

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

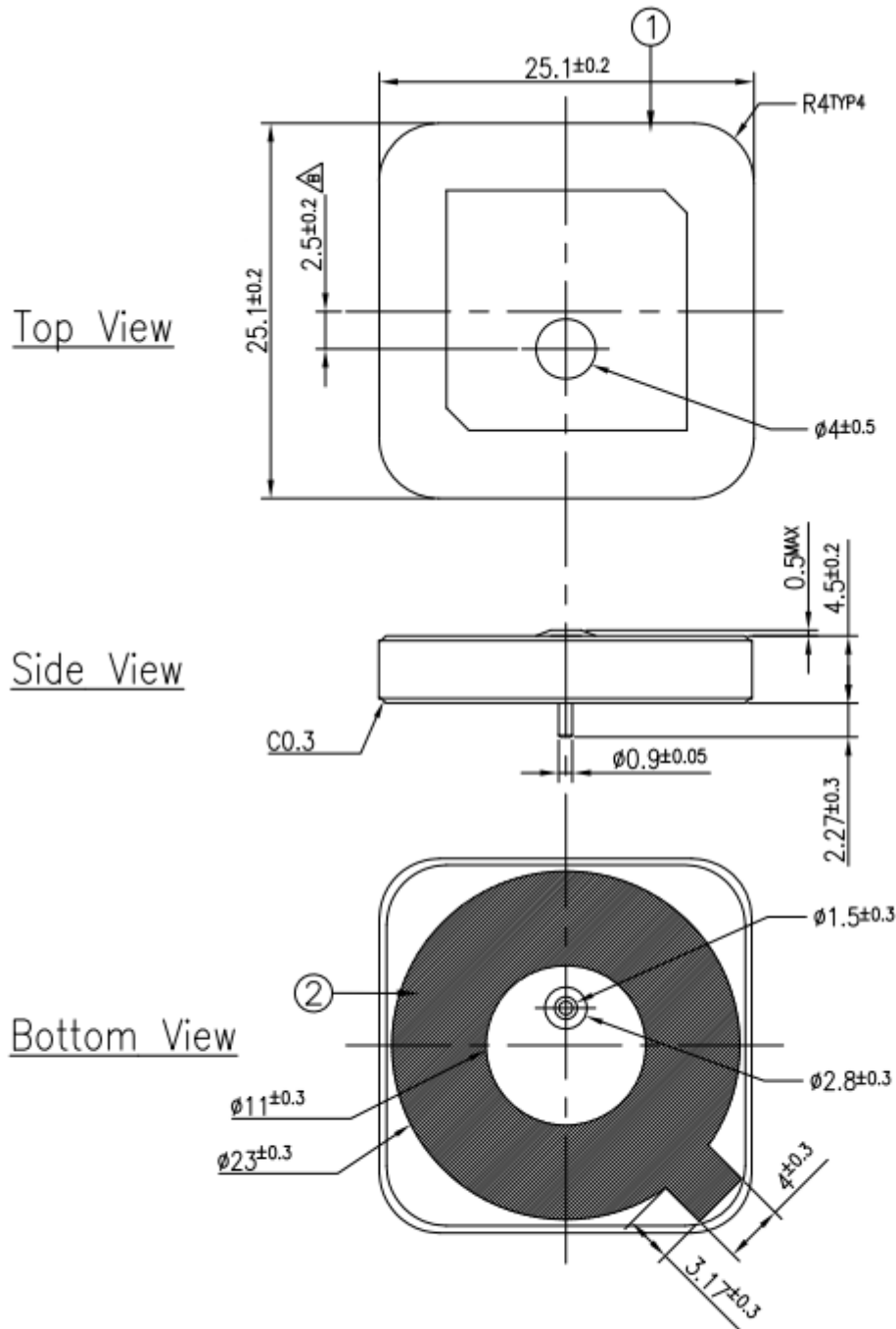
Original Patch Specification tested on 50*50mm ground plane

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 Ω	
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

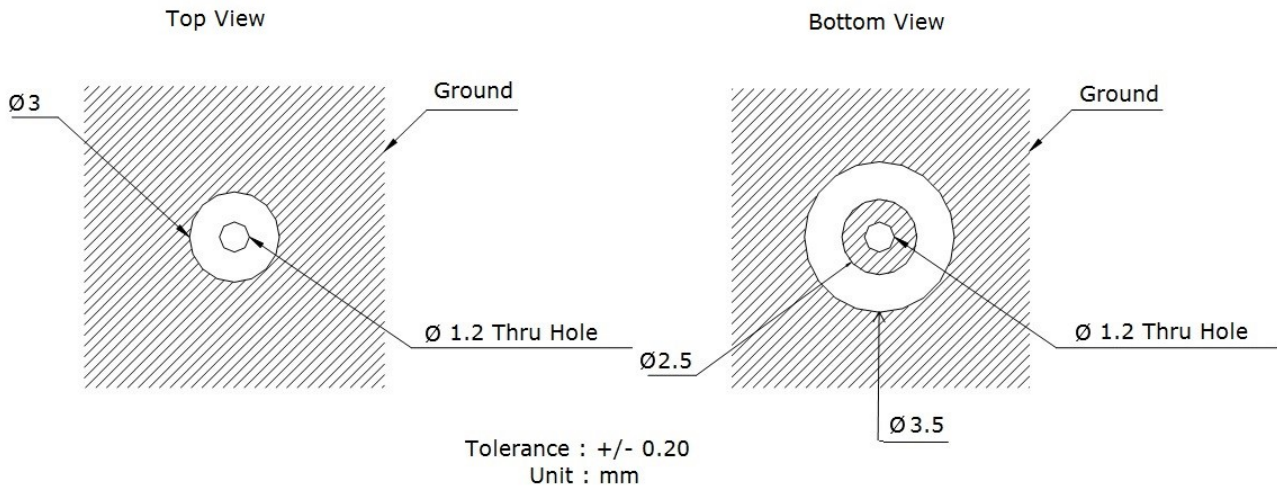


NOTE:

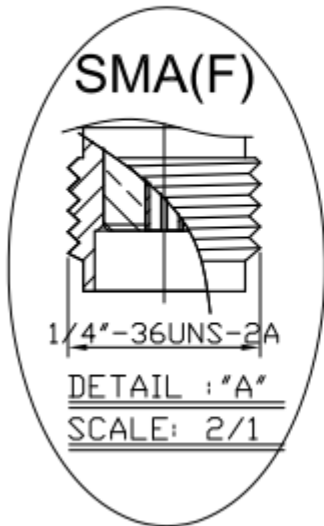
1. Double Sided Adhesive 

	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

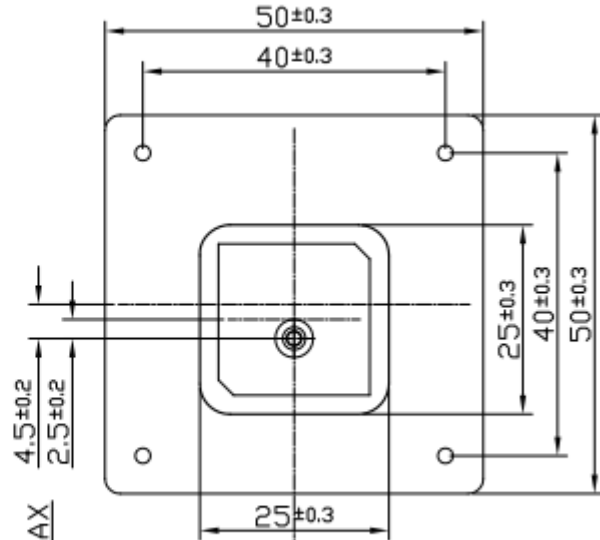
3.2 Layout Dimensions



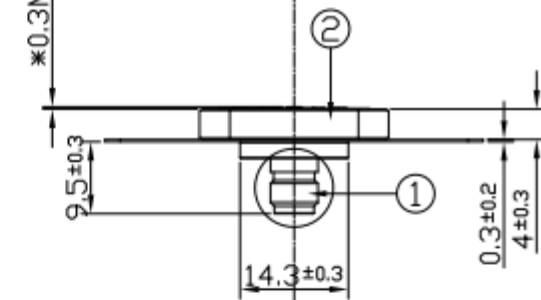
3.3 Ground Plane Dimension



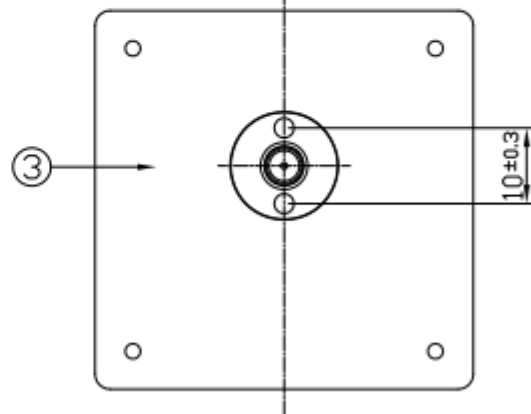
Top View



Side View

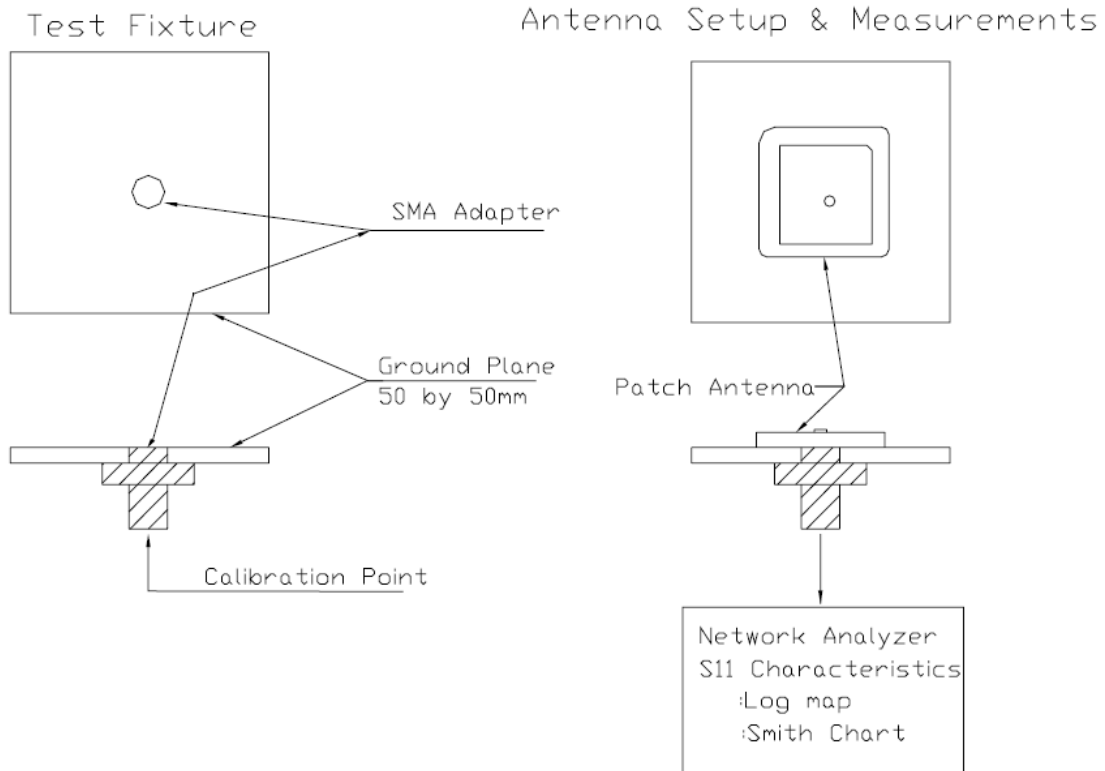


bottom View



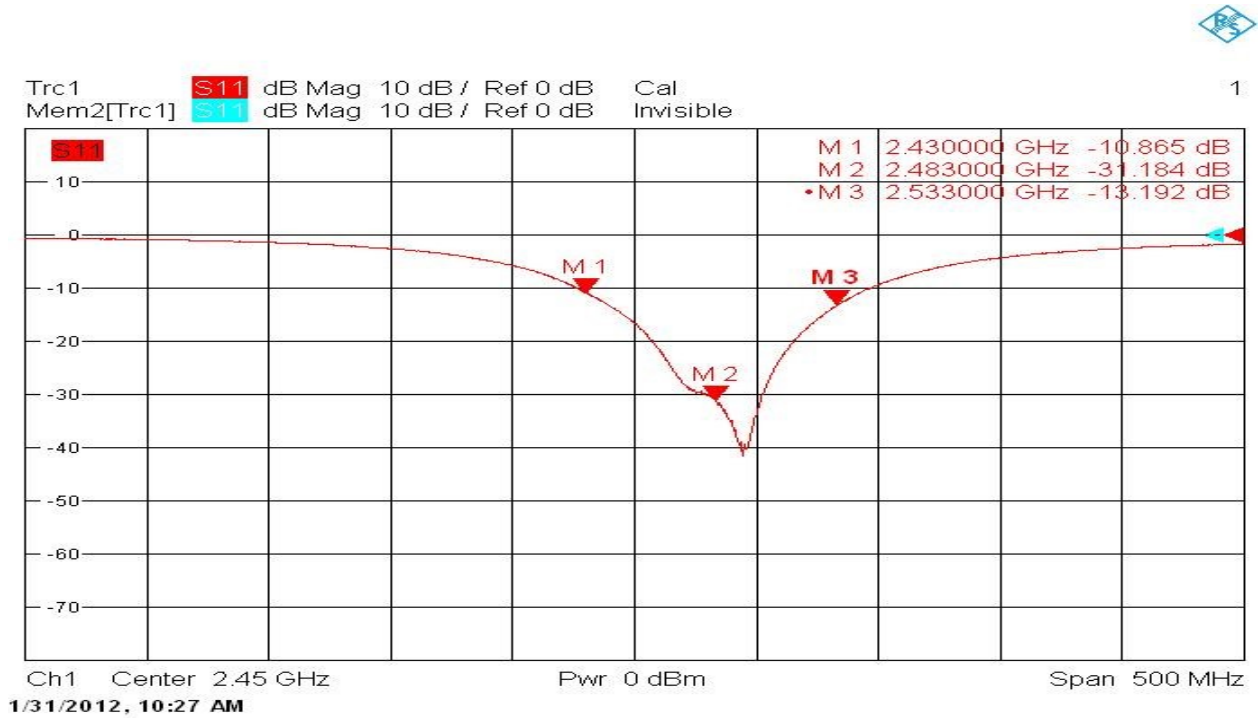
	Name	Material	Finish	QTY
1	SMA(F) ST	Brass	Gold	1
2	WLPD.2450 Patch (25x25x4mm)	Ceramic	Clear	1
3	Brass Ground-Plane(50x50x0.3mm)	Brass	Silver	1

3.4 Test Fixture Antenna & Performance Measurements

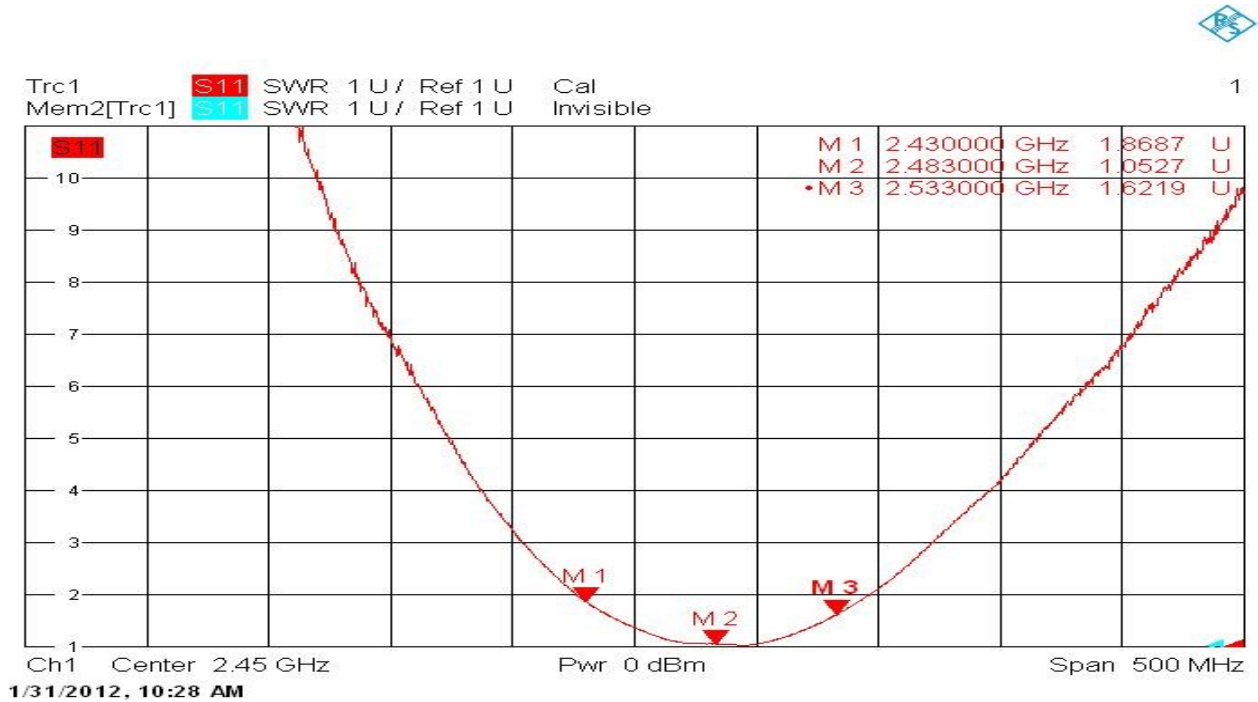


4. Performance Measurement

4.1 Antenna S11(Return Loss)



4.2 VSWR



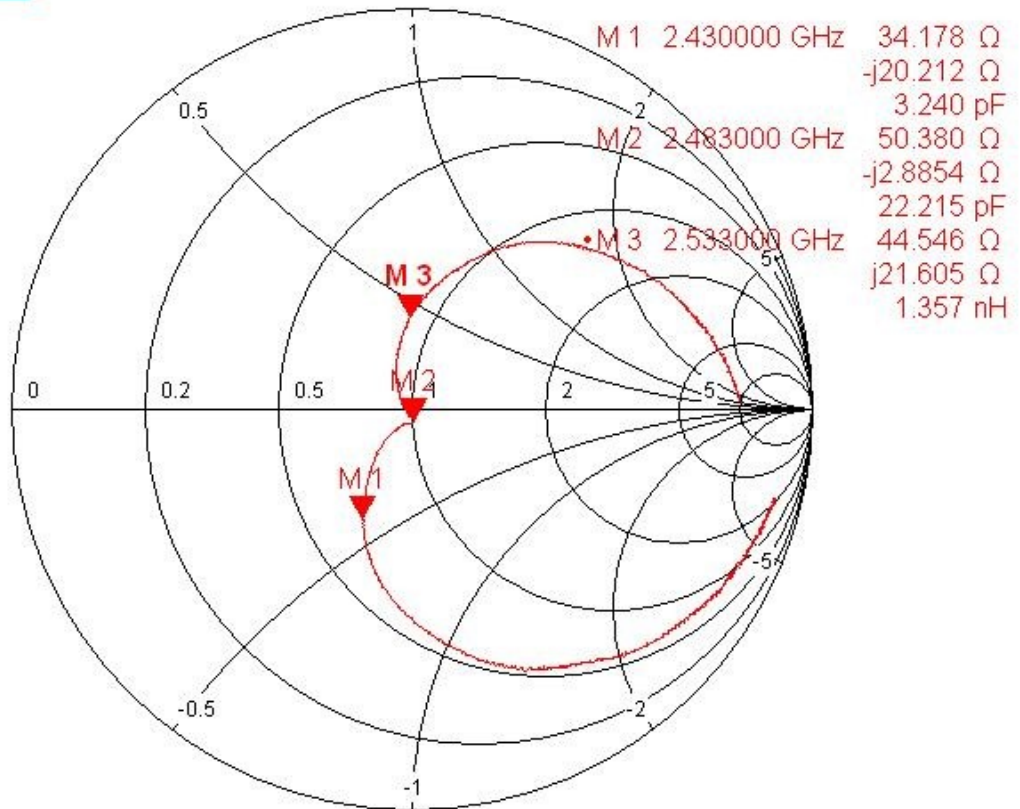
4.3 Antenna Smith Chart (Impedance)



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

1

S11

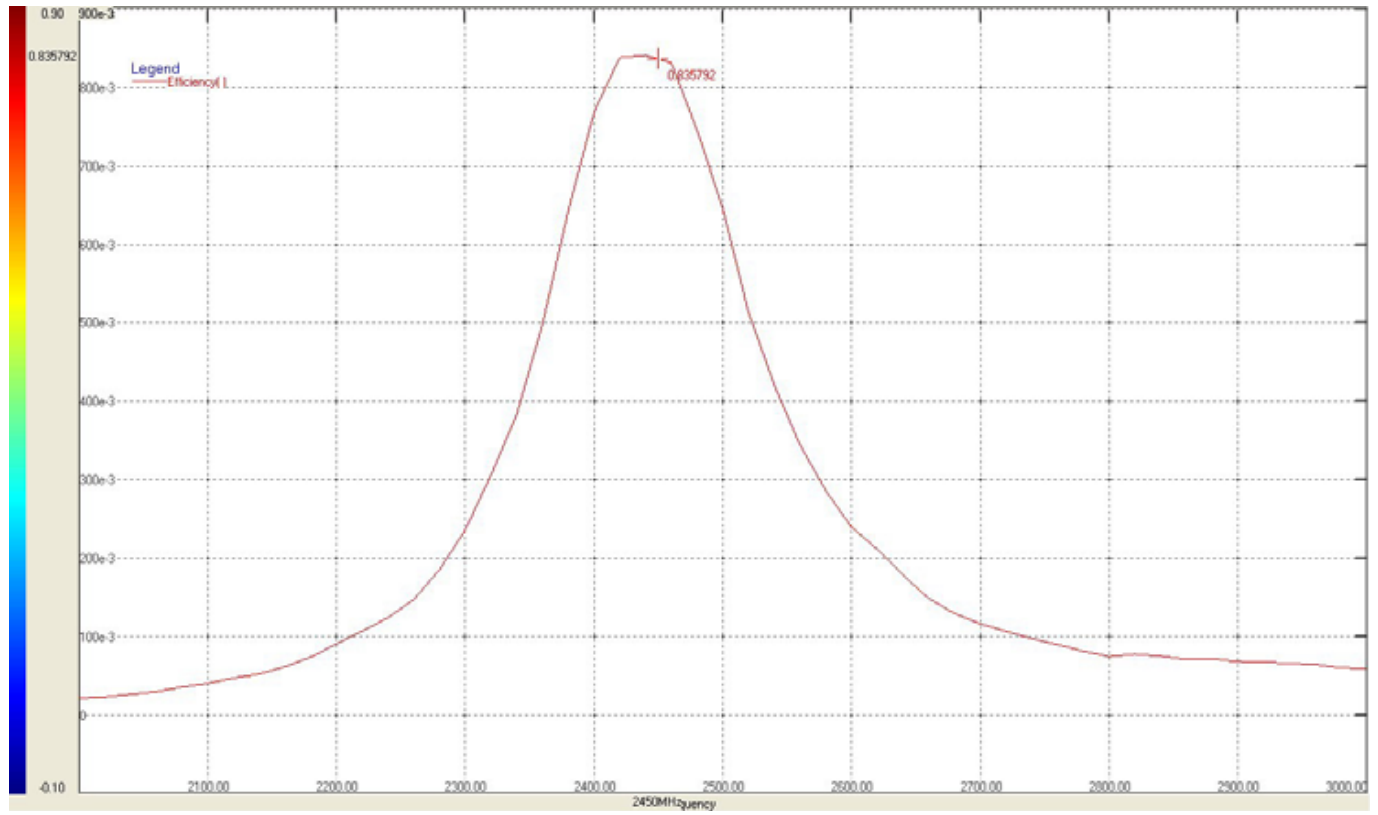


Ch1 Center 2.45 GHz
 1/31/2012, 10:27 AM

Pwr 0 dBm

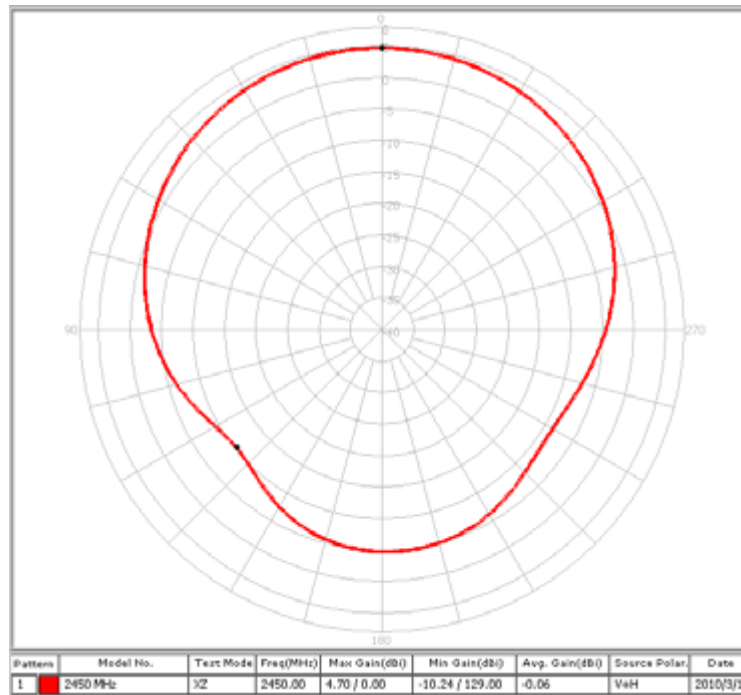
Span 500 MHz

4.4 Efficiency

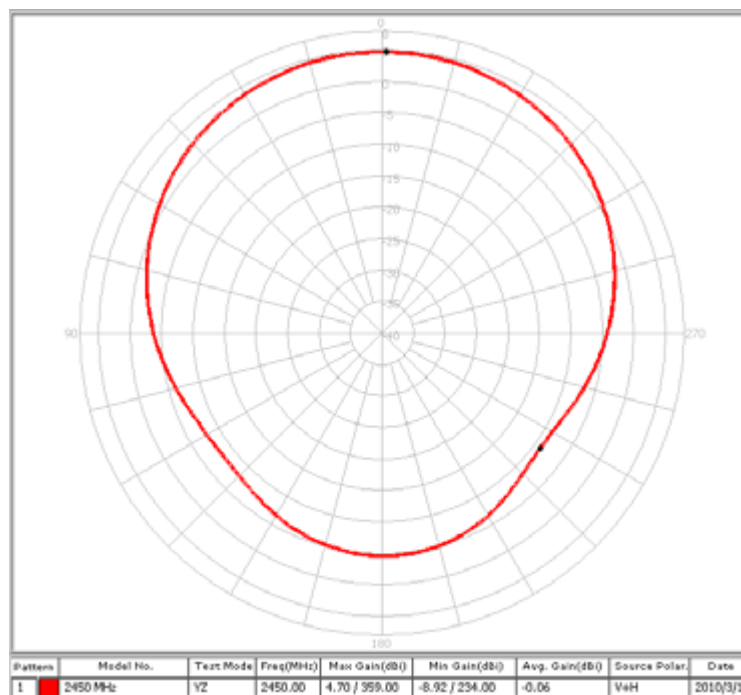


4.5 Antenna Gain

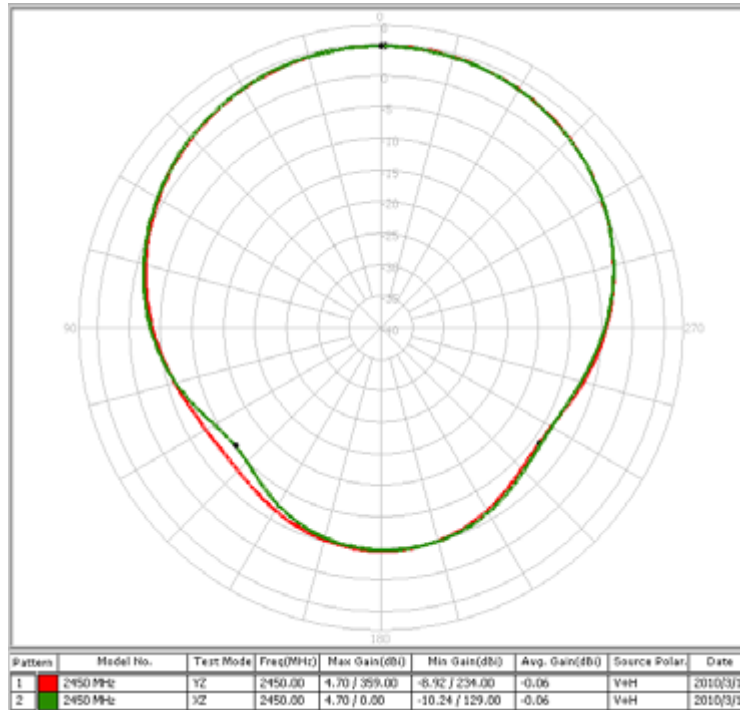
XZ Plane



YZ Plane



XY Plane

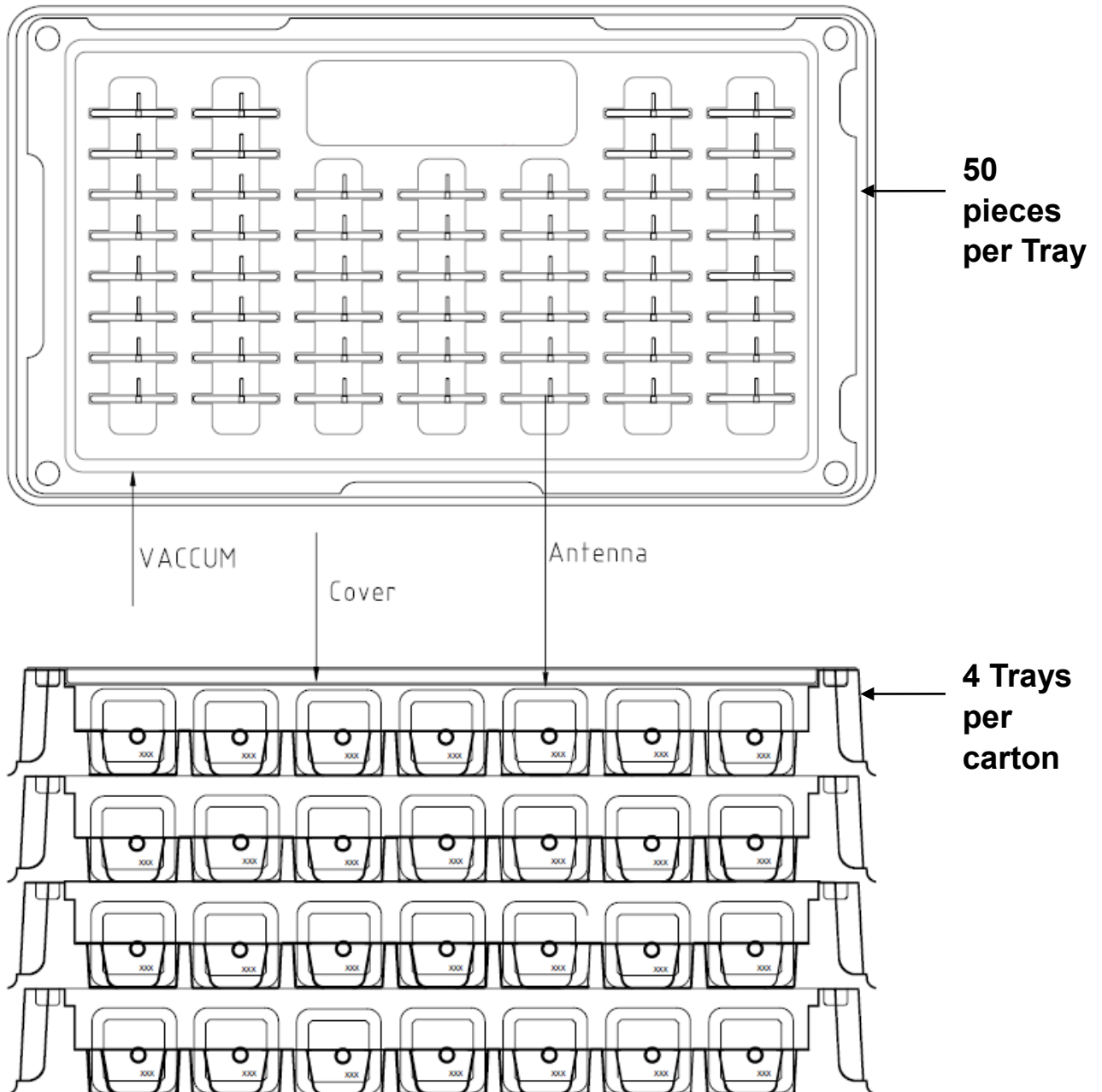


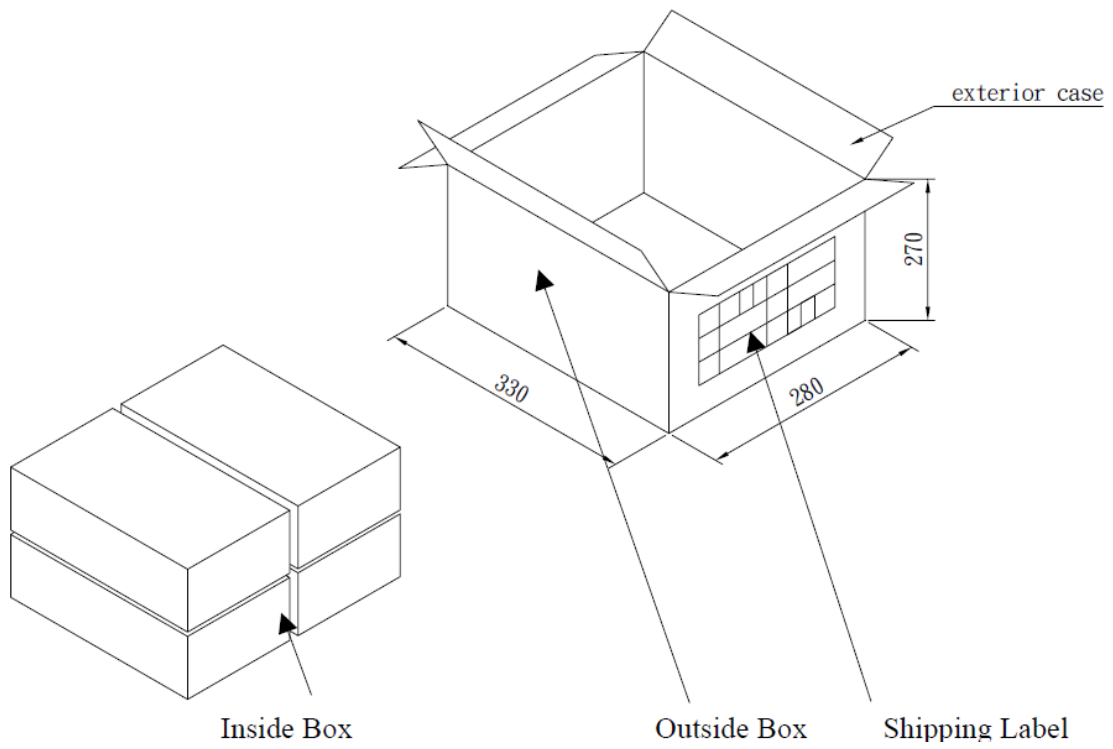
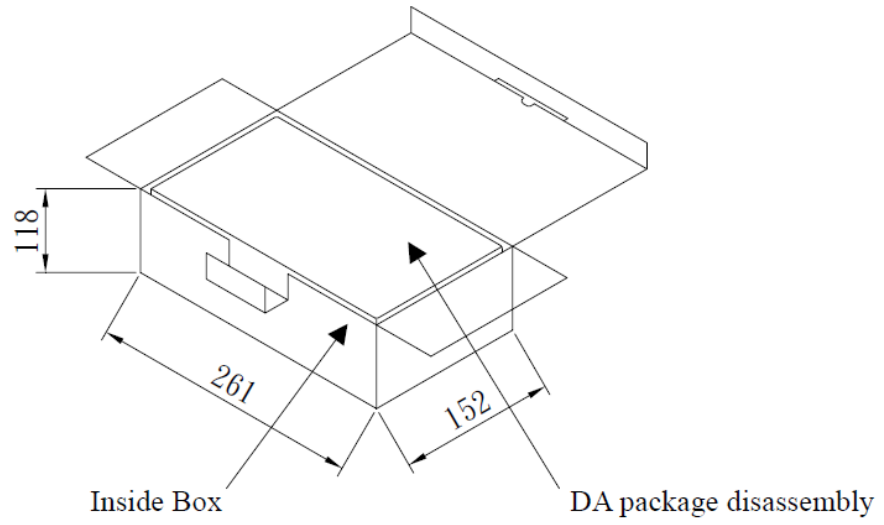
5. Packaging

Per Tray: 50 pieces

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

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





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