TECHNICAL REPORT

| | |
|---|---|
| Report No: | FCC 1605058-02 |
| File reference No: | 2016-06-08 |
| Applicant: | PHIMAX INTERNATIONAL LIMITED |
| Product: | Bluetooth Speaker |
| Model No: | X-9 |
| Trademark: | PHIMAX |
| Test Standards: | FCC Part 15 Subpart C, Paragraph 15.247 |
| Test result: | It is herewith confirmed and found to comply with the requirements set up by ANSI C63.10,FCC Part 15 Subpart C, Paragraph 15.247 regulations for the evaluation of electromagnetic compatibility |

Approved By

Jack Chung

Jack Chung

Manager

Dated: June 08, 2016

**Results appearing herein relate only to the sample tested**
**The technical reports is issued errors and omissions exempt and is subject to withdrawal at**


## SHENZHEN TIMEWAY TESTING LABORATORIES

Room 512-519, 5/F., East Tower, Building 4, Anhua Industrial Zone, Futian District, Shenzhen, Guangdong, China

Tel (755) 83448688, Fax (755) 83442996, E-Mail:info@timeway-lab.com

## Special Statement:

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.

The testing quality system of our laboratory meet with ISO/IEC-17025 requirements, which is approved by CNAL. This approval result is accepted by MRA of APLAC.

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

**CNAL-LAB Code: L2292**

The EMC Laboratory has been assessed and in compliance with CNAL/AC01:2002 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of testing Laboratories.

**FCC-Registration No.: 899988**

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 899988.

**IC- Registration No.: IC5205A-02**

The EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada. The acceptance letter from the IC is maintained in our files. Registration IC No.: 5205A-02.

Test Report Conclusion

Content

## 1.0 General Details

### 1.1 Test Lab Details

Name : SHENZHEN TIMEWAY TESTING LABORATORIES.

Address: Room 512-519,5/F., East Tower,Building 4, Anhua Industrial Zone, Futian District,Shenzhen, Guangdong China

Telephone: (755) 83448688

Fax: (755) 83442996

Site on File with the Federal Communications Commission – United Sates

Registration Number: 899988

For 3m & 10 m OATS

Site Listed with Industry Canada of Ottawa, Canada

Registration Number: IC: 5205A-02

For 3m & 10 m OATS

### 1.2 Applicant Details

Applicant: PHIMAX INTERNATIONAL LIMITED

Address: Room 1303, No.95 XinYan Building YanLing Road TianHe Distirct,Guangzhou,China

Telephone: 020-38937810

Fax: --

### 1.3 Description of EUT

| | |
|---|---|
| Product: | Bluetooth Speaker |
| Manufacturer: | SHENZHEN PHIMAX INTERNATIONAL COMPANY LTD |
| Address: | Room 401, 4 Floor Office Building ,ZhongKeNuo Indurstry , HeZhou of BaoAn Distirct, Shenzhen,China |
| Brand Name: | PHIMAX |
| Model Number: | X-9 |
| Additional Model Number: | N/A |
| Type of Modulation | GFSK ( Bluetooth BLE) |
| Frequency range | 2402-2480MHz |
| Frequency Selection | By software |
| Channel Number | 40 |

### 1.4 Submitted Sample: 2 Samples

### 1.5 Test Duration

2016-05-10 to 2016-06-08

1.6 Test Uncertainty

Conducted Emissions Uncertainty =3.6dB

Radiated Emissions Uncertainty =4.7dB

1.7 Test Engineer

The sample tested by Terry Tang

Print Name: Terry Tang

| 2.0 Test Equipments | | | | | |
|---|---|---|---|---|---|
| Instrument Type | Manufacturer | Model | Serial No. | Date of Cal. | Due Date |
| ESPI Test Receiver | R&S | ESPI 3 | 100379 | 2015-08-22 | 2016-08-21 |
| TWO Line-V-NETW | R&S | EZH3-Z5 | 100294 | 2015-08-22 | 2016-08-21 |
| TWO Line-V-NETW | R&S | EZH3-Z5 | 100253 | 2015-08-22 | 2016-08-21 |
| Ultra Broadband ANT | R&S | HL562 | 100157 | 2015-08-23 | 2016-08-22 |
| ESDV Test Receiver | R&S | ESDV | 100008 | 2015-08-22 | 2016-08-21 |
| Impuls-Begrenzer | R&S | ESH3-Z2 | 100281 | 2015-08-22 | 2016-08-21 |
| System Controller | CT | SC100 | - | -- | -- |
| Printer | EPSON | PHOTO EX3 | CFNH234850 | -- | -- |
| Computer | IBM | 8434 | 1S8434KCE99BLXLO* | - | - |
| Loop Antenna | EMCO | 6502 | 00042960 | 2015-08-23 | 2016-08-22 |
| ESPI Test Receiver | R&S | ESI26 | 838786/013 | 2015-08-22 | 2016-08-21 |
| 3m OATS | -- | -- | N/A | 2015-08-24 | 2016-08-23 |
| Horn Antenna | R&S | BBHA 9170 | BBHA9170265 | 2015-08-24 | 2016-08-23 |
| Horn Antenna | R&S | BBHA 9120D | 9120D-631 | 2015-08-24 | 2016-08-23 |
| Power meter | Anritsu | ML2487A | 6K00003613 | 2015-08-22 | 2016-08-21 |
| Power sensor | Anritsu | MA2491A | 32263 | 2015-08-22 | 2016-08-21 |
| Bilog Antenna | Schwarebeck | VULB9163 | 9163/340 | 2015-08-23 | 2016-08-21 |
| LISN | AFJ | LS16C | 10010947251 | 2015-08-22 | 2016-08-21 |
| LISN (Three Phase) | Schwarebeck | NSLK 8126 | 8126453 | 2015-08-23 | 2016-08-22 |
| 9*6*6 Anechoic | -- | -- | N/A | 2015-08-24 | 2016-08-23 |
| EMI Test Receiver | RS | ESCS30 | 100139 | 2015-08-22 | 2016-08-21 |

## 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 Limit: 6dB bandwidth>500kHz | PASS | Complies |
| FCC Part 15, Paragraph 15.247(b) | Maximum peak output power Limit: max. 30dBm | PASS | Complies |
| FCC Part 15, Paragraph 15.109,15.205 & 15.209 | Transmitter Radiated Emission Limit: Table 15.209 | PASS | Complies |
| FCC Part 15, Paragraph 15.247(e) | Power Spectral Density Limit: max. 8dBm | PASS | Complies |
| FCC Part 15, Paragraph 15.247(d) | Out of Band Emission and Restricted Band Radiation Limit: 20dB less than peak value of fundamental frequency Restricted band limit: Table 15.209 | PASS | Complies |

### 3.2 Test Standards

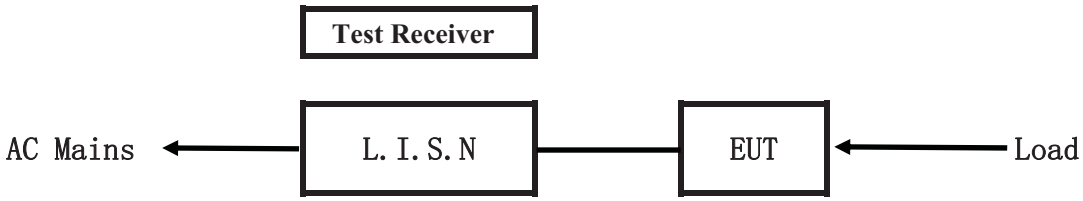
**FCC Part 15 Subpart & Subpart C, Paragraph 15.247, ANSI 63.4 :2014 and ANSI 63.10 :2013**

## 4.0 EUT Modification

**No modification SHENZHEN TIMEWAY TESTING LABORATORIES**

## 5. Power Line Conducted Emission Test

5.1 Schematics of the test



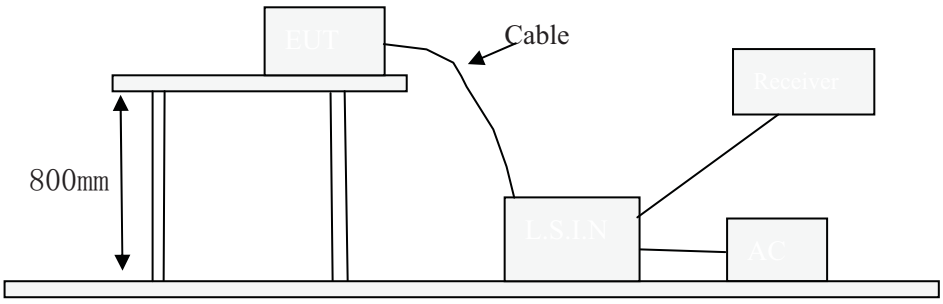

EUT: Equipment Under Test

5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.4-2014.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 –2014.

Test Voltage: 120V~, 60Hz

Block diagram of Test setup




5.3 Configuration of The EUT

The EUT was configured according to ANSI C63.4-2014. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

A. EUT

| Device | Manufacturer | Model | FCC ID |
|---|---|---|---|
| Bluetooth Speaker | SHENZHEN PHIMAX INTERNATIONAL COMPANY LTD | X-9 | 2AHXMX-9 |

B. Internal Device

| Device | Manufacturer | Model | Rating |
|---|---|---|---|
| | | | |

C. Peripherals

| Device | Manufacturer | Model | Rating |
|---|---|---|---|
| Power Supply | RH | RH-05200US | Input: 100-240V~, 0.35A; Output: DC5V, 2A |

5.4 EUT Operating Condition

Operating condition is according to ANSI C63.4 -2014.

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 15.207 and 15.107

| Frequency (MHz) | Class A Limits (dB μ V) | | Class B Limits (dB μ V) | |
|---|---|---|---|---|
| | 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**

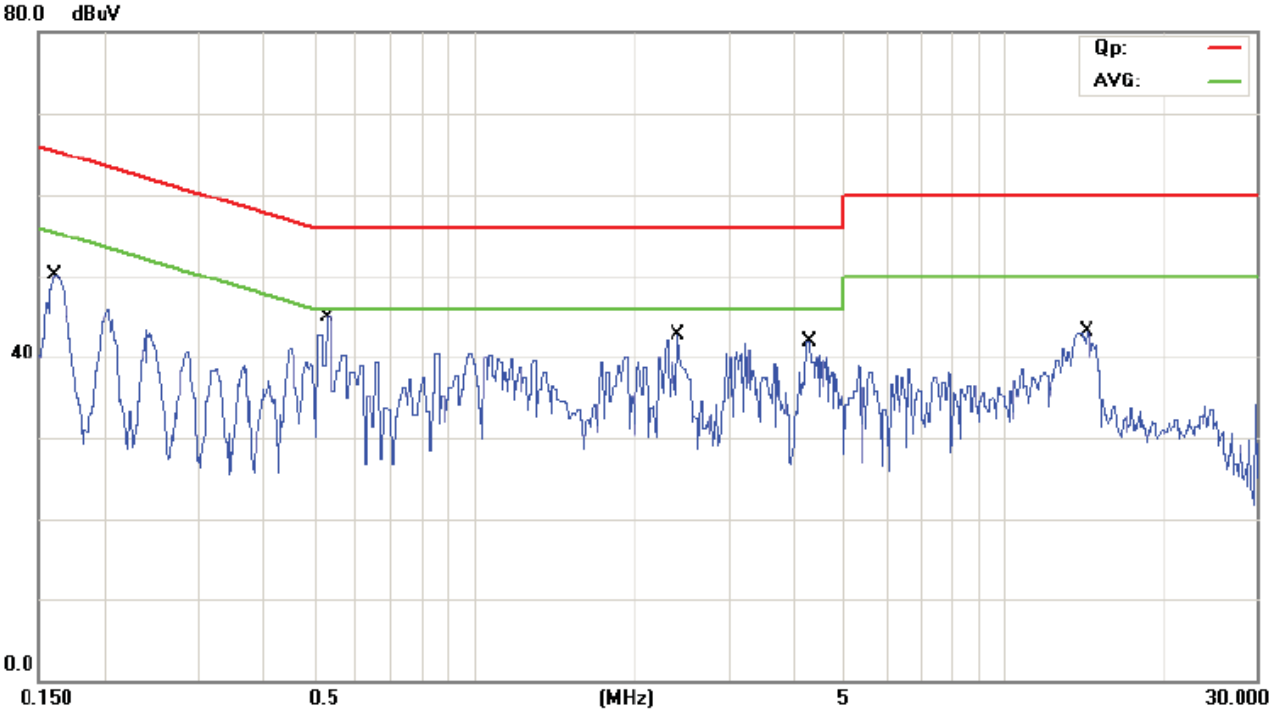
Temperature: 26℃ Humidity: 65%RH Atmospheric Pressure: 101 KPa

**EUT set Condition: Charging and Keep Bluetooth Transmitting**

**Equipment Level: Class B**

**Results: PASS**

Please refer to following diagram for individual




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | | 0.1602 | 36.30 | 11.01 | 47.31 | 65.45 | -18.14 | QP | |
| 2 | | 0.1602 | 8.30 | 11.01 | 19.31 | 55.45 | -36.14 | AVG | |
| 3 | * | 0.5304 | 29.00 | 11.40 | 40.40 | 56.00 | -15.60 | QP | |
| 4 | | 0.5304 | -7.10 | 11.40 | 4.30 | 46.00 | -41.70 | AVG | |
| 5 | | 2.4052 | 21.40 | 12.46 | 33.86 | 56.00 | -22.14 | QP | |
| 6 | | 2.4052 | -5.80 | 12.46 | 6.66 | 46.00 | -39.34 | AVG | |
| 7 | | 4.2923 | 20.60 | 13.22 | 33.82 | 56.00 | -22.18 | QP | |
| 8 | | 4.2923 | -9.20 | 13.22 | 4.02 | 46.00 | -41.98 | AVG | |
| 9 | | 14.2310 | 24.50 | 11.32 | 35.82 | 60.00 | -24.18 | QP | |
| 10 | | 14.2310 | -3.50 | 11.32 | 7.82 | 50.00 | -42.18 | AVG | |

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

**EUT Operating Environment**

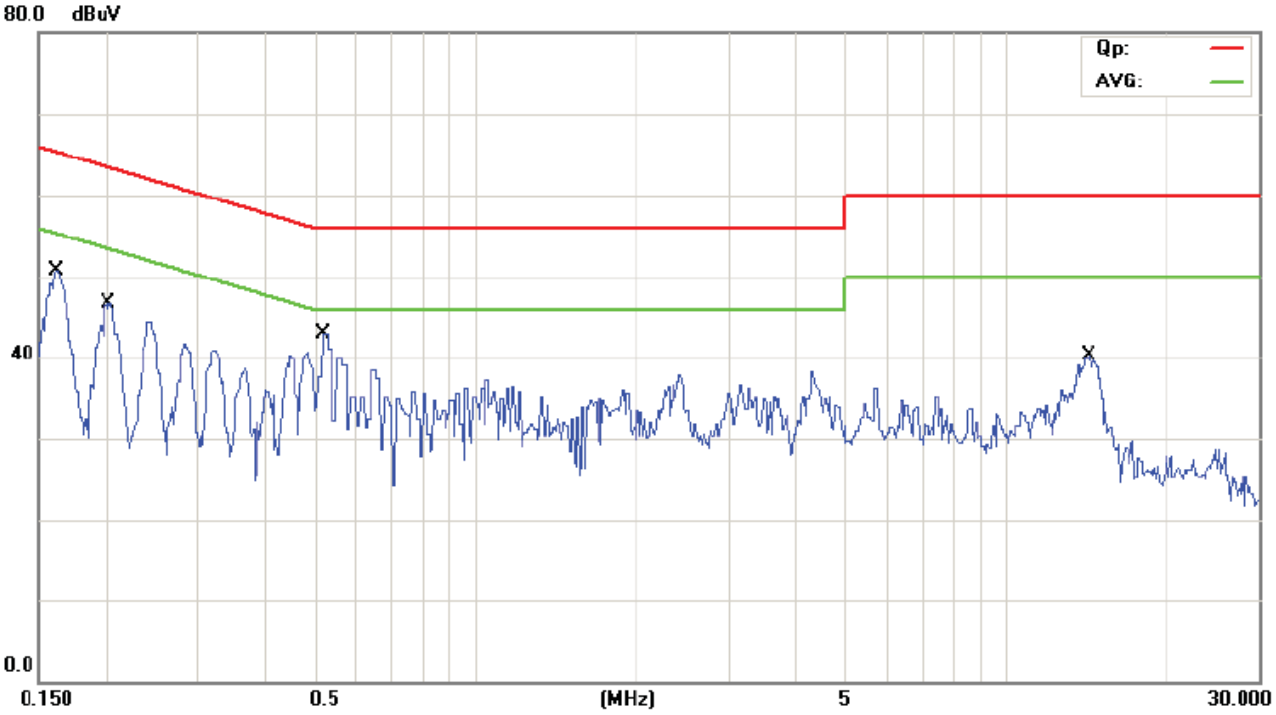
Temperature: 26℃ Humidity: 65%RH Atmospheric Pressure: 101 KPa

**EUT set Condition: Charging and Keep Bluetooth Transmitting**

**Equipment Level: Class B**

**Results: Pass**

Please refer to following diagram for individual




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | | 0.1617 | 36.70 | 11.01 | 47.71 | 65.38 | -17.67 | QP | |
| 2 | | 0.1617 | 10.50 | 11.01 | 21.51 | 55.38 | -33.87 | AVG | |
| 3 | | 0.2008 | 32.60 | 11.05 | 43.65 | 63.58 | -19.93 | QP | |
| 4 | | 0.2008 | 5.90 | 11.05 | 16.95 | 53.58 | -36.63 | AVG | |
| 5 | * | 0.5186 | 28.30 | 11.39 | 39.69 | 56.00 | -16.31 | QP | |
| 6 | | 0.5186 | 6.40 | 11.39 | 17.79 | 46.00 | -28.21 | AVG | |
| 7 | | 14.2778 | 20.30 | 11.31 | 31.61 | 60.00 | -28.39 | QP | |
| 8 | | 14.2778 | -7.20 | 11.31 | 4.11 | 50.00 | -45.89 | AVG | |

## 6 Radiated Emission Test

6.1 Test Method and test Procedure:

(1) The EUT was tested according to ANSI C63.10–2013. The radiated test was performed at Timeway Laboratory. This site is on file with the FCC laboratory division, Registration No.899988

(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 C63.10–2013.

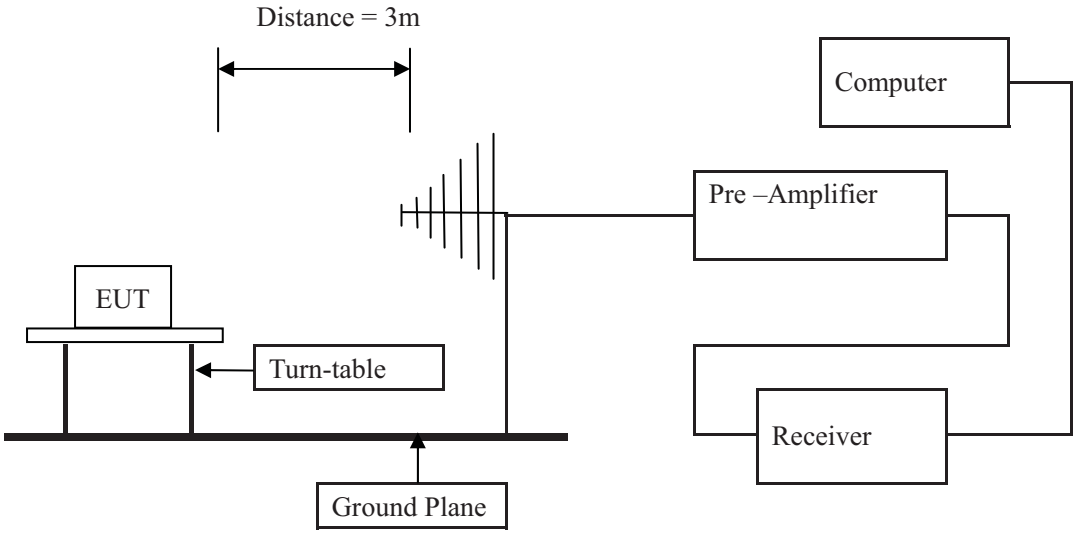
(3) The frequency spectrum from 30 MHz to 25 GHz was investigated. All readings from 30 MHz to 1 GHz are Quasi-peak values with a resolution bandwidth of 120 kHz. For measurement above 1GHz, peak values with RBW=1MHz VBW=3MHz and PK detector. AV value with RBW=1MHz, VBW=3MHz and RMS detector. Measurements 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 μ 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 handhold 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.

**Test result**

## General Radiated Emission Data and Harmonics Radiated Emission Data

**Radiated Emission In Horizontal (30MHz----1000MHz)**

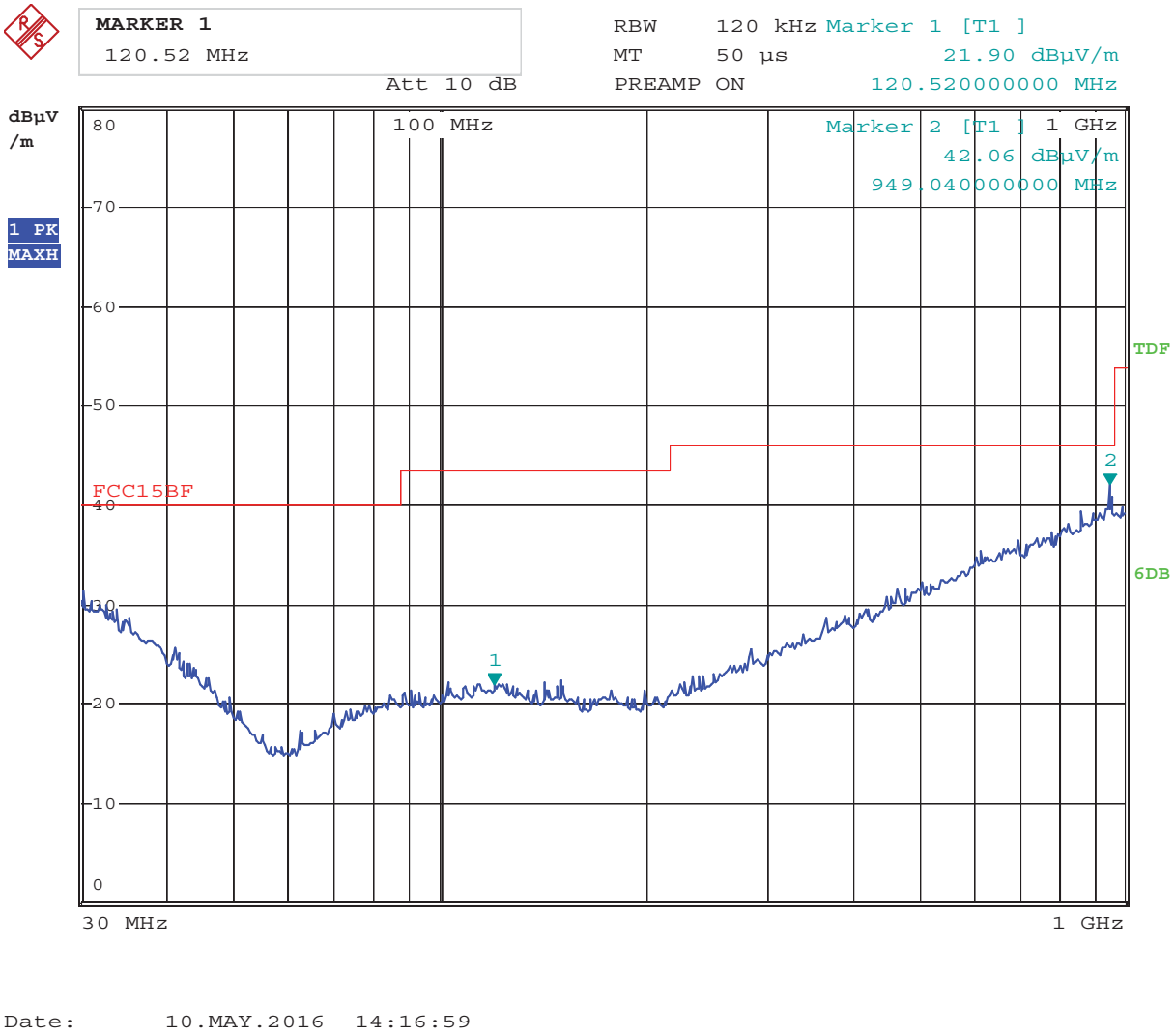
**EUT set Condition:** **Charging and Keep Bluetooth Transmitting**

**Results:** **Pass**

| Frequency (MHz) | Level@3m (dB μ V/m) | Antenna Polarity | Limit@3m (dB μ V/m) |
|---|---|---|---|
| 120.520 | 21.90 | H | 43.50 |
| 949.040 | 42.06 | H | 46.00 |
| | | | |
| 150.160 | 25.68 | V | 43.50 |
| 949.080 | 41.80 | V | 46.00 |

Test Figure:

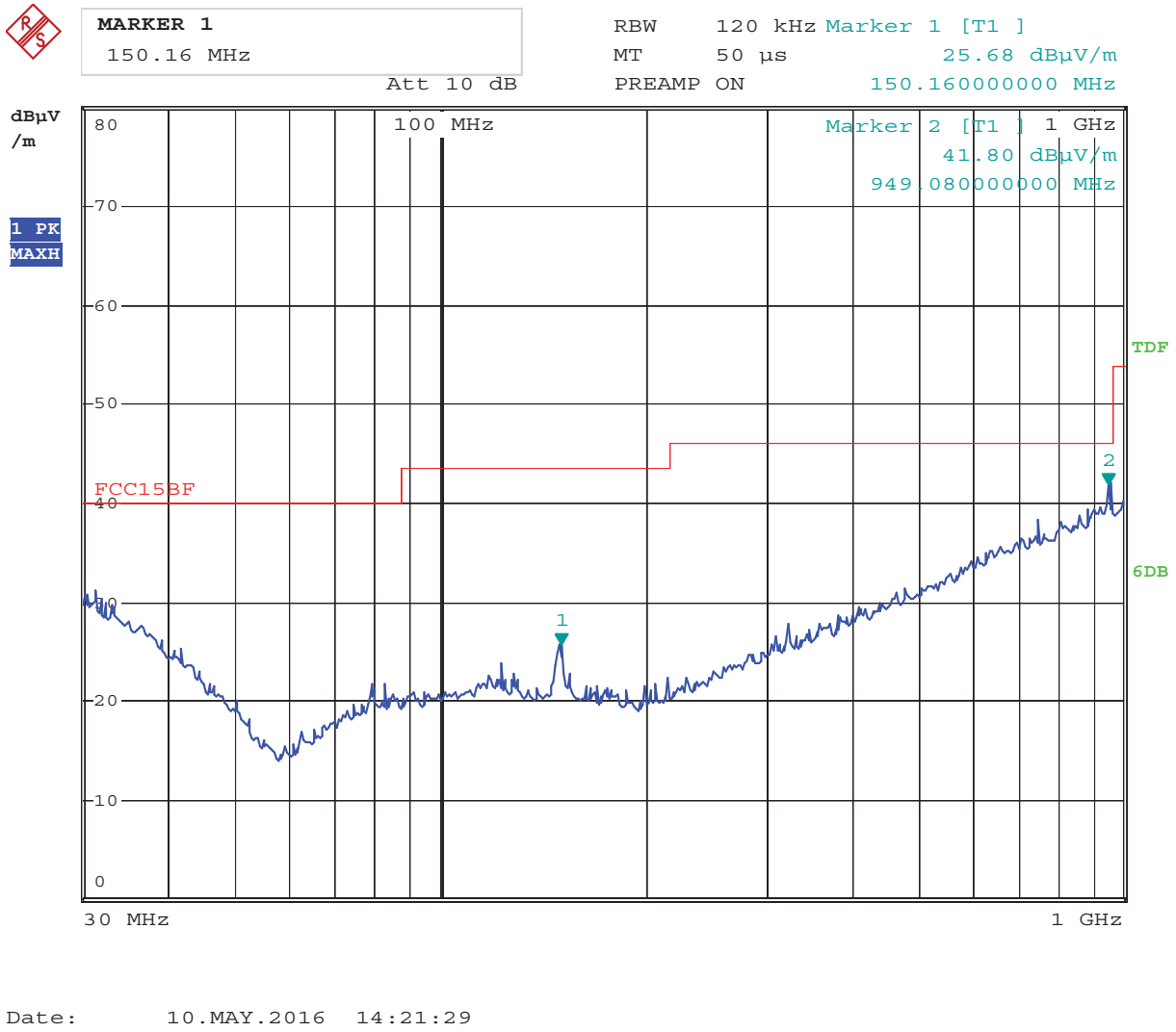
**H**




Date: 10.MAY.2016 14:16:59

Test Figure:

V



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

| Frequency (MHz) | Level@3m (dB μ V/m) | Antenna Polarity | Limit@3m (dB μ V/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 (dB μ V/m) | Antenna Polarity | Limit@3m (dB μ V/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)**

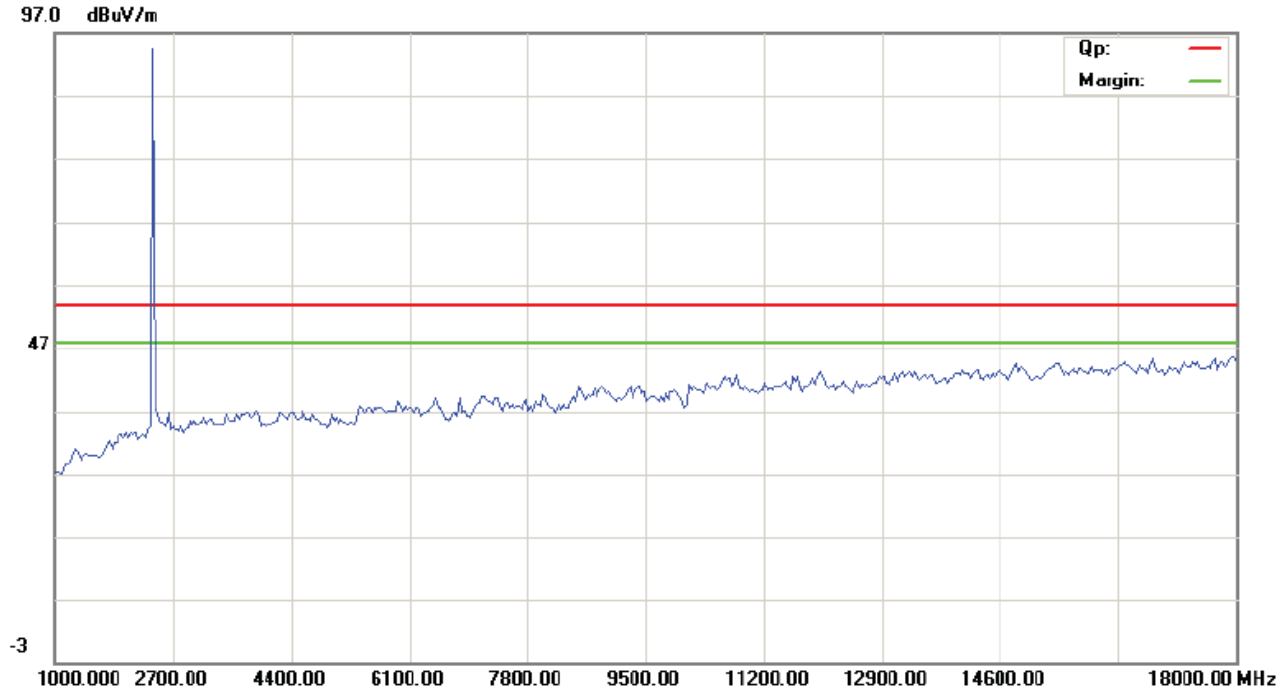
| Frequency (MHz) | Level@3m (dB μ V/m) | Antenna Polarity | Limit@3m (dB μ V/m) |
|---|---|---|---|
| 4960 | -- | H/V | 74(Peak)/ 54(AV) |
| 7440 | -- | H/V | 74(Peak)/ 54(AV) |
| 9920 | -- | H/V | 74(Peak)/ 54(AV) |
| 12400 | -- | H/V | 74(Peak)/ 54(AV) |
| 14880 | -- | H/V | 74(Peak)/ 54(AV) |
| 17360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

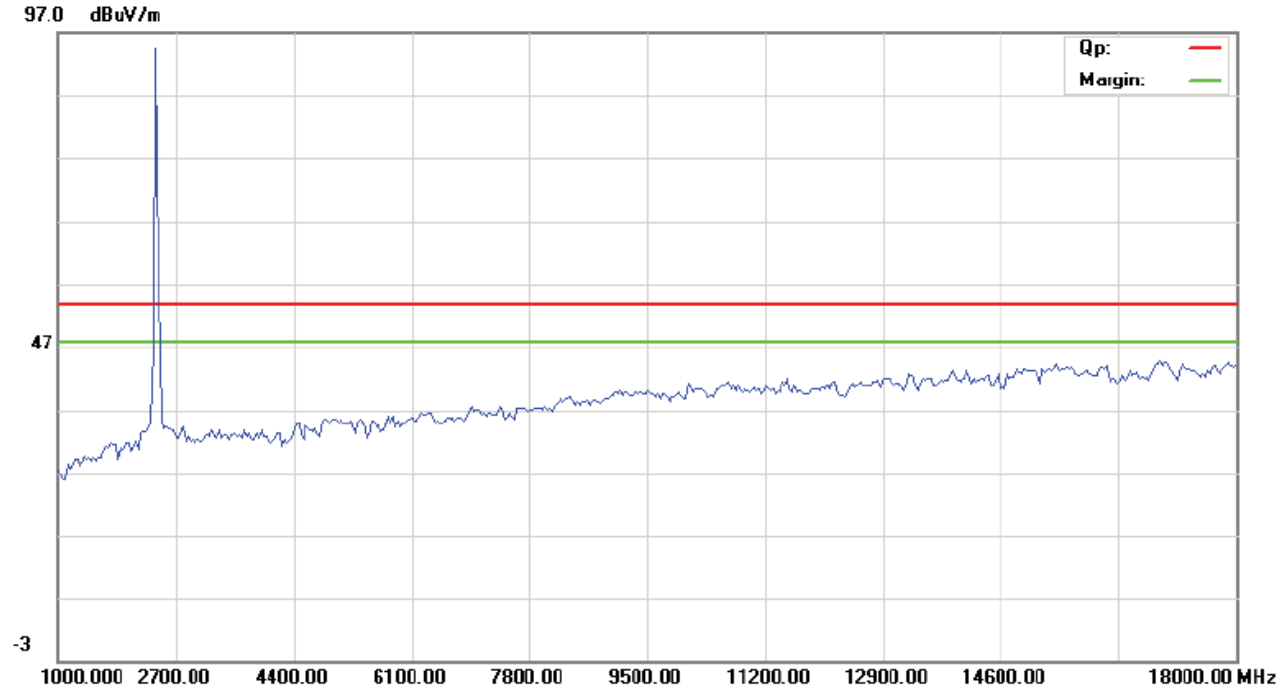
2. Remark “---” means that the emissions level is too low to be measured

Please refer to the following test plots for details:

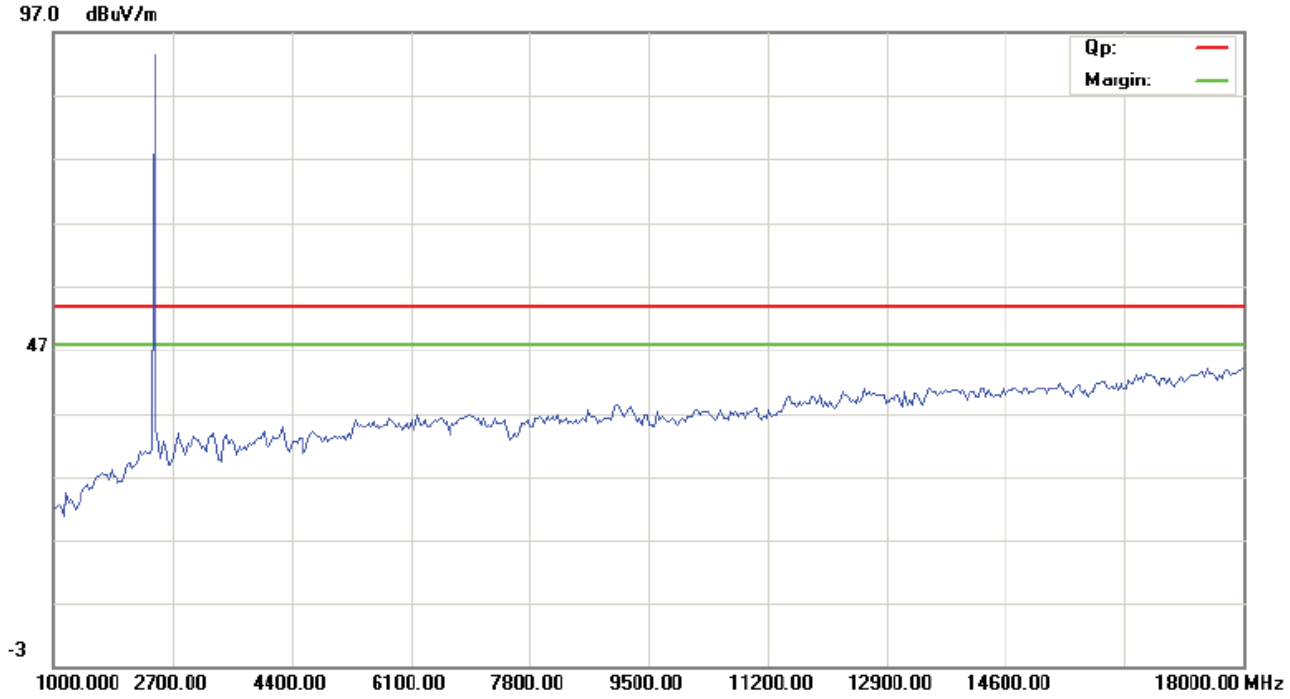
**Low Channel: Horizontal**



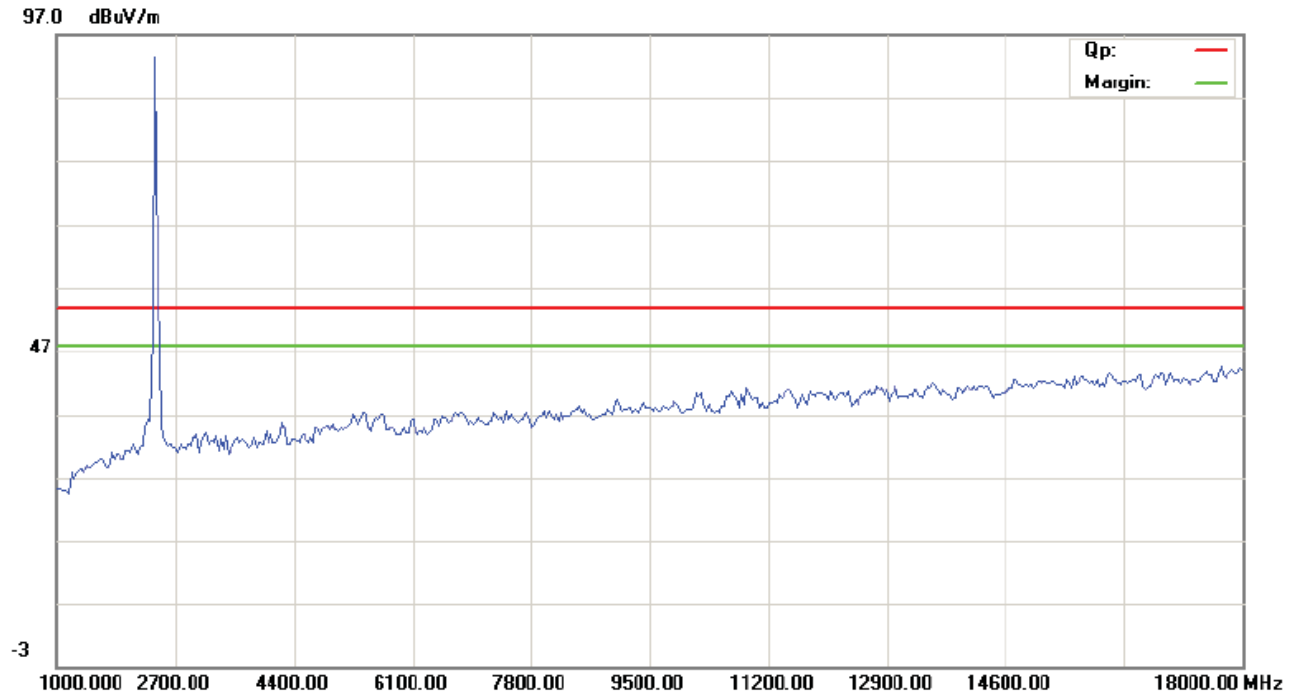

**Low Channel : Vertical**



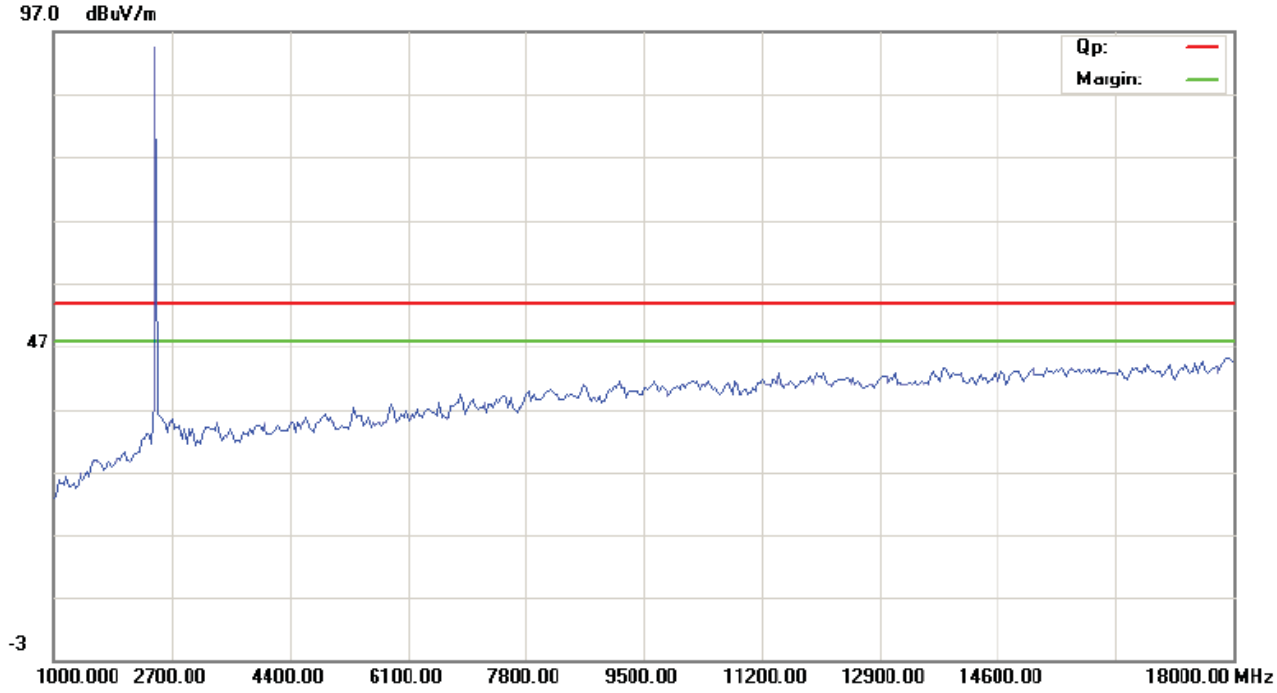
**Middle Channel : Horizontal**



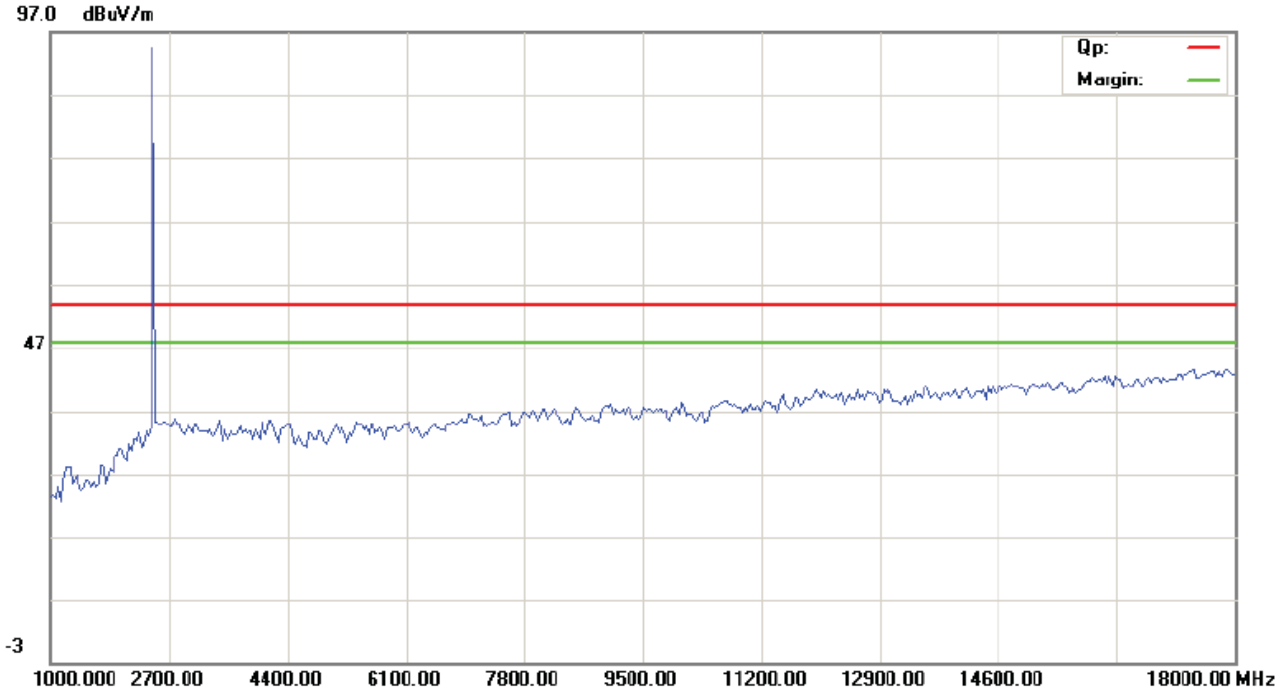

**Middle Channel : Vertical**



**High Channel : Horizontal**



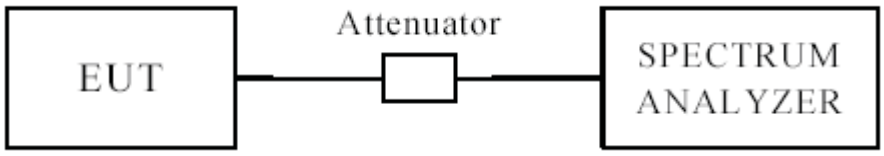

**High Channel : Vertical**




**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) ≥ 3 x 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.

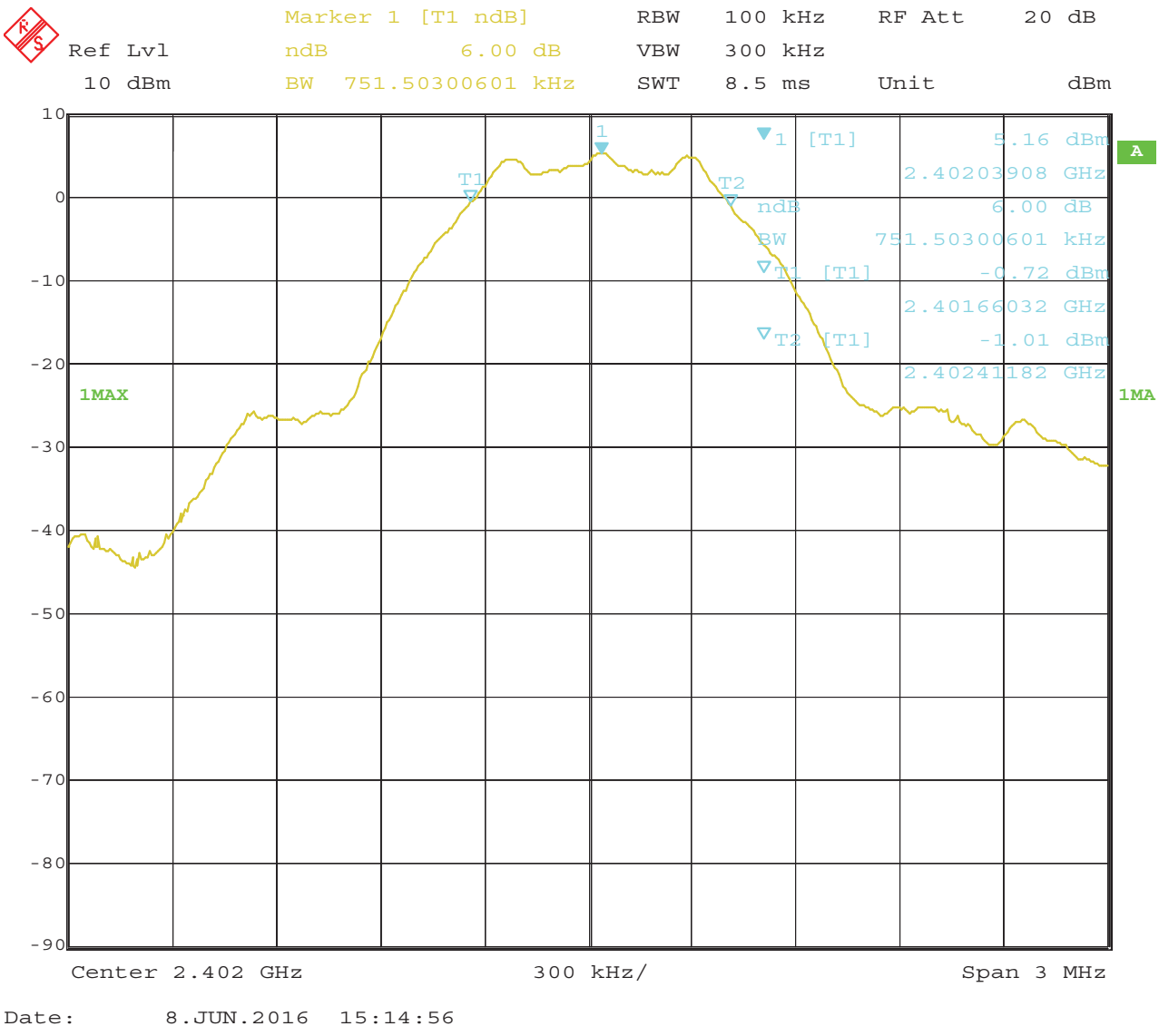
### 7.4 Test Result

| EUT | Bluetooth Speaker | Model | X-9 |
|---|---|---|---|
| Mode | Keep Transmitting | Input Voltage | DC7.4V |
| Temperature | 24 deg. C, | Humidity | 56% RH |

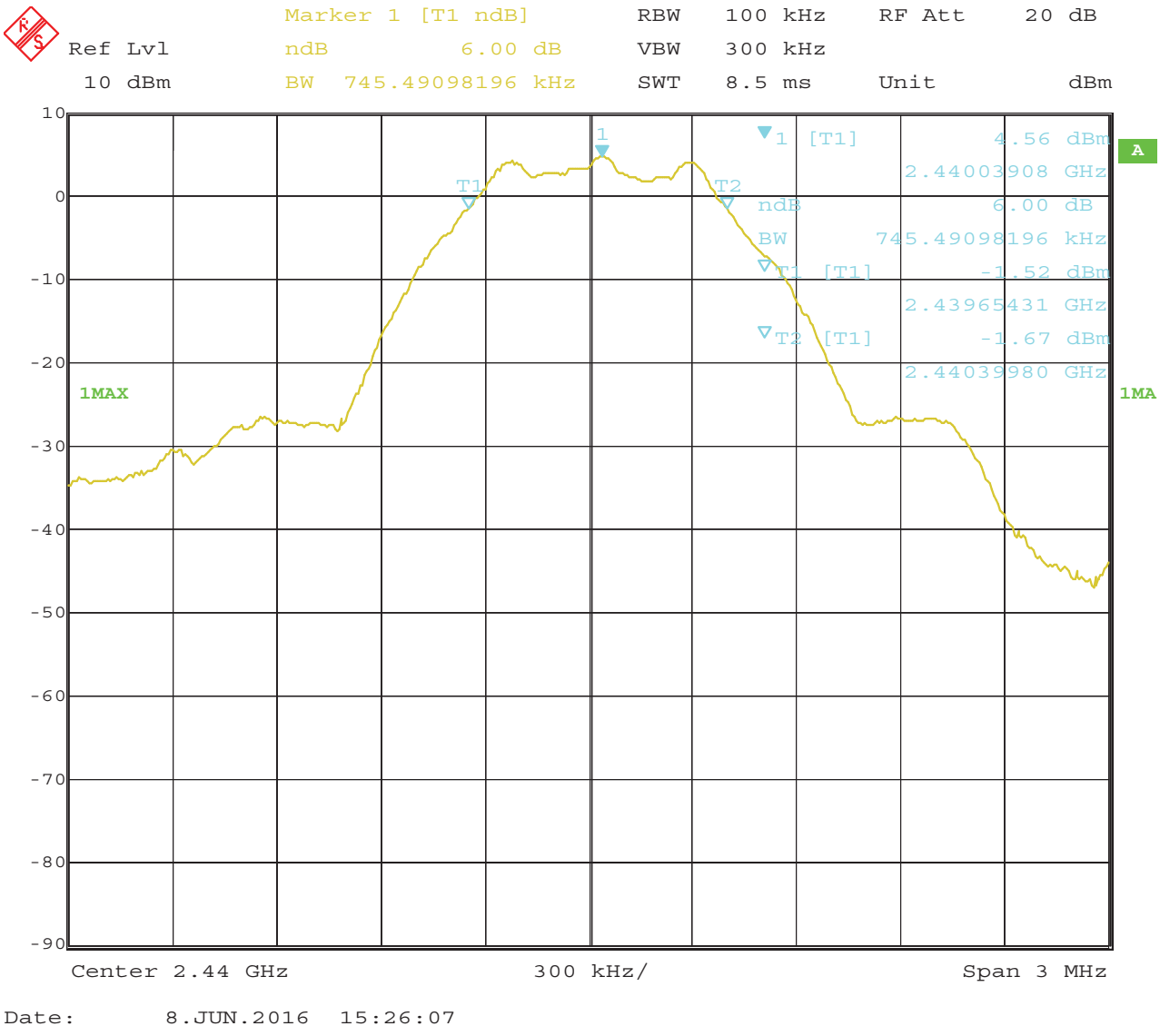
| Channel | Channel Frequency (MHz) | 6 dB Bandwidth (kHz) | Maximum Limit (kHz) | Pass/ Fail |
|---|---|---|---|---|
| Low | 2402 | 752 | 0.5 | Pass |
| Middle | 2440 | 745 | 0.5 | Pass |
| High | 2480 | 739 | 0.5 | Pass |

Test Figure:

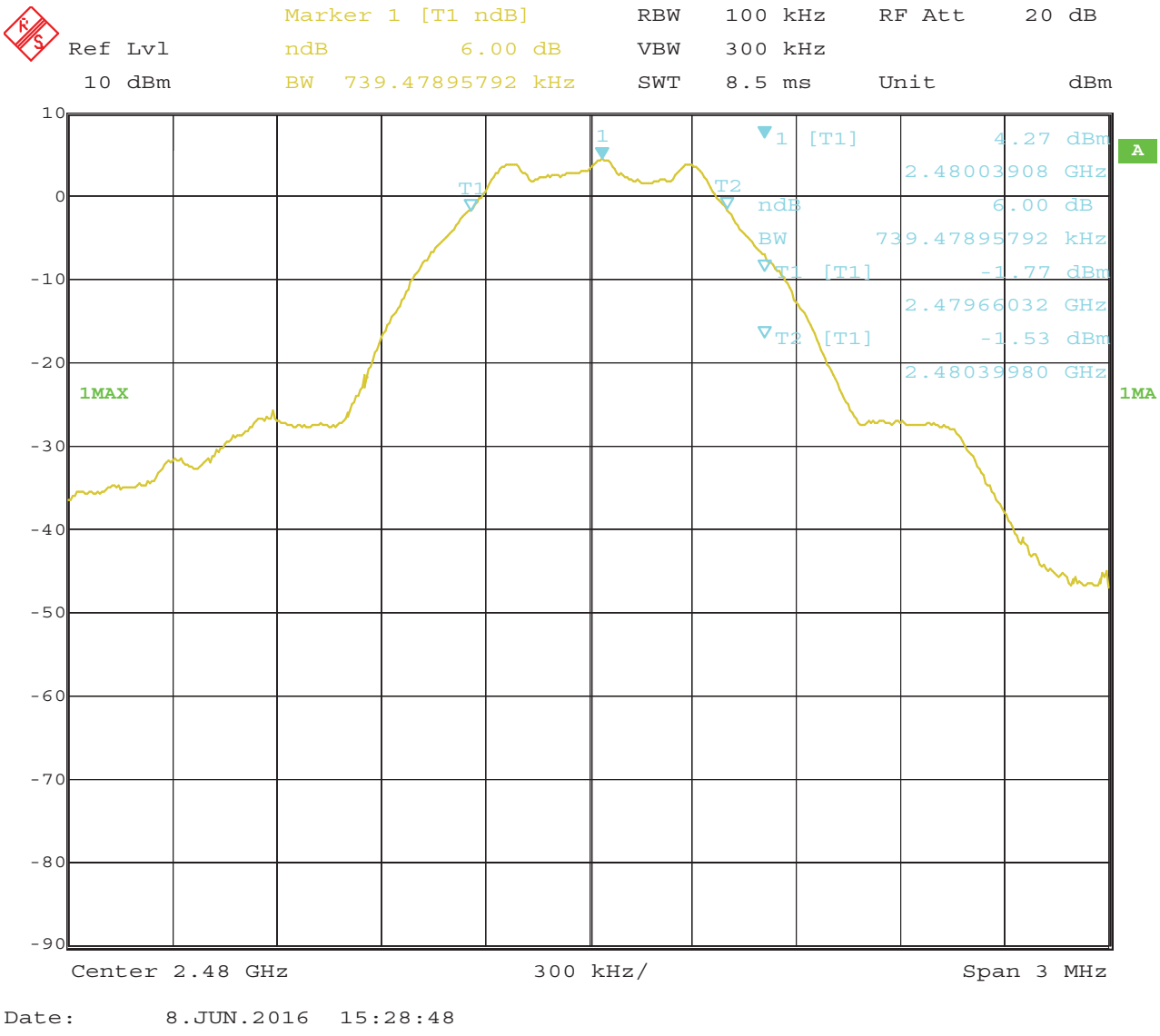
**1. Condition: Low Channel**



**2. Condition: Middle Channel**

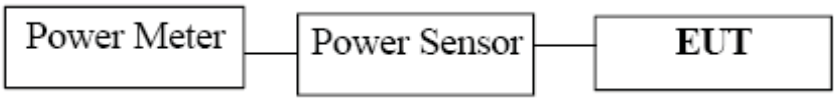


### 3. High Channel



## 8. Maximum Output Power

### 8.1 Test Setup




### 8.2 Limits of Maximum Output Power

The Maximum 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 were measured.**

**8.4Test Results**

| EUT | Bluetooth Speaker | Model | X-9 |
|---|---|---|---|
| Mode | Keep Transmitting | Input Voltage | DC7.4V |
| Temperature | 24 deg. C, | Humidity | 56% RH |

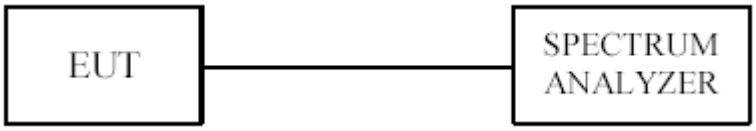
| Channel | Channel Frequency (MHz) | Peak Power Output (dBm) | Power Limit (dBm) | Pass/ Fail |
|---|---|---|---|---|
| Low | 2402 | 5.45 | 30 | Pass |
| Middle | 2440 | 4.84 | 30 | Pass |
| High | 2480 | 4.52 | 30 | Pass |

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

Max. Power Output = Power Reading + Cable loss + 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.

**9.4Test Result**

| EUT | Bluetooth Speaker | Model | X-9 |
|---|---|---|---|
| Mode | Keep Transmitting | Input Voltage | DC7.4V |
| Temperature | 24 deg. C, | Humidity | 56% RH |

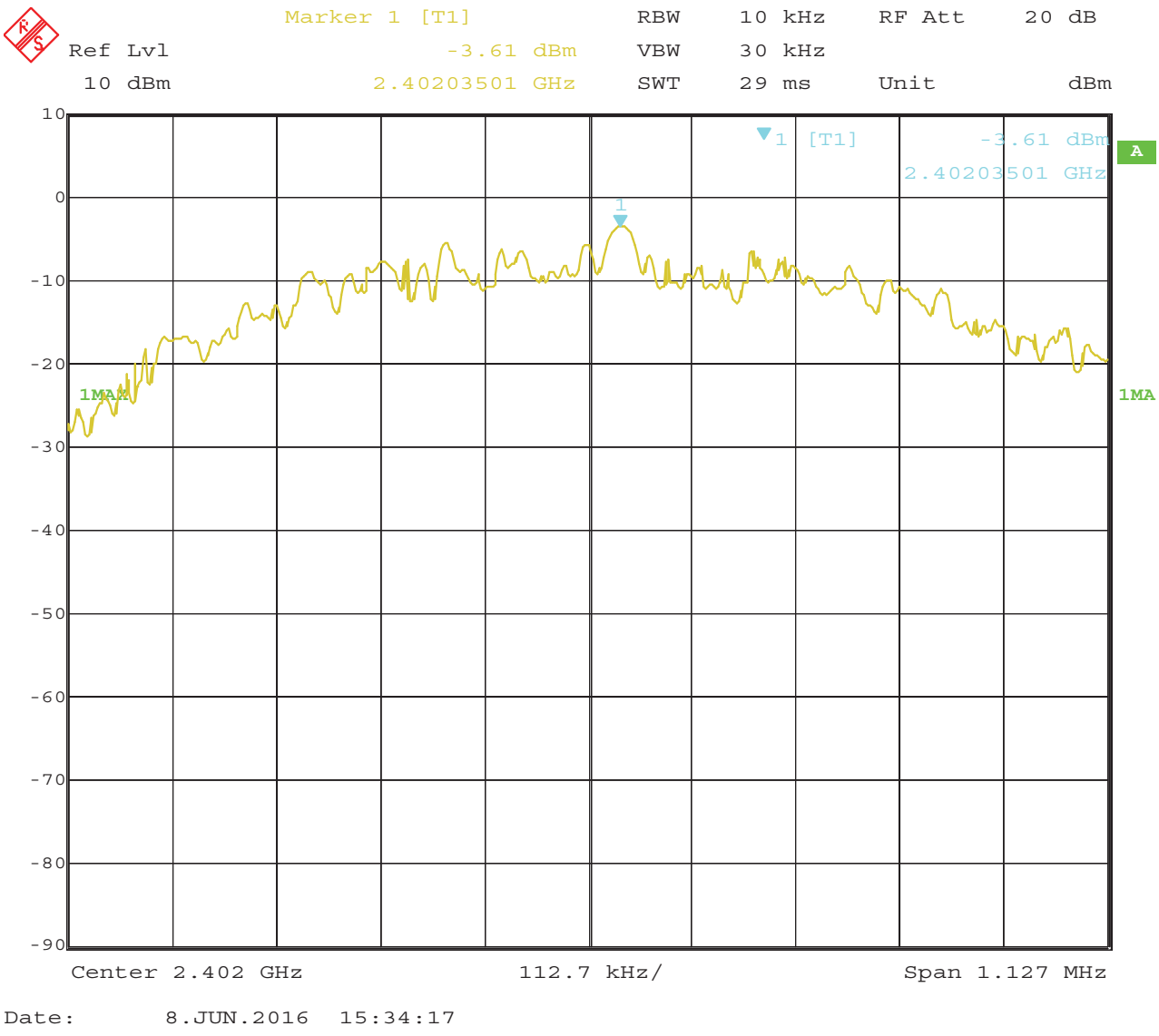
| Channel | Peak Power Reading (dBm) | Cable Loss (dB) | Final Power Spectral Density (dBm) | Maximum Limit (dBm) | Pass/ Fail |
|---|---|---|---|---|---|
| | | | | | |
| Low | -3.61 | 0.2 | -3.41 | 8 | Pass |
| Middle | -4.42 | 0.2 | -4.22 | 8 | Pass |
| High | -4.54 | 0.2 | -4.34 | 8 | Pass |

Note: The result basic equation calculation as follow:

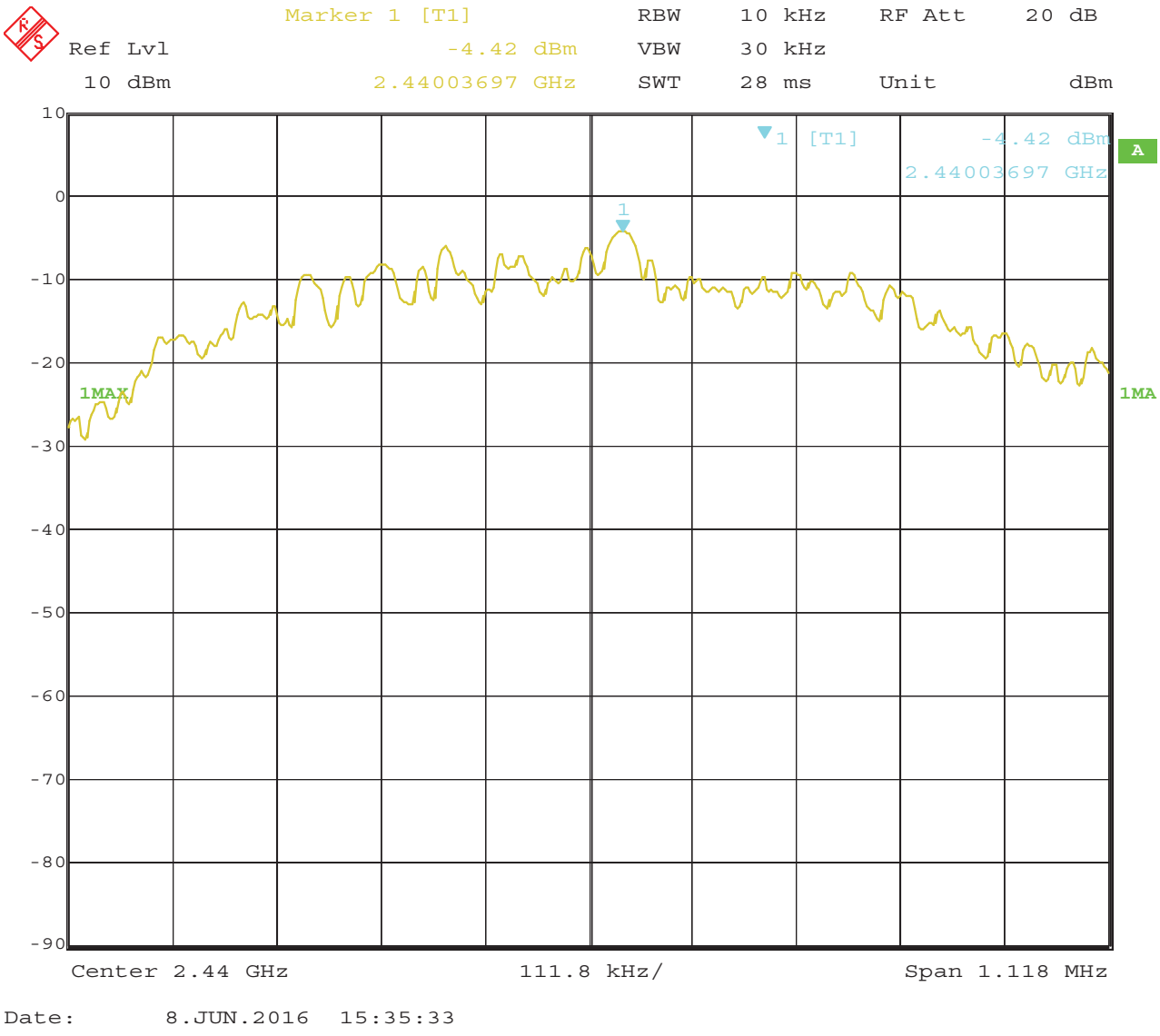
Peak Power Output = Peak Power Reading + Cable loss

Test Figure:

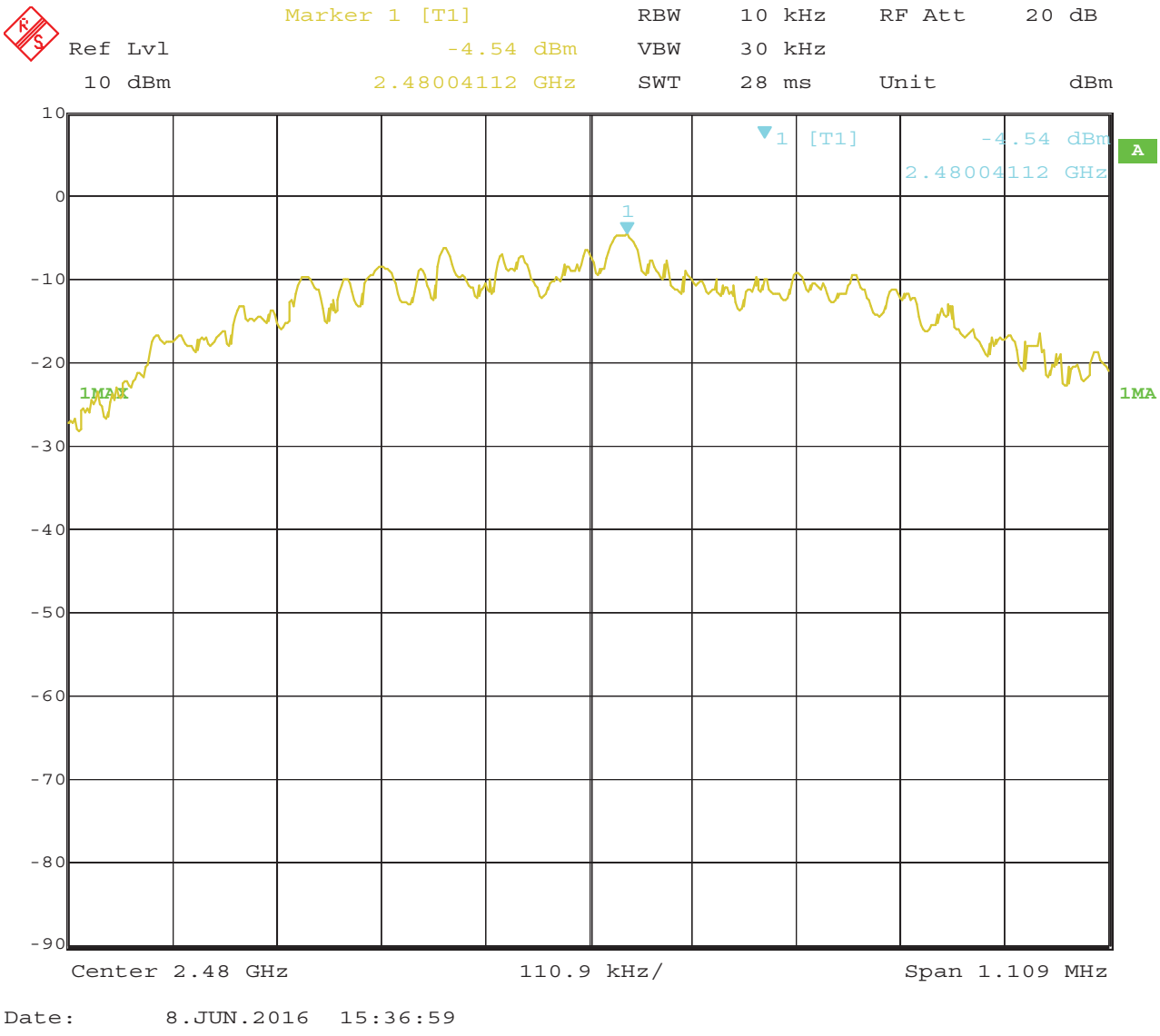
**1. Condition: Low Channel**



**2. Condition: Middle Channel**

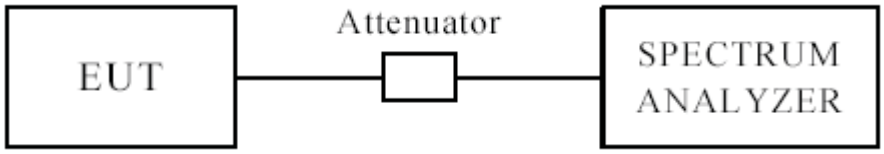


### 3. High Channel



# 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

1. Below –20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).
2. 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=100 kHz, 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.

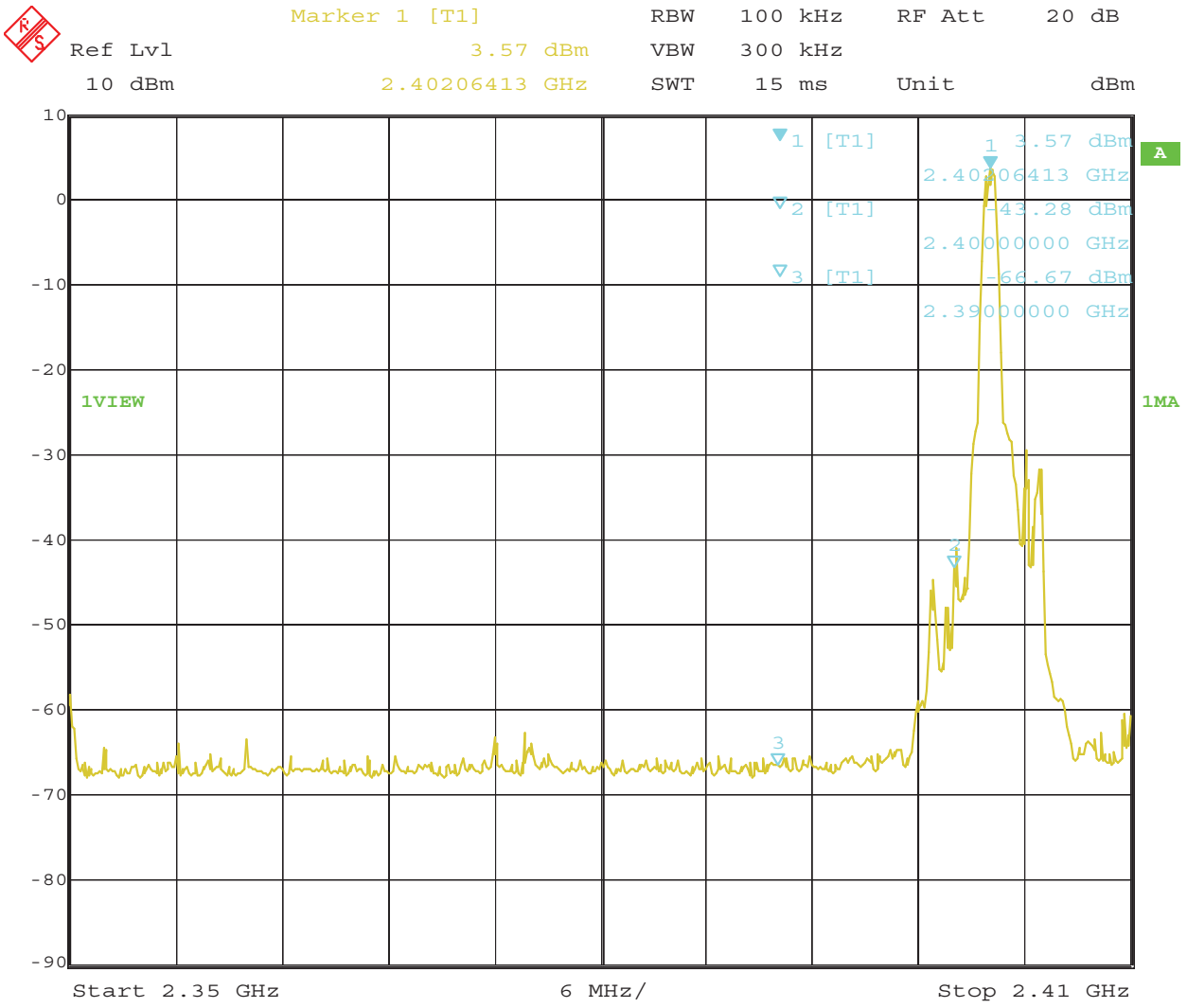
2. This is a handhold device. The radiated emissions should be tested under 3-axes position (Lying, Side, and Stand), After pre-test. It was found that the worse radiated emission was get at the lying position.

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

**10.4** Band-edge and Restricted band Measurement

| EUT | Bluetooth Speaker | | Model | X-9 |
|---|---|---|---|---|
| Mode | Keep Transmitting | | Input Voltage | DC7.4V |
| Temperature | 24 deg. C, | | Humidity | 56% RH |
| Test Result: | Pass | | Detector | PK |
| 2400 | PK (dBμV/m) | 50.6 | Limit | 74(dBμV/m) |
| | AV (dBμV/m) | -- | | 54(dBμV/m) |
| 2390 | PK (dBμV/m) | 42.8 | Limit | 74(dBμV/m) |
| | AV (dBμV/m) | -- | | 54(dBμV/m) |

**Test Figure:**

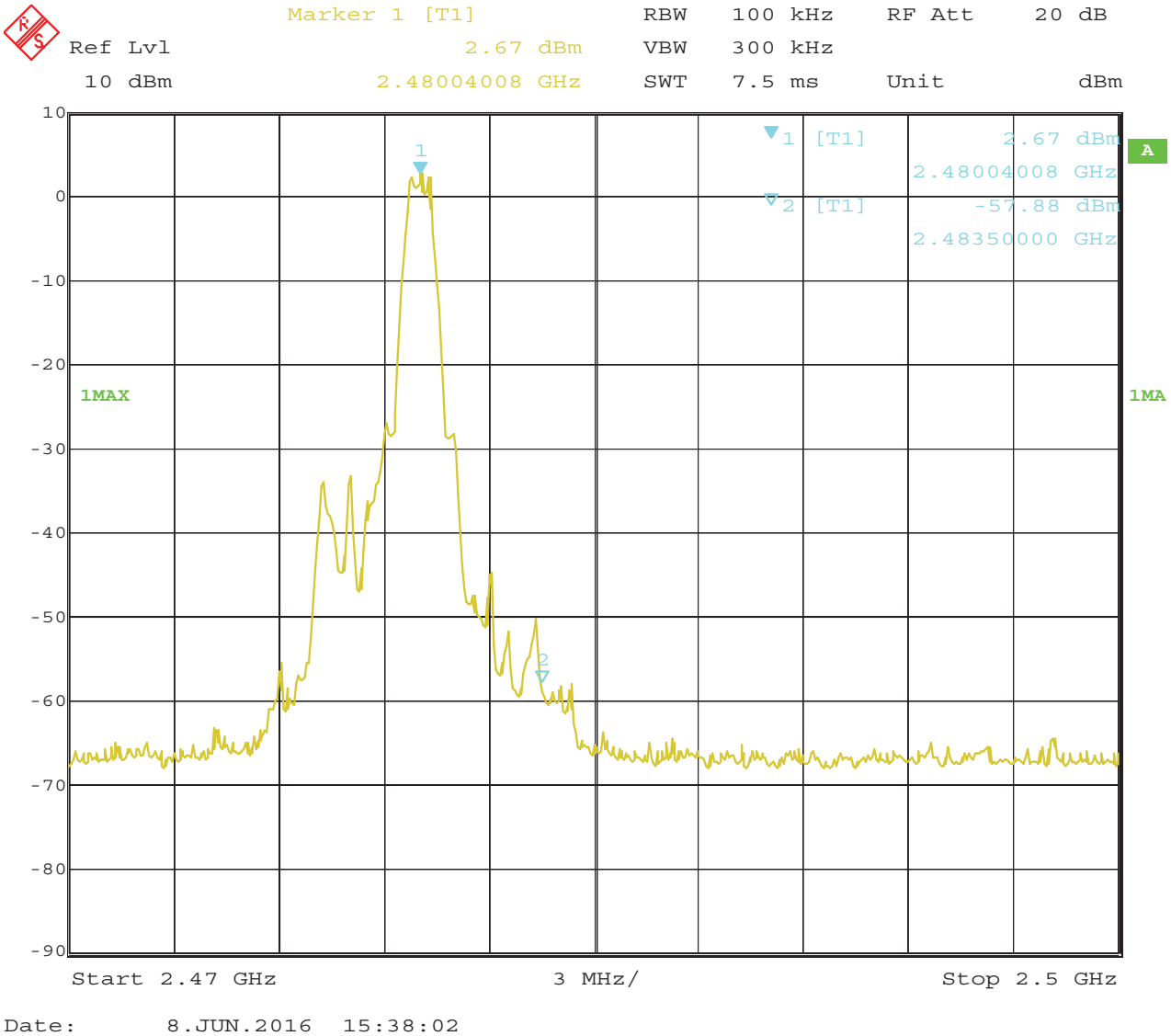



Note: The Max. FS in Restrict Band are measured in conventional method.

**10.4** Band-edge and Restricted band Measurement

| EUT | Bluetooth Speaker | | Model | X-9 |
|---|---|---|---|---|
| Mode | Keeping Transmitting | | Input Voltage | DC7.4V |
| Temperature | 24 deg. C, | | Humidity | 56% RH |
| Test Result: | Pass | | Detector | PK |
| 2483.5 | PK (dBμV/m) | 45.7 | Limit | 74(dBμV/m) |
| | AV (dBμV/m) | -- | | 54(dBμV/m) |

**Test Figure:**




Note: The Max. FS in Restrict Band are measured in conventional method.

## 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 mount 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 1.0dBi.

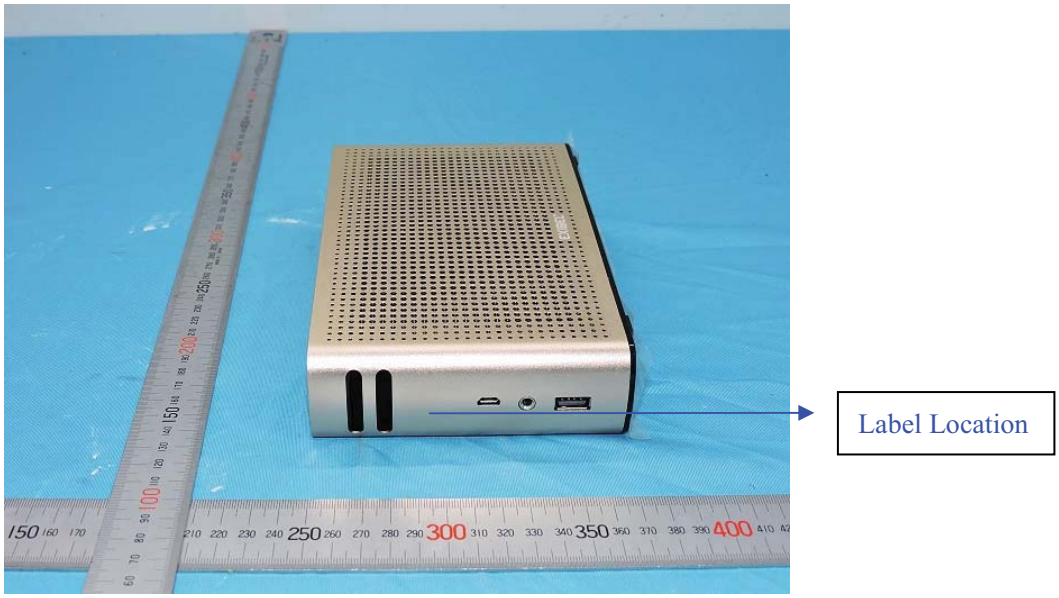
## 12.0 FCC ID Label

**FCC ID: 2AHXMX-9**

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

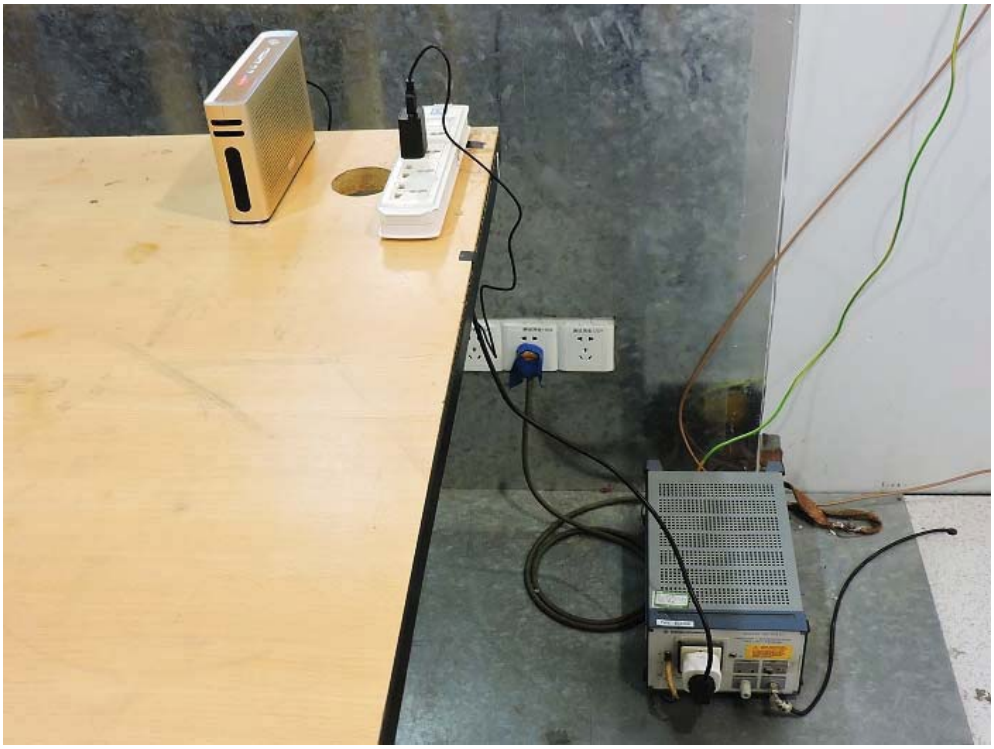
The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

**Mark Location:**

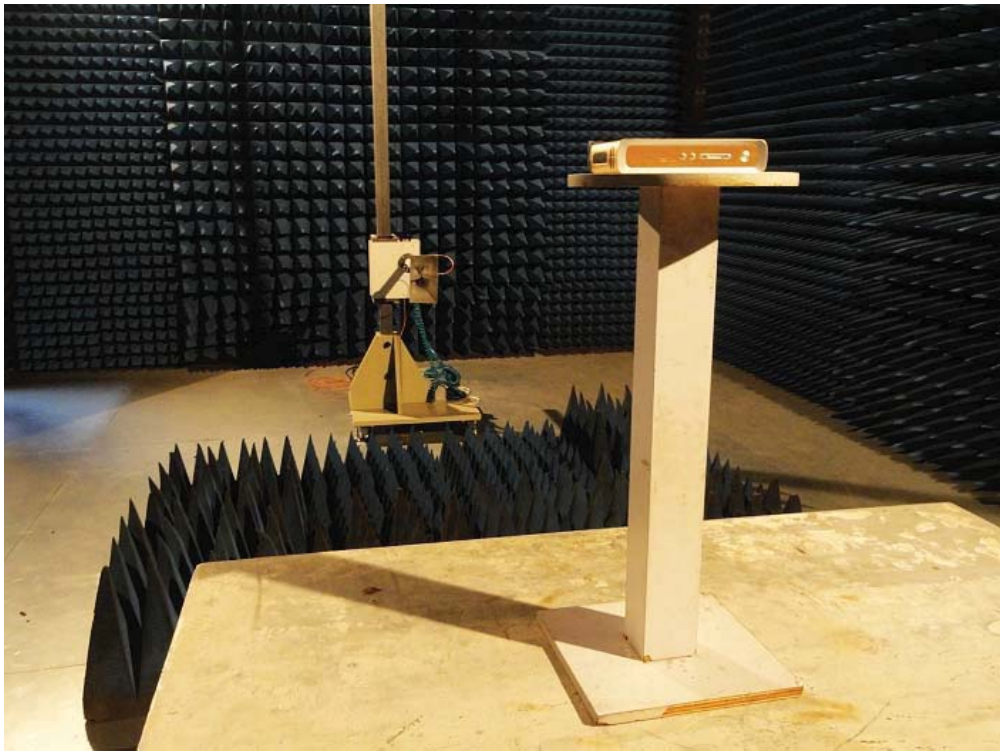


## 13.0 Photo of testing

Conducted Emission Test Setup:



Radiated Emission Test Setup:



## Photographs - EUT

Outside View

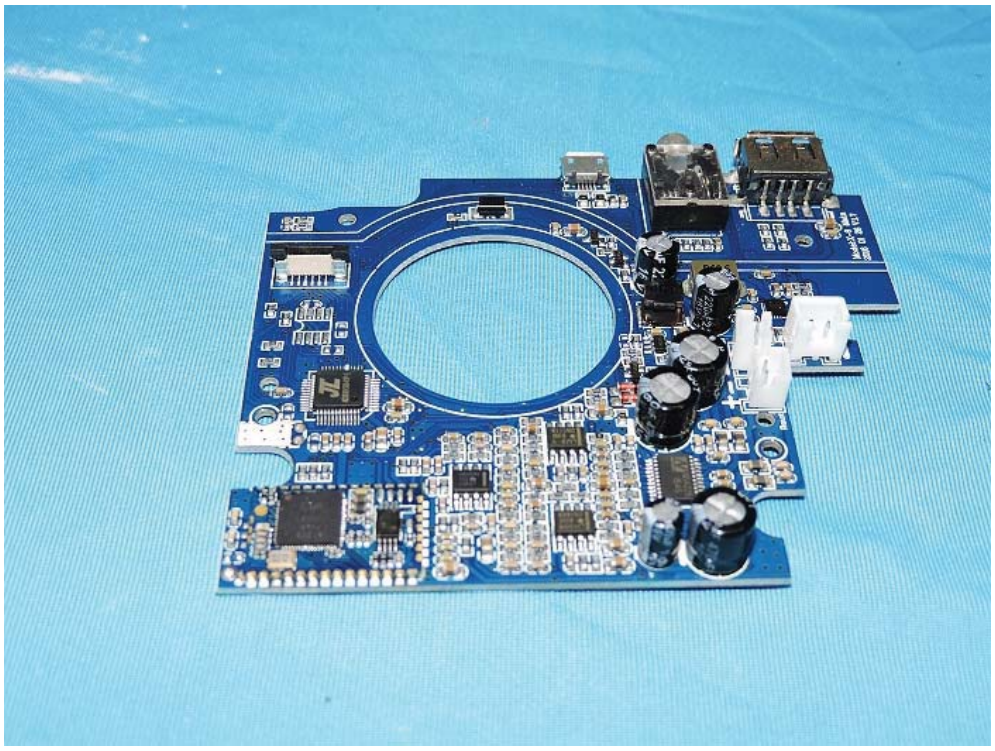
Outside View

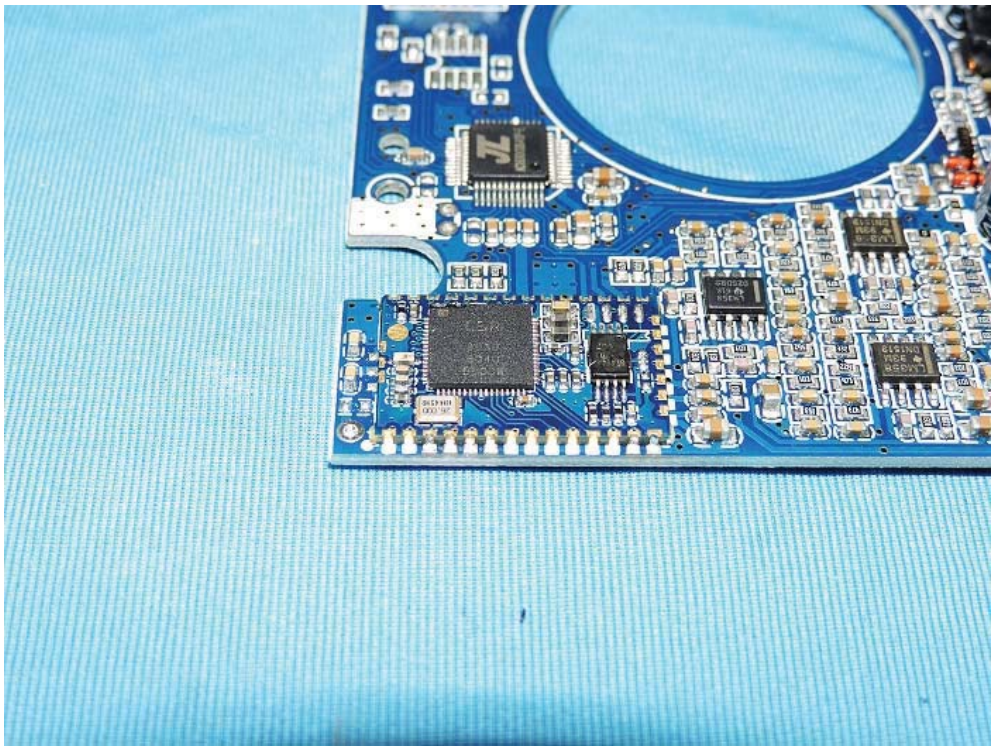

Outside View

Inside View

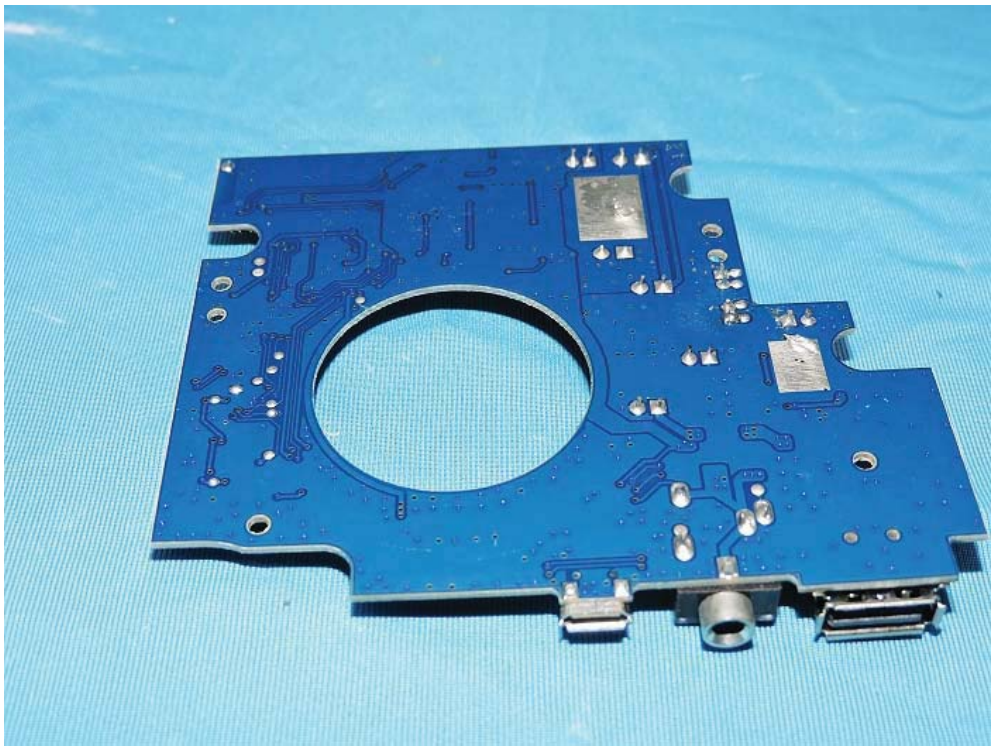
Inside View

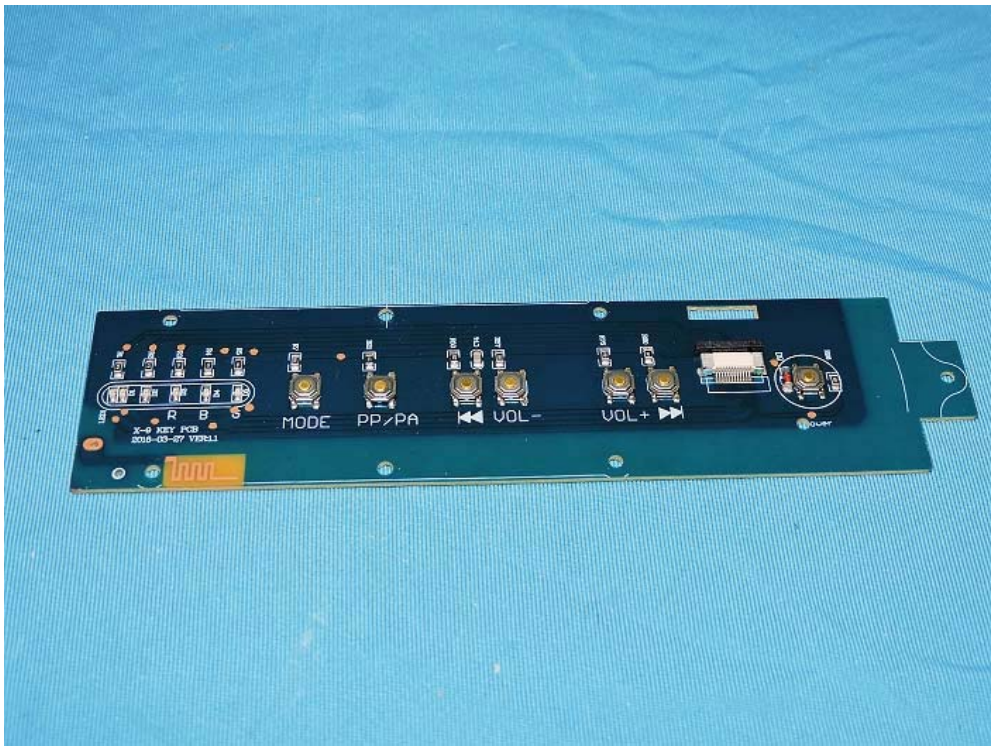
Inside View



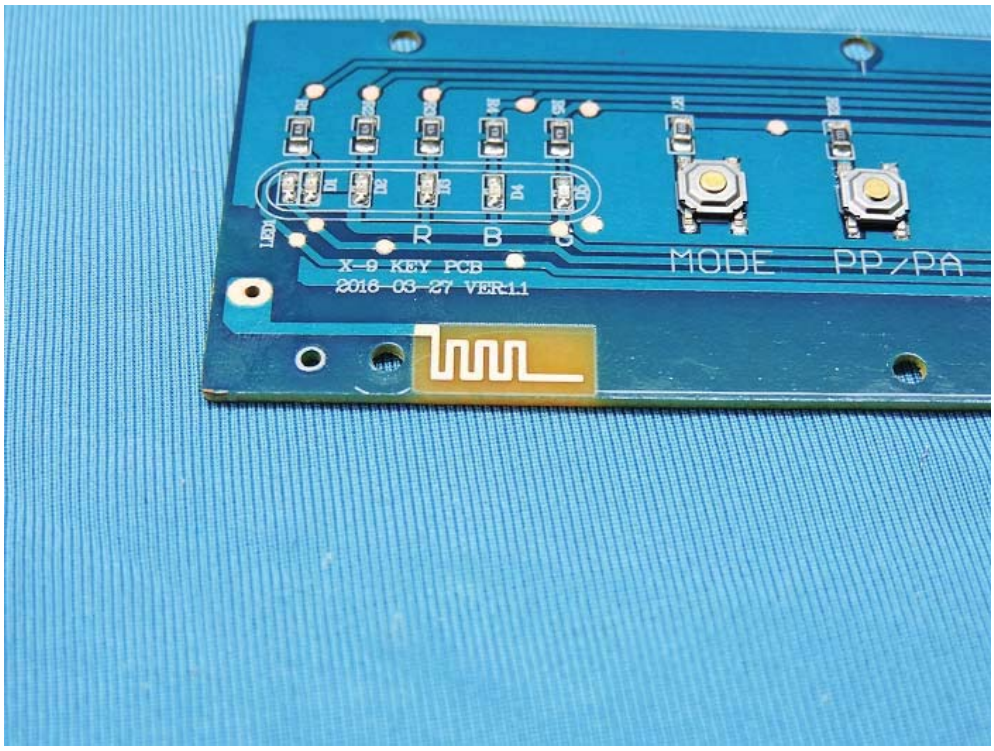


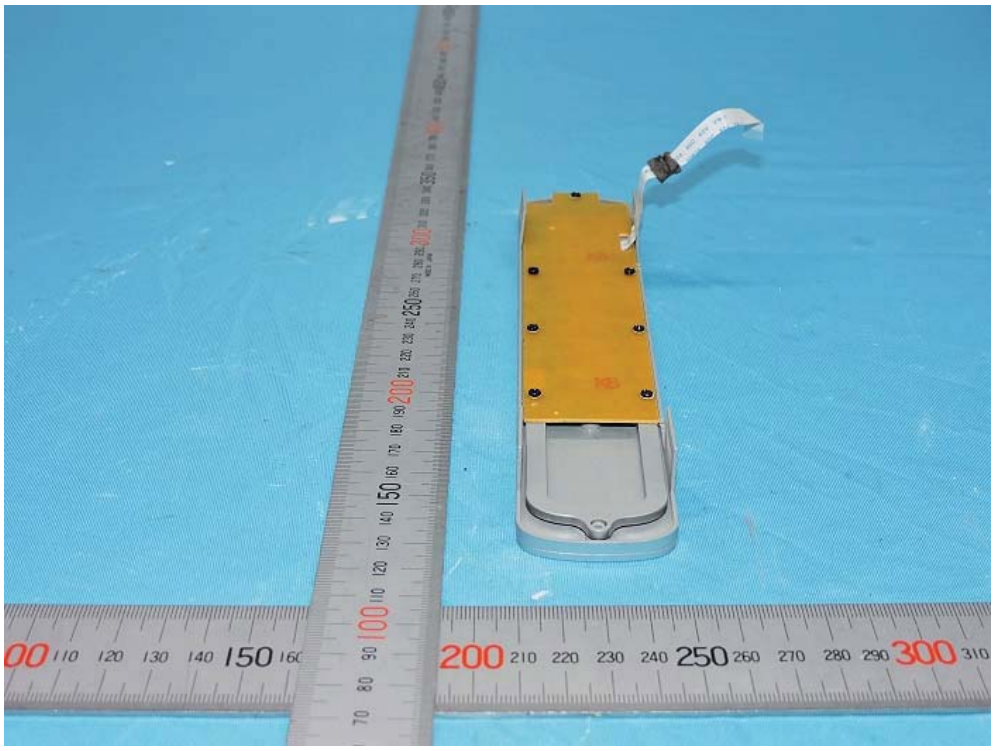
Inside View



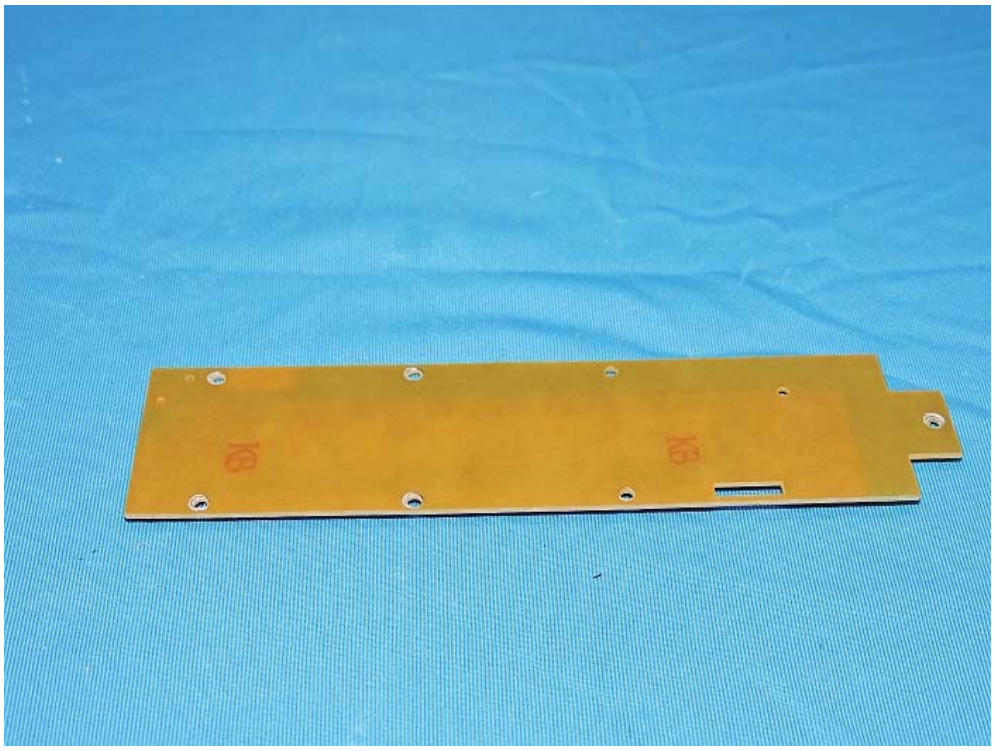


Inside View



Inside View



**End of the report**