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

MEASURMENT 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.: 5.1 Multimedia Speaker

Model Name: F2300X, F2300BT, F2300U, F2300BTU

Brand Name: F&D

Report Number: NTC1410504E

Test Date(s): October 29, 2014 to November 06, 2014

Report Date(s): November 07, 2014

Prepared by

Dongguan Nore Testing Center Co., Ltd.

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

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

Prepared By	Approved & Authorized Signer
Rose Hu / Engineer	Sunm Lv / Q.A. Director

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1. GENERAL INFORMATION

PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST

This device is a Multimedia BT speaker; it's powered by AC Mains. For more details features, please refer to User's Manual.

Manufacturer	:	Shenzhen Fenda Technology Co., Ltd
Address	:	Fenda Hi-Tech Park, Zhoushi Road, Shiyan Town, Baoan District, Shenzhen City, Guangdong, China
Product Name	:	5.1 Multimedia Speaker
Model Name	:	F2300X, F2300BT, F2300U, F2300BTU
Model Difference Description	:	All models have the same circuitry, electrical mechanical and physical construction. Their differences in model name and silk-screen for trading purpose.
Power Supply	:	AC 220-240V ~ 50/60Hz
Test Voltage	:	AC 230V/50Hz for normal voltage AC 198V/50Hz and AC 264V/50Hz for Extreme voltage (The voltage range provide by manufacturer)
Operating Temperature Range	:	0°C to +45°C (Declaration by manufacturer)
Bluetooth Version	:	3.0
Frequency Range	:	2402-2480MHz
Modulation Type	:	GFSK, π/4-DQPSK, 8DPSK
Modulation Technology	:	FHSS
Number of Channel	:	79
Channel Space	:	1MHz
Antenna Type	:	PCB
Antenna Gain	:	2dBi (Declaration by manufacturer)
Adaptive/Non-Adaptive Equipment	:	Adaptive equipment
Note	:	Only one of the model F2300U was test in this report.

2. 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.

3. 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.

4. TEST FACILITY

Site Description

EMC Lab : Listed by FCC, August. 02, 2011
The Certificate Number is 665078.

Listed by Industry Canada, July 01, 2011
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 Province, China

5. SUPPORT EQUIPMENT

Mobile Phone : Manufacturer: Apple
M/N: MD298CH/A
S/N: DNQK31HEDTWF

iPod Nano : Manufacturer: Apple
M/N: A1446
S/N: DCYK12V6F0GV

6. 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.

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

7.1 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

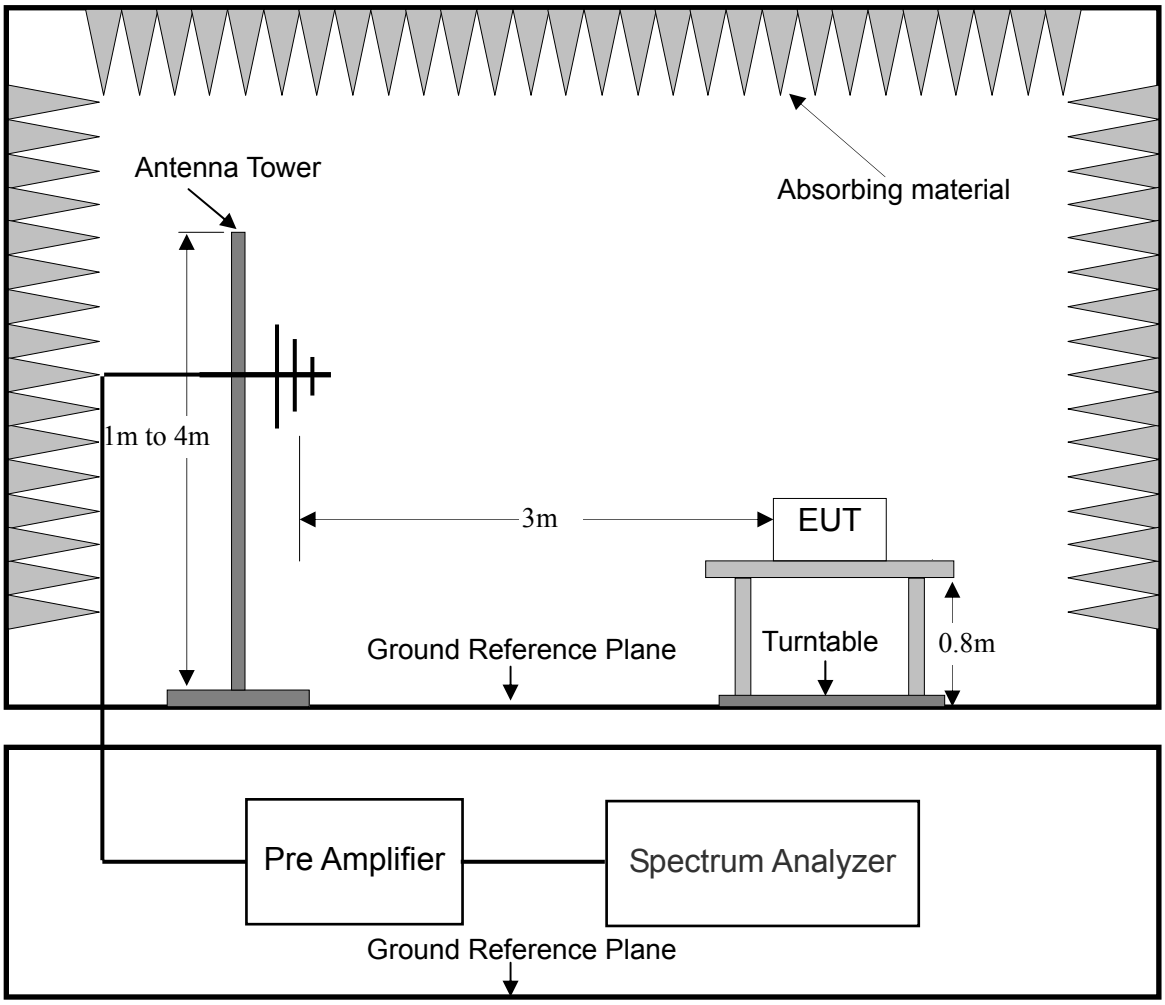
Limits for radiated disturbance Blow 1GHz

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

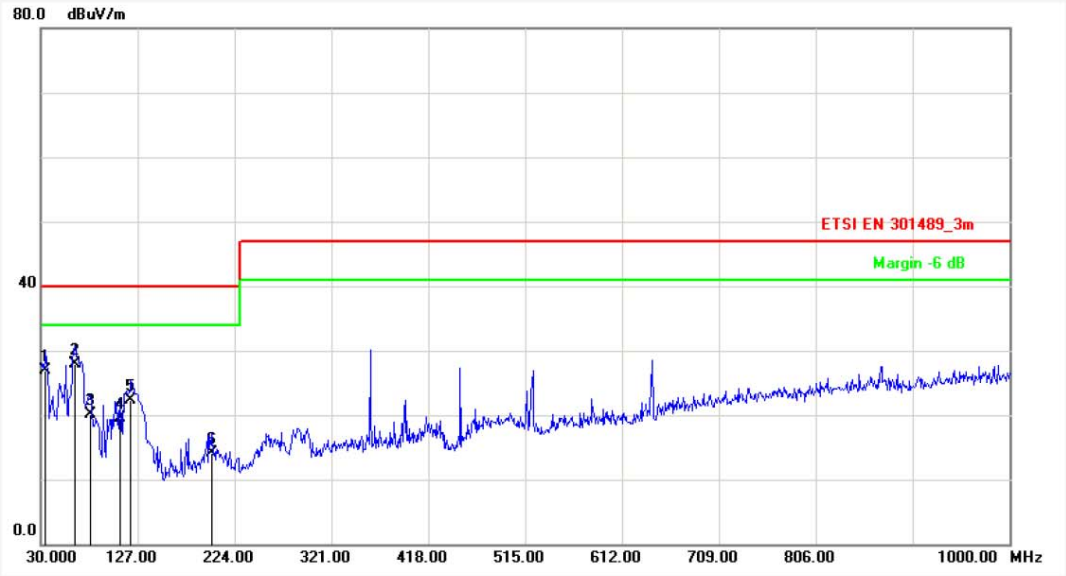
PASS

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: 2014-10-31 13:51:33



Report No.:	F2300U		
Test Standard:	ETSI EN 301489_3m	Test Distance:	
Test item:	Radiation Emission	Ant. Polarization:	Vertical
Applicant:	SHENZHEN FENDA	Temp.(C)/Hum.(%):	24(C) / 54 %
Product:	5.1Multimedia Speaker	Power Rating:	AC 230V/50Hz
Model No.:	F2300U	Test Engineer:	Jason

Test Mode: TX+RX(BT Link)

Remark:

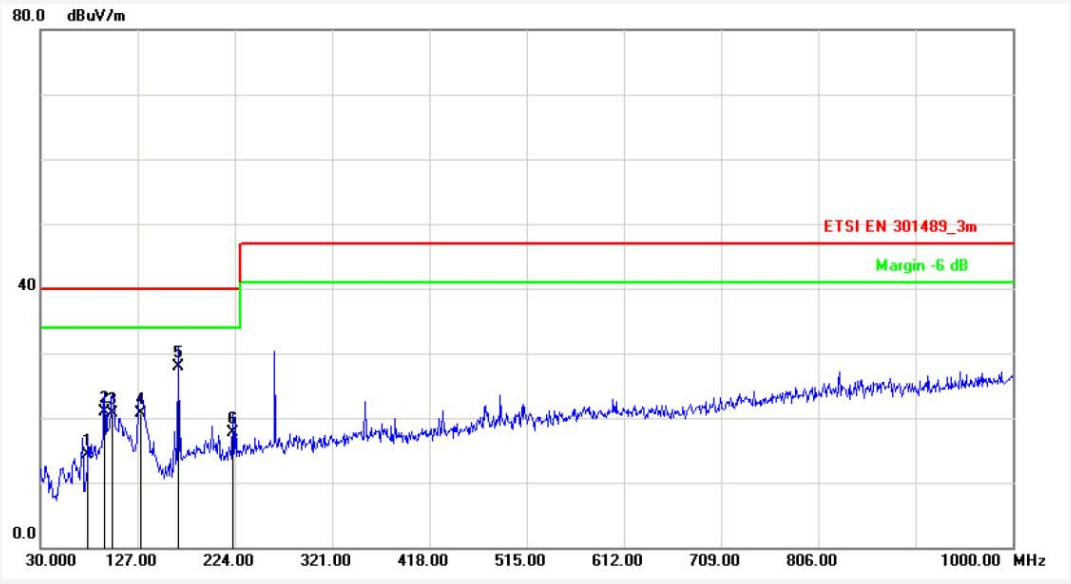
No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	34.8500	-16.17	43.16	26.99	40.00	-13.01	QP			P	
2	63.9500	-15.30	43.18	27.88	40.00	-12.12	QP			P	
3	79.4700	-19.12	39.24	20.12	40.00	-19.88	QP			P	
4	109.5400	-16.15	35.67	19.52	40.00	-20.48	QP			P	
5	120.2100	-17.08	39.39	22.31	40.00	-17.69	QP			P	
6	201.6900	-16.40	30.48	14.08	40.00	-25.92	QP			P	

Note: Level=Reading+Factor.
Margin=Limit-Level.

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

Site: Radiation

Test Time: 2014-10-31 13:55:18



Report No.:	F2300U		
Test Standard:	ETSI EN 301489_3m	Test Distance:	
Test item:	Radiation Emission	Ant. Polarization:	Horizontal
Applicant:	SHENZHEN FENDA	Temp.(C)/Hum.(%):	24(C) / 54 %
Product:	5.1Multimedia Speaker	Power Rating:	AC 230V/50Hz
Model No.:	F2300U	Test Engineer:	Jason

Test Mode: TX+RX(BT Link)

Remark:

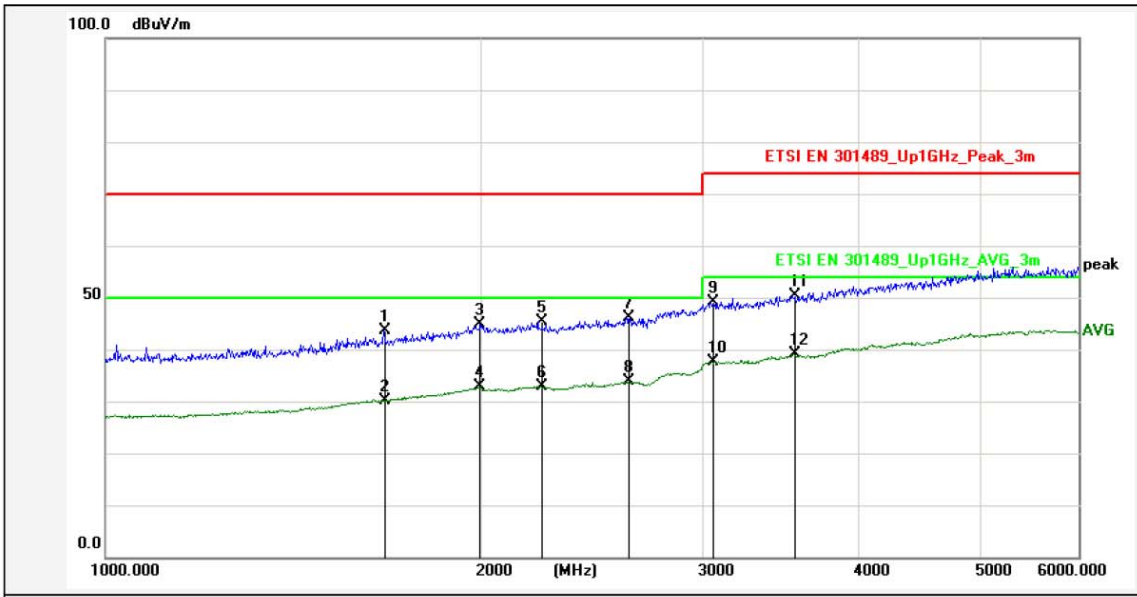
No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	77.5300	-18.55	32.76	14.21	40.00	-25.79	QP			P	
2	94.0199	-13.01	33.82	20.81	40.00	-19.19	QP			P	
3	101.7800	-12.06	32.76	20.70	40.00	-19.30	QP			P	
4	129.9100	-15.15	35.88	20.73	40.00	-19.27	QP			P	
5	167.7400	-14.89	42.70	27.81	40.00	-12.19	QP			P	
6	222.0600	-12.86	30.58	17.72	40.00	-22.28	QP			P	

Note: Level=Reading+Factor.
Margin=Limit-Level.

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

Site: Radiation

Test Time: 2014-10-31 14:38:22



Report No.:	F2300U		
Test Standard:	ETSI EN 301489_Up1GHz_Peak_3m	Test Distance:	
Test item:	Radiation Emission	Ant. Polarization:	Horizontal
Applicant:	SHENZHEN FENDA	Temp.(C)/Hum.(%):	24(C) / 54 %
Product:	5.1Multimedia Speaker	Power Rating:	AC 230V/50Hz
Model No.:	F2300U	Test Engineer:	Jason

Test Mode: TX+RX(BT Link)

Remark:

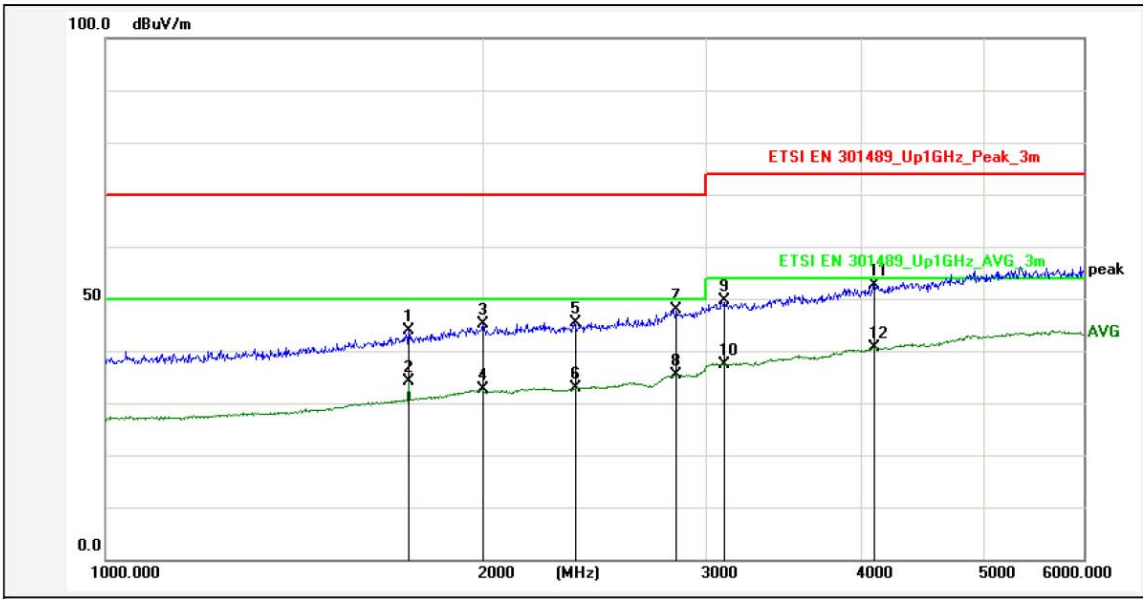
No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	1672.359	4.93	38.64	43.57	70.00	-26.43	peak			P	
2	1672.359	4.93	25.25	30.18	50.00	-19.82	AVG			P	
3	1996.946	6.95	38.04	44.99	70.00	-25.01	peak			P	
4	1996.946	6.95	25.86	32.81	50.00	-17.19	AVG			P	
5	2227.582	7.53	37.89	45.42	70.00	-24.58	peak			P	
6	2227.582	7.53	25.29	32.82	50.00	-17.18	AVG			P	
7	2622.077	8.56	37.55	46.11	70.00	-23.89	peak			P	
8	2622.077	8.56	25.21	33.77	50.00	-16.23	AVG			P	
9	3053.432	9.40	39.73	49.13	74.00	-24.87	peak			P	
10	3053.432	9.40	28.17	37.57	54.00	-16.43	AVG			P	
11	3549.384	10.52	39.95	50.47	74.00	-23.53	peak			P	
12	3549.384	10.52	28.65	39.17	54.00	-14.83	AVG			P	

Note: Level=Reading+Factor.
Margin=Limit-Level.

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

Site: Radiation

Test Time: 2014-10-31 14:42:32



Report No.:	**F2300U**		
Test Standard:	**ETSI EN 301489_Up1GHz_Peak_3m**	**Test Distance:**	
Test item:	**Radiation Emission**	**Ant. Polarization:**	**Vertical**
Applicant:	**SHENZHEN FENDA**	**Temp.(C)/Hum.(%):**	**24(C) / 54 %**
Product:	**5.1Multimedia Speaker**	**Power Rating:**	**AC 230V/50Hz**
Model No.:	**F2300U**	**Test Engineer:**	**Jason**

Test Mode: **TX+RX(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	1742.717	5.45	38.32	43.77	70.00	-26.23	peak			P	
2	1742.717	5.45	28.76	34.21	50.00	-15.79	AVG			P	
3	1996.946	6.95	38.28	45.23	70.00	-24.77	peak			P	
4	1996.946	6.95	25.72	32.67	50.00	-17.33	AVG			P	
5	2367.504	7.98	37.28	45.26	70.00	-24.74	peak			P	
6	2367.504	7.98	24.86	32.84	50.00	-17.16	AVG			P	
7	2842.249	8.91	39.00	47.91	70.00	-22.09	peak			P	
8	2842.249	8.91	26.53	35.44	50.00	-14.56	AVG			P	
9	3108.635	9.56	39.99	49.55	74.00	-24.45	peak			P	
10	3108.635	9.56	27.94	37.50	54.00	-16.50	AVG			P	
11	4096.425	12.54	40.21	52.75	74.00	-21.25	peak			P	
12	4096.425	12.54	28.20	40.74	54.00	-13.26	AVG			P	

Note: Level=Reading+Factor.
Margin=Limit-Level.

7.2 AC POWER CONDUCTED EMISSION

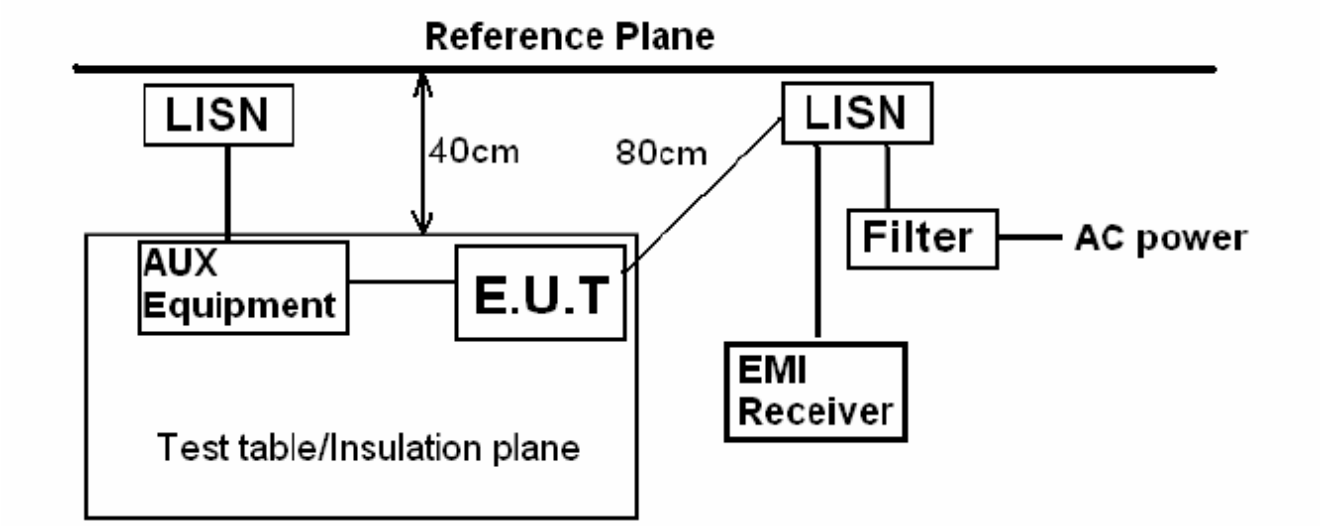
LIMIT

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

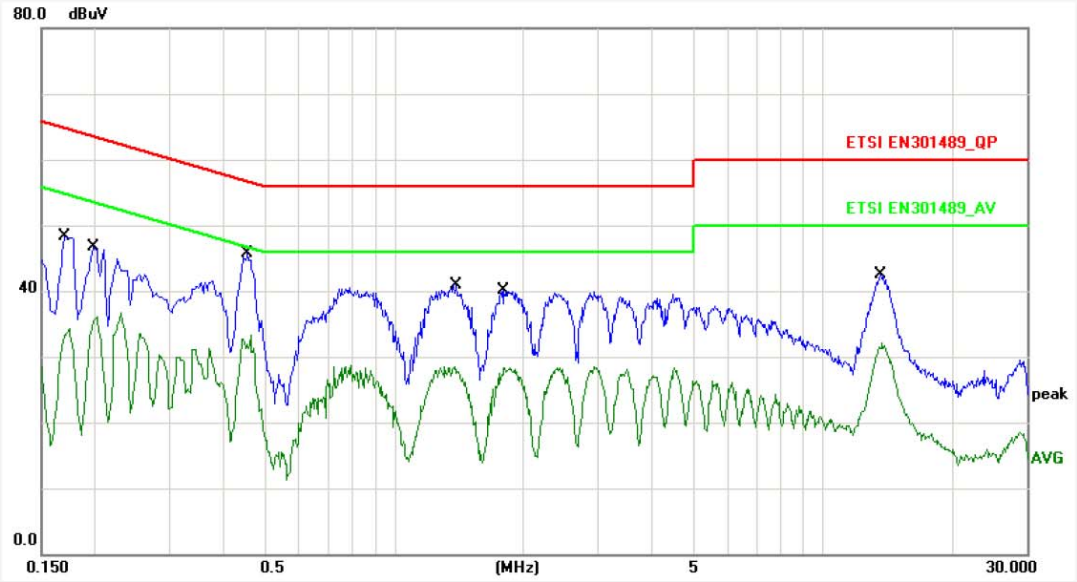
PASS

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: 2014-10-31 9:13:06



Report No.: F2300U
Test Standard: ETSI EN301489_QP
Test item: Conducted Emission
Phase: L1
Applicant: FENDA
Temp.( )/Hum.(%): 24(C) / 54 %
Product: 5.1Multimedia Speaker
Power Rating: AC 230V/50Hz
Model No.: F2300U
Test Engineer: Lecdon

Test Mode: TX+RX(BT Link)
Remark:

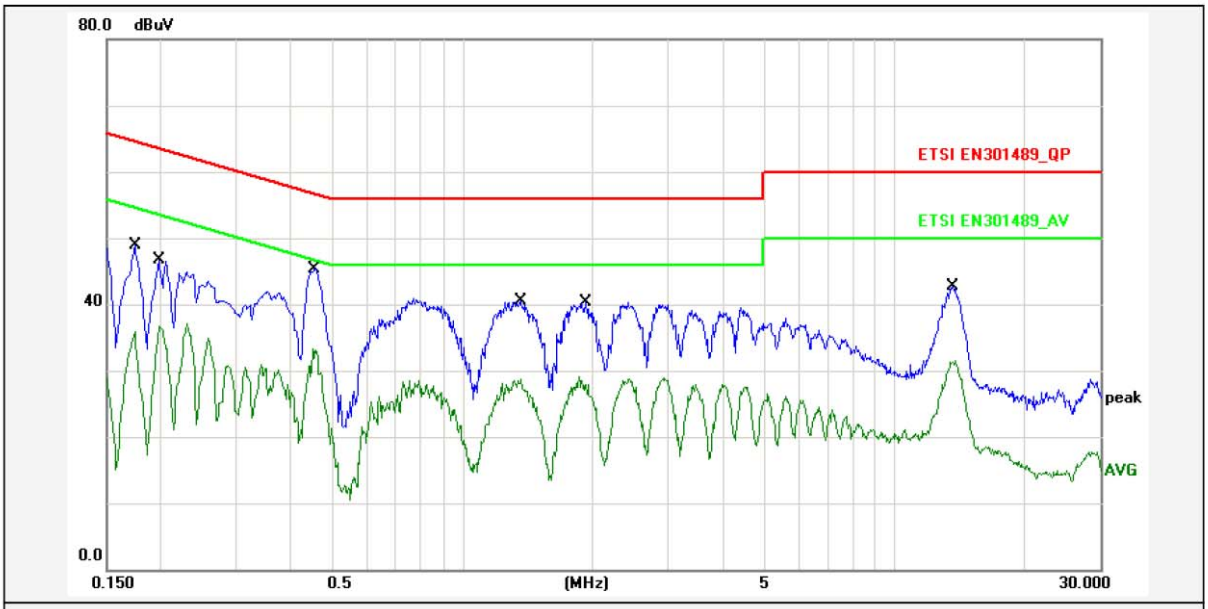
No.	Frequency (MHz)	Factor (dBuV)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1700	10.80	35.50	46.30	64.96	-18.66	QP	P	
2	0.1700	10.80	21.40	32.20	54.96	-22.76	AVG	P	
3	0.1980	10.80	33.80	44.60	63.69	-19.09	QP	P	
4	0.1980	10.80	23.80	34.60	53.69	-19.09	AVG	P	
5	0.4540	10.80	33.00	43.80	56.80	-13.00	QP	P	
6	0.4540	10.80	20.50	31.30	46.80	-15.50	AVG	P	
7	1.3980	10.80	28.00	38.80	56.00	-17.20	QP	P	
8	1.3980	10.80	15.70	26.50	46.00	-19.50	AVG	P	
9	1.8020	10.80	27.30	38.10	56.00	-17.90	QP	P	
10	1.8020	10.80	15.40	26.20	46.00	-19.80	AVG	P	
11	13.6540	10.80	29.70	40.50	60.00	-19.50	QP	P	
12	13.6540	10.80	19.70	30.50	50.00	-19.50	AVG	P	

Note: Level=Reading+Factor.
Margin=Limit-Level.

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

Site: Conduction

Test Time: 2014-10-31 9:16:02



Report No.: F2300U
Test Standard: ETSI EN301489_QP
Test item: Conducted Emission
Applicant: FENDA
Product: 5.1Multimedia Speaker
Model No.: F2300U
Phase: N
Temp.( )/Hum.(%): 24(C) / 54 %
Power Rating: AC 230V/50Hz
Test Engineer: Lecdon

Test Mode: TX+RX(BT Link)
Remark:

No.	Frequency (MHz)	Factor (dBuV)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1740	10.80	35.70	46.50	64.76	-18.26	QP	P	
2	0.1740	10.80	23.00	33.80	54.76	-20.96	AVG	P	
3	0.1980	10.80	33.80	44.60	63.69	-19.09	QP	P	
4	0.1980	10.80	23.90	34.70	53.69	-18.99	AVG	P	
5	0.4500	10.80	30.70	41.50	56.87	-15.37	QP	P	
6	0.4500	10.80	20.40	31.20	46.87	-15.67	AVG	P	
7	1.3660	10.80	27.60	38.40	56.00	-17.60	QP	P	
8	1.3660	10.80	15.90	26.70	46.00	-19.30	AVG	P	
9	1.9300	10.80	27.60	38.40	56.00	-17.60	QP	P	
10	1.9300	10.80	17.10	27.90	46.00	-18.10	AVG	P	
11	13.6540	10.80	27.60	38.40	60.00	-21.60	QP	P	
12	13.6540	10.80	18.50	29.30	50.00	-20.70	AVG	P	

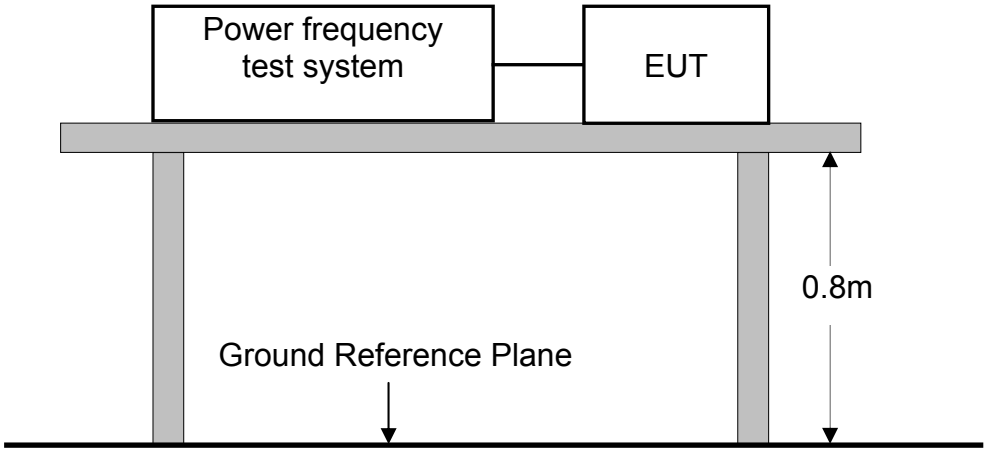
Note: Level=Reading+Factor.
Margin=Limit-Level.

7.3 AC MAINS HARMONIC CURRENT EMISSION

LIMIT

Please refer to EN 61000-3-2

TEST CONFIGURATION



Ambient Condition of the Test Site			
Temperature	21°C	**Test Voltage**	AC 230V/50Hz
Humidity	55%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: TX+RX

Note: According to clause 7 of EN 61000-3-2, equipment with a rated power of 75W or less, no limits apply.

7.4 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	21°C	**Test Voltage**	AC 230V/50Hz
Humidity	55%RH	**Tested by**	Sance
Pressure	1022mbar		

TEST PROCEDURE

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

TEST RESULTS

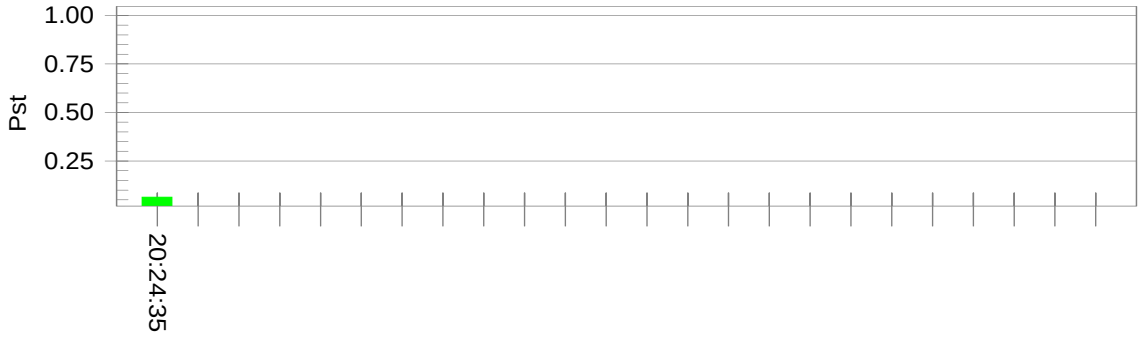
No non-compliance noted.

Test Mode : TX+RX

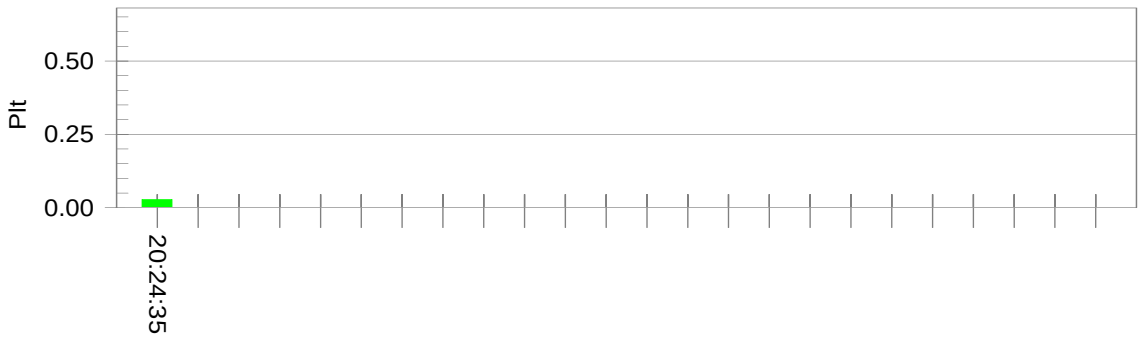
Flicker Test Summary per EN/IEC61000-3-3 (Run time)

EUT: 5.1 Multimedia Speaker **Tested by: Steven**
Test category: All parameters (European limits) **Test Margin: 100**
Test date: 2014-10-31 **Start time: 20:14:05** **End time: 20:24:36**
Test duration (min): 10 **Data file name: F-000368.cts_data**
Comment: TX+RX (BT Link)
Customer: Shenzhen Fenda Technology Co., Ltd
Mode:F2300U
Test Result: Pass **Status: Test Completed**

Pst_i and limit line **European Limits**



Plt and limit line

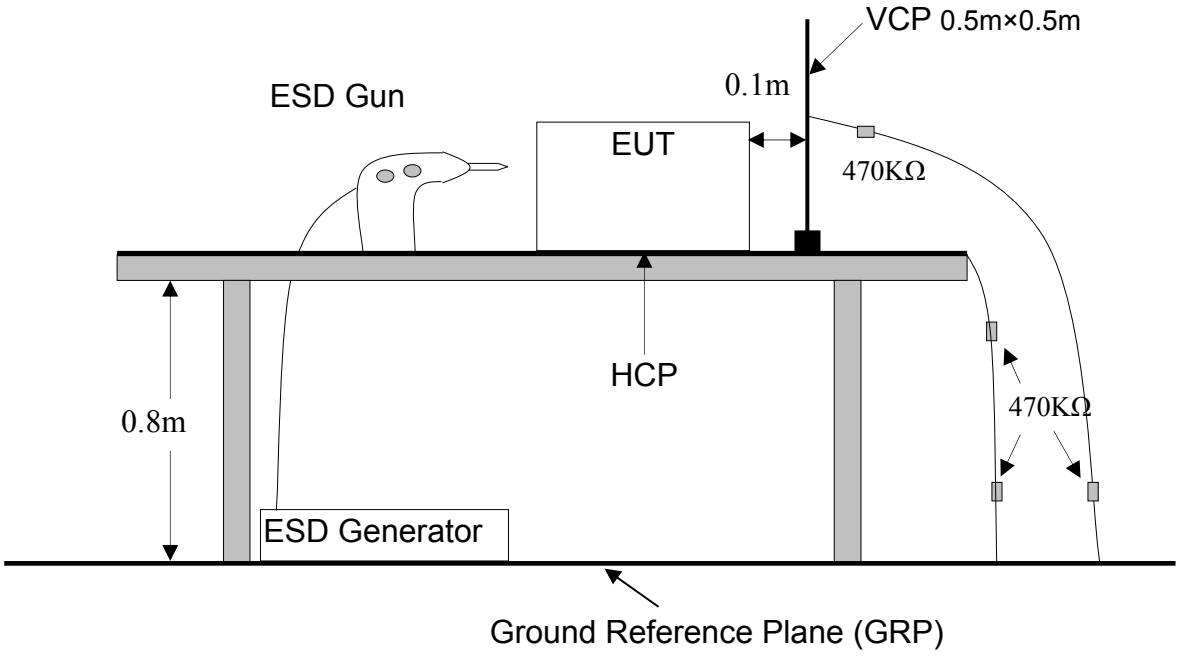


Parameter values recorded during the test:

Vrms at the end of test (Volt):	**230.18**			
Highest dt (%):	**0.00**	**Test limit (%):**	**3.30**	**Pass**
Tmax(mS) > dt:	**0**	**Test limit (mS):**	**500.0**	**Pass**
Highest dc (%):	**0.00**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**0.00**	**Test limit (%):**	**4.00**	**Pass**
Highest Pst (10 min. period):	**0.064**	**Test limit:**	**1.000**	**Pass**
Highest Plt (2 hr. period):	**0.028**	**Test limit:**	**0.650**	**Pass**

7.5 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.

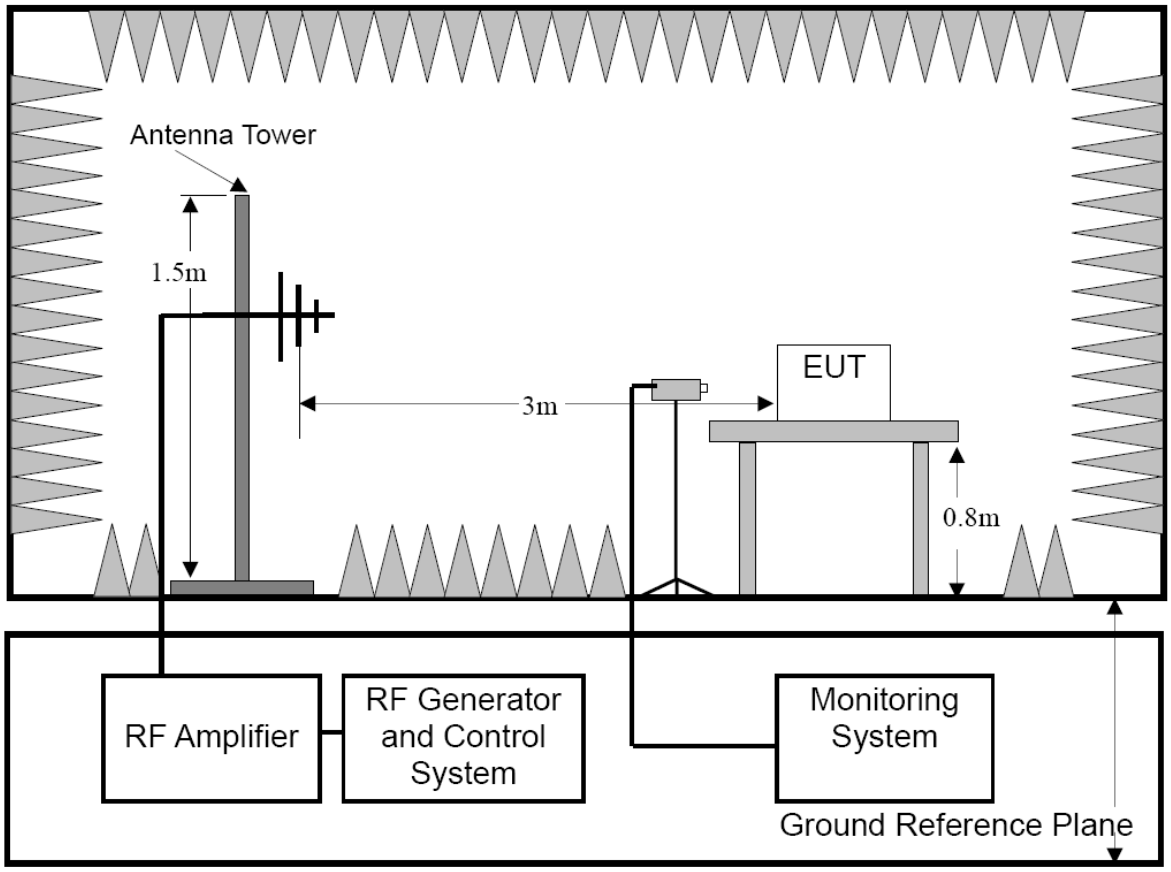
Test Condition			
Temperature	24°C	Test Voltage	AC 230V/50Hz
Humidity	54%RH	Tested by	Sance
Pressure	1022mbar	Performance Criterion :	CR & CT & B
Ground Bond Resistance		0.2 Ω	
Time Between Each Discharge :		1 second	
Test Mode		TX+RX	
Test Level		± 2.0, ± 4.0, ±8.0 kV (Air Discharge) ± 2.0, ±4.0 kV (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, ± 8kV	Pass
Indirect HCP Discharge	± 2, ± 4kV	Pass
Indirect VCP Discharge	± 2, ± 4kV	Pass

Note: The EUT stop working during the test, but it can be resumed to normal operation by user after test. After consider with client's confirmation that relevant instruction will be mentioned in the manual, so the test result was considered to be passed.

7.6 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	24°C	Test Voltage	AC 230V 50Hz
Humidity	54%RH	Tested by	Sance
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		TX+RX	
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.

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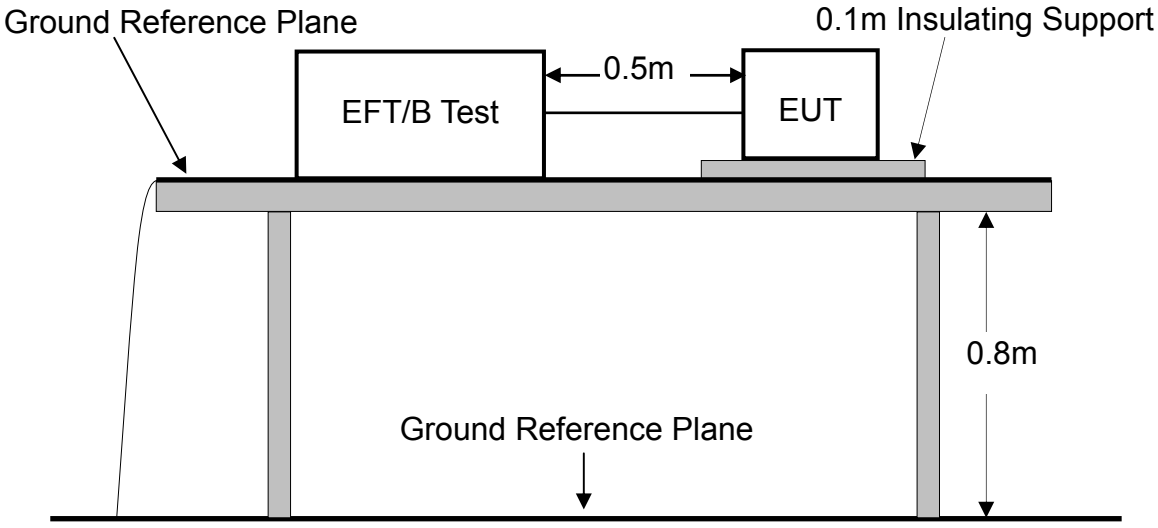
7.7 AC MAINS FAST TRANSIENTS COMMON MODE

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

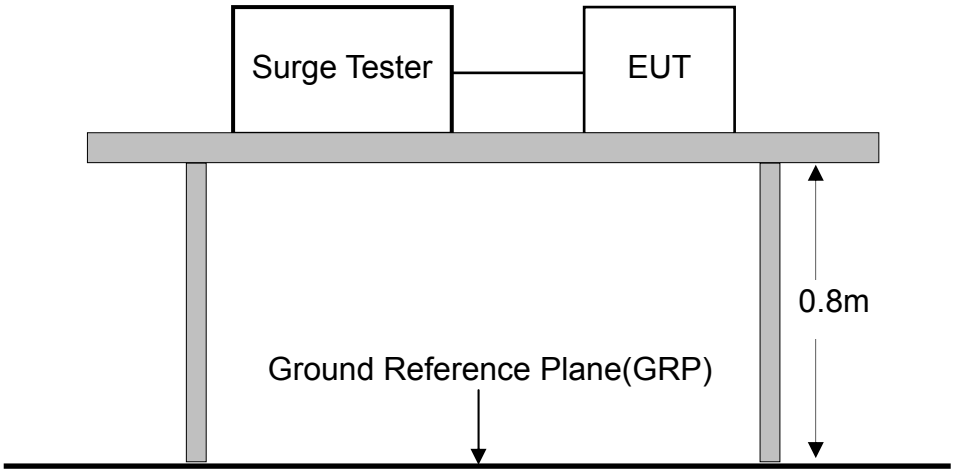
please refer to following data table.

Test Condition			
Temperature	24°C	Test Voltage	AC 230V/50Hz
Humidity	54%RH	Tested by	Sance
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		TX+RX	
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

7.8 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

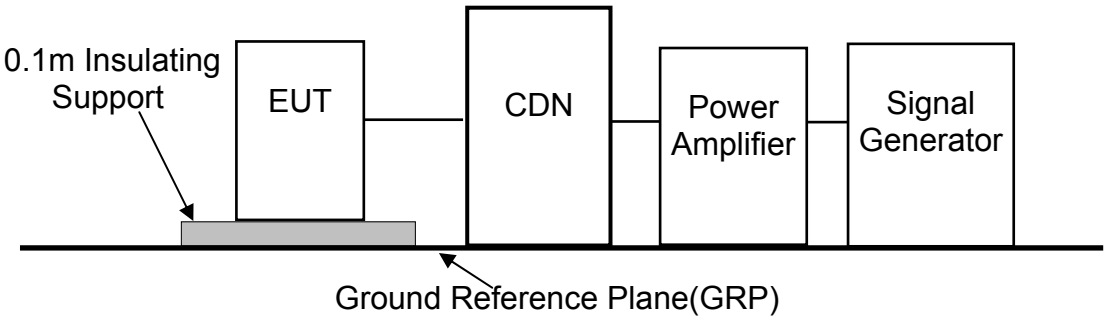
please refer to following data table.

Test Condition			
Temperature	22°C	Test Voltage	AC 230V/50Hz
Humidity	54%RH	Tested by	Sance
Pressure	1022mbar	Performance Criterion	CR & CT & B
Voltage Waveform		1.2/50 us	
Current Waveform		8/20 us	
Polarity		Positive/Negative	
Phase angle		0°, 90°, 180 °, 270°	
Repetition Rate		1 minute	
Test Mode		TX+RX	
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

7.9 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

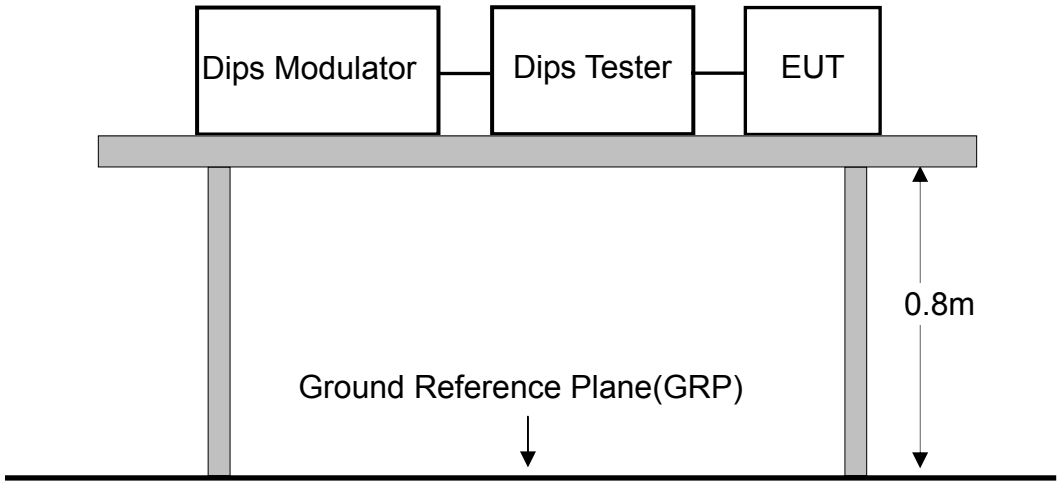
please refer to following data table.

Test Condition			
Temperature	24°C	Test Voltage	AC 230V/50Hz
Humidity	54%RH	Tested by	Sance
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		TX+RX	
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

7.10 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	24°C	Test Voltage	AC 230V 50Hz
Humidity	54%RH	Tested by	Sance
Pressure	1022mbar	Performance Criterion	B&C
Phase angles		0^o, 45^o, 90^o, 135^o, 180^o, 225^o, 270^o, 315^o	
Number of Dips/Interruptions :		3 times	
Repetition Rate		10s	
Test Mode		TX+RX	

Test Level				
	Test Level (% U_T)	Reduction (%)	Duration (ms)	Criterion
Voltage Dips	70	30%	500	B
	0	100%	20	B
	0	100%	10	B
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

7.11 TEST EQUIPMENT LIST

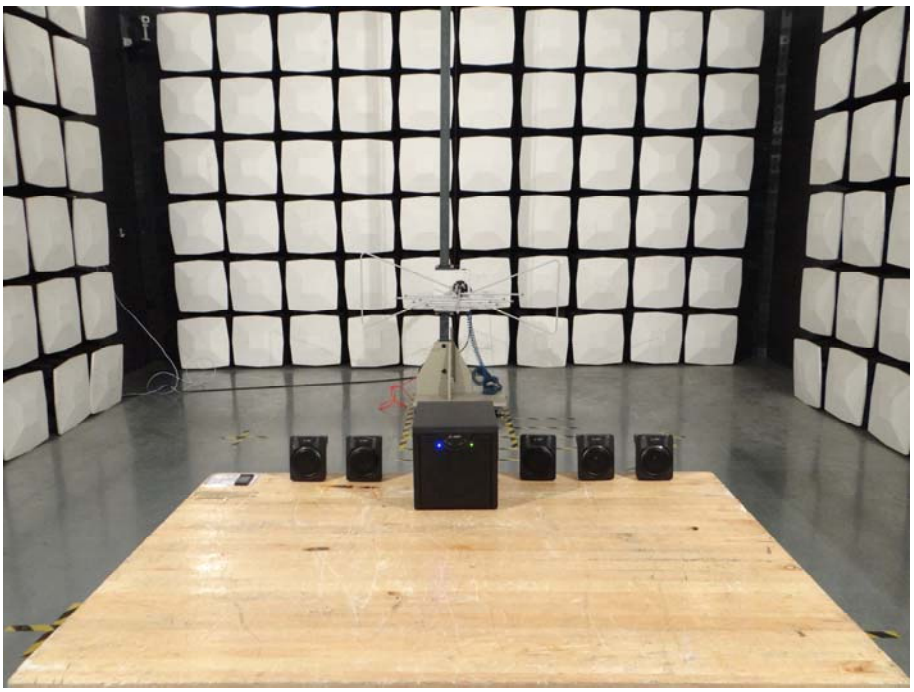
Description	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due Date
Receiver	Rohde & Schwarz	ESCI7	100837	Nov.25,2013	Nov.24, 2014
Receiver	Rohde & Schwarz	ESCI	101152	Nov.25,2013	Nov.24, 2014
Spectrum Analyzer	Rohde & Schwarz	FSU26	200409/026	Sep.02, 2014	Sep.01, 2015
Pre-Amplifier	HP	8447D	2944A07999	Nov.09, 2013	Nov.08, 2014
Broadband Antenna	Schwarzbeck	VULB9162	9162-010	Nov. 28,2013	Nov. 27,2014
Horn Antenna	COM-Power	AH-118	071078	Nov. 07, 2013	Nov. 06, 2014
Pre-Amplifier	COM-Power	PAM-118	443007	Nov. 05, 2014	Nov. 04, 2015
Cable	Huber+Suhner	CIL02	N/A	Nov.09,2013	Nov.08,2014
RF Switching Unit	Compliance Direction Systems Inc	RSU-M2	38311	Nov.05,2014	Nov.04,2015
Pulse Limiter	MTS-systemtechnik	MTS-IMP-136	261115-010-0022	Nov.05,2014	Nov.04,2015
RF Power Meter	ESE	4242	13984	Sep.01,2014	Aug.31,2015
Power Amplifier	TESEQ	CBA 1G-150	T44029	Sep.01,2014	Aug.31,2015
Signal Generator	Agilent	N5181A	MY50142530	Sep.01,2014	Aug.31,2015
Antenna Log-Periodic	CORAD	ATR80M6G	0337307	Sep.01,2014	Aug.31,2015
Switch Controller	CORAD	SC1000	0337343	Sep.01,2014	Aug.31,2015
Power Sensor	ESE	51011EMC	35716	Sep.01,2014	Aug.31,2015
Power Amplifier	TESEQ	CBA 3G-100	T44030	Sep.01,2014	Aug.31,2015

Description	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due Date
Dual Directional Coupler	TESEQ	C5982	95208	Sep.01,2014	Aug.31,2015
Dual Directional Coupler	TESEQ	C6187	95175	Sep.01,2014	Aug.31,2015
Signal Generator	HP	8648A	3426A01263	Oct.19,2014	Oct.18,2015
CDN	Luthi	L-801M2/M3	2015	Oct.19,2014	Oct.18,2015
CDN(AUX)	TESEQ	CDN M016	27452	Oct.19,2014	Oct.18,2015
6dB 50Watt Attenuator	HUBER+SUHNER	5906.17.0005	303688	Oct.19,2014	Oct.18,2015
Signal Amplifier	HAEFELY	PAMP250	149594	Oct.19,2014	Oct.18,2015
Electromagnetic Injection Clamp	Luthi	EM101	35640	Oct.19,2014	Oct.18,2015
C/S Test System	HAEFELY	WinPAMP	NSEMC002	Oct.19,2014	Oct.18,2015
Power Frequency Test System	CI	CTS	72846	Nov. 05,2014	Nov. 04,2015
Software	CI	CTS30	N/A	N/A	N/A
ESD Tester	TESEQ	NSG 437	432	Nov. 10, 2013	Nov. 09, 2014
EMS Test System	EM TEST	UCS 500N	V1104108683	Nov. 21, 2013	Nov. 20, 2014
Dips Modulator	EM TEST	V4780S2	0111-11	Nov. 21, 2013	Nov. 20, 2014
Test Soft	EM TEST	Iec.control	N/A	N/A	N/A
L.I.S.N	Rohde & Schwarz	ENV 216	101317	Nov. 09, 2013	Nov. 08, 2014

APPENDIX 1
PHOTOGRPHS OF TEST SETUP

LINE CONDUCTED EMISSION TEST

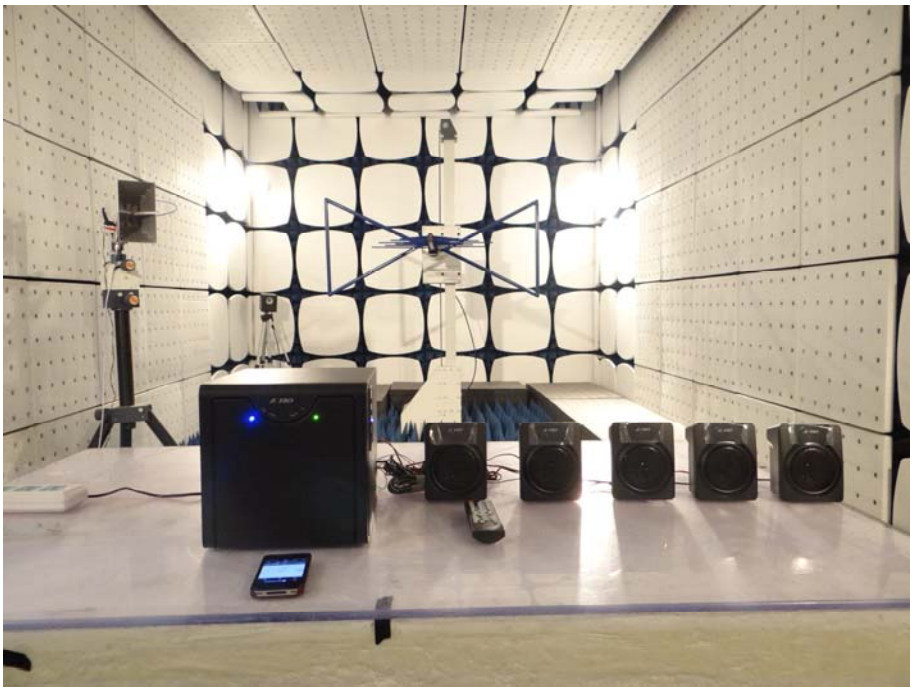
RADIATED EMISSION TEST



POWER HARMONIC & VOLTAGE FLUCTUATION / FLICKER TEST

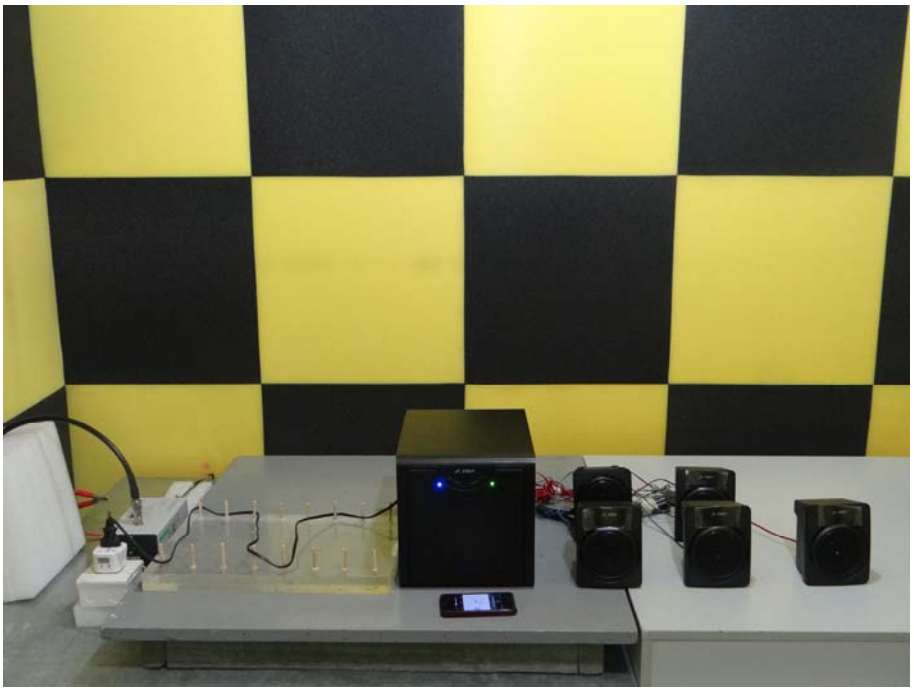
ELECTROSTATIC DISCHARGE TEST

RADIATED ELECTROMAGNETIC FIELD TEST

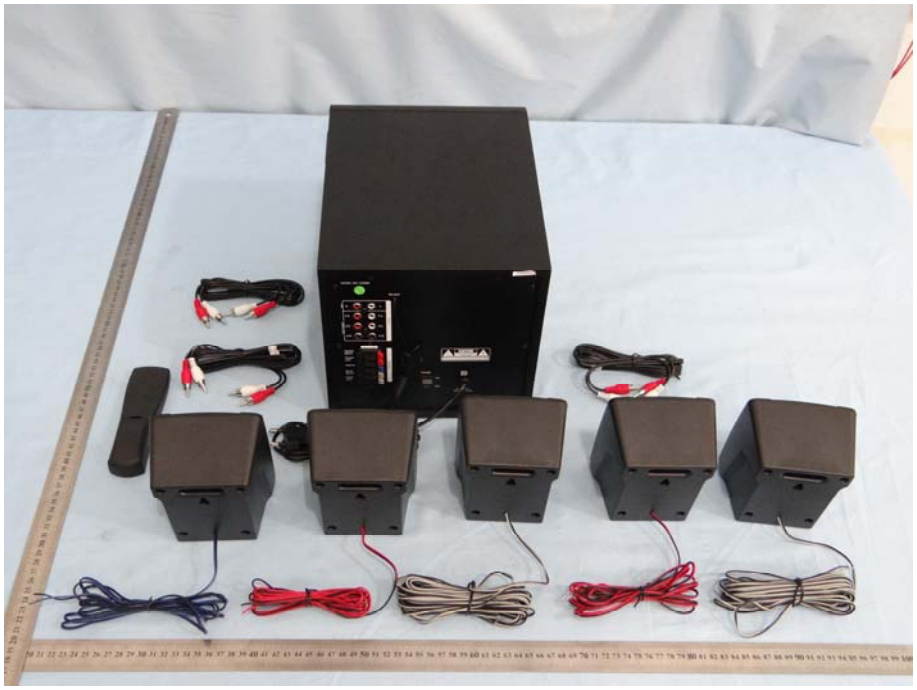


ELECTRICAL FAST TRANSIENTS/BURST/ SURGE/ VOLTAGE DIPS TEST

RADIO FREQUENCY COMMON MODE TEST

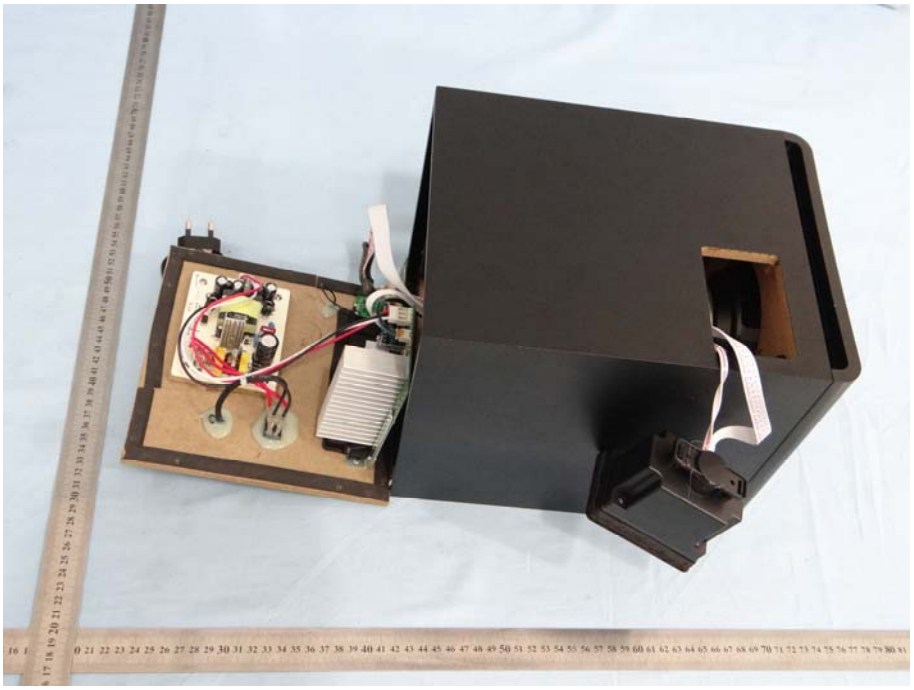


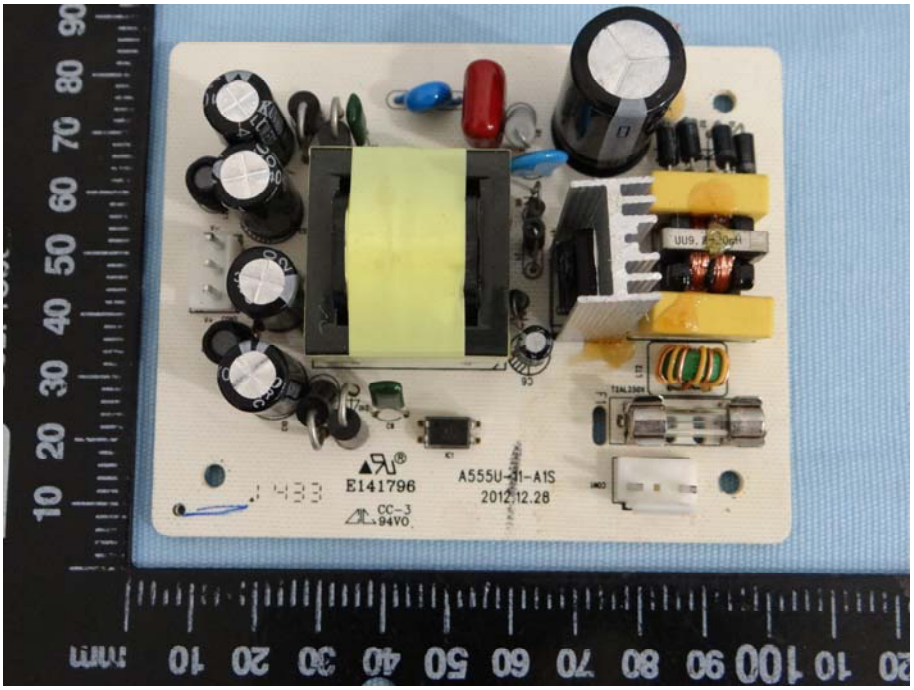
General Appearance of the EUT

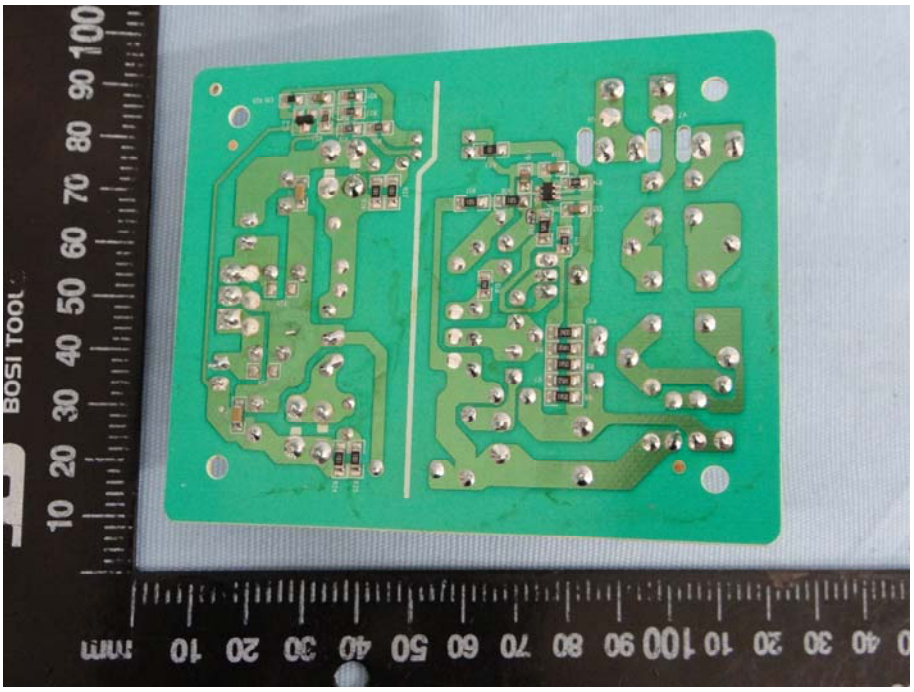


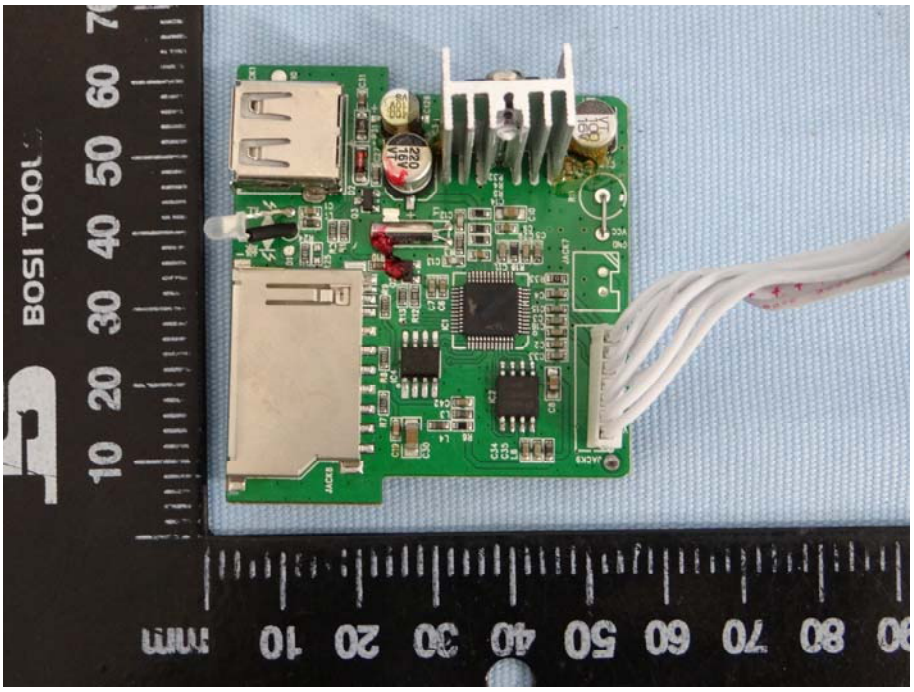

MODEL NO. F2300X
FM ANT
CAUTION
POWER
ON
OFF

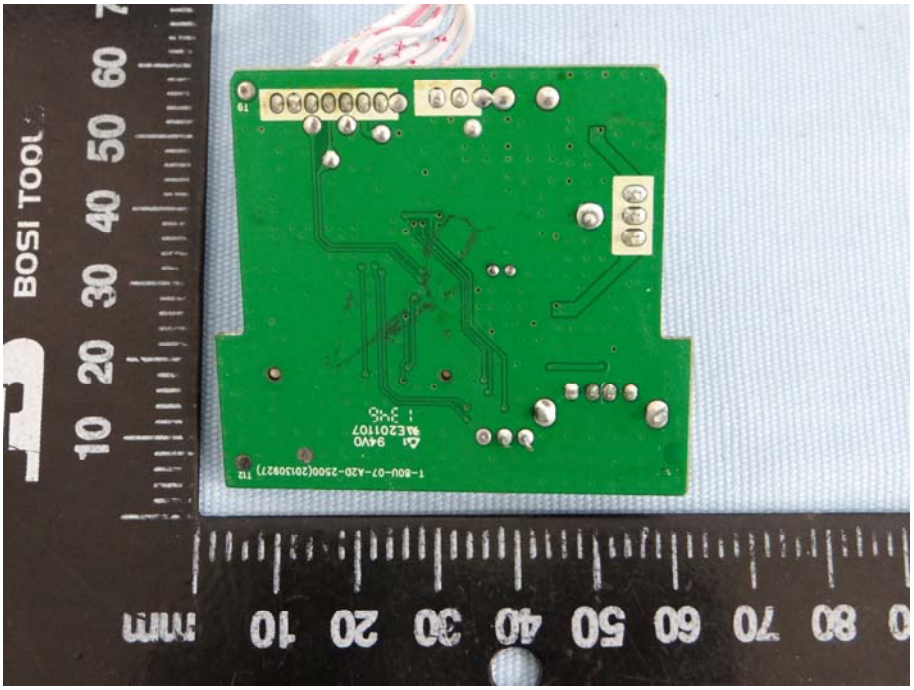

F&D

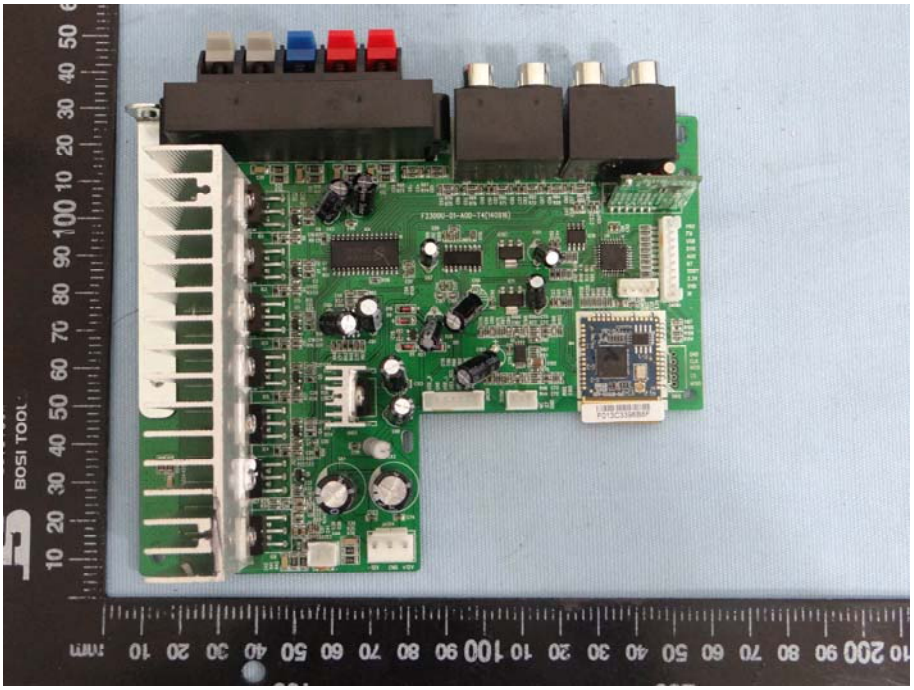


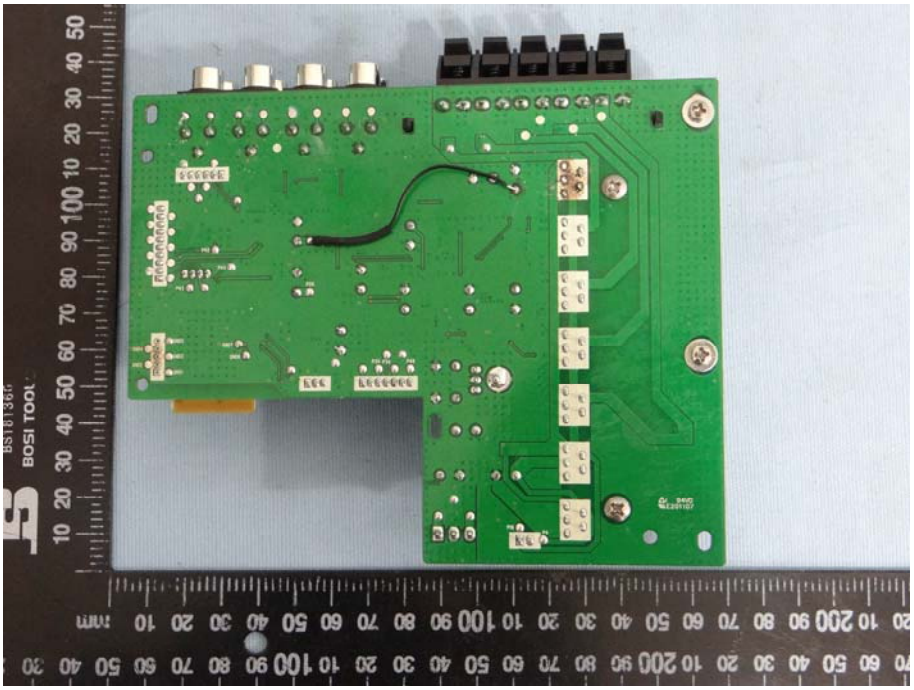

E141796
A555U-31-A1S
2012.12.28

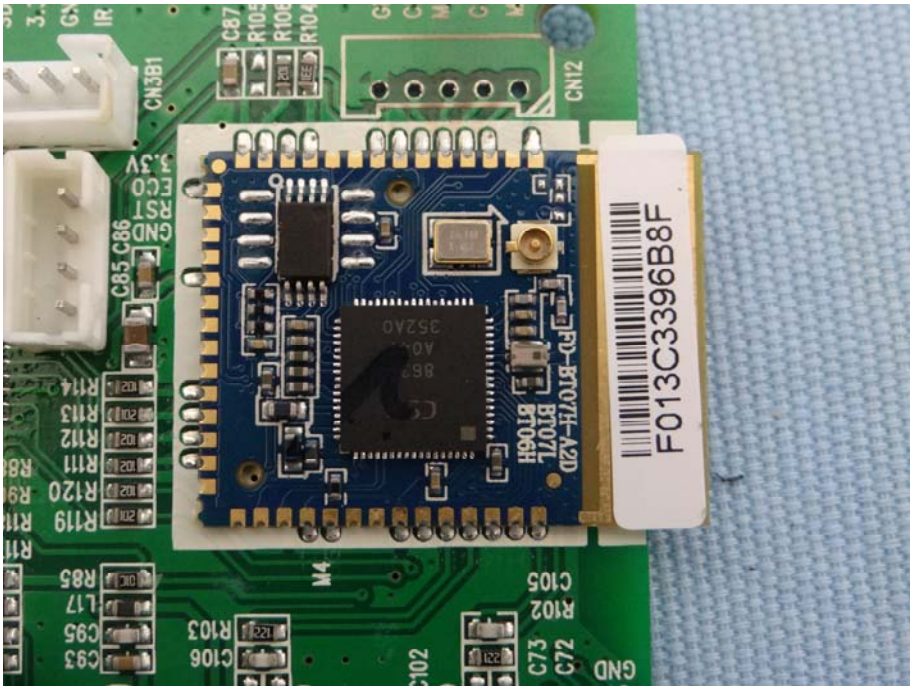

BOSI TOOL


BOSI TOOL


BOSI TOOL


BOSI TOOL





---End of report---