



# FCC TEST REPORT

|                  |  |
|------------------|--|
| Prepared For :   | ARCTIC (HK) Ltd  |
| Product Name:    | P614BT Bluetooth Headphones with Microphone  |
| Model :          | P614BT   |
| Prepared By :    | Shenzhen United Testing Technology Co., Ltd.<br>4F, Block B Unit 2, Jianxing Building, Chaguang Industry Area,<br>Nanshan District, Shenzhen, China<br>Tel: 86-755-86180996 Fax: 86-755-86180156 |
| Test Date:       | November 01, 2014 to November 16, 2014   |
| Date of Report : | November 16, 2014  |
| Report No.:      | UNI-1411005-02   |

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# 1 TEST CERTIFICATION

|                                     |  |
|-------------------------------------|--|
| <b>Product:</b>                     | <b>P614BT Bluetooth Headphones with Microphone</b>   |
| <b>Model:</b>                       | <b>P614BT</b>  |
| <b>Applicant:</b>                   | <b>ARCTIC (HK) Ltd</b><br><b>Unit 2304   Nina Tower 2   8 Yeung Uk Road   Hong Kong</b>  |
| <b>Factory:</b>                     | <b>Cyber Blue(HK) Ltd</b><br><b>12th Floor, Guanghao International Building, Meilong Road, Longhua District, Shenzhen, China</b> |
| <b>Trade Mark:</b>                  | <b>Arctic</b>  |
| <b>Tested:</b>                      | <b>November 01, 2014 to November 16, 2014</b>  |
| <b>Test Voltage:</b>                | <b>DC3.7V Powered Li-Po Battery</b>  |
| <b>Operational Frequency Range:</b> | <b>Bluetooth: 2402-2480MHz</b>   |
| <b>Modulation Type:</b>             | <b>Bluetooth LE: GFSK</b>  |
| <b>Number of Channel</b>            | <b>40 Channels for Bluetooth</b>   |
| <b>Bluetooth Version:</b>           | <b>4.0</b>   |
| <b>Antenna:</b>                     | <b>PCB antenna with Gain 2.0 dBi</b>   |
| <b>FCC ID:</b>                      | <b>Z3AP614BT</b>   |
| <b>Applicable Standards:</b>        | <b>FCC Part 15.247</b>   |

The test report was prepared by Shenzhen United Testing Technology Co., Ltd. and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Prepared by : Michael Su  
Michael Su /Assistant Engineer

Reviewer : Mike Yong  
Mike Yong/Supervisor

Approved & Authorized Signer : Hoffer Lau  
Hoffer Lau/ Manager



| 2.0 Test Equipment |  |                                |                             |                        |                            |
|--------------------|--|--------------------------------|-----------------------------|------------------------|----------------------------|
| Item               | Test Equipment                           | Manufacturer                   | Model No.                   | Cal.Date<br>(mm-dd-yy) | Cal.Due date<br>(mm-dd-yy) |
| 1                  | 3m Semi- Anechoic Chamber                | ZhongYu Electron               | 9.2(L)*6.2(W)* 6.4(H)       | June. 30 2014          | June. 29 2015              |
| 2                  | Control Room                             | ZhongYu Electron               | 6.2(L)*2.5(W)* 2.4(H)       | N/A                    | N/A                        |
| 3                  | EMI Test Receiver                        | Rohde & Schwarz                | ESU26                       | Jul. 03 2014           | Jul. 02 2015               |
| 4                  | BiConiLog Antenna                        | SCHWARZBECK<br>MESS-ELEKTRONIK | VULB9163                    | Feb. 25 2014           | Feb. 24 2015               |
| 5                  | Double -ridged waveguide<br>horn         | SCHWARZBECK<br>MESS-ELEKTRONIK | 9120D-829                   | June 29 2014           | June 28 2015               |
| 6                  | Horn Antenna                             | ETS-LINDGREN                   | 3160                        | June. 30 2014          | June. 29 2015              |
| 7                  | EMI Test Software                        | AUDIX                          | E3                          | N/A                    | N/A                        |
| 8                  | Amplifier(100kHz-3GHz)                   | HP                             | 8347A                       | Jul. 03 2014           | Jul. 02 2015               |
| 9                  | Amplifier(2GHz-20GHz)                    | HP                             | 8349B                       | Jul. 03 2014           | Jul. 02 2015               |
| 10                 | Amplifier (18-26GHz)                     | Rohde & Schwarz                | AFS33-18002<br>650-30-8P-44 | June. 30 2014          | June. 29 2015              |
| 11                 | Band filter                              | Amindeon                       | 82346                       | June. 30 2014          | June. 29 2015              |
| 12                 | Constant temperature<br>and humidity box | Oregon Scientific              | BA-888                      | May 11 2014            | May 10 2015                |
| 13                 | D.C. Power Supply                        | Instek                         | PS-3030                     | May 11 2014            | May 10 2015                |
| 14                 | Universal radio<br>communication tester  | Rohde & Schwarz                | CMU200                      | May 11 2014            | May 10 2015                |
| 15                 | Splitter                                 | Agilent                        | 11636B                      | May 11 2014            | May 10 2015                |
| 16                 | EMI Test Receiver                        | Rohde & Schwarz                | ESCS30                      | Jul. 03 2014           | Jul. 02 2015               |
| 17                 | LISN                                     | Schwarebeck                    | NSLK 8126                   | Jul. 03 2014           | Jul. 02 2015               |
| 18                 | Power meter                              | Anritsu                        | ML2487A                     | August 22, 2014        | August 21, 2015            |
| 19                 | Power sensor                             | Anritsu                        | MA2491A                     | August 22, 2014        | August 21, 2015            |



3.0 Technical Details

3.1 Summary of test results

The EUT has been tested according to the following specifications:

| Standard   | Test Type   | Result | Notes    |
|--|---|--------|----------|
| FCC Part 15, Paragraph 15.107 & 15.207             | Conducted Emission Test   | PASS   | Complies |
| FCC Part 15 Subpart C Paragraph 15.247(a)(2) Limit | Spectrum bandwidth of a Orthogonal Frequency Division Multiplex System<br>Limit: 6dB<br>bandwidth>500kHz  | PASS   | Complies |
| FCC Part 15, Paragraph 15.247(b)                   | Maximum peak output power<br>Limit: max. 30dBm  | PASS   | Complies |
| FCC Part 15, Paragraph 15.109,15.205               | Transmitter Radiated Emission<br>Limit: Table 15.209  | PASS   | Complies |
| FCC Part 15, Paragraph 15.247(e)                   | Power Spectral Density<br>Limit: max. 8dBm  | PASS   | Complies |
| FCC Part 15, Paragraph 15.247(d)                   | Out of Band Emission and Restricted Band Radiation<br>Limit: 20dB less than peak value of fundamental frequency<br>Restricted band limit:<br>Table 15.209 | PASS   | Complies |

4.0 Test LAB Details

All Tests Performed at

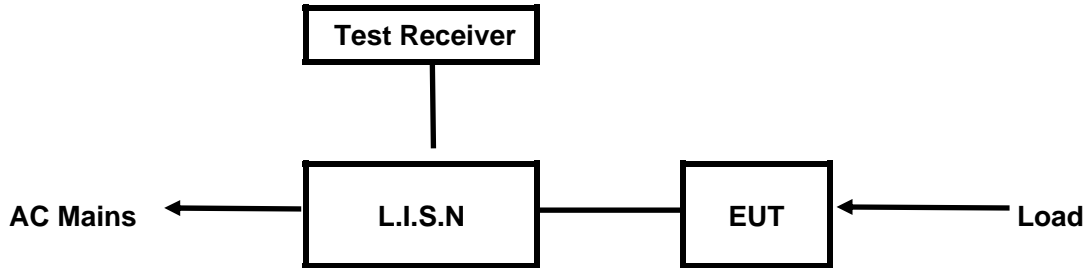
Name: ShenZhen CTL Testing Technology Co.,Ltd

Address: Floor 1-A, Baisha Technology Park, No. 3011, Shahexi Road, Nanshan, Shenzhen, Guangdong, China

FCC Registration Number: 970318

5. Power Line Conducted Emission Test

5.1 Schematics of the test



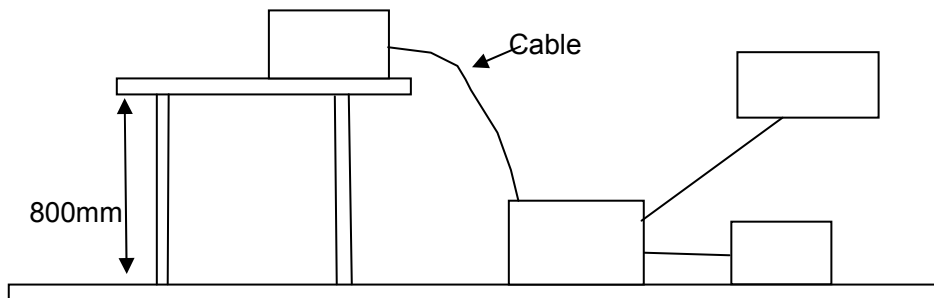
EUT: Equipment Under Test

5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.4-2003. The Frequency spectrum From 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.4 –2003.

Test Voltage: 120V~, 60Hz

Block diagram of Test setup



5.3 Configuration of The EUT

The EUT was configured according to ANSI C63.4-2003. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

40 channels are provided to the EUT



A. EUT

| Device                                      | Manufacturer       | Model  | FCC ID    |
|---|--------------------|--------|-----------|
| P614BT Bluetooth Headphones with Microphone | Cyber Blue(HK) Ltd | P614BT | Z3AP614BT |

B. Internal Device

| Device | Manufacturer | Model | FCC ID/DOC |
|--------|--------------|-------|------------|
| N/A    |              |       |            |

C. Peripherals

| Device       | Manufacturer | Model      | FCC ID/DOC | Cable                        |
|--------------|--------------|------------|------------|------------------------------|
| Power Supply | HUONIU       | HNB050100U | VOC        | 1.0m unshielded output cable |

5.4 EUT Operating Condition

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

A Setup the EUT and simulators as shown on follow

B Enable AF signal and confirm EUT active to normal condition

5.5 Power line conducted Emission Limit according to Paragraph 15.107, 15.207

| Frequency (MHz) | Class A Limits (dBµV) |               | Class B Limits (dBµV) |               |
|-----------------|-----------------------|---------------|-----------------------|---------------|
|                 | Quasi-peak Level      | Average Level | Quasi-peak Level      | Average Level |
| 0.15 ~ 0.50     | 79.0                  | 66.0          | 66.0~56.0*            | 56.0~46.0*    |
| 0.50 ~ 5.00     | 73.0                  | 60.0          | 56.0                  | 46.0          |
| 5.00 ~ 30.00    | 73.0                  | 60.0          | 60.0                  | 50.0          |

- Notes: 1. \*Decreasing linearly with logarithm of frequency.  
2. The tighter limit shall apply at the transition frequencies

5.6 Test Results

The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz.



**A: Conducted Emission on Live Terminal (150kHz to 30MHz)**

**EUT Operating Environment**

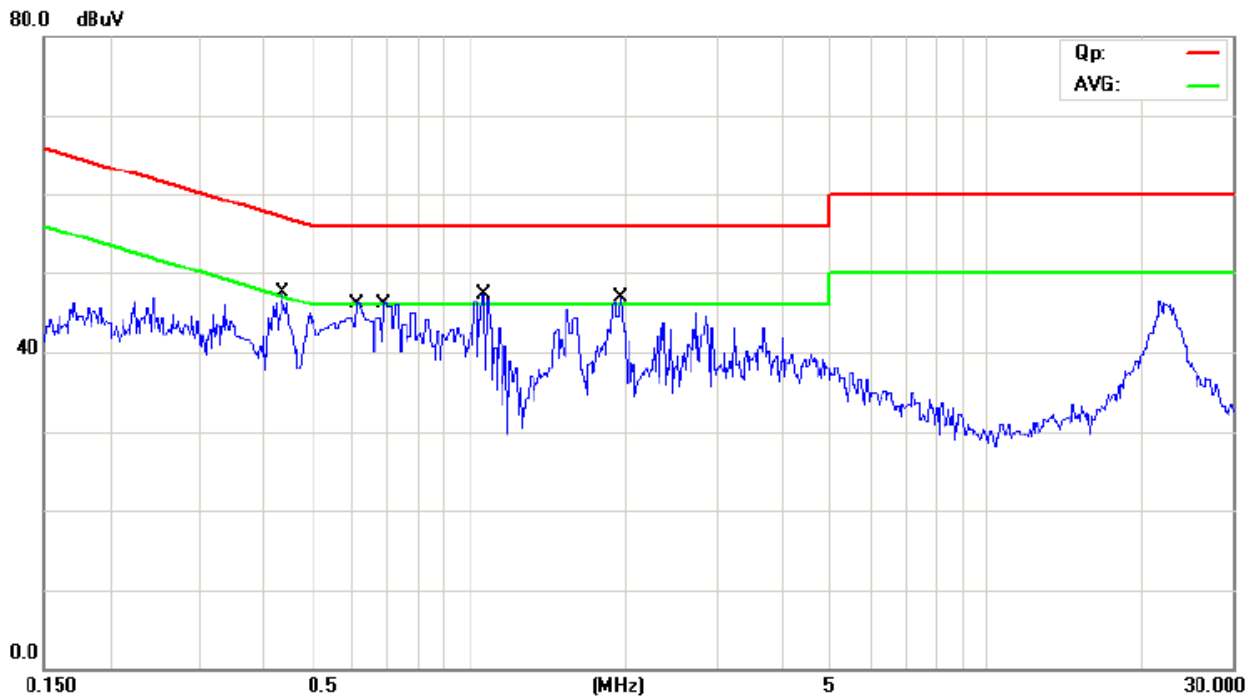
Temperature: 26°C      Humidity: 65%RH      Atmospheric Pressure: 101 KPa

**EUT set Condition: Keep Bluetooth Transmitting**

**Equipment Level: Class B**

**Results: Pass**

Please refer to following diagram for individual



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Over<br>dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|------------|----------|---------|
| 1   |     | 0.4311       | -7.90                    | 11.30                   | 3.40                     | 57.23         | -53.83     | QP       |         |
| 2   |     | 0.4311       | -13.70                   | 11.30                   | -2.40                    | 47.23         | -49.63     | AVG      |         |
| 3   |     | 0.6050       | -8.00                    | 11.48                   | 3.48                     | 56.00         | -52.52     | QP       |         |
| 4   |     | 0.6050       | -13.90                   | 11.48                   | -2.42                    | 46.00         | -48.42     | AVG      |         |
| 5   |     | 0.6801       | -8.00                    | 11.56                   | 3.56                     | 56.00         | -52.44     | QP       |         |
| 6   |     | 0.6801       | -13.80                   | 11.56                   | -2.24                    | 46.00         | -48.24     | AVG      |         |
| 7   |     | 1.0652       | -7.10                    | 11.93                   | 4.83                     | 56.00         | -51.17     | QP       |         |
| 8   | *   | 1.0652       | -12.90                   | 11.93                   | -0.97                    | 46.00         | -46.97     | AVG      |         |
| 9   |     | 1.9410       | -7.80                    | 12.28                   | 4.48                     | 56.00         | -51.52     | QP       |         |
| 10  |     | 1.9410       | -13.70                   | 12.28                   | -1.42                    | 46.00         | -47.42     | AVG      |         |





**B: Conducted Emission on Neutral Terminal (150kHz to 30MHz)**

**EUT Operating Environment**

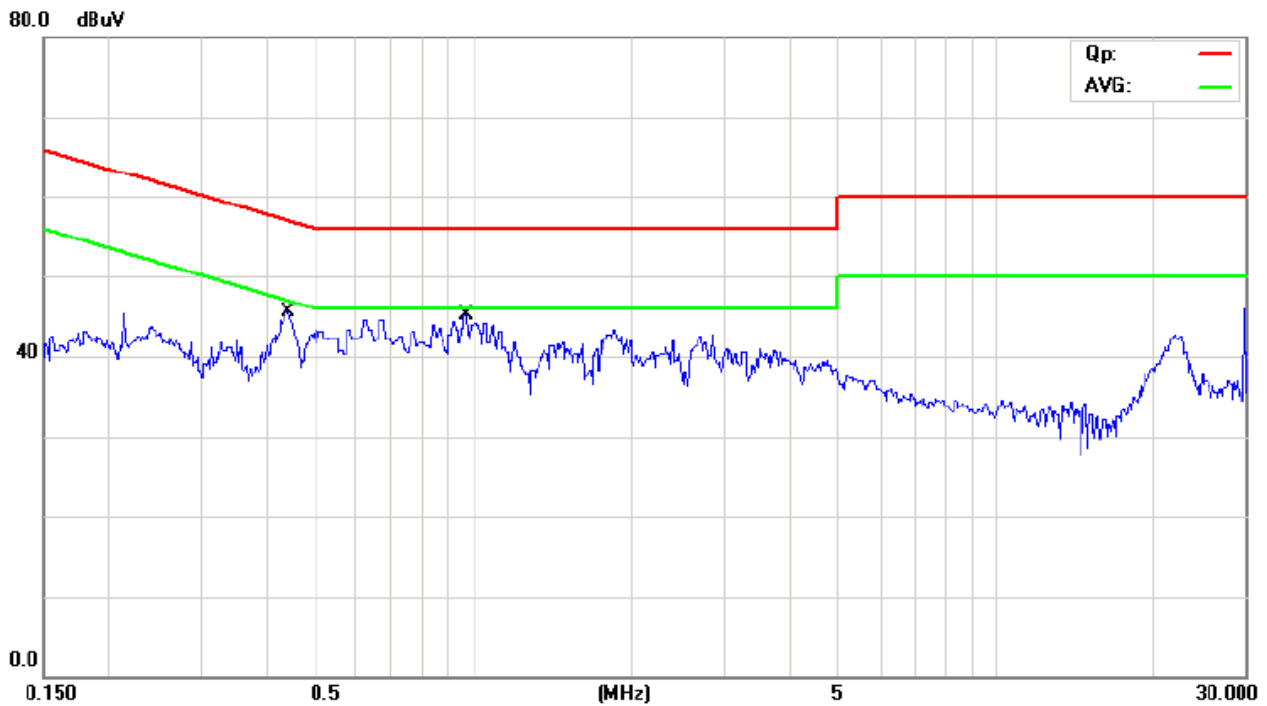
Temperature: 26°C Humidity: 65%RH Atmospheric Pressure: 101 KPa

**EUT set Condition: Keep Bluetooth Transmitting**

**Equipment Level: Class B**

**Results: Pass**

Please refer to following diagram for individual



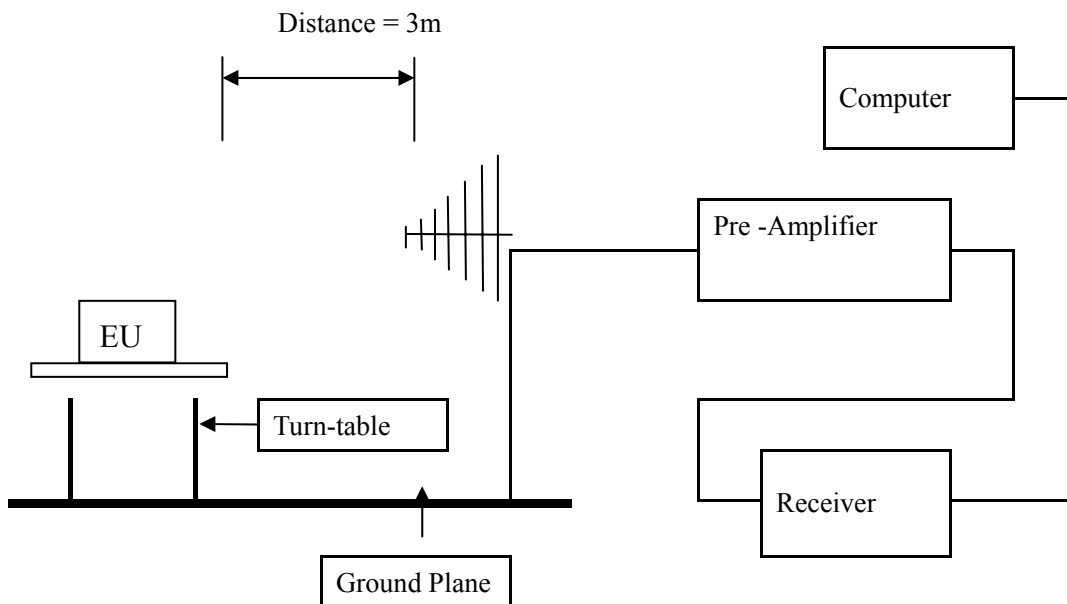
| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Over<br>dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|------------|----------|---------|
| 1   |     | 0.4377       | -8.00                    | 11.30                   | 3.30                     | 57.11         | -53.81     | QP       |         |
| 2   |     | 0.4377       | -13.80                   | 11.30                   | -2.50                    | 47.11         | -49.61     | AVG      |         |
| 3   |     | 0.9796       | -8.10                    | 11.88                   | 3.78                     | 56.00         | -52.22     | QP       |         |
| 4   | *   | 0.9796       | -13.90                   | 11.88                   | -2.02                    | 46.00         | -48.02     | AVG      |         |

**6 Radiated Emission Test**

6.1 Test Method and test Procedure:

- (1) The EUT was tested according to ANSI C63.4 –2003. The radiated test was performed at CTL Laboratory. This site is on file with the FCC laboratory division, Registration No.807767
- (2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.4-2003.
- (3) The frequency spectrum from 30 MHz to 25 GHz was investigated. All readings from 30 MHz to 1 GHz are Quasi-peak values with a resolution bandwidth of 120 kHz. For measurement above 1GHz, peak values with RBW=1MHz, VBW=3MHz and PK detector. AV value with RBW=1MHz, VBW=3MHz and RMS detector. Measurements were made at 3 meters.
- (4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (5) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a "QP" in the data table.
- (6) The antenna polarization : Vertical polarization and Horizontal polarization.

**Block diagram of Test setup**



6.2 Configuration of The EUT

Same as section 5.3 of this report

6.3 EUT Operating Condition

Same as section 5.4 of this report.



6.4 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

**Frequencies in restricted band are complied to limit on Paragraph 15.209 and 15.109**

| Frequency Range (MHz) | Distance (m) | Field strength (dB $\mu$ V/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 higher limit applies at the band edges.
  3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT
  4. This is a handheld device. The radiated emissions should be tested under 3-axes position (Lying, Side, and Stand), After pre-test. It was found that the worse radiated emission was get at the lying position.



A: Radiated Disturbance In Horizontal (30MHz----1000MHz)

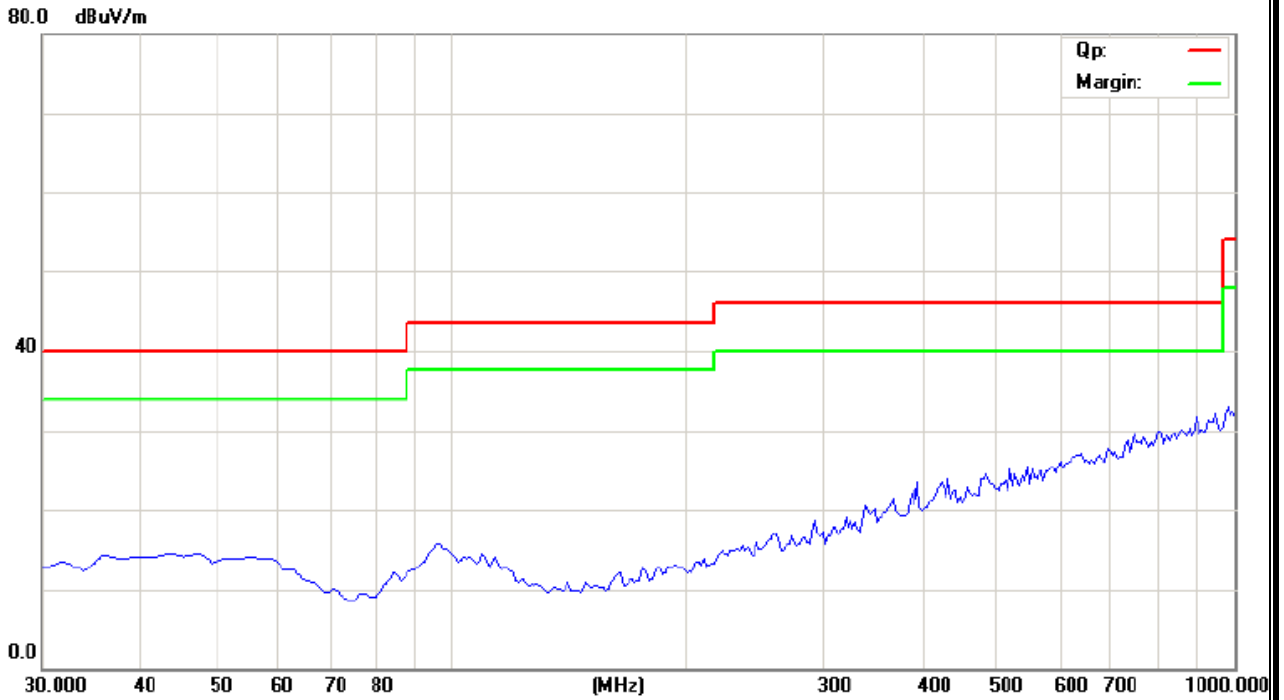
EUT set Condition: Keep Bluetooth Transmitting

Level: Class B

Results: PASS

Please refer to following diagram for individual

Picture of the test



| Frequency (MHz) | Level@3m (dBμV/m) | Antenna Polarity | Limit@3m (dBμV/m) |
|-----------------|-------------------|------------------|-------------------|
| --              | --                | H                | --                |

-The test data shows much less than the limit, no necessary take down the results.

**B: Radiated Disturbance In Vertical (30MHz----1000MHz)**

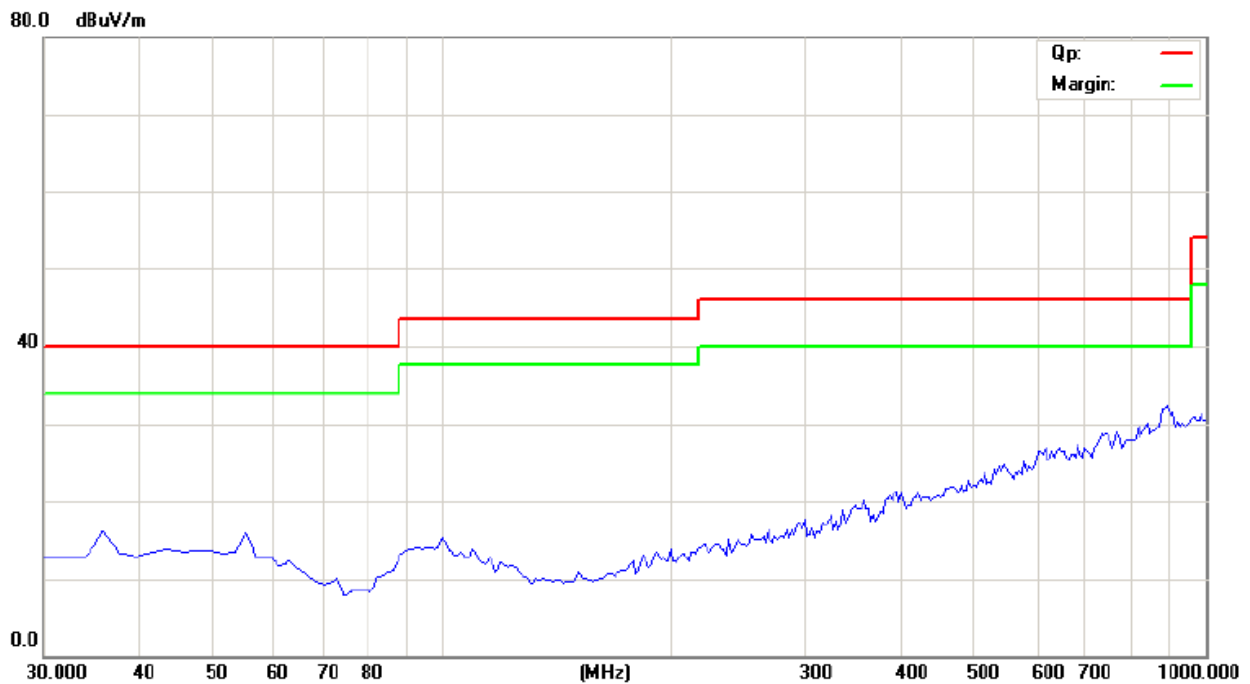
**EUT set Condition: Keep Bluetooth Transmitting**

**Level: Class B**

**Results: PASS**

Please refer to following diagram for individual

Picture of the test



| Frequency (MHz) | Level@3m (dBμV/m) | Antenna Polarity | Limit@3m (dBμV/m) |
|-----------------|-------------------|------------------|-------------------|
| --              | --                | V                | --                |

-The test data shows much less than the limit, no necessary take down the results.



**Operation Mode: Transmitting under Low Channel (2402MHz)**

| Frequency (MHz) | Level@3m (dBµV/m) | Antenna Polarity | Limit@3m (dBµV/m) |
|-----------------|-------------------|------------------|-------------------|
| 4804            | --                | H/V              | 74(Peak)/ 54(AV)  |
| 7206            | --                | H/V              | 74(Peak)/ 54(AV)  |
| 9608            | --                | H/V              | 74(Peak)/ 54(AV)  |
| 12010           | --                | H/V              | 74(Peak)/ 54(AV)  |
| 14412           | --                | H/V              | 74(Peak)/ 54(AV)  |
| 16814           | --                | H/V              | 74(Peak)/ 54(AV)  |
| 19216           | --                | H/V              | 74(Peak)/ 54(AV)  |
| 21618           | --                | H/V              | 74(Peak)/ 54(AV)  |
| 24020           | --                | H/V              | 74(Peak)/ 54(AV)  |

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark "---" means that the emissions level is too low to be measured

**Operation Mode: Transmitting g under Middle Channel (2440MHz)**

| Frequency (MHz) | Level@3m (dBµV/m) | Antenna Polarity | Limit@3m (dBµV/m) |
|-----------------|-------------------|------------------|-------------------|
| 4880            | --                | H/V              | 74(Peak)/ 54(AV)  |
| 7320            | --                | H/V              | 74(Peak)/ 54(AV)  |
| 9760            | --                | H/V              | 74(Peak)/ 54(AV)  |
| 12200           | --                | H/V              | 74(Peak)/ 54(AV)  |
| 14640           | --                | H/V              | 74(Peak)/ 54(AV)  |
| 17080           | --                | H/V              | 74(Peak)/ 54(AV)  |
| 19520           | --                | H/V              | 74(Peak)/ 54(AV)  |
| 21960           | --                | H/V              | 74(Peak)/ 54(AV)  |
| 24400           | --                | H/V              | 74(Peak)/ 54(AV)  |

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark "---" means that the emissions level is too low to be measured



**Operation Mode: Transmitting under High Channel (2480MHz)**

| Frequency (MHz) | Level@3m (dBµV/m) | Antenna Polarity | Limit@3m (dBµV/m) |
|-----------------|-------------------|------------------|-------------------|
| 4960            | --                | H/V              | 74(Peak)/ 54(AV)  |
| 7440            | --                | H/V              | 74(Peak)/ 54(AV)  |
| 9920            | --                | H/V              | 74(Peak)/ 54(AV)  |
| 12400           | --                | H/V              | 74(Peak)/ 54(AV)  |
| 14880           | --                | H/V              | 74(Peak)/ 54(AV)  |
| 17360           | --                | H/V              | 74(Peak)/ 54(AV)  |
| 19840           | --                | H/V              | 74(Peak)/ 54(AV)  |
| 22320           | --                | H/V              | 74(Peak)/ 54(AV)  |
| 24800           | --                | H/V              | 74(Peak)/ 54(AV)  |

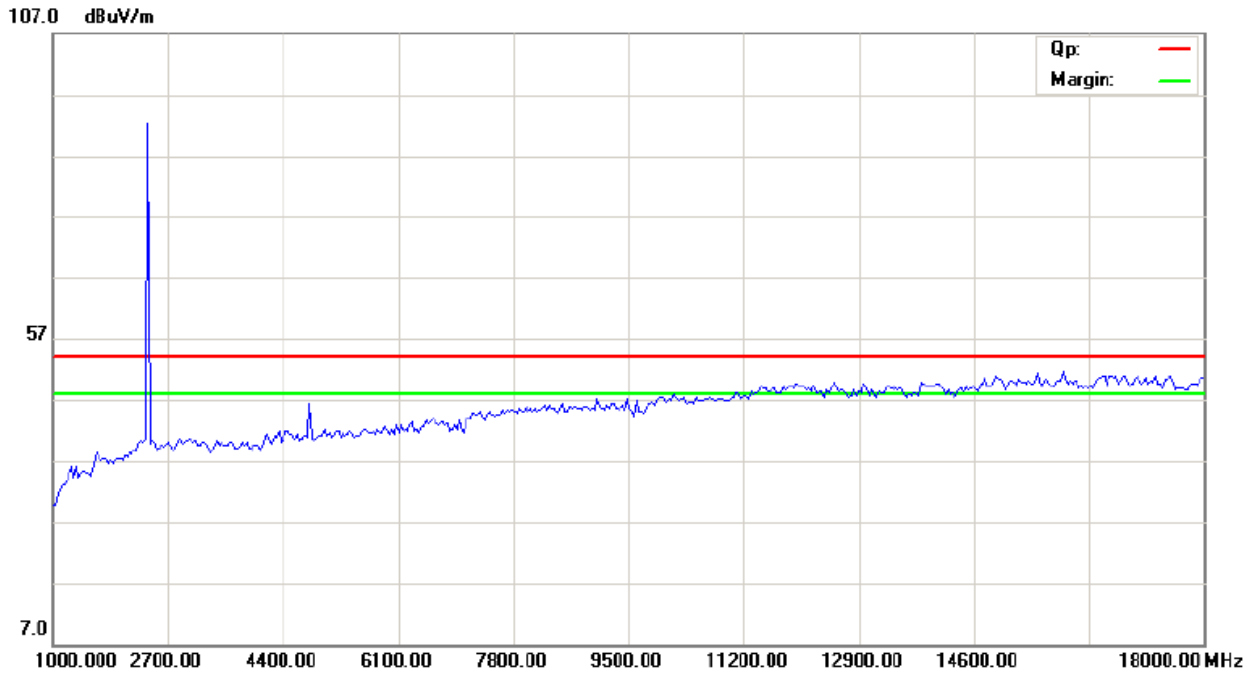
Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark "---" means that the emissions level is too low to be measured

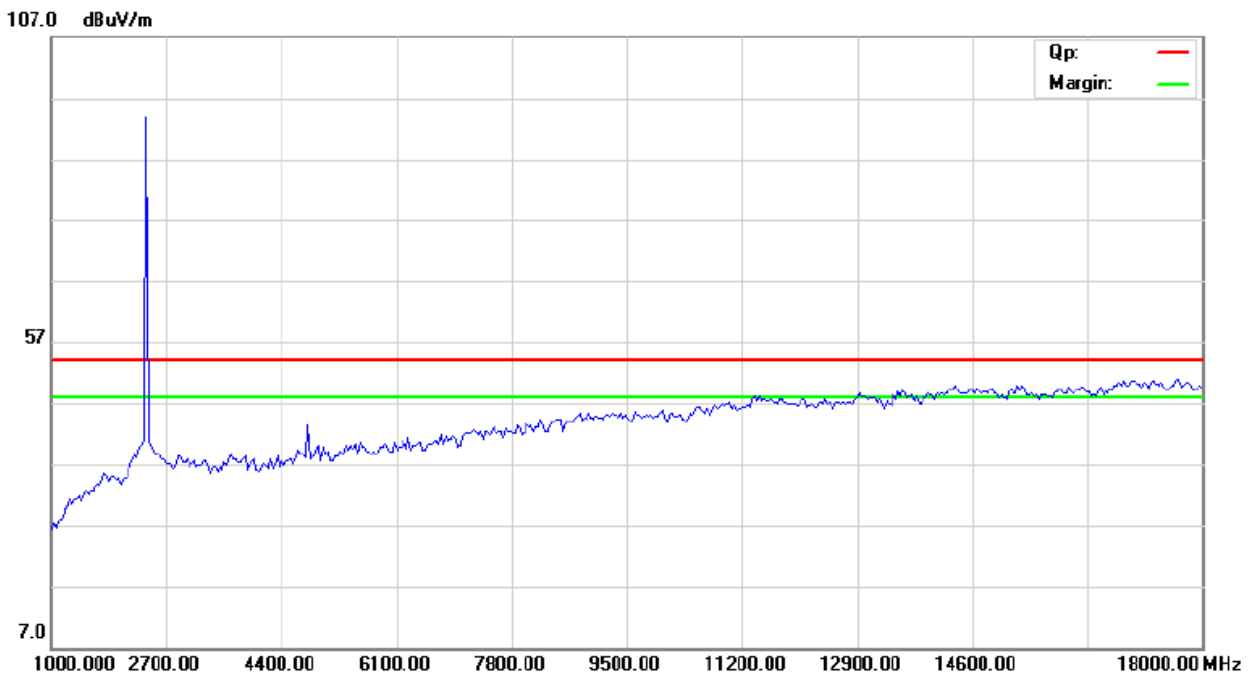


Please refer to the following test plots for details:

**Low Channel: Horizontal**



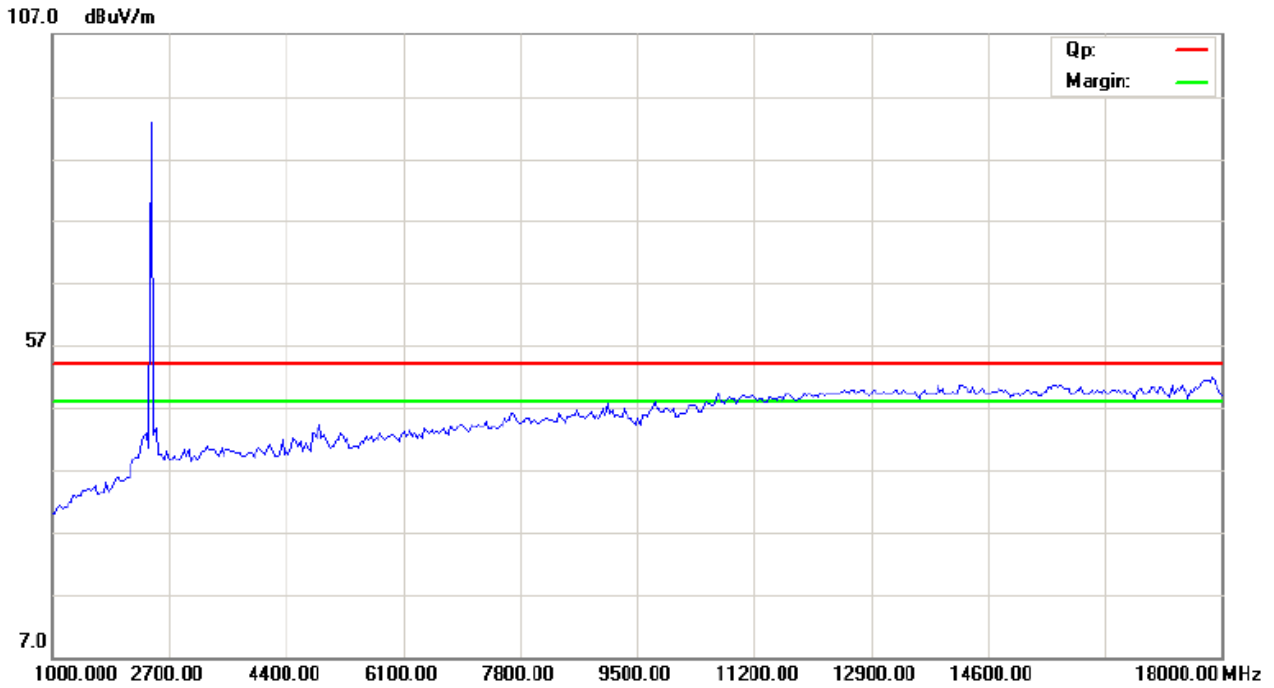
**Low Channel : Vertical**



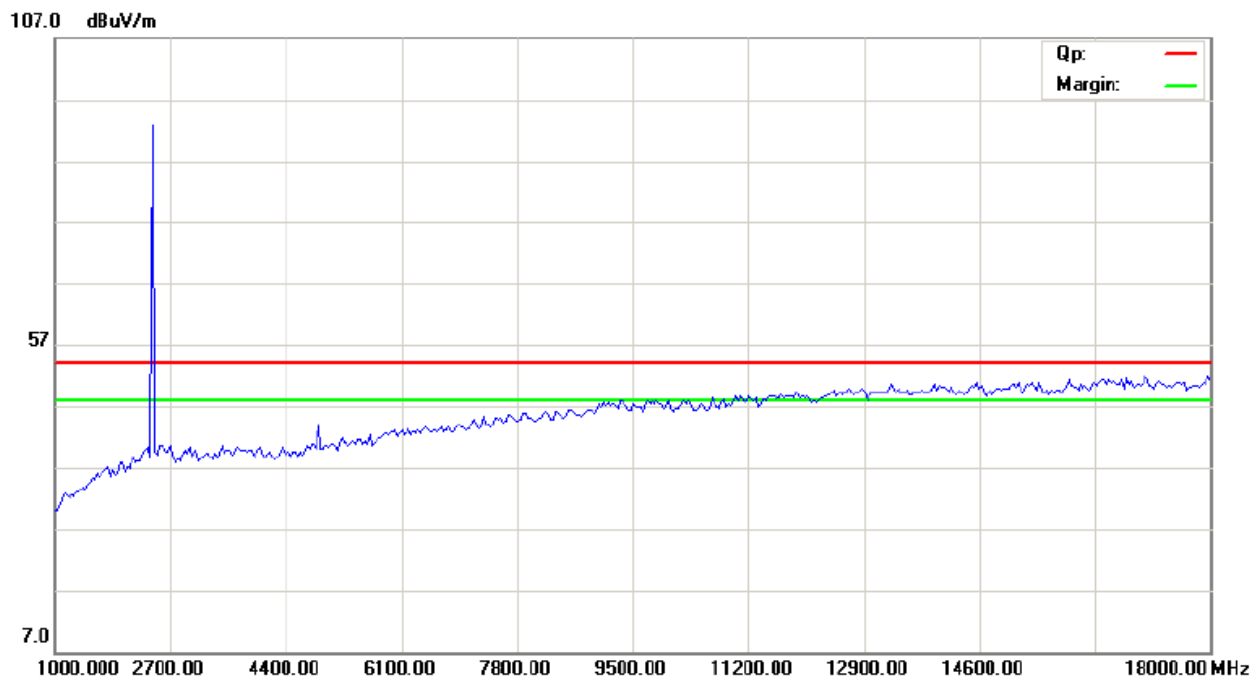




Middle Channel : Horizontal

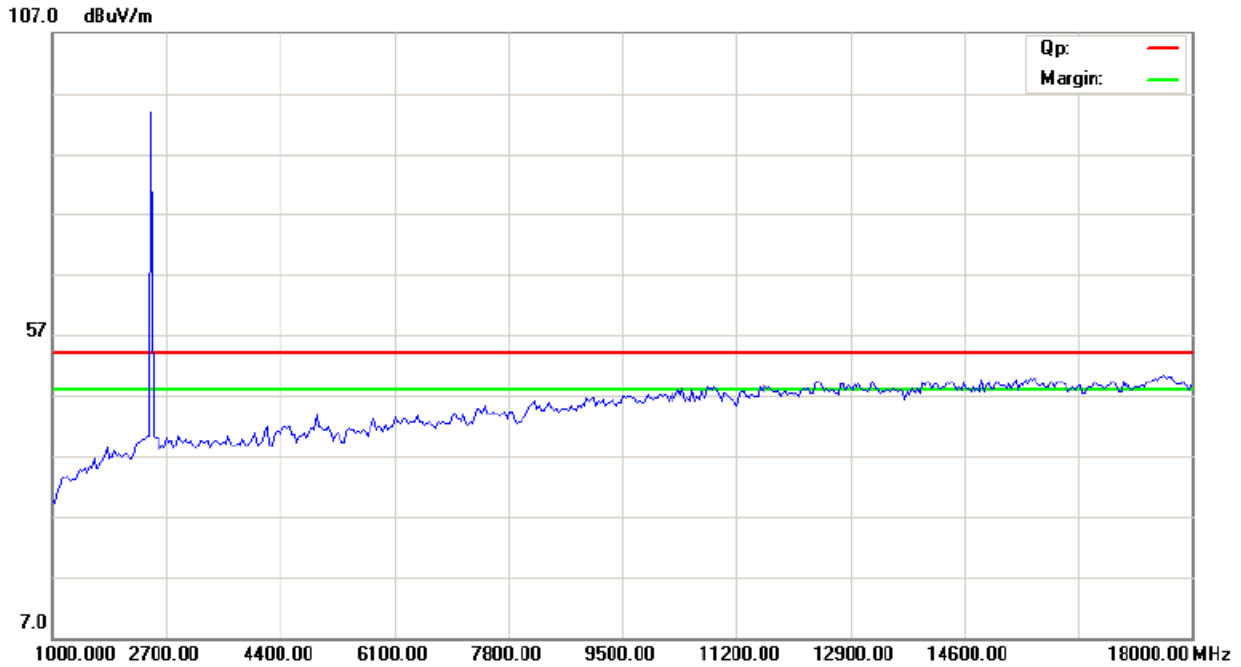


Middle Channel : Vertical

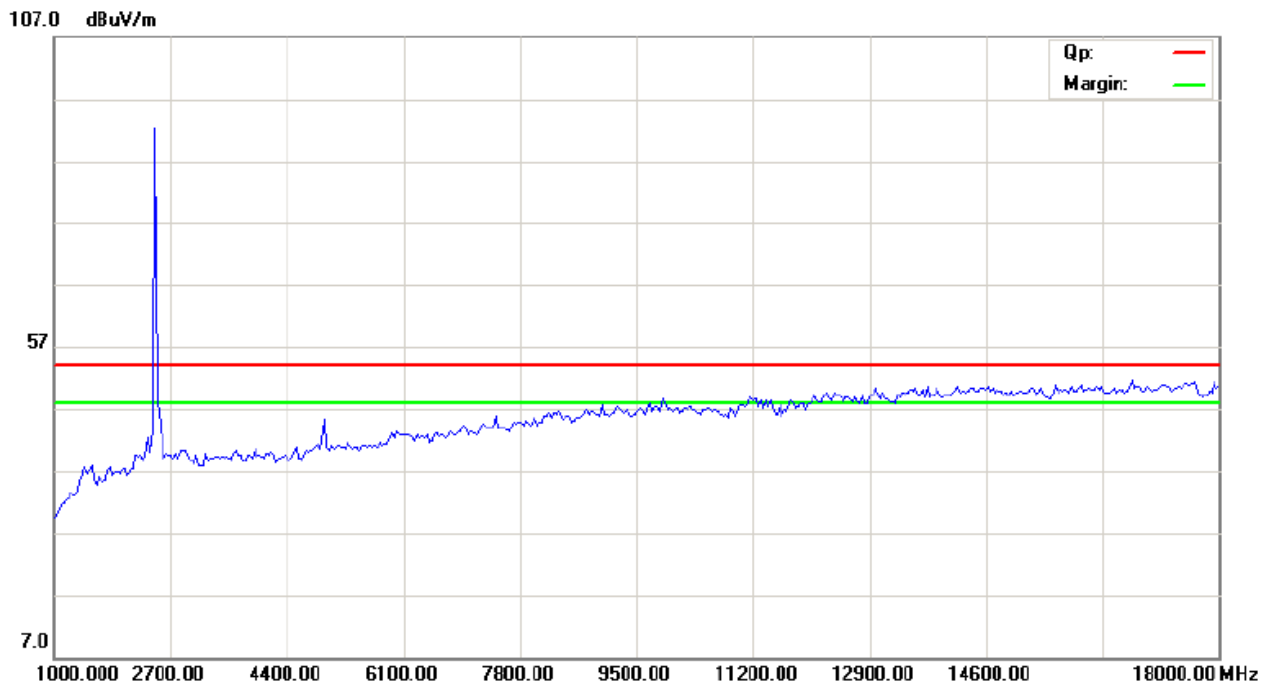




High Channel : Horizontal



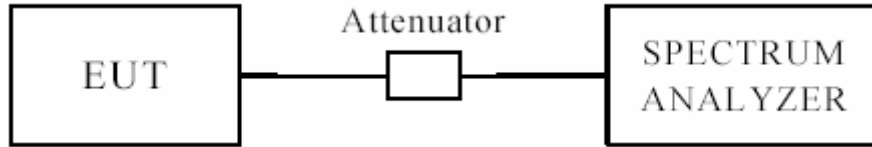
High Channel : Vertical



Note: for the radiated emissions above 18G, it is the floor noise.

## 7.0 6dB Bandwidth Measurement

### 7.1 Test Setup



### 7.2 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is >500 kHz

### 7.3 Test Procedure

1. Set resolution bandwidth (RBW) = 100 kHz
2. Set the video bandwidth (VBW)  $\geq 3 \times$  RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

### 7.4 Test Result



| EUT         | P614BT Bluetooth Headphones<br>with Microphone |                         | Model                  | P614BT     |  |
|-------------|--|-------------------------|------------------------|------------|--|
| Mode        | Keep Transmitting                              |                         | Input Voltage          | DC3.7V     |  |
| Temperature | 24 deg. C,                                     |                         | Humidity               | 56% RH     |  |
| Channel     | Channel<br>Frequency<br>(MHz)                  | 6 dB Bandwidth<br>(kHz) | Maximum Limit<br>(kHz) | Pass/ Fail |  |
| Low         | 2402   | 751.503                 | 0.5                    | Pass       |  |
| Middle      | 2440   | 751.503                 | 0.5                    | Pass       |  |
| High        | 2480   | 751.503                 | 0.5                    | Pass       |  |

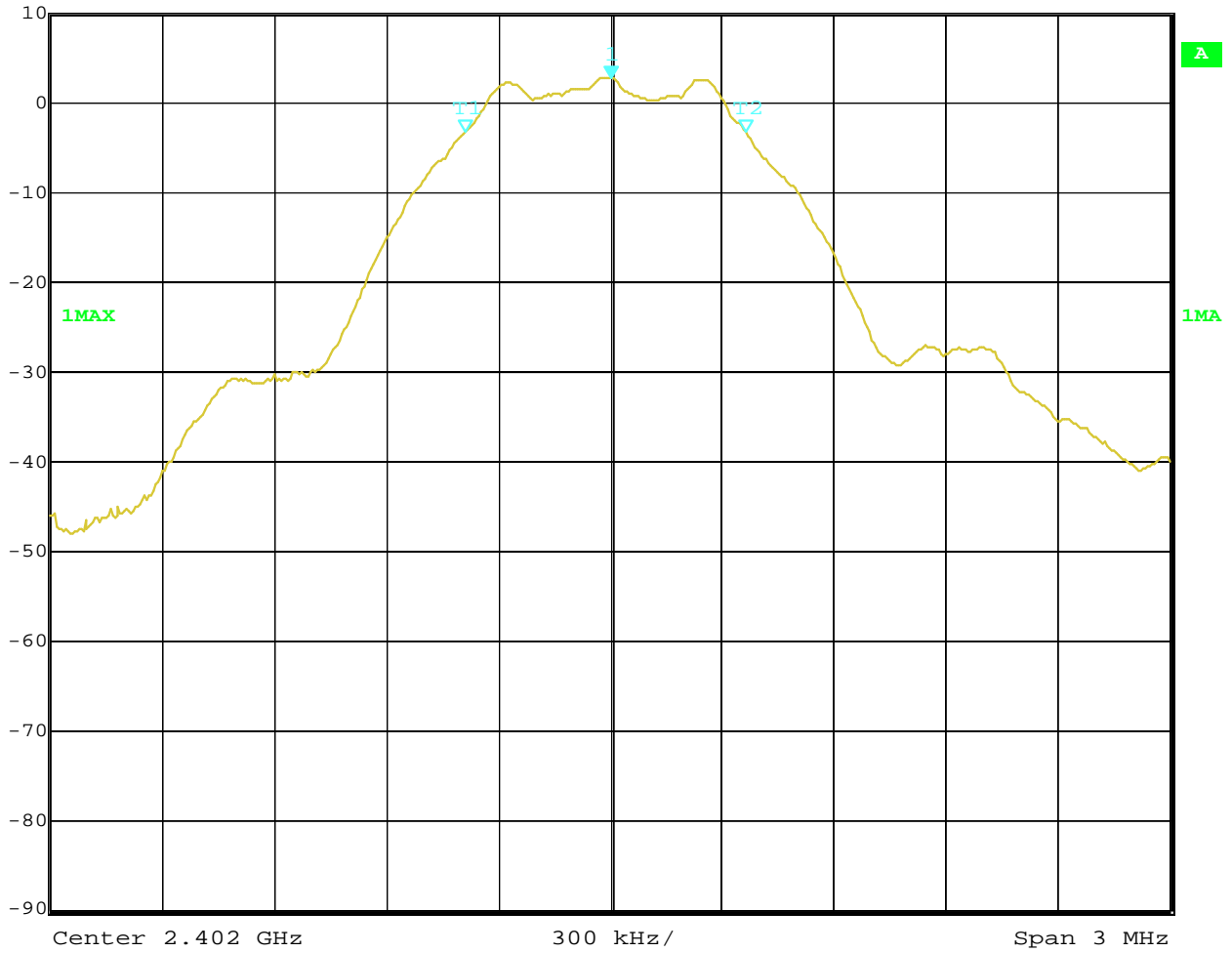


Test Figure:

1. Condition: Low Channel



|         |                     |     |         |        |       |
|---------|---------------------|-----|---------|--------|-------|
| Ref Lvl | Marker 1 [T1 ndB]   | RBW | 100 kHz | RF Att | 20 dB |
| 10 dBm  | ndB 6.00 dB         | VBW | 300 kHz | Unit   | dBm   |
|         | BW 751.50300601 kHz | SWT | 5 ms    |        |       |



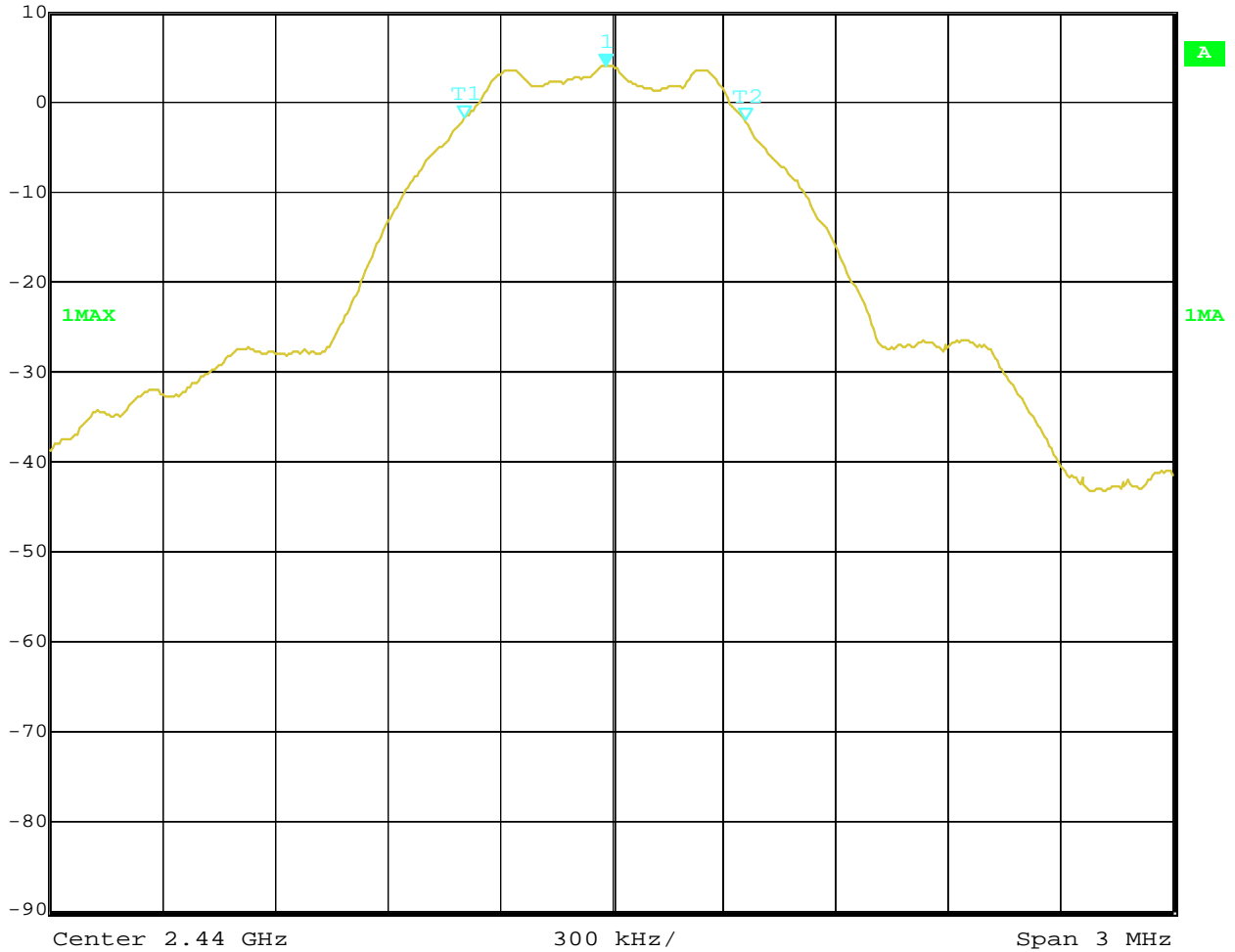
Date: 5.NOV.2014 10:08:26



2. Condition: Middle Channel



|         |                     |     |         |        |       |
|---------|---------------------|-----|---------|--------|-------|
| Ref Lvl | Marker 1 [T1 ndB]   | RBW | 100 kHz | RF Att | 20 dB |
| 10 dBm  | ndB 6.00 dB         | VBW | 300 kHz |        |       |
|         | BW 751.50300601 kHz | SWT | 5 ms    | Unit   | dBm   |



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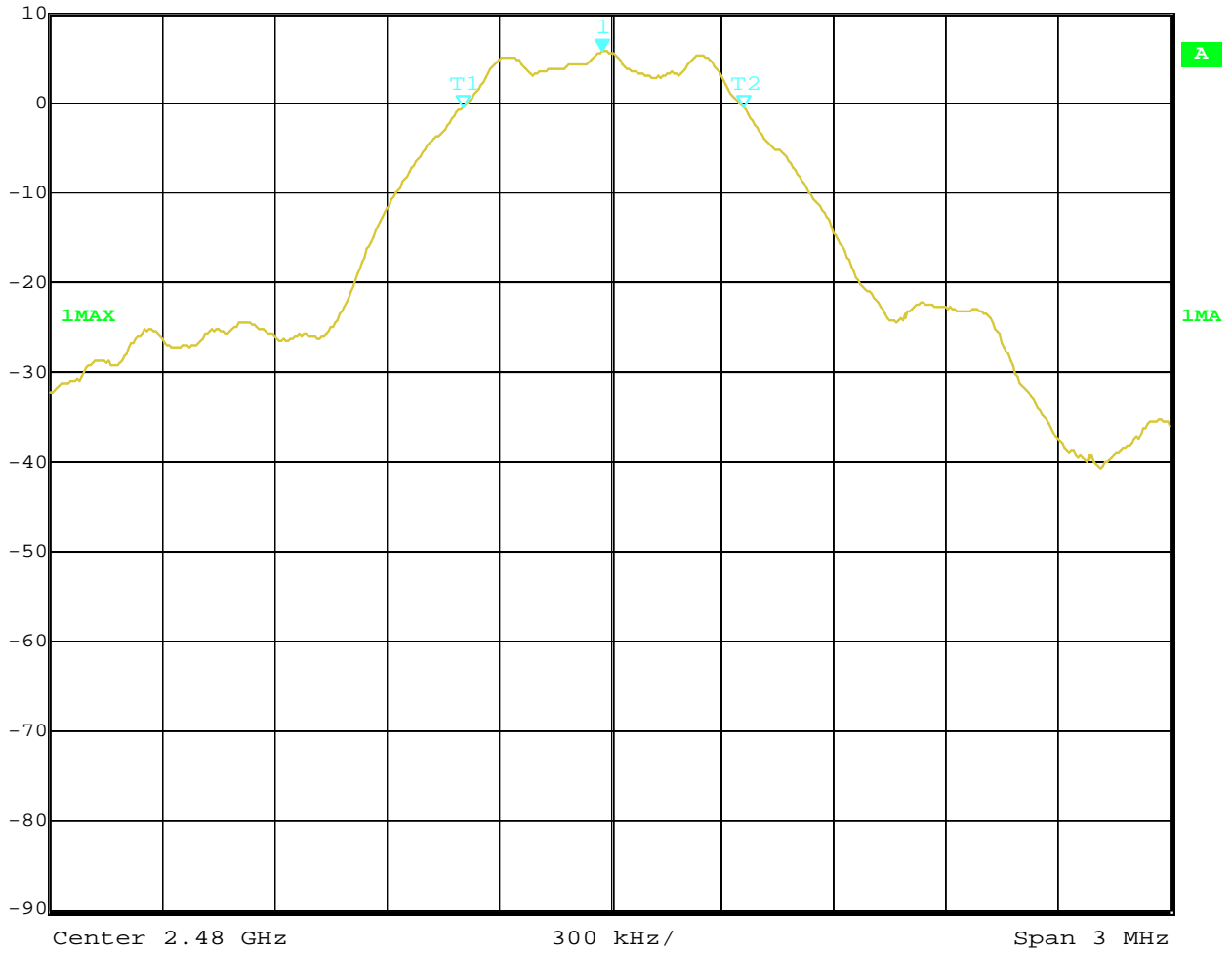
### 3. High Channel



Ref Lvl  
10 dBm

Marker 1 [T1 ndB]  
ndB 6.00 dB  
BW 751.50300601 kHz

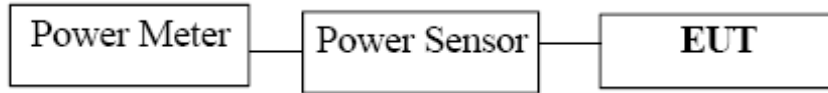
RBW 100 kHz RF Att 20 dB  
VBW 300 kHz  
SWT 5 ms Unit dBm



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**8. Maximum Peak Output Power**

**8.1 Test Setup**



**8.2 Limits of Maximum Peak Output Power**

The Maximum Peak Output Power Measurement is 30dBm.

**8.3 Test Procedure**

The RF power output was measured with a Power meter connected to the RF Antenna connector ( conducted measurement ) while EUT was operating in transmit mode at the appropriate centre frequency.

**Note: the peak power was measured**





8.4 Test Results

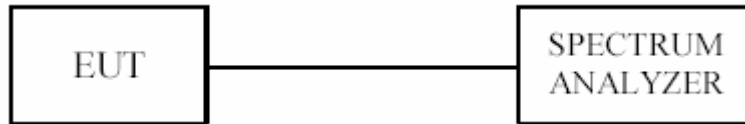
| EUT         | P614BT Bluetooth Headphones with Microphone | Model                   | P614BT                 |            |
|-------------|---|-------------------------|------------------------|------------|
| Mode        | Keep Transmitting                           | Input Voltage           | DC3.7V                 |            |
| Temperature | 24 deg. C,                                  | Humidity                | 56% RH                 |            |
| Channel     | Channel Frequency (MHz)                     | Peak Power Output (dBm) | Peak Power Limit (dBm) | Pass/ Fail |
| Low         | 2402  | 3.19                    | 30                     | Pass       |
| Middle      | 2440  | 4.23                    | 30                     | Pass       |
| High        | 2480  | <b>5.78</b>             | 30                     | Pass       |

Note: 1. the result basic equation calculation as follow:

$$\text{Peak Power Output} = \text{Peak Power Reading} + \text{Cable loss} + \text{Attenuator}$$

**9. Power Spectral Density Measurement**

**9.1 Test Setup**



**9.2 Limits of Power Spectral Density Measurement**

The Maximum Power Spectral Density Measurement is 8dBm.

**9.3 Test Procedure**

1. Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.
2. Set the RBW = 10 kHz.
3. Set the VBW ≥ 30 kHz.
4. Set the span to 1.5 times the DTS channel bandwidth.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.
11. The resulting peak PSD level must be ≤ 8 dBm.



9.4 Test Result

| EUT         | P614BT Bluetooth Headphones with Microphone |                 | Model                              | P614BT              |            |
|-------------|---|-----------------|------------------------------------|---------------------|------------|
| Mode        | Keep Transmitting                           |                 | Input Voltage                      | DC3.7V              |            |
| Temperature | 24 deg. C,                                  |                 | Humidity                           | 56% RH              |            |
| Channel     | Peak Power Reading (dBm)                    | Cable Loss (dB) | Final Power Spectral Density (dBm) | Maximum Limit (dBm) | Pass/ Fail |
| Low         | -6.72                                       | 0.2             | -6.52                              | 8                   | Pass       |
| Middle      | -5.49                                       | 0.2             | -5.29                              | 8                   | Pass       |
| High        | -3.46                                       | 0.2             | -3.26                              | 8                   | Pass       |

Note: The result basic equation calculation as follow:

Peak Power Output = Peak Power Reading + Cable loss



Test Figure:

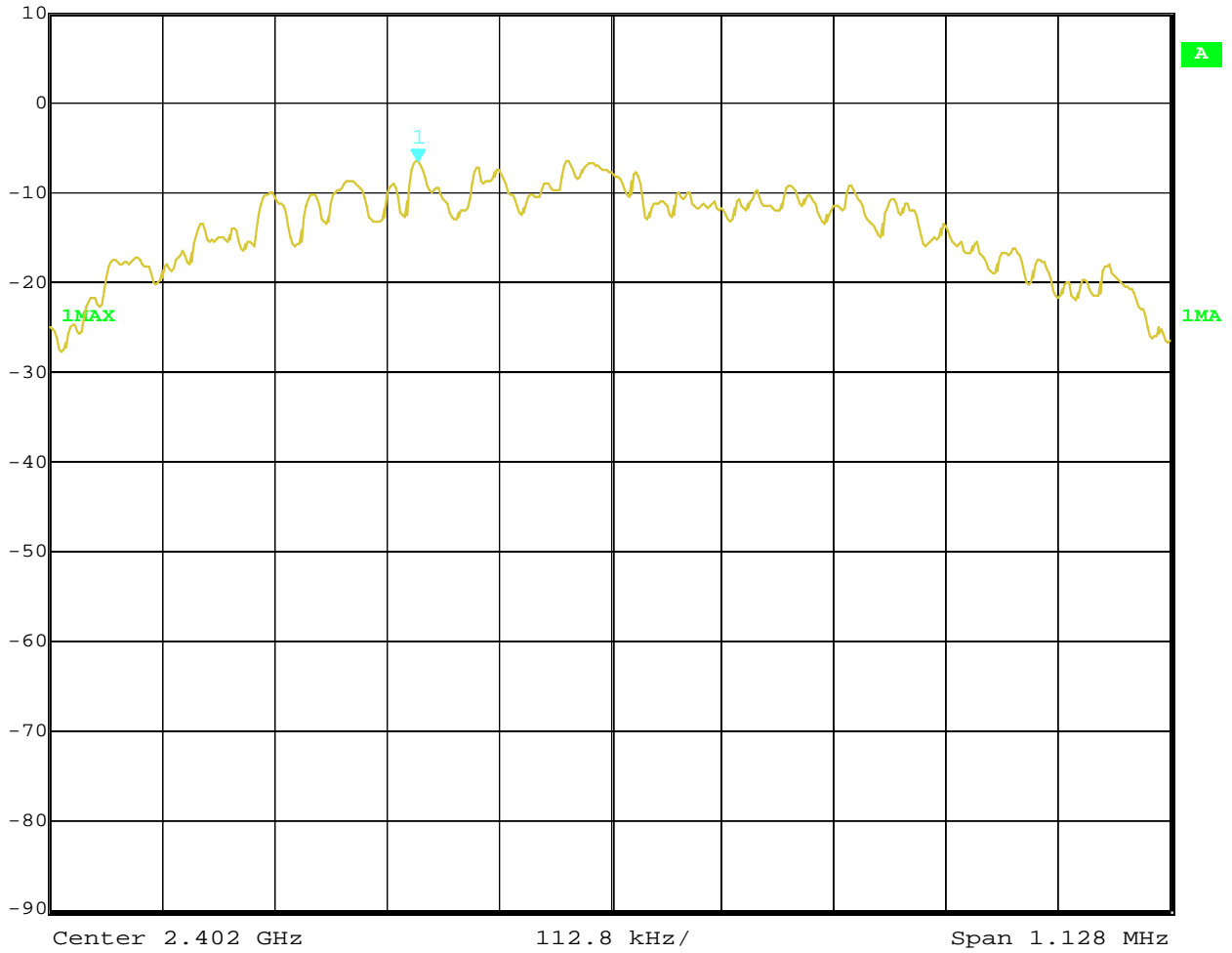
1. Condition: Low Channel



Ref Lvl  
10 dBm

Marker 1 [T1]  
-6.72 dBm  
2.40180673 GHz

RBW 10 kHz RF Att 20 dB  
VBW 30 kHz  
SWT 30 ms Unit dBm



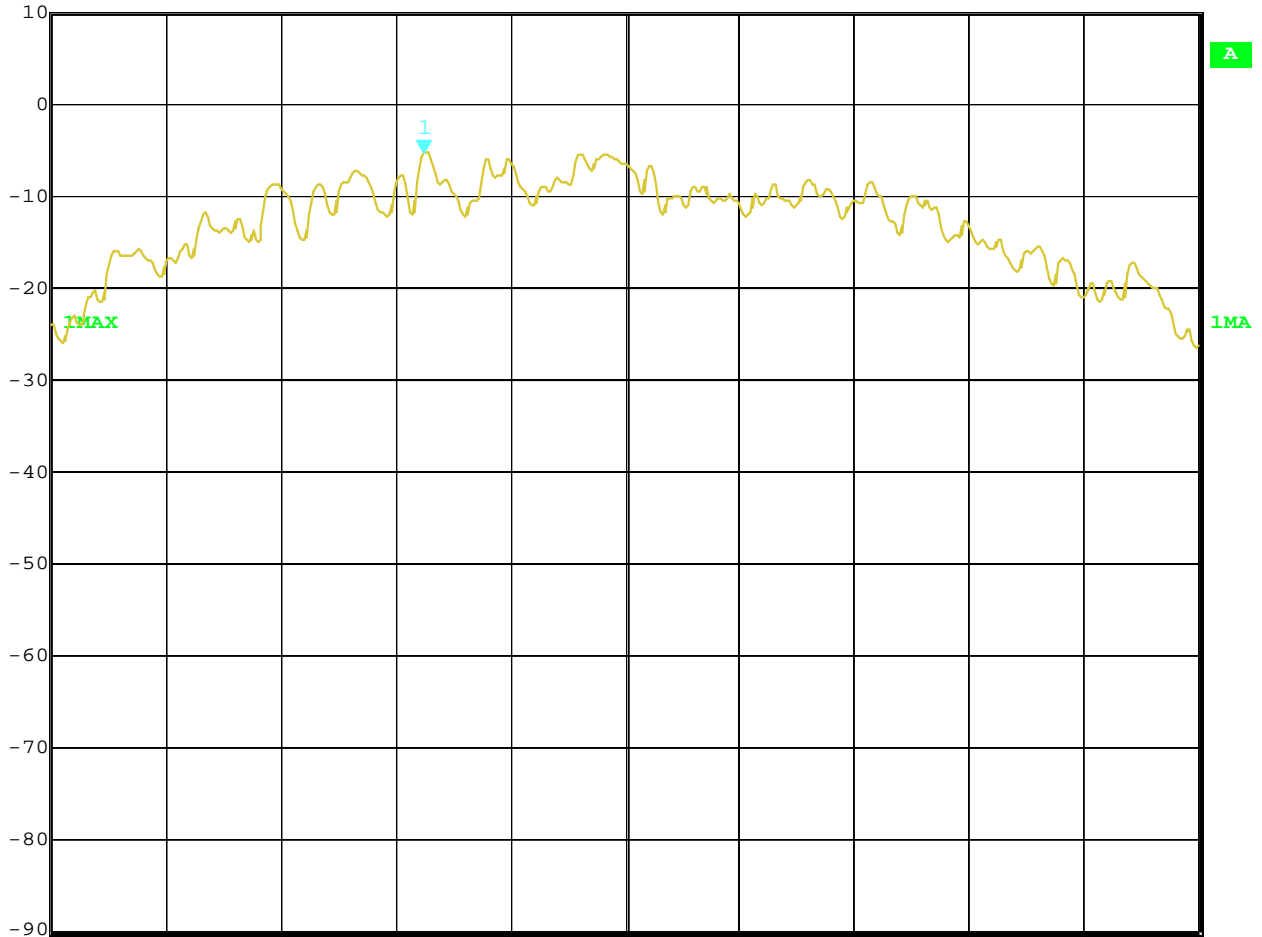
Date: 5.NOV.2014 10:14:02



2. Condition: Middle Channel



Ref Lvl 10 dBm  
Marker 1 [T1] 2.43980220 GHz  
RBW 10 kHz  
RF Att 20 dB  
VBW 30 kHz  
SWT 30 ms  
Unit dBm  
-5.49 dBm



Center 2.44 GHz      112.8 kHz/      Span 1.128 MHz

Date: 5.NOV.2014 10:13:13



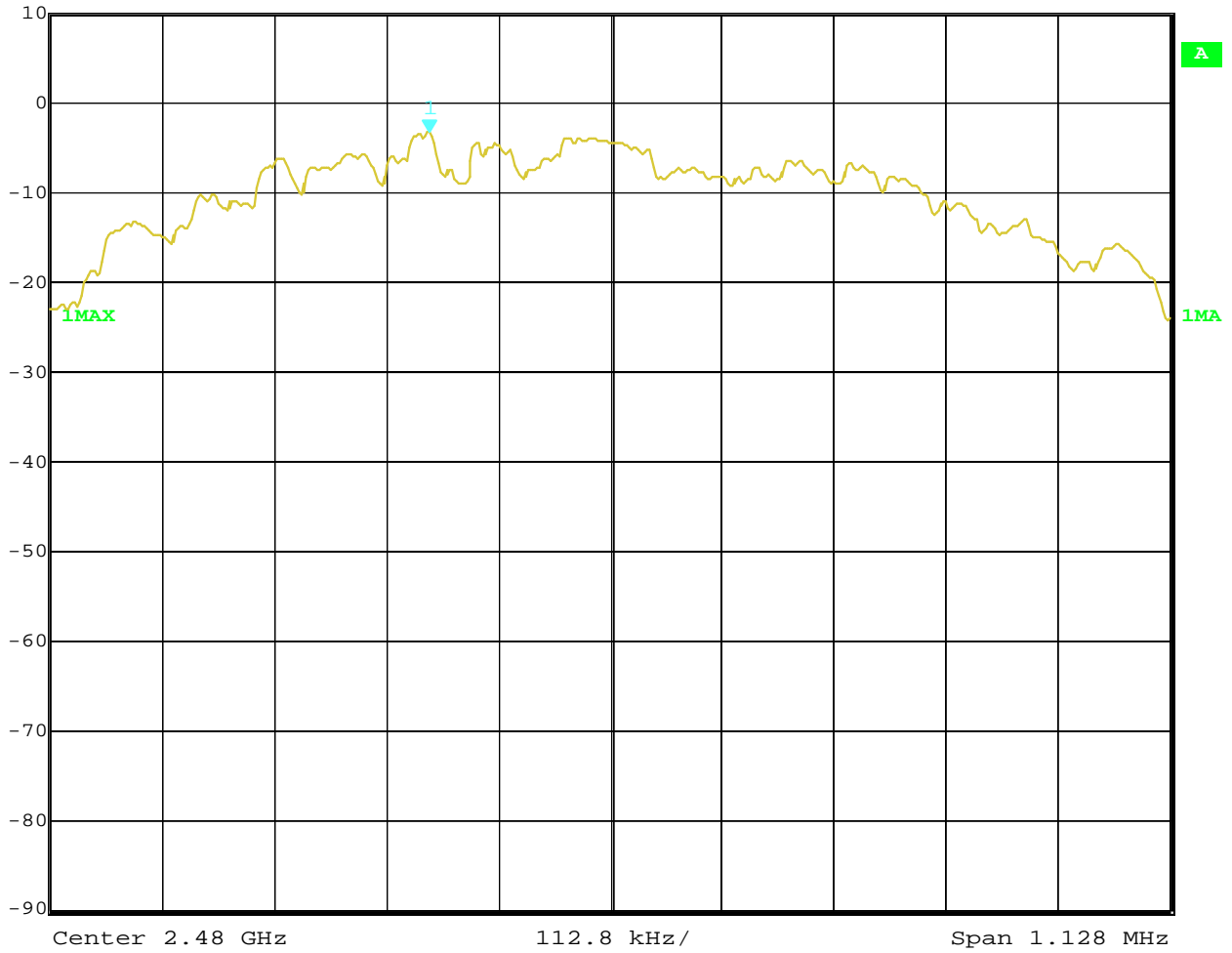
### 3. High Channel



Ref Lvl  
10 dBm

Marker 1 [T1]  
-3.46 dBm  
2.47981803 GHz

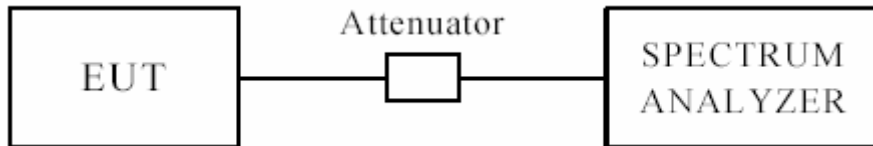
RBW 10 kHz RF Att 20 dB  
VBW 30 kHz  
SWT 30 ms Unit dBm



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**10 Out of Band Measurement**

**10.1 Test Setup for band edge**



The restricted band requirement based on radiated emission test; please see the clause 6 for the test setup

**10.2 Limits of Out of Band Emissions Measurement**

Below -20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).  
 Fall in the restricted bands listed in section 15.205. The maximum permitted average field strength is listed in section 15.209.

**10.3 Test Procedure**

For signals in the restricted bands above and below the 2.4-2.483GHz allocated band a measurement was made of

radiated emission test.( Peak values with RBW=1MHz, VBW=3MHz and PK detector. AV value with RBW=1MHz, VBW=3MHz and RMS detector)

For bandage test, the spectrum set as follows: RBW=100kHz, VBW=300 kHz. A conducted measurement used

**10.4 Test Result**

Please see next pages

Note: 1. For band-edge measurement, the frequency from 30MHz-25GHz was tested. And It met the FCC rule.

2. This is a handheld device. The radiated emissions should be tested under 3-axes position (Lying, Side, and Stand), After pre-test. It was found that the worse radiated emission was get at the lying position.

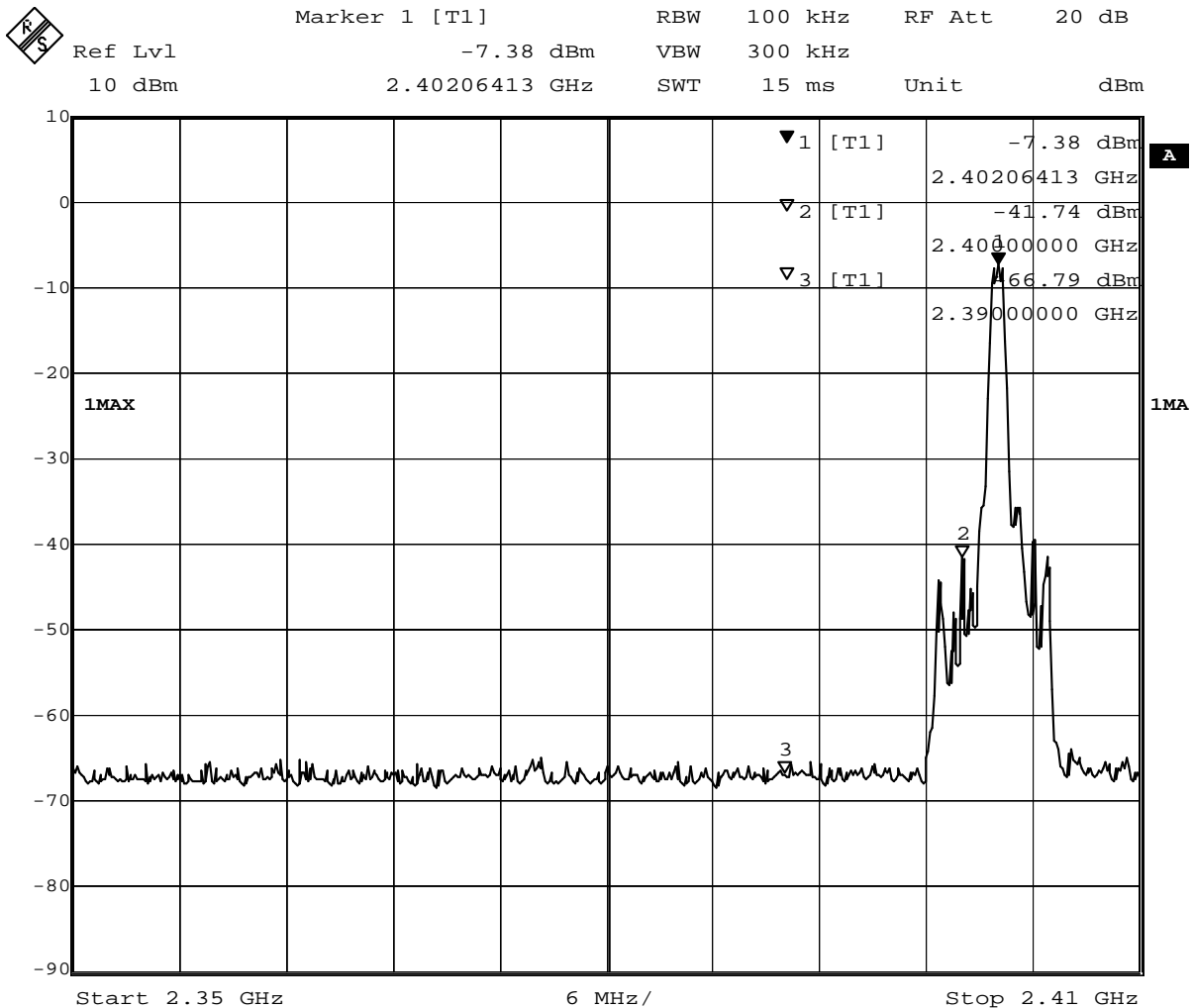
H and V polarity all have been tested only worse case is reported



10.4 Band-edge and Restricted band Measurement

|              |   |      |               |            |
|--------------|---|------|---------------|------------|
| EUT          | P614BT Bluetooth Headphones with Microphone |      | Model         | P614BT     |
| Mode         | Keeping Transmitting                        |      | Input Voltage | DC3.7V     |
| Temperature  | 24 deg. C,                                  |      | Humidity      | 56% RH     |
| Test Result: | Pass  |      | Detector      | PK         |
| 2390MHz      | PK (dBμV/m)                                 | 36.7 | Limit         | 74(dBμV/m) |
|              | AV (dBμV/m)                                 | --   |               | 54(dBμV/m) |

Test Figure:



Date: 16.NOV.2014 08:36:27

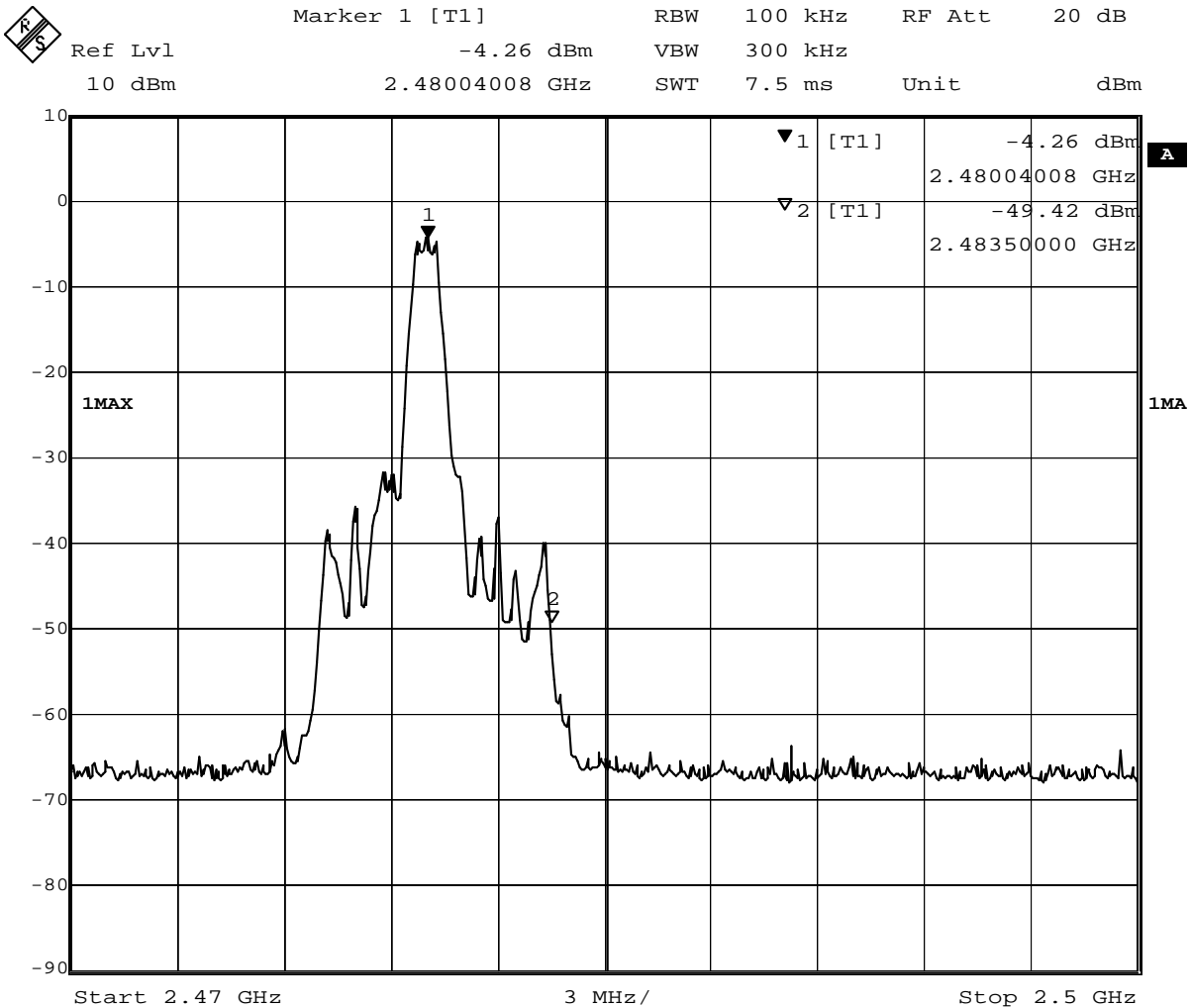




10.4 Band-edge and Restricted band Measurement

|              |   |      |               |            |
|--------------|---|------|---------------|------------|
| EUT          | P614BT Bluetooth Headphones with Microphone |      | Model         | P614BT     |
| Mode         | Keeping Transmitting                        |      | Input Voltage | DC3.7V     |
| Temperature  | 24 deg. C,                                  |      | Humidity      | 56% RH     |
| Test Result: | Pass  |      | Detector      | PK         |
| 2483.500MHz  | PK (dBμV/m)                                 | 40.6 | Limit         | 74(dBμV/m) |
|              | AV (dBμV/m)                                 | --   |               | 54(dBμV/m) |

Test Figure:



Date: 16.NOV.2014 08:35:10



## **11.0 Antenna Requirement**

### **11.1 Standard Applicable**

For intentional device, according to FCC 47 CFR Section 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.

And according to FCC 47 CFR Section 15.247 (b), if transmitter antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### **11.2 Antenna Connected construction**

PCB antenna used. The maximum Gain of the antennas is 2.0 dBi.

**12.0 FCC ID Label**

**FCC ID: Z3AP614BT**

The label must not be a stick-on paper label. 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.

**Mark Location:**



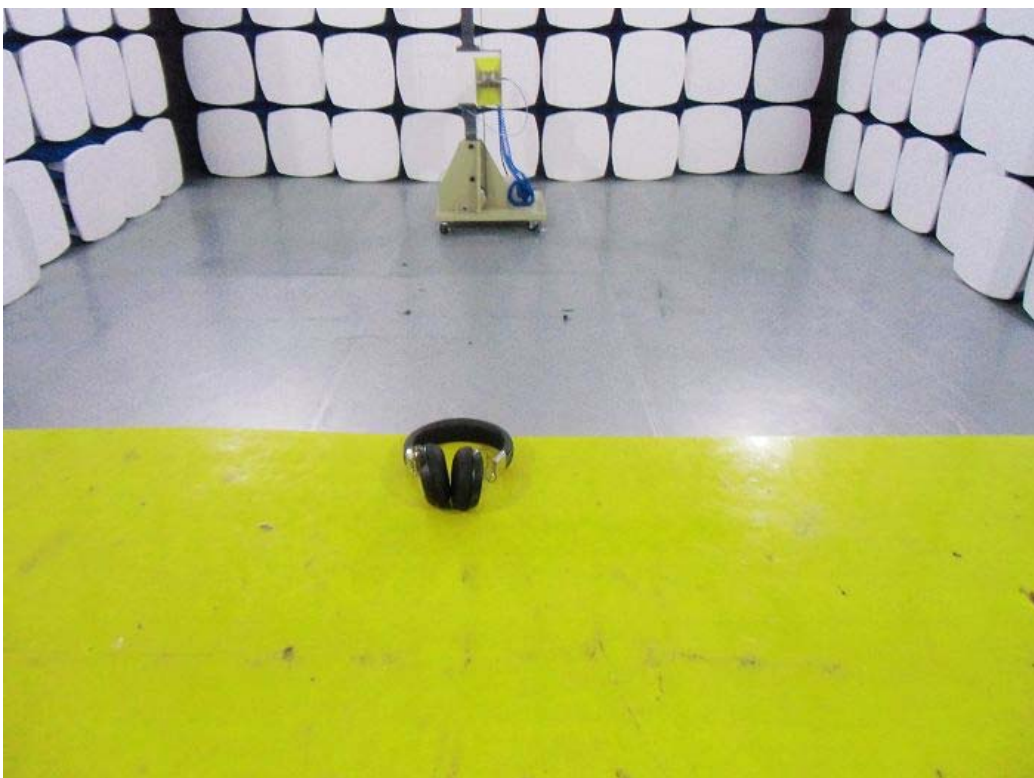
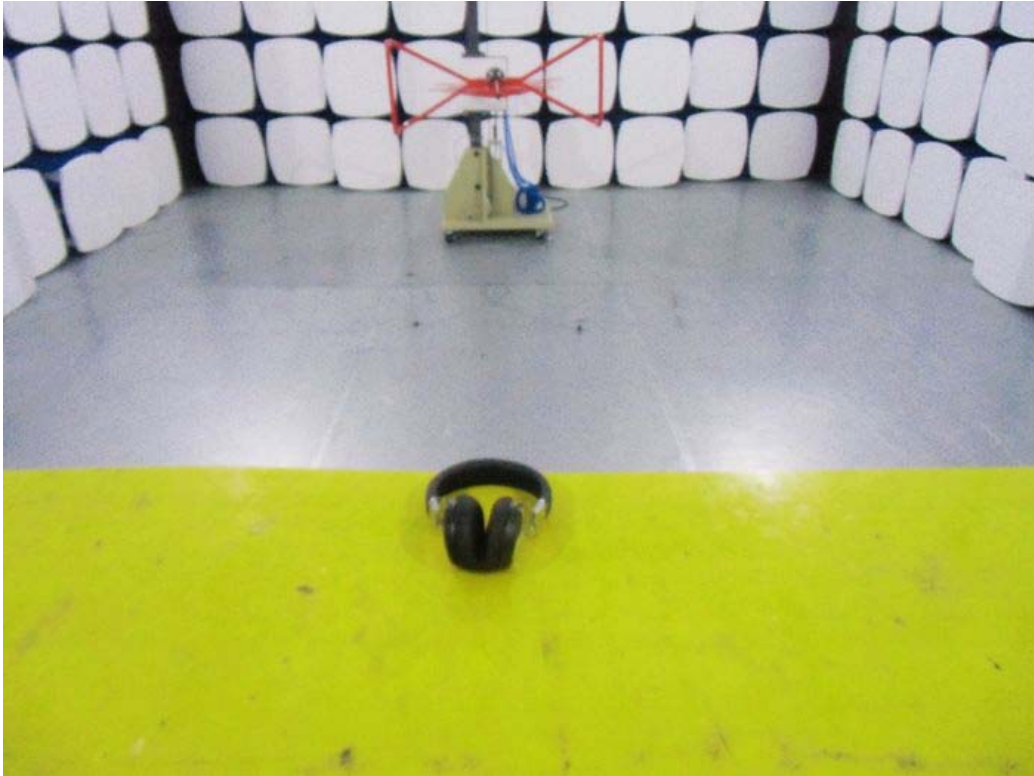
Label Location

## 13 PHOTOGRAPHS OF THE TEST CONFIGURATION

### Conducted Emissions



Radiated Emissions





### PHOTOGRAPHS OF EUT



Photo 1



Photo 2



Photo 3

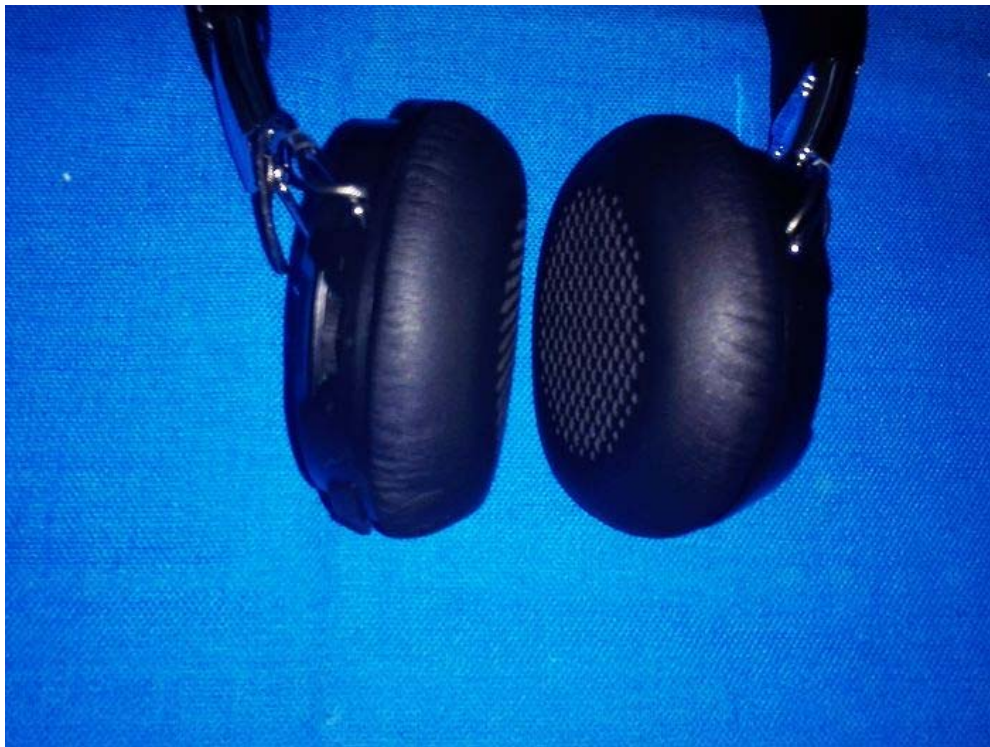


Photo 4





Photo 5



Photo 6





Photo 7



Photo 8



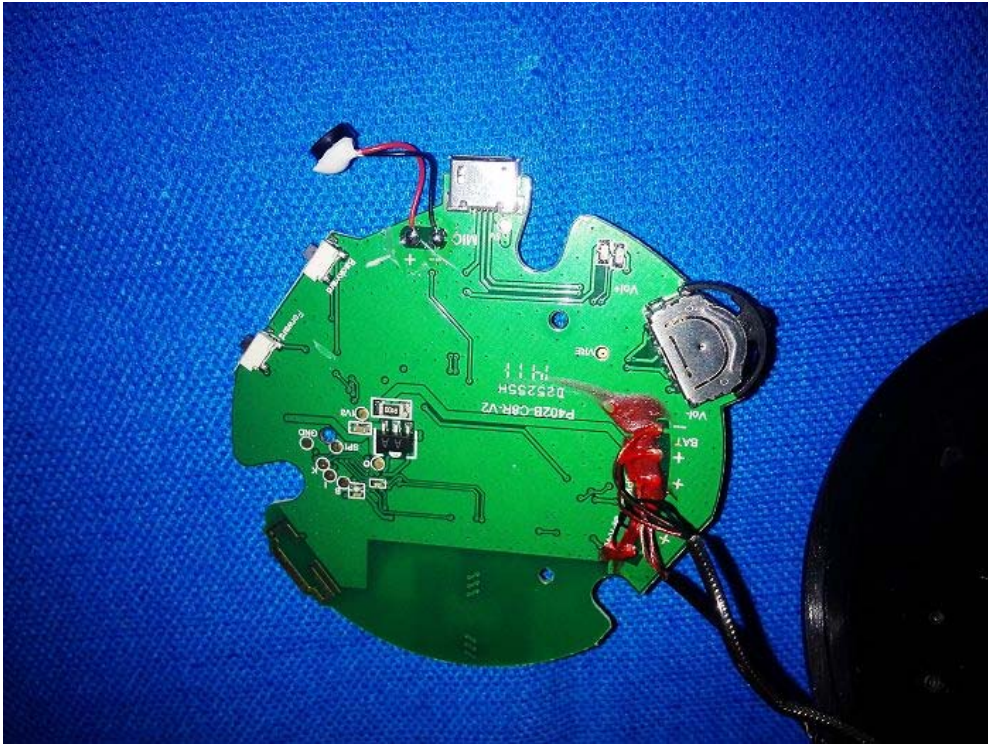


Photo 9



Photo 10



Photo 11

**The Report End**