

# ***FCC TEST REPORT***

**FCC ID** : OU4-QC101000

**Applicant** : **Xanboo Inc.**  
400 Columbus Ave. Valhalla, New York, United States.

**Equipment Under Test (EUT) :**


Product description : ZigbeePIR Motion Sensor

Model No. : QC101000

**Standards** : FCC 15 Paragraph 15.249

**Date of Test** : Mar 27, 2008

**Test Engineer** : **Tiger Su**

**Reviewed By** : 

PERPARED BY:

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### 3 Test Summary

| <b>Test</b>                             | <b>Test Requirement</b> | <b>Test Method</b> | <b>Class / Severity</b> | <b>Result</b> |
|---|-------------------------|--------------------|-------------------------|---------------|
| Radiated Emission<br>(30MHz to 25GHz)   | FCC PART 15: 2003       | ANSI C63.4: 2003   | Class B                 | PASS          |
| Conducted Emission<br>(150KHz to 30MHz) | FCC PART 15: 2003       | ANSI C63.4: 2003   | Class B                 | PASS          |

## 4 General Information

### 4.1 Client Information

Applicant: **Xanboo Inc.**  
Address of Applicant: 400 Columbus Ave. Valhalla, New York, United States

Manufacturer: RDI Technology (Shenzhen) Co., Ltd.  
Address: Building C1 Xingtang Industrial Park, East Baishixia, Fuyong, Baoan, Shenzhen, P.R.C.

### 4.2 General Description of E.U.T.

Product description: ZigbeePIR Motion Sensor  
Model No.: QC101000

### 4.3 Details of E.U.T.

Power Supply: DC 3V Battery

### 4.4 Description of Support Units

The EUT has been tested as an independent unit.

### 4.5 Standards Applicable for Testing

The customer requested FCC tests for a ZigbeePIR Motion Sensor. The standards used were FCC 15 Paragraph 15.249, Paragraph 15.207, Paragraph 15.209, Paragraph 15.31, Paragraph 15.33, Paragraph 15.35.

#### **4.6 Test Facility**

The test facility is recognized, certified, or accredited by the following organizations:

- **FCC – Registration No.: 759397**

Solid Industrial (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 759397, December 28, 2006.

#### **4.7 Test Location**

All Emissions tests were performed at:-

Solid Industrial (Shenzhen) Co., Ltd. at 333 Bulong Highway Buji Longgang, Shenzhen, Guangdong, China.

## 5 Equipment Used during Test

| Equipment                     | Brand Name   | Model     | Cal. Int Months | Last Cal. Date |
|-------------------------------|--------------|-----------|-----------------|----------------|
| <b>3m Anechoic chamber</b>    |              |           |                 |                |
| EMC Analyzer                  | Agilent      | E7402A    | 12              | 2007-08        |
| EMI Test Receiver             | R&S          | ESS       | 12              | 2007-08        |
| Pre Amplifier                 | Anritsu      | MH648A    | 12              | 2007-08        |
| Bilog Antenna                 | SCHAFFNER    | CBL6111C  | 12              | 2007-08        |
| Loop Antenna                  | R&S          | 6108      | 12              | 2007-08        |
| Horn Antenna                  | ETS.LINDGERN | GH14-H052 | 12              | 2007-08        |
| AM/FM Stereo Signal Generator | Panasonic    | VP-8122A  | 12              | 2007-08        |
| Signal Generator              | R&S          | SMG       | 12              | 2007-08        |
| RF Selector                   | TOYO         | NS4901A   | -               | -              |
| Turn Disc                     | HD           | DS4150S   | -               | -              |
| Antenna Mast                  | HD           | MA2400    | -               | -              |
| <b>EMI Shielded Room</b>      |              |           |                 |                |
| Spectrum analyzer             | ADVANTEST    | R3261C    | 12              | 2007-08        |
| EMI Test Receiver             | R&S          | ESS       | 12              | 2007-08        |
| Pre Amplifier                 | Anritsu      | MH648A    | 12              | 2007-08        |
| LISN                          | Kyoritsu     | KNW-403D  | 12              | 2007-08        |
| Absorbing Clamp               | R&S          | MDS-21    | 12              | 2007-08        |
| Distortion Meter              | MEGURO       | MAK-6578A | 12              | 2007-08        |
| AM/FM Stereo Signal Generator | Panasonic    | VP-8122A  | 12              | 2007-08        |
| Oscilloscope                  | LEADER       | LS1020    | 12              | 2007-08        |
| Function Generator            | National     | VP-7422A  | 12              | 2007-08        |
| Signal Generator              | R&S          | SMG       | 12              | 2007-08        |
| RF Selector                   | TOYO         | NS4000    | -               | -              |
| Remote Controller             | TOYO         | MAC       | -               | -              |

## 6 Conducted Emission Test

|                   |   |
|-------------------|---|
| Product Name:     | ZigbeePIR Motion Sensor   |
| Test Requirement: | FCC Part15 Paragraph 15.207   |
| Test Method:      | Based on FCC Part15 Paragraph 15.207  |
| Test Date:        | Mar 27, 2008  |
| Frequency Range:  | 150 kHz to 30MHz  |
| Class:            | Class B   |
| Detector:         | Peak for pre-scan (9 kHz Resolution Bandwidth)<br>Quasi-Peak & Average if maximised peak within 6dB of<br>Average Limit |

### 6.1 Test Equipment

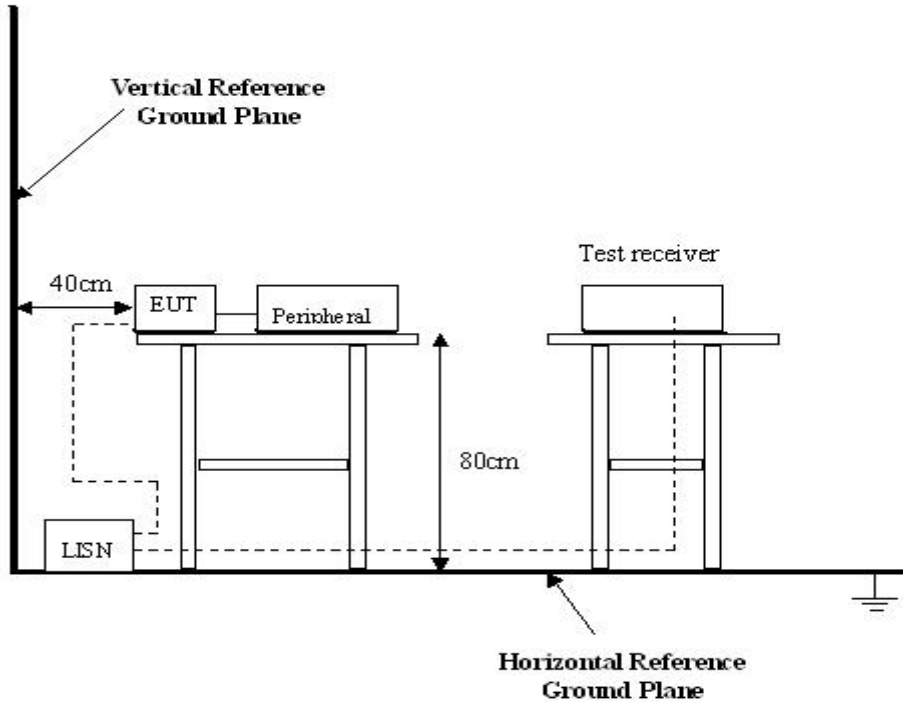
Please refer to Section 5 this report.

### 6.2 Test Procedure

1. The EUT was tested according to ANSI C63.4: 2003. The frequency spectrum from 150kHz to 30MHz was investigated.
2. The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

### 6.3 Conducted Test Setup

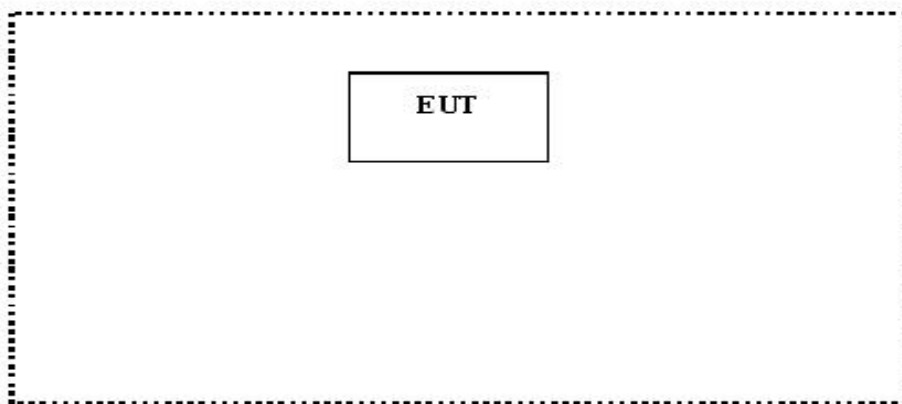
The conducted emission tests were performed using the setup accordance with the ANSI C63.4:2003, The specification used in this report was the FCC Part15 Paragraph 15.207 limits.



### 6.4 EUT Operating Condition

Operating condition is according to ANSI C63.4: 2003.

- A. Setup the EUT and simulators as shown on follow.
- B. Enable RF signal and confirm EUT active.
- C. Modulate output capacity of EUT up to specification.





## 6.5 Conducted Emission Limits

66-56 dB $\mu$ V/m between 0.15MHz & 0.5MHz

56 dB $\mu$ V/m between 0.5MHz & 5MHz

60 dB $\mu$ V/m between 5MHz & 30MHz

**Note:** In the above limits, the tighter limit applies at the band edges.

Owing to the DC operation of EUT, this test is not performed.

## 7 Radiation Emission Test

|                       |   |
|-----------------------|---|
| Product Name:         | ZigbeePIR Motion Sensor   |
| Test Requirement:     | FCC Part15 Paragraph 15.249   |
| Test Method:          | Based on FCC Part15 Paragraph 15.31 and Paragraph 15.33   |
| Test Date:            | Mar 27, 2008  |
| Frequency Range:      | 30MHz to 25GHz  |
| Measurement Distance: | 3m  |
| Detector:             | Peak for pre-scan (120kHz resolution bandwidth)<br>Quasi-Peak if maximised peak within 6dB of limit |

### 7.1 Test Equipment

Please refer to Section 5 this report.

### 7.2 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in the field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase centre variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

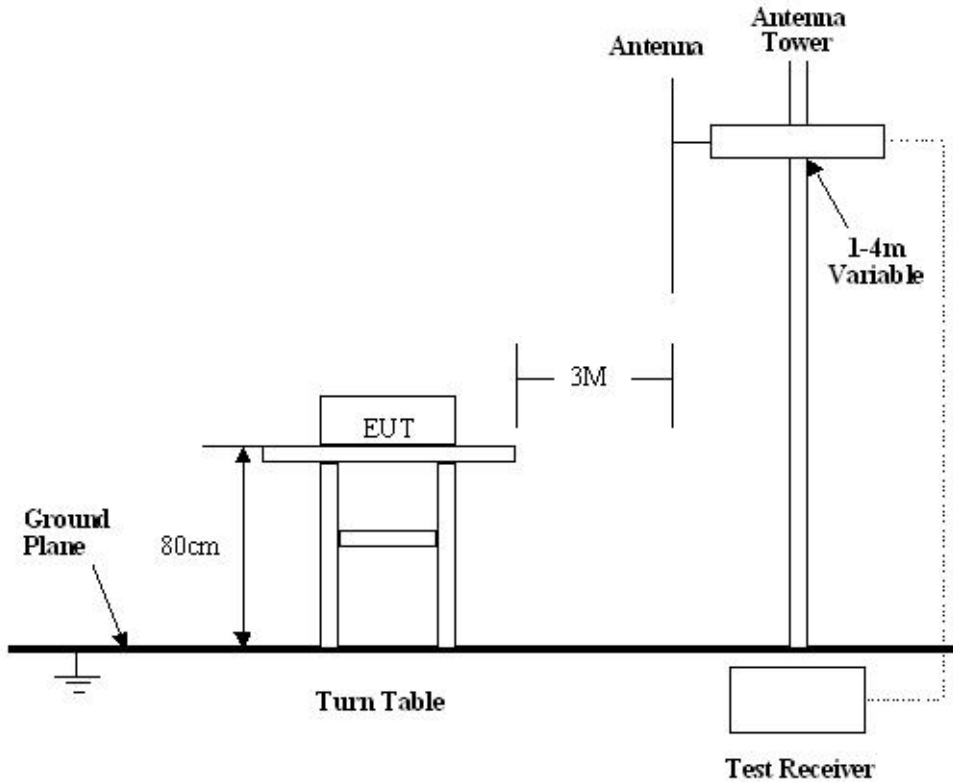
Based on ANSI C63.4: 2003, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Solid EMC Lab is +4.0 dB.

### 7.3 Test Procedure

1. Maximizing procedure was performed on the six (6) highest emissions to ensure EUT is compliant with all installation combinations.
2. All data was recorded in the peak detection mode.
3. The EUT was under normal mode during the final qualification test and the configuration was used to represent the worst case results.
4. According to the FCC Part 15 Paragraph 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna to the intentional radiator shall be considered sufficient to comply with the provisions of this section. This product has a permanent antenna, fulfill the requirement of this section.

### 7.4 Radiated Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.4: 2003, The specification used in this report was the FCC Part15 Paragraph 15.249 and Paragraph 15.209 limits.



### 7.5 Spectrum Analyzer Setup

According to FCC Part15 Paragraph 15.249 Rules, the system was tested to 25000 MHz.

- Start Frequency..... 30 MHz
- Stop Frequency..... 25000 MHz
- Sweep Speed Auto
- IF Bandwidth..... 100 kHz
- Video Bandwidth..... 1 MHz
- Quasi-Peak Adapter Bandwidth ..... 120 kHz
- Quasi-Peak Adapter Mode ..... Normal
- Resolution Bandwidth ..... 1MHz

## 7.6 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of  $-7\text{dB}\mu\text{V}$  means the emission is  $7\text{dB}\mu\text{V}$  below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{Class B Limit}$$

## 7.7 Summary of Test Results

According to the data in section 7.10, the EUT complied with the FCC Part15 Paragraph 15.249 standards.

**7.8 EUT Operating Condition**

Same as section 6.4 of this report.

**7.9 Radiated Emissions Limit**

**A. FCC Part 15 subpart C Paragraph 15.249 Limit**

| Fundamental Frequency | Field Strength of Fundamental |        | Field Strength of Harmonics |        |
|-----------------------|-------------------------------|--------|-----------------------------|--------|
|                       | mV/m                          | dBuV/m | uV/m                        | dBuV/m |
| 902-928MHz            | 50                            | 94     | 500                         | 54     |
| 2400-2483.5 MHz       | 50                            | 94     | 500                         | 54     |
| 5725-5875 MHz         | 50                            | 94     | 500                         | 54     |
| 24.0-24.25GHz         | 250                           | 108    | 2500                        | 68     |

- Note:**
- (1)  $RF\ Voltage(dBuV) = 20 \log RF\ Voltage(uV)$
  - (2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
  - (3) The emission limit in this paragraph is based on measurement instrumentation employing an average detector. Measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit.
  - (4) Above 1GHz, do a Peak and average measurements for all emissions, Limit for peak is 94dBuV/m, According to Part 15.35(b) and average is 54BuV/m.

**B. Frequencies in restricted band are complied to limit on Paragraph 15.209**

| Frequency(MHZ) | Distance(m) | Field strength(dBuV/m) |
|----------------|-------------|------------------------|
| 30-88          | 3           | 40.0                   |
| 88-216         | 3           | 43.5                   |
| 216-960        | 3           | 46.0                   |
| Above 960      | 3           | 54.0                   |

- Note:**
- (1)  $RF\ Voltage(dBuV) = 20 \log RF\ Voltage(uV)$
  - (2) In the Above Table, the tighter limit applies at the band edges.
  - (3) Distance refers to the distance in meters between the measuring instrument antenna.

**7.10 Radiated Emissions Test Result**

Formula of conversion factors: the field strength at 3m was established by adding  
 The meter reading of the spectrum analyzer (which is set to read in units of dBuV)  
 To the antenna correction factor supplied by the antenna manufacturer. The antenna  
 Correction factors are stated in terms of dB. The gain of the pressletor was accounted  
 For in the spectrum analyser meter reading.

Example:

$$\text{Freq(MHz)} \quad \text{Meter Reading} + \text{ACF} = \text{FS}$$

$$33 \quad 20\text{dBuV} + 10.36\text{dB} = 30.36\text{dBuV/m @3m}$$

**Radiated Emission Test Data**

Test Voltage: 120VAC  
 Test Mode: TX On  
 Temperature: 24 °C  
 Humidity: 52%RH  
 Test Result: PASS

Remarks: 30-1000MHz radiation test no significant emissions above the equipment noise floor were detected.

| Frequency(MHz) | Detector | Antenna Polarization | Emission Level (dBuV/m) | FCC 15 Subpart C Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Turntable Angle (°) |
|----------------|----------|----------------------|-------------------------|---------------------------------|-------------|--------------------|---------------------|
| Low frequency  |          |                      |                         |                                 |             |                    |                     |
| 2405.0         | AV       | Vertical             | 84.51                   | 94.00                           | 9.49        | 1.5                | 120                 |
| 4810.0         | AV       | Vertical             | 46.21                   | 54.00                           | 7.79        | 1.5                | 60                  |
| 7215.0         | AV       | Vertical             | 46.19                   | 54.00                           | 7.81        | 1.8                | 45                  |
| 9620.0         | AV       | Vertical             | 46.28                   | 54.00                           | 7.72        | 1.0                | 90                  |
| 12025.0        | AV       | Vertical             | 45.53                   | 54.00                           | 8.47        | 1.5                | 60                  |
| 14430.0        | AV       | Vertical             | 45.72                   | 54.00                           | 8.28        | 1.2                | 100                 |
| 16835.0        | AV       | Vertical             | 46.66                   | 54.00                           | 7.34        | 1.8                | 120                 |
| 19240.0        | AV       | Vertical             | 46.55                   | 54.00                           | 7.45        | 1.2                | 60                  |
| 21645.0        | AV       | Vertical             | 45.16                   | 54.00                           | 8.84        | 1.5                | 90                  |
| 24050.0        | AV       | Vertical             | 45.37                   | 54.00                           | 8.63        | 1.0                | 120                 |
| 2405.0         | AV       | Horizontal           | 84.15                   | 94.00                           | 9.85        | 1.5                | 270                 |
| 4810.0         | AV       | Horizontal           | 45.12                   | 54.00                           | 6.88        | 1.6                | 180                 |
| 7215.0         | AV       | Horizontal           | 45.64                   | 54.00                           | 6.36        | 1.5                | 120                 |
| 9620.0         | AV       | Horizontal           | 46.11                   | 54.00                           | 7.89        | 1.6                | 200                 |
| 12025.0        | AV       | Horizontal           | 46.37                   | 54.00                           | 7.63        | 1.5                | 100                 |
| 14430.0        | AV       | Horizontal           | 46.88                   | 54.00                           | 7.12        | 1.2                | 270                 |

|                  |    |            |       |        |       |     |     |
|------------------|----|------------|-------|--------|-------|-----|-----|
| 16835.0          | AV | Horizontal | 47.20 | 54.00  | 6.80  | 1.8 | 180 |
| 19240.0          | AV | Horizontal | 46.75 | 54.00  | 7.25  | 1.0 | 90  |
| 21645.0          | AV | Horizontal | 45.58 | 54.00  | 8.42  | 1.5 | 60  |
| 24050.0          | AV | Horizontal | 46.82 | 54.00  | 7.18  | 1.2 | 100 |
| 2405.0           | PK | Vertical   | 86.69 | 114.00 | 27.31 | 1.5 | 45  |
| 4810.0           | PK | Vertical   | 53.61 | 74.00  | 20.39 | 1.5 | 120 |
| 7215.0           | PK | Vertical   | 54.18 | 74.00  | 19.82 | 1.8 | 60  |
| 9620.0           | PK | Vertical   | 54.29 | 74.00  | 19.71 | 1.0 | 270 |
| 12025.0          | PK | Vertical   | 55.59 | 74.00  | 18.41 | 1.2 | 180 |
| 14430.0          | PK | Vertical   | 54.82 | 74.00  | 19.18 | 1.5 | 60  |
| 16835.0          | PK | Vertical   | 55.77 | 74.00  | 18.23 | 1.8 | 100 |
| 19240.0          | PK | Vertical   | 56.29 | 74.00  | 17.71 | 1.2 | 120 |
| 21645.0          | PK | Vertical   | 56.89 | 74.00  | 17.11 | 1.8 | 100 |
| 24050.0          | PK | Vertical   | 56.73 | 74.00  | 17.27 | 1.0 | 90  |
| 2405.0           | PK | Horizontal | 86.15 | 114.00 | 20.00 | 1.5 | 120 |
| 4810.0           | PK | Horizontal | 53.84 | 74.00  | 20.16 | 1.6 | 180 |
| 7215.0           | PK | Horizontal | 54.42 | 74.00  | 19.58 | 1.5 | 120 |
| 9620.0           | PK | Horizontal | 55.33 | 74.00  | 18.67 | 1.6 | 90  |
| 12025.0          | PK | Horizontal | 55.78 | 74.00  | 18.22 | 1.8 | 180 |
| 14430.0          | PK | Horizontal | 56.10 | 74.00  | 17.90 | 1.2 | 120 |
| 16835.0          | PK | Horizontal | 56.77 | 74.00  | 17.23 | 1.5 | 100 |
| 19240.0          | PK | Horizontal | 57.15 | 74.00  | 16.85 | 1.0 | 45  |
| 21645.0          | PK | Horizontal | 55.72 | 74.00  | 18.28 | 1.5 | 60  |
| 24050.0          | PK | Horizontal | 57.22 | 74.00  | 16.78 | 1.0 | 90  |
| Middle frequency |    |            |       |        |       |     |     |
| 2440.00          | AV | Vertical   | 84.56 | 94.00  | 9.44  | 1.5 | 60  |
| 4880.00          | AV | Vertical   | 46.66 | 54.00  | 7.34  | 1.5 | 45  |
| 7320.00          | AV | Vertical   | 47.42 | 54.00  | 6.58  | 1.6 | 90  |
| 9760.00          | AV | Vertical   | 46.75 | 54.00  | 7.25  | 1.5 | 180 |
| 12200.00         | AV | Vertical   | 47.58 | 54.00  | 6.42  | 1.2 | 120 |
| 14640.00         | AV | Vertical   | 47.90 | 54.00  | 6.10  | 1.0 | 100 |
| 17080.00         | AV | Vertical   | 47.99 | 54.00  | 6.01  | 1.5 | 90  |
| 19520.00         | AV | Vertical   | 48.21 | 54.00  | 5.79  | 1.8 | 45  |
| 21960.00         | AV | Vertical   | 48.45 | 54.00  | 5.55  | 1.2 | 60  |
| 24400.00         | AV | Vertical   | 47.62 | 54.00  | 6.38  | 1.6 | 120 |
| 2440.00          | AV | Horizontal | 85.76 | 94.00  | 8.24  | 1.5 | 60  |
| 4880.00          | AV | Horizontal | 47.23 | 54.00  | 6.77  | 1.5 | 180 |

|                |    |            |       |        |       |     |     |
|----------------|----|------------|-------|--------|-------|-----|-----|
| 7320.00        | AV | Horizontal | 48.49 | 54.00  | 5.51  | 1.8 | 120 |
| 9760.00        | AV | Horizontal | 47.26 | 54.00  | 6.74  | 1.2 | 90  |
| 12200.00       | AV | Horizontal | 47.42 | 54.00  | 6.58  | 1.5 | 60  |
| 14640.00       | AV | Horizontal | 46.89 | 54.00  | 7.11  | 1.0 | 100 |
| 17080.00       | AV | Horizontal | 46.82 | 54.00  | 7.18  | 1.5 | 90  |
| 19520.00       | AV | Horizontal | 47.45 | 54.00  | 6.55  | 1.8 | 120 |
| 21960.00       | AV | Horizontal | 47.87 | 54.00  | 6.13  | 1.5 | 180 |
| 24400.00       | AV | Horizontal | 47.52 | 54.00  | 6.48  | 1.8 | 270 |
| 2440.00        | PK | Vertical   | 86.78 | 114.00 | 27.22 | 1.5 | 90  |
| 4880.00        | PK | Vertical   | 53.52 | 74.00  | 20.48 | 1.5 | 60  |
| 7320.00        | PK | Vertical   | 54.57 | 74.00  | 19.43 | 1.5 | 120 |
| 9760.00        | PK | Vertical   | 55.25 | 74.00  | 18.75 | 1.2 | 270 |
| 12200.00       | PK | Vertical   | 56.34 | 74.00  | 17.66 | 1.8 | 100 |
| 14640.00       | PK | Vertical   | 55.68 | 74.00  | 18.32 | 1.5 | 180 |
| 17080.00       | PK | Vertical   | 56.59 | 74.00  | 17.41 | 1.2 | 90  |
| 19520.00       | PK | Vertical   | 56.75 | 74.00  | 17.25 | 1.8 | 45  |
| 21960.00       | PK | Vertical   | 57.71 | 74.00  | 16.29 | 1.2 | 100 |
| 24400.00       | PK | Vertical   | 57.82 | 74.00  | 16.18 | 1.0 | 90  |
| 2440.00        | PK | Horizontal | 86.94 | 114.00 | 27.06 | 1.5 | 180 |
| 4880.00        | PK | Horizontal | 52.58 | 74.00  | 21.42 | 1.8 | 90  |
| 7320.00        | PK | Horizontal | 54.12 | 74.00  | 19.88 | 1.5 | 120 |
| 9760.00        | PK | Horizontal | 54.89 | 74.00  | 19.11 | 1.5 | 100 |
| 12200.00       | PK | Horizontal | 56.26 | 74.00  | 17.74 | 1.8 | 45  |
| 14640.00       | PK | Horizontal | 54.78 | 74.00  | 19.22 | 1.5 | 90  |
| 17080.00       | PK | Horizontal | 56.25 | 74.00  | 17.75 | 1.5 | 180 |
| 19520.00       | PK | Horizontal | 56.48 | 74.00  | 17.52 | 1.6 | 120 |
| 21960.00       | PK | Horizontal | 57.56 | 74.00  | 16.44 | 1.2 | 270 |
| 24400.00       | PK | Horizontal | 57.71 | 74.00  | 16.29 | 1.0 | 180 |
| High frequency |    |            |       |        |       |     |     |
| 2480.00        | AV | Vertical   | 84.65 | 94.00  | 9.35  | 1.5 | 120 |
| 4960.00        | AV | Vertical   | 47.21 | 54.00  | 6.88  | 1.5 | 90  |
| 7440.00        | AV | Vertical   | 47.84 | 54.00  | 6.16  | 1.5 | 45  |
| 9920.00        | AV | Vertical   | 47.38 | 54.00  | 6.62  | 1.5 | 100 |
| 12400.00       | AV | Vertical   | 46.62 | 54.00  | 7.38  | 1.2 | 180 |
| 14880.00       | AV | Vertical   | 46.77 | 54.00  | 7.23  | 1.6 | 120 |
| 17360.00       | AV | Vertical   | 47.29 | 54.00  | 6.71  | 1.8 | 45  |
| 19840.00       | AV | Vertical   | 48.46 | 54.00  | 5.54  | 1.2 | 60  |



|          |    |            |       |        |       |     |     |
|----------|----|------------|-------|--------|-------|-----|-----|
| 22320.00 | AV | Vertical   | 48.35 | 54.00  | 5.65  | 1.5 | 90  |
| 24800.00 | AV | Vertical   | 48.28 | 54.00  | 5.72  | 1.8 | 100 |
| 2480.00  | AV | Horizontal | 85.66 | 94.00  | 8.34  | 1.5 | 180 |
| 4960.00  | AV | Horizontal | 48.41 | 54.00  | 5.59  | 1.5 | 60  |
| 7440.00  | AV | Horizontal | 49.83 | 54.00  | 4.17  | 1.5 | 120 |
| 9920.00  | AV | Horizontal | 48.27 | 54.00  | 5.73  | 1.8 | 270 |
| 12400.00 | AV | Horizontal | 47.72 | 54.00  | 6.28  | 1.2 | 180 |
| 14880.00 | AV | Horizontal | 47.86 | 54.00  | 6.14  | 1.6 | 90  |
| 17360.00 | AV | Horizontal | 48.77 | 54.00  | 5.23  | 1.8 | 120 |
| 19840.00 | AV | Horizontal | 47.73 | 54.00  | 6.27  | 1.5 | 100 |
| 22320.00 | AV | Horizontal | 48.64 | 54.00  | 5.36  | 1.2 | 45  |
| 24800.00 | AV | Horizontal | 48.89 | 54.00  | 5.11  | 1.6 | 90  |
| 2480.00  | PK | Vertical   | 86.82 | 114.00 | 27.12 | 1.5 | 180 |
| 4960.00  | PK | Vertical   | 54.41 | 74.00  | 19.59 | 1.5 | 270 |
| 7440.00  | PK | Vertical   | 54.24 | 74.00  | 19.76 | 1.5 | 45  |
| 9920.00  | PK | Vertical   | 55.68 | 74.00  | 18.32 | 1.2 | 90  |
| 12400.00 | PK | Vertical   | 55.87 | 74.00  | 18.13 | 1.6 | 180 |
| 14880.00 | PK | Vertical   | 56.46 | 74.00  | 17.54 | 1.8 | 60  |
| 17360.00 | PK | Vertical   | 56.72 | 74.00  | 17.28 | 1.5 | 90  |
| 19840.00 | PK | Vertical   | 56.89 | 74.00  | 17.11 | 1.2 | 180 |
| 22320.00 | PK | Vertical   | 57.22 | 74.00  | 16.78 | 1.0 | 270 |
| 24800.00 | PK | Vertical   | 58.13 | 74.00  | 15.87 | 1.2 | 90  |
| 2480.00  | PK | Horizontal | 86.72 | 114.00 | 27.28 | 1.5 | 60  |
| 4960.00  | PK | Horizontal | 52.12 | 74.00  | 21.88 | 1.5 | 120 |
| 7440.00  | PK | Horizontal | 53.35 | 74.00  | 20.65 | 1.5 | 180 |
| 9920.00  | PK | Horizontal | 54.42 | 74.00  | 19.58 | 1.2 | 90  |
| 12400.00 | PK | Horizontal | 55.54 | 74.00  | 18.46 | 1.0 | 270 |
| 14880.00 | PK | Horizontal | 55.73 | 74.00  | 18.27 | 1.2 | 120 |
| 17360.00 | PK | Horizontal | 56.45 | 74.00  | 17.55 | 1.5 | 90  |
| 19840.00 | PK | Horizontal | 56.64 | 74.00  | 17.36 | 1.8 | 60  |
| 22320.00 | PK | Horizontal | 56.57 | 74.00  | 17.43 | 1.3 | 180 |
| 24800.00 | PK | Horizontal | 57.34 | 74.00  | 16.66 | 1.6 | 100 |

**Note:** Above 1GHz,do a Peak and average measurements for all emissions,Limit for peak is 94dBuV/m,According to Part15.35(b) and average is 54BuvV/m.

## 8 Band Edge

### 8.1 Test Equipment

Please refer to Section 5 this report.

### 8.2 Test Procedure

1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below:



2. The bandwidth of the fundamental frequency was measure by spectrum analyser with 100kHz RBW and 100kHz VBW. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power 20dB.

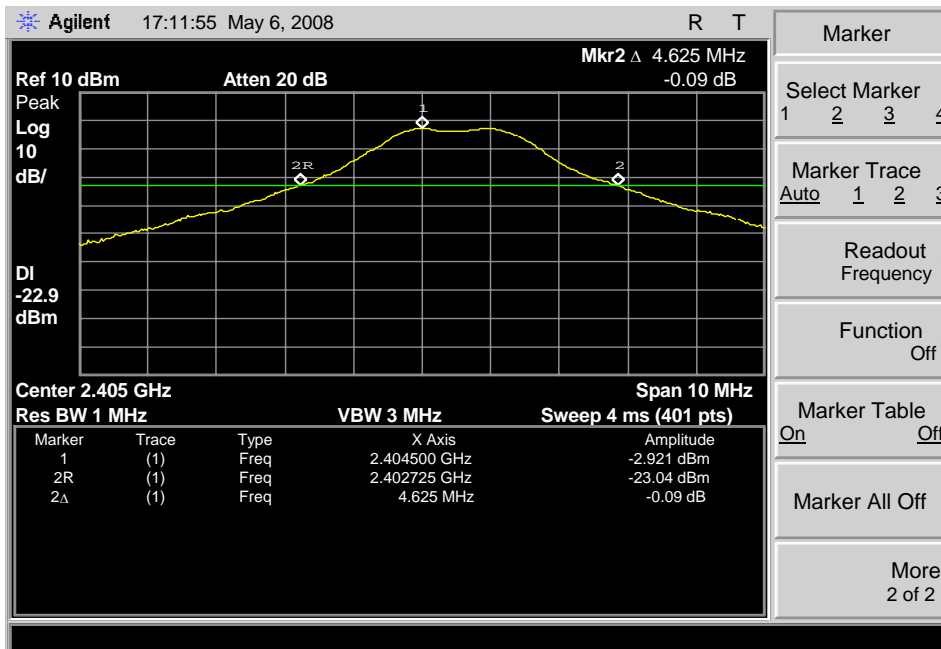
### 8.3 Band Edge

Requirements: FCC 15.249(d), the emission power at the START and STOP frequencies shall be at least 50dB below the level of the fundamental or to the general radiated emission limits in FCC 15.209.

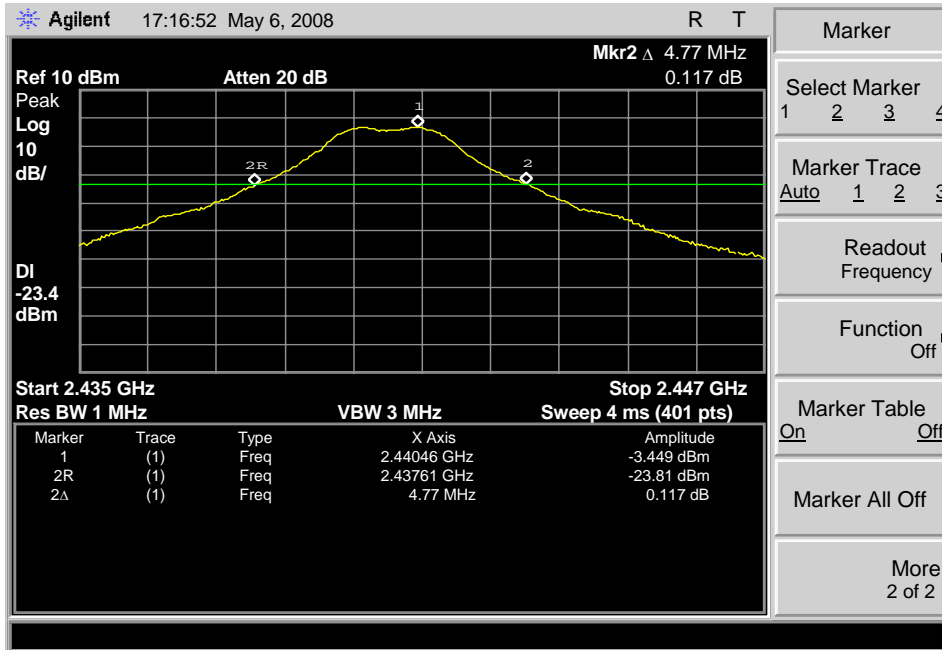
### 8.4 Band Edge Test Result

Product Name: ZigbeePIR Motion Sensor  
 Test Item: Band Edge Test  
 Test Voltage: 120VAC  
 Test Mode: TX On  
 Temperature: 24 °C  
 Humidity: 52%RH

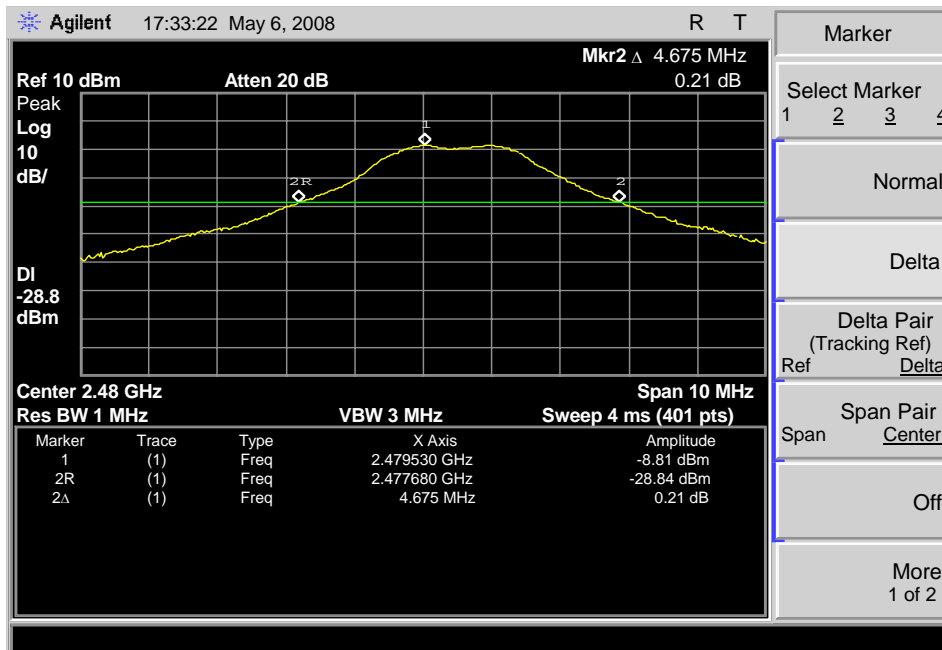
2405MHZ



2440MHZ



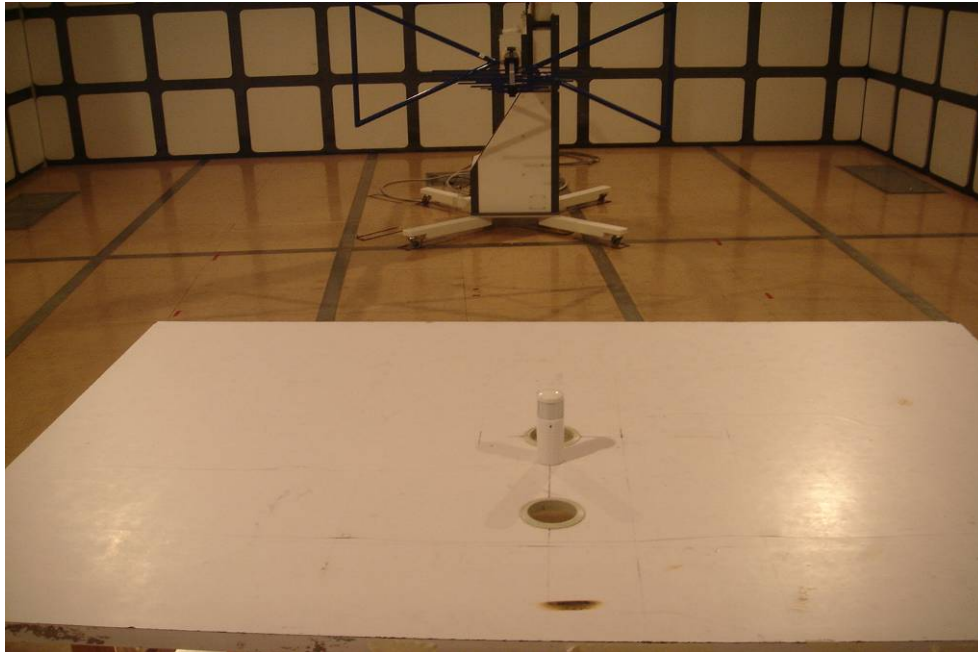
2480MHZ



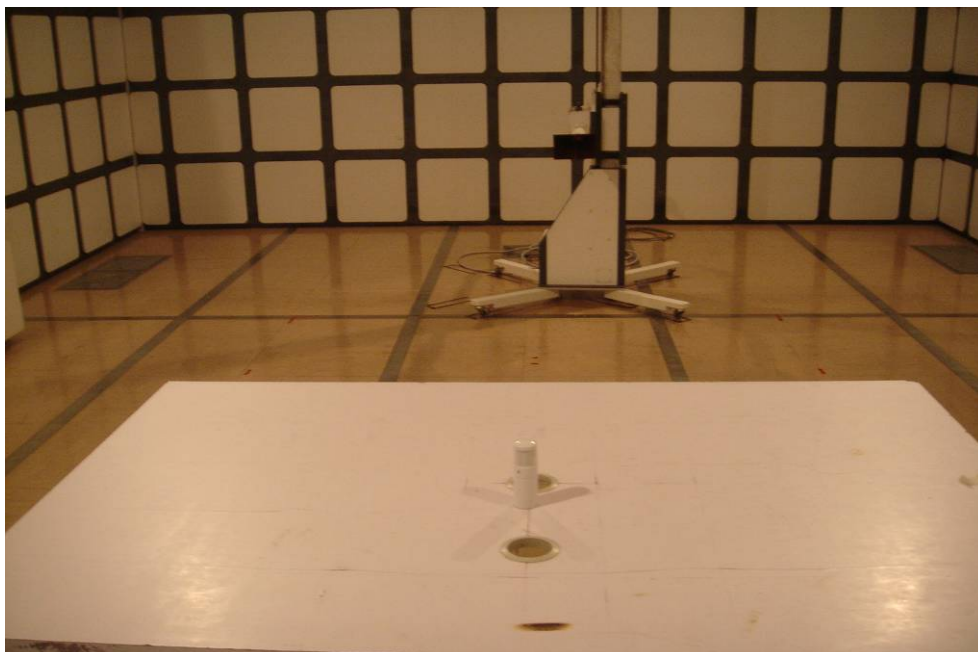
- Note:**
- (1) The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in Section 15.249.
  - (2) This device does meet the FCC requirement.

## 9 Photographs of Testing

### 9.1 Radiation Emission Test View For 30MHz-1000MHz



### 9.2 Radiation Emission Test View For 1GHz-25GHz



## 10 Photographs - Constructional Details

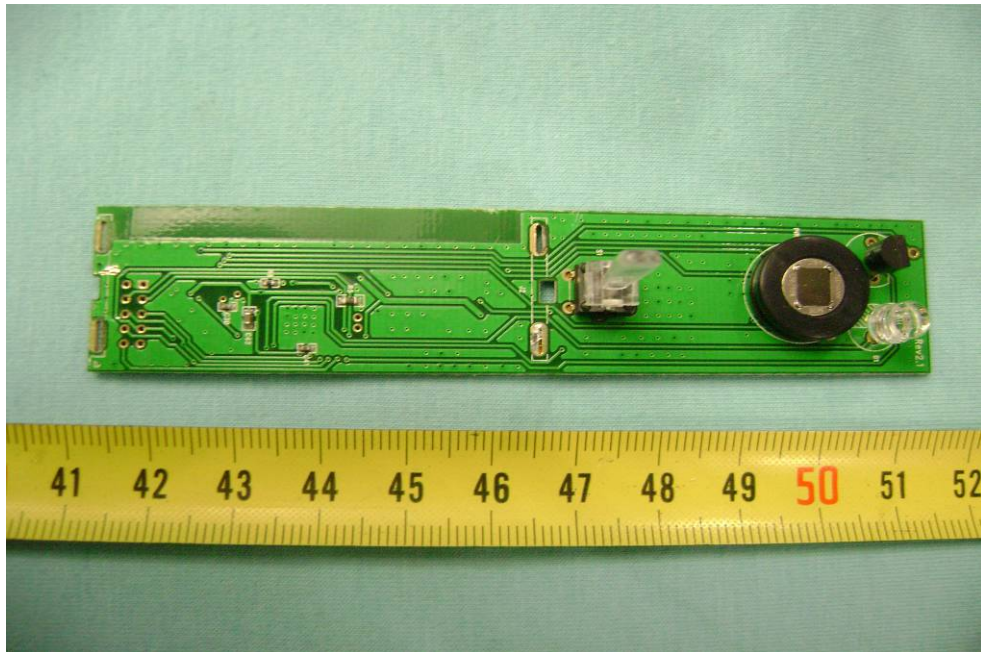
### 10.1 EUT - Front View



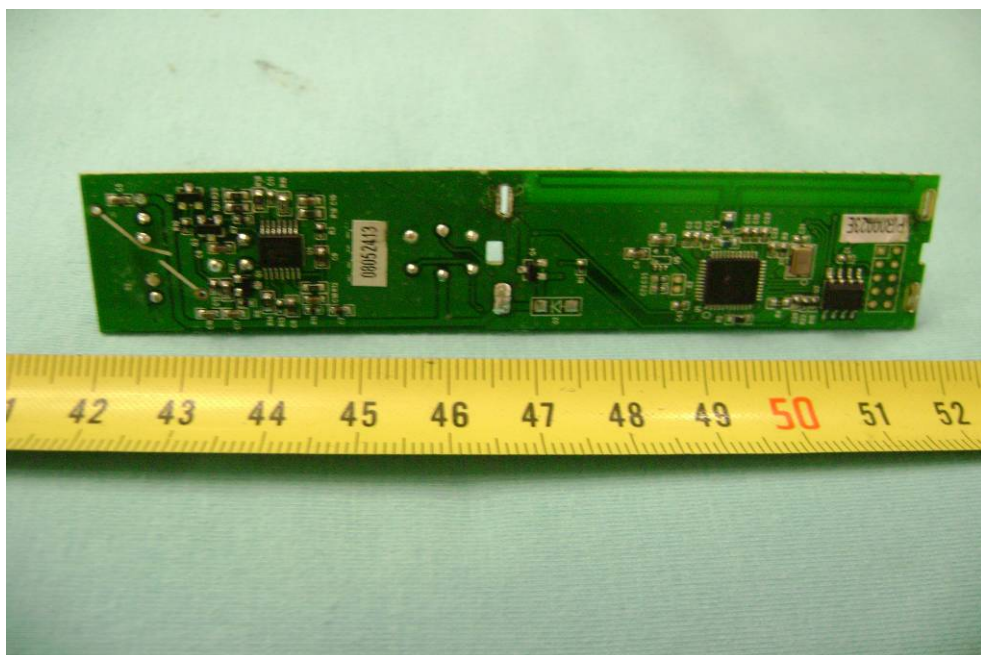
### 10.2 EUT - Back View



**10.3 PCB - Front View**



**10.4 PCB - Back View**



## 11 FCC ID Label

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation

The Label must not be a stick-on paper. The Label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

Proposed Label Location on EUT  
EUT Bottom View/proposed FCC Mark Location

