ETSI EN 301 489-1 v 1.9.2: 2011/ ETSI EN 301 489-17 v 2.2.1: 2012

MEASUREMENT AND TEST REPORT

For

Shenzhen Fenda Technology Co., Ltd.

Fenda Hi-Tech Park, Zhoushi Road, Shiyan Town, Baoan District, Shenzhen City, Guangdong, China

E.U.T.: 2.1 Computer Multimedia Speaker

Model Name: A140X, A140U, A140BT, A140F, A160X, A160BT, A140XF

Brand name: F&D

Report Number: NTC1504126E-1

Test Date(s): August 31, 2016 to September 22, 2016

Report Date(s): September 22, 2016

Prepared by

Dongguan Nore Testing Center Co., Ltd.

Building D, Gaosheng Science & Technology Park, Zhouxi Longxi Road, Nancheng District,Dongguan City, Guangdong, China

Tel: +86-769-22022444 **Fax: +86-769-22022799**

Prepared By	Approved & Authorized Signer
Alina Guo / Engineer	Iori Fan /Authorized Signatory

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Revision History of This Test Report

Report Number	Description	Issued Date
NTC1504126E	Initial Issue	2015-05-13
NTC1504126E-1	Changed model number	2016-09-22

1. GENERAL INFORMATION

PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST

Manufacturer	:	F&D Technology (Shenzhen) Co., Ltd
Address	:	Fenda Hi-Tech Park, Zhoushi Road, Shiyan Town, Baoan District, Shenzhen City, Guangdong, China
Factory	:	F&D Technology (Shenzhen) Co., Ltd
Address	:	Fenda Hi-Tech Park, Zhoushi Road, Shiyan Town, Baoan District, Shenzhen City, Guangdong, China
Product Name	:	2.1 Computer Multimedia Speaker
Model Name	:	A140X, A140U, A140BT, A140F, A160X, A160BT, A140XF All tests were carried on model A140X.
Model Difference Description	:	These models have the same circuitry, electrical mechanical, PCB layout and physical construction. Their differences in model number due to trading purpose.
Power Supply	:	AC 220-240V 50/60Hz, 0.3A
Test Voltage	:	AC 230V 50Hz
Operating Temperature Range	:	0°C to 35°C (Declaration by manufacturer)
Note	:	1. This report was an additional report based on original report NTC1504126E. 2. Both of reports are the same. But this report has changed model number. 3. The original model and new model are the same. Their difference in appearance. 4. According this change, we have retest all items, details refer to the test report.

Technical Specification:

Bluetooth Version	:	2.1+EDR
Frequency Range	:	2402-2480MHz
Modulation Type	:	GFSK, π/4-DQPSK
Modulation Technology	:	FHSS
Number of Channel	:	79
Channel Space	:	1MHz
Antenna Type	:	PCB
Antenna Gain	:	0dBi (Declaration by manufacturer)
Max RF Output Power	:	-4.62 dBm (E.I.R.P.)
Adaptive/Non-Adaptive Equipment	:	Adaptive equipment

2. SUMMARY OF TEST RESULTS

The E.U.T. has been tested according to the following specifications:

ETSI EN 301 489-1 v 1.9.2: 2011/ETSI EN 301 489-17 v 2.2.1: 2012			
EMISSION			
Standard	**Test Type**	**Result**	**Remarks**
EN 55022: 2010+AC: 2011	Mains Terminal Disturbance Voltage Test	PASS	Uncertainty: 2.7dB
	Radiated Emission Test	PASS	Uncertainty: 3.4dB
EN 61000-3-2: 2014	Harmonic current emission	PASS	Meets the requirements.
EN 61000-3-3: 2013	Voltage fluctuations & flicker	PASS	Meets the requirements.
IMMUNITY			
Standard	**Test Type**	**Result**	**Remarks**
EN 61000-4-2: 2009	Electrostatic discharge immunity test	PASS	Meets the requirements of Performance Criterion B
EN 61000-4-3: 2006+A2: 2010	Radio-frequency, electromagnetic field immunity test	PASS	Meets the requirements of Performance Criterion A
EN 61000-4-4: 2012	Electrical fast transient/ burst immunity test	PASS	Meets the requirements of Performance Criterion B
EN 61000-4-5: 2014	Surge immunity test	PASS	Meets the requirements of Performance Criterion B
EN 61000-4-6: 2014	Injected Currents immunity test	PASS	Meets the requirements of Performance Criterion A
EN 61000-4-11: 2004	Voltage Dips and Interruptions	PASS	Meets the requirements of Performance Criterion B&C

3. TEST METHODOLOGY

As per table 2 of clause 7.1 of ETSI EN 301 489-1 V1.9.2, the measurement was performed under EUT combined condition during the tests. The ports on the ancillary left empty during the measurement in this report.

4. MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

5. TEST FACILITY

Site Description

EMC Lab : Listed by CNAS, August 14, 2015
The certificate is valid until August 13, 2018
The Laboratory has been assessed and proved to be in compliance with CNAS/CL01
The Certificate Registration Number is L5795.

Listed by FCC, July 03, 2014
The Certificate Number is 665078.

Listed by Industry Canada, June 18, 2014
The Certificate Registration Number. Is 46405-9743

Name of Firm : Dongguan Nore Testing Center Co., Ltd.
(Dongguan NTC Co., Ltd.)

Site Location : Building D, Gaosheng Science & Technology Park, Zhouxi Longxi Road, Nancheng District,Dongguan City, Guangdong, China

6. SUPPORT EQUIPMENT

iPod	:	Manufacturer: Apple M/N: A1446 S/N: DCYNV5EMFOGQ
DVD Player	:	Manufacturer: PHILIPS M/N: DVP3880K193 S/N: KXZA1218622565
iPhone	:	Manufacturer: Apple M/N: iPhone 4 S/N: 84133UUVA4S 5K152N41A4S

7. PERFORMANCE CRITERIA

ETSI EN301489-17 v 2.2.1: 2012		
Criteria	**During Test**	**After Test**
A	Shall operate as intended May show degradation of performance (note 1) Shall be no loss of function Shall be no unintentional transmissions	Shall operate as intended Shall be no degradation of performance(note 2) Shall be no loss of function Shall be no loss of stored data or user programmable functions
B	May show loss of function (one or more) May show degradation of performance (note 1) No unintentional transmissions	Functions shall be self-recoverable Shall operate as intended after recovering Shall be no degradation of performance (note 2) Shall be no loss of stored data or user programmable functions
C	May be loss of function (one or more)	Functions shall be recoverable by the operator Shall operate as intended after recovering Shall be no degradation of performance(note 2)

NOTE 1: Degradation of performance during the test is understood as a degradation to a level not below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance. If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended.

NOTE 2: No degradation of performance after the test is understood as no degradation below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance. After the test no change of actual operating data or user retrievable data is allowed. If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended.

Performance Criteria For Continuous Phenomena (CT & CR)

At the conclusion of the test the EUT shall operated as intended with no loss of user control functions or stored data, the communication link shall have been maintained during the test.

Performance Criteria For Transitent Phenomena (TT & TR)

At the conclusion of each exposure the EUT shall operated with no user noticeable loss of communication link.

8. ETSI EN 301 489-1/-17 REQUIREMENTS

8.1 RADIATED EMISSION LIMIT

According standard ETSI EN 301 489-1 v 1.9.2 Clause 8.2.3, Table 3 and EN 55022: 2010+AC: 2011 Clause 6, Table 6, Class B

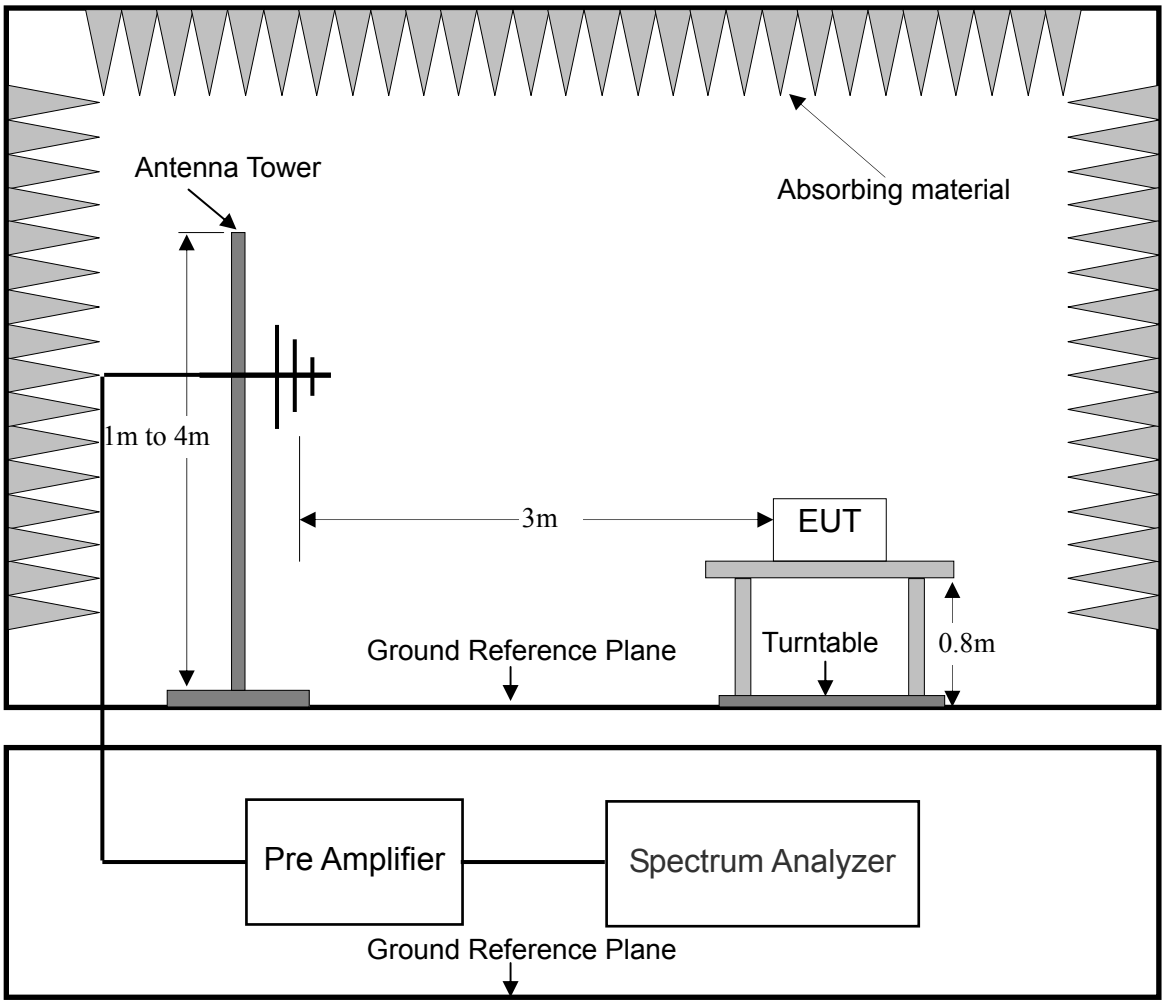
Limits for radiated disturbance Blow 1GHz

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMIT (dBμV/m)
30 ~ 230	3	40
230 ~ 1000	3	47
Note: (1) The smaller limit shall apply at the combination point between two frequency bands. (2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.		

Limits for radiated disturbance Above 1GHz

FREQUENCY (MHz)	DISTANCE (Meters)	Average Limit (dBμV/m)	Peak Limit (dBμV/m)
1000 ~ 3000	3	50	70
3000 ~ 6000	3	54	74
Note: The lower limit applies at the transition frequency.			

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 v1.9.2 Clause 8.2.3 and EN 55022: 2010+AC: 2011 Clause 6 for the measurement methods.

TEST RESULT

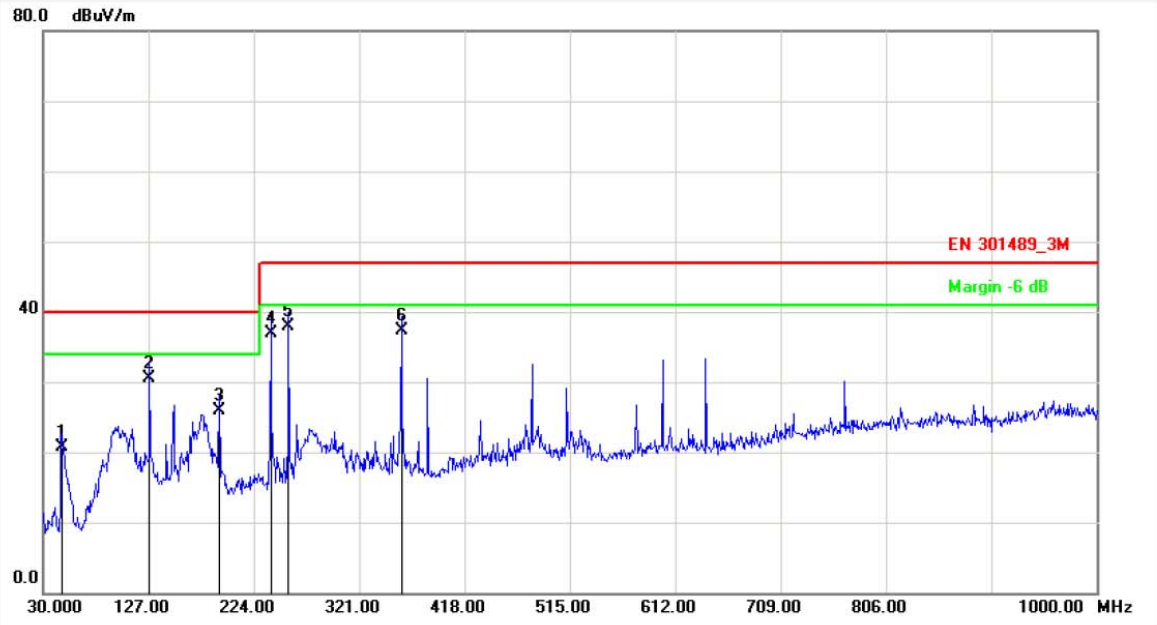
PASS

Please refer to following data tables.

Dongguan NTC Co., Ltd.
Tel:+86-769-22022444 Fax:+86-769-22022799
Web: Http://www.ntc-c.com

Site: Radiation

Test Time: 2016-9-14 10:25:36



Report No.: A140X
Test Standard: EN 301489_3M
Test item: Radiation Emission
Applicant: FENDA
Product: 2.1 Computer Multimedia Speaker
Model No.: A140X

Test Distance: 3m
Ant. Polarization: Horizontal
Temp.(C)/Hum.(%): 22(C) / 54 %
Power Rating: AC 230V/50Hz
Test Engineer: Anson

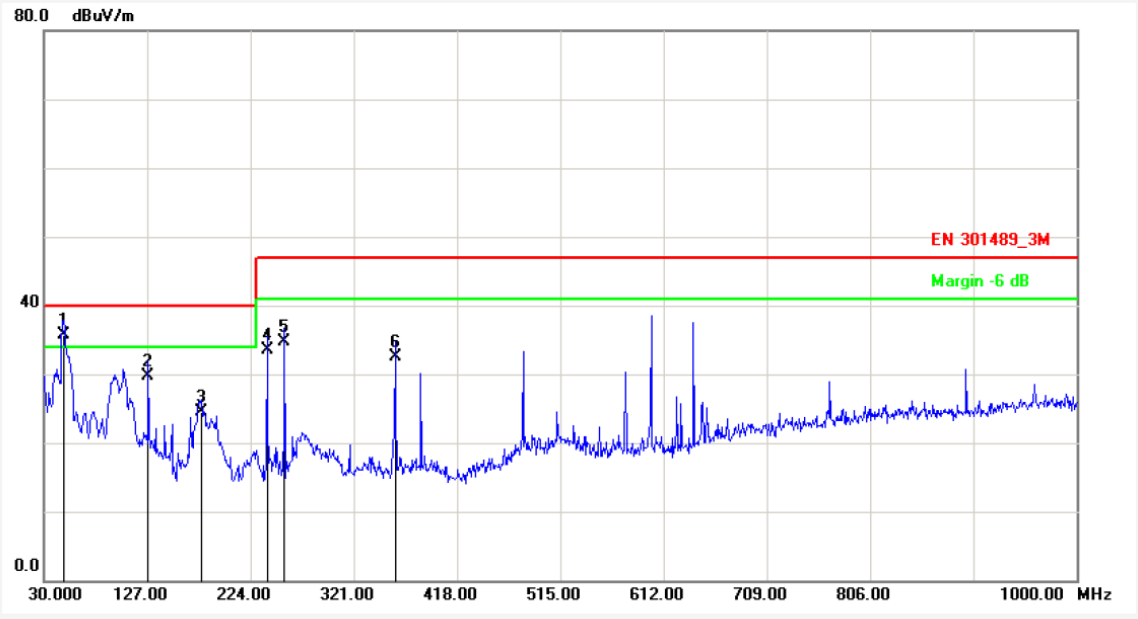
Test Mode: BT Link
Remark:

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	47.4600	-19.50	40.20	20.70	40.00	-19.30	QP			P	
2	127.9699	-14.94	45.54	30.60	40.00	-9.40	QP			P	
3	191.9900	-13.51	39.51	26.00	40.00	-14.00	QP			P	
4	239.5200	-12.06	48.96	36.90	47.00	-10.10	QP			P	
5	256.0099	-11.54	49.44	37.90	47.00	-9.10	QP			P	
6	359.8000	-9.13	46.43	37.30	47.00	-9.70	QP			P	

Dongguan NTC Co., Ltd.
Tel:+86-769-22022444 Fax:+86-769-22022799
Web: Http://www.ntc-c.com

Site: Radiation

Test Time: 2016-9-14 10:19:36



Report No.:	**A140X**		
Test Standard:	**EN 301489_3M**	**Test Distance:**	**3m**
Test item:	**Radiation Emission**	**Ant. Polarization:**	**Vertical**
Applicant:	**FENDA**	**Temp.(C)/Hum.(%):**	**22(C) / 54 %**
Product:	**2.1 Computer Multimedia Speaker**	**Power Rating:**	**AC 230V/50Hz**
Model No.:	**A140X**	**Test Engineer:**	**Anson**

Test Mode: **BT Link**

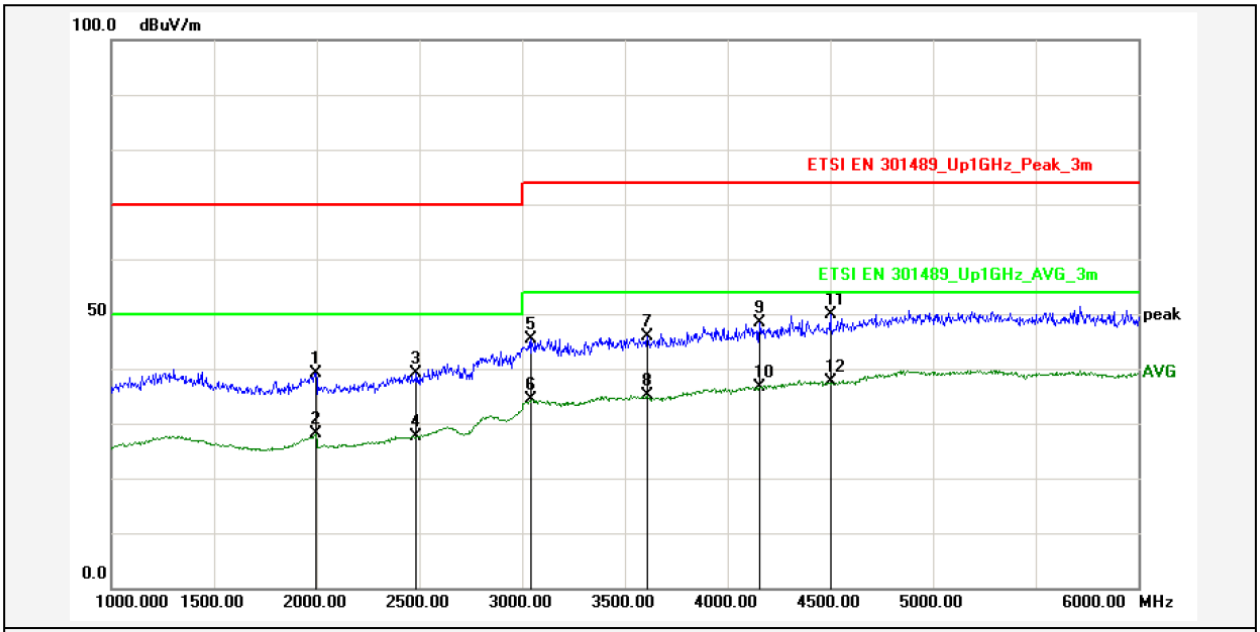
Remark:

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	48.4299	-13.42	49.22	35.80	40.00	-4.20	QP			P	
2	127.9699	-17.94	47.74	29.80	40.00	-10.20	QP			P	
3	178.4099	-17.25	41.85	24.60	40.00	-15.40	QP			P	
4	239.5200	-15.06	48.56	33.50	47.00	-13.50	QP			P	
5	256.0099	-13.54	48.24	34.70	47.00	-12.30	QP			P	
6	359.8000	-11.13	43.73	32.60	47.00	-14.40	QP			P	

Dongguan NTC Co., Ltd.
Tel:+86-769-22022444 Fax:+86-769-22022799
Web: Http://www.ntc-c.com

Site: Radiation

Test Time: 2016-9-14 11:12:33



Report No.:	**A140X**		
Test Standard:	**ETSI EN 301489_Up1GHz_Peak_3m**	**Test Distance:**	**3m**
Test item:	**Radiation Emission**	**Ant. Polarization:**	**Horizontal**
Applicant:	**FENDA**	**Temp.(C)/Hum.(%):**	**22(C) / 54 %**
Product:	**2.1 Computer Multimedia Speaker**	**Power Rating:**	**AC 230V/50Hz**
Model No.:	**A140X**	**Test Engineer:**	**Anson**

Test Mode: **BT Link**

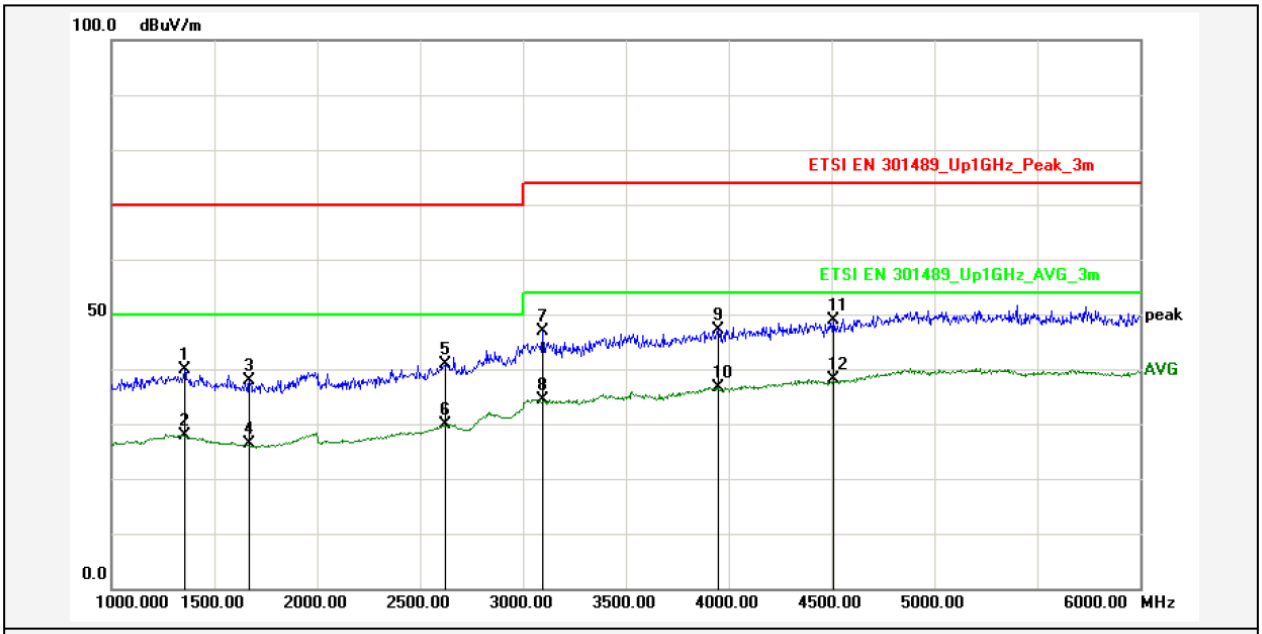
Remark:

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	1995.000	6.95	32.29	39.24	70.00	-30.76	peak			P	
2	1995.000	6.95	21.09	28.04	50.00	-21.96	AVG			P	
3	2485.000	8.38	30.80	39.18	70.00	-30.82	peak			P	
4	2485.000	8.38	19.28	27.66	50.00	-22.34	AVG			P	
5	3045.000	9.35	36.07	45.42	74.00	-28.58	peak			P	
6	3045.000	9.35	24.98	34.33	54.00	-19.67	AVG			P	
7	3610.000	10.25	35.57	45.82	74.00	-28.18	peak			P	
8	3610.000	10.25	24.97	35.22	54.00	-18.78	AVG			P	
9	4155.000	11.88	36.49	48.37	74.00	-25.63	peak			P	
10	4155.000	11.88	24.83	36.71	54.00	-17.29	AVG			P	
11	4500.000	12.88	36.95	49.83	74.00	-24.17	peak			P	
12	4500.000	12.88	24.74	37.62	54.00	-16.38	AVG			P	

Dongguan NTC Co., Ltd.
Tel:+86-769-22022444 Fax:+86-769-22022799
Web: Http://www.ntc-c.com

Site: Radiation

Test Time: 2016-9-14 11:19:12



Report No.:	**A140X**		
Test Standard:	**ETSI EN 301489_Up1GHz_Peak_3m**	**Test Distance:**	**3m**
Test item:	**Radiation Emission**	**Ant. Polarization:**	**Vertical**
Applicant:	**FENDA**	**Temp.(C)/Hum.(%):**	**22(C) / 54 %**
Product:	**2.1 Computer Multimedia Speaker**	**Power Rating:**	**AC 230V/50Hz**
Model No.:	**A140X**	**Test Engineer:**	**Anson**

Test Mode: **BT Link**

Remark:

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	1355.000	2.89	36.92	39.81	70.00	-30.19	peak			P	
2	1355.000	2.89	25.05	27.94	50.00	-22.06	AVG			P	
3	1670.000	4.92	32.87	37.79	70.00	-32.21	peak			P	
4	1670.000	4.92	21.35	26.27	50.00	-23.73	AVG			P	
5	2620.000	8.56	32.41	40.97	70.00	-29.03	peak			P	
6	2620.000	8.56	21.32	29.88	50.00	-20.12	AVG			P	
7	3095.000	9.44	37.39	46.83	74.00	-27.17	peak			P	
8	3095.000	9.44	25.02	34.46	54.00	-19.54	AVG			P	
9	3950.000	11.30	35.83	47.13	74.00	-26.87	peak			P	
10	3950.000	11.30	25.35	36.65	54.00	-17.35	AVG			P	
11	4510.000	12.92	36.06	48.98	74.00	-25.02	peak			P	
12	4510.000	12.92	25.22	38.14	54.00	-15.86	AVG			P	

8.2 AC POWER CONDUCTED EMISSION

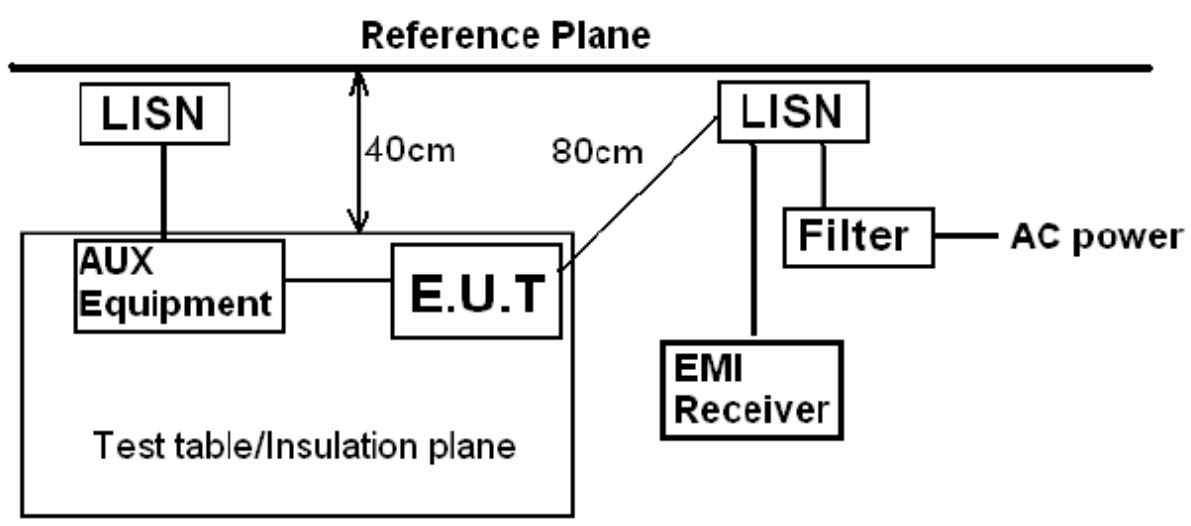
LIMIT

According to standard ETSI EN 301 489-1 v1.9.2 Clause 8.3.3, Table 8 and EN 55022: 2010+AC: 2011 Clause 5, Table 2, Class B

Limits for conducted disturbance at the mains ports of class B ITE.

Frequency range	Limits (dB(uV))	
(MHz)	Quasi-peak	Average
0.15 to 0.5	66 to 56	56 to 46
0.5 to 5	56	46
5 to 30	60	50

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 v1.9.2 Clause 8.3.3 and EN 55022: 2010+AC: 2011 Clause 5 for the measurement methods.

TEST RESULTS

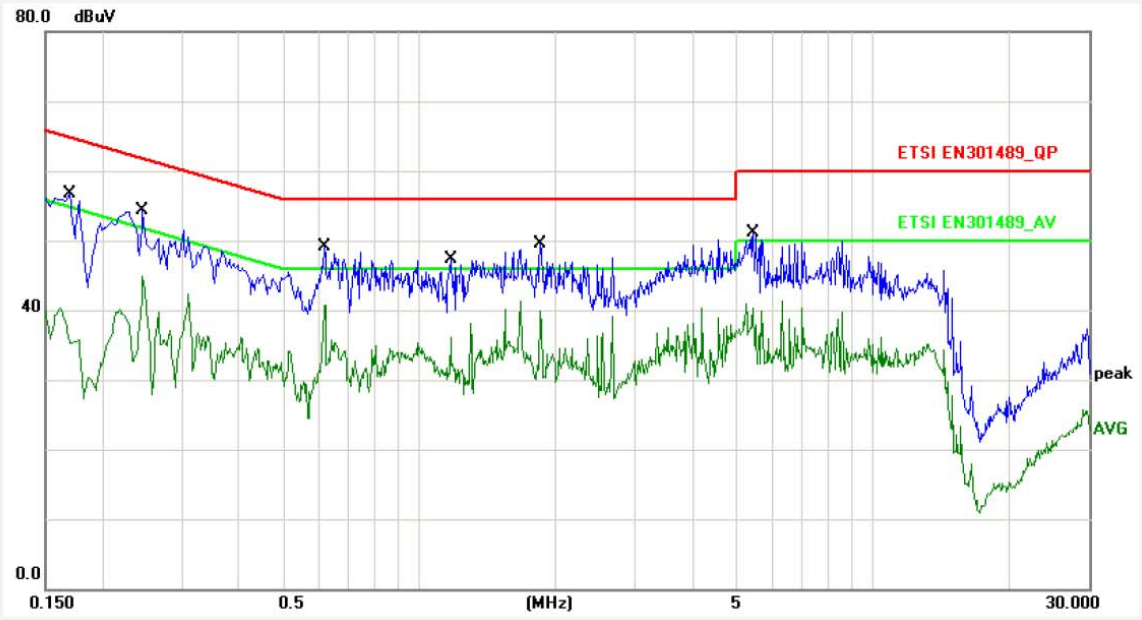
PASS

Please refer to following data.

Dongguan NTC Co., Ltd.
Tel: +86-769-22022444 Fax: +86-769-22022799
Web: Http://www.ntc-c.com

Site: Conduction

Test Time: 2016-9-7 10:21:12



Report No.: A140X
Test Standard: ETSI EN301489_QP
Test item: Conducted Emission
Phase: L1
Applicant: FENDA
Temp.( )/Hum.(%): 22(C) / 52 %
Product: 2.1 Computer Multimedia Speaker
Power Rating: AC 230V/50Hz
Model No.: A140X
Test Engineer: Jerry

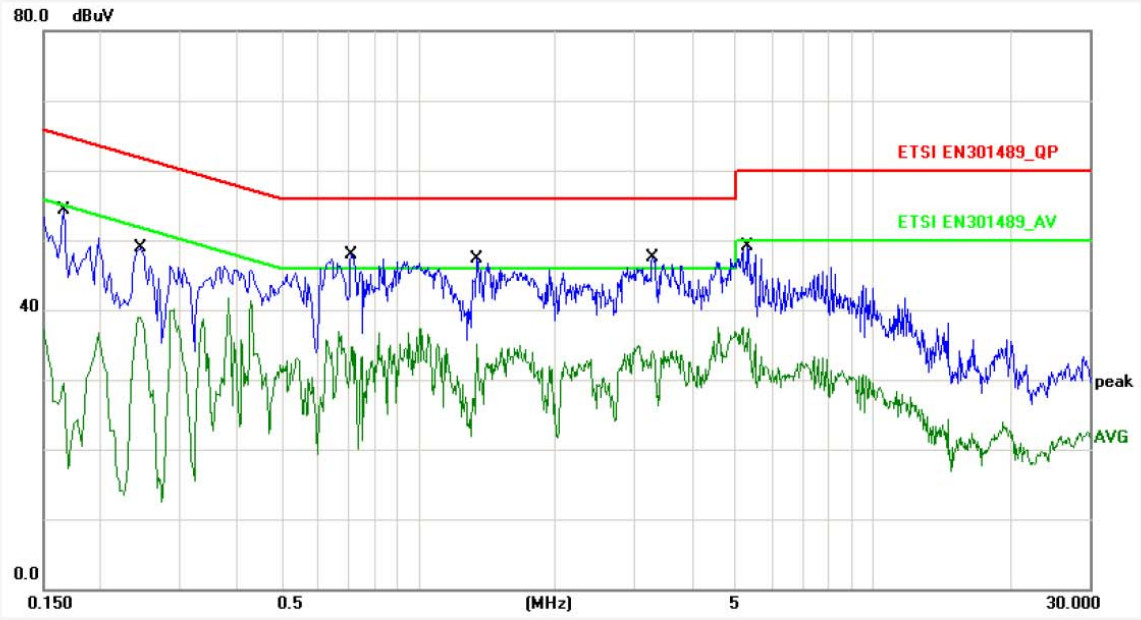
Test Mode: BT Link
Remark:

No.	Frequency (MHz)	Factor (dBuV)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1693	10.80	43.80	54.60	64.99	-10.39	QP	P	
2	0.1693	10.80	27.50	38.30	54.99	-16.69	AVG	P	
3	0.2455	10.80	41.40	52.20	61.90	-9.70	QP	P	
4	0.2455	10.80	32.10	42.90	51.90	-9.00	AVG	P	
5	0.6172	10.80	36.50	47.30	56.00	-8.70	QP	P	
6	0.6172	10.80	27.90	38.70	46.00	-7.30	AVG	P	
7	1.1719	10.80	34.40	45.20	56.00	-10.80	QP	P	
8	1.1719	10.80	23.80	34.60	46.00	-11.40	AVG	P	
9	1.8483	10.80	36.70	47.50	56.00	-8.50	QP	P	
10	1.8483	10.80	27.10	37.90	46.00	-8.10	AVG	P	
11	5.4474	10.80	38.40	49.20	60.00	-10.80	QP	P	
12	5.4474	10.80	28.00	38.80	50.00	-11.20	AVG	P	

Dongguan NTC Co., Ltd.
Tel: +86-769-22022444 Fax: +86-769-22022799
Web: Http://www.ntc-c.com

Site: Conduction

Test Time: 2016-9-7 10:28:34



Report No.: A140X
Test Standard: ETSI EN301489_QP
Test item: Conducted Emission
Phase: N
Applicant: FENDA
Temp.( )/Hum.(%): 22(C) / 52 %
Product: 2.1 Computer Multimedia Speaker
Power Rating: AC 230V/50Hz
Model No.: A140X
Test Engineer: Jerry

Test Mode: BT Link
Remark:

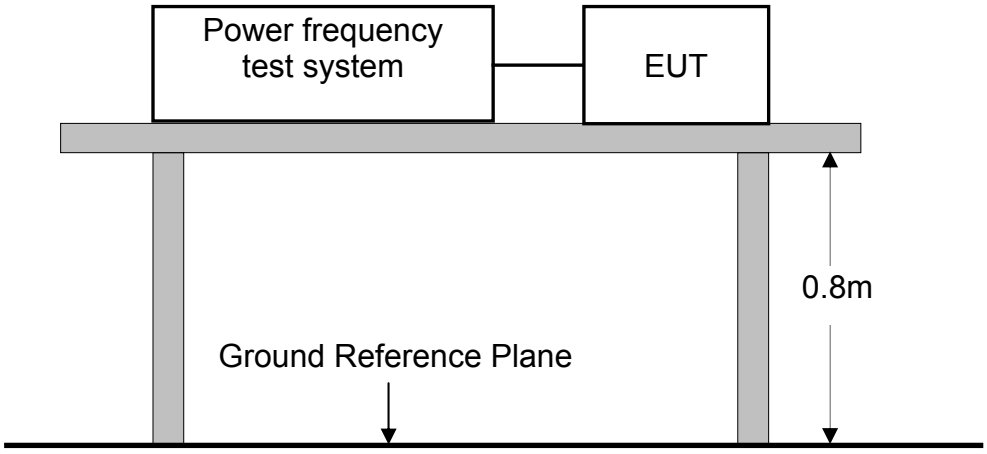
No.	Frequency (MHz)	Factor (dBuV)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1658	10.80	41.40	52.20	65.16	-12.96	QP	P	
2	0.1658	10.80	16.60	27.40	55.16	-27.76	AVG	P	
3	0.2455	10.80	36.00	46.80	61.90	-15.10	QP	P	
4	0.2455	10.80	26.10	36.90	51.90	-15.00	AVG	P	
5	0.7121	10.80	35.10	45.90	56.00	-10.10	QP	P	
6	0.7121	10.80	24.00	34.80	46.00	-11.20	AVG	P	
7	1.3448	10.80	34.40	45.20	56.00	-10.80	QP	P	
8	1.3448	10.80	22.70	33.50	46.00	-12.50	AVG	P	
9	3.2755	10.80	34.50	45.30	56.00	-10.70	QP	P	
10	3.2755	10.80	21.40	32.20	46.00	-13.80	AVG	P	
11	5.3048	10.80	37.10	47.90	60.00	-12.10	QP	P	
12	5.3048	10.80	24.90	35.70	50.00	-14.30	AVG	P	

8.3 AC MAINS HARMONIC CURRENT EMISSION

LIMIT

Please refer to EN 61000-3-2

TEST CONFIGURATION



Ambient Condition of the Test Site			
Temperature	24°C	**Test Voltage**	AC 230V/50Hz
Humidity	52%RH	**Tested by**	Sance
Pressure	1022mbar		

TEST PROCEDURE

Please refer to EN 61000-3-2 for the measurement methods.

TEST RESULTS

No non-compliance noted.

Test Mode: BT Link

According to clause 7 of EN 61000-3-2, equipment with a rated power of 75W or less, no limits apply. It is considered to meet the requirements of the standard.

8.4 AC MAINS VOLTAGE FLUCTUATION AND FLICKER

LIMIT

Please refer to EN 61000-3-3

TEST CONFIGURATION

(Same as the configuration of the AC MAINS HARMONIC CURRENT EMISSIONS TEST)

Ambient Condition of the Test Site			
Temperature	24°C	**Test Voltage**	AC 230V/50Hz
Humidity	52%RH	**Tested by**	Sance
Pressure	1022mbar		

TEST PROCEDURE

Please refer to EN 61000-3- 3 for the measurement methods.

TEST RESULTS

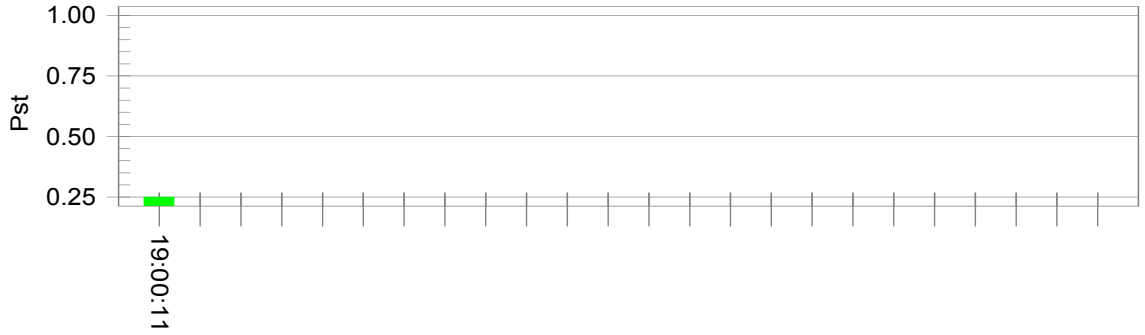
No non-compliance noted.

Test Mode : BT Link

Flicker Test Summary per EN/IEC61000-3-3 Ed. 3.0 (2013) (Run time)

EUT: 2.1 Computer Multimedia Speaker **Tested by: Ryan**
Test category: All parameters (European limits)Test Margin: 100
Test date: 2016-9-19 **Start time: 18:49:41 End time: 19:00:12**
Test duration (min): 10 **Data file name: F-010691.cts_data**
Comment: BT Link
Customer: Fenda
M/N: A140X
Test Result: Pass **Status: Test Completed**

Psti and limit line **European Limits**



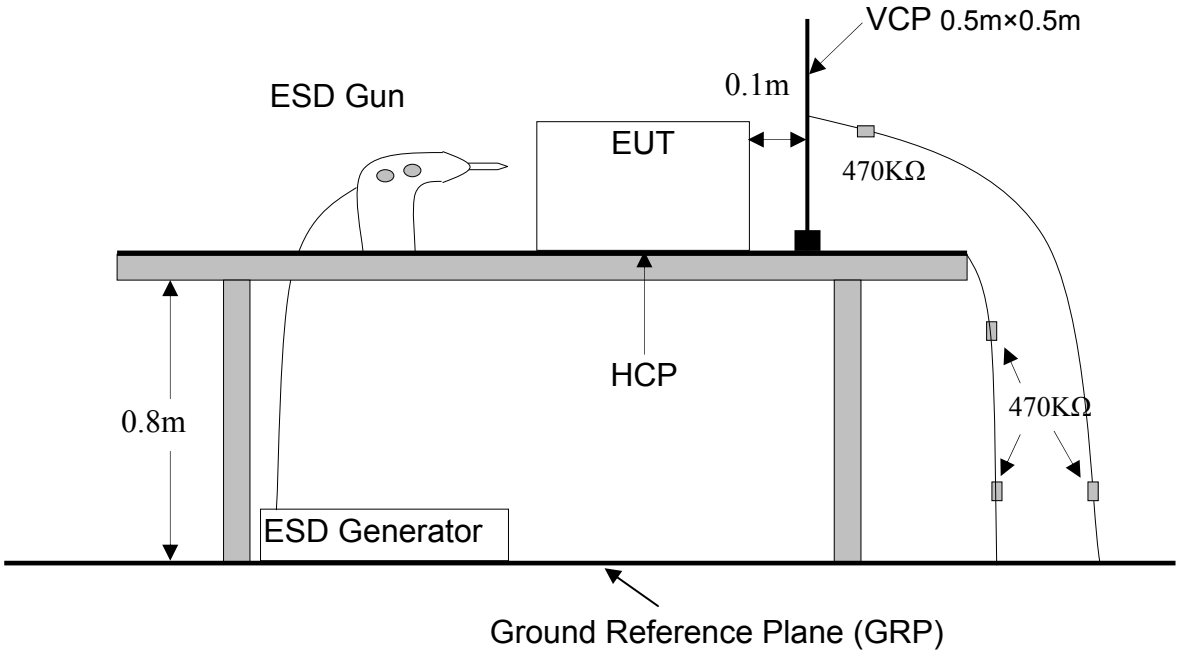
Plt and limit line

Parameter values recorded during the test:

Vrms at the end of test (Volt):	**230.32**			
Highest dt (%):	**0.00**	**Test limit (%):**	**N/A**	**N/A**
T-max (mS):	**0**	**Test limit (mS):**	**500.0**	**Pass**
Highest dc (%):	**0.00**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**-0.04**	**Test limit (%):**	**4.00**	**Pass**
Highest Pst (10 min. period):	**0.250**	**Test limit:**	**1.000**	**Pass**
Highest Plt (2 hr. period):	**0.109**	**Test limit:**	**0.650**	**Pass**

8.5 ELECTROSTATIC DISCHARGE

TEST CONFIGURATION



TEST PROCEDURE:

Please refer to ETSI EN 301 489-1 v1.9.2 Clause 9.3.2 and EN 61000-4-2 for the measurement methods.

TEST RESULT

PASS

please refer to following data table.

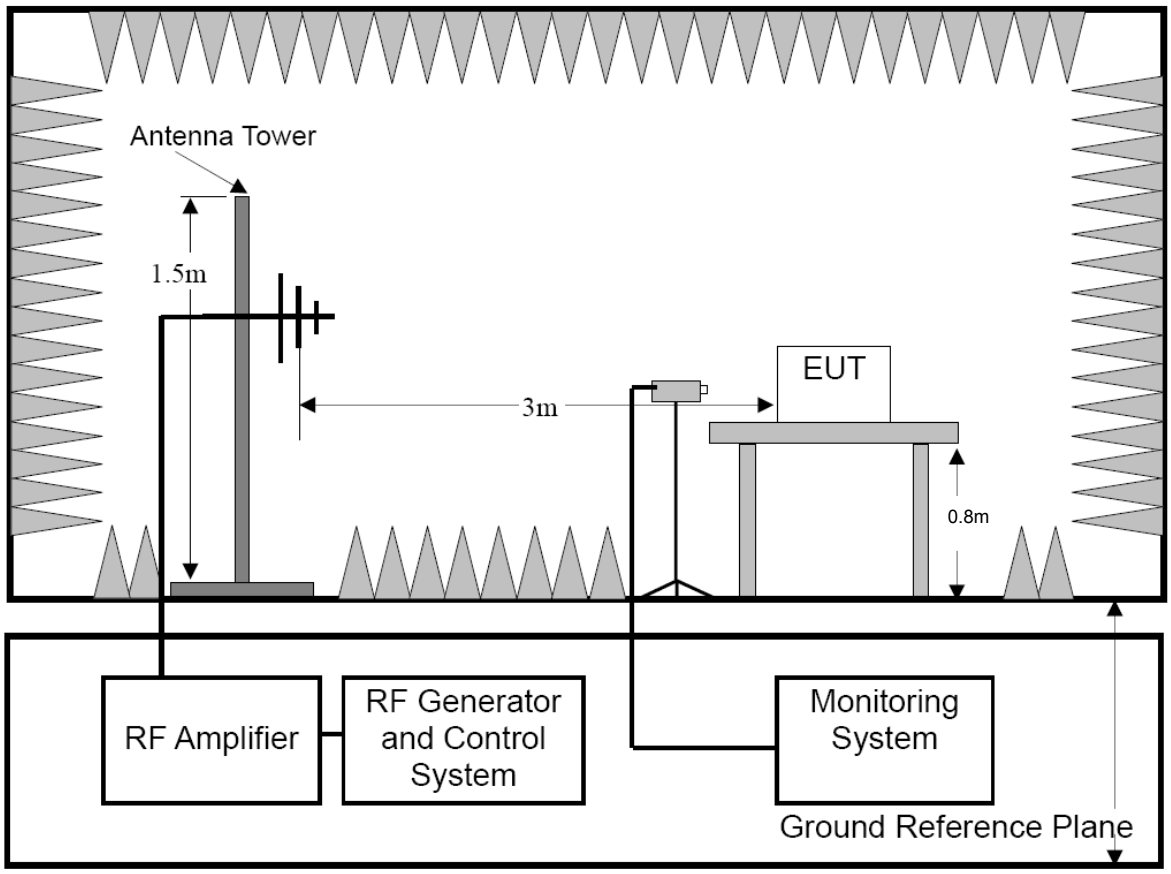
Test Condition			
Temperature	26°C	Test Voltage	AC 230V/50Hz
Humidity	51%RH	Tested by	Ryan
Pressure	1022mbar	Performance Criterion :	CR & CT & B
Ground Bond Resistance		0.2 Ω	
Time Between Each Discharge :		1 second	
Test Mode		BT Link	
Test Level		±2.0, 4.0, 8.0 kV (Air Discharge) ±2.0, 4.0 kV (Contact Discharge) ± 2.0, ±4.0 kV (Indirect Contact Discharge)	

Test Result		
Discharge Type	Level	Result
Contact Discharge	±2, 4kV	Pass*
Air Discharge	±2, 4, 6, 8kV	Pass*
Indirect HCP Discharge	± 2, ± 4kV	Pass*
Indirect VCP Discharge	± 2, ± 4kV	Pass*

Note: "*": During the test the EUT stops working, and it should be recovered by users after test. This test result was performed based on the client's product specifications and user's manual

8.6 RF ELECTROMAGNETIC FIELD

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 v1.9.2 Clause 9.2.2 and EN61000-4-3 for the measurement methods.

TEST RESULT

PASS

please refer to following data table.

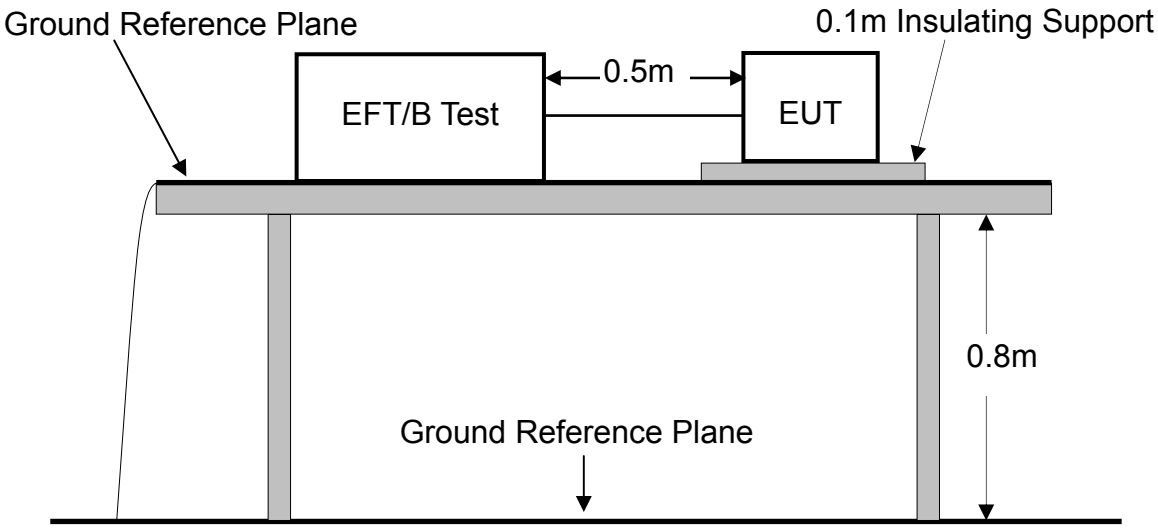
Test Condition			
Temperature	26°C	Test Voltage	AC 230V 50Hz
Humidity	51%RH	Tested by	Ryan
Pressure	1022mbar	Performance Criterion	CR & CT & A
Frequency Range		80-1000MHz and 1400-2700 MHz	
Test Modulation		1kHz, 80% AM	
Dwell time		1 second	
Frequency Step		1%	
Antenna Polarization		Horizontal and Vertical	
Test Mode		BT Link	
Test Level		3V/m	

Test Result		
Frequency (MHz)	Exposed Side	Result
80 to 1000 1400 to 2700	Front	Pass
80 to 1000 1400 to 2700	Left	Pass
80 to 1000 1400 to 2700	Rear	Pass
80 to 1000 1400 to 2700	Right	Pass

Note: The exclusion band for 2,45 GHZ equipment falling within the scope of the present document extends from 2 280 MHz to 2 607,675 MHz.

8.7 AC MAINS FAST TRANSIENTS COMMON MODE

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 v1.9.2 Clause 9.4.2 and EN 61000-4-4 for the measurement methods.

TEST RESULT

PASS

please refer to following data table.

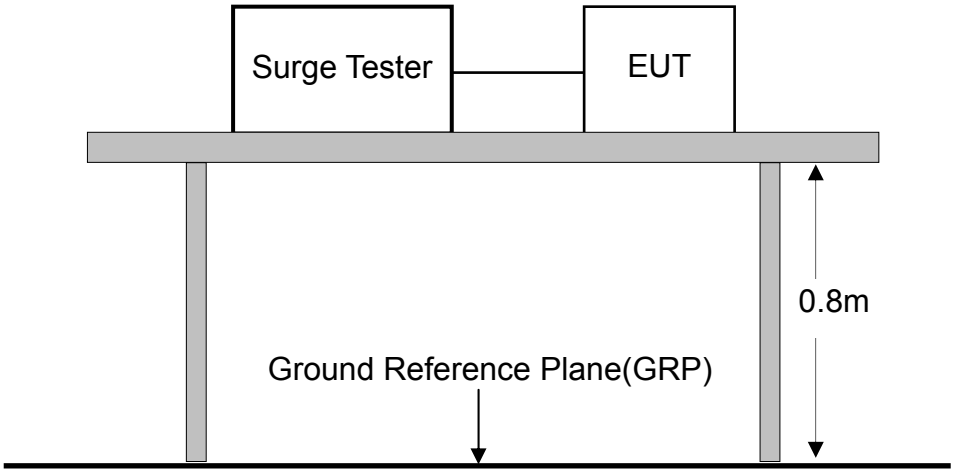
Test Condition			
Temperature	26°C	Test Voltage	AC 230V/50Hz
Humidity	51%RH	Tested by	Ryan
Pressure	1022mbar	Performance Criterion	CR & CT & B
Impulse Frequency		5kHz	
Tr/Th		5/50ns	
Burst Duration		15ms	
Burst Period		300ms	
Port		AC Power	
Test Mode		BT Link	
Test Level		±1.0kV	

Test Result		
Injection Line	Level	Result
Line	±1.0kV	Pass**
Neutral	±1.0kV	Pass**
PE	N/A	N/A
Line + Neutral	±1.0kV	Pass**
Line + PE	N/A	N/A
Neutral + PE	N/A	N/A
DC Power Line	N/A	N/A
Signal Line	N/A	N/A

Note: "": In test modes, the sound of EUT muting occurs during test, but it can be resumed by itself after test.**

8.8 AC MAINS SURGE

TEST CONFIGURATION



TEST PROCEDURE:

Please refer to ETSI EN 301 489-1 v1.9.2 Clause 9.8.2 and EN 61000-4-5 for the measurement methods.

TEST RESULT

PASS

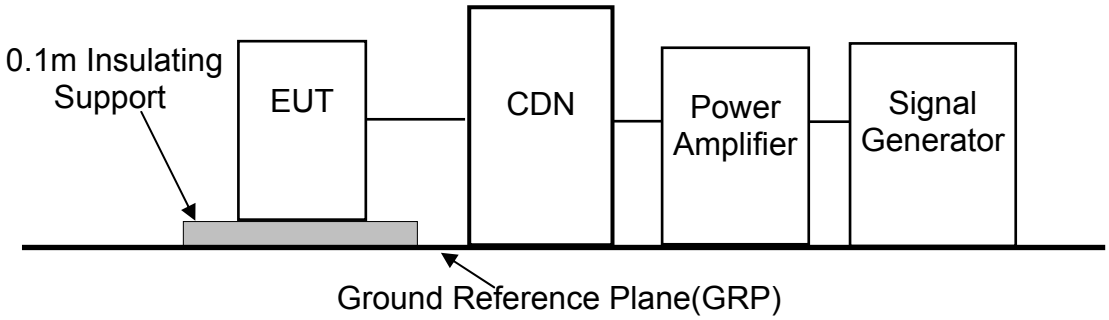
please refer to following data table.

Test Condition			
Temperature	26°C	Test Voltage	AC 230V/50Hz
Humidity	51%RH	Tested by	Ryan
Pressure	1022mbar	Performance Criterion	CR & CT & B
Voltage Waveform		1.2/50 us	
Current Waveform		8/20 us	
Polarity		Positive/Negative	
Phase angle		0o, 90o, 180 o, 270o	
Repetition Rate		1 minute	
Test Mode		BT Link	
Test Level		±1.0kV / 5 Positive And 5 Negative Surges	

Test Result		
Coupling Line	Level	Result
Line + Neutral	±1.0kV	Pass
Line + PE	N/A	N/A
Neutral + PE	N/A	N/A
T, R-Ground	N/A	N/A
L1, 2, 3, 4-G (LAN)	N/A	N/A

8.9 RADIO FREQUENCY COMMON MODE

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 v1.9.2 Clause 9.5.2, EN61000-4-6 for the measurement methods.

TEST RESULT

PASS

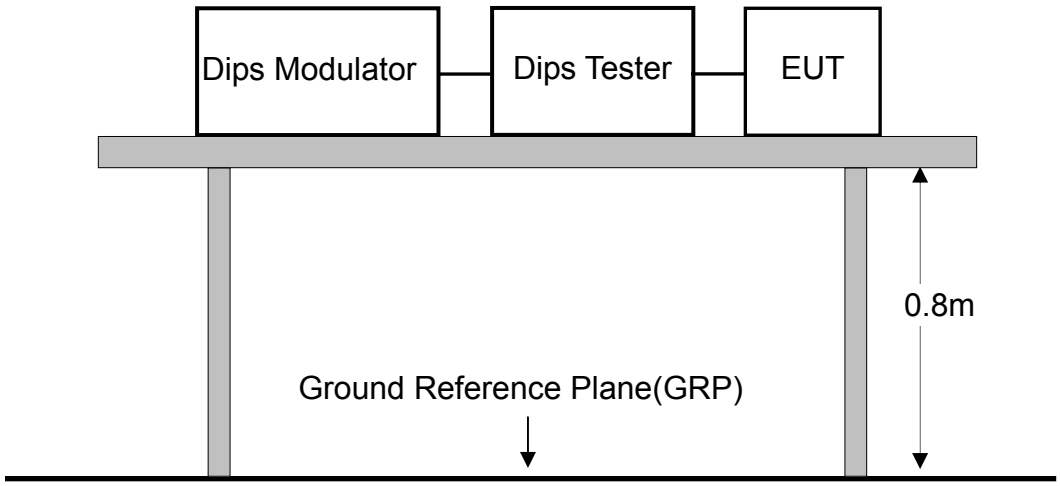
please refer to following data table.

Test Condition			
Temperature	26°C	Test Voltage	AC 230V/50Hz
Humidity	51%RH	Tested by	Ryan
Pressure	1022mbar	Performance Criterion	CR & CT & A
Frequency Range		0.15MHz~80MHz	
Frequency Step		1%	
Dwell time		1s	
Test Modulation		1 kHz, 80% AM	
Source Impedance		150Ω	
Test Mode		BT Link	
Test Level		3V(r.m.s)	

Test Result		
Injection Line	Level	Result
AC Power Line	3V(r.m.s)	Pass
Telecommunication Line	N/A	N/A
DC Line	N/A	N/A
Signal Line	N/A	N/A
Control Line	N/A	N/A

8.10 VOLTAGE DIPS AND INTERRUPTION

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 V1.9.2 Clause 9.7.2 and EN 61000-4-11 for the measurement methods.

TEST RESULT

PASS

please refer to following data table.

Test Condition			
Temperature	26°C	Test Voltage	AC 230V 50Hz
Humidity	51%RH	Tested by	Ryan
Pressure	1022mbar	Performance Criterion	B&C
Phase angles		0°, 45°, 90°, 135°, 180°, 225°, 270 °, 315°	
Number of Dips/Interruptions :		3 times	
Repetition Rate		10s	
Test Mode		BT Link	

Test Level				
	Test Level (% U_T)	Reduction (%)	Duration (ms)	Criterion
Voltage Dips	70	30%	500	A
	0	100%	20	A
	0	100%	10	A
Voltage Interruption	0	100%	5000	C

Test Result			
Test Level (% U_T)	Reduction (%)	Duration (ms)	Result
70	30%	500	Pass
0	100%	20	Pass
0	100%	10	Pass
0	100%	5000	Pass*

Note: "*": During the test the EUT Power off, and it should be recovered by users after test.

8.11 TEST EQUIPMENT LIST

FOR MAINS TERMINALS DISTURBANCE VOLTAGE TEST

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESCI	101152	Mar. 07, 2016	1 Year
2.	L.I.S.N	Rohde & Schwarz	ENV 216	101317	Mar. 07, 2016	1 Year
3.	L.I.S.N	Schwarzbeck	NNLK8129	8129-212	Mar. 07, 2016	1 Year
4.	RF Switching Unit	Compliance Direction Systems Inc.	RSU-M2	38311	Mar. 07, 2016	1 Year
5.	Pulse Limiter	MTS-systemtechnik	MTS-IMP-136	26115-010-0007	Mar. 07, 2016	1 Year

FOR RADIATED EMISSION MEASUREMENT

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESCI7	100837	Mar. 07, 2016	1 Year
2.	Antenna	Schwarzbeck	VULB9162	9162-010	Apr. 25, 2016	1 Year
3.	Cable	Huber+Suhner	CBL3-NN-9M	21490001	Mar. 07, 2016	1 Year
4.	Cable	Huber+Suhner	CIL02	N/A	Mar. 07, 2016	1 Year
5.	Power Amplifier	HP	HP 8447D	1145A00203	Mar. 07, 2016	1 Year
6	Horn Antenna	COM-Power	AH-118	071078	Mar. 07, 2016	1 Year
7	Pre-Amplifier	COM-Power	PAM-118	443007	Mar. 07, 2016	1 Year

FOR HARMONIC / FLICKER MEASUREMENT

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Power Frequency Test System	California Instruments	CTS	72846	Apr. 25, 2016	1 Year
2.	Software	California Instruments	CTS30	N/A	N/A	N/A

FOR ELECTROSTATIC DISCHARGE TEST

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	ESD Tester	TESEQ	NSG 437	432	Apr. 26, 2016	1 Year

FOR RF ELECTROMAGNETIC FIELD IMMUNITY TEST

(Bureau Veritas Shenzhen Co., Ltd., Dongguan Branch)

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Signal Generator	Agilent	N5181A	MY50142530	Aug 31, 2016	1 Year
2.	Antenna Log-Periodic	CORAD	ATR80M6G	0337307	Aug 31, 2016	1 Year
3.	Switch Controller	CORAD	SC1000	0337343	Aug 31, 2016	1 Year
4.	RF Power Meter	ESE	4242	13984	Aug 31, 2016	1 Year
5	Power Sensor	ESE	51011EMC	35716	Aug 31, 2016	1 Year
6	E-Field probe	Narda	NBM-520	2403/01B	Aug 31, 2016	1 Year
7	Power Amplifier	TESEQ	CBA 1G-150	T44029	N/A	N/A
8	Power Amplifier	TESEQ	CBA 3G-100	T44030	N/A	N/A
9	Power Amplifier	TESEQ	CBA 6G-050	1041204	N/A	N/A
10	Dual Directional Coupler	TESEQ	C5982	95208	Aug 31, 2016	1 Year
11	Dual Directional Coupler	TESEQ	C6187	95175	Aug 31, 2016	1 Year
12	Dual Directional Coupler	TESEQ	CPH-274F	M251304-01	Aug 31, 2016	1 Year

FOR ELECTRICAL FAST TRANSIENT /BURST IMMUNITY TEST

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Burst Tester	EM TEST	UCS 500N	V1104108683	Mar. 07, 2016	1 Year
2.	Coupling Clamp	EM TEST	HFK	0311-94	Mar. 07, 2016	1 Year
3.	Test Soft	EM TEST	lec. control	N/A	N/A	N/A

FOR SURGE IMMUNITY TEST

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Surge Tester	EM TEST	UCS 500N	V1104108683	Mar. 07, 2016	1 Year
2.	Test Soft	EM TEST	lec. control	N/A	N/A	N/A

FOR INJECTED CURRENTS IMMUNITY MEASUREMENT

(Bureau Veritas Shenzhen Co., Ltd., Dongguan Branch)

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Signal Generator	HP	8648A	3426A01263	Oct.18, 2015	1 Year
2.	CDN	Luthi	L-801M2/M3	2015	Oct.18, 2015	1 Year
3.	CDN(AUX)	TESEQ	CDN M016	27452	Oct.18, 2015	1 Year
4.	6dB 50Watt Attenuator	Huber+Suhner	5906.17.0005	303688	Oct.18, 2015	1 Year
5.	Signal Amplifier	HAEFELY	PAMP250	149594	Oct.18, 2015	1 Year
6.	Electromagnetic Injection Clamp	Luthi	EM101	35640	Oct.18, 2015	1 Year
7.	C/S Test System	HAEFELY	WinPAMP	NSEMC002	Oct.18, 2015	1 Year

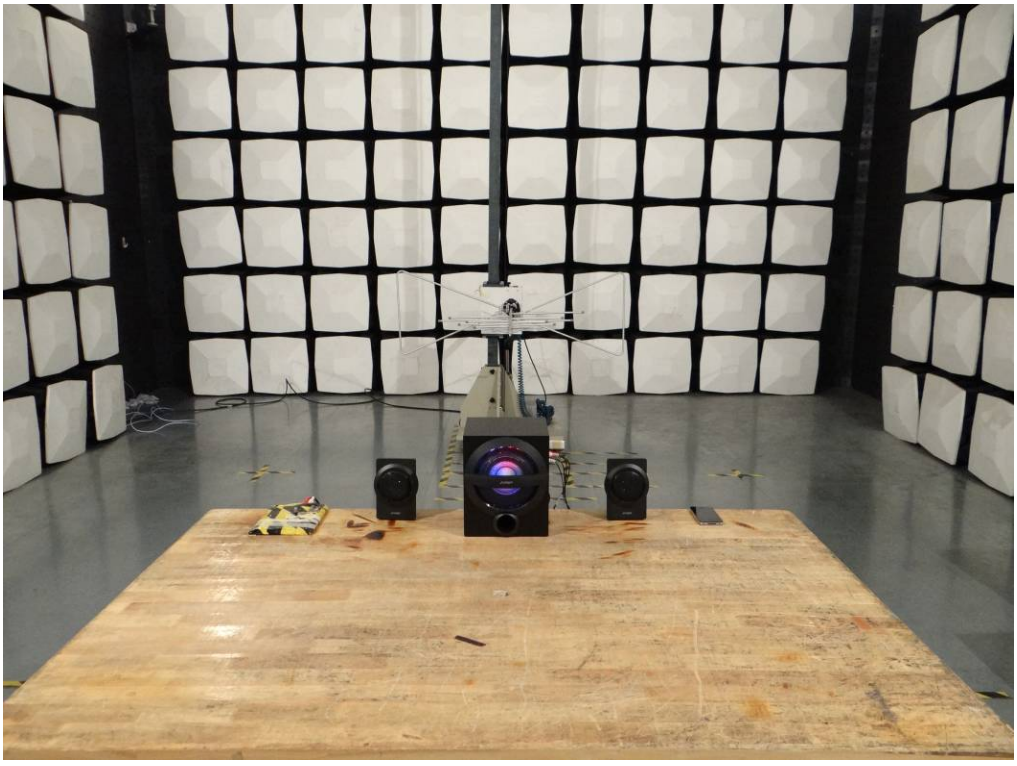
FOR VOLTAGE DIPS AND INTERRUPTIONS MEASUREMENT

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Dips Tester	EM TEST	UCS500N	V1104108683	Mar. 07, 2016	1 Year
2.	Test Soft	EM TEST	Iec.control	N/A	N/A	N/A
3.	Dips Modulator	EM TEST	V4780S2	0111-11	Mar. 07, 2016	1 Year

APPENDIX 1
PHOTOGRPHS OF TEST SETUP

LINE CONDUCTED EMISSION TEST

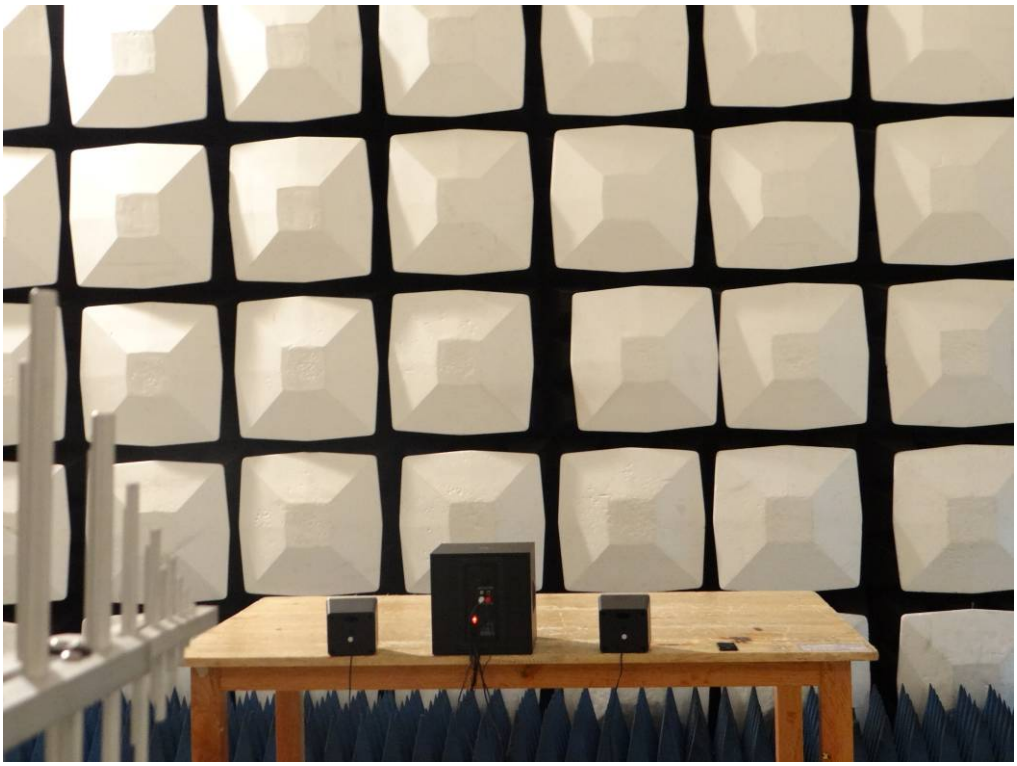
RADIATED EMISSION TEST



POWER HARMONIC & VOLTAGE FLUCTUATION / FLICKER TEST

ELECTROSTATIC DISCHARGE TEST

RADIATED ELECTROMAGNETIC FIELD TEST



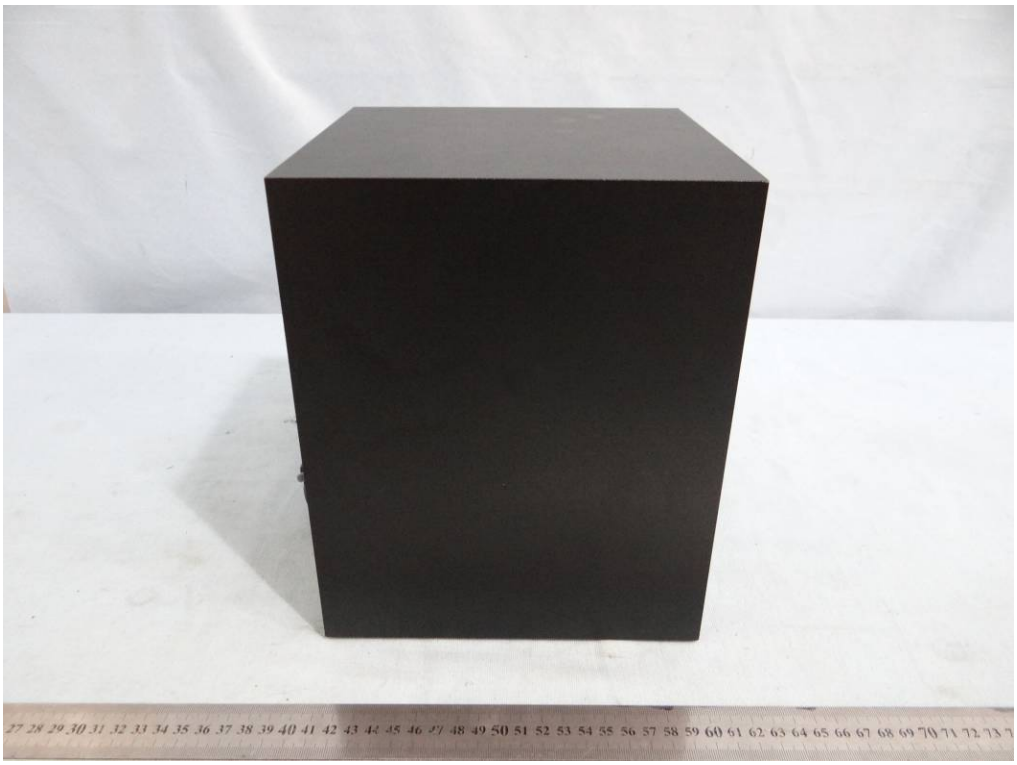
ELECTRICAL FAST TRANSIENTS/BURST/ SURGE/ VOLTAGE DIPS TEST

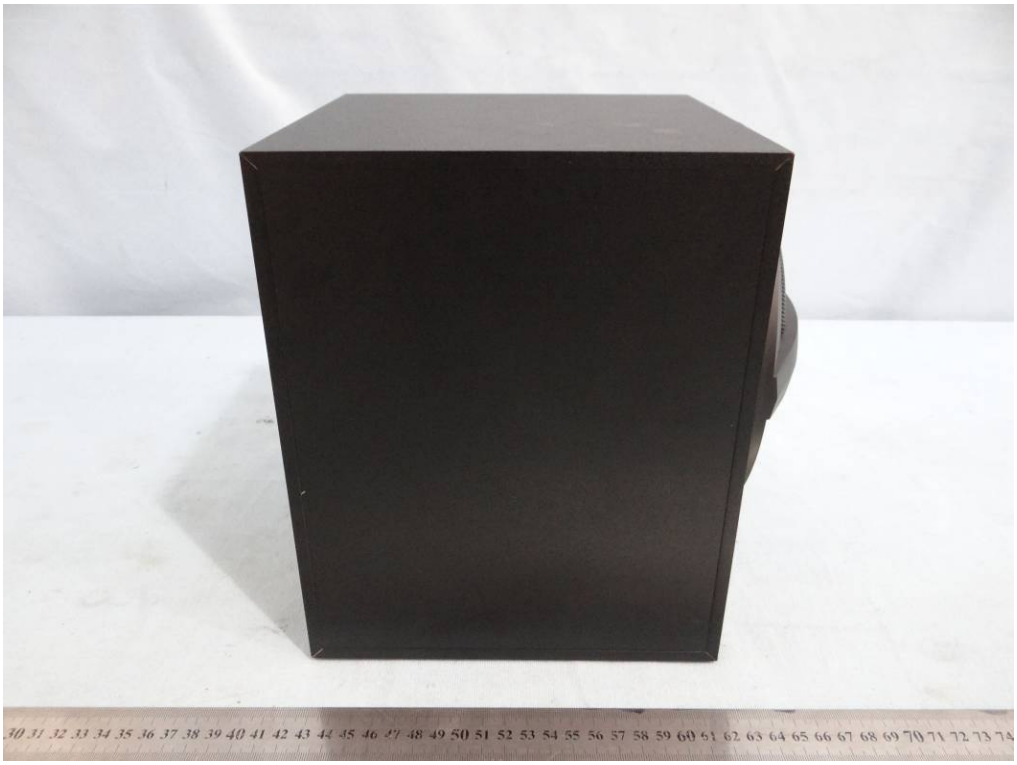
General Appearance of the EUT

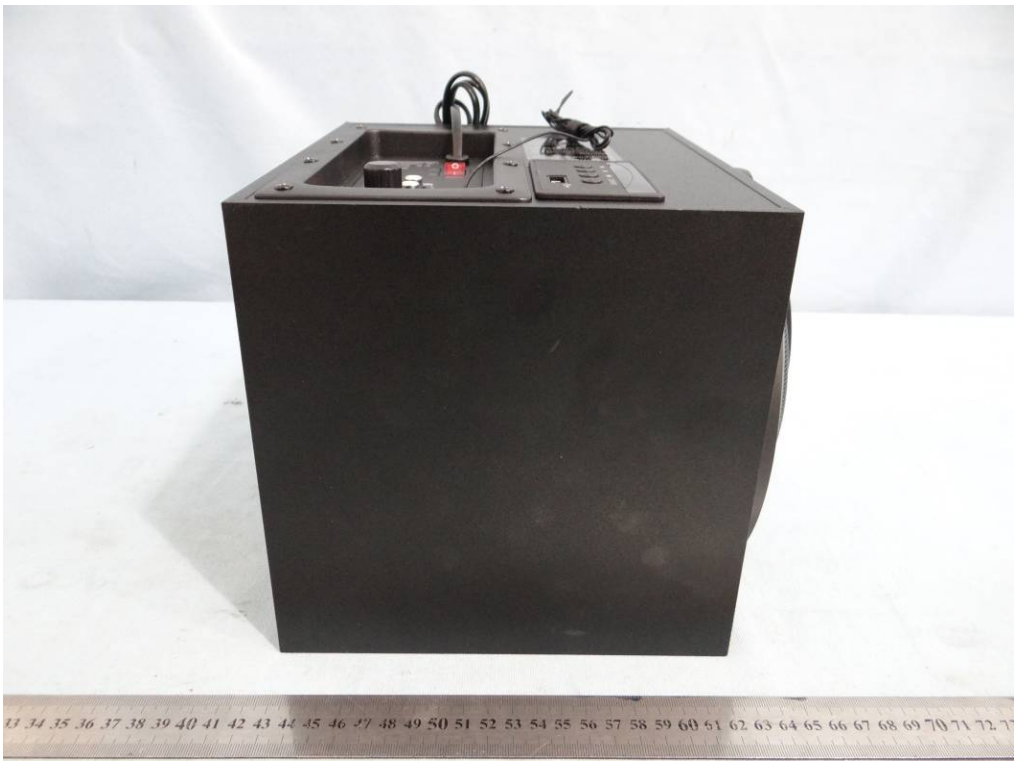

QUICK
OPERATION NOTE

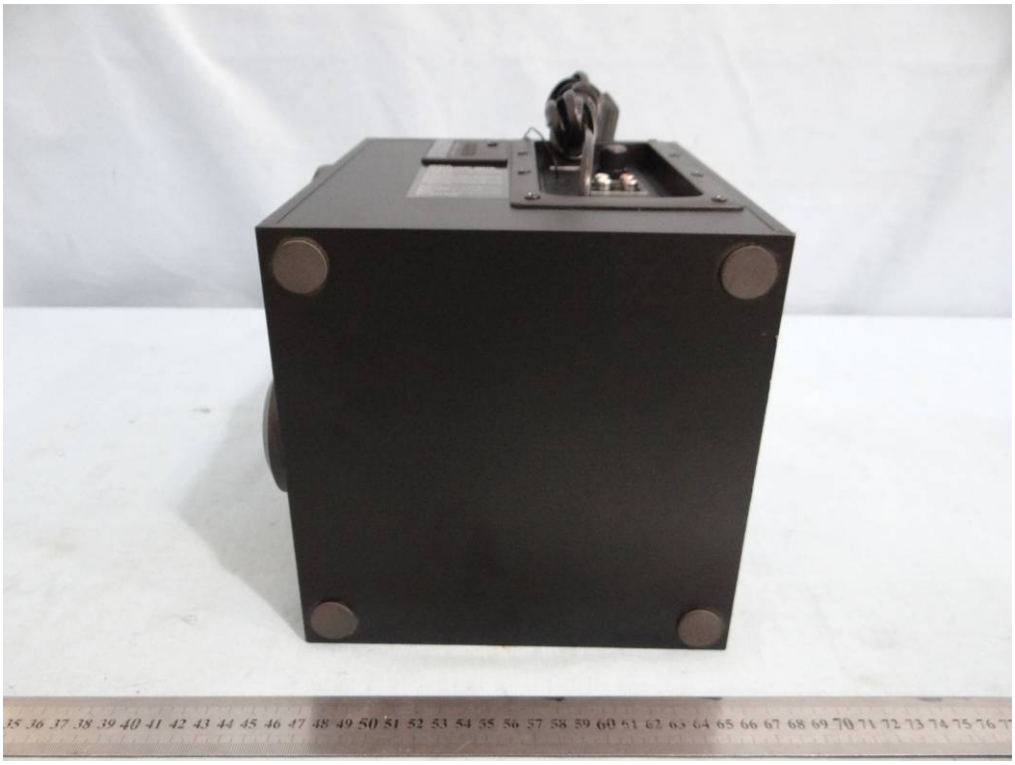

SOURCE

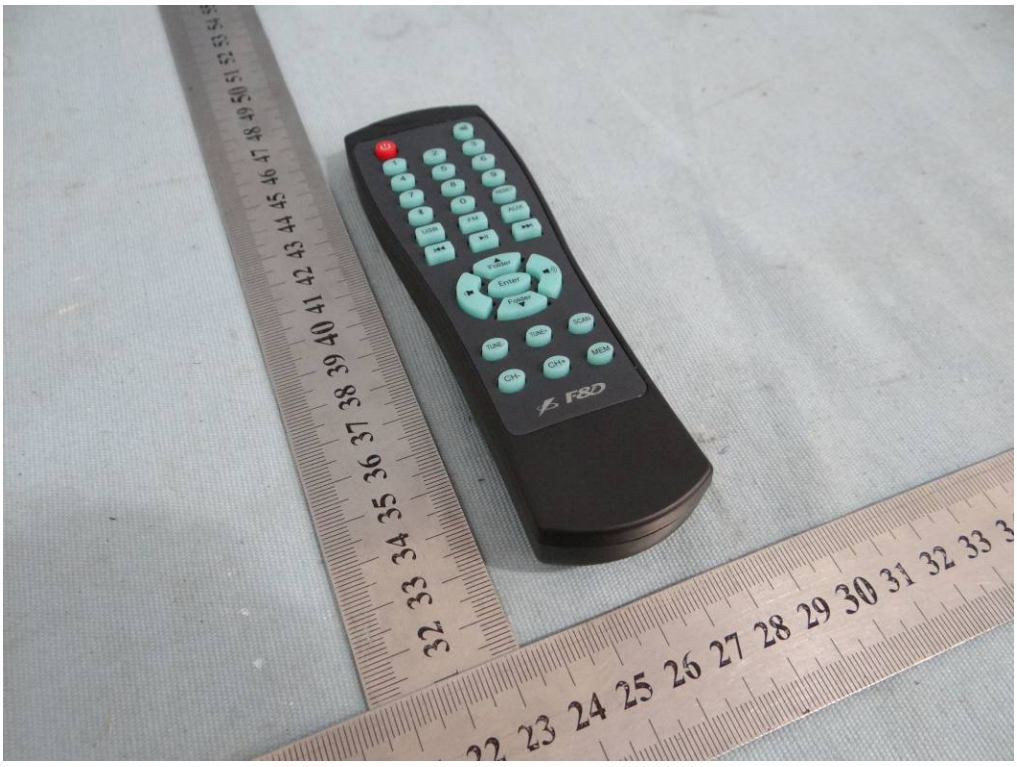

BASS
AUDIO INPUT
L.
R.
L.
R.
AUDIO OUTPUT
POWER
ON

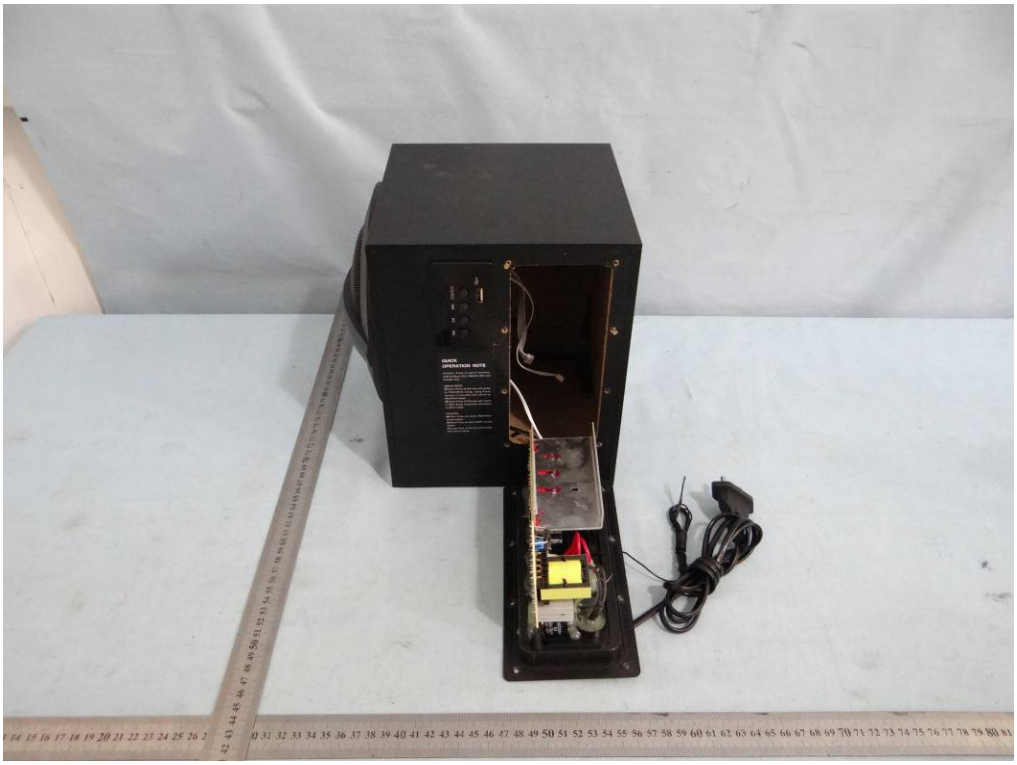


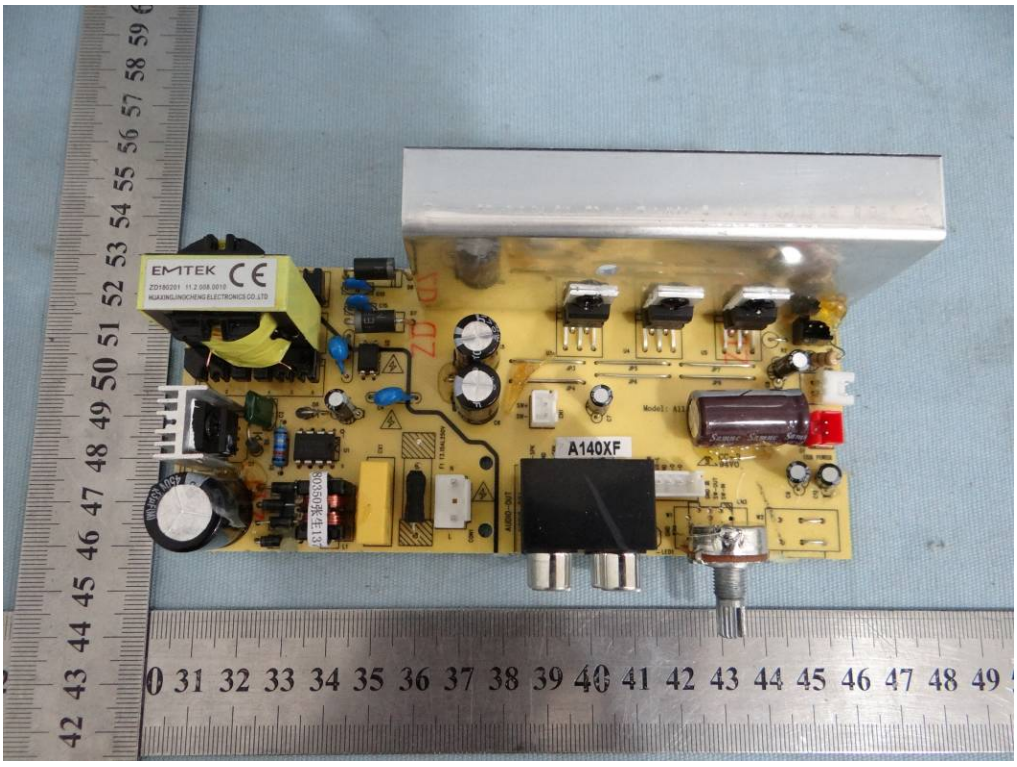


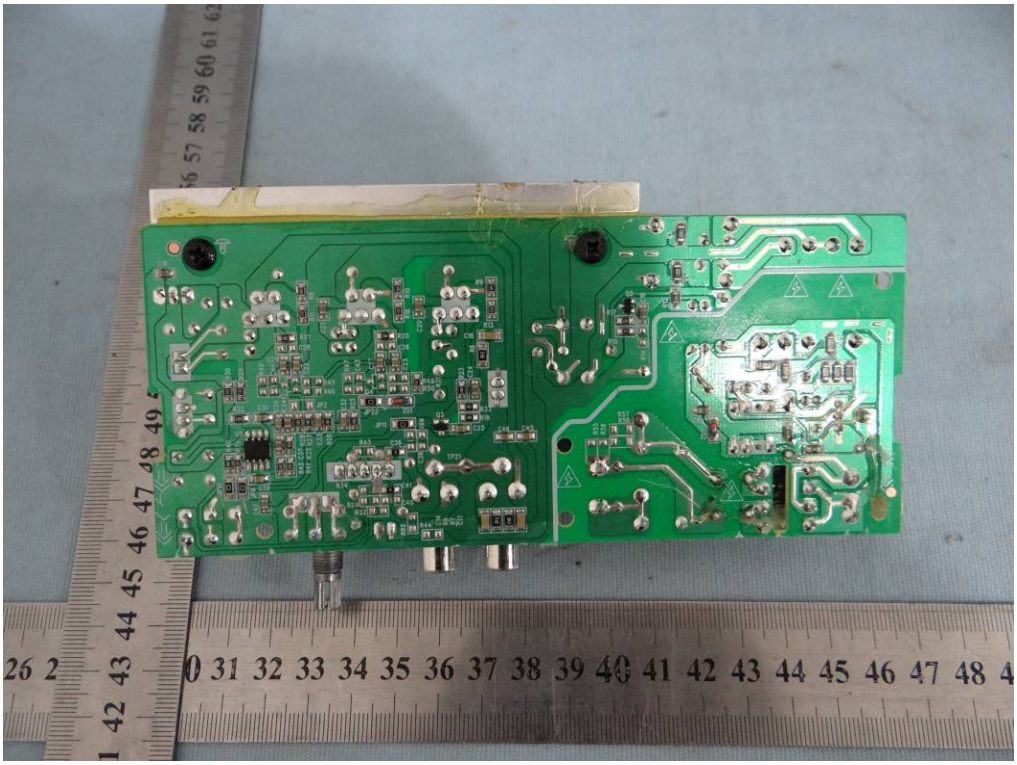


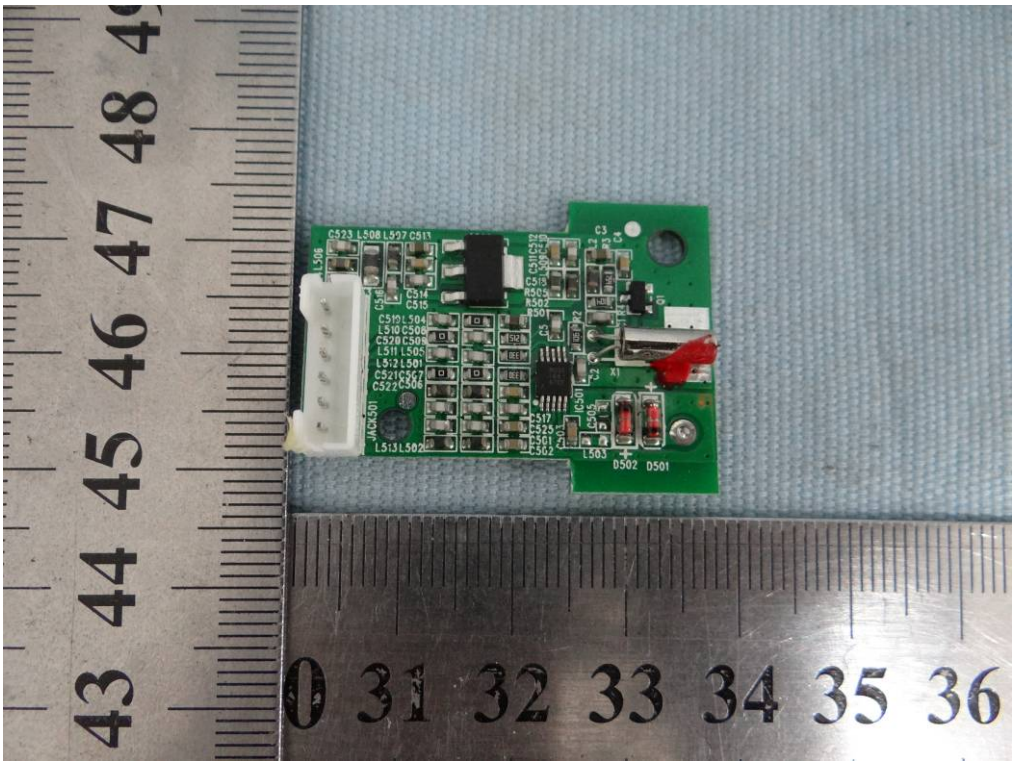


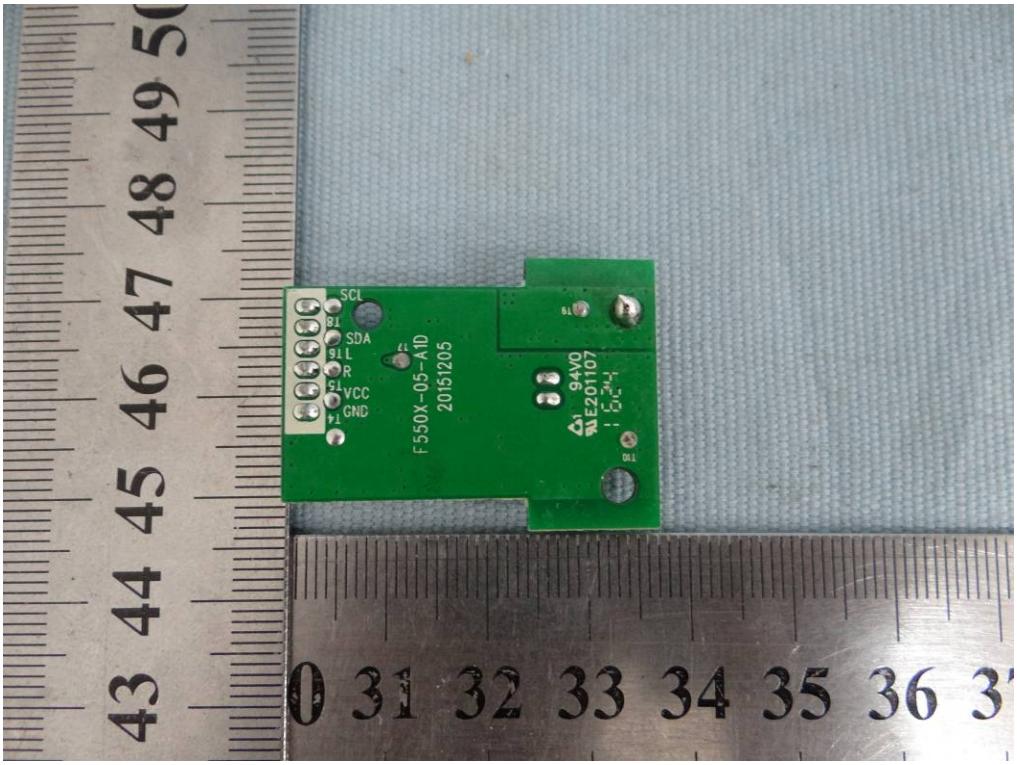

F&D

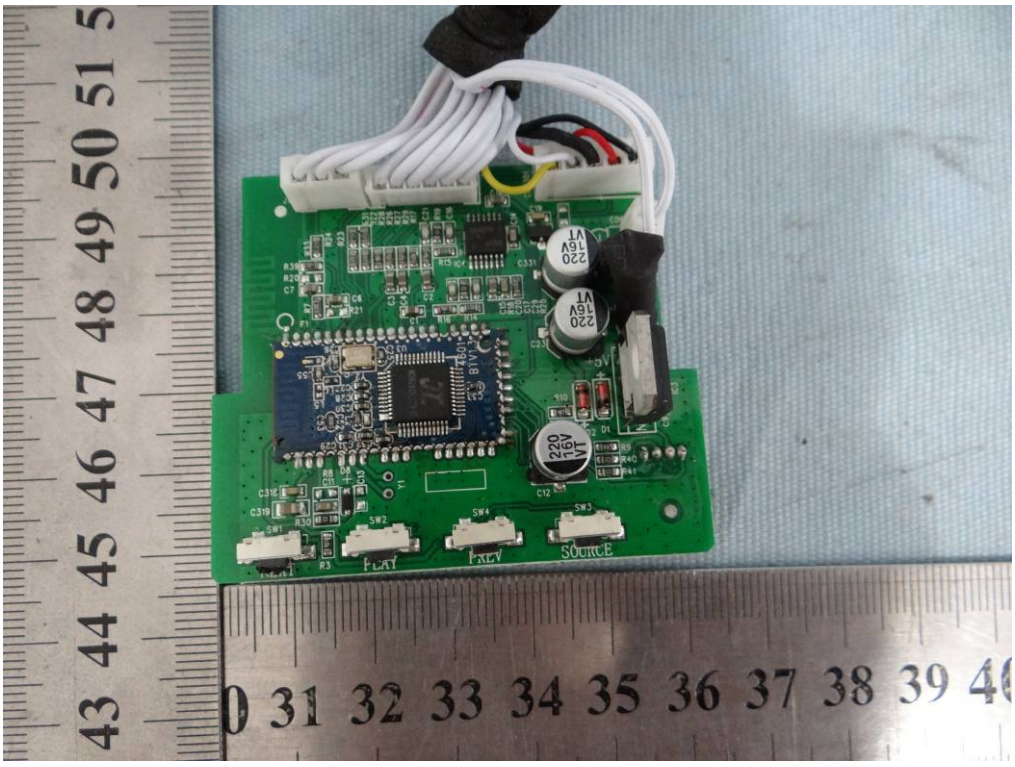


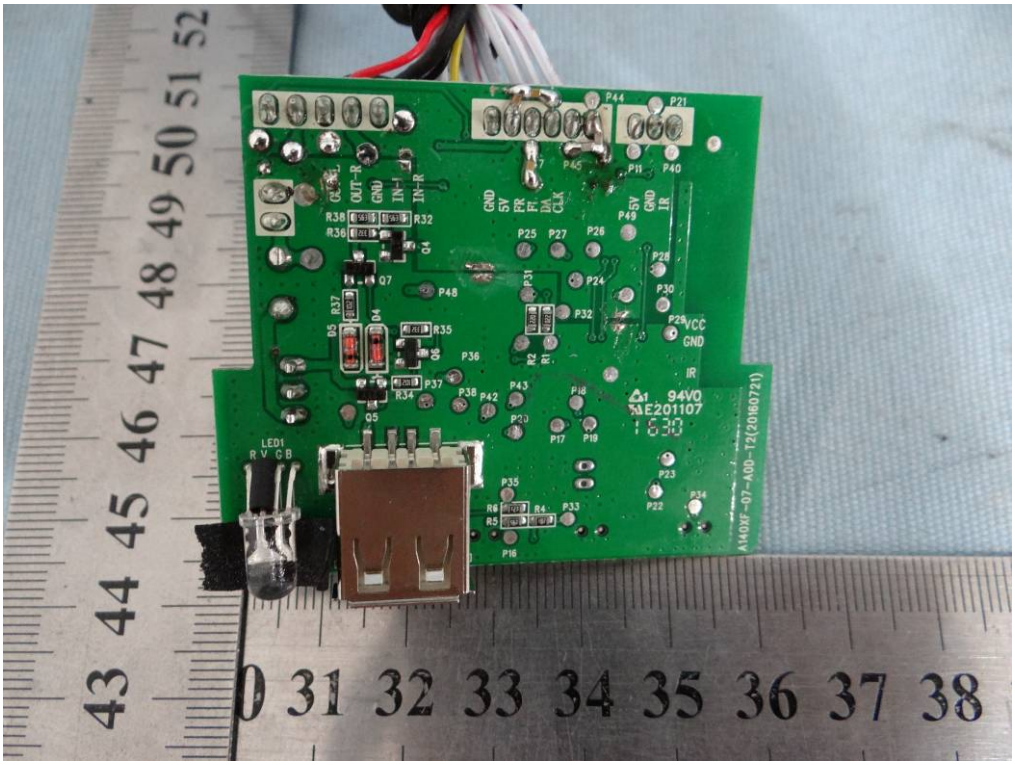

EMTEK
A140XF

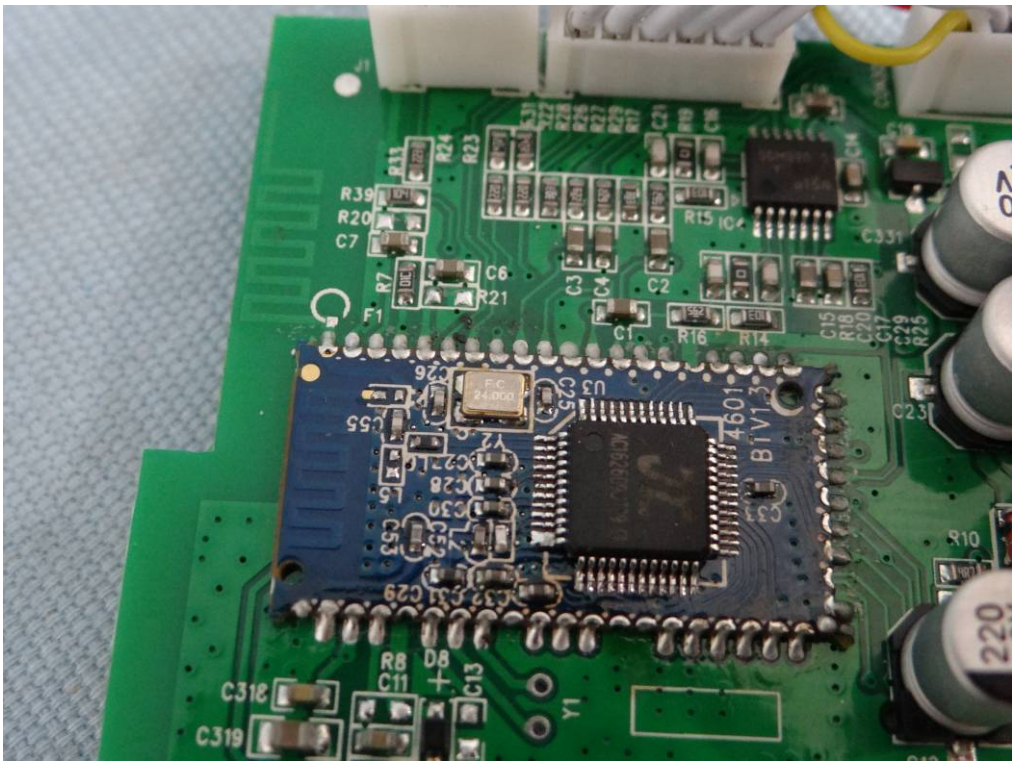


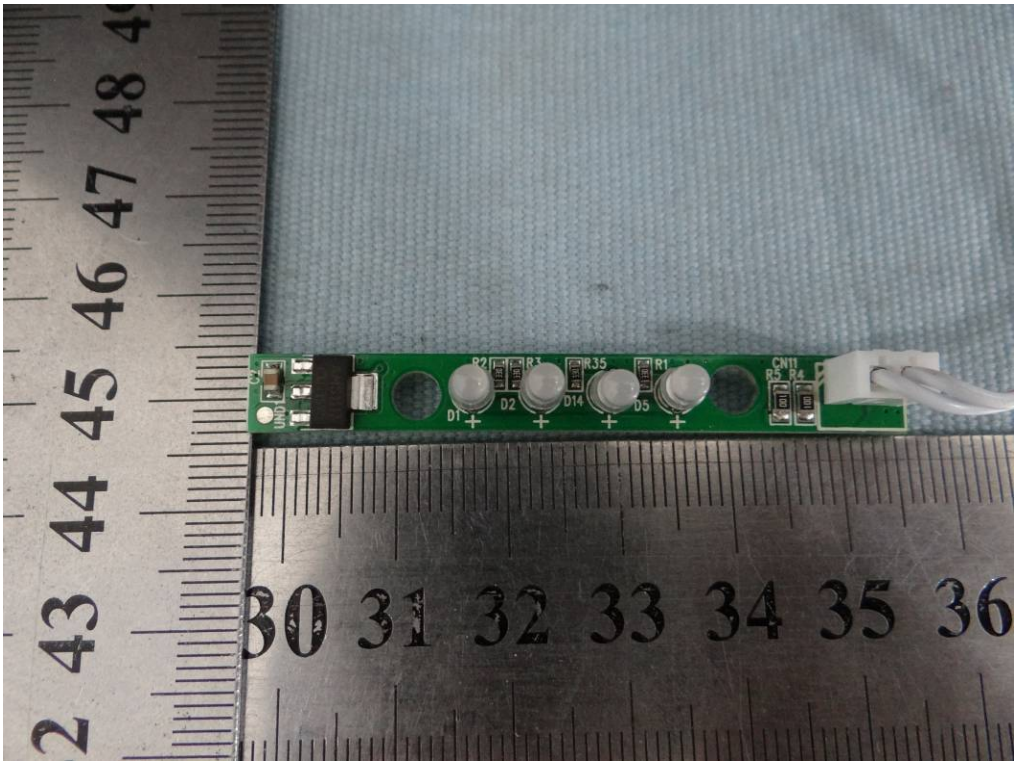


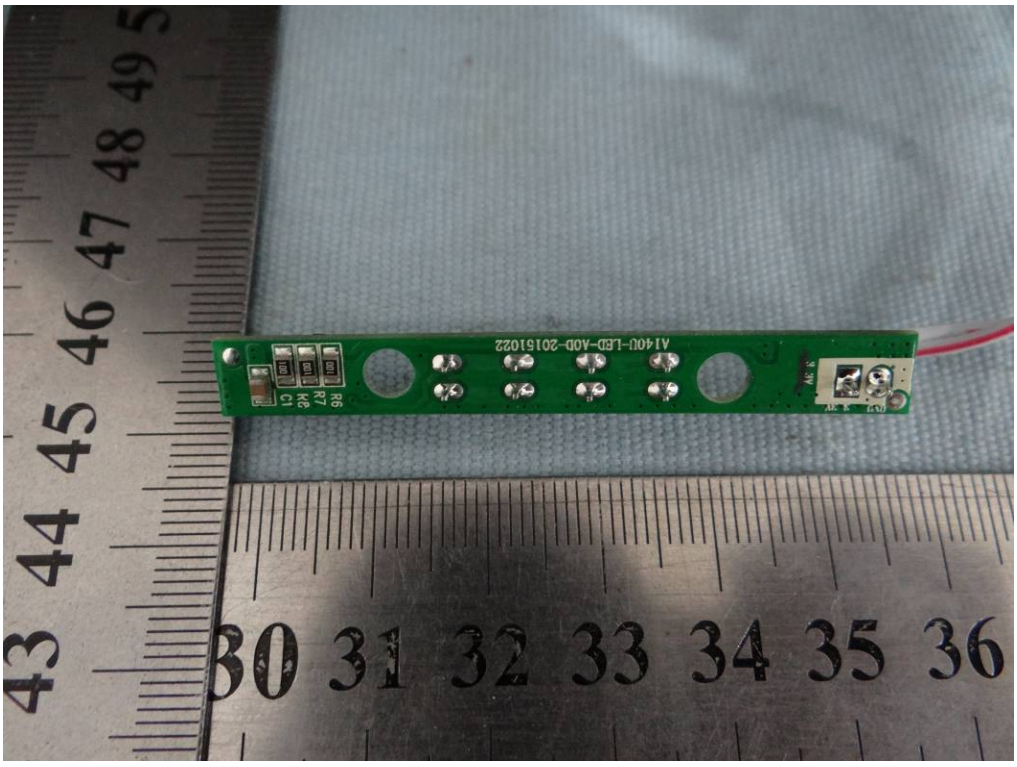

SCL
SDA
L
R
VCC
GND
F550X-05-A1D
20151205
94V0


220
16V
SOURCE


43 44 45 46 47 48 49 50 51 52
0 31 32 33 34 35 36 37 38
LED1
R V G B
OUT-R
GND
IN-L
IN-R
5V
GND
IR
VCC
GND
94V0
E201107


R39
R20
C7
R7
C6
R21
F1
C1
R16
R14
R15
C331
C23
R10
220
R8
C11
D8
C313
C319
Y1


R2
R3
R35
R1
CN11
D1
D2
D14
D5
30 31 32 33 34 35 36


A140U-LED-A0D-20151022
30 31 32 33 34 35 36

--- End ---