APPLICATION SPECIFICATION

2.4/5GHz SMT CHIP ANTENNA

1.0 SCOPE

This specification describes the antenna application and recommended PCB layout for the Molex 2.4/5 GHz SMT Chip Antenna. The information in this document is for reference and benchmark purposes only. The user is responsible for validating antenna RF performance based on users own PCB and matching circuits.

All measurements are done of the antenna mounted on the recommended PCB with VNA Agilent 5071C and OTA chamber.

Antenna illustrations in this document are generic representations. They are not intended to be an image of any antenna listed in the scope.

2.0 PRODUCT DESCRIPTION

A. DEFINITIONS OF TERMS

The antenna design is based on carrier size 3mm* 5mm*4mm (Width*Length*Height). There are one feeding pad, one grounding pad, two fixing pads and antenna radiator. See Figure 1.

1. **FEEDING PAD**
   SMT mounted to feeding pad on PCB.
2. **GROUNDING PAD**
   SMT mounted to grounding pad on PCB.
3. **FIXING PAD**
   SMT mounted to dummy pads on PCB. Anchoring the antenna to the PCB
4. **ANTENNA RADIATOR**
   To act as a transducer that converts unguided electromagnetic wave to guided electromagnetic wave and vice versa.
5. **PICK AND PLACE FEATURE**
   To enable the antenna to be picked up by SMT machine pick up nozzle.

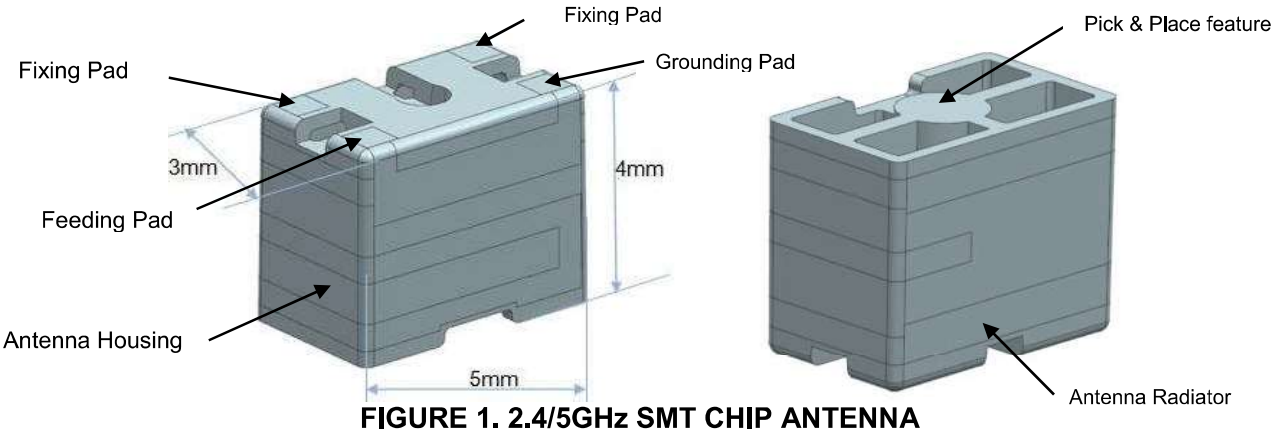

FIGURE 1. 2.4/5GHz SMT CHIP ANTENNA

III. PERFORMANCE AT REFERENCE ANTENNA LOCATION

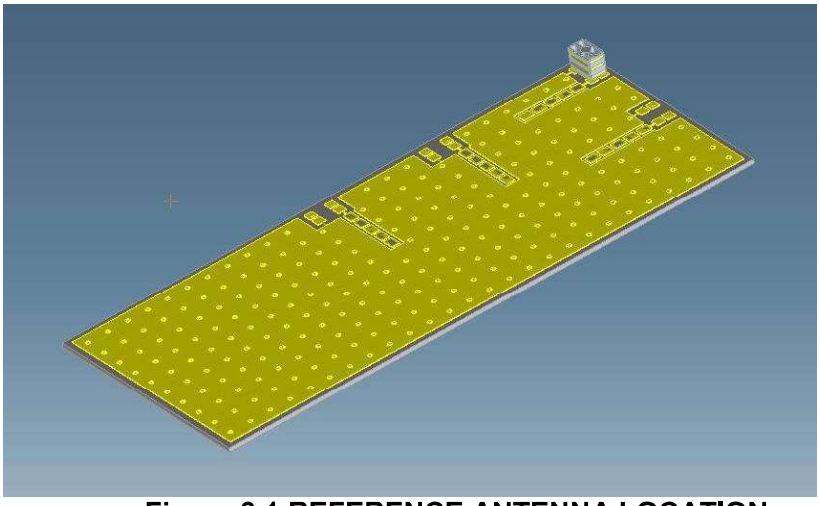

Figure 3.1 REFERENCE ANTENNA LOCATION

The reference antenna location is at the corner of the PCB as shown in Figure 3.1.

DESCRIPTION	TEST CONDITION	REQUIREMENTS	
Frequency Range	Measure antenna on recommended PCB through VNA E5071C	2.4~2.5GHz	5.15~5.85GHz
Return Loss	Measure antenna on recommended PCB through VNA E5071C	< -6 dB	< -6 dB
Peak Gain (Max)	Measure antenna on recommended PCB through OTA chamber	3dBi	4.2dBi
Total Efficiency	Measure antenna on recommended PCB through OTA chamber	>70%	>70%
Polarization	Measure antenna on recommended PCB through OTA chamber	Linear	Linear
Input Impedance	Measure antenna on recommended PCB through VNA E5071C	50Ohms	50Ohms

6.0 RADIATION PATTERN

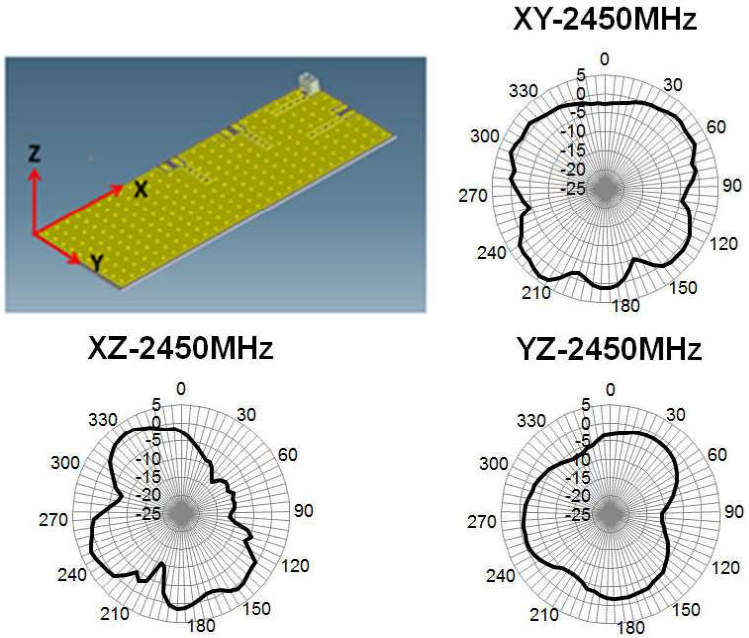

FIGURE 6.1 RADIATION PATTERN OF ATNENNA AT 2.45 GHZ AT REFERENCE LOCATION

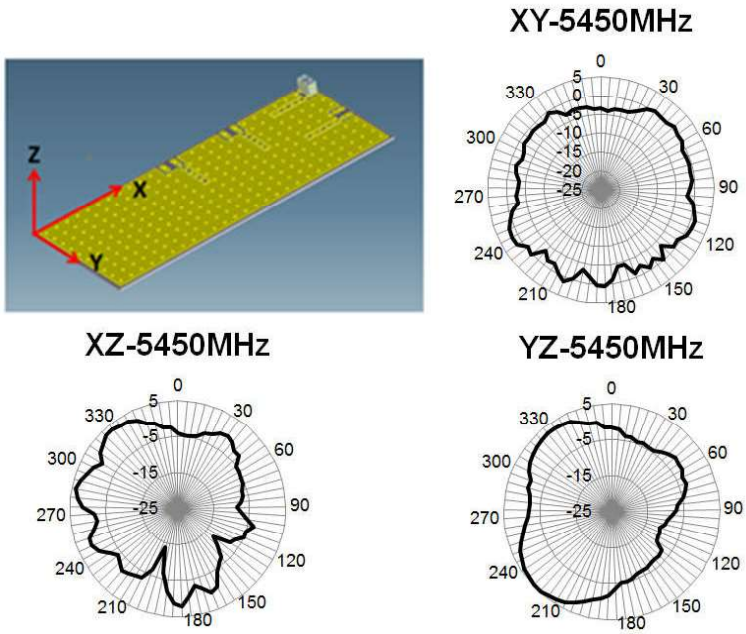

FIGURE 6.2 RADIATION PATTERN OF ATNENNA AT 5 GHZ AT REFERENCE LOCATION