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:	Reviewed by:
Wade Zhang	Daniel . Zhao
Wade Zhang (*Project Engineer*)	Daniel Zhao (*Reviewer*)

Description of Test Facility

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IC Assigned Code: 2042B-1

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Content

1. General Information

1.1 Applicant Information

Applicant	:	Hansong(Nanjing) Technology Ltd 8th Kangping Road, Jiangning Economy&Technology Development Zone, Nanjing, 211106, China
Name of contact	:	Anya Sun
Tel	:	0086-025-66604242
Fax	:	0086-025-66612098
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	:	PHASE TECHNOLOGY *(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 No	:	01501310-08-001
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

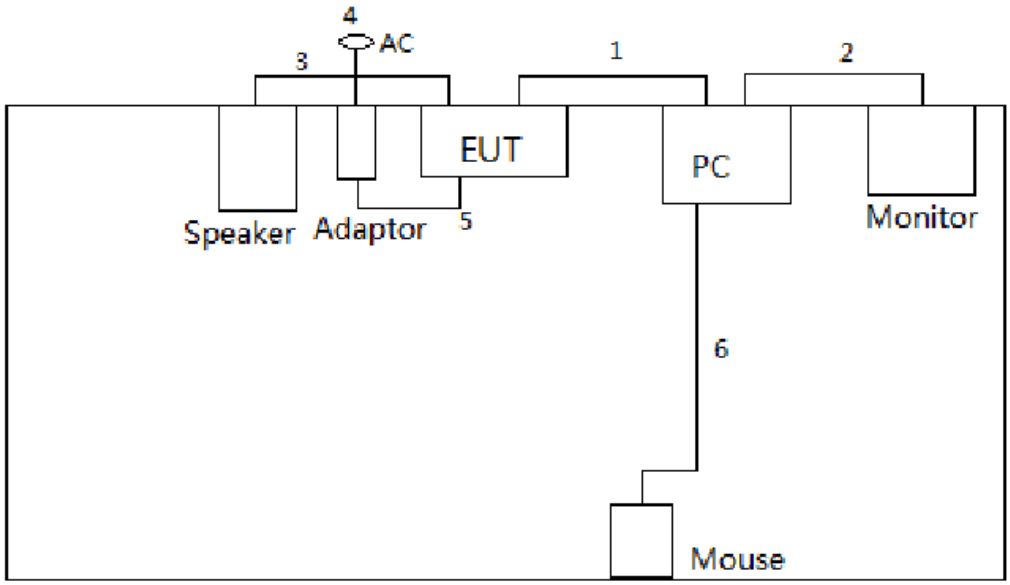
Within this test report, EUT was tested under all available operation modes, and we verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

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

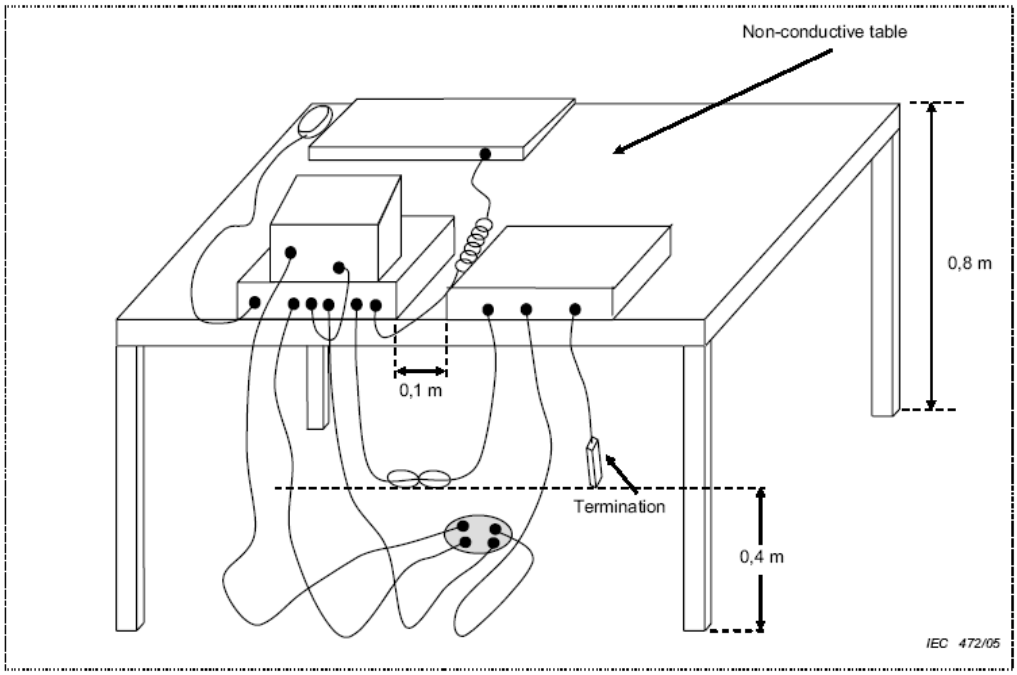
Frequency (MHz)	Permitted limit in dBμV/m (Quasi-peak) of Measurement Distance 10m
30 – 88	39
88 – 216	43.5
216 – 960	46.4
Above 960	49.5
Note: for the measurement distance other than 3m and 10m, the limit is varied according to 20dB/10 decades.	

3.1.2 Limits for radiated disturbance of class B device

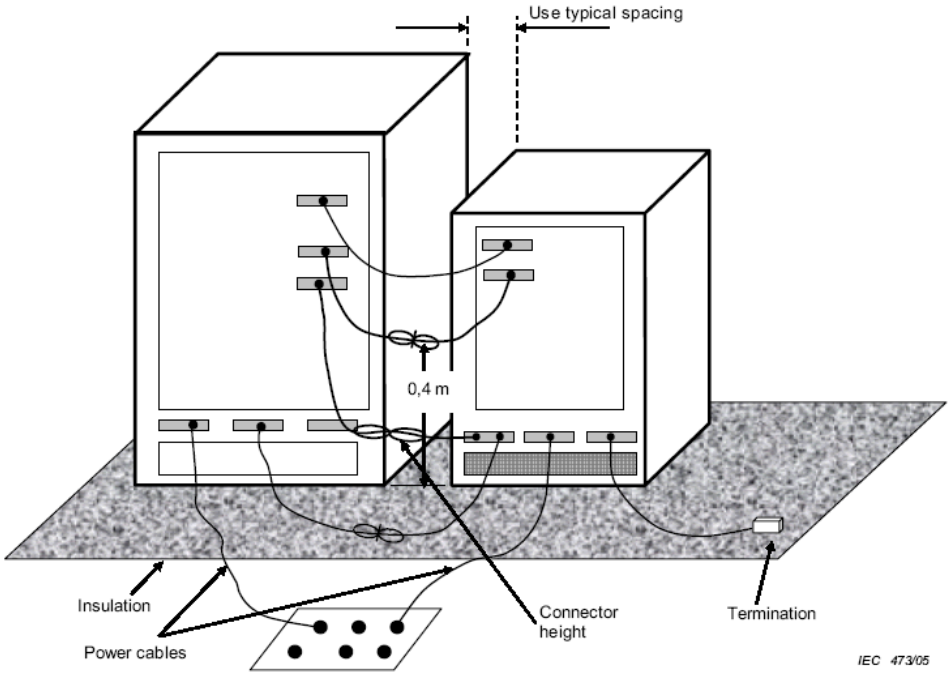
Frequency (MHz)	Permitted limit in dBμV/m (Quasi-peak) of Measurement Distance 3m
30 – 88	40.0
88 – 216	43.5
216 – 960	46.0
Above 960	54.0
Note: for the measurement distance other than 3m and 10m, the limit is varied according to 20dB/10 decades.	

3.2 Block diagram and test set up

☒ For table top equipment



☐ For floor standing equipment



3.3 Test Setup and Test Procedure

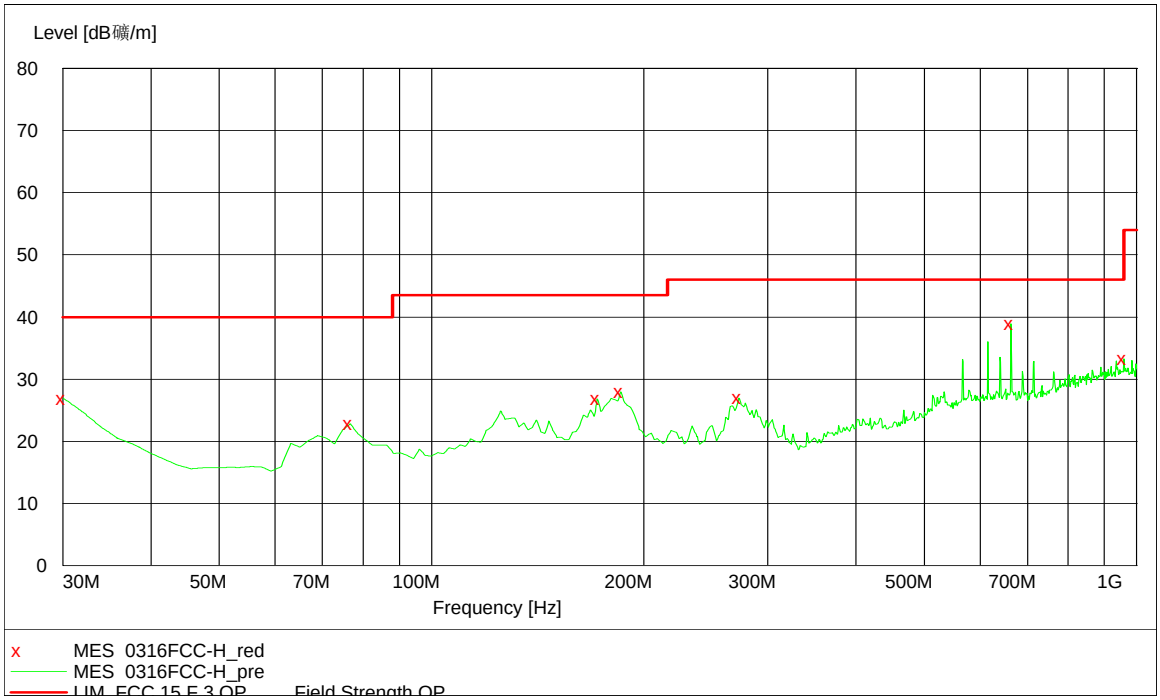
The measurement was performed in a semi-anechoic chamber. While testing for spurious emission higher than 1GHz, the pre-amplifier (and high pass filter if necessary) is equipped just at the output terminal of the antenna.
The distance from EUT to receiving antenna is **3** meter.
Measurement was performed 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)

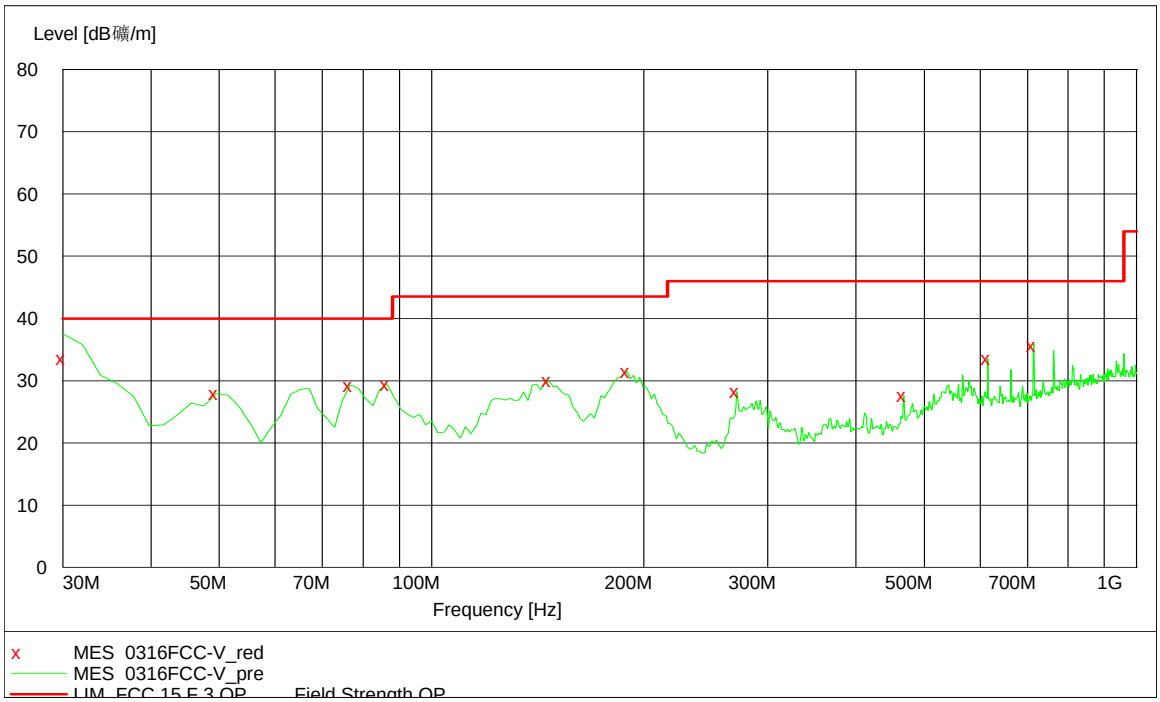
3.4 Test protocol

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

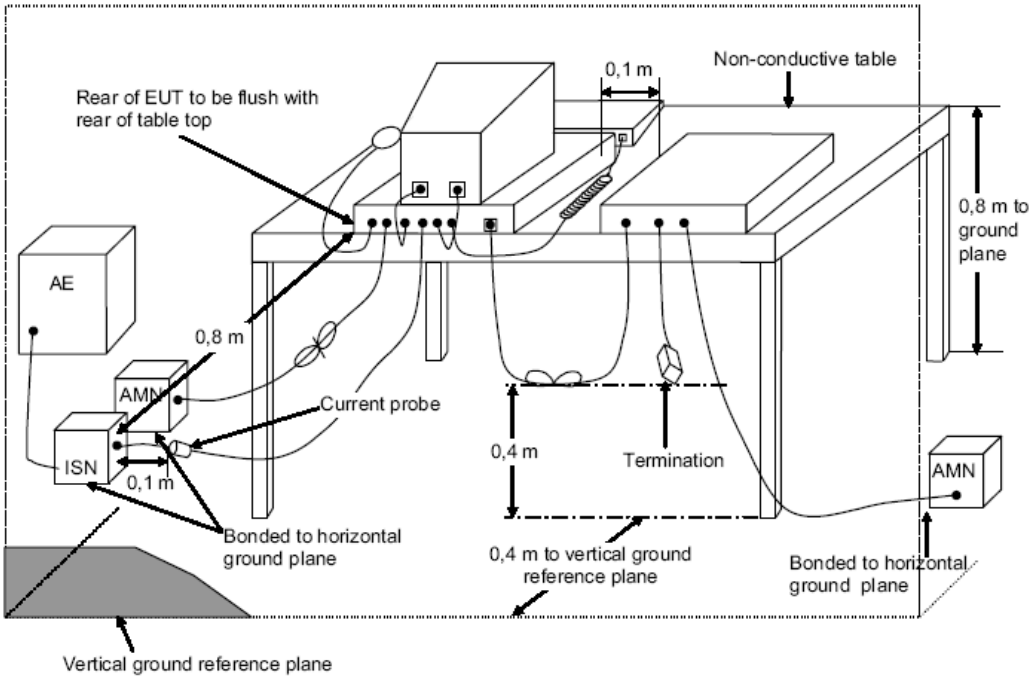
Frequency range (MHz)	Limits dB(μV) Quasi-peak	Average
0.15 ~ 0.5	79	66
0.5 ~ 30	73	60
Note: If the limit for the measurement with the average detector is met when using a receiver with a quasi-peak detector, the equipment under test shall be deemed to meet both limits and the measurement using the receiver 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

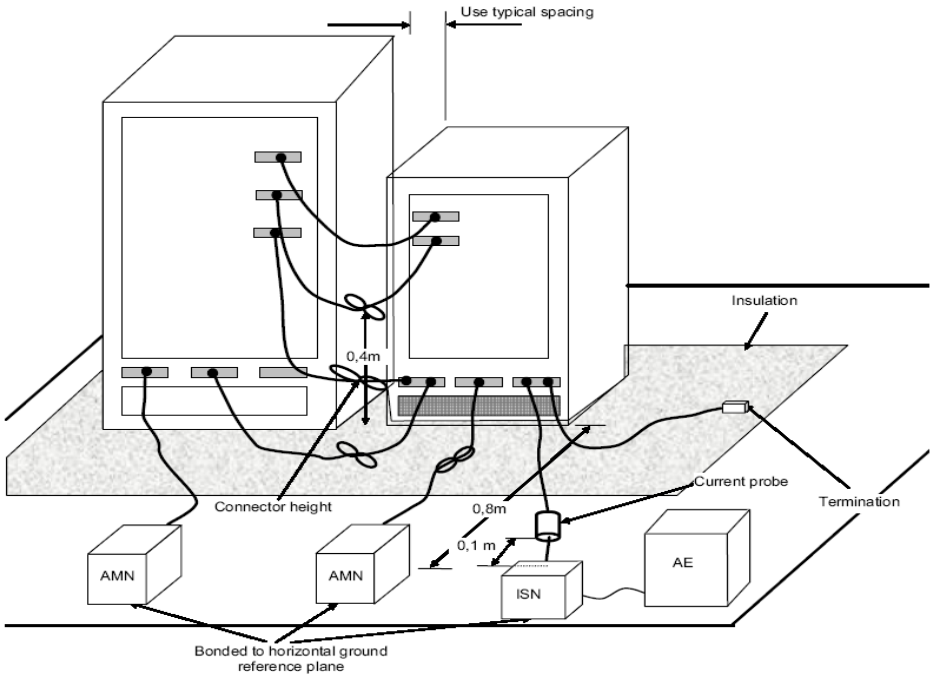
Frequency range (MHz)	Limits dB(μV) Quasi-peak	Average
0.15 ~ 0.5	66 ~ 56 *	56 ~ 46 *
0.5 ~ 5	56	46
5 ~ 30	60	50
Note: 1. * Means the limit decreasing linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz 2. If the limit for the measurement with the average detector is met when 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.

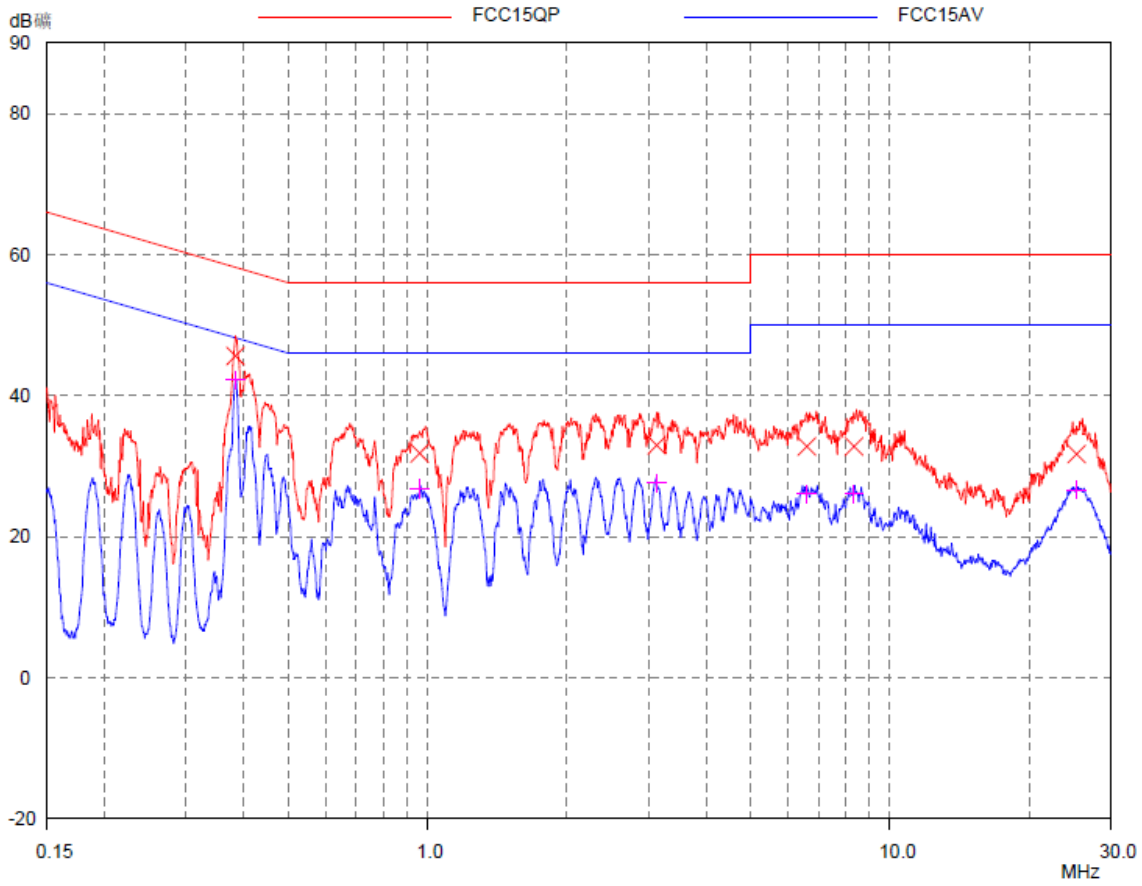
EUT arrangement and operation conditions were according to clause 6 and clause 7 of ANSI 63.4.

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 %

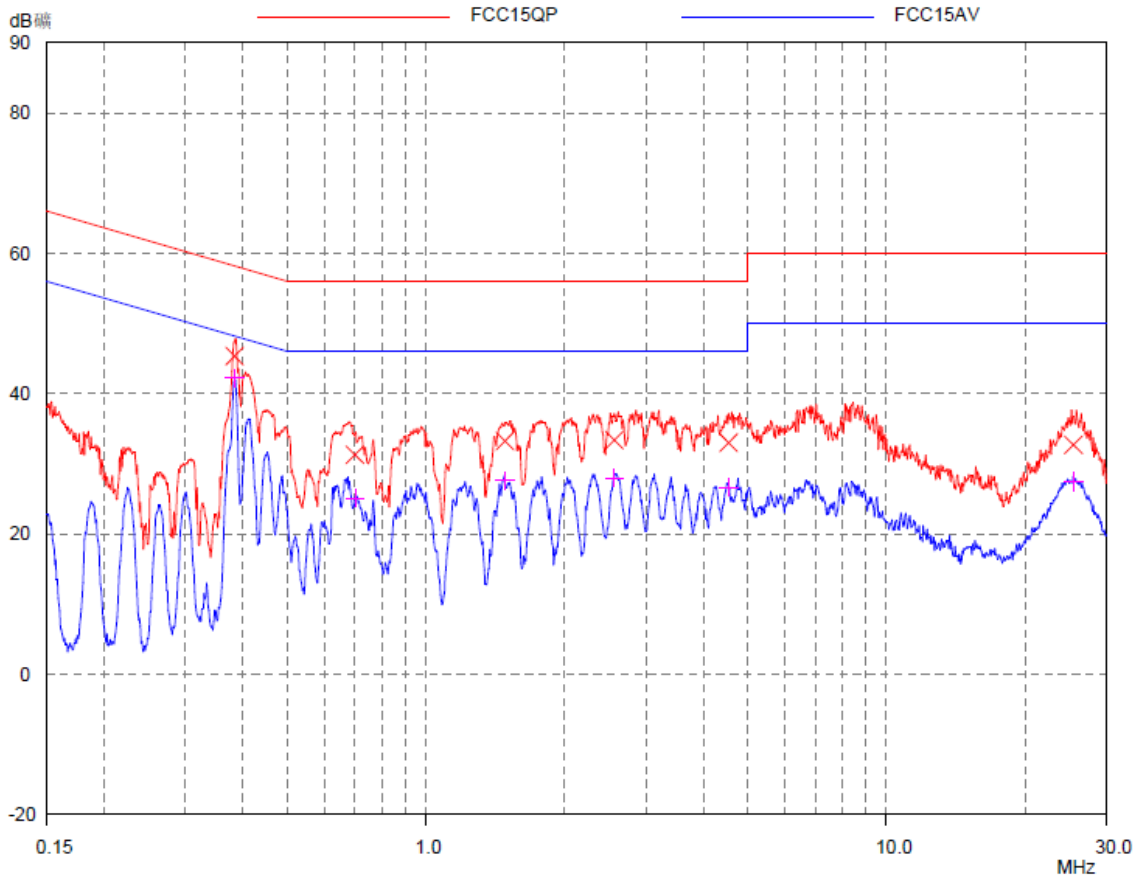
L line



Test Data:

Frequency (MHz)	Quasi-peak			Average		
	level dB(μV)	Limit dB(μV)	Margin (dB)	level dB(μV)	limit dB(μV)	Margin (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

N line

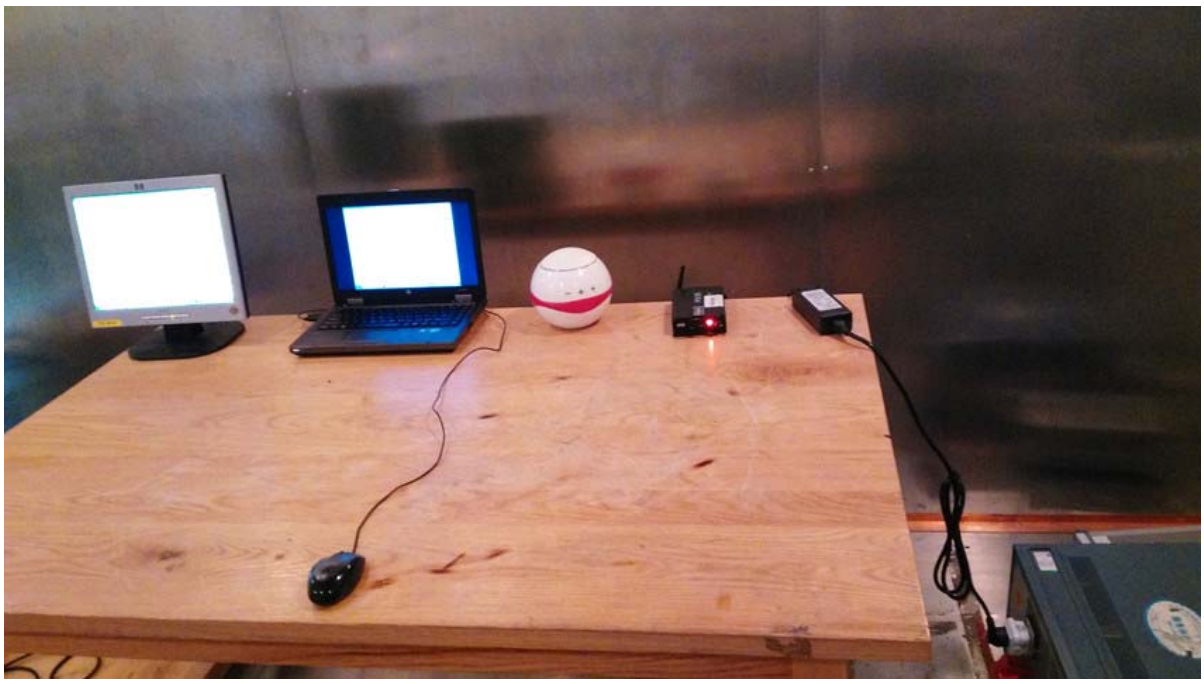


Test Data:

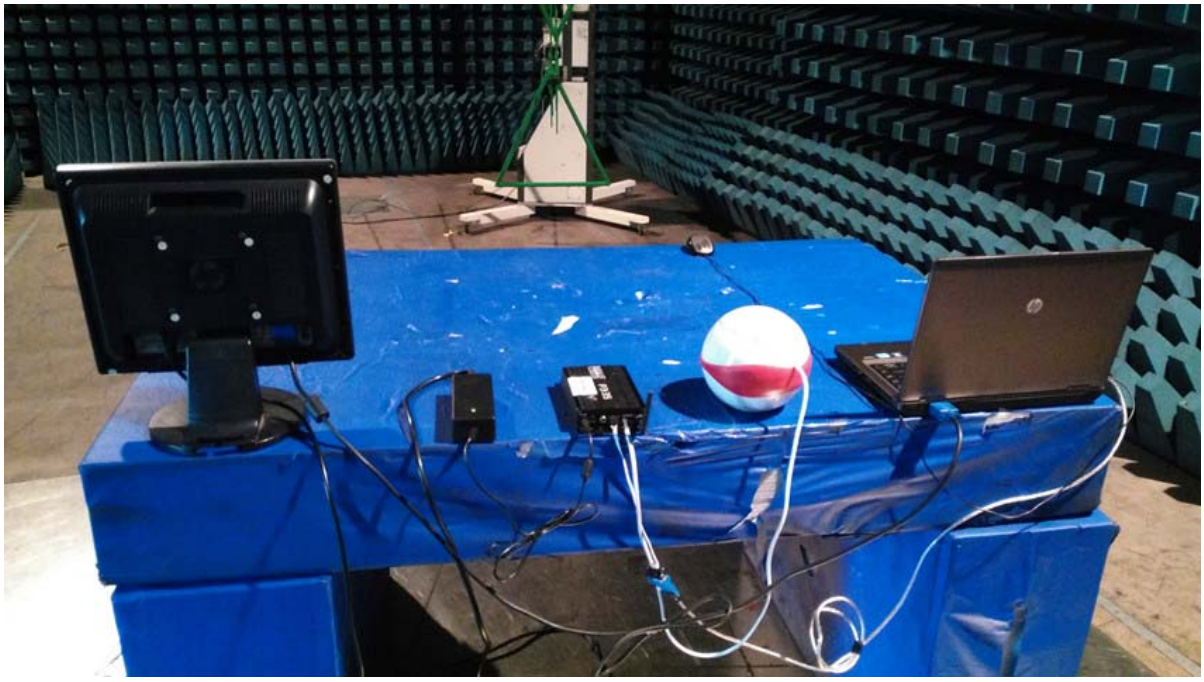
Frequency (MHz)	Quasi-peak			Average		
	level dB(μV)	Limit dB(μV)	Margin (dB)	level dB(μV)	limit dB(μV)	Margin (dB)
0.38	45.3	58.2	12.9	42.2	48.2	6.0
0.70	31.3	56.0	24.7	25.1	46.0	20.9
1.48	33.3	56.0	22.7	27.6	46.0	18.4
2.56	33.4	56.0	22.6	28.0	46.0	18.0
4.54	33.0	56.0	23.0	26.7	46.0	19.3
25.45	32.7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

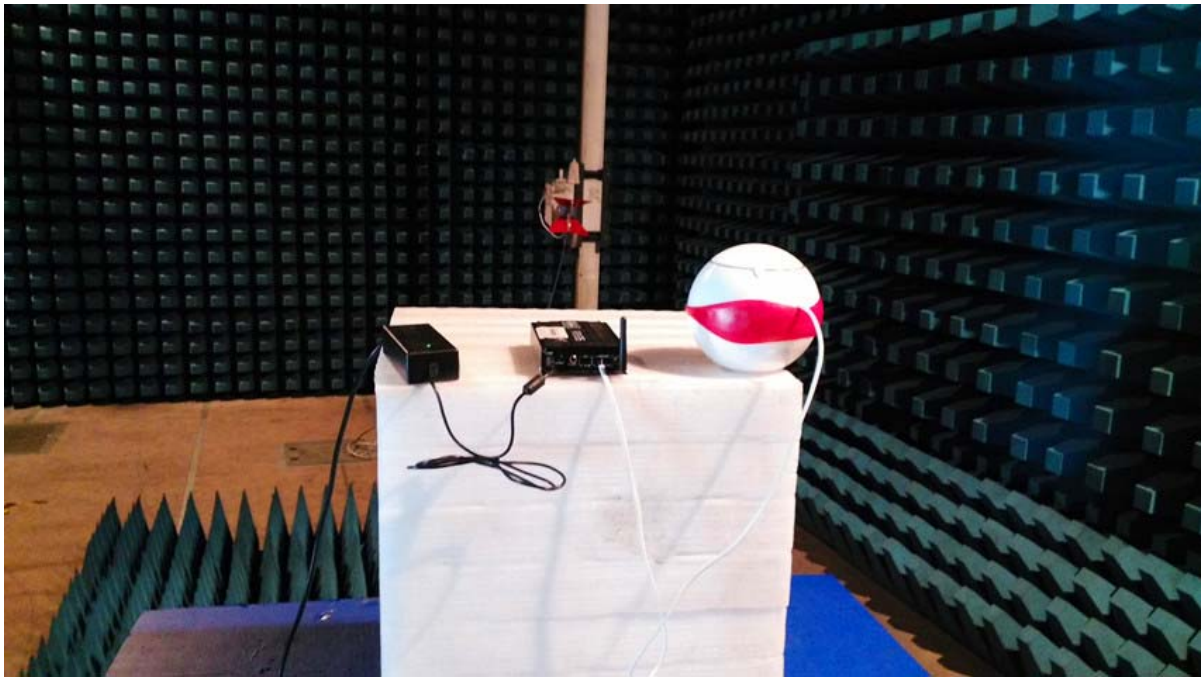
Appendix I: Photograph of test setup

Conducted Emission

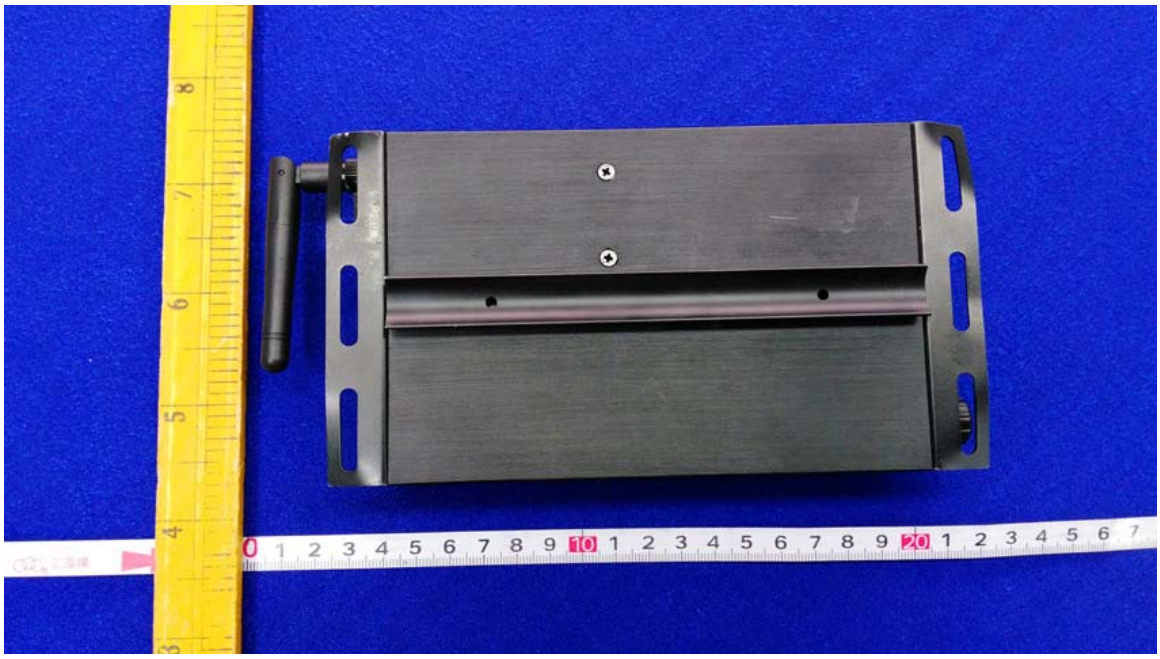


Radiated Emission



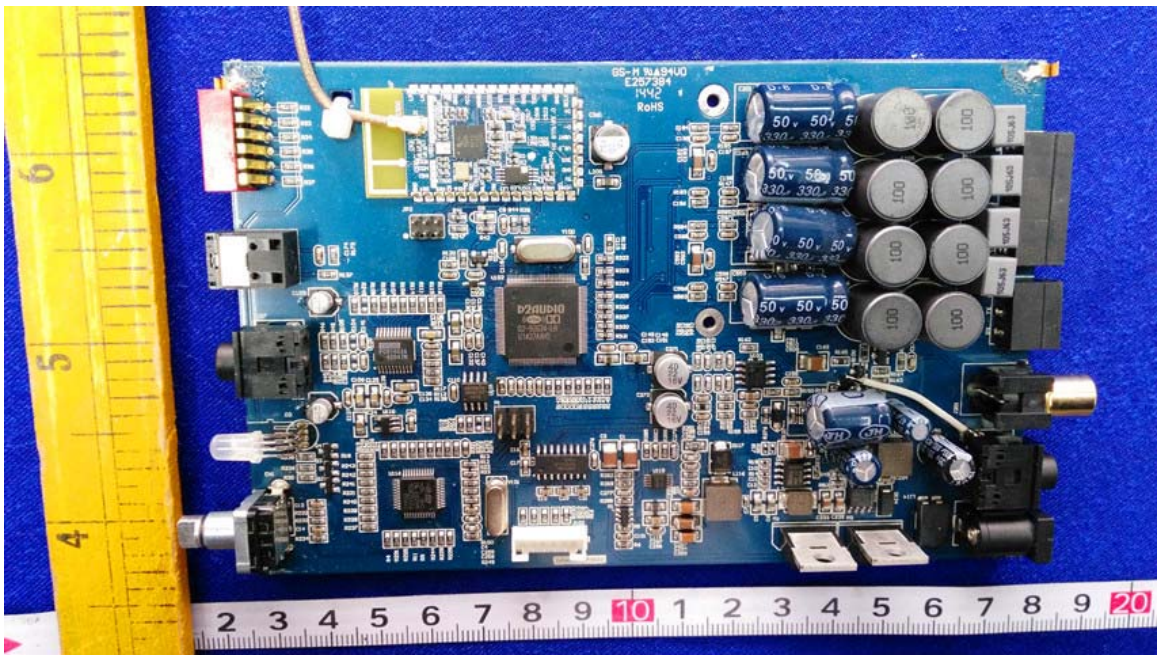


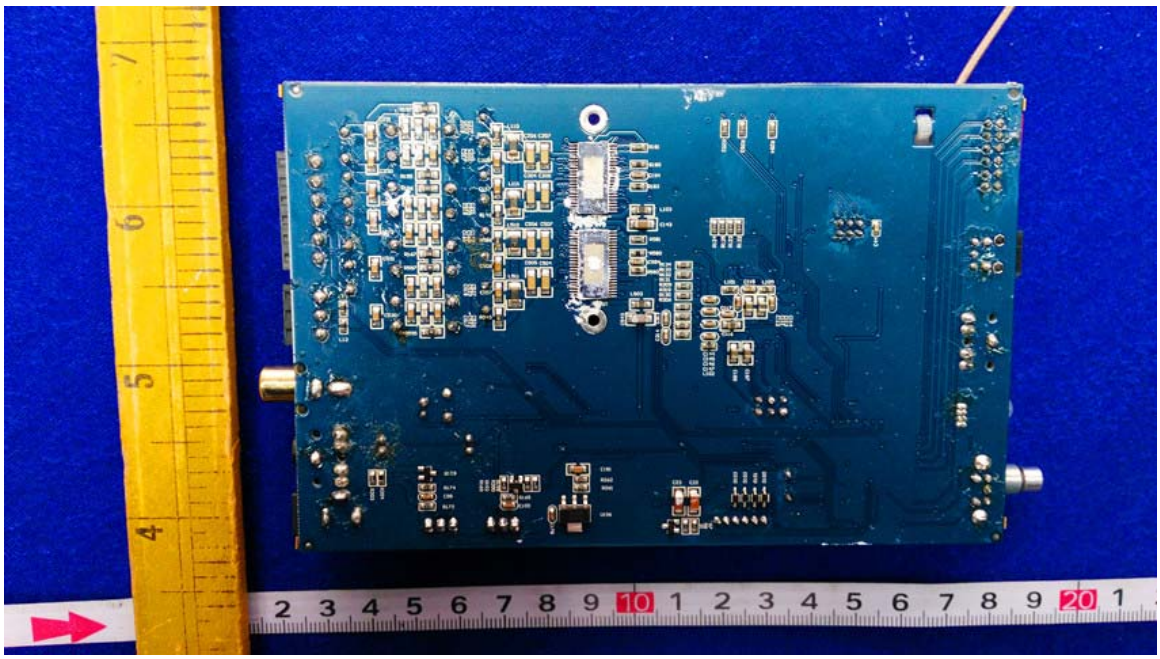
Appendix I: Photograph of equipment under test




INPUTS
ON/OFF
VOL
OPTICAL
ANALOG
STATUS


DC POWER
EXTERNAL IR
RS232
SPEAKER OUTPUT
TX — RX — GND





Adaptor (FY3203750)