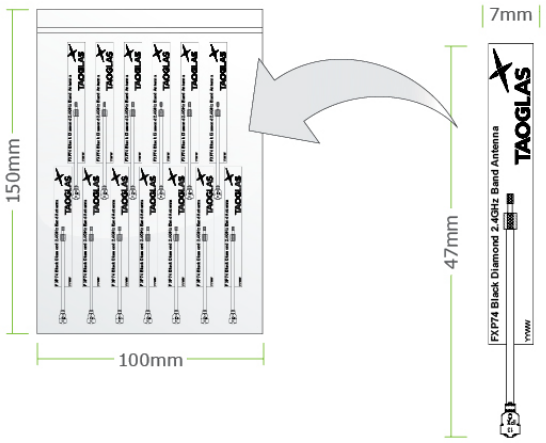

Z
0
30
60
90
120
150
180
210
240
270
300
330
5
0
-5
-10
-15
-20
-25
-30
-35
-40
Y
2400MHz
2450MHz
2500MHz
(dBi)

5. Antenna Drawing

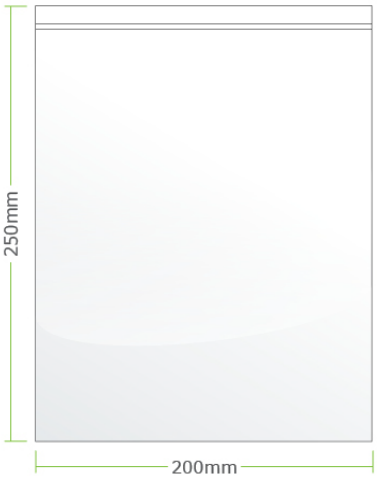


6. Packaging

100pcs FXP74.07.0100A per PE Bag
Dimensions: 150*100mm
Weight: 1.02Kg

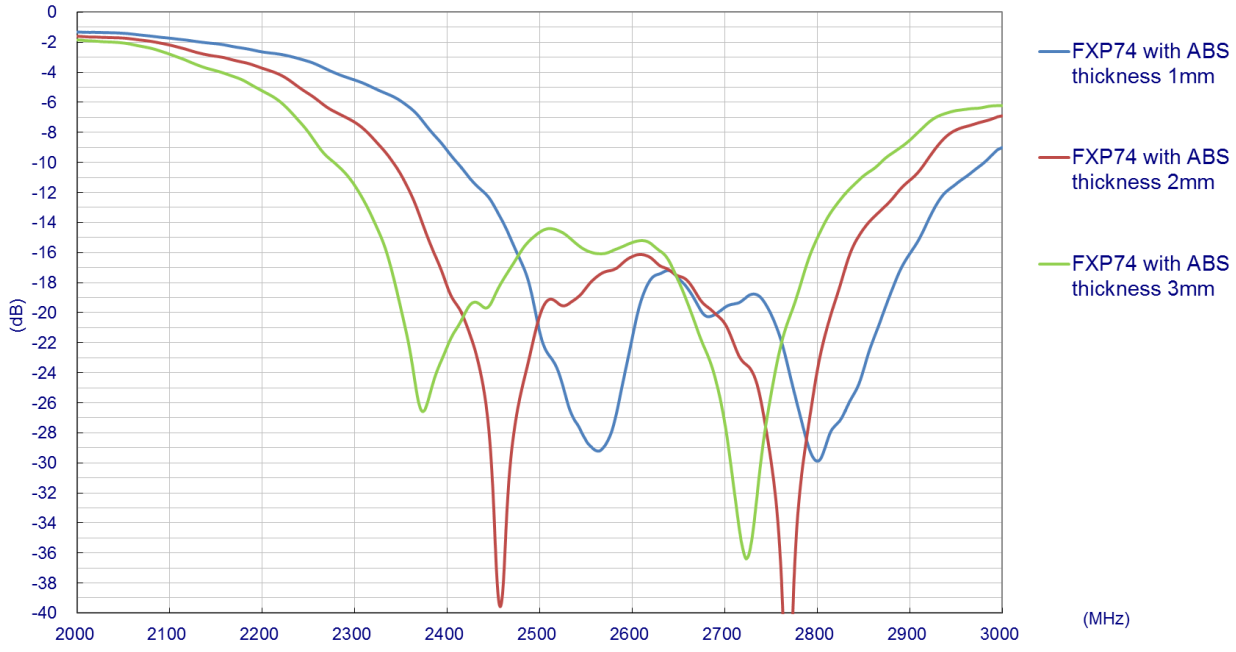


1000pcs per Large Bag
Carton Dimensions: 250*200mm
Weight: 10.2Kg



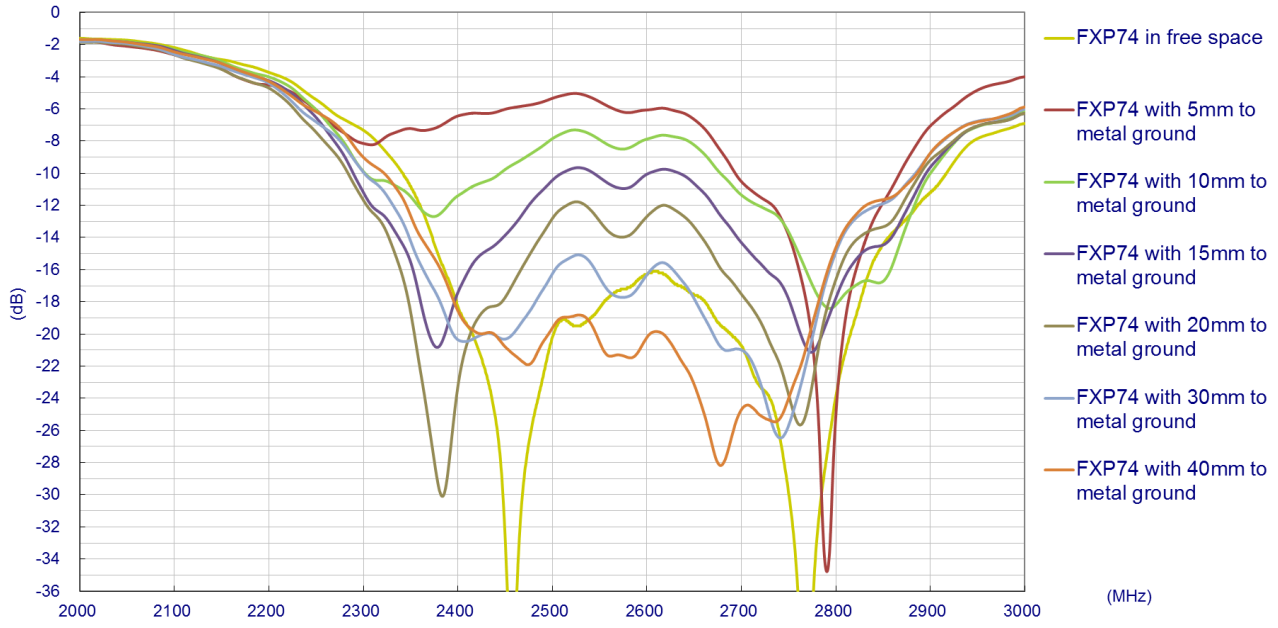
7. Return Loss – environmental effects

7.1. Antenna on different ABS thickness (Cable Length 100mm)



7.2. Proximities to metal ground plane

(Cable Length 100mm, antenna stuck on 2mm ABS base)



7.3. Antenna with different cable type (Antenna stuck on 2mm ABS base)