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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.     | : | <b>WLP.2450.25.4.A.02</b>  |
| Product Name | : | 2450MHz Patch Antenna  |
| Features     | : | 5dBi Peak gain<br>Pin Type<br>Automotive TS16949 Production and Quality<br>Approved<br>25*25*4.5mm<br>ROHS Compliant |
| Photo        | : |  |



## 1. Introduction

This WLP.25 patch antenna for ISM, Wi-Fi, Bluetooth and Zigbee is based on smart XtremeGain™ technology. It is mounted via pin and double-sided adhesive and has been selected as optimal solution for the 50\*50mm ground plane. This passive patch offers typical gain response from 2.5 dBi and a higher gain can be achieved, depending on the Ground Plane, the space available and clearance afforded. The WLP.25's high gain performance is a perfect solution for metering and remote monitoring applications; it can deliver longer range than smaller chip antennas.

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. Key Antenna Performance Indicators

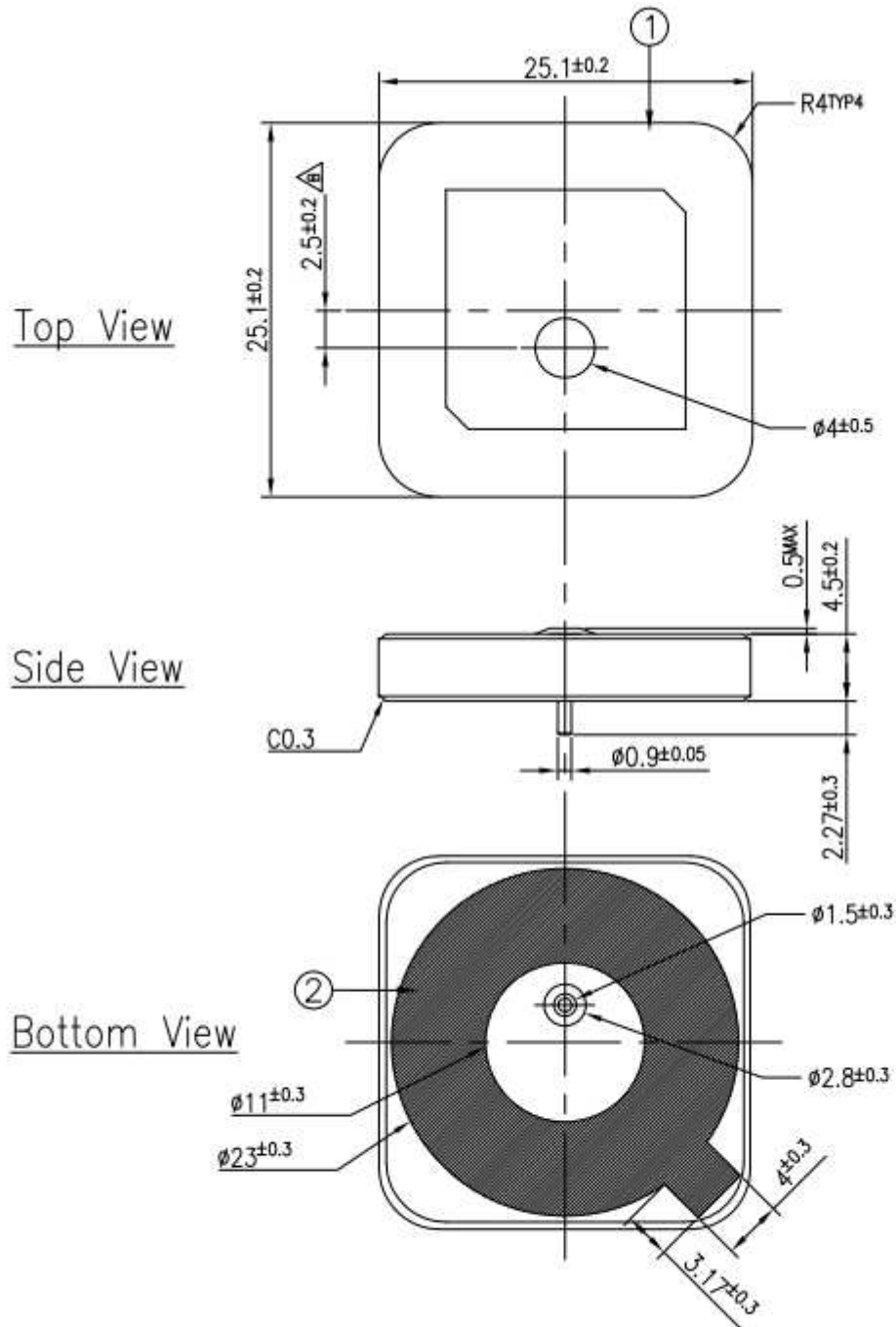
### Original Patch Specification tested on 50\*50mm ground plane

| No | Parameter                       | Specification                         | Notes                                 |
|----|---------------------------------|---------------------------------------|---------------------------------------|
| 1  | Center Frequency                | 2482MHz                               | with 50*50mm GND Plane                |
| 2  | Bandwidth                       | 85 MHz min                            | Return Loss $\leq$ -10dB              |
| 3  | VSWR                            | 2.0 max                               | Center Frequency                      |
| 4  | Gain at Zenith                  | +5.0dBic typ.                         | Center Frequency                      |
| 5  | Gain at 10° Elevation           | -1.0dBic typ.                         | Center Frequency                      |
| 6  | Axial Ratio                     | 3 dB Max                              | Center Frequency                      |
| 7  | Polarization                    | Broadly Linear                        |                                       |
| 8  | Impedance                       | 50 $\Omega$                           |                                       |
| 9  | Frequency Temp Coefficient (Tf) | 0 $\pm$ 20ppm/ $^{\circ}$ C           | -40 $^{\circ}$ C to +105 $^{\circ}$ C |
| 10 | Operating Temperature           | -40 $^{\circ}$ C to +105 $^{\circ}$ C |                                       |


**\*Changes in user groundplane and environment will have an effect on the antennas performance**

### 3. Mechanical Specifications

#### 3.1 Dimensions and Drawing

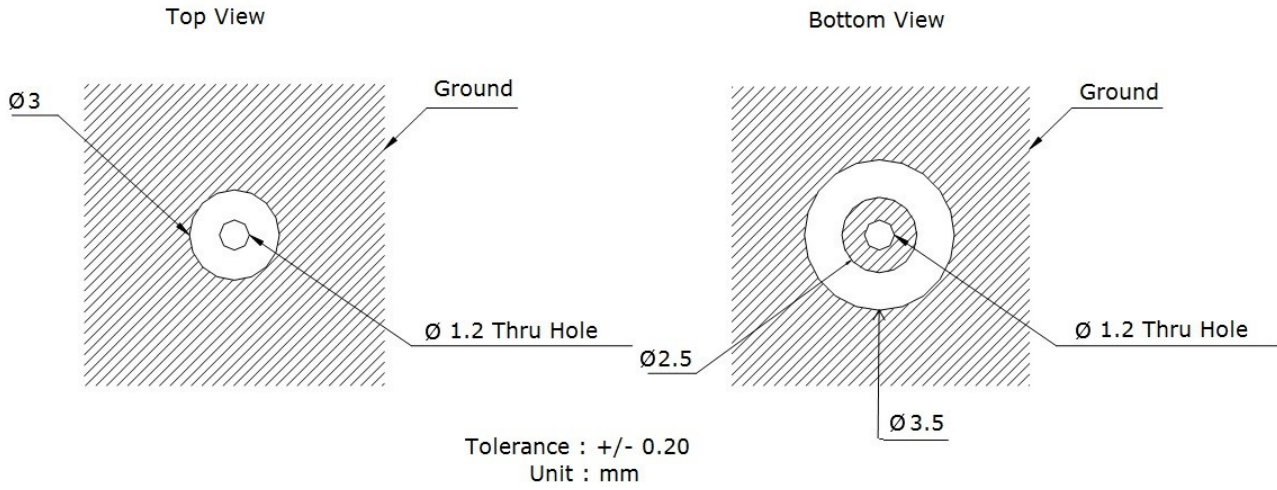


NOTE:

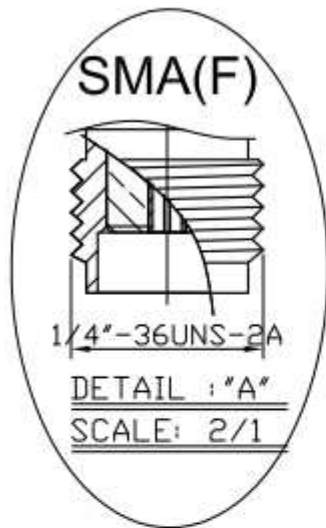
1. Double Sided Adhesive 

|   | Name                         | P/N            | Material   | Finish      | QTY |
|---|------------------------------|----------------|------------|-------------|-----|
| 1 | WLP.2450 Patch (25x25x4.5mm) | 001513B080007A | Ceramic    | Light Pink  | 1   |
| 2 | Double Sided Adhesive        | 001013C130007A | NITTO 5015 | White Liner | 1   |

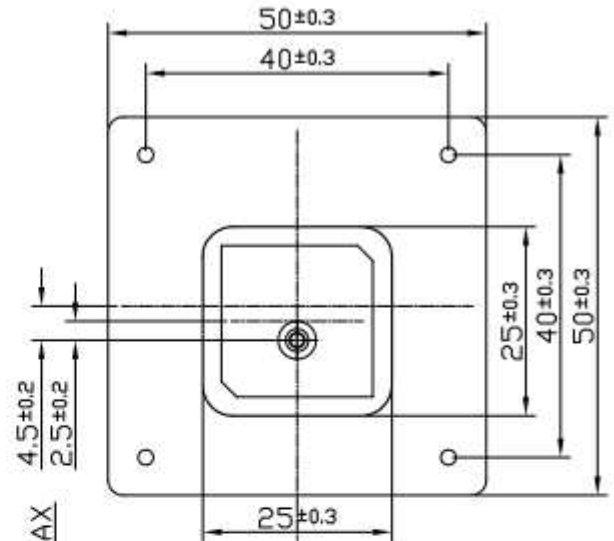
### 3.2 Layout Dimensions



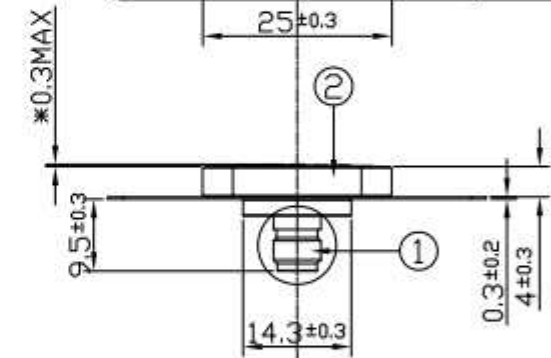
### 3.3 Ground Plane Dimension



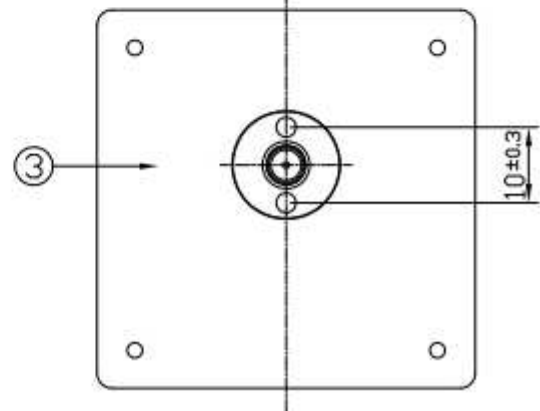
Top View



Side View

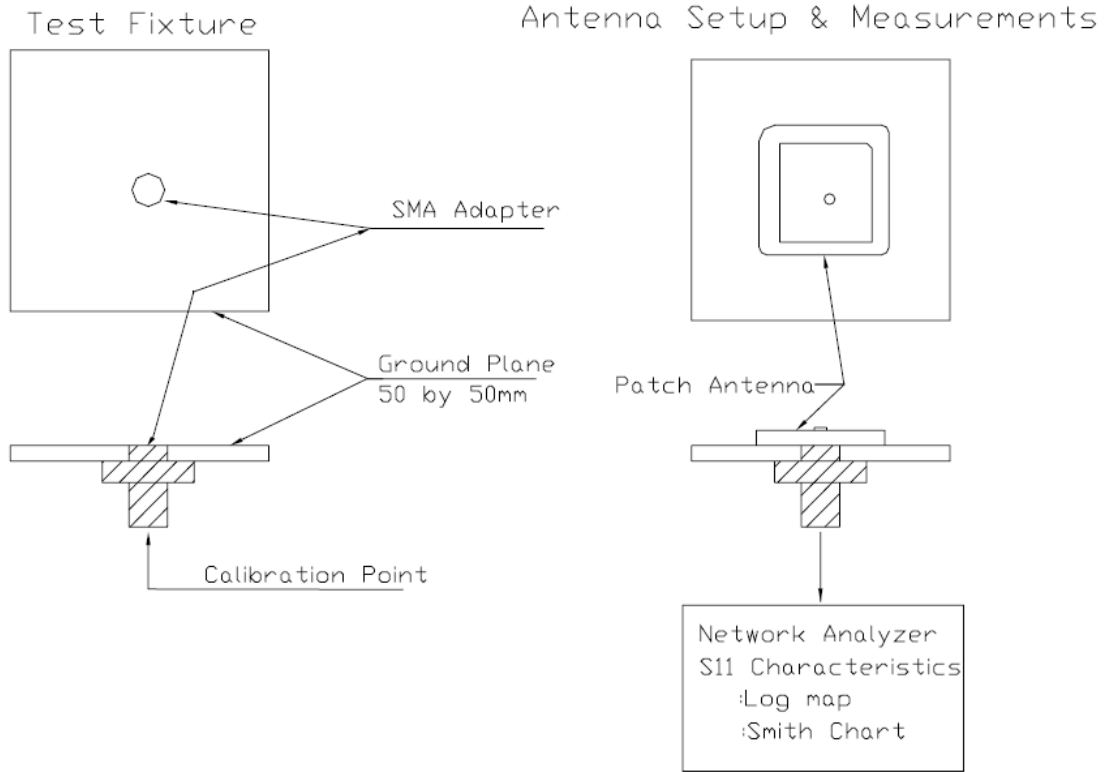


bottom View



|   | Name                            | Material | Finish     | QTY |
|---|---------------------------------|----------|------------|-----|
| 1 | SMA(F) ST                       | Brass    | Gold       | 1   |
| 2 | WLPD.2450 Patch (25x25x4mm)     | Ceramic  | Light Pink | 1   |
| 3 | Brass Ground-Plane(50x50x0.3mm) | Brass    | Silver     | 1   |

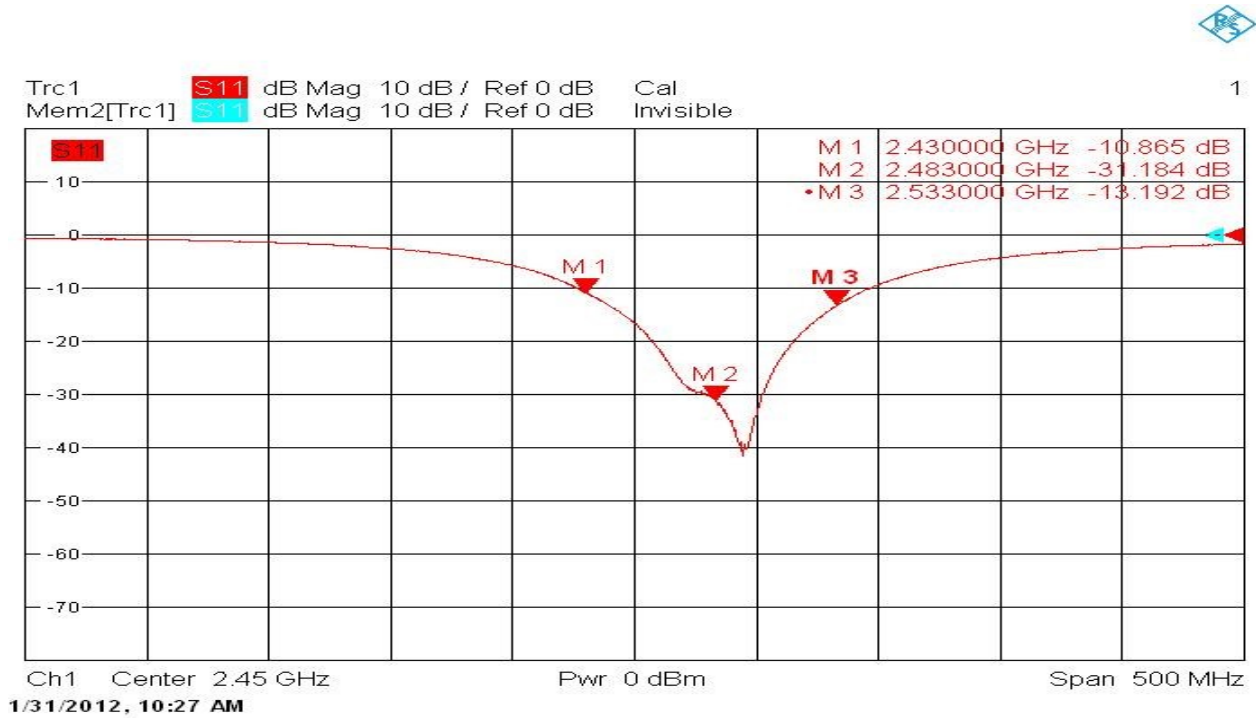
### 3.4 Test Fixture Antenna & Performance Measurements



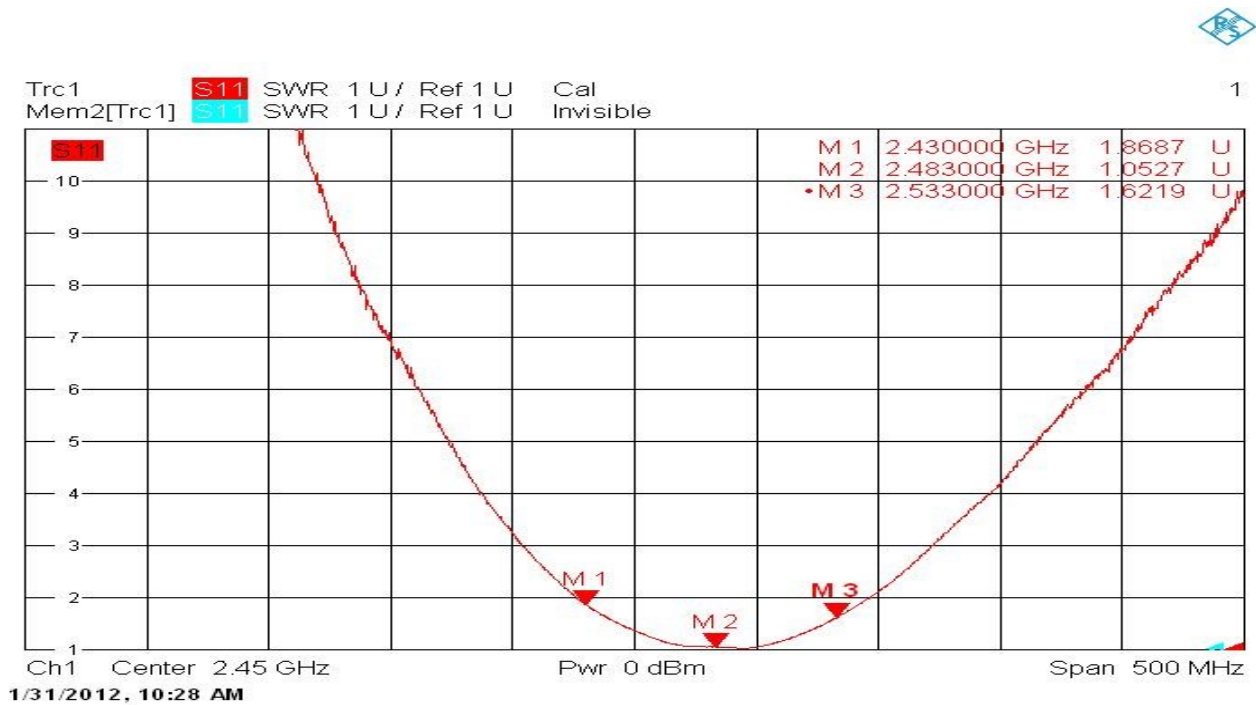


## 4. Performance Measurement

### 4.1 Antenna S11(Return Loss)



### 4.2 VSWR



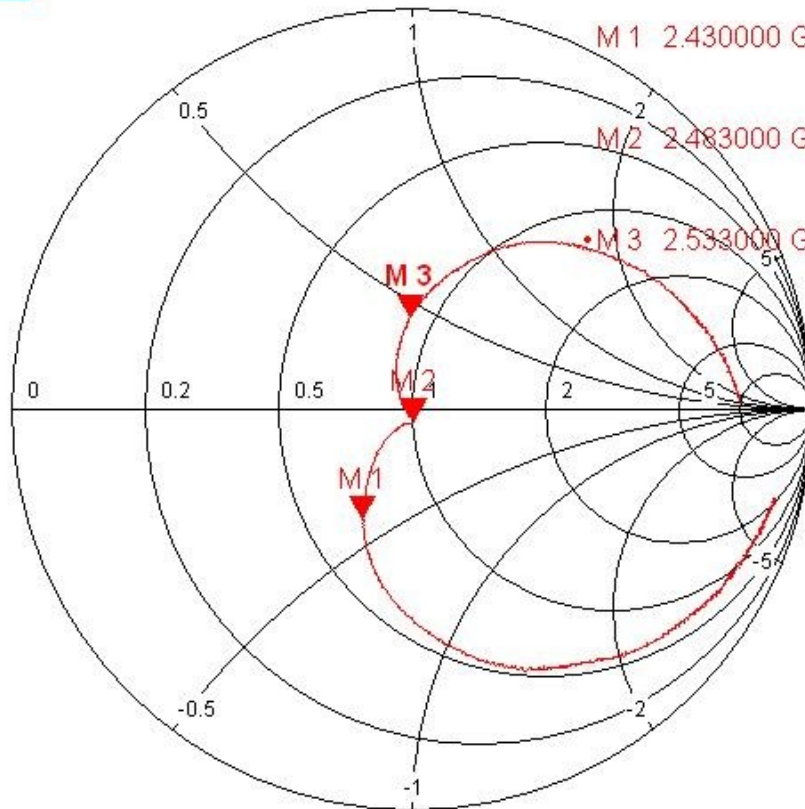
### 4.3 Antenna Smith Chart (Impedance)



Trc1 **S11** Smith Ref 1 U Cal  
 Mem2[Trc1] **S11** Smith Ref 1 U Invisible

1

**S11**



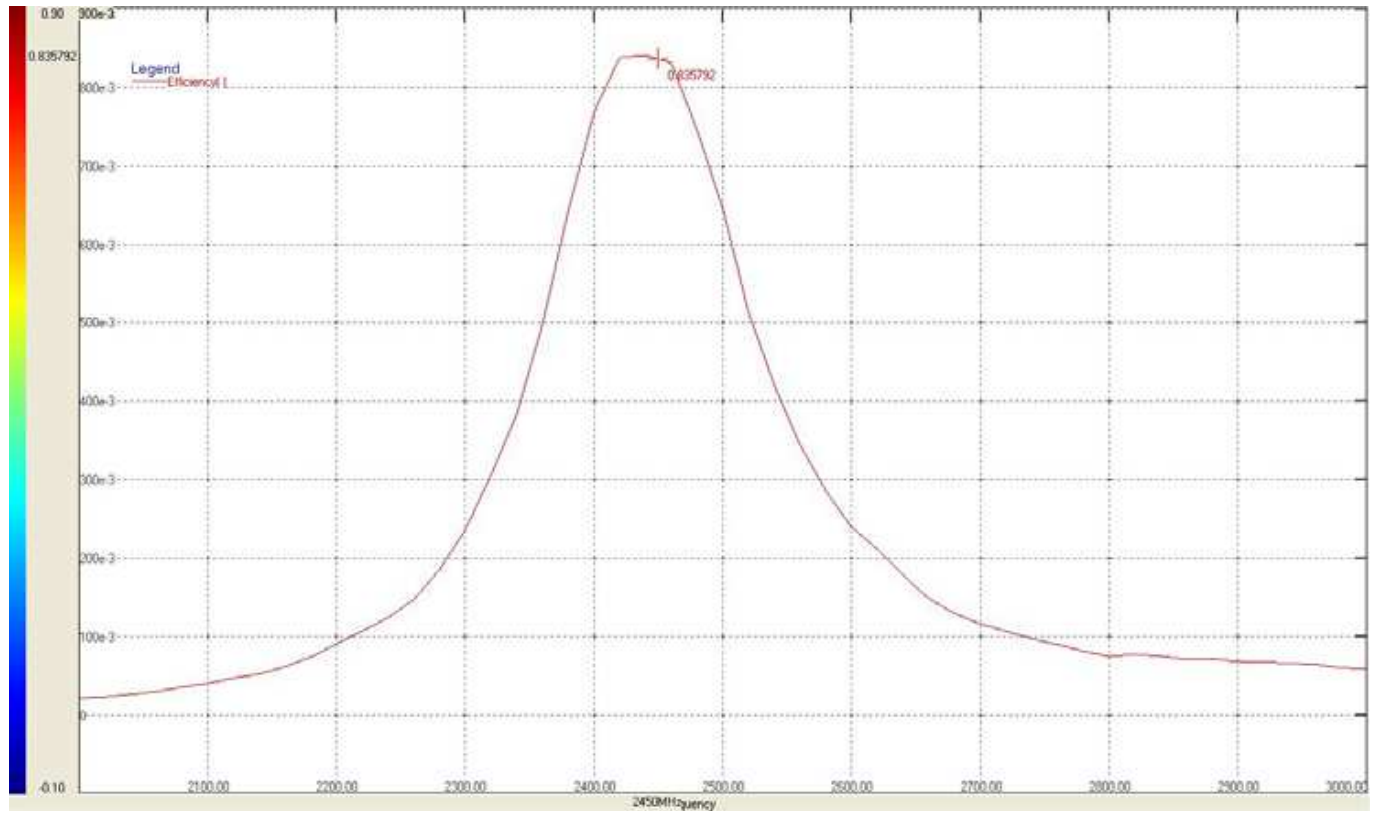
|     |              |                   |
|-----|--------------|-------------------|
| M 1 | 2.430000 GHz | 34.178 $\Omega$   |
|     |              | -j20.212 $\Omega$ |
|     |              | 3.240 pF          |
| M/2 | 2.483000 GHz | 50.380 $\Omega$   |
|     |              | -j2.8854 $\Omega$ |
|     |              | 22.215 pF         |
| M 3 | 2.533000 GHz | 44.546 $\Omega$   |
|     |              | j21.605 $\Omega$  |
|     |              | 1.357 nH          |

Ch1 Center 2.45 GHz  
 1/31/2012, 10:27 AM

Pwr 0 dBm

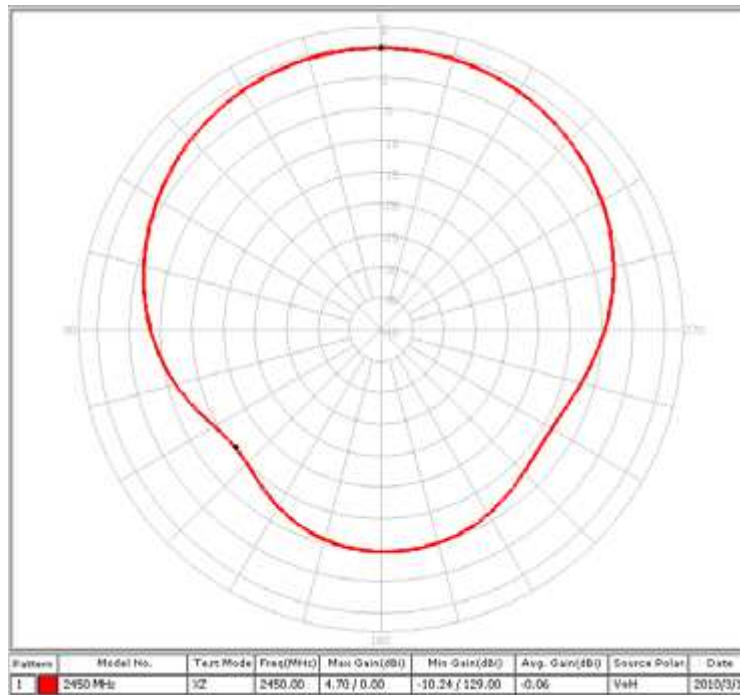
Span 500 MHz

## 4.4 Efficiency

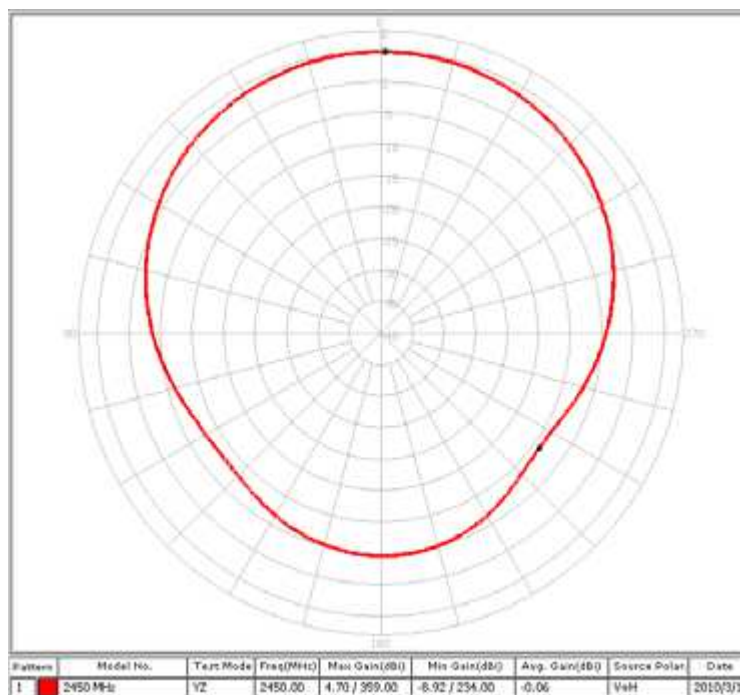


## 4.5 Antenna Gain

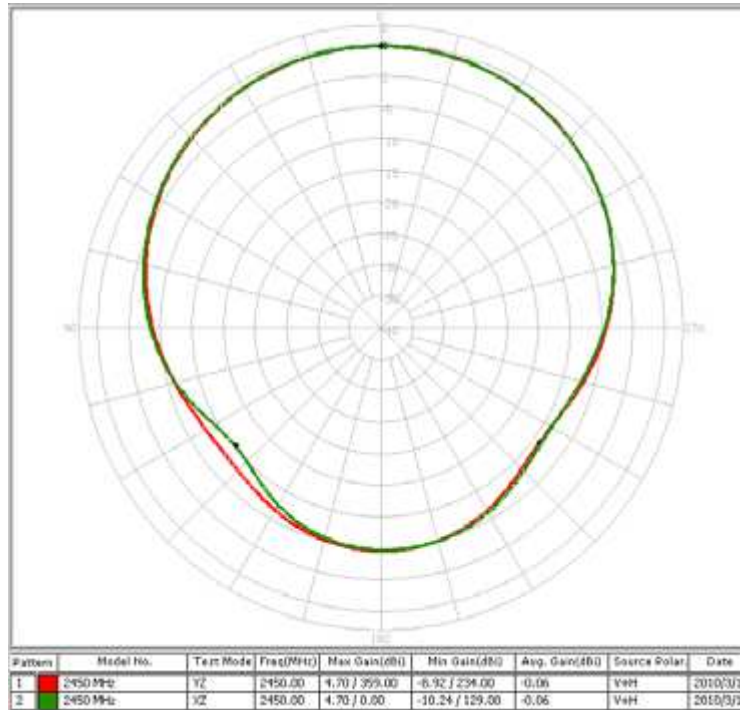
### XZ Plane



### YZ Plane



## XY Plane

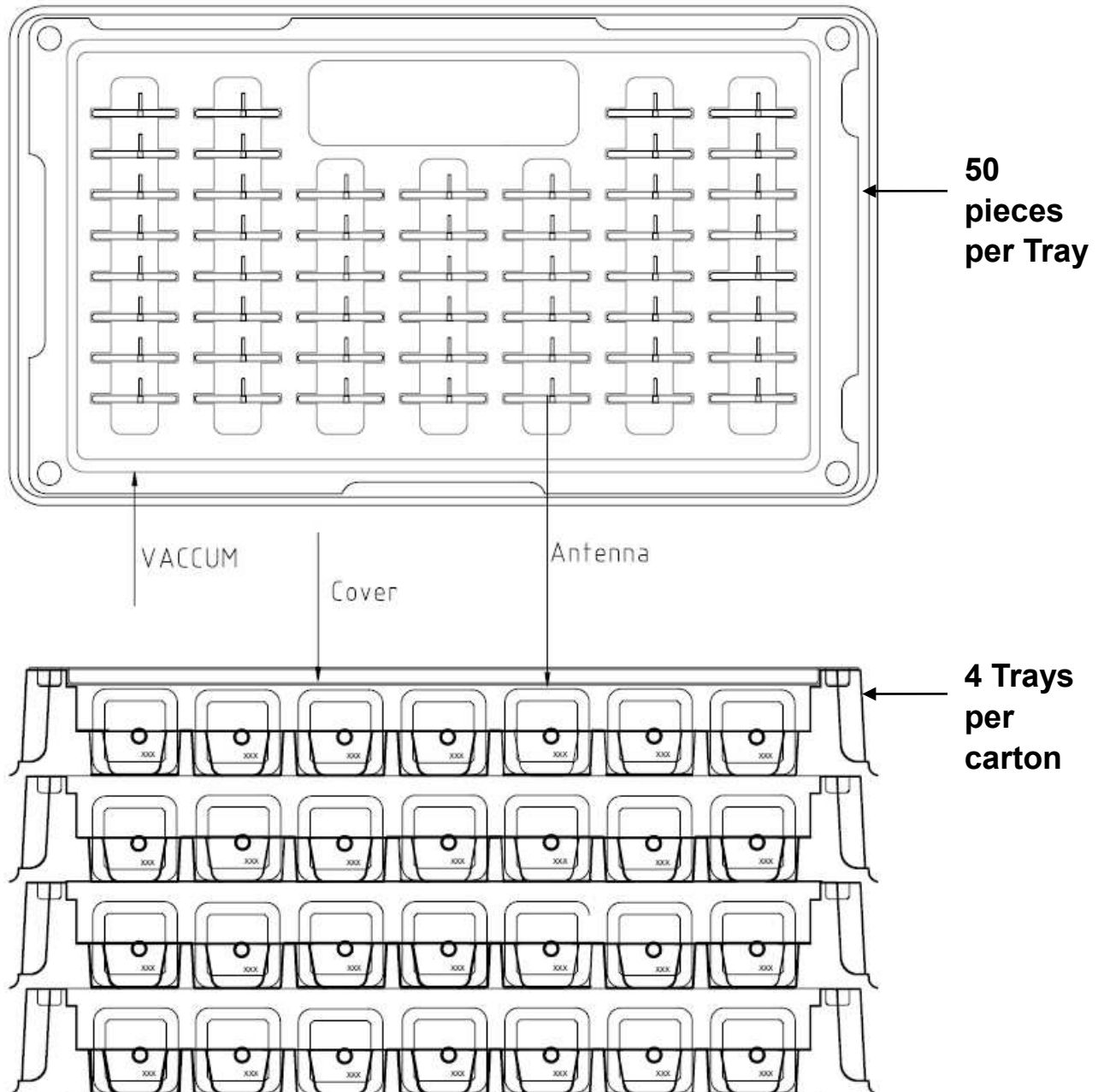


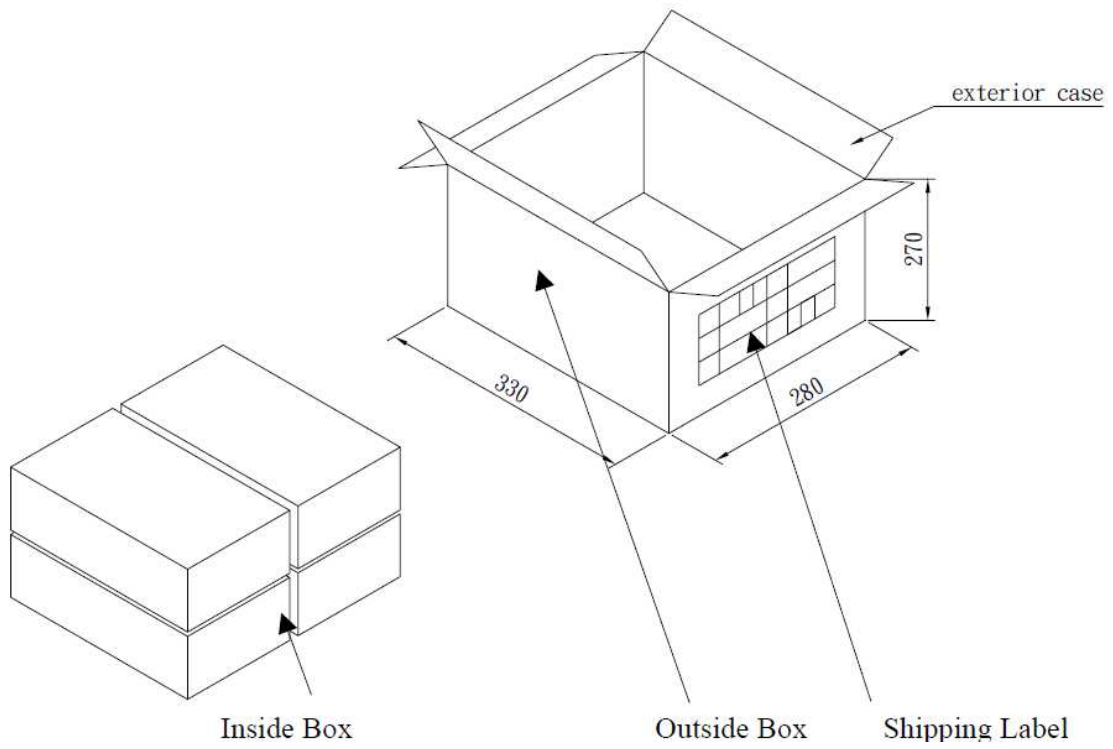
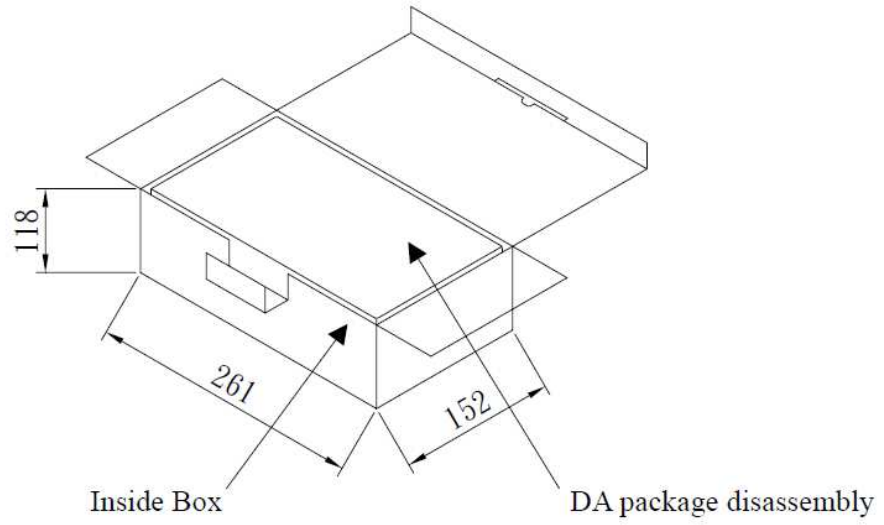
## 5. Packaging

Per Tray: 50 pieces

Per Carton(Inside Box) - 4 Trays = 200 pieces

Outer Carton (Outside Box)- 4 Cartons = 800 pieces





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