

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 Multimedia Speaker

Model Name: F210X, AL2109 Plus, F210U, F210BT, F210F, F210

Brand Name: F&D

Report Number: NTC1604347E

Test Date(s): April 28, 2016 to May 17, 2016

Report Date(s): May 17, 2016

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



Iori Fan / Authorized Signatory

Note: This test report is for the customer shown above and their specific product only. It may not be duplicated or used in part without prior written consent from Dongguan Nore Testing Center Co., Ltd. The test results referenced from this report are relevant only to the sample tested.

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1. GENERAL INFORMATION

PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST

- Manufacturer & Factory : Same as the applicant
- Model Name : F210X, AL2109 Plus, F210U, F210BT, F210F, F210
(All tests were carried on model F210X.)
- Model difference : These models have the same circuitry, electrical
mechanical, PCB layout and physical construction.
Their differences in model name for trading purpose.
- Power Supply : AC 220-240V 50/60Hz
- Adapter : None
- Test Voltage : AC 230V 50Hz
- Operating Temperature Range : 0°C to 45°C (Declaration by manufacturer)
- Adaptive/Non-Adaptive Equipment : Adaptive equipment

| | |
|-------------------|----------------------------------|
| Item | BT2.1+EDR |
| Frequency | 2402-2480MHz |
| Modulation | GFSK, $\pi/4$ -DQPSK |
| Number of Channel | 79 |
| Channel space | 1MHz |
| Antenna Type | PCB antenna |
| Antenna Gain | 0 dBi (declared by manufacturer) |

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 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 1 : Dongguan Nore Testing Center Co., Ltd.
(Dongguan NTC Co., Ltd.)

Site Location 1 : Building D, Gaosheng Science & Technology Park,
Zhouxi Longxi Road, Nancheng District, Dongguan
City, Guangdong Province, China

Name of Firm 2 : Bureau Veritas Shenzhen Co., Ltd., Dongguan
Branch

Site Location 2 : No. 34, Chenwulu Section, Guantai Rd., Houjie
Town, Dongguan City, Guangdong 523942, China

6. SUPPORT EQUIPMENT

| No. | Equipment | Model | Serial No. | Trade name | Data Cable | Power Cord |
|-----|--------------|-------|---------------------|------------|-----------------|------------|
| 1 | Mobile phone | X5SL | 86704802393 0426 | VIVO | 1.5m unshielded | N/A |
| 2. | iPod | A1446 | DCYNV5EMF 0GQ | Apple | 1.5m unshielded | N/A |

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) |
| <p>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.</p> <p>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.</p> | | |

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 Transient 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 (dB μ V/m) |
|--------------------|----------------------|---|
| 30 ~ 230 | 3 | 40 |
| 230 ~ 1000 | 3 | 47 |

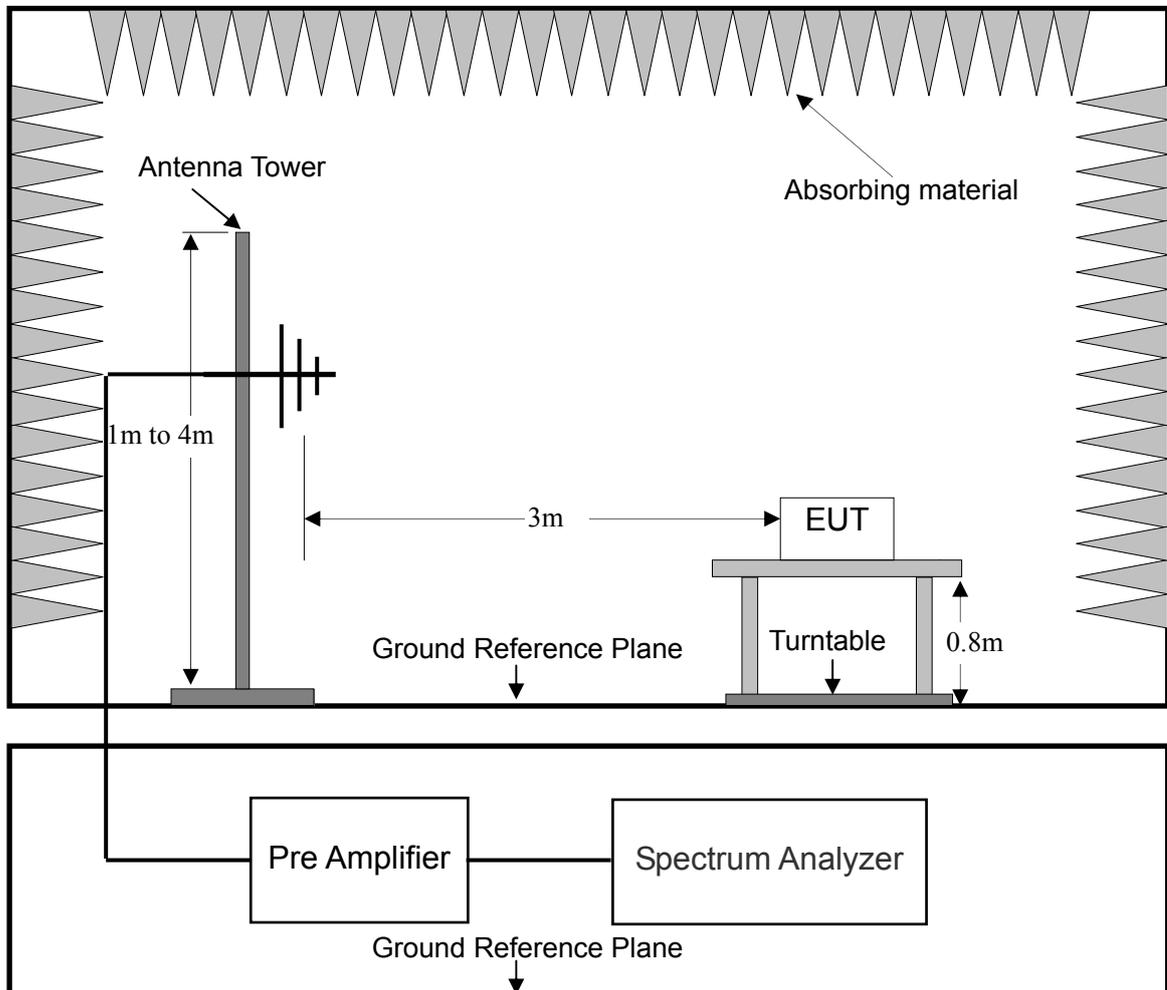
Note: (1) The smaller limit shall apply at the combination point between two frequency bands.
 (2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.

Limits for radiated disturbance Above 1GHz

| FREQUENCY (MHz) | DISTANCE (Meters) | Average Limit (dB μ V/m) | Peak Limit (dB μ V/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

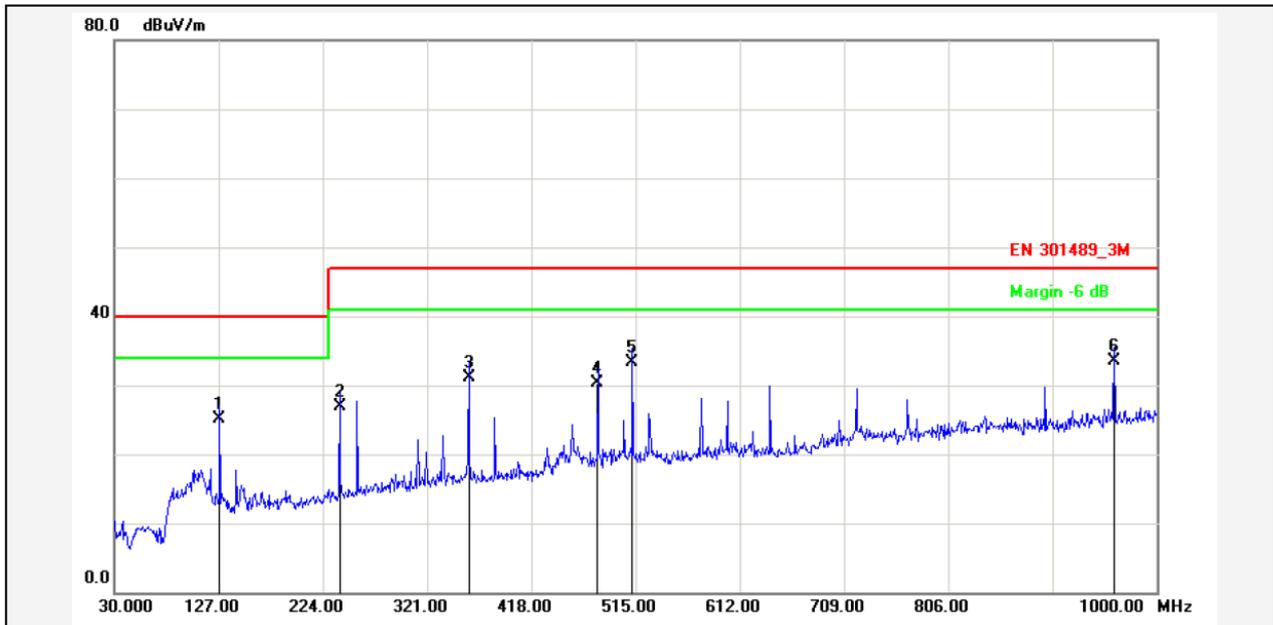
Please refer to following data tables.



Dongguan NTC Co., Ltd.
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 Web: [Http://www.ntc-c.com](http://www.ntc-c.com)

Site: Radiation

Test Time: 2016-5-3 17:15:54



| | | |
|---------------------------------|-------------------------------|--------------------------------|
| Report No.: F210X | Test Standard: EN 301489_3M | Test Distance: 3m |
| Test item: Radiation Emission | Ant. Polarization: Horizontal | Temp.(C)/Hum.(%): 22(C) / 54 % |
| Applicant: FENDA | Power Rating: AC 230V/50Hz | Test Engineer: Anson |
| Product: 2.1 Multimedia Speaker | | |
| Model No.: F210X | | |
| Test Mode: TX+RX(BT Link) | | |
| Remark: | | |

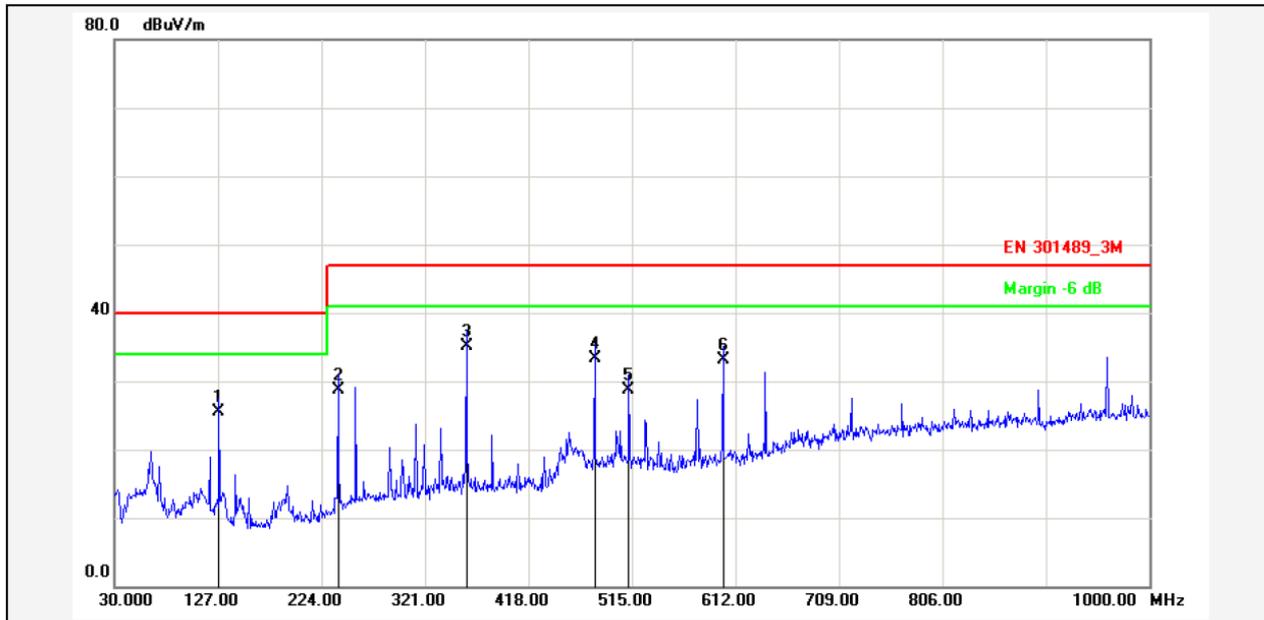
| No. | Frequency (MHz) | Factor (dB/m) | Reading (dBuV) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F | Remark |
|-----|-----------------|---------------|----------------|----------------|----------------|-------------|----------|-------------|----------------|-----|--------|
| 1 | 127.9699 | -14.94 | 40.04 | 25.10 | 40.00 | -14.90 | QP | | | P | |
| 2 | 239.5200 | -12.06 | 39.06 | 27.00 | 47.00 | -20.00 | QP | | | P | |
| 3 | 359.8000 | -9.13 | 40.33 | 31.20 | 47.00 | -15.80 | QP | | | P | |
| 4 | 480.0799 | -7.21 | 37.61 | 30.40 | 47.00 | -16.60 | QP | | | P | |
| 5 | 512.0900 | -6.74 | 40.04 | 33.30 | 47.00 | -13.70 | QP | | | P | |
| 6 | 960.2300 | -0.23 | 33.73 | 33.50 | 47.00 | -13.50 | QP | | | P | |



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Site: Radiation

Test Time: 2016-5-3 17:22:33



Report No.: F210X
Test Standard: EN 301489_3M
Test item: Radiation Emission
Applicant: FENDA
Product: 2.1 Multimedia Speaker
Model No.: F210X
Test Distance: 3m
Ant. Polarization: Vertical
Temp.(C)/Hum.(%): 22(C) / 54 %
Power Rating: AC 230V/50Hz
Test Engineer: Anson

Test Mode: TX+RX(BT Link)

Remark:

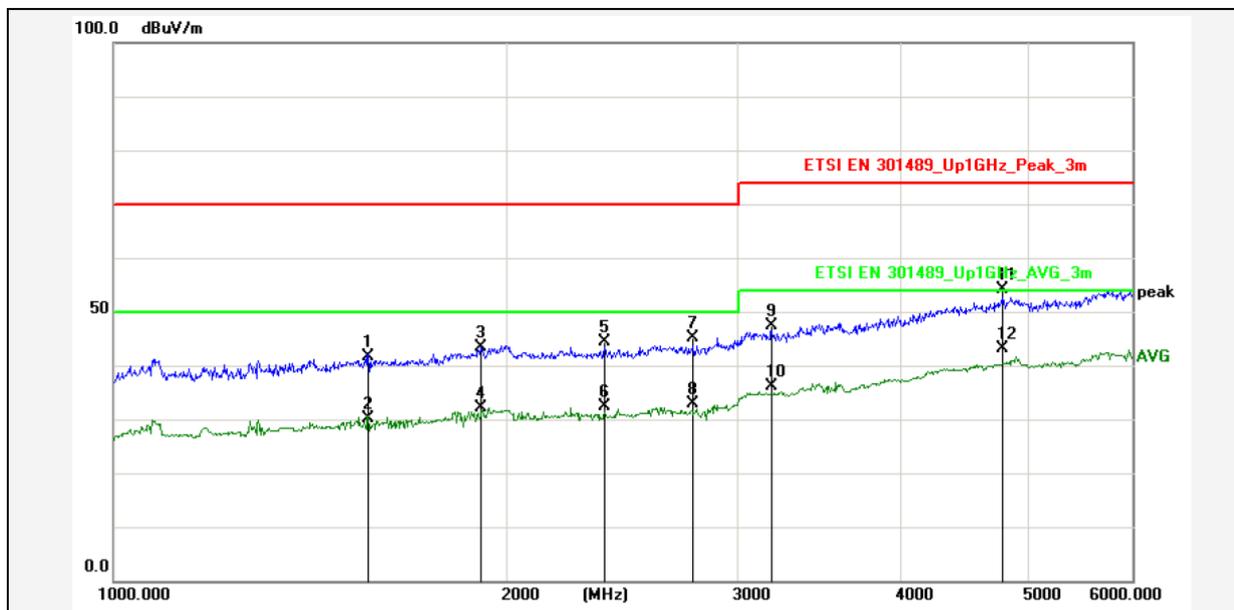
| No. | Frequency (MHz) | Factor (dB/m) | Reading (dBuV) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F | Remark |
|-----|-----------------|---------------|----------------|----------------|----------------|-------------|----------|-------------|----------------|-----|--------|
| 1 | 127.9700 | -17.94 | 43.44 | 25.50 | 40.00 | -14.50 | QP | | | P | |
| 2 | 239.5200 | -15.06 | 43.86 | 28.80 | 47.00 | -18.20 | QP | | | P | |
| 3 | 359.8000 | -11.13 | 46.33 | 35.20 | 47.00 | -11.80 | QP | | | P | |
| 4 | 480.0800 | -9.21 | 42.61 | 33.40 | 47.00 | -13.60 | QP | | | P | |
| 5 | 512.0900 | -8.74 | 37.54 | 28.80 | 47.00 | -18.20 | QP | | | P | |
| 6 | 600.3600 | -7.00 | 40.10 | 33.10 | 47.00 | -13.90 | QP | | | P | |



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Web: [Http://www.ntc-c.com](http://www.ntc-c.com)

Site: Radiation

Test Time: 2016-5-3 17:07:48



Report No.: F210X

Test Standard: ETSI EN 301489_Up1GHz_Peak_3m

Test Distance: 3m

Test item: Radiation Emission

Ant. Polarization: Horizontal

Applicant: FENDA

Temp.(C)/Hum.(%): 21(C) / 55 %

Product: 2.1 Multimedia Speaker

Power Rating: AC 230V/50Hz

Model No.: F210X

Test Engineer: Anson

Test Mode: TX+RX(BT Link)

Remark:

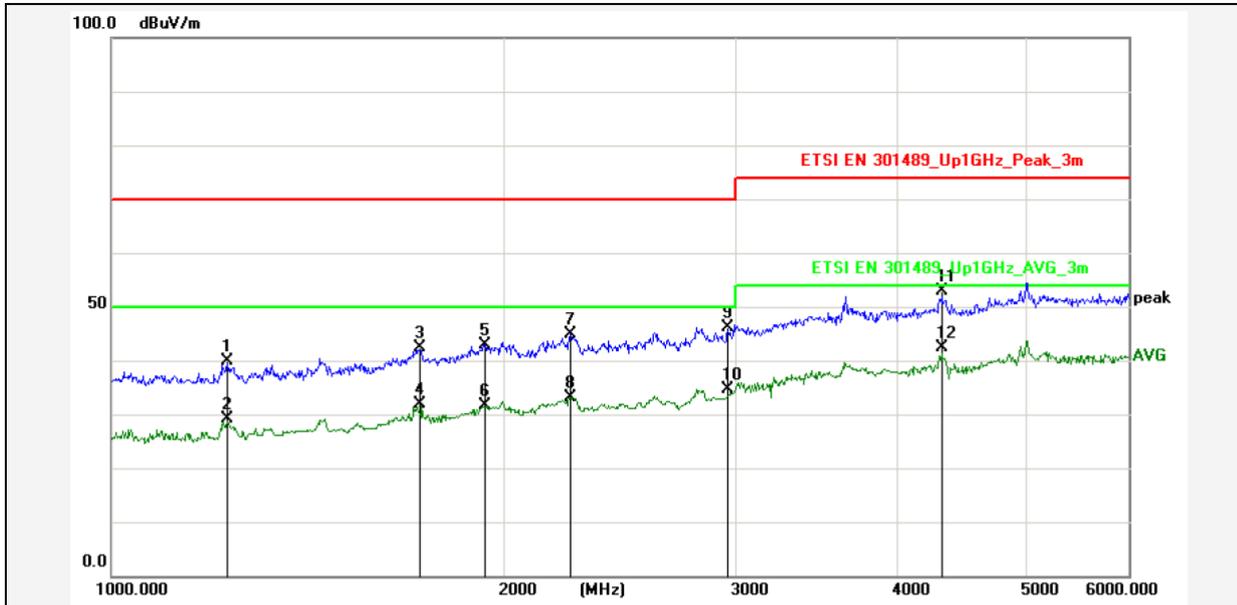
| No. | Frequency (MHz) | Factor (dB/m) | Reading (dBuV) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F | Remark |
|-----|-----------------|---------------|----------------|----------------|----------------|-------------|----------|-------------|----------------|-----|--------|
| 1 | 1565.084 | 4.15 | 37.45 | 41.60 | 70.00 | -28.40 | peak | | | P | |
| 2 | 1565.084 | 4.15 | 26.04 | 30.19 | 50.00 | -19.81 | AVG | | | P | |
| 3 | 1909.469 | 6.43 | 36.84 | 43.27 | 70.00 | -26.73 | peak | | | P | |
| 4 | 1909.469 | 6.43 | 25.76 | 32.19 | 50.00 | -17.81 | AVG | | | P | |
| 5 | 2371.750 | 7.99 | 36.46 | 44.45 | 70.00 | -25.55 | peak | | | P | |
| 6 | 2371.750 | 7.99 | 24.40 | 32.39 | 50.00 | -17.61 | AVG | | | P | |
| 7 | 2771.839 | 8.76 | 36.26 | 45.02 | 70.00 | -24.98 | peak | | | P | |
| 8 | 2771.839 | 8.76 | 24.00 | 32.76 | 50.00 | -17.24 | AVG | | | P | |
| 9 | 3181.894 | 9.75 | 37.74 | 47.49 | 74.00 | -26.51 | peak | | | P | |
| 10 | 3181.894 | 9.75 | 26.29 | 36.04 | 54.00 | -17.96 | AVG | | | P | |
| 11 | 4770.324 | 14.49 | 39.73 | 54.22 | 74.00 | -19.78 | peak | | | P | |
| 12 | 4770.324 | 14.49 | 28.67 | 43.16 | 54.00 | -10.84 | AVG | | | P | |



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Site: Radiation

Test Time: 2016-5-3 17:00:20



Report No.: F210X
 Test Standard: ETSI EN 301489_Up1GHz_Peak_3m Test Distance: 3m
 Test item: Radiation Emission Ant. Polarization: Vertical
 Applicant: FENDA Temp.(C)/Hum.(%): 21(C) / 55 %
 Product: 2.1 Multimedia Speaker Power Rating: AC 230V/50Hz
 Model No.: F210X Test Engineer: Anson
 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 | 1226.618 | 2.22 | 37.68 | 39.90 | 70.00 | -30.10 | peak | | | P | |
| 2 | 1226.618 | 2.22 | 26.90 | 29.12 | 50.00 | -20.88 | AVG | | | P | |
| 3 | 1720.995 | 5.29 | 37.14 | 42.43 | 70.00 | -27.57 | peak | | | P | |
| 4 | 1720.995 | 5.29 | 26.71 | 32.00 | 50.00 | -18.00 | AVG | | | P | |
| 5 | 1930.108 | 6.57 | 36.33 | 42.90 | 70.00 | -27.10 | peak | | | P | |
| 6 | 1930.108 | 6.57 | 25.04 | 31.61 | 50.00 | -18.39 | AVG | | | P | |
| 7 | 2243.604 | 7.56 | 37.34 | 44.90 | 70.00 | -25.10 | peak | | | P | |
| 8 | 2243.604 | 7.56 | 25.62 | 33.18 | 50.00 | -16.82 | AVG | | | P | |
| 9 | 2961.827 | 9.17 | 36.89 | 46.06 | 70.00 | -23.94 | peak | | | P | |
| 10 | 2961.827 | 9.17 | 25.52 | 34.69 | 50.00 | -15.31 | AVG | | | P | |
| 11 | 4314.907 | 13.04 | 39.78 | 52.82 | 74.00 | -21.18 | peak | | | P | |
| 12 | 4314.907 | 13.04 | 29.42 | 42.46 | 54.00 | -11.54 | AVG | | | P | |

8.2 AC POWER CONDUCTED EMISSION

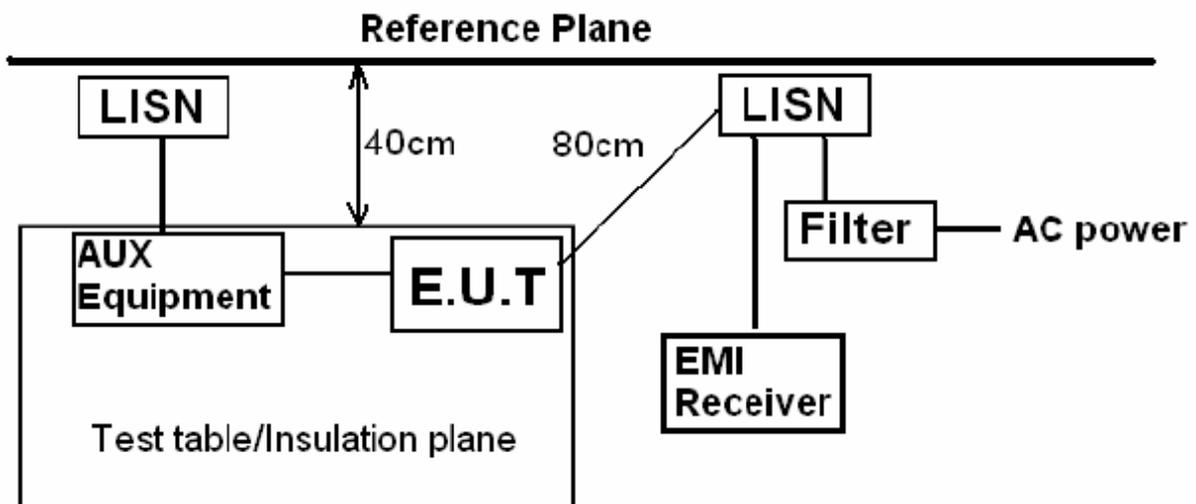
LIMIT

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 (MHz) | Limits (dB(uV)) | |
|--------------------------|--------------------|----------|
| | 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

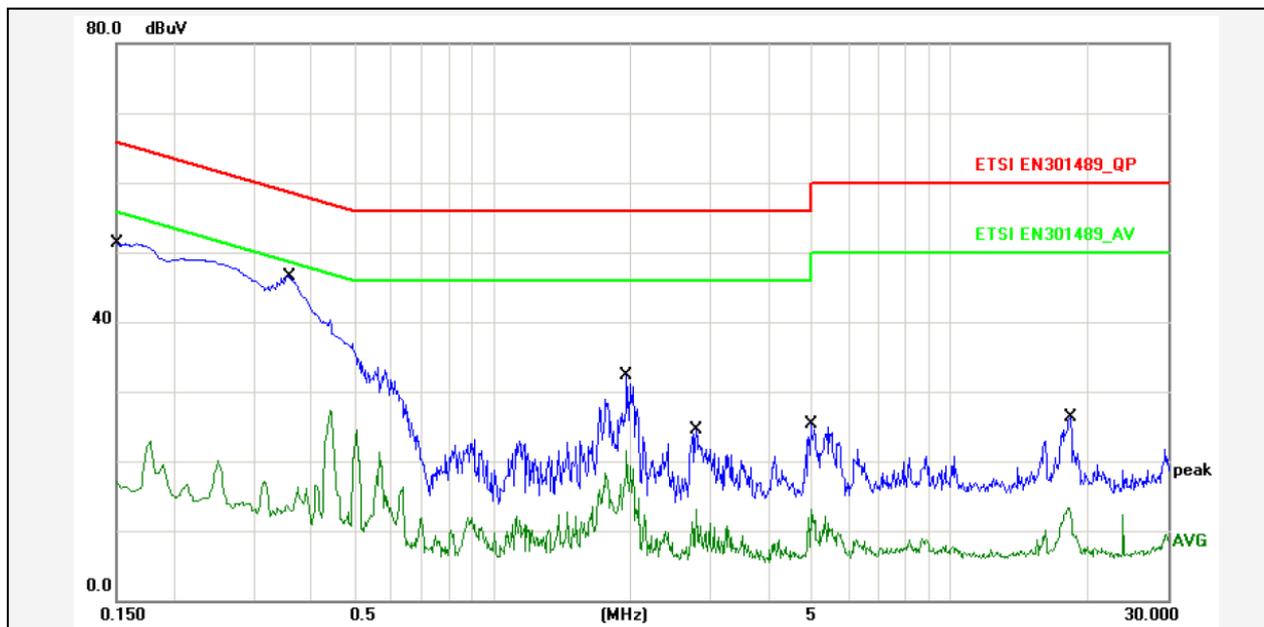
Please refer to following data tables.



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Tel: +86-769-22022444 Fax: +86-769-22022799
Web: [Http://www.ntc-c.com](http://www.ntc-c.com)

Site: Conduction

Test Time: 2016-5-3 16:30:06



Report No.: F210X
Test Standard: ETSI EN301489_QP
Test item: Conducted Emission
Applicant: FENDA
Product: 2.1 Multimedia Speaker
Model No.: F210X
Phase: L1
Temp.()/Hum.(%): 22(C) / 50 %
Power Rating: AC 230V/50Hz
Test Engineer: chilaw
Test Mode: TX+RX(BT Link)
Remark:

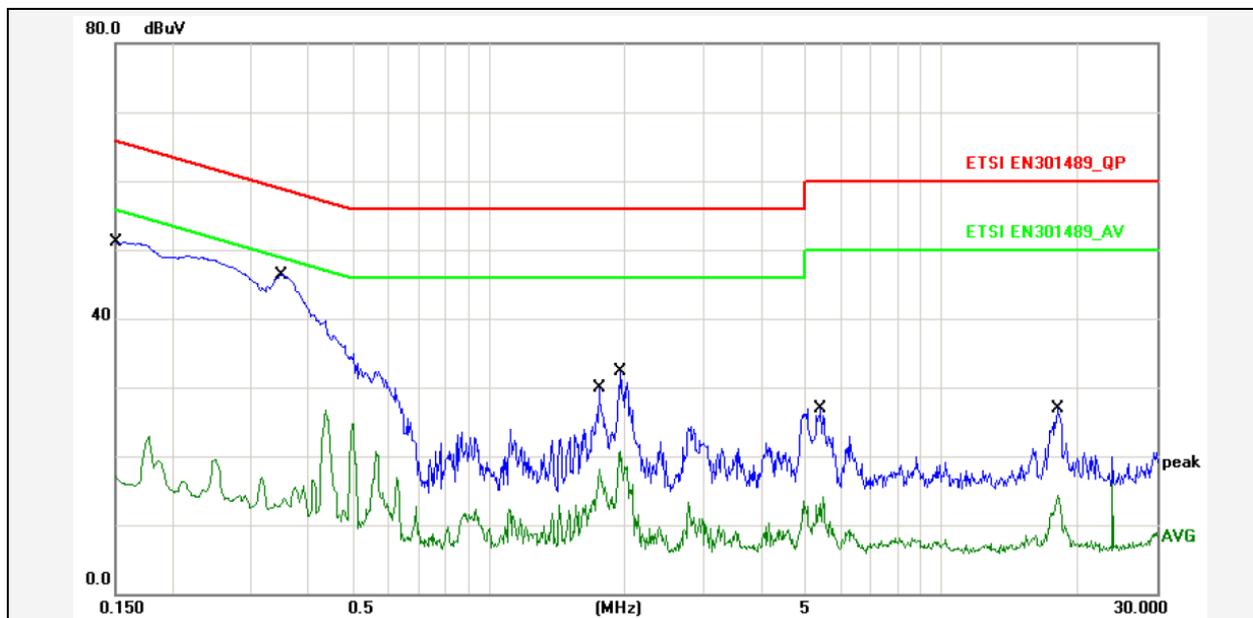
| No. | Frequency (MHz) | Factor (dBuV) | Reading (dBuV) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | P/F | Remark |
|-----|-----------------|---------------|----------------|--------------|--------------|-------------|----------|-----|--------|
| 1 | 0.1500 | 10.80 | 34.90 | 45.70 | 65.99 | -20.29 | QP | P | |
| 2 | 0.1500 | 10.80 | 9.00 | 19.80 | 55.99 | -36.19 | AVG | P | |
| 3 | 0.3580 | 10.80 | 33.70 | 44.50 | 58.77 | -14.27 | QP | P | |
| 4 | 0.3580 | 10.80 | 0.90 | 11.70 | 48.77 | -37.07 | AVG | P | |
| 5 | 1.9660 | 10.80 | 19.50 | 30.30 | 56.00 | -25.70 | QP | P | |
| 6 | 1.9660 | 10.80 | 8.70 | 19.50 | 46.00 | -26.50 | AVG | P | |
| 7 | 2.7900 | 10.80 | 11.70 | 22.50 | 56.00 | -33.50 | QP | P | |
| 8 | 2.7900 | 10.80 | 0.20 | 11.00 | 46.00 | -35.00 | AVG | P | |
| 9 | 4.9739 | 10.80 | 12.40 | 23.20 | 56.00 | -32.80 | QP | P | |
| 10 | 4.9739 | 10.80 | 0.20 | 11.00 | 46.00 | -35.00 | AVG | P | |
| 11 | 18.3419 | 10.80 | 13.40 | 24.20 | 60.00 | -35.80 | QP | P | |
| 12 | 18.3419 | 10.80 | 0.60 | 11.40 | 50.00 | -38.60 | AVG | P | |



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Site: Conduction

Test Time: 2016-5-3 16:37:26



Report No.: F210X
Test Standard: ETSI EN301489_QP
Test item: Conducted Emission
Applicant: FENDA
Product: 2.1 Multimedia Speaker
Model No.: F210X
Phase: N
Temp.()/Hum.(%): 22(C) / 50 %
Power Rating: AC 230V/50Hz
Test Engineer: chilaw
Test Mode: TX+RX(BT Link)
Remark:

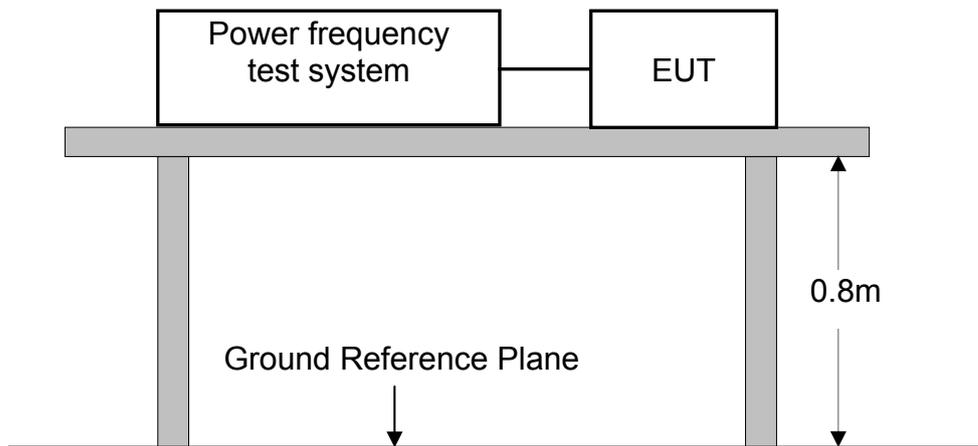
| No. | Frequency (MHz) | Factor (dBuV) | Reading (dBuV) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | P/F | Remark |
|-----|-----------------|---------------|----------------|--------------|--------------|-------------|----------|-----|--------|
| 1 | 0.1500 | 10.80 | 35.40 | 46.20 | 65.99 | -19.79 | QP | P | |
| 2 | 0.1500 | 10.80 | 9.00 | 19.80 | 55.99 | -36.19 | AVG | P | |
| 3 | 0.3500 | 10.80 | 33.50 | 44.30 | 58.96 | -14.66 | QP | P | |
| 4 | 0.3500 | 10.80 | 1.10 | 11.90 | 48.96 | -37.06 | AVG | P | |
| 5 | 1.7540 | 10.80 | 17.00 | 27.80 | 56.00 | -28.20 | QP | P | |
| 6 | 1.7540 | 10.80 | 5.30 | 16.10 | 46.00 | -29.90 | AVG | P | |
| 7 | 1.9620 | 10.80 | 19.40 | 30.20 | 56.00 | -25.80 | QP | P | |
| 8 | 1.9620 | 10.80 | 7.80 | 18.60 | 46.00 | -27.40 | AVG | P | |
| 9 | 5.4419 | 10.80 | 14.10 | 24.90 | 60.00 | -35.10 | QP | P | |
| 10 | 5.4419 | 10.80 | 1.30 | 12.10 | 50.00 | -37.90 | AVG | P | |
| 11 | 18.0579 | 10.80 | 14.00 | 24.80 | 60.00 | -35.20 | QP | P | |
| 12 | 18.0579 | 10.80 | 1.40 | 12.20 | 50.00 | -37.80 | 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 | 22°C | Test Voltage | AC 230V/50Hz |
| Humidity | 49%RH | Tested by | Sance |
| Pressure | 1022mbar | | |

TEST PROCEDURE

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

TEST RESULTS

Pass

Test Mode: TX+RX

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 | 22°C | Test Voltage | AC 230V/50Hz |
| Humidity | 49%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.

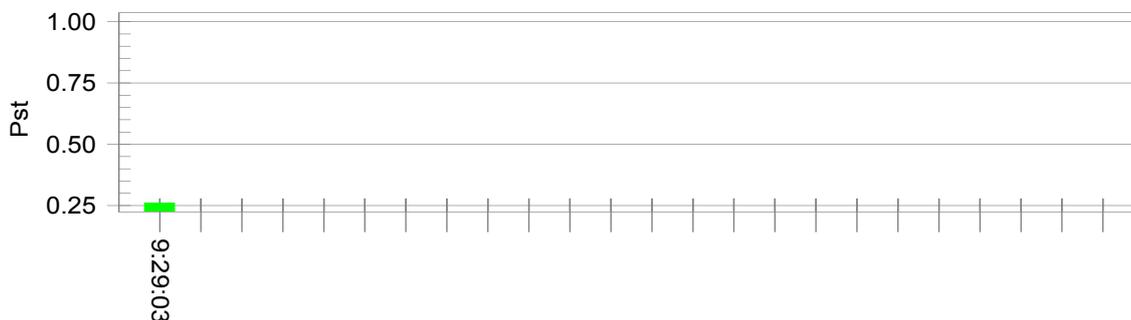
Test Mode : TX+RX

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

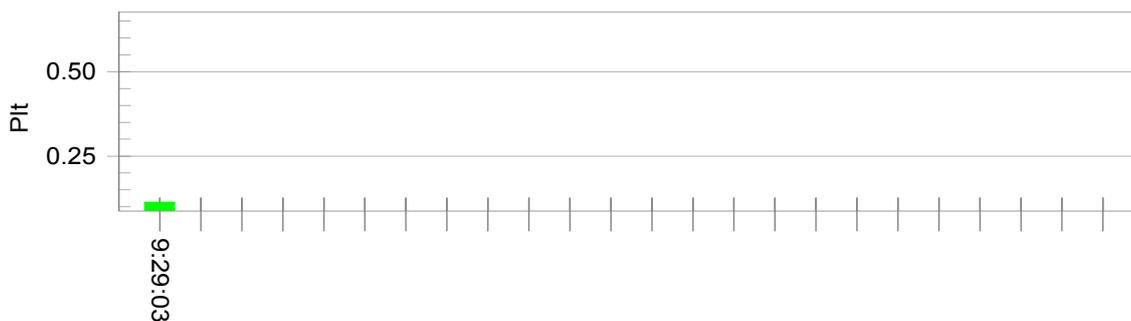
EUT: 2.1 Multimedia Speaker **Tested by: Steven**
Test category: All parameters (European limits)Test Margin: 100
Test date: 2016-5-4 **Start time: 9:18:33** **End time: 9:29:04**
Test duration (min): 10 **Data file name: F-010061.cts_data**
Comment: TX+RX(BT Link)
Customer: FENDA
Model:F210X
Test Result: Pass **Status: Test Completed**

Psti and limit line

European Limits



Plt and limit line

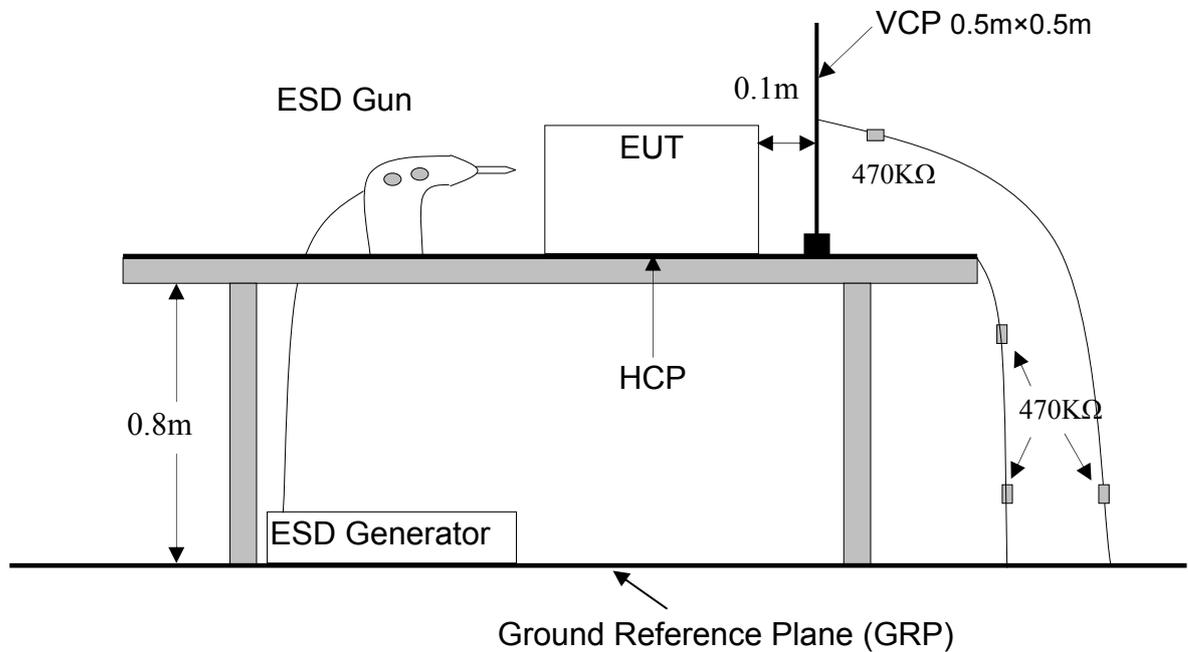


Parameter values recorded during the test:

| | | | | |
|--|---------------|-------------------------|--------------|-------------|
| Vrms at the end of test (Volt): | 230.29 | | | |
| 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 (%): | 0.10 | Test limit (%): | 4.00 | Pass |
| Highest Pst (10 min. period): | 0.261 | Test limit: | 1.000 | Pass |
| Highest Plt (2 hr. period): | 0.114 | 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

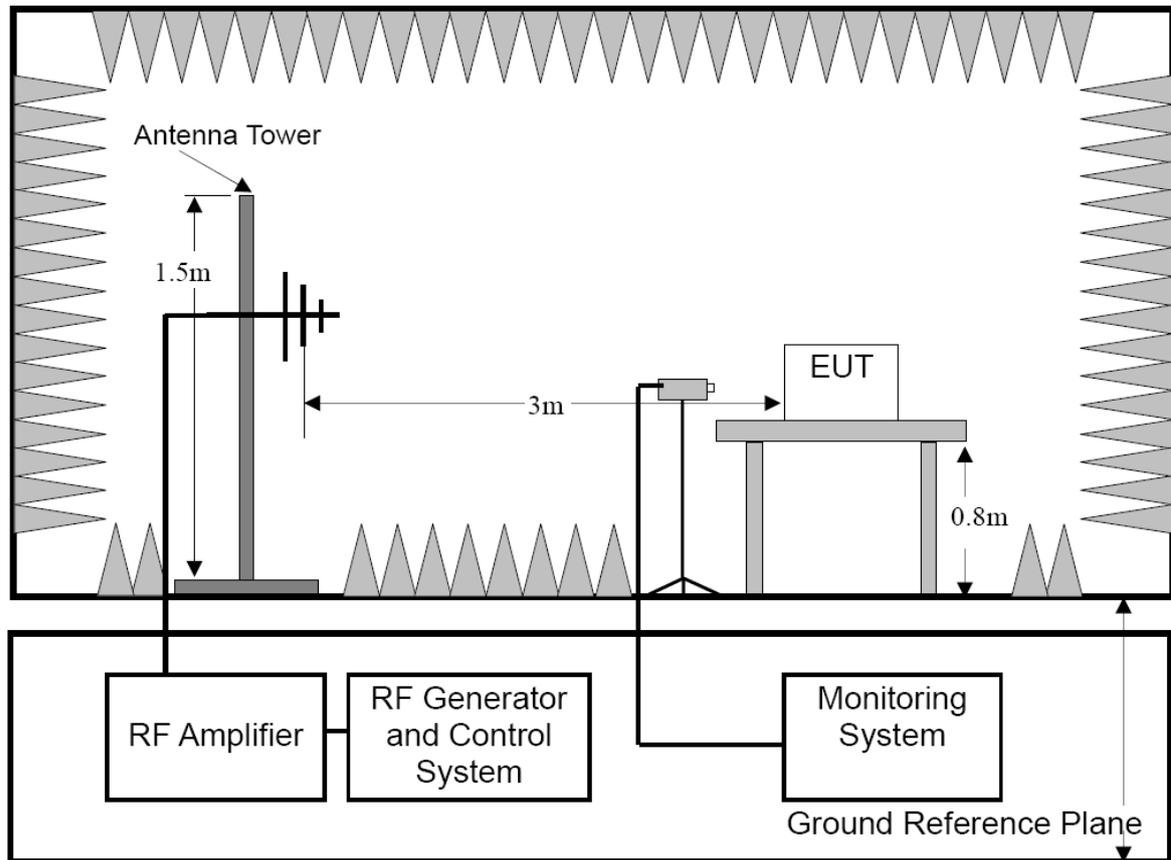
please refer to following data table.

| Test Condition | | | |
|-------------------------------|-----------------|--|--------------|
| Temperature | 24°C | Test Voltage | AC 230V/50Hz |
| Humidity | 55%RH | Tested by | Steven |
| 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: During the test, the EUT changes to stand-by mode, but it can be recovered by users after test. This test results 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.

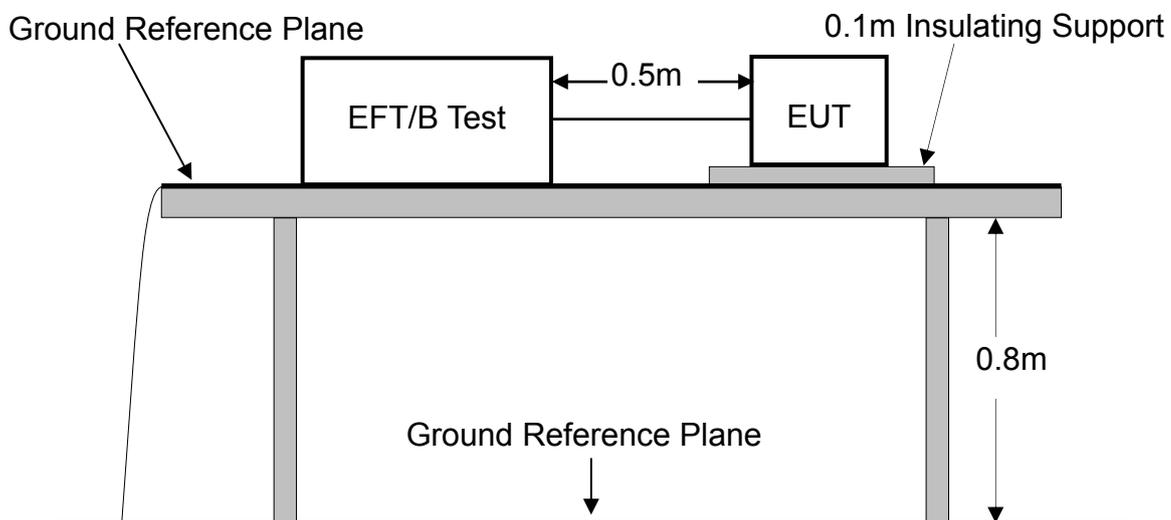
| Test Condition | | | |
|----------------------------|--------------|------------------------------|--------------|
| Temperature | 24°C | Test Voltage | AC 230V 50Hz |
| Humidity | 55%RH | Tested by | Steven |
| Pressure | 1022mbar | Performance Criterion | CR & CT & A |
| Frequency Range | | 80-1000MHz 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.

Note: This test was carry out on Bureau Veritas Shenzhen Co., Ltd., Dongguan Branch.

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

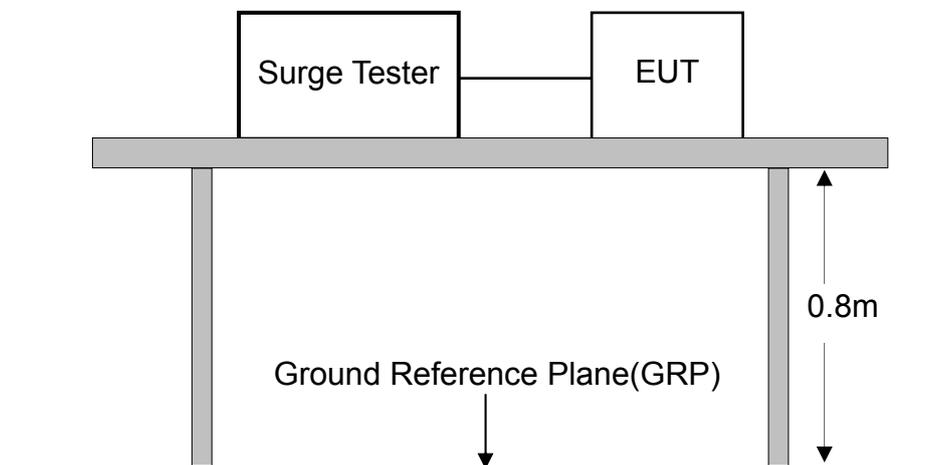
please refer to following data table.

| Test Condition | | | |
|-------------------|----------|-----------------------|--------------|
| Temperature | 24°C | Test Voltage | AC 230V/50Hz |
| Humidity | 55%RH | Tested by | Steven |
| 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 | |

Note **: In test mode, 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

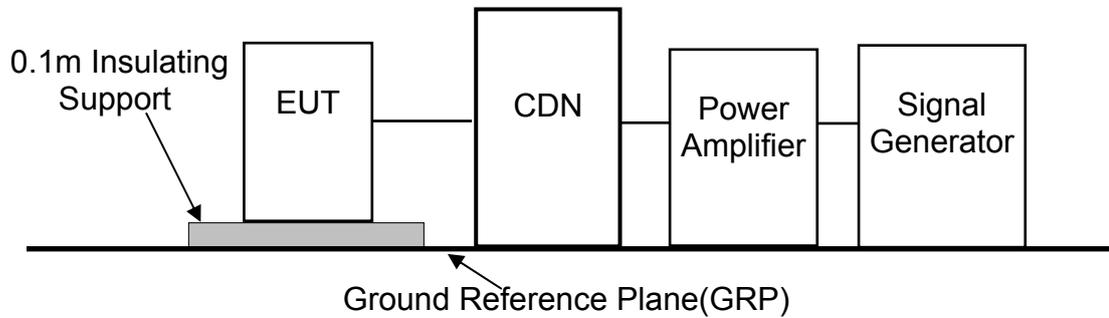
PASS

please refer to following data table.

| Test Condition | | | |
|---------------------|----------|---|--------------|
| Temperature | 24°C | Test Voltage | AC 230V/50Hz |
| Humidity | 55%RH | Tested by | Steven |
| 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 | |

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

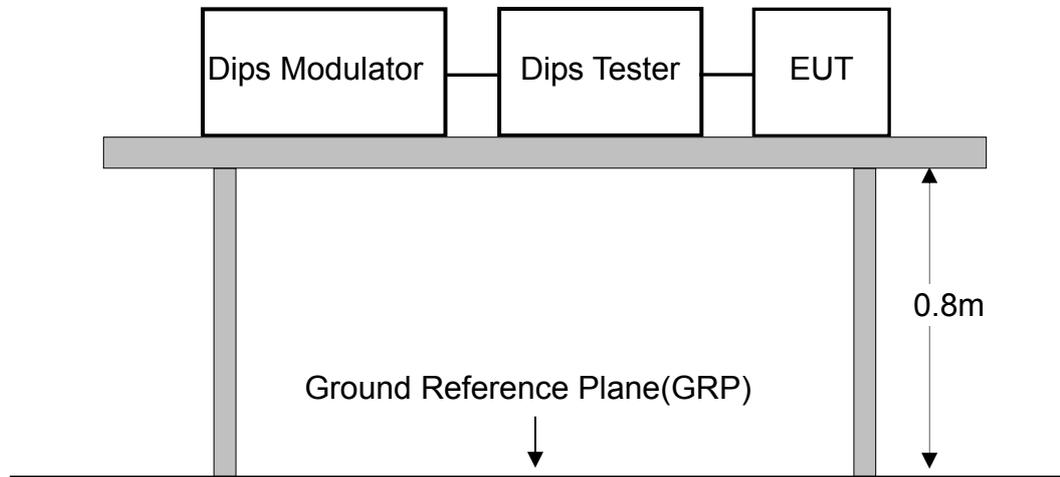
please refer to following data table.

| Test Condition | | | |
|------------------------|-----------|-----------------------|--------------|
| Temperature | 24°C | Test Voltage | AC 230V/50Hz |
| Humidity | 55%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 |

Note: This test was carry out on Bureau Veritas Shenzhen Co., Ltd., Dongguan Branch.

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 | 24°C | Test Voltage | AC 230V 50Hz | |
| Humidity | 55%RH | Tested by | Steven | |
| 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 | 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* |

Note *: During the test, the EUT changes to stand-by mode, but it can 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 | Nov. 25, 2015 | 1 Year |
| 2. | L.I.S.N | Rohde & Schwarz | ENV 216 | 101317 | Nov. 08, 2015 | 1 Year |
| 3. | L.I.S.N | Schwarzbeck | NNLK8129 | 8129-212 | Nov. 08, 2015 | 1 Year |
| 4. | RF Switching Unit | Compliance Direction Systems Inc. | RSU-M2 | 38311 | Nov. 08, 2015 | 1 Year |
| 5. | Pulse Limiter | MTS-systemtechnik | MTS-IMP-136 | 26115-010-0007 | Nov. 08, 2015 | 1 Year |

FOR RADIATED EMISSION MEASUREMENT

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|------|-----------------|-----------------|------------|------------|---------------|---------------|
| 1. | Test Receiver | Rohde & Schwarz | ESCI7 | 100837 | Nov. 24, 2015 | 1 Year |
| 2. | Antenna | Schwarzbeck | VULB9162 | 9162-010 | Nov. 27, 2015 | 1 Year |
| 3. | Cable | Huber+Suhner | CBL3-NN-9M | 21490001 | Nov. 08, 2015 | 1 Year |
| 4. | Cable | Huber+Suhner | CIL02 | N/A | Nov. 08, 2015 | 1 Year |
| 5. | Power Amplifier | HP | HP 8447D | 1145A00203 | Nov. 07, 2015 | 1 Year |
| 6. | Horn Antenna | COM-Power | AH-118 | 071078 | Nov. 05, 2015 | 1 Year |
| 7. | Pre-Amplifier | COM-Power | PAM-118 | 443007 | Nov. 05, 2015 | 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 | Nov. 04, 2015 | 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 | Nov. 09, 2015 | 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, 2015 | 1 Year |
| 2. | Antenna Log-Periodic | CORAD | ATR80M6G | 0337307 | Aug 31, 2015 | 1 Year |
| 3. | Switch Controller | CORAD | SC1000 | 0337343 | Aug 31, 2015 | 1 Year |
| 4. | RF Power Meter | ESE | 4242 | 13984 | Aug 31, 2015 | 1 Year |
| 5 | Power Sensor | ESE | 51011EMC | 35716 | Aug 31, 2015 | 1 Year |
| 6 | E-Field probe | Narda | NBM-520 | 2403/01B | Nov. 03, 2015 | 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, 2015 | 1 Year |
| 11 | Dual Directional Coupler | TESEQ | C6187 | 95175 | Aug 31, 2015 | 1 Year |
| 12 | Dual Directional Coupler | TESEQ | CPH-274F | M251304-01 | Aug 31, 2015 | 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 | Nov. 21, 2015 | 1 Year |
| 2. | Coupling Clamp | EM TEST | HFK | 0311-94 | Nov. 21, 2015 | 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 | Nov. 21, 2015 | 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)

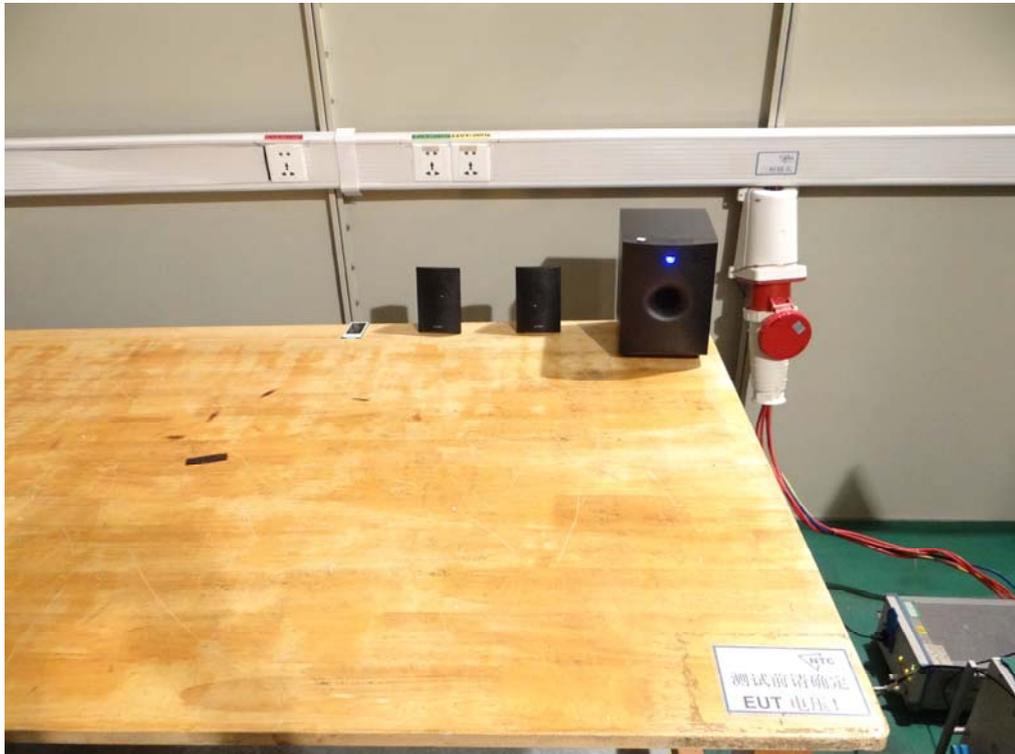
| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|------|---------------------------------|--------------|--------------|------------|--------------|---------------|
| 1. | Signal Generator | HP | 8648A | 3426A01263 | Oct.18, 2015 | 1 Year |
| 2. | CDN | Luthi | 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

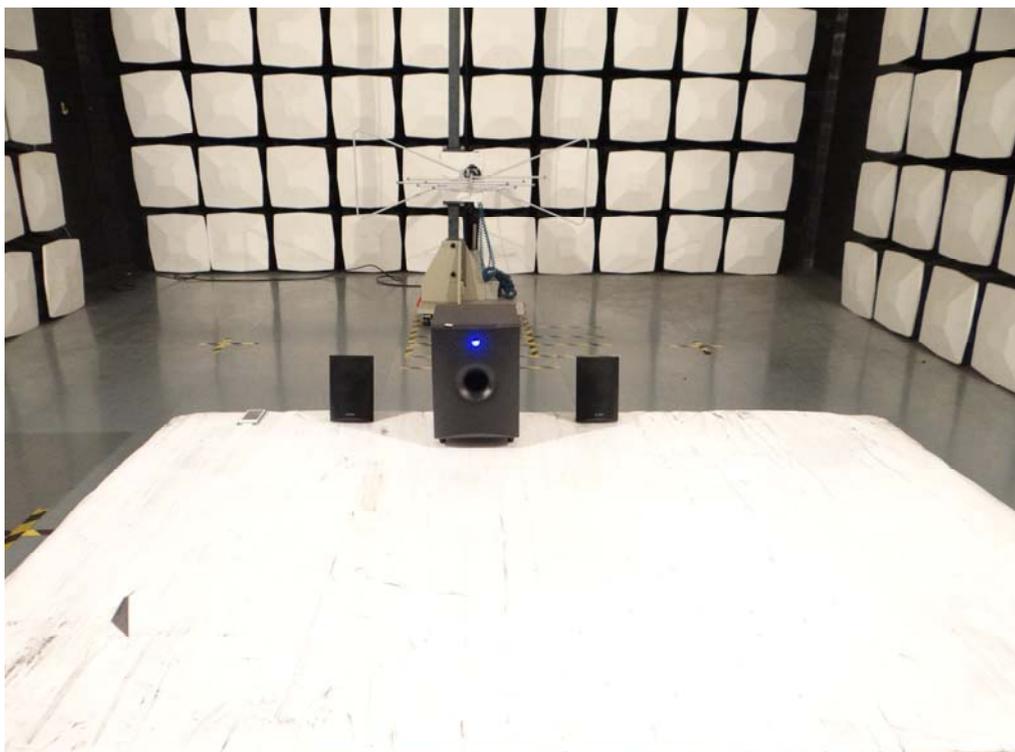
| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|------|----------------|--------------|-------------|-------------|---------------|---------------|
| 1. | Dips Tester | EM TEST | UCS500N | V1104108683 | Nov. 21, 2015 | 1 Year |
| 2. | Test Soft | EM TEST | lec.control | N/A | N/A | N/A |
| 3. | Dips Modulator | EM TEST | V4780S2 | 0111-11 | Nov. 21, 2015 | 1 Year |

APPENDIX 1 PHOTOGRPHS OF TEST SETUP

LINE CONDUCTED EMISSION TEST



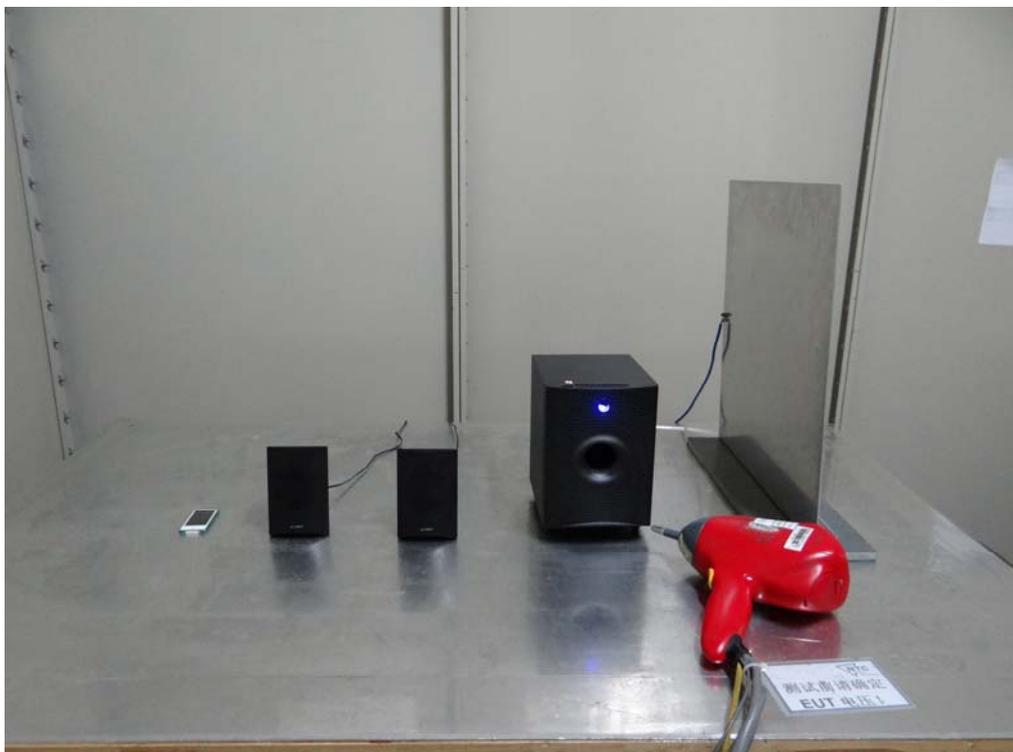
RADIATED EMISSION TEST



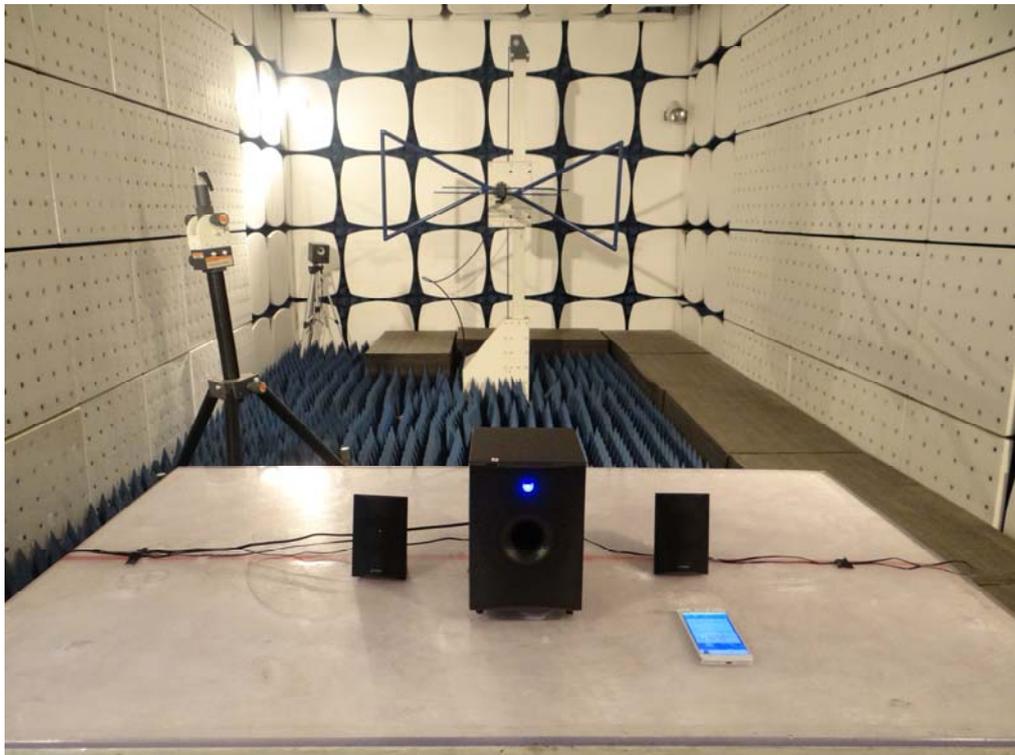
POWER HARMONIC & VOLTAGE FLUCTUATION / FLICKER TEST



ELECTROSTATIC DISCHARGE TEST



RADIATED ELECTROMAGNETIC FIELD TEST



ELECTRICAL FAST TRANSIENTS/BURST/ SURGE/ VOLTAGE DIPS TEST



RADIO FREQUENCY COMMON MODE TEST

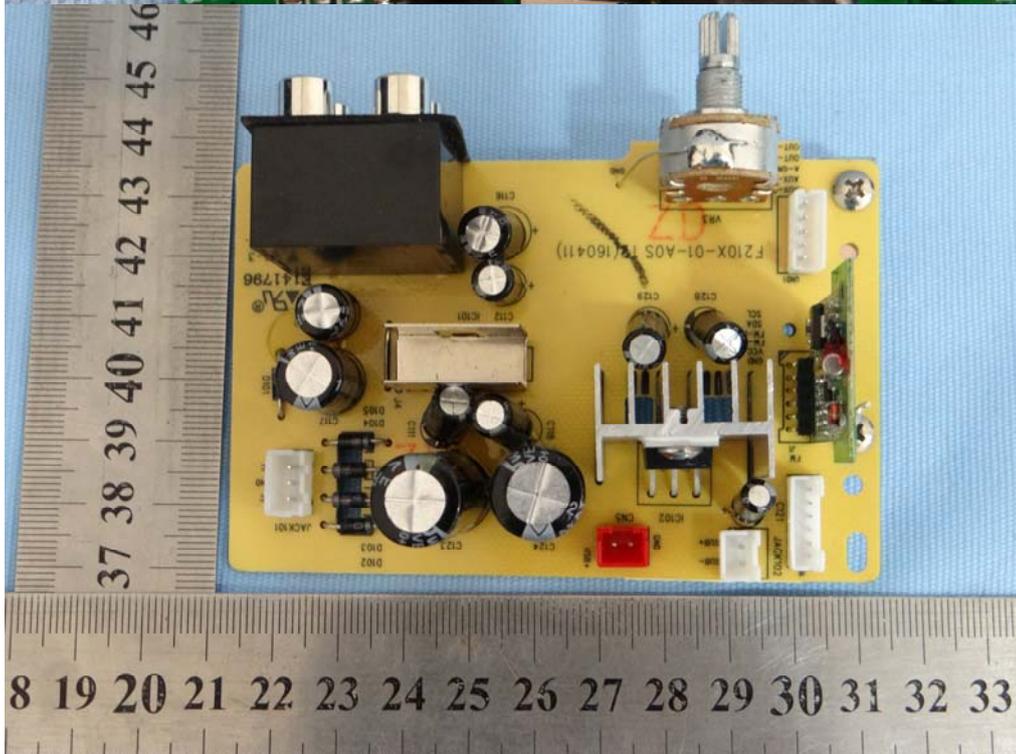
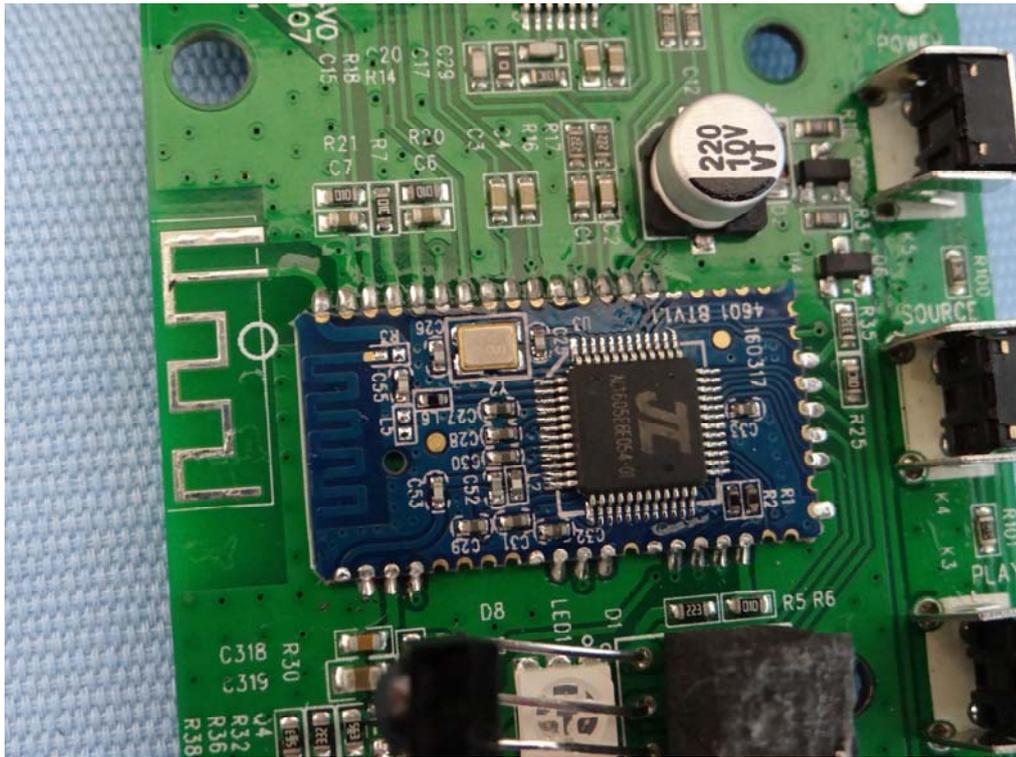


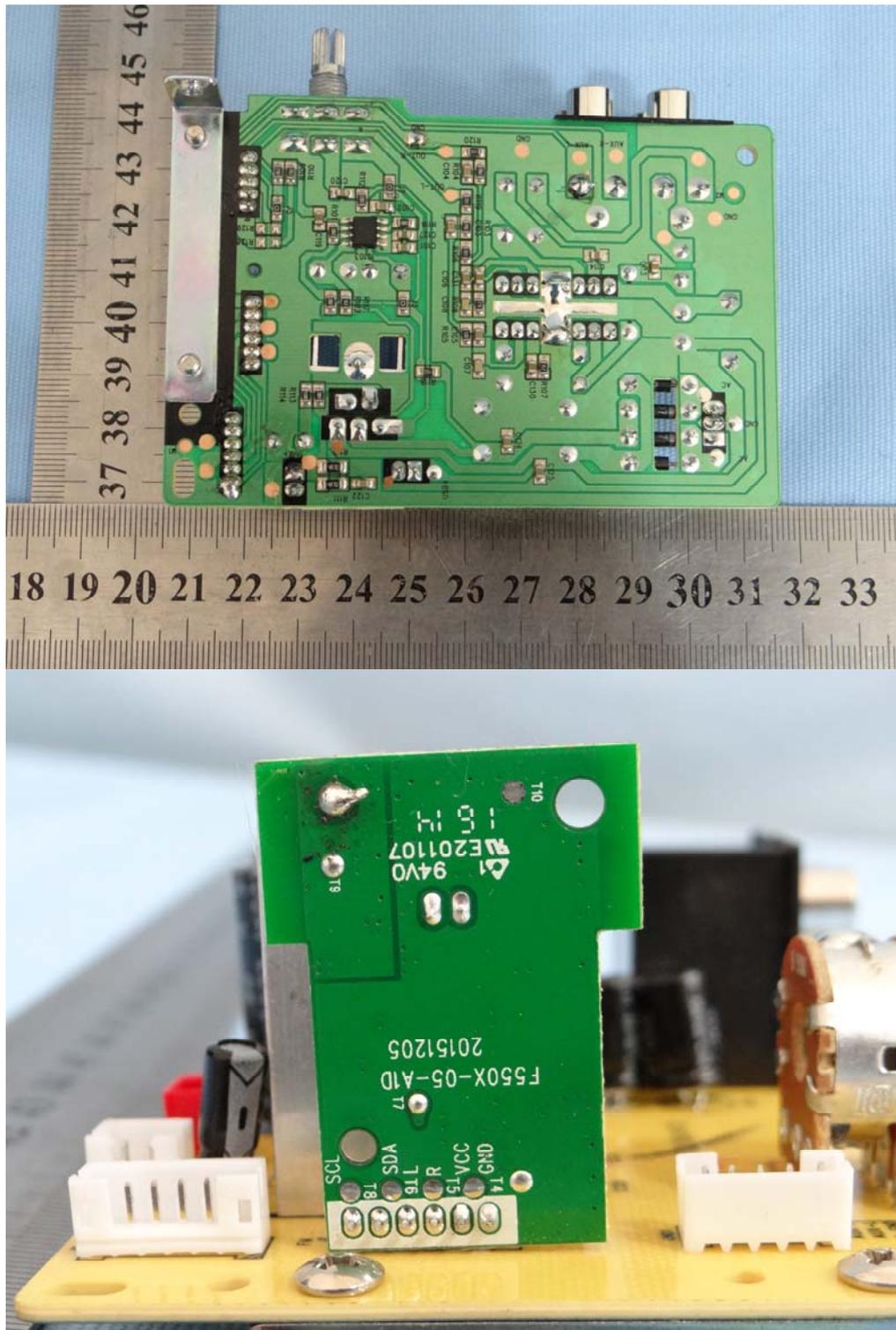
General Appearance of the EUT

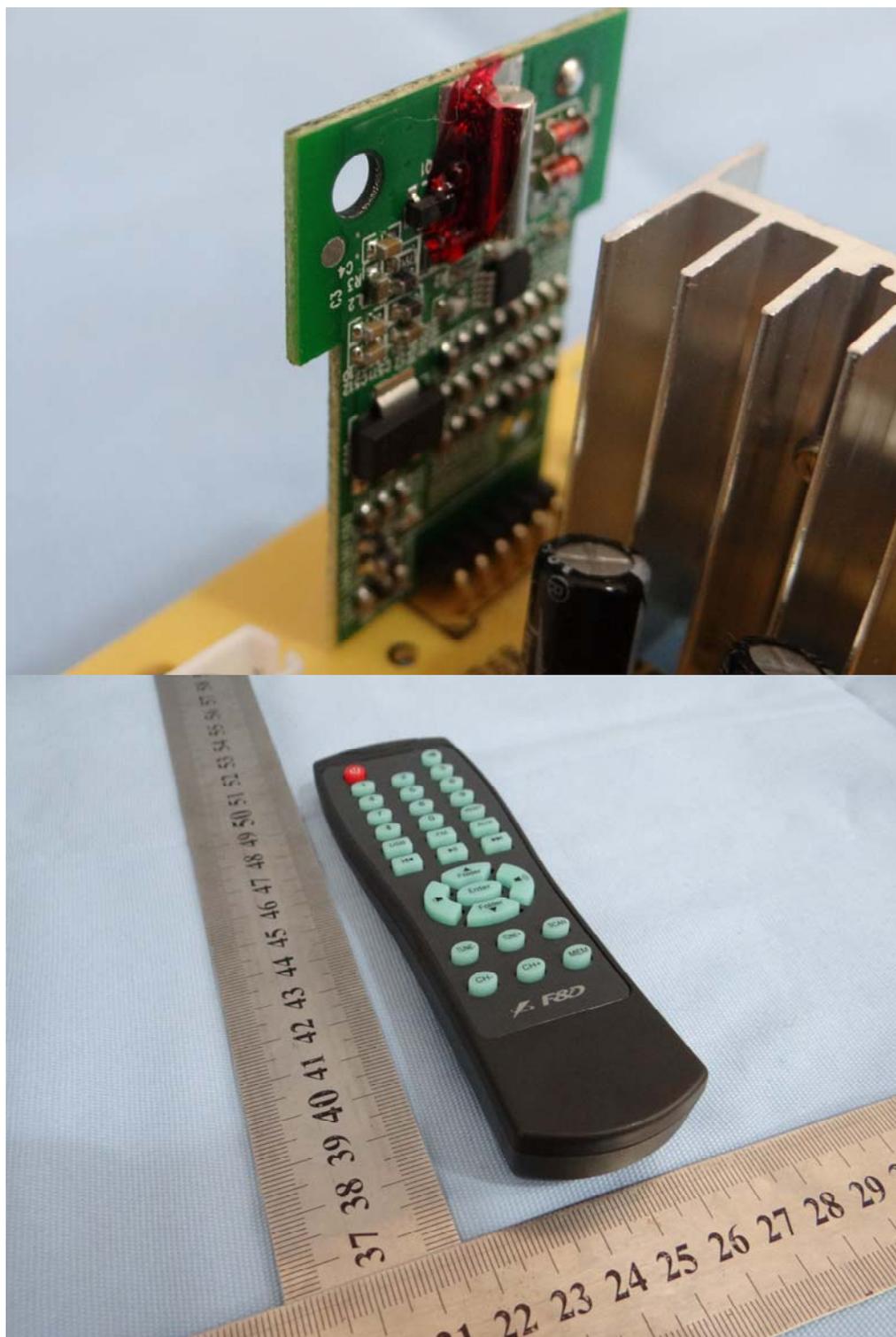












---End---