

## Specification

|              |  |
|--------------|--|
| Part No.     | : <b>WCM.02.0121</b>   |
| Product Name | : 2.4GHz Two Monopole Connector<br>Mount Antenna with SMA(F) Connector<br>with Hybrid Coupler                          |
| Features     | : Two Monopole<br>Connector Mount Antenna<br>Dimension: 70.2x70.2x6.7mm<br>IP67<br>Connector: SMA(F)<br>RoHS compliant |



## 1. Introduction

The WCM.02 2.4GHz antenna is a compact, low-profile two-monopole external antenna. A unique PIFA design provides circular polarization, allowing for robust communication with antennas in unknown or varying orientations. High, omnidirectional gain from 2.4GHz to 2.5GHz makes this antenna an excellent choice for Wi-Fi, Bluetooth, and other applications on the 2.4GHz ISM band.

The WCM.02 antenna comes with an SMA(F) connector for compatibility with most Wi-Fi applications and routers in the market. With an IP67 water resistant housing, it can be used for both indoor and outdoor IoT applications.

Typical Applications:

- Application points
- Routers
- IoT M2M devices
- Smart Home applications

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 freespace conditions. In practice, the peak gain of an antenna tested in freespace can degrade by at least 1 or 2 dBi 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 2 dBi peak gain, but you don't need to select an embedded antenna that has a peak gain of less than 2 dBi in freespace. This will give you a less optimized solution. It is better to go for a slightly higher freespace peak gain of 3 dBi or more if available. Once that antenna gets integrated into your device, performance will degrade below this 2 dBi 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.

Cable and connector are customizable subject to minimum order quantities and possible NRE. Contact your Taoglas regional sales office for more information.

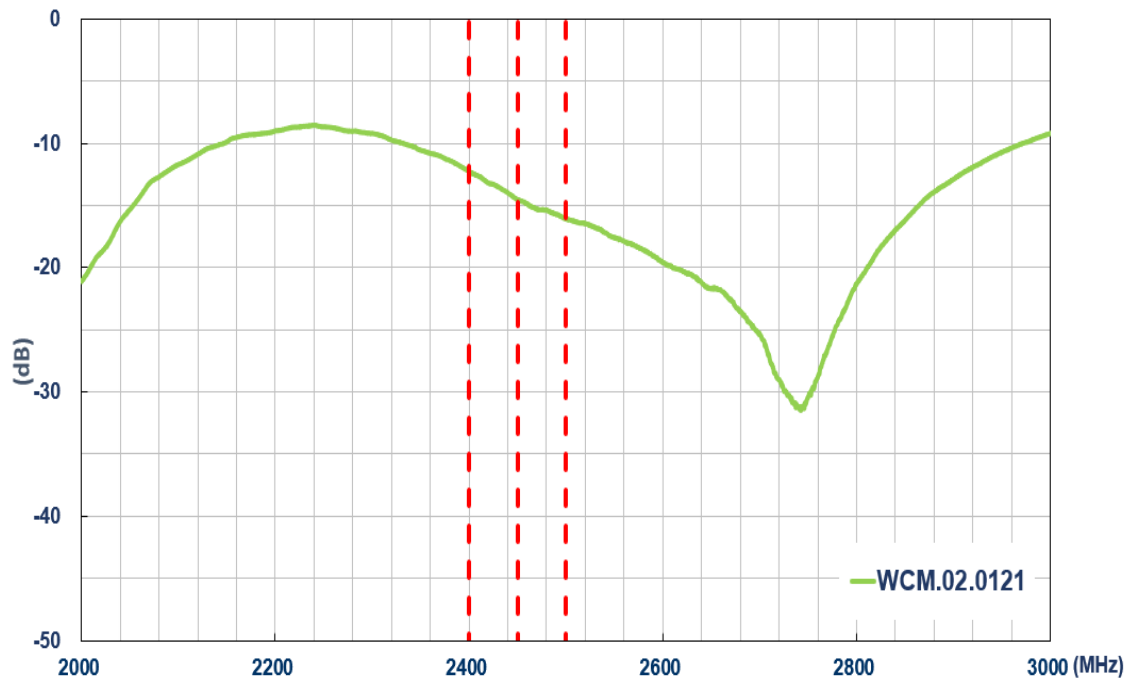
## 2. Specification

| Electrical**                      |                            |
|-----------------------------------|----------------------------|
| Frequency (MHz)                   | 2400~2500                  |
| Efficiency (%)                    | 58.60                      |
| Average Gain (dBi)                | -2.32                      |
| Peak Gain (dBi)                   | 1.68                       |
| Return Loss                       | <-10                       |
| Impedance                         | 50Ω                        |
| Polarization                      | RHCP                       |
| Axial Ratio @ Zenith              | < 5                        |
| Mechanical                        |                            |
| Dimensions (mm)                   | 70.19*70.19*6.72           |
| Housing Material                  | ASA                        |
| Connector                         | SMA(F)                     |
| IP rating                         | IP67                       |
| Weight                            | 23.5g                      |
| Environmental                     |                            |
| Operating and Storage Temperature | -40°C to +80°C             |
| Humidity                          | Non-condensing 65 C 95% RH |

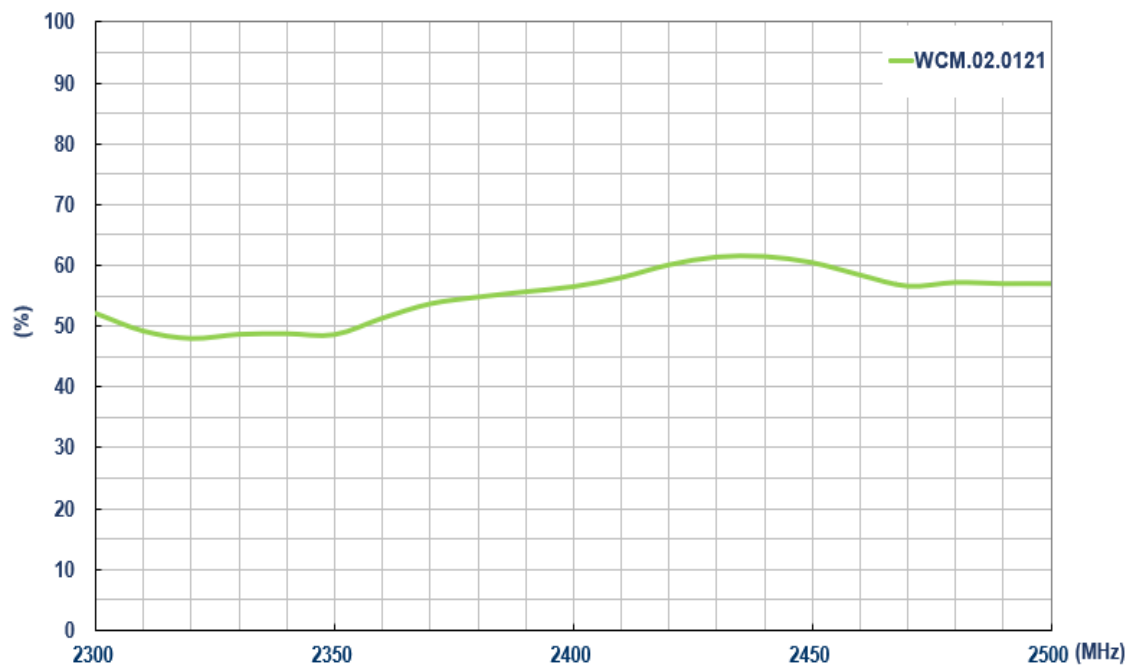
**\*\*Measurements taken in free space**

## 3. Antenna Characteristics

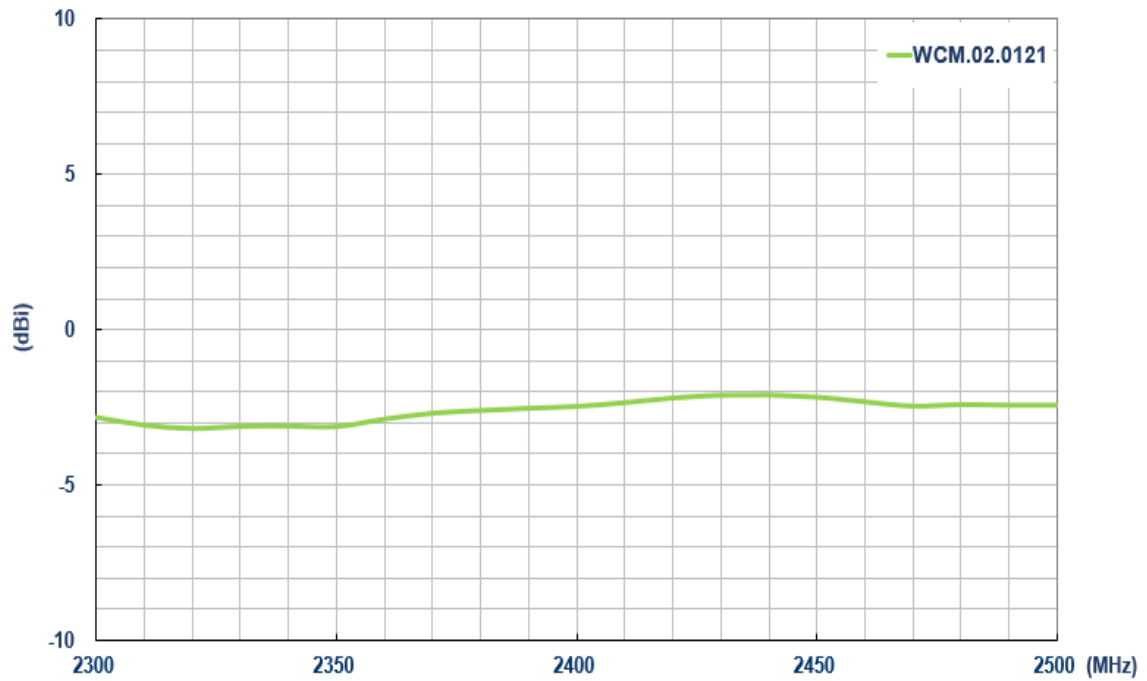
### 3.1 Return Loss



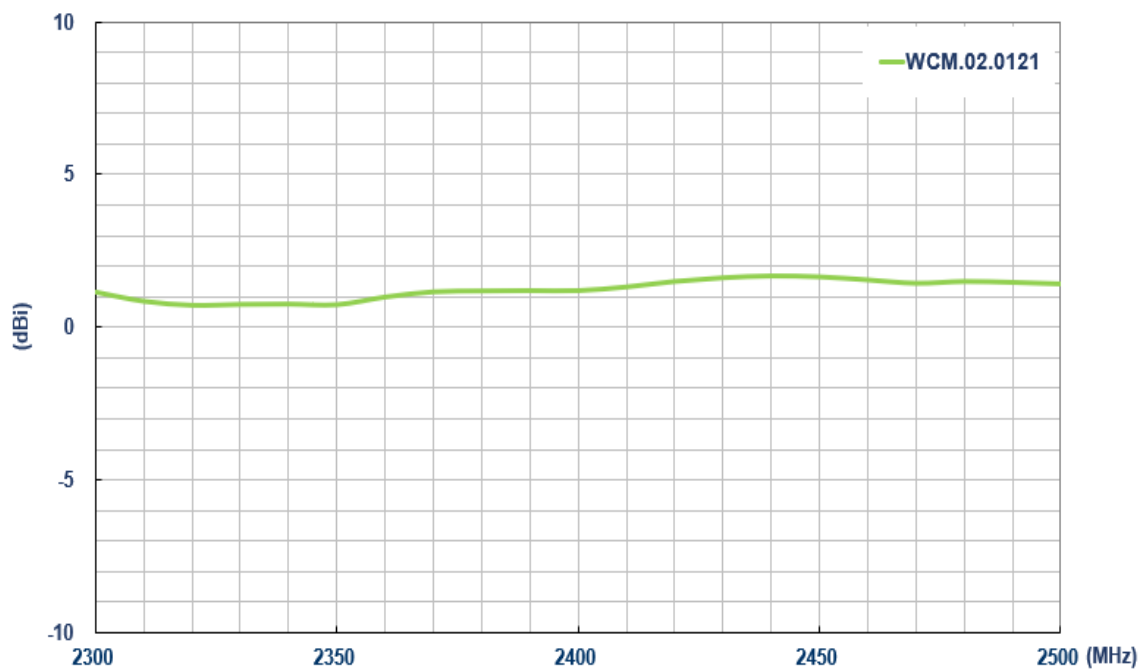
### 3.2 Efficiency



### 3.3 Average Gain

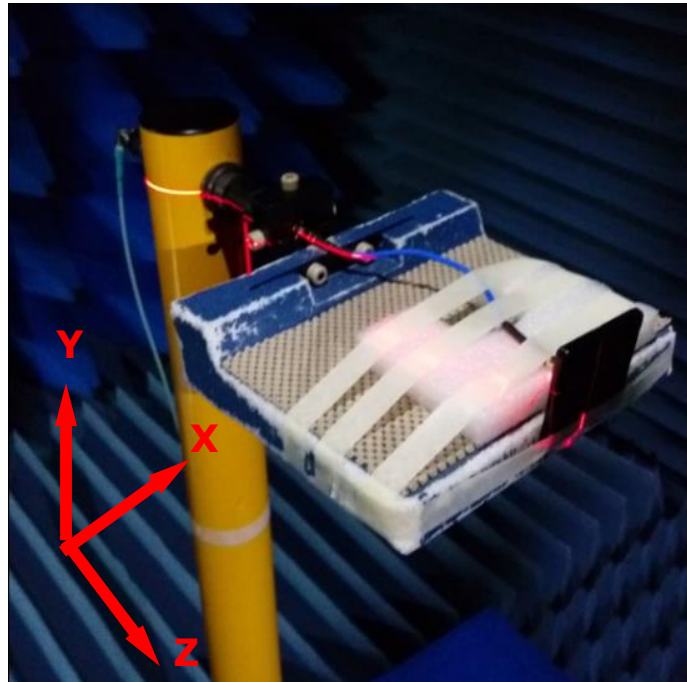


### 3.4 Peak Gain



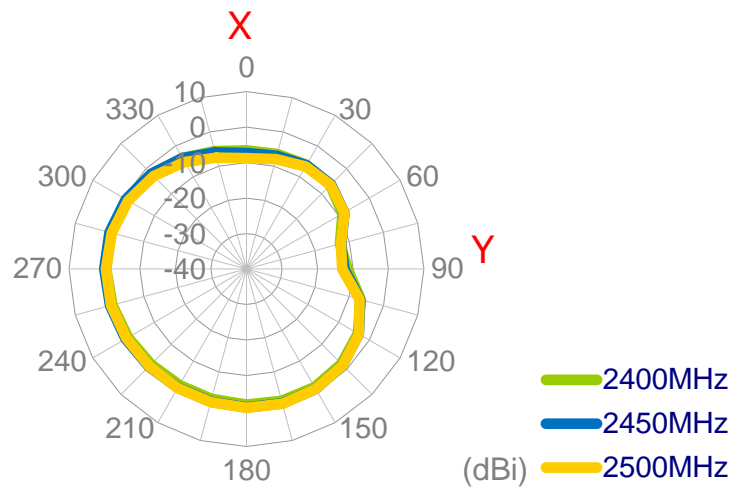
## 4. Antenna Radiation Patterns

### 4.1 Antenna Setup (Antenna Test Setup in Anechoic Chamber)

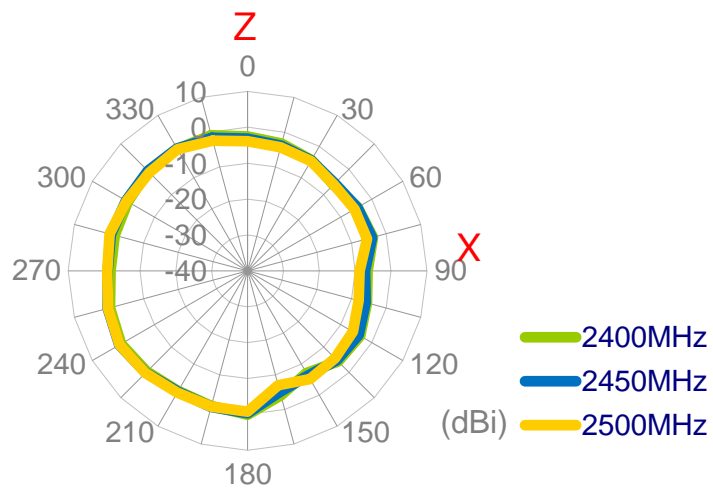


## 4.2 2D Radiation Patterns

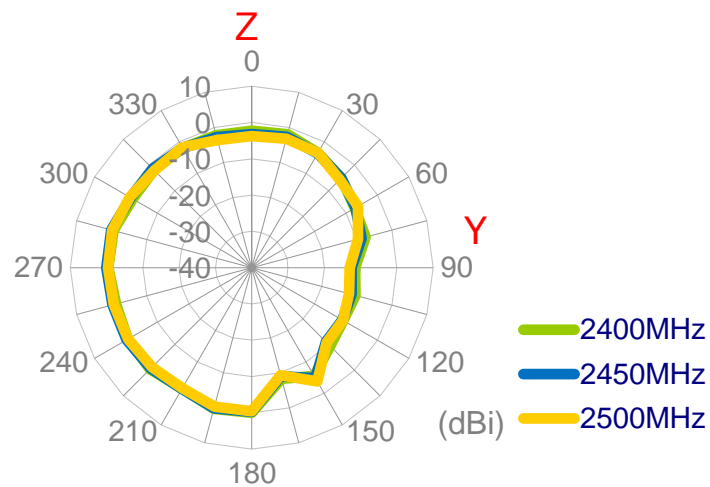
### XY Plane



### XZ Plane

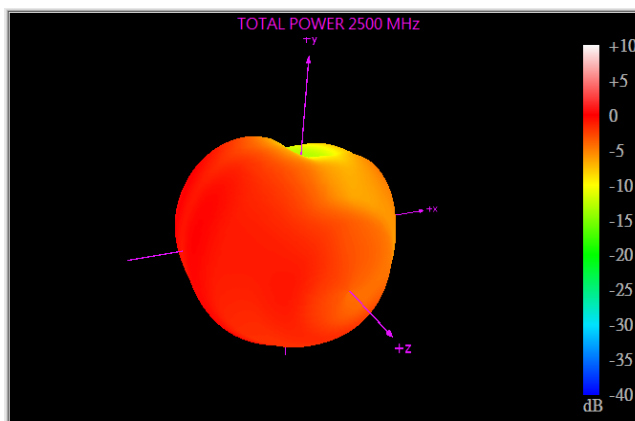
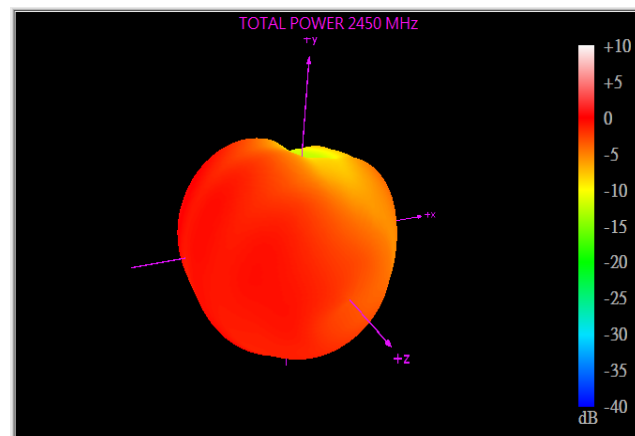
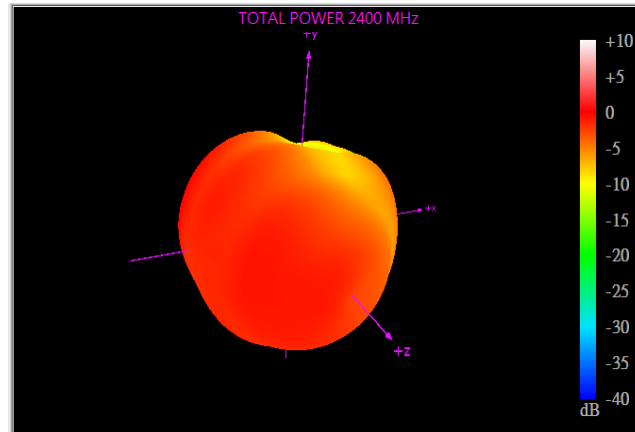


### YZ Plane

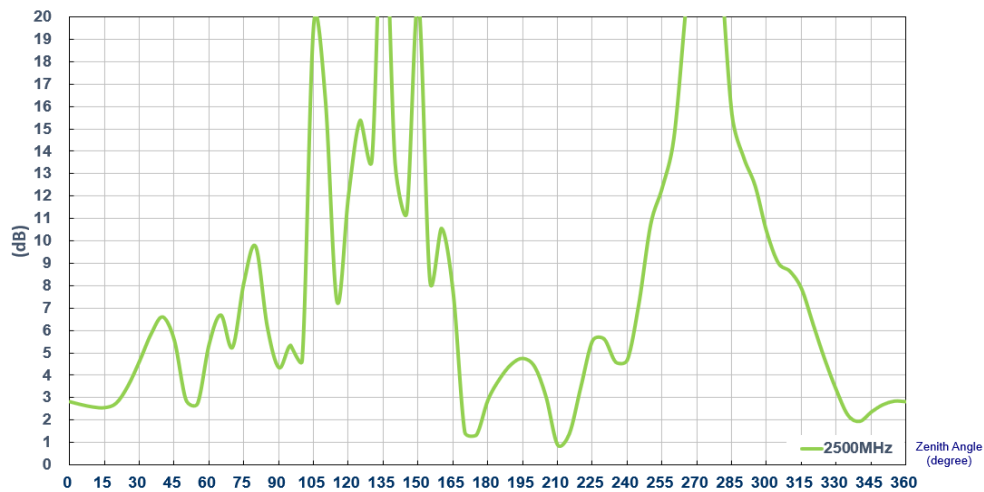
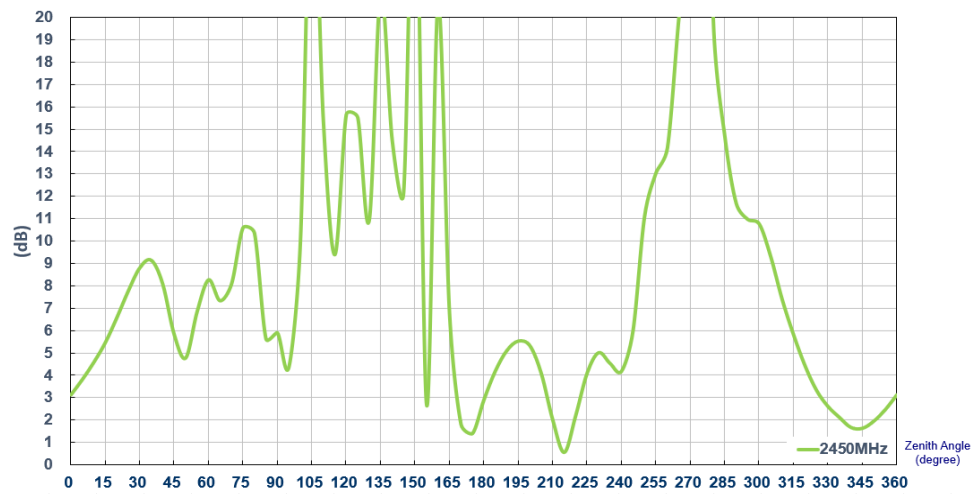
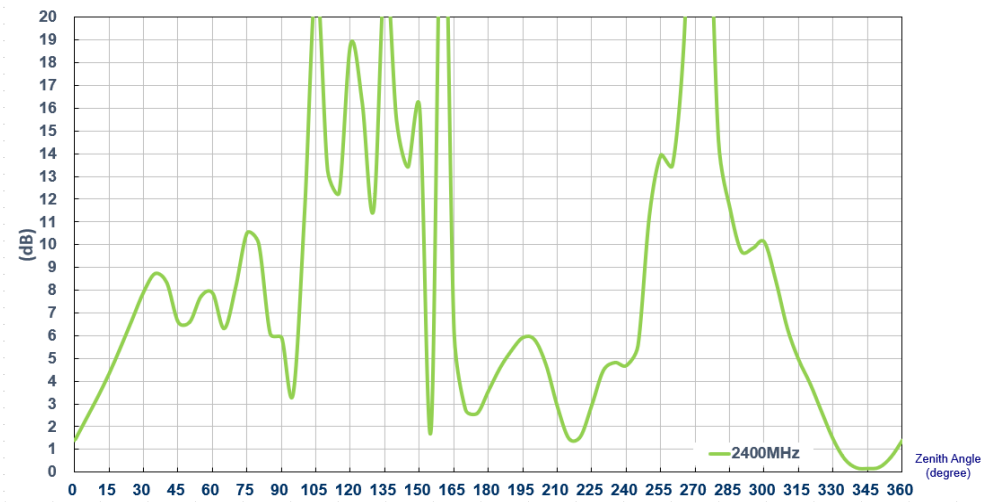




### 4.3 3D Radiation Patterns

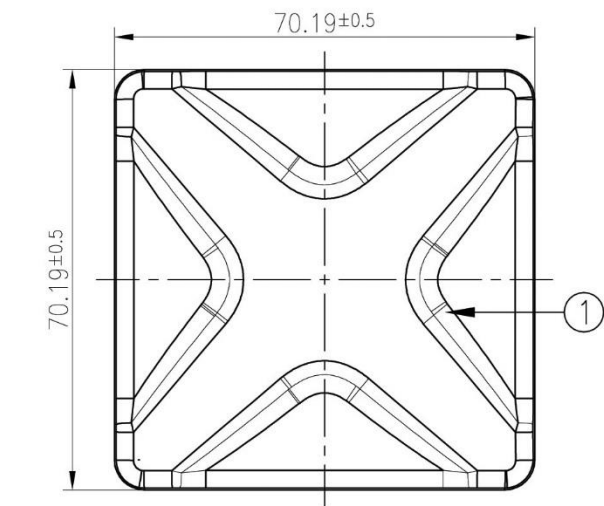


## 4.4 Axial Ratio

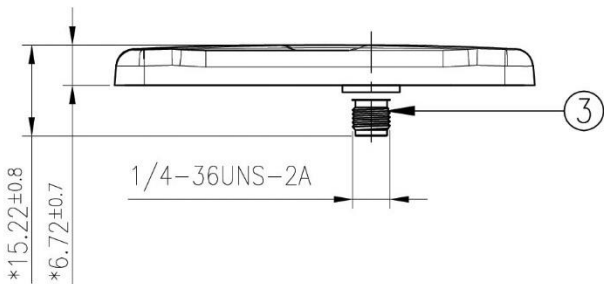


## 5. Mechanical Drawing (Unit: mm)

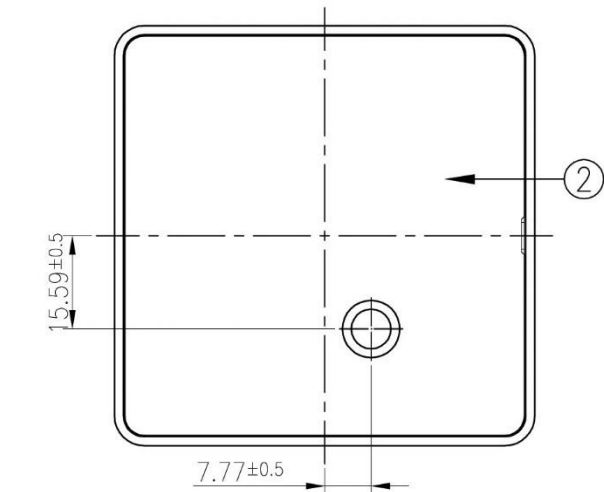
Front View



Side View



Back View

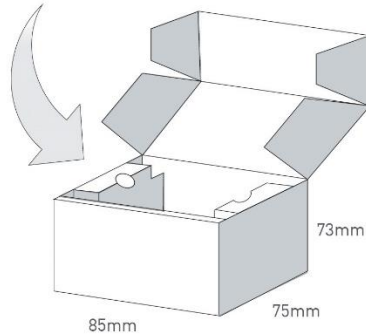


|   | Name           | Material | Finish    | QTY |
|---|----------------|----------|-----------|-----|
| 1 | Housing Top    | ASA      | Black     | 1   |
| 2 | Housing Bottom | ASA      | Black     | 1   |
| 3 | SMA(F)ST       | Brass    | Au Plated | 1   |

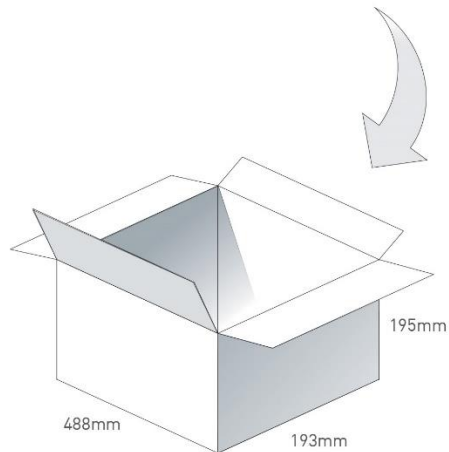
## 6. Packaging



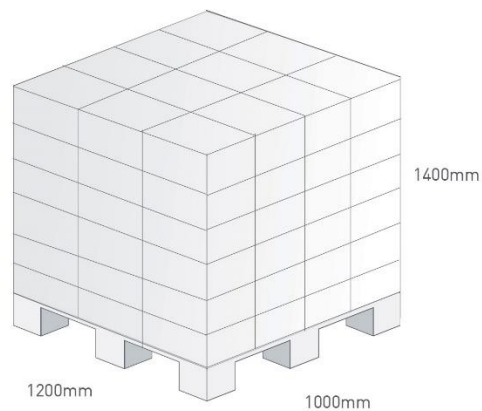
1 pcs WCM.02.0121 per box  
Box Dimensions - 75\*73\*85mm



24pcs WCM.02.0121 per carton  
Carton Dimensions - 488\*193\*195mm  
Weight - 1.5kg



72 cartons per Pallet  
Pallet Dimensions - 1200\*1000\*1400mm  
12 Cartons per layer  
6 Layers



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