


## TEST REPORT

**Product** : Pilot Translating Earpiece  
**Trade mark** :  **WAVERLYLABS**  
**Model/Type reference** : V100LR,V100LB,V100LW  
**Serial Number** : N/A  
**Report Number** : EED32J00237202  
**FCC ID** : 2AN4B-WLABSV1PL  
**Date of Issue** : Nov. 22, 2017  
**Test Standards** : 47 CFR Part 15Subpart C  
**Test result** : PASS

Prepared for:

**Waverly Labs Inc.**

**19 Morris Ave Brooklyn New York United States 11205**

Prepared by:

**Centre Testing International Group Co., Ltd.**  
**Hongwei Industrial Zone, Bao'an 70 District,**  
**Shenzhen, Guangdong, China**  
**TEL: +86-755-3368 3668**  
**FAX: +86-755-3368 3385**

Tested By:

*Tom chen*

Tom chen (Test Project)

Compiled by:

*Kevin lan*

Kevin lan (Project Engineer)

Reviewed by:

*Kevin yang*

Kevin yang (Reviewer)

Approved by:

*Sheek Luo*

Sheek Luo (Lab supervisor)

Date:

Nov. 22, 2017

Check No.: 2392114011



## 2 Version

| Version No. | Date          | Description |
|-------------|---------------|-------------|
| 00          | Nov. 22, 2017 | Original    |
|             |               |             |
|             |               |             |

### 3 Test Summary

| Test Item                                                                | Test Requirement                                  | Test method                           | Result |
|--------------------------------------------------------------------------|---------------------------------------------------|---------------------------------------|--------|
| <b>Antenna Requirement</b>                                               | 47 CFR Part 15Subpart C Section 15.203/15.247 (c) | ANSI C63.10-2013                      | PASS   |
| <b>AC Power Line Conducted Emission</b>                                  | 47 CFR Part 15Subpart C Section 15.207            | ANSI C63.10-2013                      | N/A    |
| <b>Maximum Conducted Average Output Power</b>                            | 47 CFR Part 15Subpart C Section 15.247 (b)(3)     | ANSI C63.10-2013<br>KDB 558074 D01v04 | PASS   |
| <b>6dB Occupied Bandwidth</b>                                            | 47 CFR Part 15Subpart C Section 15.247 (a)(2)     | ANSI C63.10-2013<br>KDB 558074 D01v04 | PASS   |
| <b>Power Spectral Density</b>                                            | 47 CFR Part 15Subpart C Section 15.247 (e)        | ANSI C63.10-2013<br>KDB 558074 D01v04 | PASS   |
| <b>Band-edge for RF Conducted Emissions</b>                              | 47 CFR Part 15Subpart C Section 15.247(d)         | ANSI C63.10-2013<br>KDB 558074 D01v04 | PASS   |
| <b>RF Conducted Spurious Emissions</b>                                   | 47 CFR Part 15Subpart C Section 15.247(d)         | ANSI C63.10-2013<br>KDB 558074 D01v04 | PASS   |
| <b>Radiated Spurious Emissions</b>                                       | 47 CFR Part 15Subpart C Section 15.205/15.209     | ANSI C63.10-2013                      | PASS   |
| <b>Restricted bands around fundamental frequency (Radiated Emission)</b> | 47 CFR Part 15Subpart C Section 15.205/15.209     | ANSI C63.10-2013                      | PASS   |

**Remark:**

The tested sample(s) and the sample information are provided by the client.

N/A:The device is only battery operated, the conducted emission at AC mains is not applicable.

Model No.: V100LR,V100LB,V100LW

Only the model V100LR was tested, since the electrical circuit design, layout, components used and internal wiring were identical for the above models, with difference being color of appearance and model name.

## 4 Content

|                                                                            |           |
|----------------------------------------------------------------------------|-----------|
| <b>1 COVER PAGE</b> .....                                                  | <b>1</b>  |
| <b>2 VERSION</b> .....                                                     | <b>2</b>  |
| <b>3 TEST SUMMARY</b> .....                                                | <b>3</b>  |
| <b>4 CONTENT</b> .....                                                     | <b>4</b>  |
| <b>5 TEST REQUIREMENT</b> .....                                            | <b>5</b>  |
| 5.1 TEST SETUP.....                                                        | 5         |
| 5.1.1 For Radiated Emissions test setup.....                               | 5         |
| 5.2 TEST ENVIRONMENT.....                                                  | 6         |
| 5.3 TEST CONDITION.....                                                    | 6         |
| <b>6 GENERAL INFORMATION</b> .....                                         | <b>7</b>  |
| 6.1 CLIENT INFORMATION.....                                                | 7         |
| 6.2 GENERAL DESCRIPTION OF EUT.....                                        | 7         |
| 6.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD.....                 | 7         |
| 6.4 DESCRIPTION OF SUPPORT UNITS.....                                      | 8         |
| 6.5 TEST LOCATION.....                                                     | 8         |
| 6.6 DEVIATION FROM STANDARDS.....                                          | 8         |
| 6.7 ABNORMALITIES FROM STANDARD CONDITIONS.....                            | 8         |
| 6.8 OTHER INFORMATION REQUESTED BY THE CUSTOMER.....                       | 8         |
| 6.9 MEASUREMENT UNCERTAINTY (95% CONFIDENCE LEVELS, K=2).....              | 8         |
| <b>7 EQUIPMENT LIST</b> .....                                              | <b>9</b>  |
| <b>8 RADIO TECHNICAL REQUIREMENTS SPECIFICATION</b> .....                  | <b>11</b> |
| Appendix A): 6dB Occupied Bandwidth.....                                   | 12        |
| Appendix B): Maximum Conducted Average Output Power.....                   | 14        |
| Appendix C): Band-edge for RF Conducted Emissions.....                     | 15        |
| Appendix D): RF Conducted Spurious Emissions.....                          | 17        |
| Appendix E): Power Spectral Density.....                                   | 20        |
| Appendix F): Antenna Requirement.....                                      | 22        |
| Appendix G): Restricted bands around fundamental frequency (Radiated)..... | 23        |
| Appendix H): Radiated Spurious Emissions.....                              | 26        |
| <b>PHOTOGRAPHS OF TEST SETUP</b> .....                                     | <b>31</b> |
| <b>PHOTOGRAPHS OF EUT CONSTRUCTIONAL DETAILS</b> .....                     | <b>33</b> |

## 5 Test Requirement

### 5.1 Test setup

#### 5.1.1 For Radiated Emissions test setup

Radiated Emissions setup:

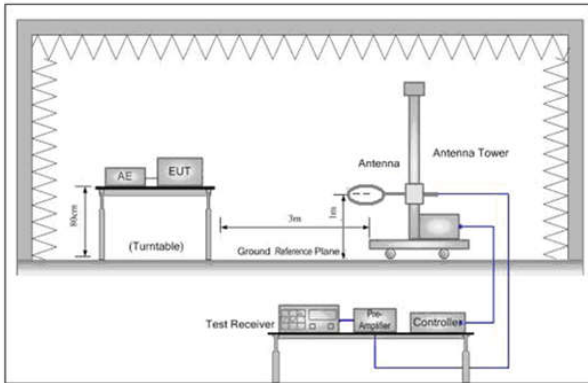


Figure 1. Below 30MHz

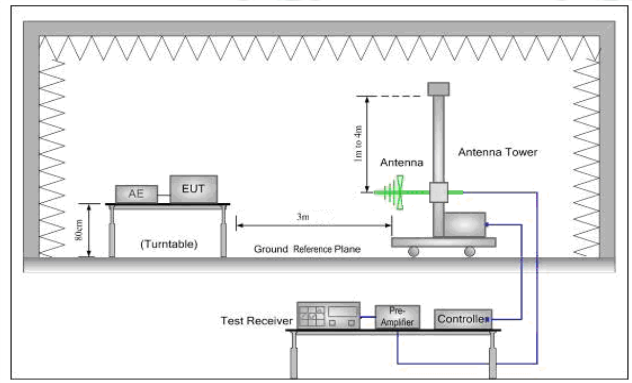


Figure 2. 30MHz to 1GHz

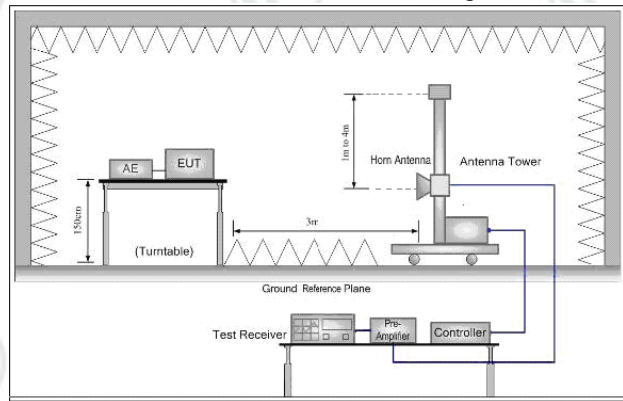


Figure 3. Above 1GHz

## 5.2 Test Environment

|                               |          |
|-------------------------------|----------|
| <b>Operating Environment:</b> |          |
| Temperature:                  | 24.6 °C  |
| Humidity:                     | 55 % RH  |
| Atmospheric Pressure:         | 1010mbar |

## 5.3 Test Condition

Test channel:


| Test Mode          | Tx/Rx                                                                                 | RF Channel |            |            |
|--------------------|---------------------------------------------------------------------------------------|------------|------------|------------|
|                    |                                                                                       | Low(L)     | Middle(M)  | High(H)    |
| GFSK               | 2402MHz ~2480 MHz                                                                     | Channel 1  | Channel 20 | Channel 40 |
|                    |                                                                                       | 2402MHz    | 2440MHz    | 2480MHz    |
| Transmitting mode: | The EUT transmitted the continuous modulation test signal at the specific channel(s). |            |            |            |

## 6 General Information

### 6.1 Client Information

|                          |                                                                                                 |
|--------------------------|-------------------------------------------------------------------------------------------------|
| Applicant:               | Waverly Labs Inc.                                                                               |
| Address of Applicant:    | 19 Morris Ave Brooklyn New York United States 11205                                             |
| Manufacturer:            | Waverly Labs Inc.                                                                               |
| Address of Manufacturer: | 19 Morris Ave Brooklyn New York United States 11205                                             |
| Factory:                 | ShengHai Electronics (Shenzhen) Ltd.                                                            |
| Address of Factory:      | Block 17-19, Hui Ming Ying Industry, Yan Chuan, Song Gang, Baoan County, Shenzhen, China 518105 |

### 6.2 General Description of EUT

|                                  |                                                                                                       |
|----------------------------------|-------------------------------------------------------------------------------------------------------|
| Product Name:                    | Pilot Translating Earpiece                                                                            |
| Model No.(EUT):                  | V100LR,V100LB,V100LW                                                                                  |
| Test Model No.:                  | V100LR                                                                                                |
| Trade mark:                      |  <b>WAVERLY LABS</b> |
| EUT Supports Radios application: | BT4.1 Dual mode, 2402-2480MHz                                                                         |
| Power Supply:                    | Lithium-ion button cell:1x3.7V(Z55)=3.7V                                                              |
| Sample Received Date:            | Oct. 25, 2017                                                                                         |
| Sample tested Date:              | Oct. 25, 2017 Nov. 21, 2017                                                                           |

### 6.3 Product Specification subjective to this standard

|                        |                                          |
|------------------------|------------------------------------------|
| Operation Frequency:   | 2402MHz~2480MHz                          |
| Bluetooth Version:     | 4.1                                      |
| Modulation Technique:  | DSSS                                     |
| Modulation Type:       | GFSK                                     |
| Number of Channel:     | 40                                       |
| Sample Type:           | Portable production                      |
| Test Power Grade:      | Class 1(manufacturer declare )           |
| Test Software of EUT:  | Blue Suite 2.4.8 (manufacturer declare ) |
| Antenna Type and Gain: | Type: Monopole antenna, Gain: 0dBi       |
| Test Voltage:          | Lithium-ion button cell:1x3.7V(Z55)=3.7V |

| Operation Frequency each of channel |           |         |           |         |           |         |           |
|-------------------------------------|-----------|---------|-----------|---------|-----------|---------|-----------|
| Channel                             | Frequency | Channel | Frequency | Channel | Frequency | Channel | Frequency |
| 1                                   | 2402MHz   | 11      | 2422MHz   | 21      | 2442MHz   | 31      | 2462MHz   |
| 2                                   | 2404MHz   | 12      | 2424MHz   | 22      | 2444MHz   | 32      | 2464MHz   |
| 3                                   | 2406MHz   | 13      | 2426MHz   | 23      | 2446MHz   | 33      | 2466MHz   |
| 4                                   | 2408MHz   | 14      | 2428MHz   | 24      | 2448MHz   | 34      | 2468MHz   |
| 5                                   | 2410MHz   | 15      | 2430MHz   | 25      | 2450MHz   | 35      | 2470MHz   |
| 6                                   | 2412MHz   | 16      | 2432MHz   | 26      | 2452MHz   | 36      | 2472MHz   |
| 7                                   | 2414MHz   | 17      | 2434MHz   | 27      | 2454MHz   | 37      | 2474MHz   |
| 8                                   | 2416MHz   | 18      | 2436MHz   | 28      | 2456MHz   | 38      | 2476MHz   |
| 9                                   | 2418MHz   | 19      | 2438MHz   | 29      | 2458MHz   | 39      | 2478MHz   |
| 10                                  | 2420MHz   | 20      | 2440MHz   | 30      | 2460MHz   | 40      | 2480MHz   |

#### 6.4 Description of Support Units

The EUT has been tested independently.

#### 6.5 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd.

Hongwei Industrial Zone, Bao'an 70 District, Shenzhen, Guangdong, China 518101

Telephone: +86 (0) 755 33683668 Fax: +86 (0) 755 33683385

No tests were sub-contracted.

FCC Designation No.: CN1164

#### 6.6 Deviation from Standards

None.

#### 6.7 Abnormalities from Standard Conditions

None.

#### 6.8 Other Information Requested by the Customer

None.

#### 6.9 Measurement Uncertainty (95% confidence levels, k=2)

| No. | Item                            | Measurement Uncertainty |
|-----|---------------------------------|-------------------------|
| 1   | Radio Frequency                 | $7.9 \times 10^{-8}$    |
| 2   | RF power, conducted             | 0.31dB (30MHz-1GHz)     |
|     |                                 | 0.57dB (1GHz-18GHz)     |
| 3   | Radiated Spurious emission test | 4.5dB (30MHz-1GHz)      |
|     |                                 | 4.8dB (1GHz-12.75GHz)   |
| 4   | Conduction emission             | 3.6dB (9kHz to 150kHz)  |
|     |                                 | 3.2dB (150kHz to 30MHz) |
| 5   | Temperature test                | 0.64°C                  |
| 6   | Humidity test                   | 2.8%                    |
| 7   | DC power voltages               | 0.025%                  |



## 7 Equipment List

| RF test system                   |               |                              |               |                        |                            |
|----------------------------------|---------------|------------------------------|---------------|------------------------|----------------------------|
| Equipment                        | Manufacturer  | Model No.                    | Serial Number | Cal. Date (mm-dd-yyyy) | Cal. Due date (mm-dd-yyyy) |
| Signal Generator                 | Keysight      | E8257D                       | MY53401106    | 03-14-2017             | 03-13-2018                 |
| Spectrum Analyzer                | Keysight      | N9010A                       | MY54510339    | 03-14-2017             | 03-13-2018                 |
| Signal Generator                 | Keysight      | N5182B                       | MY53051549    | 03-14-2017             | 03-13-2018                 |
| High-pass filter                 | Sinoscite     | FL3CX03WG18<br>NM12-0398-002 | ---           | 01-11-2017             | 01-10-2018                 |
| High-pass filter                 | MICRO-TRONICS | SPA-F-63029-4                | ---           | 01-11-2017             | 01-10-2018                 |
| band rejection filter            | Sinoscite     | FL5CX01CA09C<br>L12-0395-001 | ---           | 01-11-2017             | 01-10-2018                 |
| band rejection filter            | Sinoscite     | FL5CX01CA08C<br>L12-0393-001 | ---           | 01-11-2017             | 01-10-2018                 |
| band rejection filter            | Sinoscite     | FL5CX02CA04C<br>L12-0396-002 | ---           | 01-11-2017             | 01-10-2018                 |
| band rejection filter            | Sinoscite     | FL5CX02CA03C<br>L12-0394-001 | ---           | 01-11-2017             | 01-10-2018                 |
| DC Power                         | Keysight      | E3642A                       | MY54436035    | 03-14-2017             | 03-13-2018                 |
| PC-1                             | Lenovo        | R4960d                       | ---           | 04-01-2017             | 03-31-2018                 |
| power meter & power sensor       | R&S           | OSP120                       | 101374        | 03-14-2017             | 03-13-2018                 |
| RF control unit                  | JS Tonscend   | JS0806-2                     | 158060006     | 03-14-2017             | 03-13-2018                 |
| BT&WI-FI Automatic test software | JS Tonscend   | JS1120-2                     | ---           | 03-14-2017             | 03-13-2018                 |

| 3M Semi/full-anechoic Chamber    |               |                           |               |                        |                            |
|----------------------------------|---------------|---------------------------|---------------|------------------------|----------------------------|
| Equipment                        | Manufacturer  | Model No.                 | Serial Number | Cal. date (mm-dd-yyyy) | Cal. Due date (mm-dd-yyyy) |
| 3M Chamber & Accessory Equipment | TDK           | SAC-3                     | ---           | 06-05-2016             | 06-05-2019                 |
| TRILOG Broadband Antenna         | SCHWARZBEC K  | VULB9163                  | 9163-484      | 05-23-2017             | 05-22-2018                 |
| Microwave Preamplifier           | Agilent       | 8449B                     | 3008A02425    | 02-16-2017             | 02-15-2018                 |
| Horn Antenna                     | ETS-LINDGREN  | 3117                      | 00057407      | 07-20-2015             | 07-18-2018                 |
| Loop Antenna                     | ETS           | 6502                      | 00071730      | 06-22-2017             | 06-21-2019                 |
| Microwave Preamplifier           | A.H.SYSTEMS   | PAP-1840-60               | 6041.6042     | 06-30-2015             | 06-28-2018                 |
| Horn Antenna                     | A.H.SYSTEMS   | SAS-574 374               | ---           | 06-30-2015             | 06-28-2018                 |
| Spectrum Analyzer                | R&S           | FSP40                     | 100416        | 06-13-2017             | 06-12-2018                 |
| Receiver                         | R&S           | ESCI                      | 100435        | 06-14-2017             | 06-13-2018                 |
| Multi device Controller          | matur         | NCD/070/10711 112         | ---           | 01-11-2017             | 01-10-2018                 |
| LISN                             | schwarzbeck   | NNBM8125                  | 81251547      | 06-13-2017             | 06-12-2018                 |
| LISN                             | schwarzbeck   | NNBM8125                  | 81251548      | 06-13-2017             | 06-12-2018                 |
| Signal Generator                 | Agilent       | E4438C                    | MY45095744    | 03-14-2017             | 03-13-2018                 |
| Signal Generator                 | Keysight      | E8257D                    | MY53401106    | 03-14-2017             | 03-13-2018                 |
| Temperature/ Humidity Indicator  | TAYLOR        | 1451                      | 1905          | 05-08-2017             | 05-07-2018                 |
| Cable line                       | Fulai(7M)     | SF106                     | 5219/6A       | 01-11-2017             | 01-10-2018                 |
| Cable line                       | Fulai(6M)     | SF106                     | 5220/6A       | 01-11-2017             | 01-10-2018                 |
| Cable line                       | Fulai(3M)     | SF106                     | 5216/6A       | 01-11-2017             | 01-10-2018                 |
| Cable line                       | Fulai(3M)     | SF106                     | 5217/6A       | 01-11-2017             | 01-10-2018                 |
| High-pass filter                 | Sinoscite     | FL3CX03WG18 NM12-0398-002 | ---           | 01-11-2017             | 01-10-2018                 |
| High-pass filter                 | MICRO-TRONICS | SPA-F-63029-4             | ---           | 01-11-2017             | 01-10-2018                 |
| band rejection filter            | Sinoscite     | FL5CX01CA09 CL12-0395-001 | ---           | 01-11-2017             | 01-10-2018                 |
| band rejection filter            | Sinoscite     | FL5CX01CA08 CL12-0393-001 | ---           | 01-11-2017             | 01-10-2018                 |
| band rejection filter            | Sinoscite     | FL5CX02CA04 CL12-0396-002 | ---           | 01-11-2017             | 01-10-2018                 |
| band rejection filter            | Sinoscite     | FL5CX02CA03 CL12-0394-001 | ---           | 01-11-2017             | 01-10-2018                 |

## 8 Radio Technical Requirements Specification

### Reference documents for testing:

| No. | Identity         | Document Title                                                     |
|-----|------------------|--------------------------------------------------------------------|
| 1   | FCC Part15C      | Subpart C-Intentional Radiators                                    |
| 2   | ANSI C63.10-2013 | American National Standard for Testing Unlicensed Wireless Devices |

### Test Results List:

| Test Requirement                  | Test method                | Test item                                                         | Verdict | Note        |
|-----------------------------------|----------------------------|-------------------------------------------------------------------|---------|-------------|
| Part15C Section 15.247 (a)(2)     | ANSI C63.10/<br>KDB 558074 | 6dB Occupied Bandwidth                                            | PASS    | Appendix A) |
| Part15C Section 15.247 (b)(3)     | ANSI C63.10/<br>KDB 558074 | Maximum Conducted Average Output Power                            | PASS    | Appendix B) |
| Part15C Section 15.247(d)         | ANSI C63.10/<br>KDB 558074 | Band-edge for RF Conducted Emissions                              | PASS    | Appendix C) |
| Part15C Section 15.247(d)         | ANSI C63.10/<br>KDB 558074 | RF Conducted Spurious Emissions                                   | PASS    | Appendix D) |
| Part15C Section 15.247 (e)        | ANSI C63.10/<br>KDB 558074 | Power Spectral Density                                            | PASS    | Appendix E) |
| Part15C Section 15.203/15.247 (c) | ANSI C63.10                | Antenna Requirement                                               | PASS    | Appendix F) |
| Part15C Section 15.207            | ANSI C63.10                | AC Power Line Conducted Emission                                  | N/A     | N/A         |
| Part15C Section 15.205/15.209     | ANSI C63.10                | Restricted bands around fundamental frequency (Radiated Emission) | PASS    | Appendix G) |
| Part15C Section 15.205/15.209     | ANSI C63.10                | Radiated Spurious Emissions                                       | PASS    | Appendix H) |

**Appendix A): 6dB Occupied Bandwidth  
Test Result**

| Mode | Channel | 6dB Bandwidth [MHz] | 99% OBW[MHz] | Verdict | Remark         |
|------|---------|---------------------|--------------|---------|----------------|
| BLE  | LCH     | 0.6909              | 1.0451       | PASS    | Peak<br>dector |
| BLE  | MCH     | 0.6882              | 1.0451       | PASS    |                |
| BLE  | HCH     | 0.6966              | 1.0435       | PASS    |                |

**Test Graphs**

| Graphs |                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LCH    | <p>Keyight Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.402000000 GHz    Center Freq: 2.402000000 GHz    Radio Std: None    Frequency</p> <p>Ref Offset 19.08 dB    Ref 15.00 dBm</p> <p>Span 3 MHz</p> <p>Occupied Bandwidth <b>1.0451 MHz</b>    Total Power 13.0 dBm</p> <p>Transmit Freq Error 6.480 kHz    OBW Power 99.00 %</p> <p>x dB Bandwidth 690.9 kHz    x dB -6.00 dB</p>  |
| MCH    | <p>Keyight Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.440000000 GHz    Center Freq: 2.440000000 GHz    Radio Std: None    Frequency</p> <p>Ref Offset 19.02 dB    Ref 29.02 dBm</p> <p>Span 3 MHz</p> <p>Occupied Bandwidth <b>1.0451 MHz</b>    Total Power 14.0 dBm</p> <p>Transmit Freq Error -1.521 kHz    OBW Power 99.00 %</p> <p>x dB Bandwidth 688.2 kHz    x dB -6.00 dB</p> |
| HCH    | <p>Keyight Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.480000000 GHz    Center Freq: 2.480000000 GHz    Radio Std: None    Frequency</p> <p>Ref Offset 19.05 dB    Ref 29.05 dBm</p> <p>Span 3 MHz</p> <p>Occupied Bandwidth <b>1.0435 MHz</b>    Total Power 13.9 dBm</p> <p>Transmit Freq Error -2.499 kHz    OBW Power 99.00 %</p> <p>x dB Bandwidth 696.6 kHz    x dB -6.00 dB</p> |

## Appendix B): Maximum Conducted Average Output Power

### Test Result

| Mode | Channel | Duty cycle | Duty cycle Correction Factor(dB) | Read Value [dBm] | Average Output Power[dBm] | Verdict |
|------|---------|------------|----------------------------------|------------------|---------------------------|---------|
| BLE  | LCH     | 68.00%     | 1.68                             | 5.11             | 6.79                      | PASS    |
| BLE  | MCH     | 67.46%     | 1.71                             | 6.01             | 7.72                      | PASS    |
| BLE  | HCH     | 67.46%     | 1.71                             | 6.10             | 7.81                      | PASS    |

Note:Output Power=Read Value+Duty cycle Correction Factor,and the Read Value was Read by power meter

**Appendix C): Band-edge for RF Conducted Emissions**  
**Result Table**

| Mode | Channel | Carrier Power[dBm] | Max.Spurious Level [dBm] | Limit [dBm] | Verdict |
|------|---------|--------------------|--------------------------|-------------|---------|
| BLE  | LCH     | 6.429              | -61.152                  | -13.57      | PASS    |
| BLE  | HCH     | 7.386              | -53.233                  | -12.61      | PASS    |

**Test Graphs**



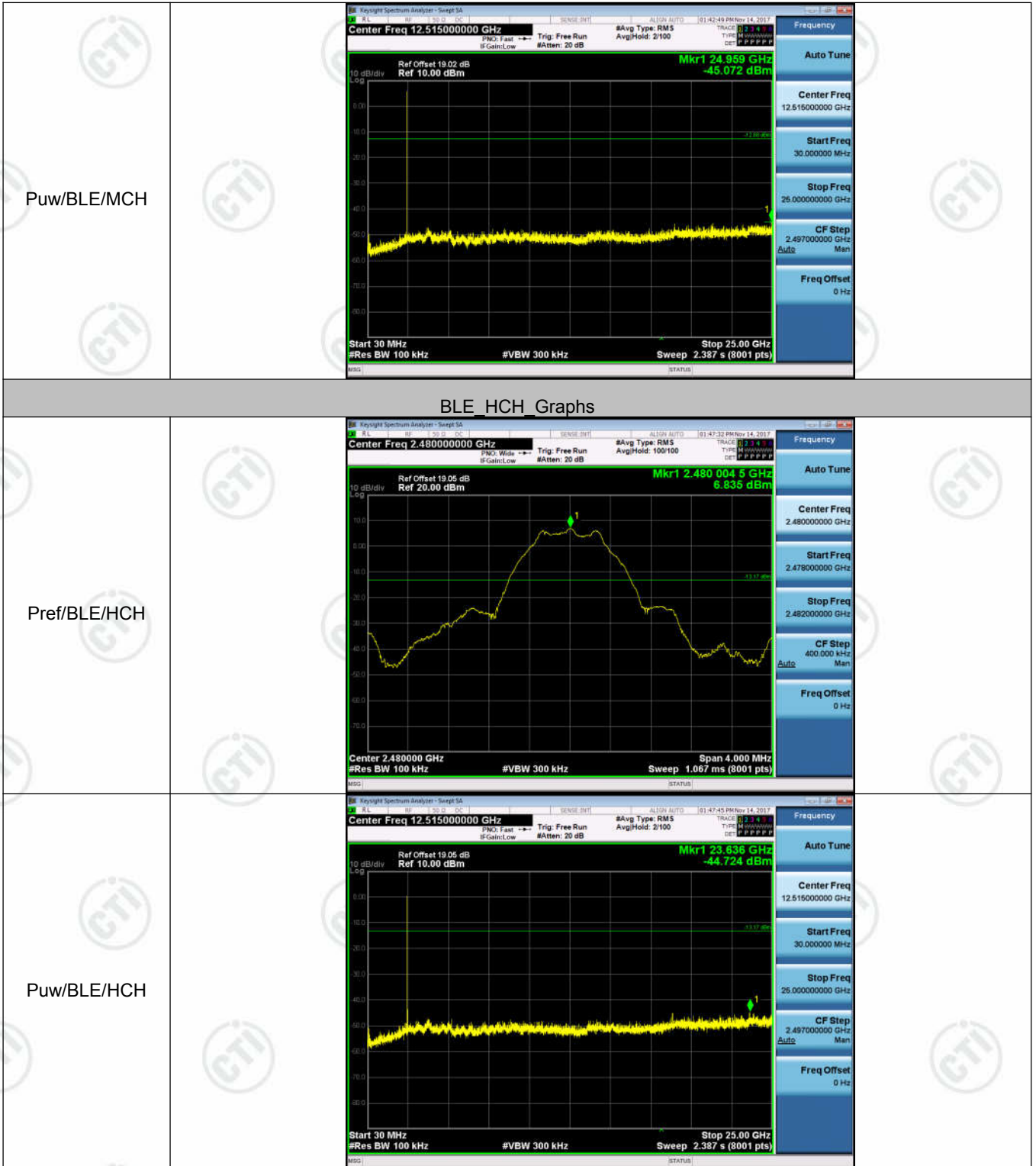


**Appendix D): RF Conducted Spurious Emissions**  
**Result Table**

| Mode | Channel | Pref [dBm] | Puw[dBm] | Verdict |
|------|---------|------------|----------|---------|
| BLE  | LCH     | 6.307      | <Limit   | PASS    |
| BLE  | MCH     | 7.320      | <Limit   | PASS    |
| BLE  | HCH     | 6.835      | <Limit   | PASS    |

**Test Graphs**

| BLE_LCH_Graphs |                                                                                                                                                                                                                                                                            |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Pref/BLE/LCH   | <p>Key parameters for Pref/BLE/LCH graph:<br/>           Center Freq: 2.40200000 GHz<br/>           Mkr1: 2.4020040 GHz, 6.307 dBm<br/>           Span: 4.000 MHz<br/>           Res BW: 100 kHz<br/>           VBW: 300 kHz<br/>           Sweep: 1.067 ms (8001 pts)</p> |
| Puw/BLE/LCH    | <p>Key parameters for Puw/BLE/LCH graph:<br/>           Center Freq: 12.51500000 GHz<br/>           Mkr1: 23.655 GHz, -44.894 dBm<br/>           Span: 25.00 GHz<br/>           Res BW: 100 kHz<br/>           VBW: 300 kHz<br/>           Sweep: 2.387 s (8001 pts)</p>   |
| BLE_MCH_Graphs |                                                                                                                                                                                                                                                                            |
| Pref/BLE/MCH   | <p>Key parameters for Pref/BLE/MCH graph:<br/>           Center Freq: 2.44000000 GHz<br/>           Mkr1: 2.4400005 GHz, 7.320 dBm<br/>           Span: 4.000 MHz<br/>           Res BW: 100 kHz<br/>           VBW: 300 kHz<br/>           Sweep: 1.067 ms (8001 pts)</p> |



**Appendix E): Power Spectral Density  
Result Table**

| Mode | Channel | PSD [dBm/3kHz] | Limit [dBm/3kHz] | Verdict |
|------|---------|----------------|------------------|---------|
| BLE  | LCH     | -9.110         | 8                | PASS    |
| BLE  | MCH     | -7.973         | 8                | PASS    |
| BLE  | HCH     | -8.564         | 8                | PASS    |

**Test Graphs**

| Graphs |                                                                                                                                                                                                                                                                                                    |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LCH    | <p>Keyight Spectrum Analyzer - Sweep SA<br/>Center Freq 2.40200000 GHz #Avg Type: RMS #Attenu: 26/100<br/>Ref Offset 19.08 dB Ref 10.00 dBm<br/>Mkr1 2.40186613 GHz -9.110 dBm<br/>10 dB/div<br/>Center 2.4020000 GHz #Res BW 3.0 kHz #VBW 10 kHz Sweep Span 1.500 MHz<br/>158.4 ms (8001 pts)</p> |
| MCH    | <p>Keyight Spectrum Analyzer - Sweep SA<br/>Center Freq 2.44000000 GHz #Avg Type: RMS #Attenu: 26/100<br/>Ref Offset 19.02 dB Ref 10.00 dBm<br/>Mkr1 2.43986519 GHz -7.973 dBm<br/>10 dB/div<br/>Center 2.4400000 GHz #Res BW 3.0 kHz #VBW 10 kHz Sweep Span 1.500 MHz<br/>158.4 ms (8001 pts)</p> |
| HCH    | <p>Keyight Spectrum Analyzer - Sweep SA<br/>Center Freq 2.48000000 GHz #Avg Type: RMS #Attenu: 27/100<br/>Ref Offset 19.05 dB Ref 10.00 dBm<br/>Mkr1 2.47995500 GHz -8.564 dBm<br/>10 dB/div<br/>Center 2.4800000 GHz #Res BW 3.0 kHz #VBW 10 kHz Sweep Span 1.500 MHz<br/>158.4 ms (8001 pts)</p> |

## Appendix F): Antenna Requirement

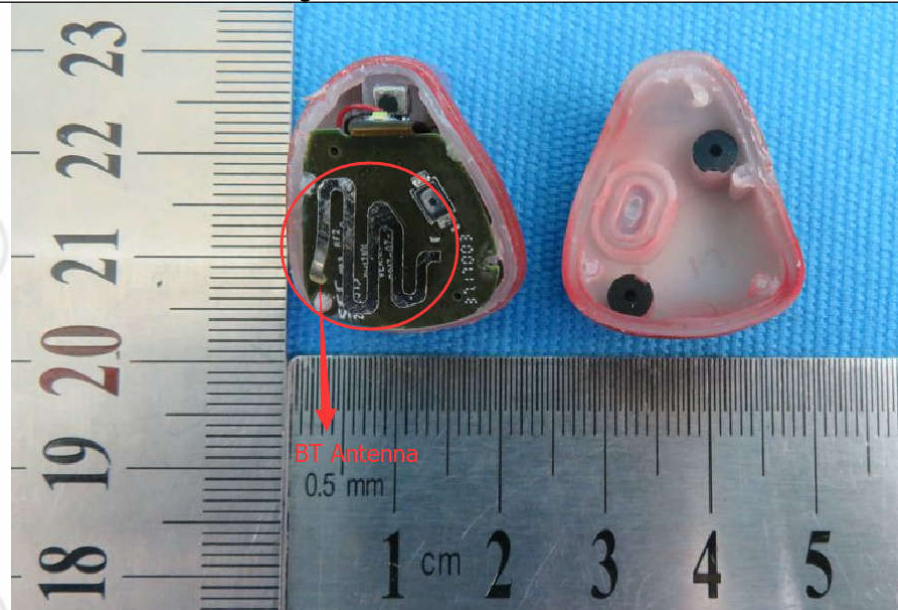
### 15.203 requirement:

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 or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

### 15.247(b) (4) requirement:

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### EUT Antenna:



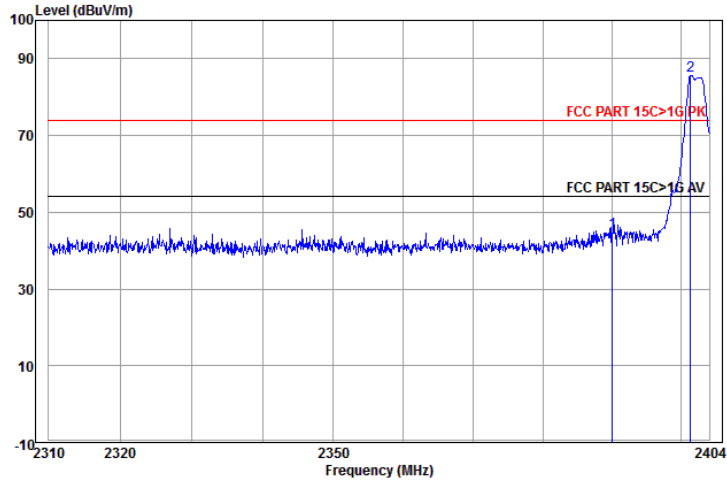
The antenna is Monopole antenna and no consideration of replacement. The best case gain of the antenna is 0dBi.

## Appendix G): Restricted bands around fundamental frequency (Radiated)

| Receiver Setup: | <table border="1"> <thead> <tr> <th>Frequency</th> <th>Detector</th> <th>RBW</th> <th>VBW</th> <th>Remark</th> </tr> </thead> <tbody> <tr> <td>30MHz-1GHz</td> <td>Quasi-peak</td> <td>120kHz</td> <td>300kHz</td> <td>Quasi-peak</td> </tr> <tr> <td rowspan="2">Above 1GHz</td> <td>Peak</td> <td>1MHz</td> <td>3MHz</td> <td>Peak</td> </tr> <tr> <td>Peak</td> <td>1MHz</td> <td>10Hz</td> <td>Average</td> </tr> </tbody> </table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Frequency        | Detector                 | RBW        | VBW         | Remark | 30MHz-1GHz       | Quasi-peak   | 120kHz | 300kHz           | Quasi-peak    | Above 1GHz | Peak             | 1MHz        | 3MHz | Peak             | Peak       | 1MHz | 10Hz          | Average |            |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|--------------------------|------------|-------------|--------|------------------|--------------|--------|------------------|---------------|------------|------------------|-------------|------|------------------|------------|------|---------------|---------|------------|
| Frequency       | Detector                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | RBW              | VBW                      | Remark     |             |        |                  |              |        |                  |               |            |                  |             |      |                  |            |      |               |         |            |
| 30MHz-1GHz      | Quasi-peak                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 120kHz           | 300kHz                   | Quasi-peak |             |        |                  |              |        |                  |               |            |                  |             |      |                  |            |      |               |         |            |
| Above 1GHz      | Peak                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1MHz             | 3MHz                     | Peak       |             |        |                  |              |        |                  |               |            |                  |             |      |                  |            |      |               |         |            |
|                 | Peak                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1MHz             | 10Hz                     | Average    |             |        |                  |              |        |                  |               |            |                  |             |      |                  |            |      |               |         |            |
| Test Procedure: | <p><b>Below 1GHz test procedure as below:</b></p> <ol style="list-style-type: none"> <li>The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.</li> <li>The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</li> <li>The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.</li> <li>For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable was turned from 0 degrees to 360 degrees to find the maximum reading.</li> <li>The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</li> <li>Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channel</li> </ol> <p><b>Above 1GHz test procedure as below:</b></p> <ol style="list-style-type: none"> <li>Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber change form table 0.8 meter to 1.5 meter( Above 18GHz the distance is 1 meter and table is 1.5 meter).</li> <li>. Test the EUT in the lowest channel , the Highest channel</li> <li>The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case.</li> <li>Repeat above procedures until all frequencies measured was complete.</li> </ol> |                  |                          |            |             |        |                  |              |        |                  |               |            |                  |             |      |                  |            |      |               |         |            |
| Limit:          | <table border="1"> <thead> <tr> <th>Frequency</th> <th>Limit (dB<math>\mu</math>V/m @3m)</th> <th>Remark</th> </tr> </thead> <tbody> <tr> <td>30MHz-88MHz</td> <td>40.0</td> <td>Quasi-peak Value</td> </tr> <tr> <td>88MHz-216MHz</td> <td>43.5</td> <td>Quasi-peak Value</td> </tr> <tr> <td>216MHz-960MHz</td> <td>46.0</td> <td>Quasi-peak Value</td> </tr> <tr> <td>960MHz-1GHz</td> <td>54.0</td> <td>Quasi-peak Value</td> </tr> <tr> <td rowspan="2">Above 1GHz</td> <td>54.0</td> <td>Average Value</td> </tr> <tr> <td>74.0</td> <td>Peak Value</td> </tr> </tbody> </table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Frequency        | Limit (dB $\mu$ V/m @3m) | Remark     | 30MHz-88MHz | 40.0   | Quasi-peak Value | 88MHz-216MHz | 43.5   | Quasi-peak Value | 216MHz-960MHz | 46.0       | Quasi-peak Value | 960MHz-1GHz | 54.0 | Quasi-peak Value | Above 1GHz | 54.0 | Average Value | 74.0    | Peak Value |
| Frequency       | Limit (dB $\mu$ V/m @3m)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Remark           |                          |            |             |        |                  |              |        |                  |               |            |                  |             |      |                  |            |      |               |         |            |
| 30MHz-88MHz     | 40.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Quasi-peak Value |                          |            |             |        |                  |              |        |                  |               |            |                  |             |      |                  |            |      |               |         |            |
| 88MHz-216MHz    | 43.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Quasi-peak Value |                          |            |             |        |                  |              |        |                  |               |            |                  |             |      |                  |            |      |               |         |            |
| 216MHz-960MHz   | 46.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Quasi-peak Value |                          |            |             |        |                  |              |        |                  |               |            |                  |             |      |                  |            |      |               |         |            |
| 960MHz-1GHz     | 54.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Quasi-peak Value |                          |            |             |        |                  |              |        |                  |               |            |                  |             |      |                  |            |      |               |         |            |
| Above 1GHz      | 54.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Average Value    |                          |            |             |        |                  |              |        |                  |               |            |                  |             |      |                  |            |      |               |         |            |
|                 | 74.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Peak Value       |                          |            |             |        |                  |              |        |                  |               |            |                  |             |      |                  |            |      |               |         |            |

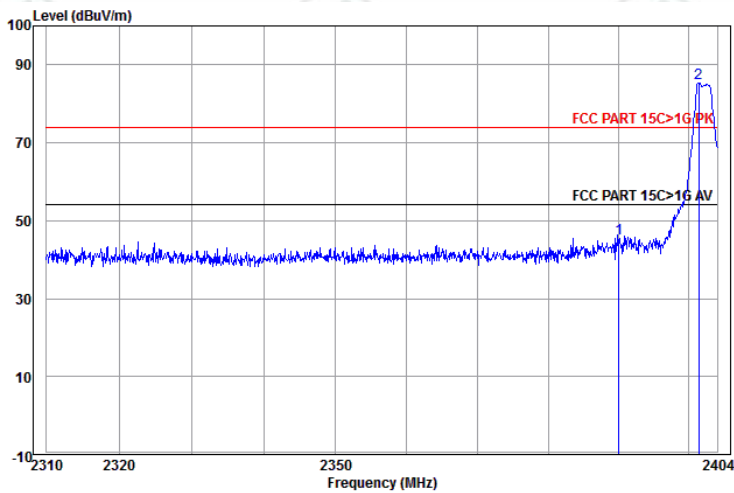
**Test plot as follows:**

|                      |                      |                          |              |
|----------------------|----------------------|--------------------------|--------------|
| Worse case mode:     | GFSK                 |                          |              |
| Frequency: 2390.0MHz | Test channel: Lowest | Polarization: Horizontal | Remark: Peak |



|      | Ant Freq | Cable Factor | Preamp Loss | Read Level | Level  | Limit Line | Over Limit | Pol/Phase | Remark          |
|------|----------|--------------|-------------|------------|--------|------------|------------|-----------|-----------------|
|      | MHz      | dB/m         | dB          | dBuV       | dBuV/m | dBuV/m     | dB         |           |                 |
| 1    | 2390.000 | 32.53        | 3.07        | 44.03      | 53.30  | 44.87      | 74.00      | -29.13    | Horizontal Peak |
| 2 pp | 2401.317 | 32.56        | 3.07        | 44.04      | 94.01  | 85.60      | 74.00      | 11.60     | Horizontal Peak |

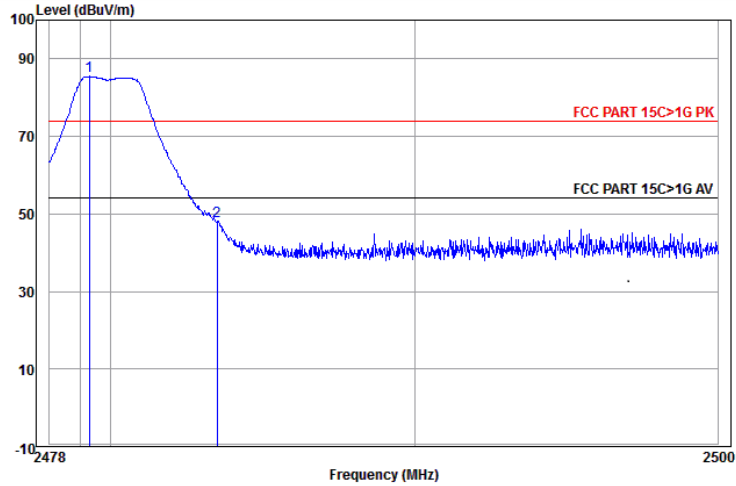
|                      |                      |                        |              |
|----------------------|----------------------|------------------------|--------------|
| Worse case mode:     | GFSK                 |                        |              |
| Frequency: 2390.0MHz | Test channel: Lowest | Polarization: Vertical | Remark: Peak |



|      | Ant Freq | Cable Factor | Preamp Loss | Read Level | Level  | Limit Line | Over Limit | Pol/Phase | Remark        |
|------|----------|--------------|-------------|------------|--------|------------|------------|-----------|---------------|
|      | MHz      | dB/m         | dB          | dBuV       | dBuV/m | dBuV/m     | dB         |           |               |
| 1    | 2390.000 | 32.53        | 3.07        | 44.03      | 53.78  | 45.35      | 74.00      | -28.65    | Vertical Peak |
| 2 pp | 2401.412 | 32.56        | 3.07        | 44.04      | 93.82  | 85.41      | 74.00      | 11.41     | Vertical Peak |

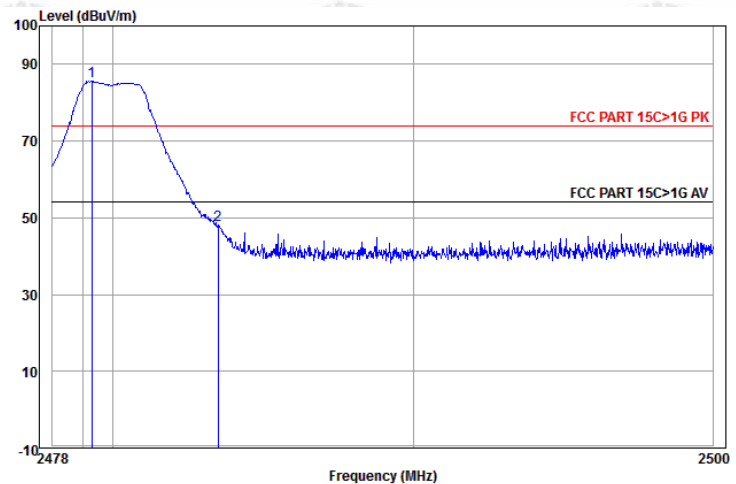


|                      |                       |                          |              |
|----------------------|-----------------------|--------------------------|--------------|
| Worse case mode:     | GFSK                  |                          |              |
| Frequency: 2483.5MHz | Test channel: Highest | Polarization: Horizontal | Remark: Peak |



|      | Ant Freq | Cable Factor | Preamp Loss | Read Level | Level | Limit Line | Over Limit | Pol/Phase | Remark          |
|------|----------|--------------|-------------|------------|-------|------------|------------|-----------|-----------------|
|      | MHz      | dB/m         | dB          | dB         | dBuV  | dBuV/m     | dBuV/m     | dB        |                 |
| 1 pp | 2479.314 | 32.71        | 3.12        | 44.14      | 93.87 | 85.56      | 74.00      | 11.56     | Horizontal Peak |
| 2    | 2483.500 | 32.71        | 3.12        | 44.14      | 56.35 | 48.04      | 74.00      | -25.96    | Horizontal Peak |

|                      |                       |                        |              |
|----------------------|-----------------------|------------------------|--------------|
| Worse case mode:     | GFSK                  |                        |              |
| Frequency: 2483.5MHz | Test channel: Highest | Polarization: Vertical | Remark: Peak |



|      | Ant Freq | Cable Factor | Preamp Loss | Read Level | Level | Limit Line | Over Limit | Pol/Phase | Remark        |
|------|----------|--------------|-------------|------------|-------|------------|------------|-----------|---------------|
|      | MHz      | dB/m         | dB          | dB         | dBuV  | dBuV/m     | dBuV/m     | dB        |               |
| 1 pp | 2479.314 | 32.71        | 3.12        | 44.14      | 93.86 | 85.55      | 74.00      | 11.55     | Vertical Peak |
| 2    | 2483.500 | 32.71        | 3.12        | 44.14      | 56.46 | 48.15      | 74.00      | -25.85    | Vertical Peak |

**Note:**

1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Pre-amplifier. The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading - Correct Factor

Correct Factor = Pre-amplifier Factor - Antenna Factor - Cable Factor

## Appendix H): Radiated Spurious Emissions

| Receiver Setup: | Frequency         | Detector   | RBW    | VBW    | Remark     |
|-----------------|-------------------|------------|--------|--------|------------|
|                 | 0.009MHz-0.090MHz | Peak       | 10kHz  | 30kHz  | Peak       |
|                 | 0.009MHz-0.090MHz | Average    | 10kHz  | 30kHz  | Average    |
|                 | 0.090MHz-0.110MHz | Quasi-peak | 10kHz  | 30kHz  | Quasi-peak |
|                 | 0.110MHz-0.490MHz | Peak       | 10kHz  | 30kHz  | Peak       |
|                 | 0.110MHz-0.490MHz | Average    | 10kHz  | 30kHz  | Average    |
|                 | 0.490MHz -30MHz   | Quasi-peak | 10kHz  | 30kHz  | Quasi-peak |
|                 | 30MHz-1GHz        | Quasi-peak | 120kHz | 300kHz | Quasi-peak |
|                 | Above 1GHz        | Peak       | 1MHz   | 3MHz   | Peak       |
|                 |                   | Peak       | 1MHz   | 10Hz   | Average    |

**Test Procedure:**

**Below 1GHz test procedure as below:**

- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

**Above 1GHz test procedure as below:**

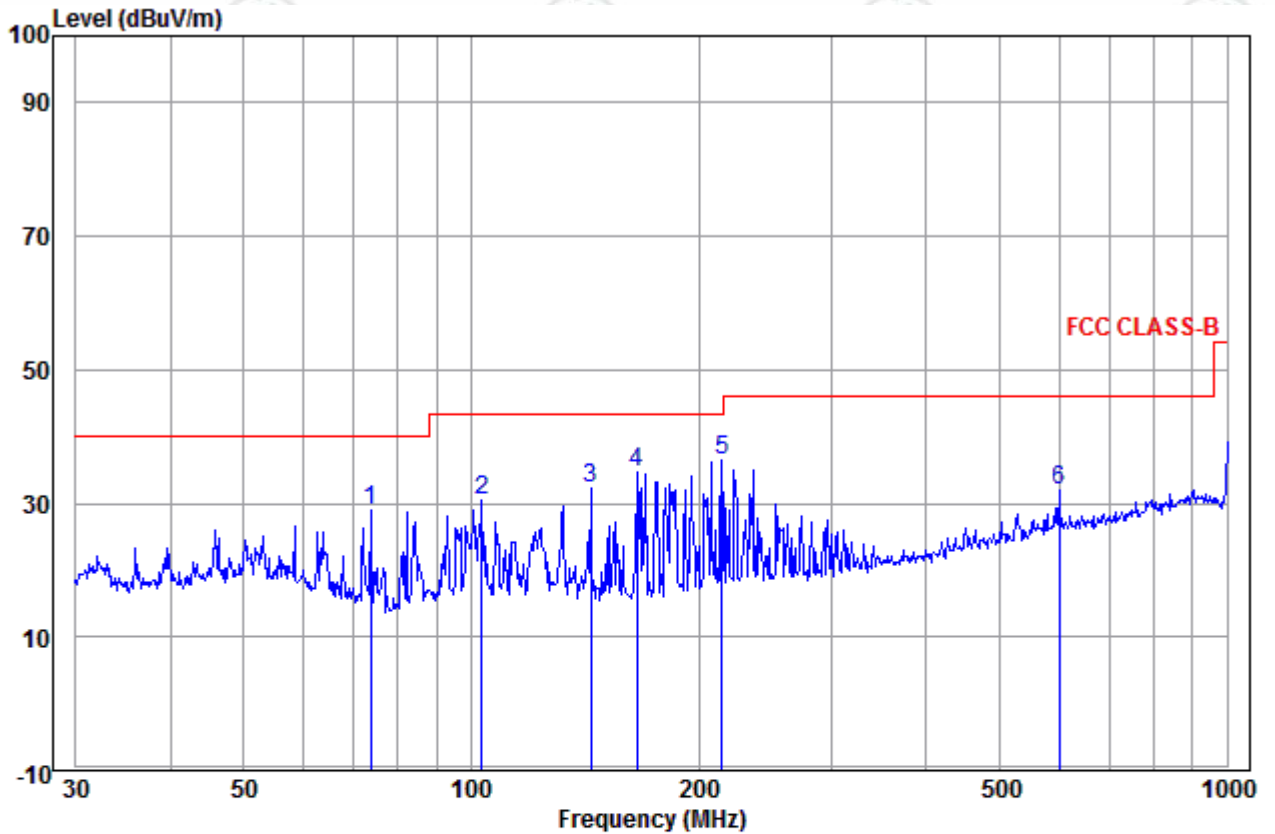
- Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 meter to 1.5 meter (Above 18GHz the distance is 1 meter and table is 1.5 meter).
- Test the EUT in the lowest channel ,the middle channel ,the Highest channel
- The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case.
- Repeat above procedures until all frequencies measured was complete.

| Limit: | Frequency         | Field strength (microvolt/meter) | Limit (dB $\mu$ V/m) | Remark     | Measurement distance (m) |
|--------|-------------------|----------------------------------|----------------------|------------|--------------------------|
|        | 0.009MHz-0.490MHz | 2400/F(kHz)                      | -                    | -          | 300                      |
|        | 0.490MHz-1.705MHz | 24000/F(kHz)                     | -                    | -          | 30                       |
|        | 1.705MHz-30MHz    | 30                               | -                    | -          | 30                       |
|        | 30MHz-88MHz       | 100                              | 40.0                 | Quasi-peak | 3                        |
|        | 88MHz-216MHz      | 150                              | 43.5                 | Quasi-peak | 3                        |
|        | 216MHz-960MHz     | 200                              | 46.0                 | Quasi-peak | 3                        |
|        | 960MHz-1GHz       | 500                              | 54.0                 | Quasi-peak | 3                        |
|        | Above 1GHz        | 500                              | 54.0                 | Average    | 3                        |

Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

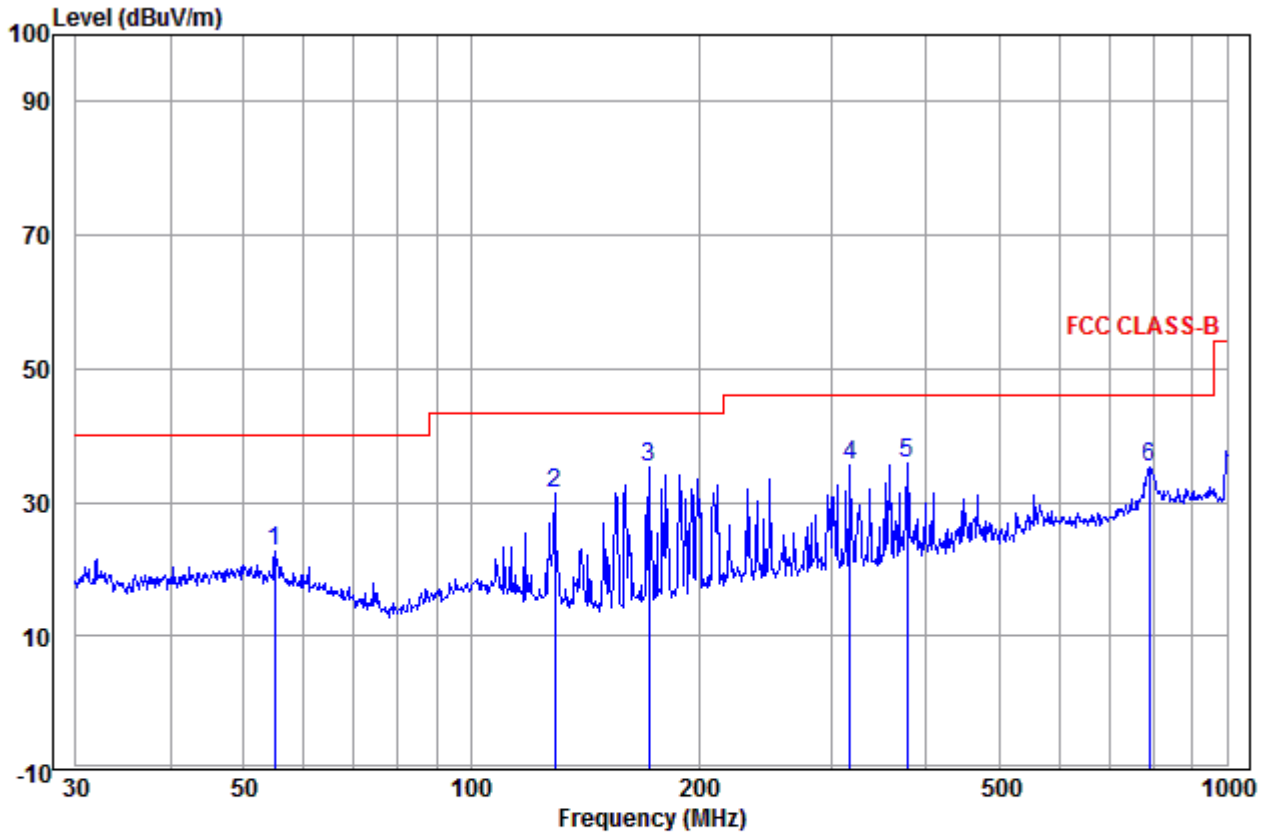
**Radiated Spurious Emissions test Data:  
Radiated Emission below 1GHz**

|                 |              |          |
|-----------------|--------------|----------|
| 30MHz~1GHz (QP) |              |          |
| Test mode:      | Transmitting | Vertical |



|      | Ant Freq | Ant Factor | Cable Loss | Read Level | Limit Line | Over Limit | Pol/Phase | Remark      |
|------|----------|------------|------------|------------|------------|------------|-----------|-------------|
|      | MHz      | dB/m       | dB         | dBuV       | dBuV/m     | dBuV/m     | dB        |             |
| 1    | 73.617   | 9.72       | 0.31       | 18.79      | 28.82      | 40.00      | -11.18    | Vertical QP |
| 2    | 103.442  | 12.19      | 0.59       | 17.64      | 30.42      | 43.50      | -13.08    | Vertical QP |
| 3    | 143.830  | 9.18       | 0.61       | 22.54      | 32.33      | 43.50      | -11.17    | Vertical QP |
| 4    | 165.487  | 9.72       | 0.78       | 24.19      | 34.69      | 43.50      | -8.81     | Vertical QP |
| 5 pp | 214.514  | 11.85      | 1.18       | 23.45      | 36.48      | 43.50      | -7.02     | Vertical QP |
| 6    | 599.321  | 18.69      | 1.83       | 11.41      | 31.93      | 46.00      | -14.07    | Vertical QP |

|            |              |            |
|------------|--------------|------------|
| Test mode: | Transmitting | Horizontal |
|------------|--------------|------------|



|      | Ant Freq | Ant Factor | Cable Loss | Read Level | Limit Level | Over Limit | Pol/Phase | Remark        |
|------|----------|------------|------------|------------|-------------|------------|-----------|---------------|
|      | MHz      | dB/m       | dB         | dBuV       | dBuV/m      | dB         |           |               |
| 1    | 55.027   | 13.81      | 0.16       | 8.55       | 22.52       | 40.00      | -17.48    | Horizontal QP |
| 2    | 129.015  | 10.18      | 0.60       | 20.58      | 31.36       | 43.50      | -12.14    | Horizontal QP |
| 3 pp | 171.995  | 10.08      | 0.84       | 24.21      | 35.13       | 43.50      | -8.37     | Horizontal QP |
| 4    | 317.701  | 13.77      | 1.16       | 20.70      | 35.63       | 46.00      | -10.37    | Horizontal QP |
| 5    | 377.259  | 14.85      | 1.32       | 19.58      | 35.75       | 46.00      | -10.25    | Horizontal QP |
| 6    | 790.619  | 19.75      | 2.47       | 12.96      | 35.18       | 46.00      | -10.82    | Horizontal QP |

**Transmitter Emission above 1GHz**

| Worse case mode: |                       | GFSK            |                  | Test channel:     |                | Lowest              | Remark: Peak    |        |                 |
|------------------|-----------------------|-----------------|------------------|-------------------|----------------|---------------------|-----------------|--------|-----------------|
| Frequency (MHz)  | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Gain (dB) | Read Level (dBμV) | Level (dBμV/m) | Limit Line (dBμV/m) | Over Limit (dB) | Result | Antenna Polaxis |
| 1241.562         | 30.32                 | 1.93            | 44.33            | 44.98             | 32.90          | 74.00               | -41.10          | Pass   | H               |
| 1533.648         | 30.93                 | 2.33            | 43.96            | 44.53             | 33.83          | 74.00               | -40.17          | Pass   | H               |
| 3776.385         | 32.96                 | 4.02            | 44.62            | 46.08             | 38.44          | 74.00               | -35.56          | Pass   | H               |
| 4804.000         | 34.69                 | 5.98            | 44.60            | 43.50             | 39.57          | 74.00               | -34.43          | Pass   | H               |
| 7206.000         | 36.42                 | 6.97            | 44.77            | 43.36             | 41.98          | 74.00               | -32.02          | Pass   | H               |
| 9608.000         | 37.88                 | 6.98            | 45.58            | 43.47             | 42.75          | 74.00               | -31.25          | Pass   | H               |
| 1185.958         | 30.19                 | 1.84            | 44.40            | 44.93             | 32.56          | 74.00               | -41.44          | Pass   | V               |
| 1518.111         | 30.90                 | 2.31            | 43.98            | 45.53             | 34.76          | 74.00               | -39.24          | Pass   | V               |
| 3738.129         | 32.99                 | 3.99            | 44.62            | 46.34             | 38.70          | 74.00               | -35.30          | Pass   | V               |
| 4804.000         | 34.69                 | 5.98            | 44.60            | 43.21             | 39.28          | 74.00               | -34.72          | Pass   | V               |
| 7206.000         | 36.42                 | 6.97            | 44.77            | 42.98             | 41.60          | 74.00               | -32.40          | Pass   | V               |
| 9608.000         | 37.88                 | 6.98            | 45.58            | 41.93             | 41.21          | 74.00               | -32.79          | Pass   | V               |

| Worse case mode: |                       | GFSK            |                  | Test channel:     |                | Middle              | Remark: Peak    |        |                 |
|------------------|-----------------------|-----------------|------------------|-------------------|----------------|---------------------|-----------------|--------|-----------------|
| Frequency (MHz)  | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Gain (dB) | Read Level (dBμV) | Level (dBμV/m) | Limit Line (dBμV/m) | Over Limit (dB) | Result | Antenna Polaxis |
| 1179.935         | 30.18                 | 1.83            | 44.41            | 46.83             | 34.43          | 74.00               | -39.57          | Pass   | H               |
| 1533.648         | 30.93                 | 2.33            | 43.96            | 45.96             | 35.26          | 74.00               | -38.74          | Pass   | H               |
| 3766.785         | 32.97                 | 4.02            | 44.62            | 46.73             | 39.10          | 74.00               | -34.90          | Pass   | H               |
| 4880.000         | 34.85                 | 6.13            | 44.60            | 44.40             | 40.78          | 74.00               | -33.22          | Pass   | H               |
| 7320.000         | 36.43                 | 6.85            | 44.87            | 42.61             | 41.02          | 74.00               | -32.98          | Pass   | H               |
| 9760.000         | 38.05                 | 7.12            | 45.55            | 43.86             | 43.48          | 74.00               | -30.52          | Pass   | H               |
| 1238.405         | 30.32                 | 1.92            | 44.33            | 45.88             | 33.79          | 74.00               | -40.21          | Pass   | V               |
| 1529.749         | 30.93                 | 2.33            | 43.96            | 45.79             | 35.09          | 74.00               | -38.91          | Pass   | V               |
| 3776.385         | 32.96                 | 4.02            | 44.62            | 47.00             | 39.36          | 74.00               | -34.64          | Pass   | V               |
| 4880.000         | 34.85                 | 6.13            | 44.60            | 43.87             | 40.25          | 74.00               | -33.75          | Pass   | V               |
| 7320.000         | 36.43                 | 6.85            | 44.87            | 44.02             | 42.43          | 74.00               | -31.57          | Pass   | V               |
| 9760.000         | 38.05                 | 7.12            | 45.55            | 43.92             | 43.54          | 74.00               | -30.46          | Pass   | V               |

| Worse case mode: |                       | GFSK            |                  | Test channel:     |                | Highest             | Remark: Peak    |        |                 |
|------------------|-----------------------|-----------------|------------------|-------------------|----------------|---------------------|-----------------|--------|-----------------|
| Frequency (MHz)  | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Gain (dB) | Read Level (dBμV) | Level (dBμV/m) | Limit Line (dBμV/m) | Over Limit (dB) | Result | Antenna Polaxis |
| 1299.773         | 30.46                 | 2.01            | 44.25            | 45.56             | 33.78          | 74.00               | -40.22          | Pass   | H               |
| 1634.419         | 31.12                 | 2.45            | 43.85            | 45.52             | 35.24          | 74.00               | -38.76          | Pass   | H               |
| 3766.785         | 32.97                 | 4.02            | 44.62            | 46.63             | 39.00          | 74.00               | -35.00          | Pass   | H               |
| 4960.000         | 35.02                 | 6.29            | 44.60            | 42.75             | 39.46          | 74.00               | -34.54          | Pass   | H               |
| 7440.000         | 36.45                 | 6.73            | 44.97            | 43.20             | 41.41          | 74.00               | -32.59          | Pass   | H               |
| 9920.000         | 38.22                 | 7.26            | 45.52            | 43.50             | 43.46          | 74.00               | -30.54          | Pass   | H               |
| 1367.659         | 30.60                 | 2.11            | 44.16            | 47.78             | 36.33          | 74.00               | -37.67          | Pass   | V               |
| 1814.218         | 31.42                 | 2.65            | 43.67            | 45.59             | 35.99          | 74.00               | -38.01          | Pass   | V               |
| 4096.875         | 33.05                 | 4.42            | 44.60            | 46.56             | 39.43          | 74.00               | -34.57          | Pass   | V               |
| 4960.000         | 35.02                 | 6.29            | 44.60            | 42.99             | 39.70          | 74.00               | -34.30          | Pass   | V               |
| 7440.000         | 36.45                 | 6.73            | 44.97            | 44.19             | 42.40          | 74.00               | -31.60          | Pass   | V               |
| 9920.000         | 38.22                 | 7.26            | 45.52            | 43.47             | 43.43          | 74.00               | -30.57          | Pass   | V               |

**Note:**

1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Pre-amplifier. The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading - Correct Factor

Correct Factor = Pre-amplifier Factor - Antenna Factor - Cable Factor

2) Scan from 9kHz to 25GHz, the disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

## PHOTOGRAPHS OF TEST SETUP

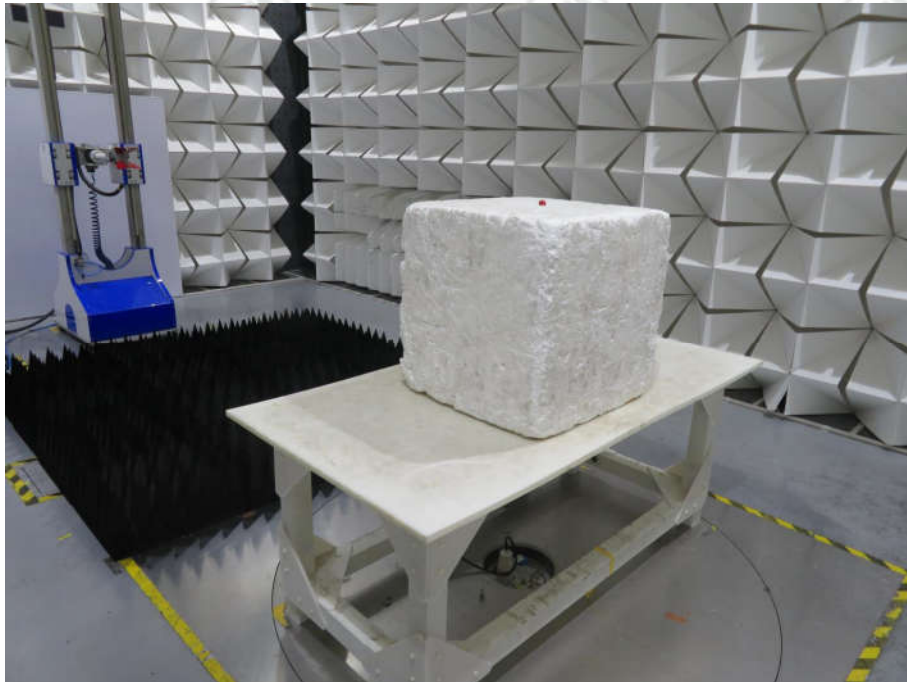
Test model No.: V100LR



**Radiated spurious emission Test Setup-1(Below 30MHz)**



**Radiated spurious emission Test Setup-2(30MHz-1G)**



**Radiated spurious emission Test Setup-3(Above 1GHz)**



**Radiated spurious emission Test Setup for close-up**



## PHOTOGRAPHS OF EUT Constructional Details

Refer to Report No.EED32J00237201 for EUT external and internal photos.

\*\*\* End of Report \*\*\*

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