

## EMC TEST REPORT

### No. 150101851SHA-001

Applicant : Hansong(Nanjing) Technology Ltd  
8th Kangping Road, Jiangning Economy&Technology  
Development Zone, Nanjing, 211106, China

Manufacturer : Hansong(Nanjing) Technology Ltd  
8th Kangping Road, Jiangning Economy&Technology  
Development Zone, Nanjing, 211106, China

Product Name : Mini Amplifier

Type/Model : SB335, P3-35

**TEST RESULT : PASS**

### SUMMARY

The equipment complies with the requirements according to the following standard(s):

**47CFR Part 15 (2014):** Radio Frequency Devices (Subpart B)

**ANSI C63.4 (2014):** American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

**ICES-003 Issue 5 (2012):** Information Technology Equipment (ITE) – Limits and methods of measurement.

Date of issue: July 2, 2015

Prepared by:



Wade Zhang (Project Engineer)

Reviewed by:



Daniel Zhao (Reviewer)



**FCC ID: XCO-MSE3CHA**  
**IC: 7756A-MSE3CHA**

## **Description of Test Facility**

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IC Assigned Code: 2042B-1

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## 1. General Information

### 1.1 Applicant Information

Applicant : Hansong(Nanjing) Technology Ltd  
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Development Zone, Nanjing, 211106, China  
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Manufacturer : Hansong(Nanjing) Technology Ltd  
8th Kangping Road, Jiangning Economy&Technology  
Development Zone, Nanjing, 211106, China

### 1.2 Identification of the EUT

Equipment : Mini Amplifier  
Type/model : SB335, P3-35  
Brand name 1 : SOUNDTUBE (for SB335)  
Brand name 2 :  (for P3-35)  
FCC ID : XCO-MSE3CHA  
IC : 7756A-MSE3CHA  
Description of EUT : The EUT is a mini amplifier, and it has 2 models. All models are the same on schematic diagram, PCB layout and electronic construction, also have same electric parameters except with different brand name.  
Rating : Adaptor: FY3203750 (Manufacturer: FUYUAN (SHENZHEN) ELECTRONIC CO., LTD.)  
Input:100-240VAC, 50/60Hz, 2.5A  
Output:32VDC, 3.75A  
Port identification : DC Power port \*1;  
Optical input \*1;  
Analog input \*1;  
External IR \*1;  
SUB/Line output \*1;  
RS232\*1;  
Speaker output \*1  
Category of EUT : Class B  
EUT type : ☒ Table top ☐ Floor standing  
Sample received date : 2015.01.30  
Sample Identification : 01501310-08-001  
No  
Date of test : 2015.02.01 ~ 2015.03.29

## 2. Test Specification

### 2.1 Instrument list

| Equipment             | Type       | Manu.             | Internal no. | Cal. Date  | Due date   |
|-----------------------|------------|-------------------|--------------|------------|------------|
| Test Receiver         | ESCS 30    | R&S               | EC 2107      | 2014-10-20 | 2015-10-19 |
| Test Receiver         | ESIB 26    | R&S               | EC 3045      | 2014-10-19 | 2015-10-18 |
| Test Receiver         | ESCI 7     | R&S               | EC4501       | 2014-12-28 | 2015-12-27 |
| Power meter           | ML 2495A   | Anritsu           | EC 4895      | 2014-10-20 | 2015-10-19 |
| A.M.N.                | ESH2-Z5    | R&S               | EC 3119      | 2015-1-8   | 2016-1-7   |
| Bilog Antenna         | CBL 6112D  | TESEQ             | EC 4206      | 2015-5-14  | 2016-5-13  |
| Horn antenna          | HF 906     | R&S               | EC 3049      | 2015-5-11  | 2016-5-10  |
| Pre-amplifier         | Pre-amp 18 | R&S               | EC 3222      | 2015-4-10  | 2016-4-9   |
| Semi-anechoic chamber | -          | Albatross project | EC 3048      | 2015-5-19  | 2016-5-18  |
| Shielded room         | -          | Zhongyu           | EC 2838      | 2015-1-9   | 2016-1-8   |
| Shielded room         | -          | Zhongyu           | EC 2839      | 2015-1-9   | 2016-1-8   |

### 2.2 Test Standard

47CFR Part 15: 2014  
ANSI C63.4: 2014  
ICES-003 Issue 5: 2012

### 2.3 Mode of operation during the test / Test peripherals used

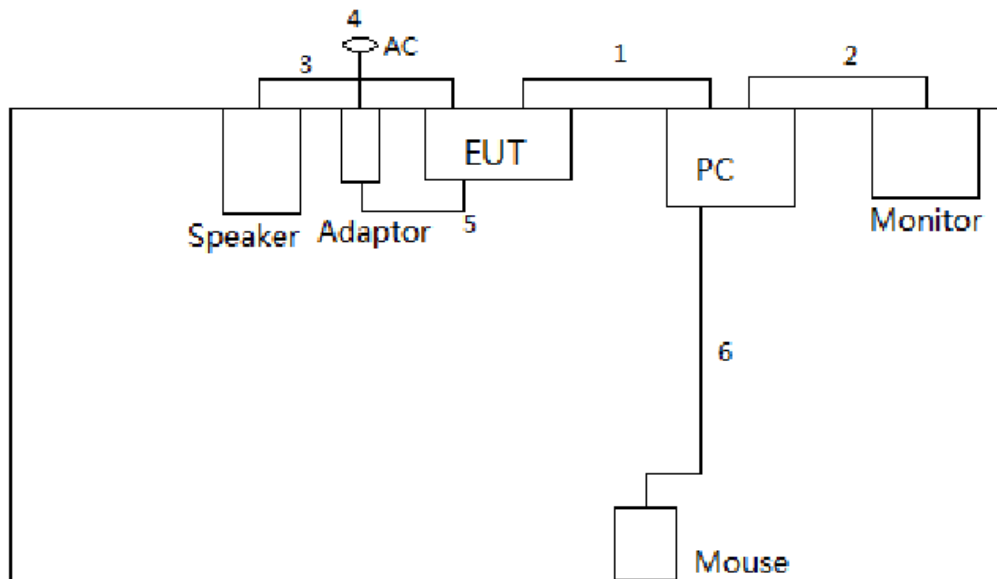
Within this test report, EUT was tested under all available operation modes, and we verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

*Mode1: Bluetooth Working with PC RS232 to control the Volume*

Test Peripherals:

| Product | Manufacture | Model No. | Serial No. | Power Cord       | FCC Approved |
|---------|-------------|-----------|------------|------------------|--------------|
| PC      | HP          | 6470b     | /          | Power by Battery | FCC DoC      |
| Monitor | HP          | 1502      | /          | 1.8m Unshielding | FCC DoC      |
| Mouse   | HP          | WF530PA   | /          | Power by PC      | FCC DoC      |
| Speaker | NA          | NA        | NA         | NA               | NA           |
| Iphone  | Apple       | Iphone 5  | NA         | Power by Battery | FCC ID       |

## 2.4 Test Setup diagram



- 1: USB-RS232 Cable: 1.8m Shielding;
- 2: VGA Cable: 1.8m Shielding;
- 3: Speaker cable: 1.2m un-shielding;
- 4: AC Power cord: 1.8m un-shielding;
- 5: DC Power cord: 1.2m un-shielding;
- 6: Mouse: 1.2m un-shielding.

## 2.5 EUT Exercise Software

- 1: Setup the EUT and simulators as shown on above.
- 2: Turn on the power of all equipments.
- 3: Turn the EUT to the Bluetooth mode.
- 4: EUT will receive a sound signal from iphone and play it.
- 5: Used PC RS-232 hyper-terminal to control the Volume.
- 6: Make sure the EUT working normally.
- 7: Start test.



## **2.6 Test Summary**

**This report applies to tested sample only. This report shall not be reproduced in part without written approval of Intertek Testing Service Shanghai Limited.**

| TEST ITEM                     | FCC REFERANCE | RESULT |
|-------------------------------|---------------|--------|
| Power line conducted emission | 15.107        | Pass   |
| Radiated emission             | 15.109        | Pass   |

### 3. Radiated emission

**Test result:** PASS

#### 3.1 Radiated emission limits

##### 3.1.1 Limits for radiated disturbance of class A device

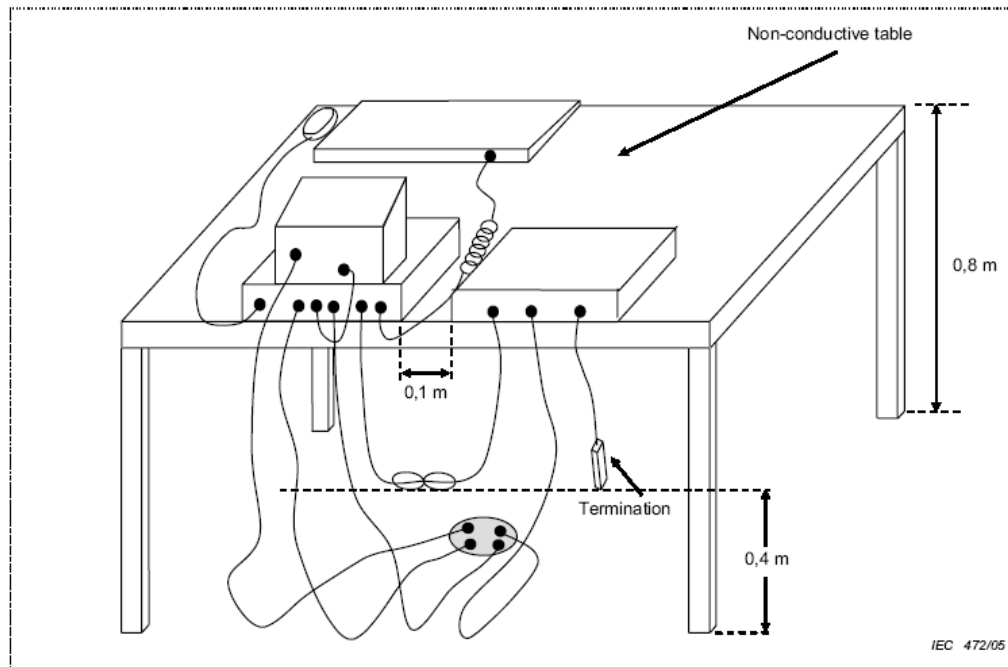
| Frequency (MHz)                                                                                             | Permitted limit in dB $\mu$ V/m<br>(Quasi-peak)<br>of Measurement Distance 10m |
|-------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| 30 – 88                                                                                                     | 39                                                                             |
| 88 – 216                                                                                                    | 43.5                                                                           |
| 216 – 960                                                                                                   | 46.4                                                                           |
| Above 960                                                                                                   | 49.5                                                                           |
| Note: for the measurement distance other than 3m and 10m, the limit is varied according to 20dB/10 decades. |                                                                                |

##### 3.1.2 Limits for radiated disturbance of class B device

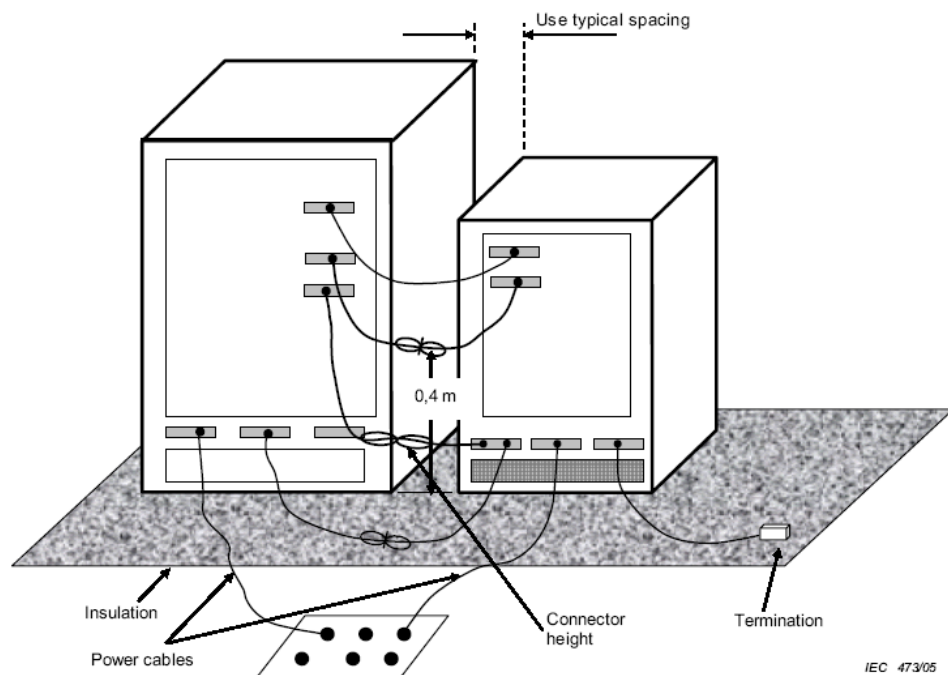
| Frequency (MHz)                                                                                             | Permitted limit in dB $\mu$ V/m<br>(Quasi-peak)<br>of Measurement Distance 3m |
|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| 30 – 88                                                                                                     | 40.0                                                                          |
| 88 – 216                                                                                                    | 43.5                                                                          |
| 216 – 960                                                                                                   | 46.0                                                                          |
| Above 960                                                                                                   | 54.0                                                                          |
| Note: for the measurement distance other than 3m and 10m, the limit is varied according to 20dB/10 decades. |                                                                               |

### 3.2 Block diagram and test set up

☒ For table top equipment



☐ For floor standing equipment



### **3.3 Test Setup and Test Procedure**

The measurement was performed in a semi-anechoic chamber. While testing for spurious emission higher than 1GHz, the pre-amplifier (and high pass filter if necessary) is equipped just at the output terminal of the antenna.

The distance from EUT to receiving antenna is **3 meter**.

Measurement was performed according to clause 4 and clause 5 of ANSI 63.4.

Test procedure was according to clause 8.3 of ANSI 63.4.

EUT arrangement and operate condition were according to clause 6 and clause 8 of ANSI 63.4.

The radiated emission was measured using the test receiver with the resolutions bandwidth set as:

RBW = 100kHz, VBW = 300kHz (30MHz~1GHz)

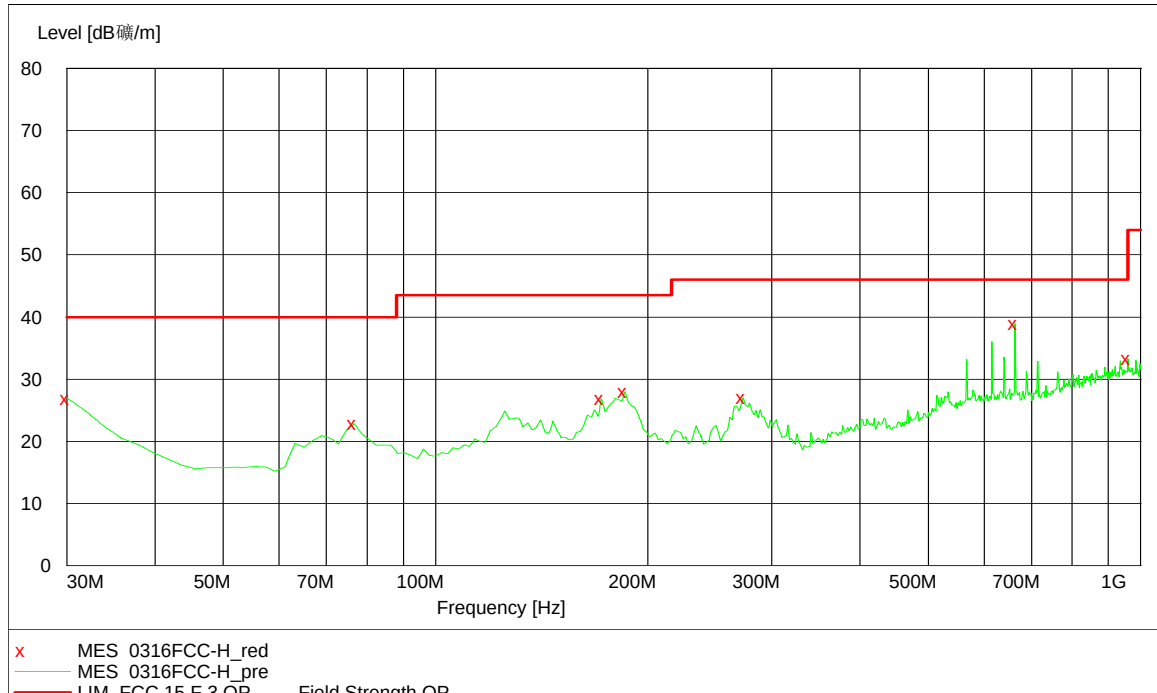
RBW = 1MHz, VBW = 3MHz (>1GHz for PK)

RBW = 1MHz, VBW = 10Hz (>1GHz for AV)

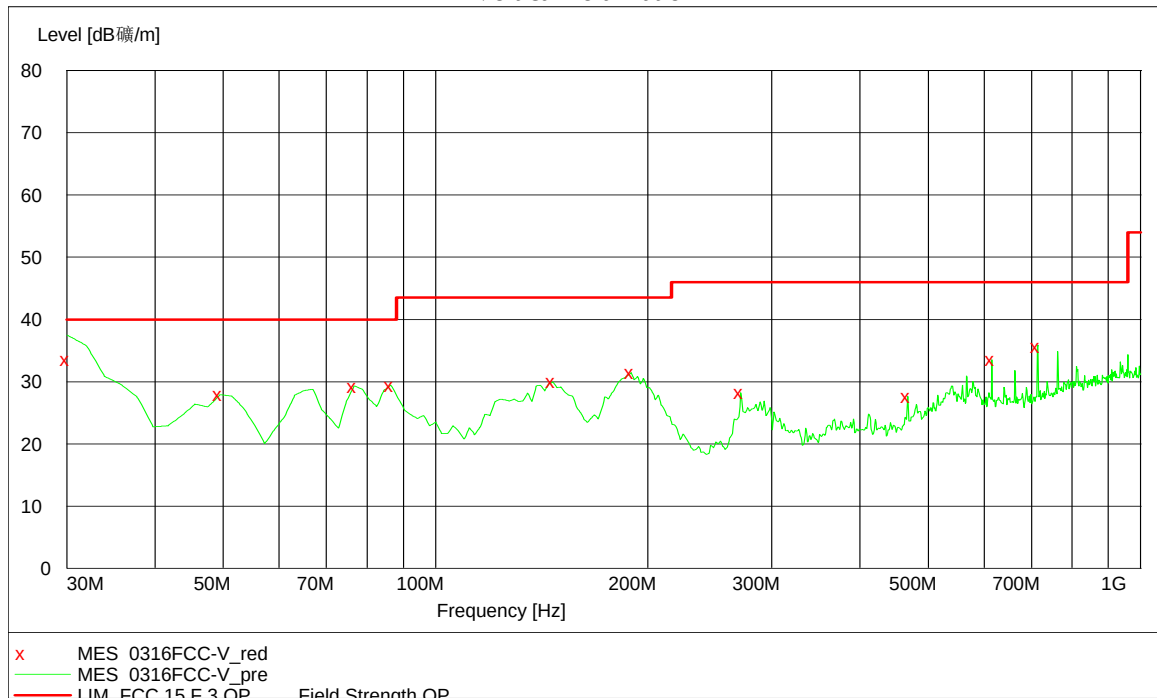
### 3.4 Test protocol

Temperature : 25 °C  
Relative Humidity : 55 %

Horizontal Polarization



Vertical Polarization



**Test data:**

| Polarization | Frequency (MHz) | Emission level (dBμV/m) | Limits (dBμV/m) | Margin (dBμV/m) | Detector |
|--------------|-----------------|-------------------------|-----------------|-----------------|----------|
| H            | 30.00           | 26.9                    | 40.0            | 13.1            | PK       |
|              | 76.65           | 22.8                    | 40.0            | 17.2            | PK       |
|              | 171.90          | 26.8                    | 43.5            | 16.7            | PK       |
|              | 185.51          | 28.0                    | 43.5            | 15.5            | PK       |
|              | 272.99          | 27.0                    | 46.0            | 19.0            | PK       |
|              | 663.71          | 38.9                    | 46.0            | 7.1             | PK       |
|              | 959.18          | 33.3                    | 46.0            | 12.7            | PK       |
| V            | 30.00           | 33.5                    | 40.0            | 6.5             | PK       |
|              | 49.44           | 27.9                    | 40.0            | 12.1            | PK       |
|              | 76.65           | 29.3                    | 40.0            | 10.7            | PK       |
|              | 86.37           | 29.4                    | 40.0            | 10.6            | PK       |
|              | 146.63          | 30.0                    | 43.5            | 13.5            | PK       |
|              | 189.40          | 31.5                    | 43.5            | 12.0            | PK       |
|              | 271.04          | 28.3                    | 46.0            | 17.7            | PK       |
|              | 467.37          | 27.6                    | 46.0            | 18.4            | PK       |
|              | 615.11          | 33.6                    | 46.0            | 12.4            | PK       |
|              | 714.25          | 35.6                    | 46.0            | 10.4            | PK       |
| H/V          | >1GHz           | <34.0                   | 54.0            | >20.0           | AV       |

Note: The test was performed from 30MHz to 18GHz and which the emission level from 1GHz to 18GHz more than 20dB margin, so the data is not listed here.

#### 4. Power line conducted emission

Test result: **PASS**

##### 4.1 Limits

##### 4.1.1 Limits for conducted disturbance voltage at the mains ports of class A device

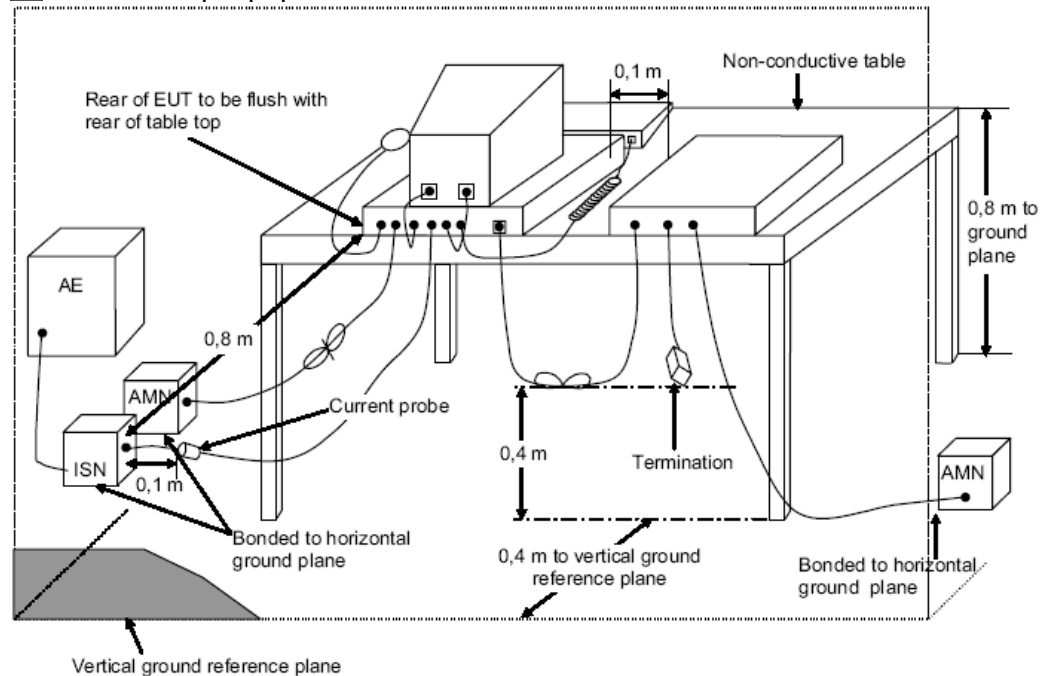
| Frequency range<br>(MHz)                                                                                                                                                                                                                                                        | Limits dB(μV) |         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------|
|                                                                                                                                                                                                                                                                                 | Quasi-peak    | Average |
| 0.15 ~ 0.5                                                                                                                                                                                                                                                                      | 79            | 66      |
| 0.5 ~ 30                                                                                                                                                                                                                                                                        | 73            | 60      |
| Note: If the limit for the measurement with the average detector is met when using a receiver with a quasi-peak detector, the equipment under test shall be deemed to meet both limits and the measurement using the receiver with an average detector need not be carried out. |               |         |

##### 4.1.2 Limits for conducted disturbance voltage at the mains ports of class B device

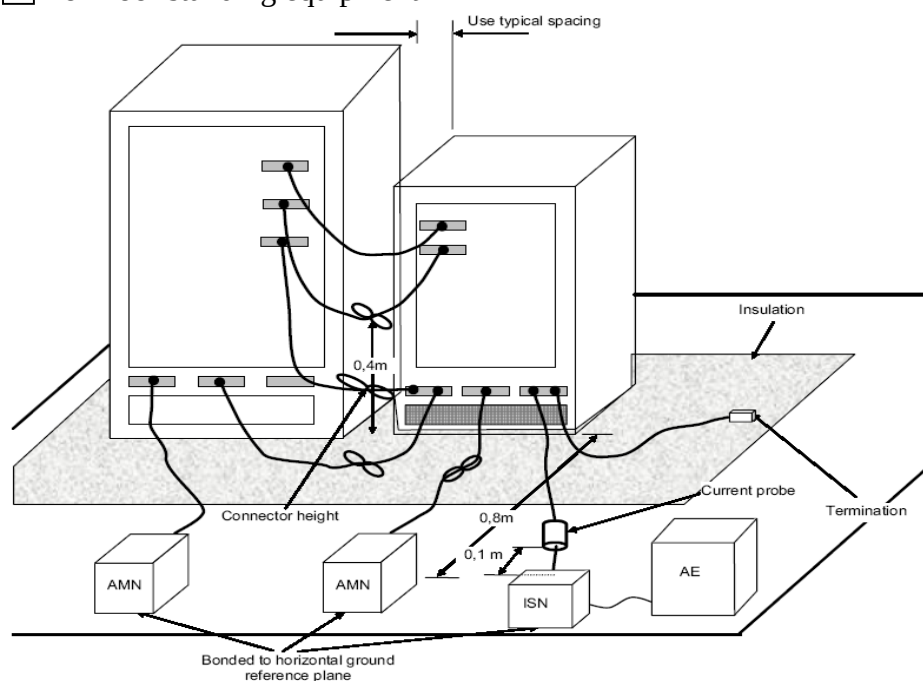
| Frequency range<br>(MHz)                                                                                                                                                                                                                                                                                                                                                                          | Limits dB(μV) |           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-----------|
|                                                                                                                                                                                                                                                                                                                                                                                                   | Quasi-peak    | Average   |
| 0.15 ~ 0.5                                                                                                                                                                                                                                                                                                                                                                                        | 66 ~ 56 *     | 56 ~ 46 * |
| 0.5 ~ 5                                                                                                                                                                                                                                                                                                                                                                                           | 56            | 46        |
| 5 ~ 30                                                                                                                                                                                                                                                                                                                                                                                            | 60            | 50        |
| Note: 1. * Means the limit decreasing linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz<br>2. If the limit for the measurement with the average detector is met when using a receiver with a quasi-peak detector, the equipment under test shall be deemed to meet both limits and the measurement using the receiver with an average detector need not be carried out. |               |           |

## 4.2 Test setup

☒ For table top equipment



☐ For floor standing equipment



### **4.3 Test Setup and Test Procedure**

Measurement was performed in shielded room, and instruments used were following clause 4 and clause 5 of ANSI 63.4.

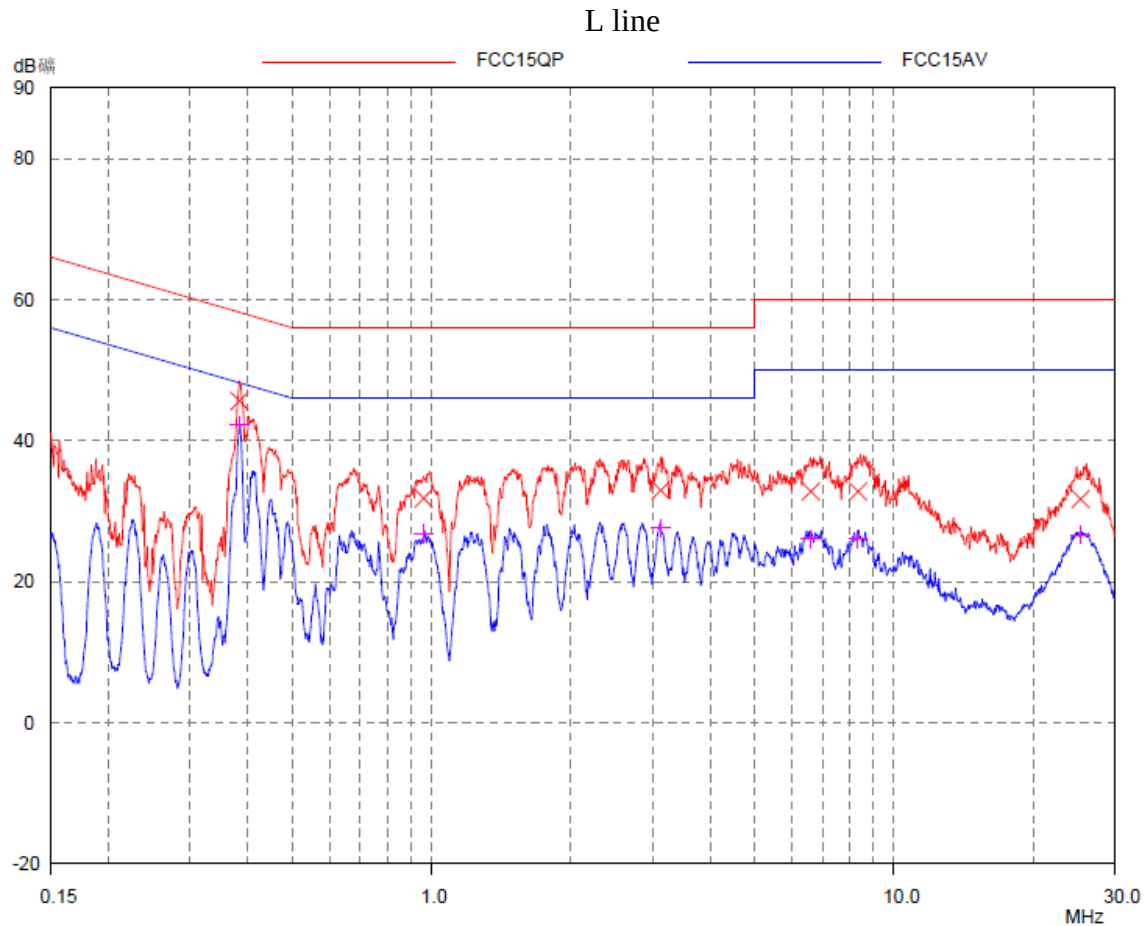
Detailed test procedure was following clause 7.2 of ANSI 63.4.

EUT arrangement and operation conditions were according to clause 6 and clause 7 of ANSI 63.4.

Frequency range 150kHz – 30MHz was checked and EMI receiver measurement bandwidth was set to 9 kHz.

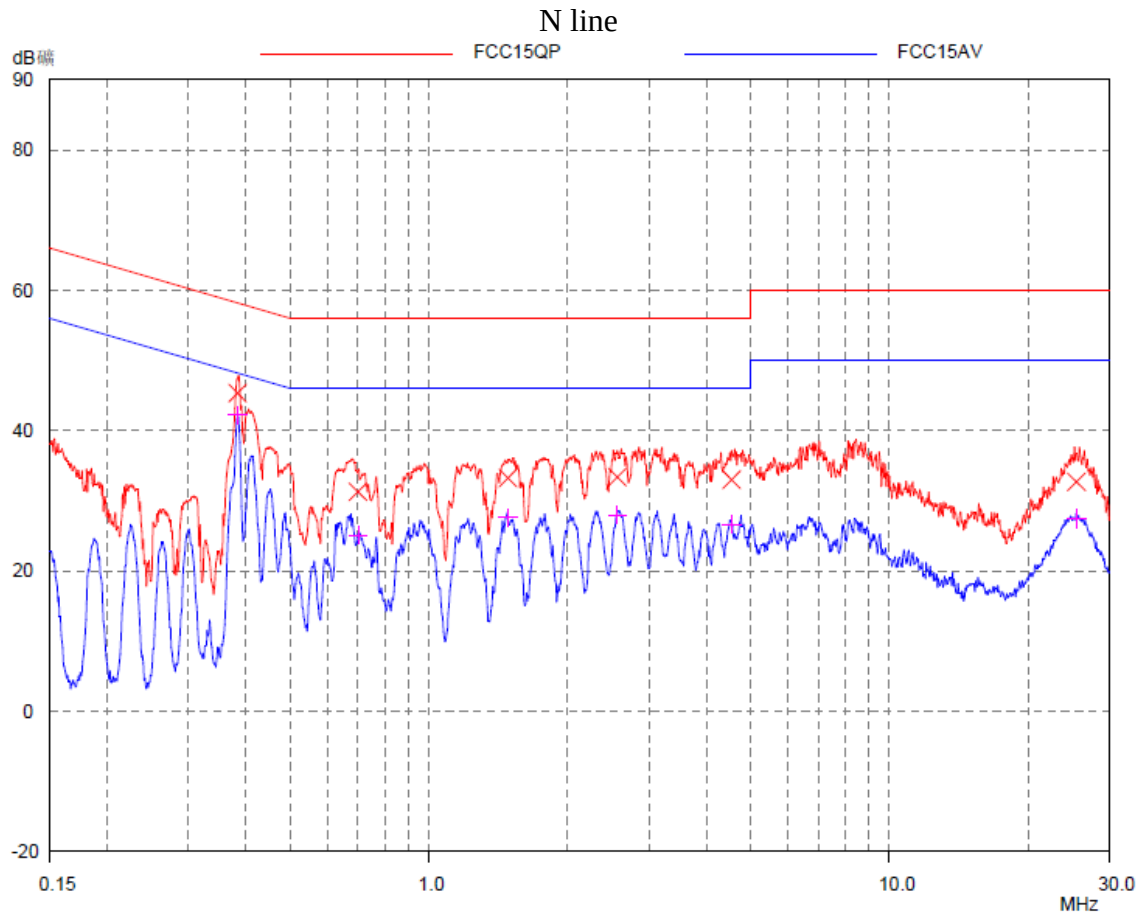
#### 4.4 Test protocol

Temperature : 25 °C  
Relative Humidity : 55 %



#### Test Data:

| Frequency<br>(MHz) | Quasi-peak      |                 |                | Average         |                 |                |
|--------------------|-----------------|-----------------|----------------|-----------------|-----------------|----------------|
|                    | level<br>dB(μV) | Limit<br>dB(μV) | Margin<br>(dB) | level<br>dB(μV) | limit<br>dB(μV) | Margin<br>(dB) |
| 0.38               | 45.6            | 58.2            | 12.6           | 42.2            | 48.2            | 6.0            |
| 0.96               | 31.8            | 56.0            | 24.2           | 26.9            | 46.0            | 19.2           |
| 3.13               | 33.0            | 56.0            | 23.0           | 27.6            | 46.0            | 18.4           |
| 6.60               | 32.8            | 60.0            | 27.2           | 26.0            | 50.0            | 24.0           |
| 8.35               | 32.8            | 60.0            | 27.2           | 26.1            | 50.0            | 23.9           |
| 25.35              | 31.7            | 60.0            | 28.3           | 26.6            | 50.0            | 23.4           |

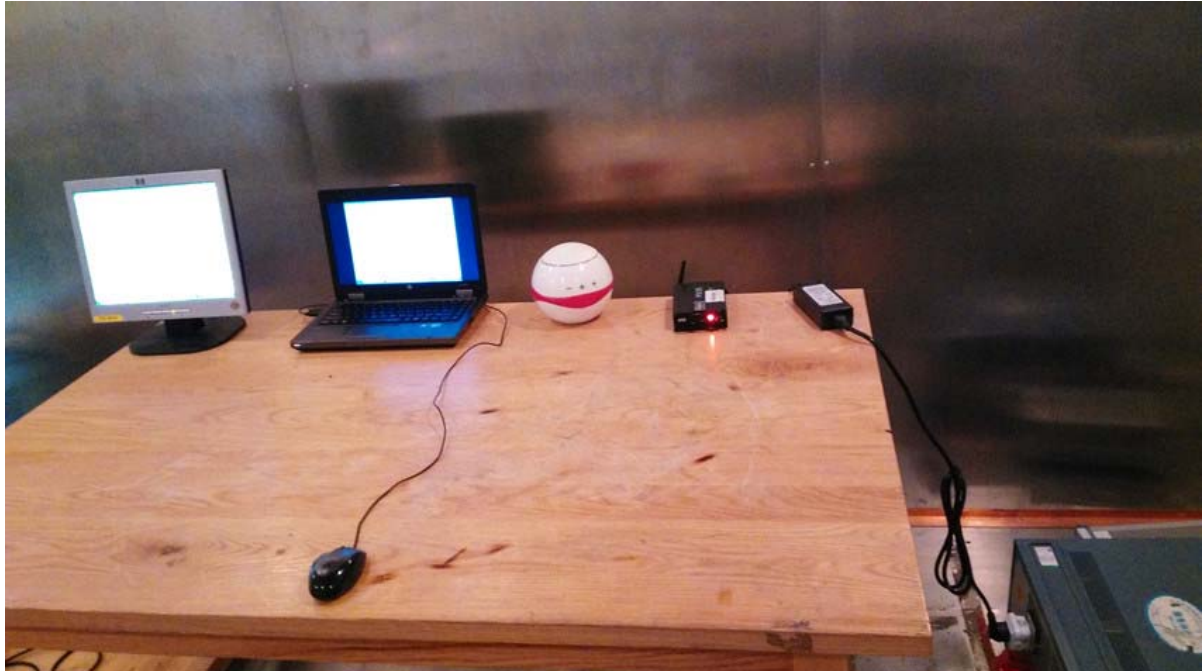


**Test Data:**

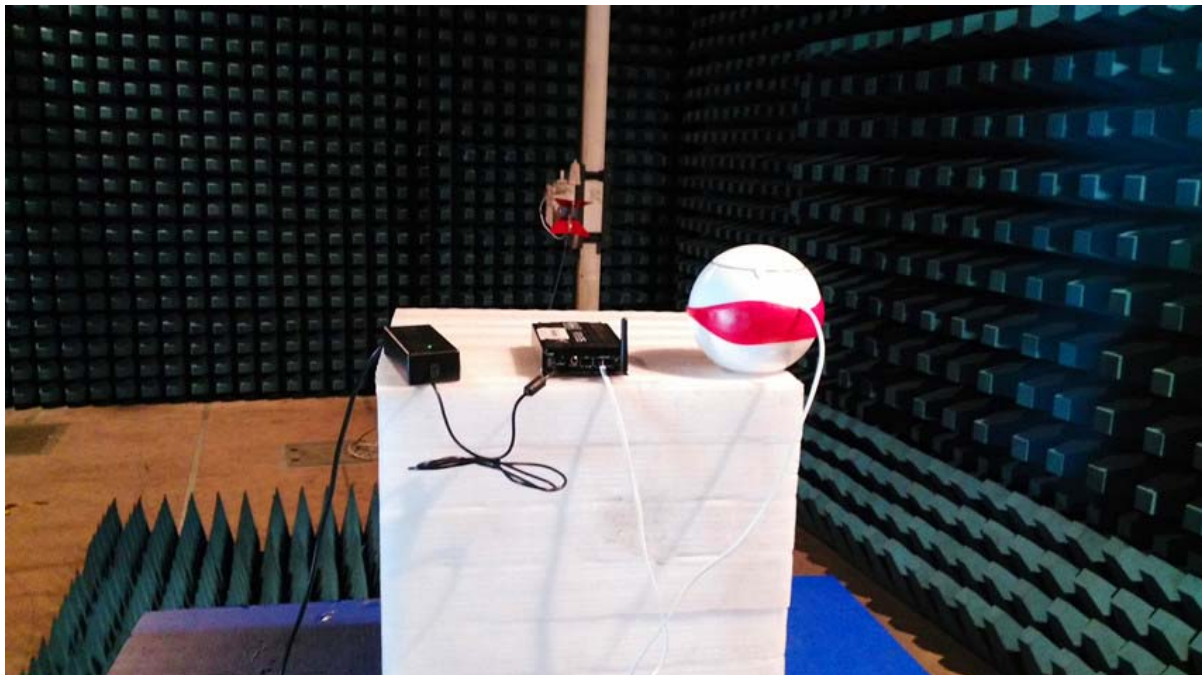
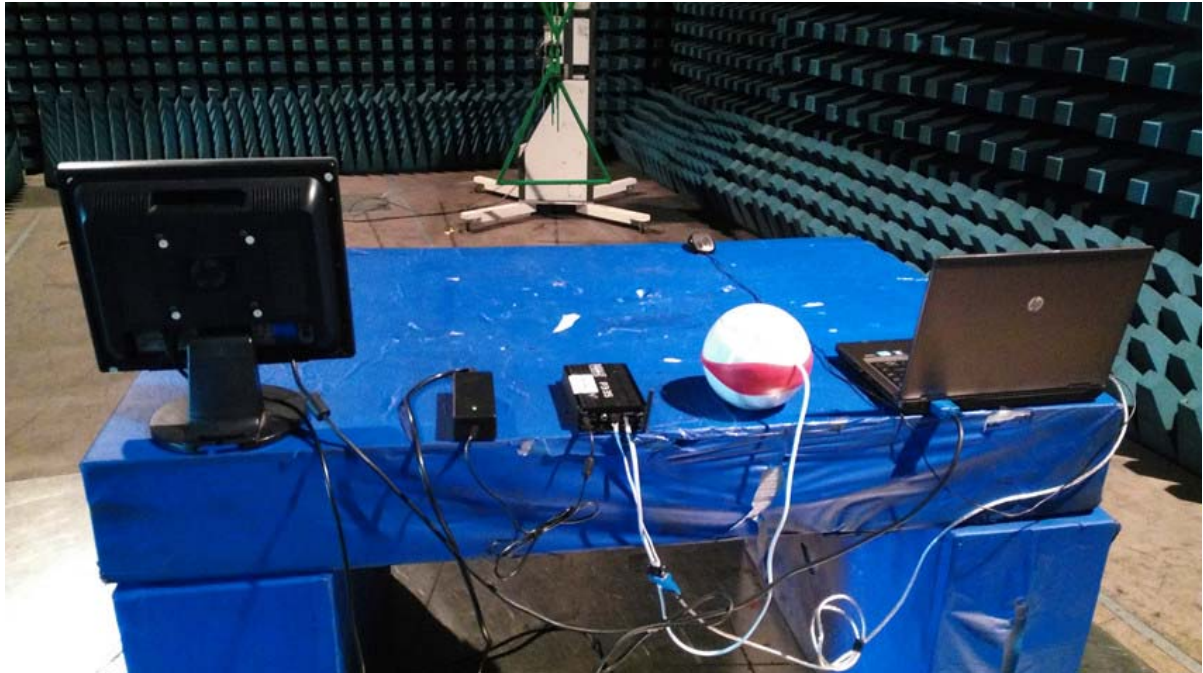
| Frequency<br>(MHz) | Quasi-peak      |                 |                | Average         |                 |                |
|--------------------|-----------------|-----------------|----------------|-----------------|-----------------|----------------|
|                    | level<br>dB(μV) | Limit<br>dB(μV) | Margin<br>(dB) | level<br>dB(μV) | limit<br>dB(μV) | Margin<br>(dB) |
| 0.38               | 45.3            | 58.2            | 12.9           | 42.2            | 48.2            | 6.0            |
| 0.70               | 31.3            | 56.0            | 24.7           | 25.1            | 46.0            | 20.9           |
| 1.48               | 33.3            | 56.0            | 22.7           | 27.6            | 46.0            | 18.4           |
| 2.56               | 33.4            | 56.0            | 22.6           | 28.0            | 46.0            | 18.0           |
| 4.54               | 33.0            | 56.0            | 23.0           | 26.7            | 46.0            | 19.3           |
| 25.45              | 32.7            | 60.0            | 27.3           | 27.5            | 50.0            | 22.5           |

## **Appendix I: Photograph of test setup**

### **Conducted Emission**

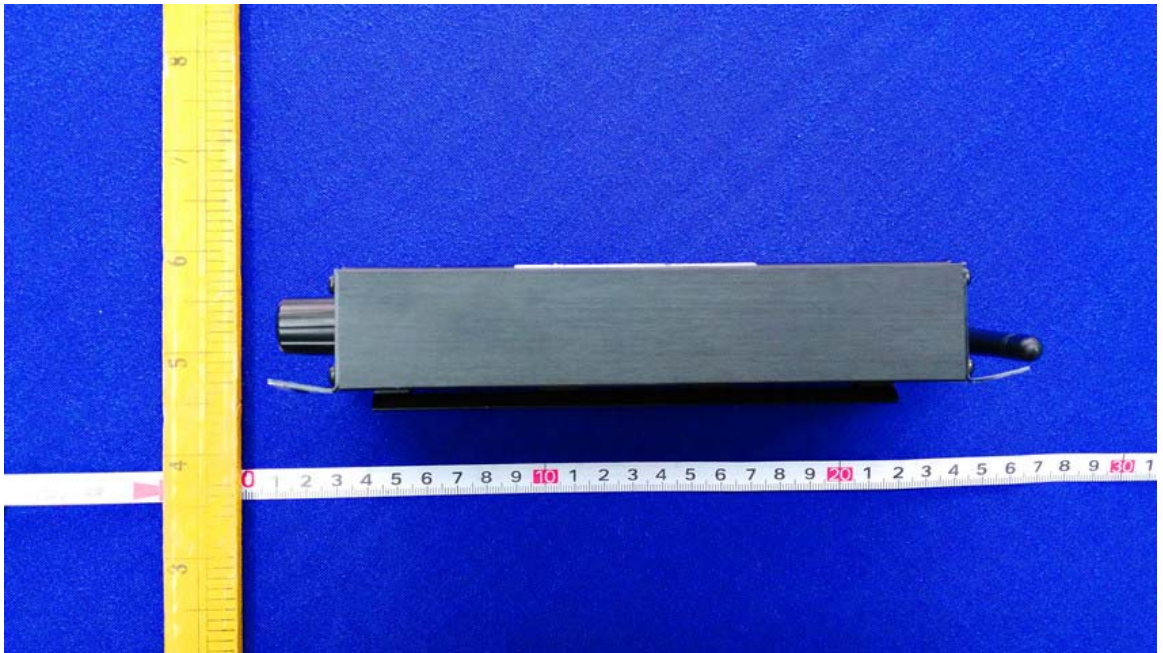


Radiated Emission

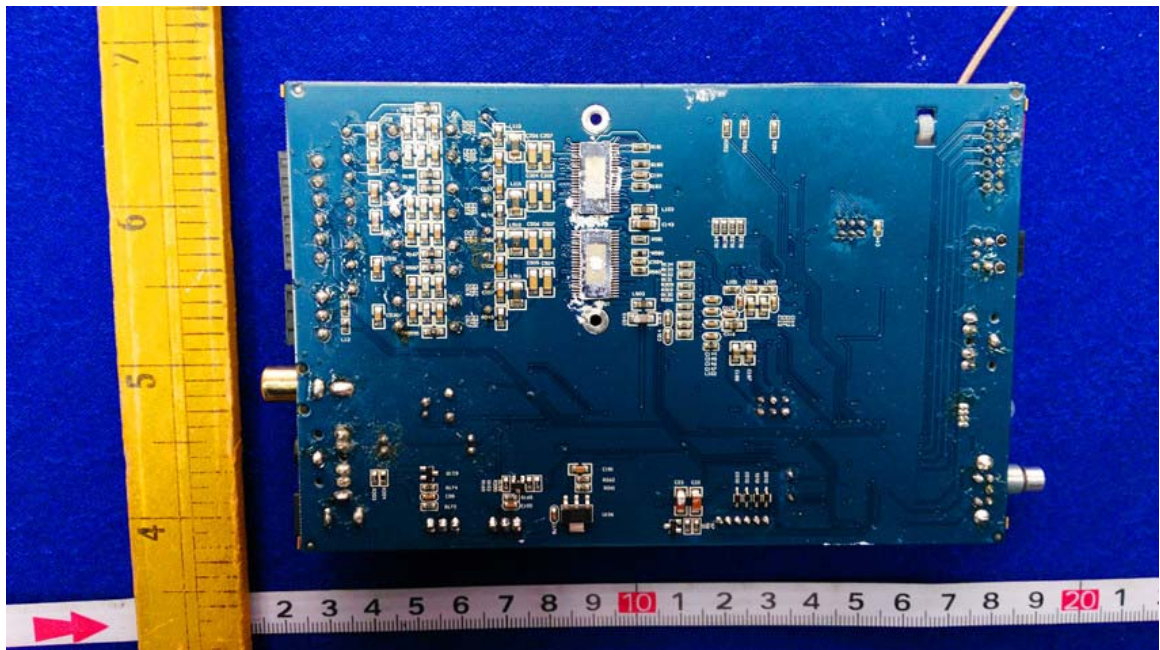
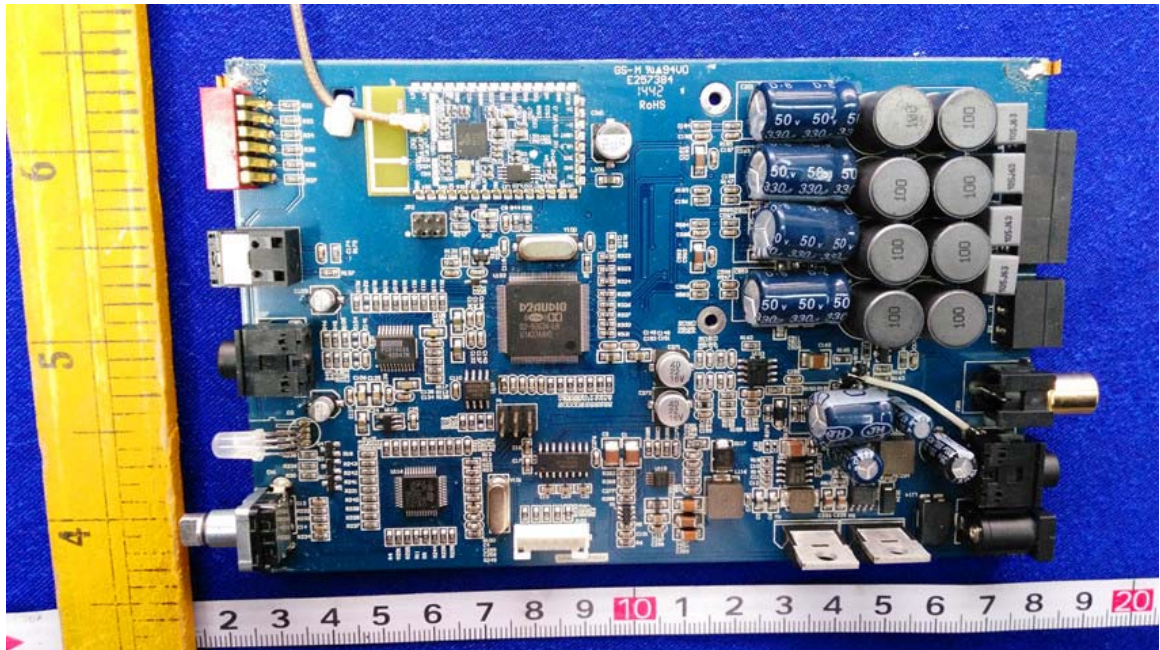


**Appendix I: Photograph of equipment under test**









Adaptor (FY3203750)

