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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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## SPECIFICATION

- Part No. : **FW.24.NTY.M**
- Description : Meteor-2.4GHz Flexible Whip Monopole  
Antenna N Type(M) Straight
- Features : External 2.4GHz Monopole Antenna  
Designed for Outdoor Use  
Omni-directional  
Over 70% Efficiency\*  
Over 4dBi peak gain\*  
Robust Inner Steel Core  
Antenna height 316mm  
N Type(M) Straight Connector  
IP67 dust and water-resistant  
\*Tested on 30cm\*30cm Ground Plane  
RoHS ✓



## 1. Introduction

The FW.24 is a flexible 2.4GHz omni-directional whip antenna with an N type (M) connector for outdoor use. It features excellent efficiency (>75%) and high peak gain (>4 dBi) between 2400-2500MHz on a 30x30 cm ground plane.

The antenna was specifically developed for applications in outdoor monitoring systems, such as weather monitoring, motion/vibration sensors, and pollutants monitoring.

The FW.24 works in the 2.4GHz WiFi/Bluetooth/ISM band. It has excellent omni-directional radiation properties providing a wide coverage area in the azimuth. Its high efficiency means that it allows your radio to consume less power than with a lower efficiency antenna when transferring data, while also achieving better sensitivity of reception. The antenna performs at its best while attached to a ground plane with dimensions of at least 30x30 cm, though it can be used even without ground-plane.

The whip is made of a flexible inner steel core covered by PE so it is extremely resistant to abrasion and springs back to its original shape if bent. The rugged design and its housing's IP67 rating ensure it can withstand bad weather, environmental stress and physical shock in the field.

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.

Other connector options are available or custom versions can be made subject to NRE and MOQ. Contact your regional Taoglas office for details.

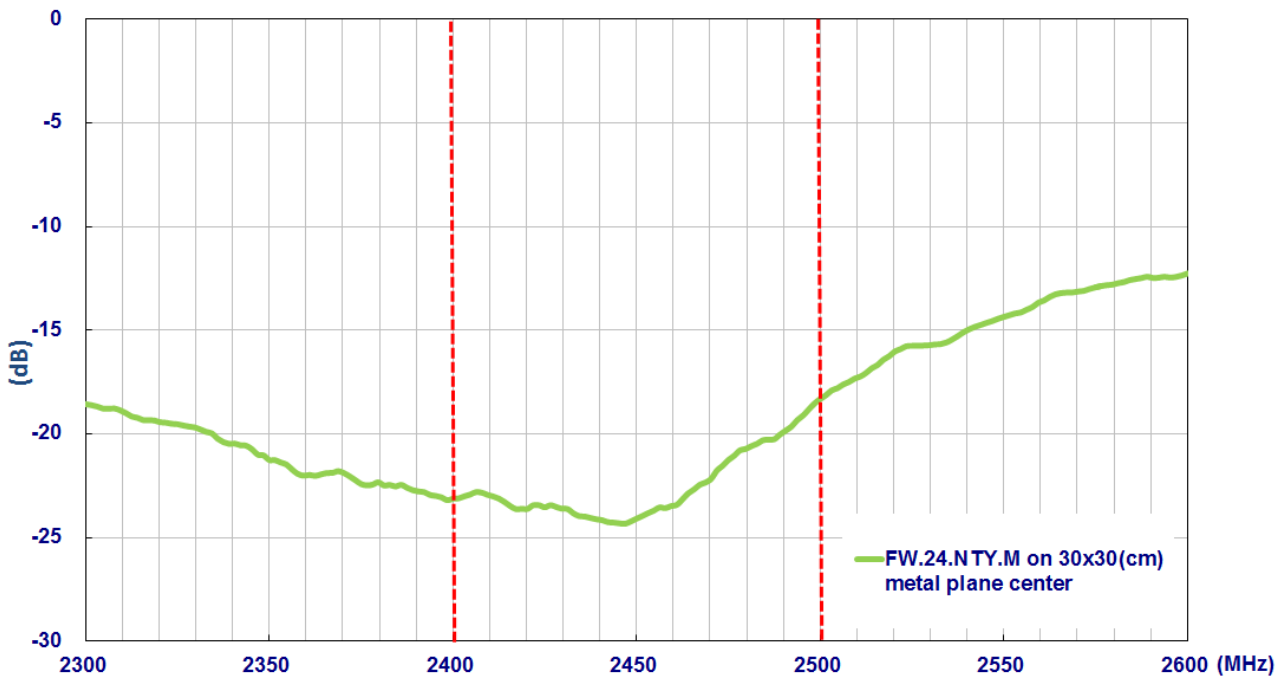
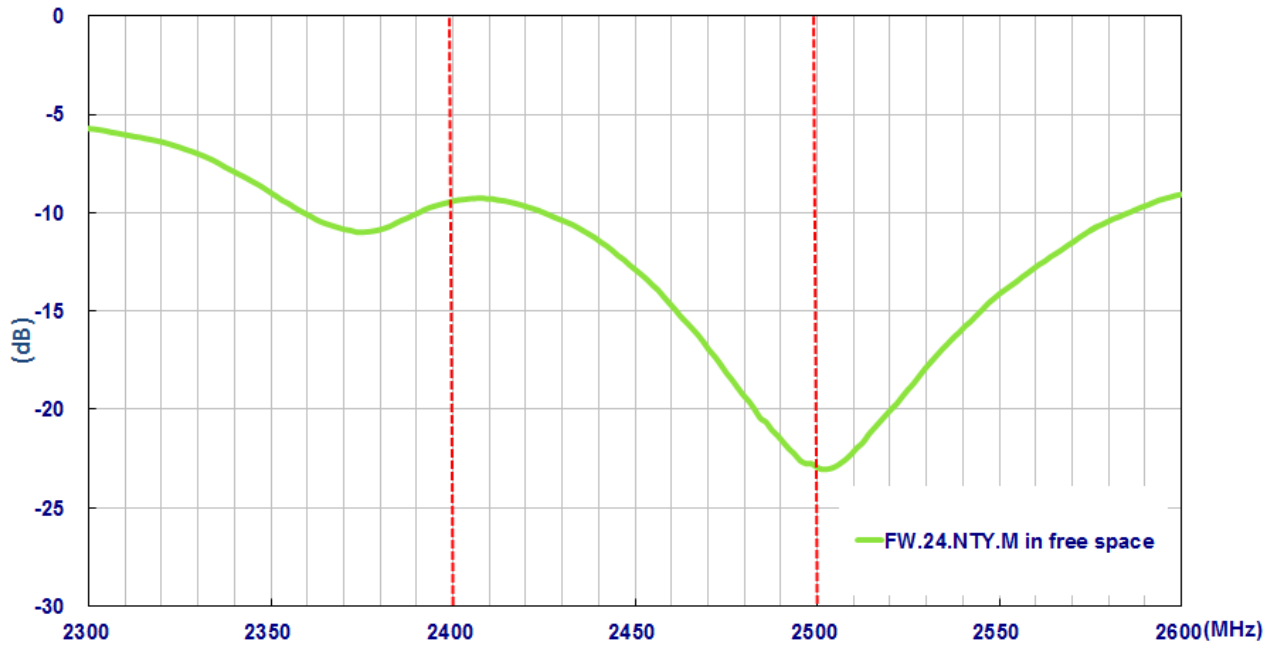


## 2. Specification

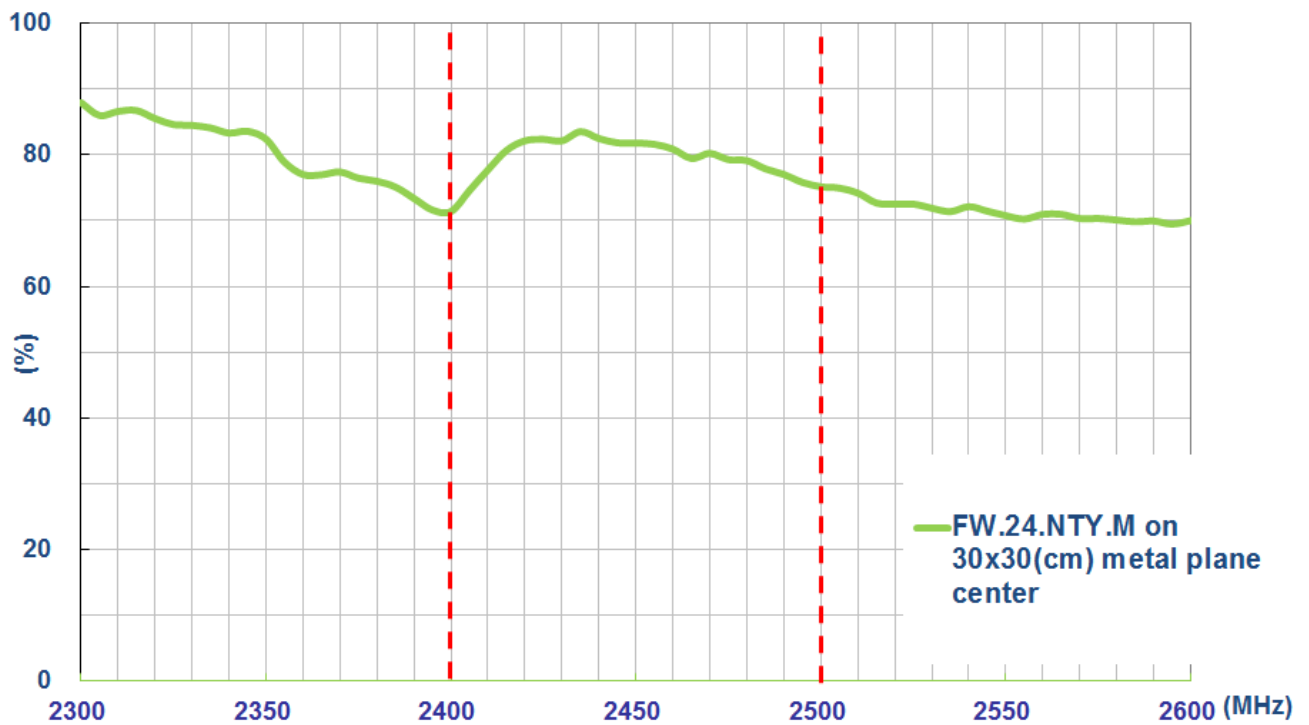
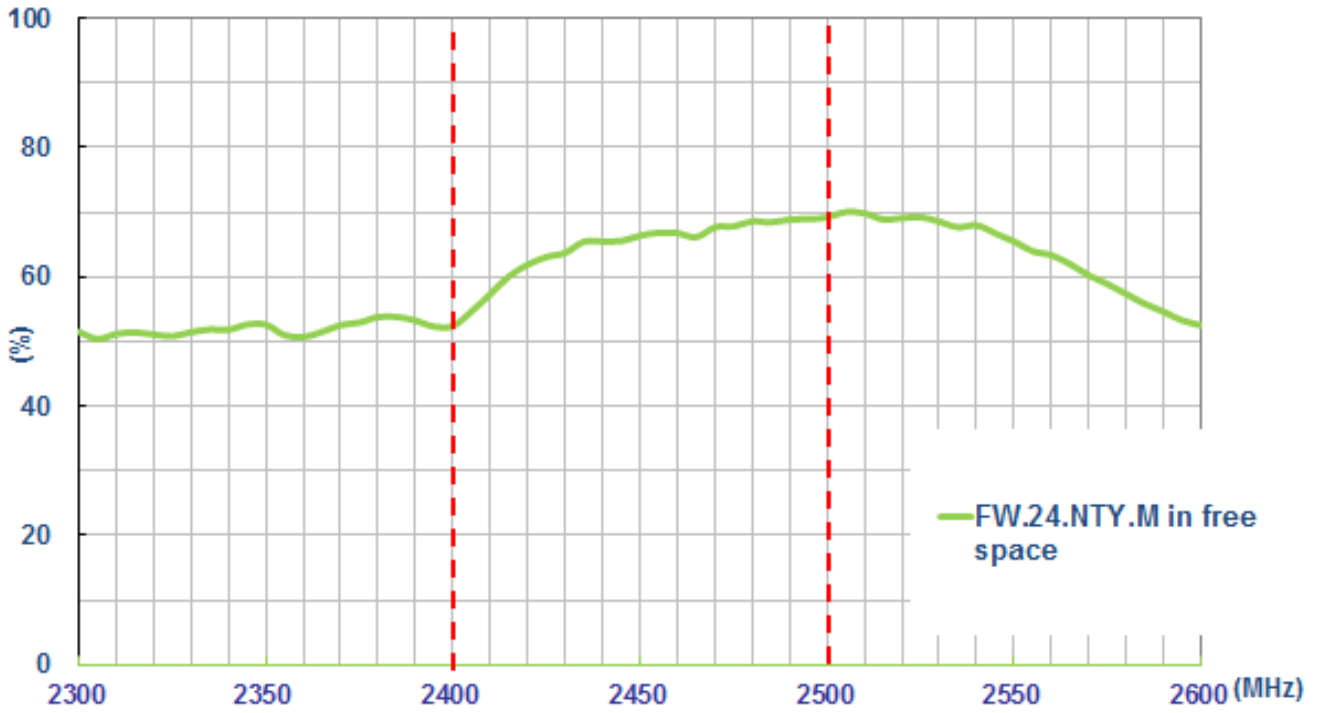
2.4GHz		
Frequency	2400~2500MHz	
	In free space	On 30x30cm ground
Efficiency	64.5 %	79.3 %
Peak Gain	4.26 dBi	4.48 dBi
Return loss	< -6dB	< -10dB
VSWR	≤ 3:1	≤ 2:1
Impedance	50Ω	
Polarization	Linear	
Radiation Pattern	Omni-Directional	
Input Power	2 W	
MECHANICAL		
Dimensions	Height 316 ± 9 mm	
Base Diameter	20 ± 0.5 mm	
Whip Diameter	6.2 ± 0.6 mm	
Casing	ABS & PE	
Connector	N type Male Straight	
Weight	46.6 g	
Dust and Water Resistance	IP67 (housing only)	
ENVIRONMENTAL		
Temperature Range	-40°C to 85°C	
Humidity	Non-condensing 65°C 95% RH	

### 3. Antenna Characteristics

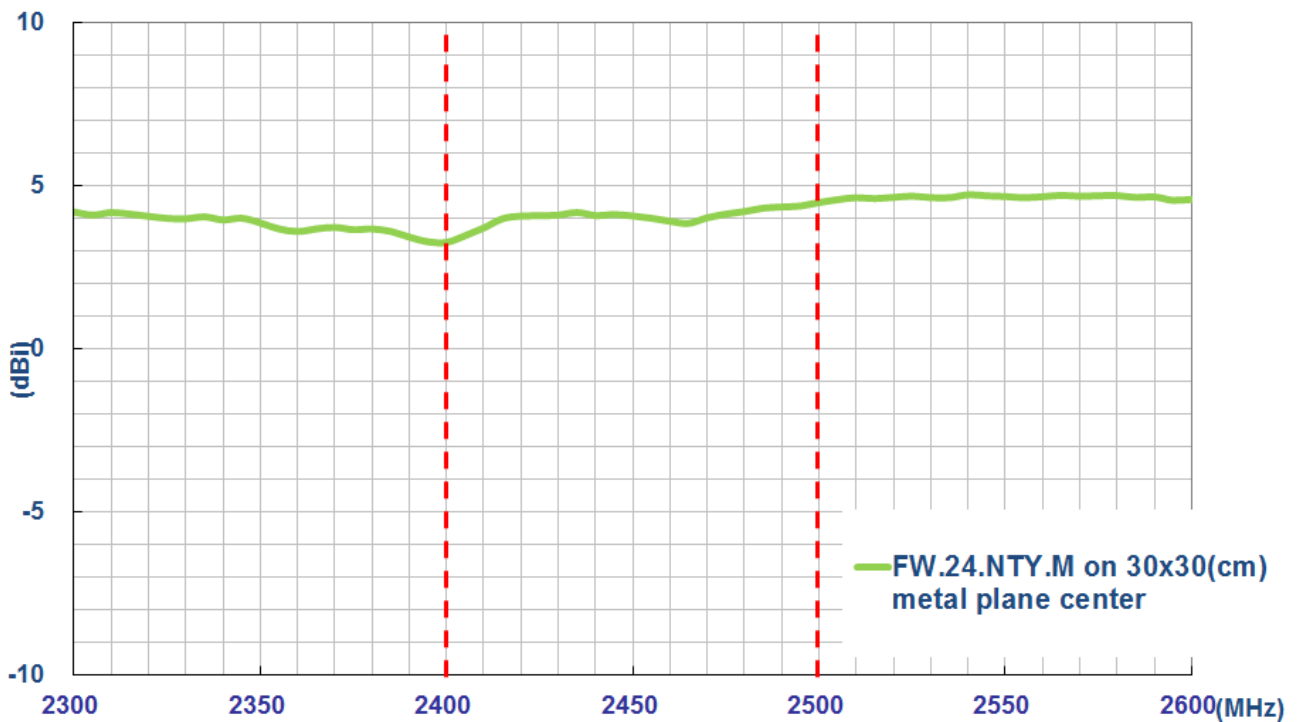
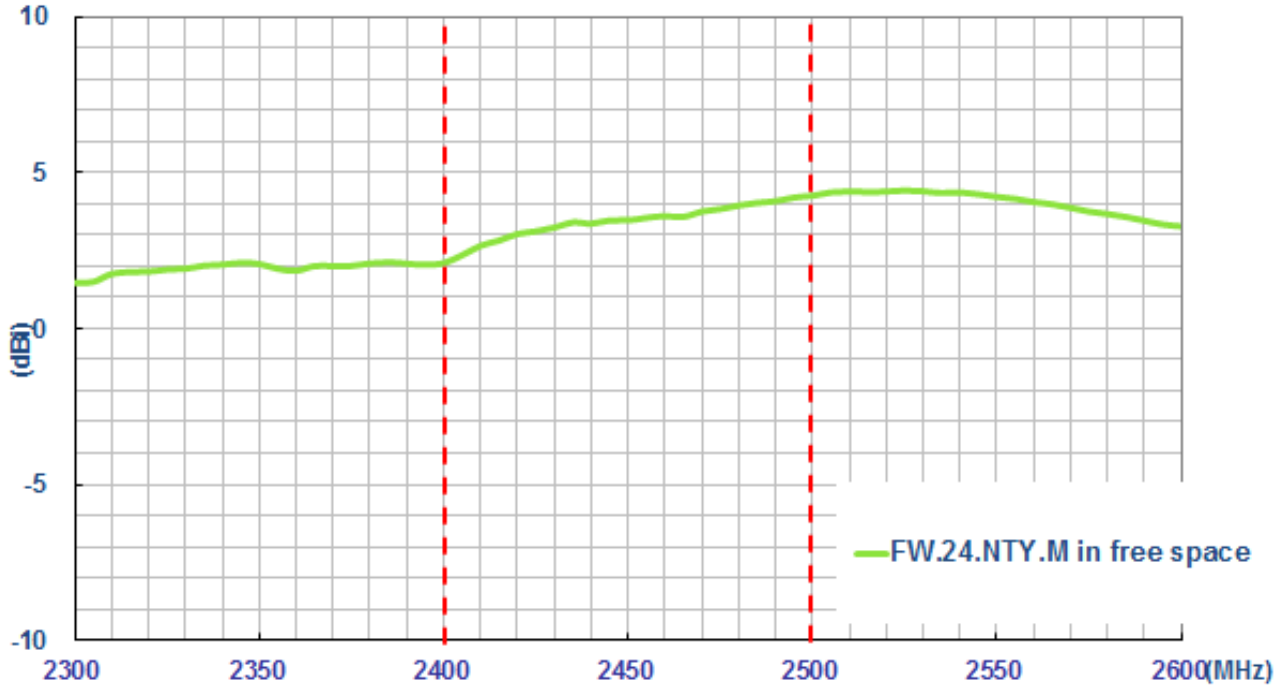
#### 3.1. Return Loss



### 3.2. Antenna Efficiency



### 3.3. Peak Gain

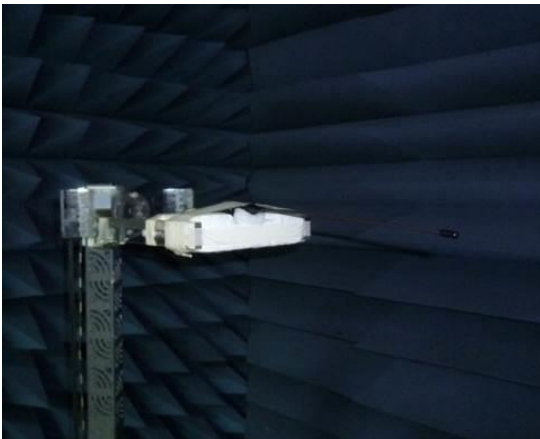




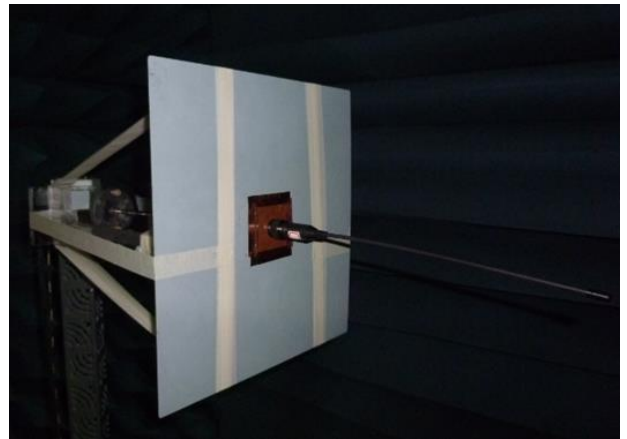
## 4. Antenna Radiation Pattern

### 4.1. Antenna Setup

Free Space



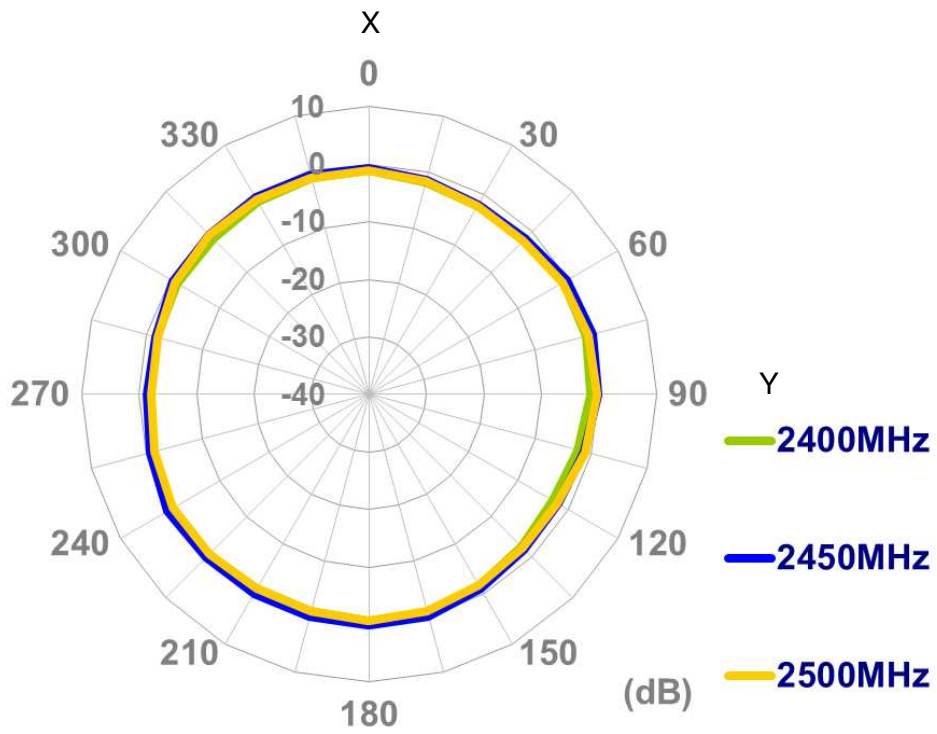
On 30x30 cm ground plane



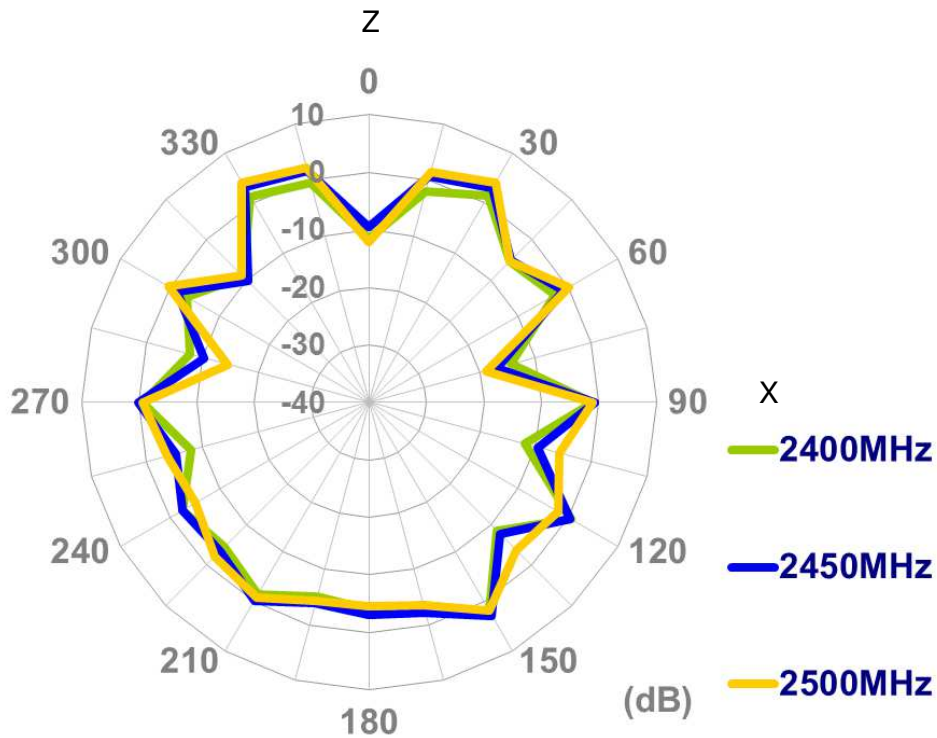
## 4.2. 2-D Radiation Pattern

- In Free Space

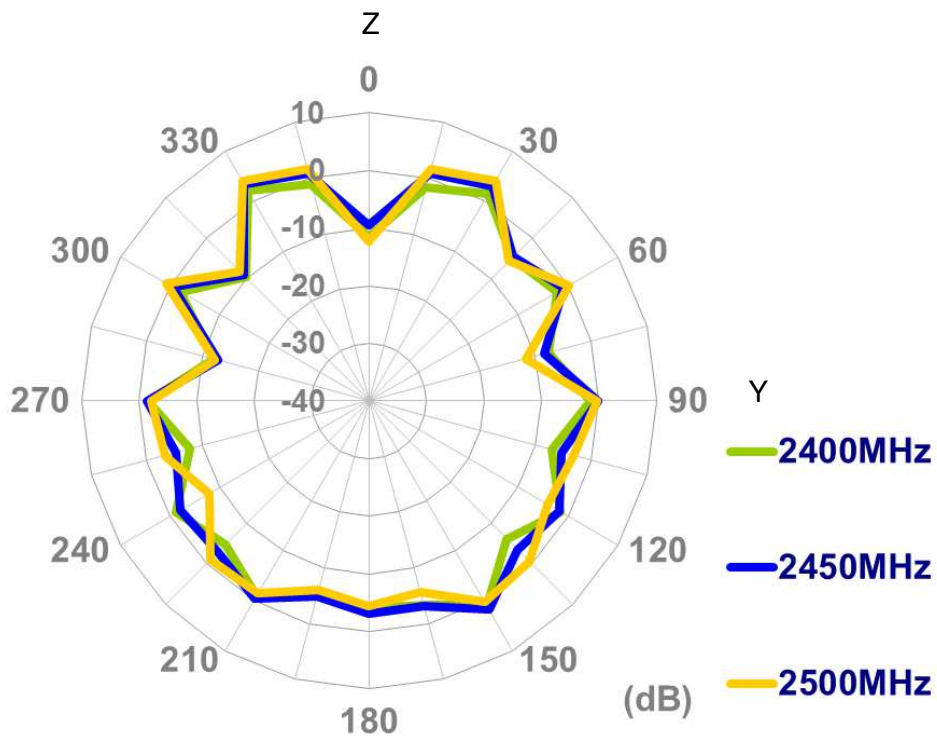
### XY-plane



### XZ-plane

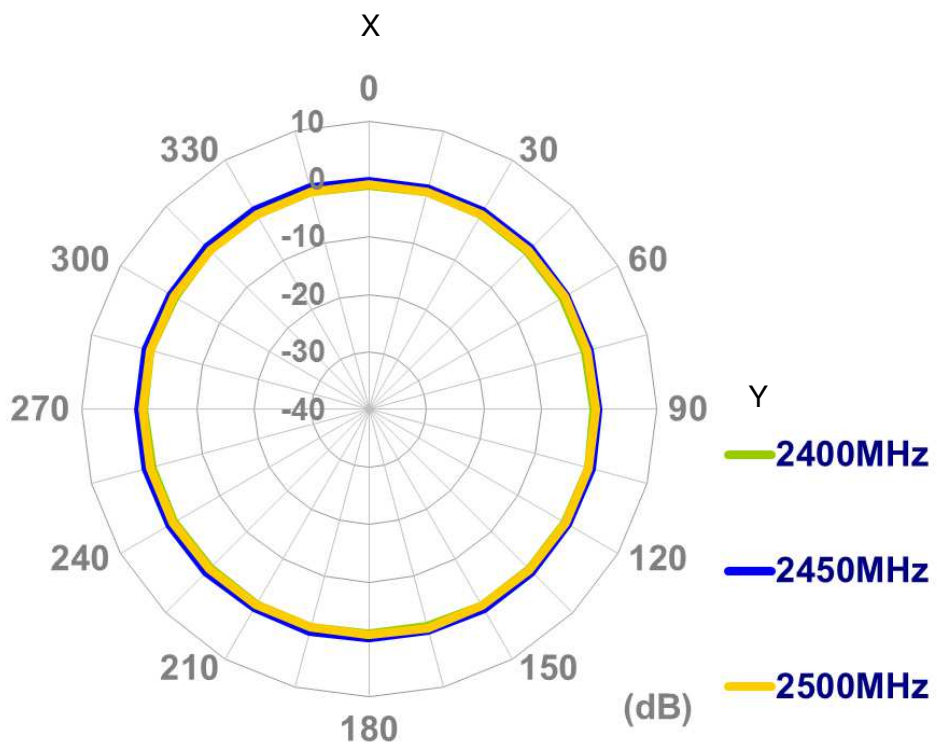


**YZ-plane**

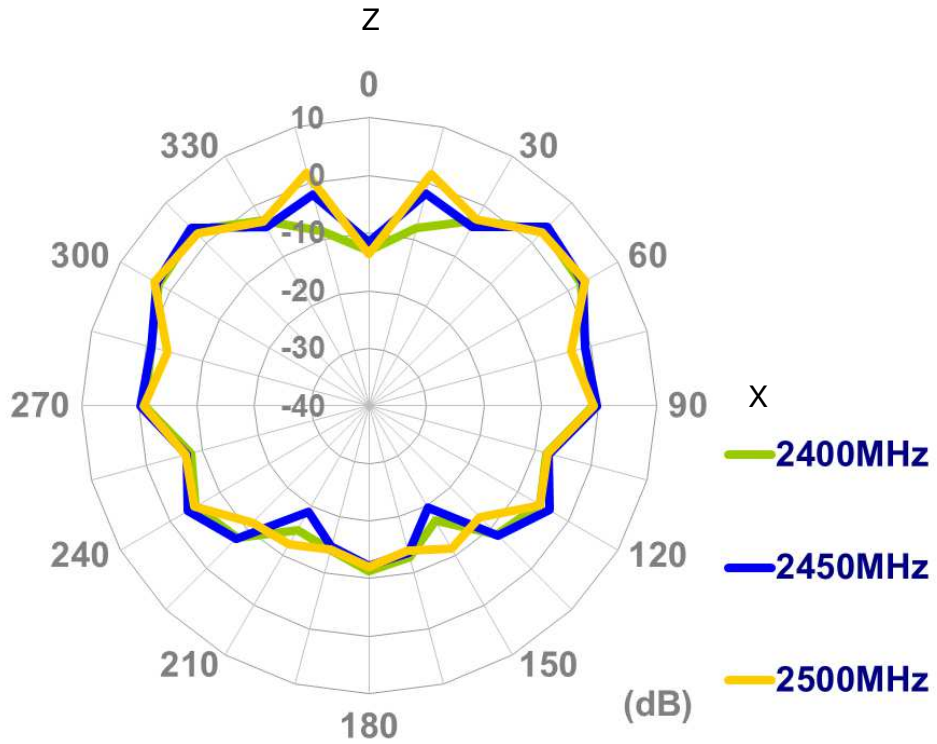


- On 30cm\*30cm Ground Plane

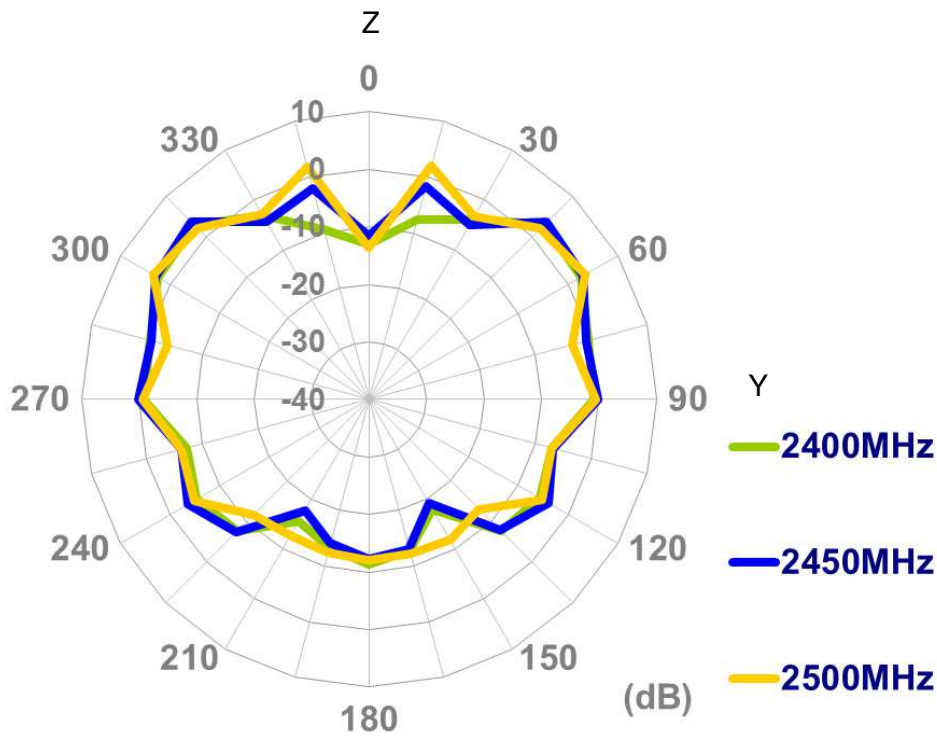
**XY-plane**



**XZ-plane**



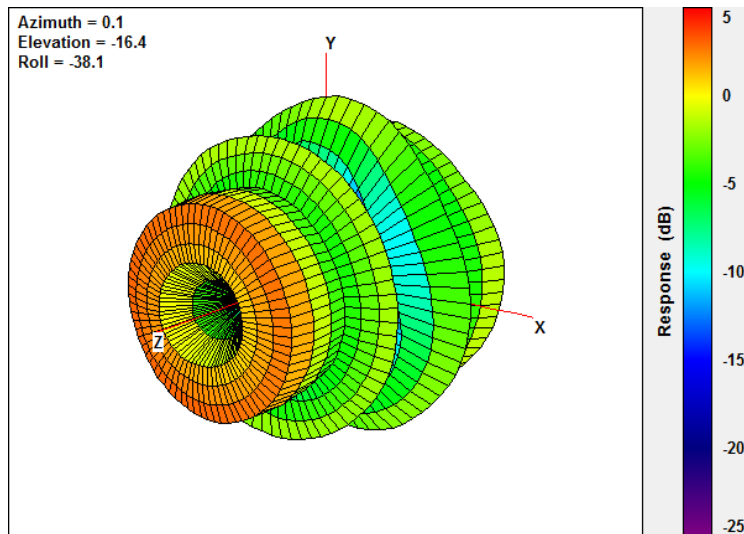
**YZ-plane**



### 4.3. 3-D Radiation Pattern

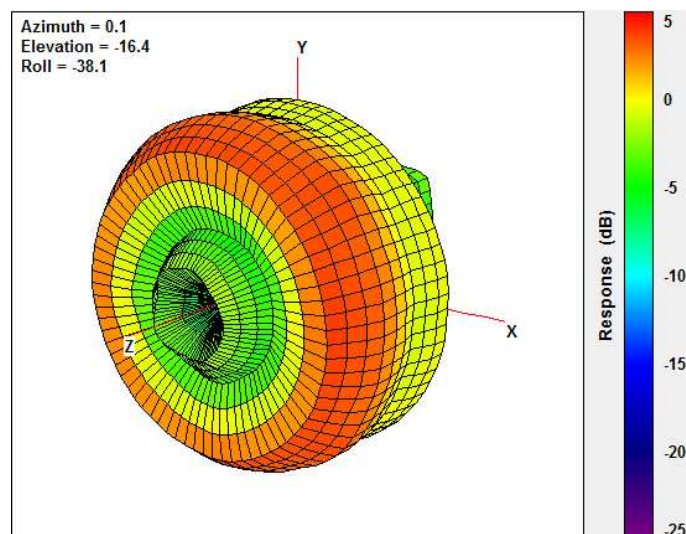
- In free space

@2450MHz

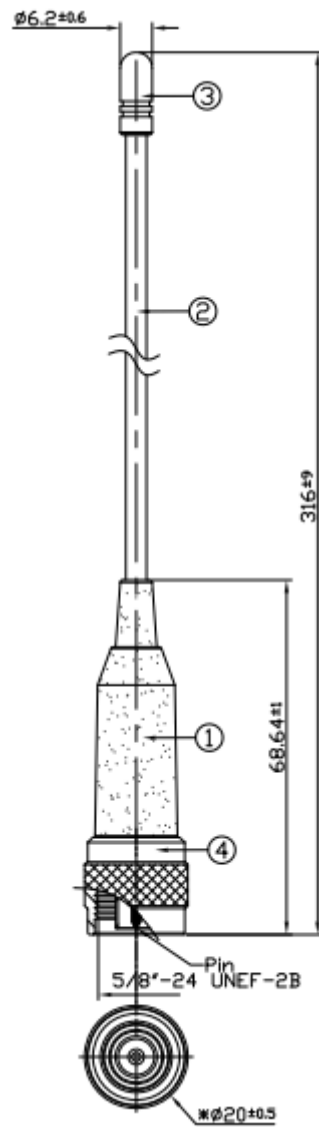


- On 30cm\*30cm Ground Plane

@2450MHz



## 5. Antenna Drawing



Unit: mm

	Name	Material	Finish	QTY
①	Housing	ABS	Black	1
②	Flexible Whip	Steel+PE Jacket	Black	1
③	Cap	ABS	Black	1
④	N-TYPE(M) ST	Brass	Black	1

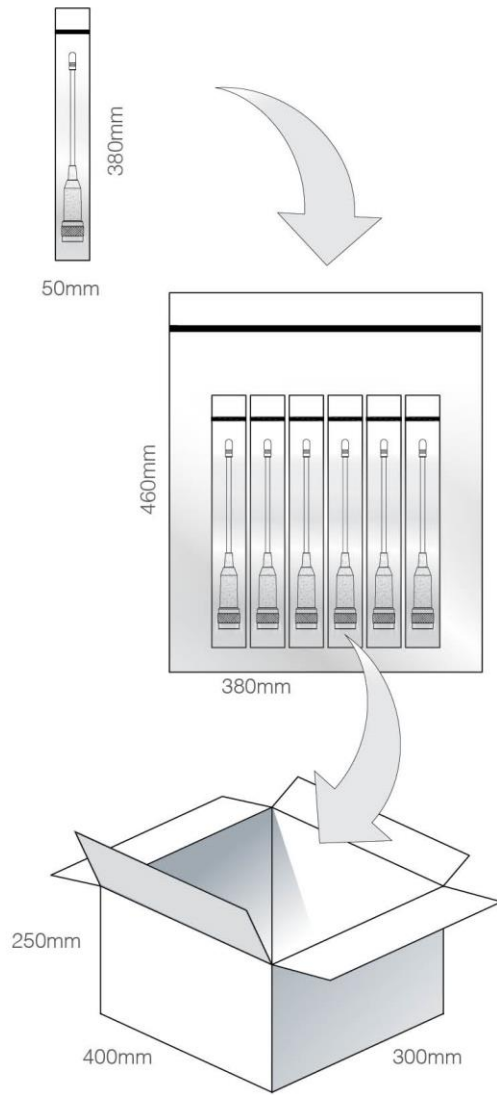


## 6. Packaging

1 FW.24.NTY.M per PE bag  
 Bag Dimensions - 380\*50mm  
 Total Weight - 50g

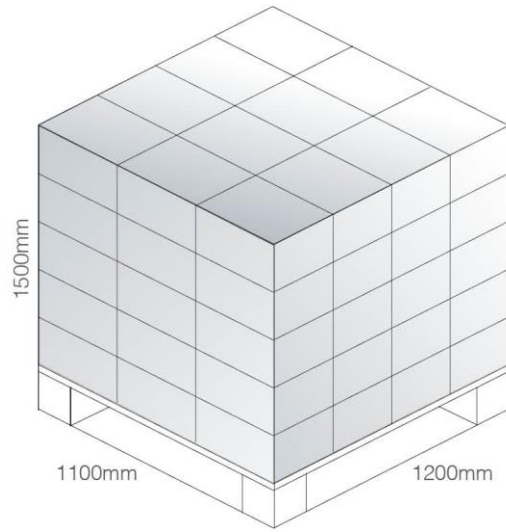
50 PE bags per large PE Bag  
 Large Bag Dimensions - 460\*380mm  
 Weight - 2.5Kg

4 Large PE Bags per Outer Carton  
 Carton Dimensions - 400\*300\*250mm  
 Weight - 10.5Kg





Pallet Dimensions 1100\*1200\*1500mm  
60 Cartons per Pallet  
12 Cartons per layer  
5 Layers



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