

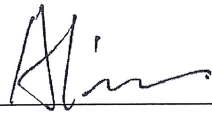
EMC TEST REPORT

The device described below is tested by Dongguan Nore Testing Center Co., Ltd. to determine the maximum emission levels emanating from the device, the severe levels which the device can endure and E.U.T.'s performance criterion. The test results, data evaluation, test procedures, and equipment of configurations shown in this report were made in accordance with the RED directive 2014/53/EU.

Applicant : SHENZHEN FENDA TECHNOLOGY CO., LTD.
Address : Fenda Hi-Tech Park, Zhoushi Road, Shiyan Town, Baoan District, Shenzhen City, Guangdong, China
Manufacturer /Factory : SHENZHEN FENDA TECHNOLOGY CO., LTD.
Address : Fenda Hi-Tech Park, Zhoushi Road, Shiyan Town, Baoan District, Shenzhen City, Guangdong, China
E.U.T. : 2.0 Multimedia Speaker
Brand Name : F&D
Model No. : R60BT, R50BT, R60BT II, R60BT V2, R70, T-60X II, T-60 plus (For model difference refer to section 1)
Measurement Standard : ETSI EN 301 489-1 v 2.2.3: 2019
Draft ETSI EN 301 489-17 v 3.2.2: 2019
Date of Receiver : May 14, 2020
Date of Test : May 14, 2020 to June 10, 2020
Date of Report : July 07, 2020

This Test Report is Issued Under the Authority of :

Prepared by



Alina Guo / Engineer

Approved & Authorized Signer



Iori Fan / Authorized Signatory

This test report is for the customer shown above and their specific product only. This report applies to above tested sample only and shall not be reproduced in part without written approval of Dongguan Nore Testing Center Co., Ltd.

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1. GENERAL INFORMATION

PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST

| | | |
|---------------------------------|---|---|
| E.U.T. | : | 2.0 Multimedia Speaker |
| Main Model Name | : | R60BT |
| Additional Model Name | : | R50BT, R60BT II, R60BT V2, R70, T-60X II, T-60 plus |
| Brand Name | : | F&D |
| Rating | : | AC 100-240V 50/60Hz |
| Adapter | : | N/A |
| Test Voltage | : | AC 230V 50Hz, AC 110V 60Hz (Only the worst case was recorded in the report) |
| Cable | : | AC Mains: 1.5m unshielded Speaker Line: 2.0m unshielded Audio Line 1 to 1: 1.60m unshielded |
| Hardware Version | : | V1.0 |
| Software Version | : | V1.0 |
| Operating Temperature Range | : | 0°C to 35°C (Declaration by manufacturer) |
| Description of Model Difference | : | These models have the same circuit schematic, construction and critical components. The difference in model number only due to trading purpose. |
| Note | : | According to the model difference, all tests were performed on model R60BT. |

Technical Specification:

| Item | : | Description |
|-------------------|---|-----------------------------------|
| BT Version | : | BT5.0 (BDR+EDR) |
| Frequency | : | 2402-2480MHz |
| Modulation | : | GFSK, $\pi/4$ -DQPSK, 8DPSK |
| Number of Channel | : | 79 |
| Channel space | : | 1MHz |
| Antenna Type | : | PCB antenna |
| Antenna Gain | : | 0.5dBi (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 2.2.3: 2019/ Draft ETSI EN 301 489-17 v 3.2.2 2019 | | | |
|---|--|---------------|--|
| EMISSION | | | |
| Standard | Test Type | Result | Remarks |
| EN 55032: 2015 | Mains Terminal Disturbance Voltage Test | PASS | Uncertainty: ±2.52dB |
| | Radiated Emission Test | PASS | Uncertainty: Below 1GHz ±4.60dB Above 1GHz ±5.02dB |
| EN IEC 61000-3-2: 2019 | 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 |
| IEC 61000-4-3: 2006+A1: 2007+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 V2.2.3, 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 13, 2018
The certificate is valid until August 13, 2024
The Laboratory has been assessed and proved to be in compliance with CNAS/CL01
The Certificate Registration Number is L5795.

Listed by A2LA, November 01, 2017
The certificate is valid until December 31, 2021
The Laboratory has been assessed and proved to be in compliance with ISO17025
The Certificate Registration Number is 4429.01

Listed by FCC, November 06, 2017
The Designation Number is CN1214
Test Firm Registration Number: 907417

Listed by Industry Canada, June 08, 2017
The Certificate Registration Number. Is 46405-9743A

Name of Firm : Dongguan Nore Testing Center Co., Ltd.
(Dongguan NTC Co., Ltd.)
Site Location : Building D, Gaosheng Science and Technology Park,
Hongtu Road, Nancheng District, Dongguan City,
Guangdong Province, China

6. SUPPORT EQUIPMENT

Mobile Phone 1 : Manufacturer: HUAWEI
M/N: PCT-AL10
S/N: 5EN0219301002260
Mobile Phone 2 : Manufacturer: HUAWEI
M/N: JKM-AL00b
S/N: 2PFNW19530010902

7. DEVIATIONS AND ABNORMALITIES FROM STANDARD CONDITIONS

No additions, deviations and exclusions from the standard.

8. PERFORMANCE CRITERIA

| Draft ETSI EN301489-17 v 3.2.2 2019 | | |
|---|---|---|
| Criteria | During Test | After Test |
| A | Shall operate as intended. (see note 1). Shall be no loss of function. Shall be no unintentional transmissions. | Shall operate as intended. Shall be no degradation of performance (see note 3). 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 (see note 2). Shall be no unintentional transmissions. | Functions shall be self-recoverable. Shall operate as intended after recovering. Shall be no degradation of performance (see note 3). 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 (see note 3). |
| <p>NOTE 1: Operate as intended during the test allows a level of degradation 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: 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 3: 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.

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

9.1 RADIATED EMISSION LIMIT

According standard ETSI EN 301 489-1 v 2.2.3 Clause 8.2.3, Table 3 and EN 55032: 2015 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.

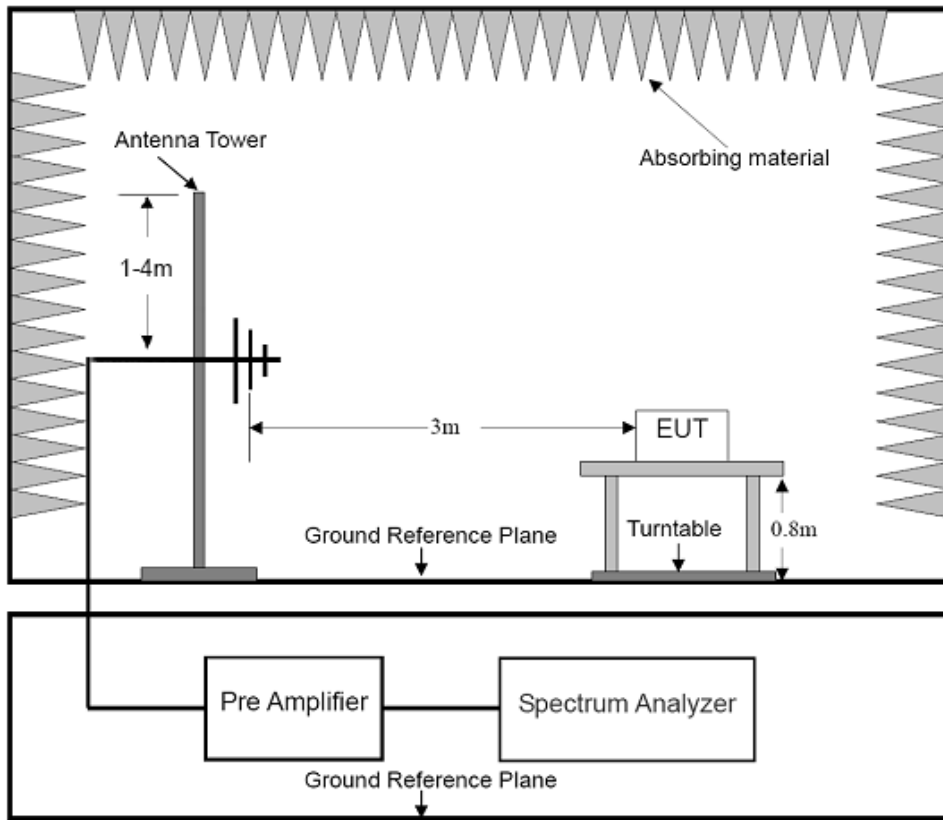
Limits for radiated disturbance Above 1GHz

| 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 |

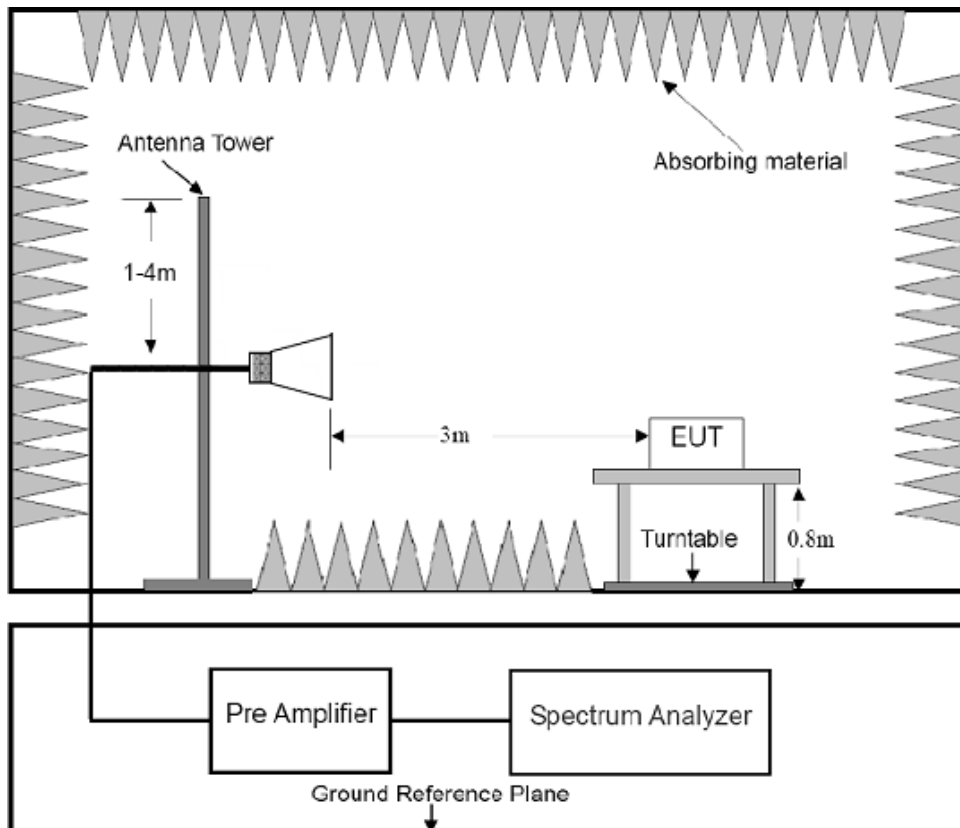
Note: The lower limit applies at the transition frequency.

TEST CONFIGURATION

Below 1GHz



Above 1GHz



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 V2.2.3 Clause 8.2.3 and EN 55032: 2015 Clause 6 for the measurement methods.

TEST RESULT

PASS

Please refer to following data tables.

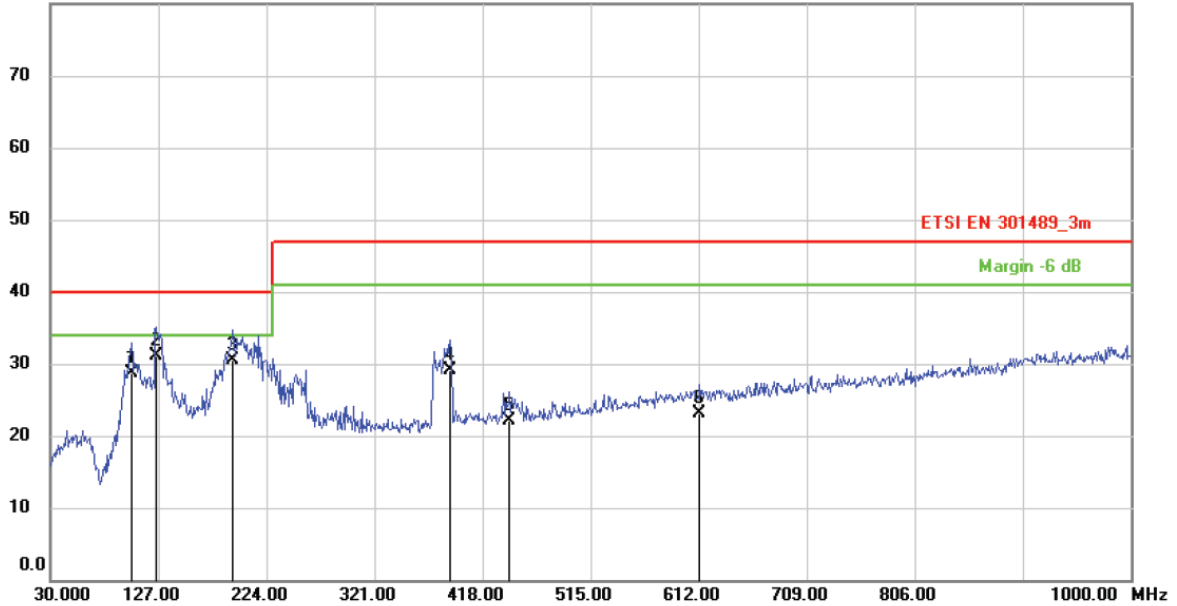


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Radiated Emission Measurement

File :R60BT Data :#5 Date: 2020/6/5 Time: 14:50:37

80.0 dBuV/m



Site Polarization: *Horizontal* Temperature: 26
 Limit: ETSI EN 301489_3m Power: AC230V/50Hz Humidity: 47 %
 EUT: 2.0 Multimedia Speaker Distance: 3m
 M/N: R60BT
 Mode: BT Link
 Note:

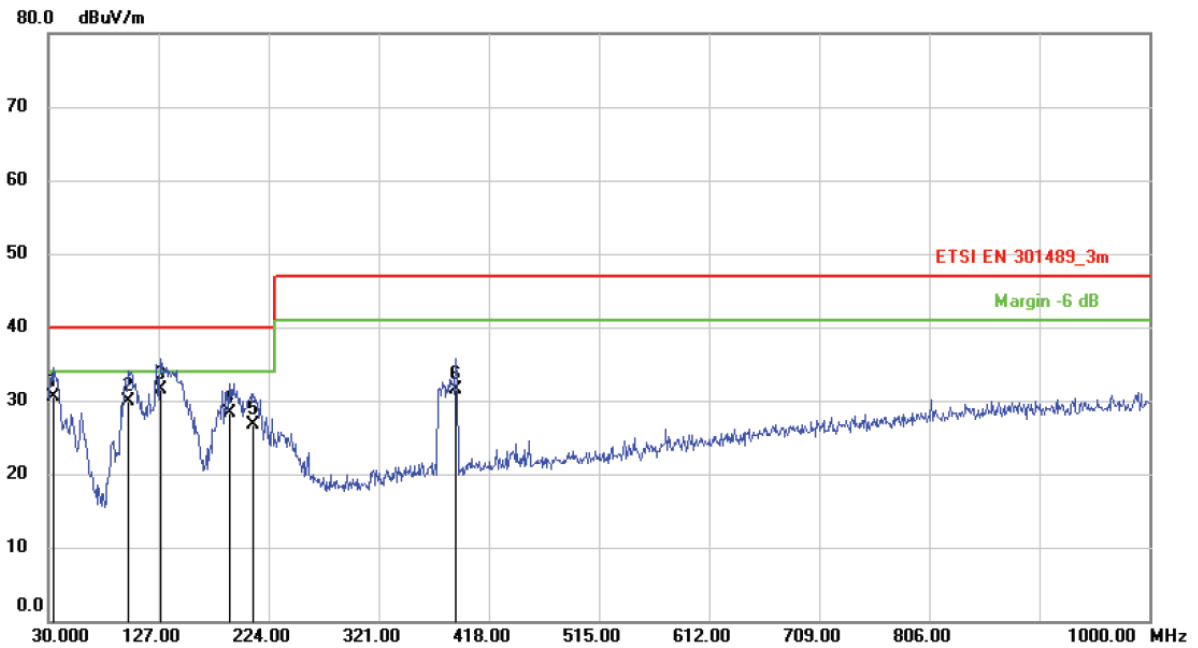
| No. | Mk. | Freq. | Reading Level | Correct Factor | Measurement | Limit | Over | Antenna Height | Table Degree | |
|-----|-----|----------|---------------|----------------|-------------|--------|--------|----------------|--------------|---------|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | cm | degree | Comment |
| 1 | | 102.7500 | 36.32 | -7.52 | 28.80 | 40.00 | -11.20 | | | QP |
| 2 | * | 125.0600 | 41.09 | -9.99 | 31.10 | 40.00 | -8.90 | | | QP |
| 3 | | 193.9299 | 38.58 | -7.98 | 30.60 | 40.00 | -9.40 | | | QP |
| 4 | | 388.9000 | 32.76 | -3.56 | 29.20 | 47.00 | -17.80 | | | QP |
| 5 | | 442.2500 | 24.78 | -2.68 | 22.10 | 47.00 | -24.90 | | | QP |
| 6 | | 612.9699 | 22.26 | 0.84 | 23.10 | 47.00 | -23.90 | | | QP |



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Radiated Emission Measurement

File :R60BT Data :#6 Date: 2020/6/5 Time: 14:57:49



Site: Polarization: **Vertical** Temperature: 26
 Limit: ETSI EN 301489_3m Power: AC230V/50Hz Humidity: 47 %
 EUT: 2.0 Multimedia Speaker Distance: 3m
 M/N: R60BT
 Mode: BT Link
 Note:

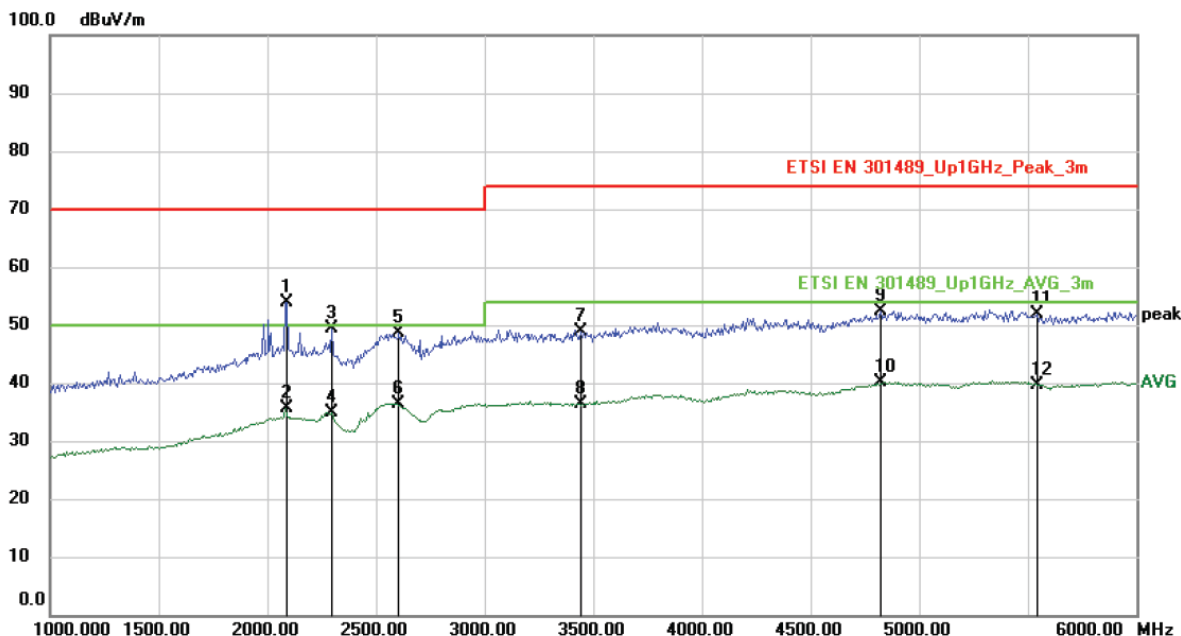
| No. | Mk. | Freq. | Reading Level | Correct Factor | Measurement | Limit | Over | Antenna Height | Table Degree | |
|-----|-----|----------|---------------|----------------|-------------|--------|--------|----------------|--------------|---------|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | cm | degree | Comment |
| 1 | | 33.8800 | 39.90 | -9.40 | 30.50 | 40.00 | -9.50 | QP | | |
| 2 | | 100.8100 | 38.54 | -8.54 | 30.00 | 40.00 | -10.00 | QP | | |
| 3 | * | 128.9400 | 42.87 | -11.27 | 31.60 | 40.00 | -8.40 | QP | | |
| 4 | | 189.0800 | 37.42 | -9.12 | 28.30 | 40.00 | -11.70 | QP | | |
| 5 | | 210.4200 | 35.39 | -8.59 | 26.80 | 40.00 | -13.20 | QP | | |
| 6 | | 388.9000 | 36.16 | -4.56 | 31.60 | 47.00 | -15.40 | QP | | |



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Radiated Emission Measurement

File :R60BT Data :#12 Date: 2020/6/5 Time: 15:39:45



Site Polarization: **Horizontal** Temperature: 26
Limit: ETSI EN 301489_Up1GHz_Peak_3m Power: AC230V/50Hz Humidity: 47 %
EUT: 2.0 Multimedia Speaker Distance: 3m
M/N: R60BT
Mode: BT Link
Note:

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measurement | Limit | Over | Antenna Height | Table Degree | |
|-----|-----|----------|---------------|----------------|-------------|--------|--------|----------------|--------------|---------|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | cm | degree | Comment |
| 1 | | 2087.500 | 54.65 | -0.65 | 54.00 | 70.00 | -16.00 | | | peak |
| 2 | | 2087.500 | 36.32 | -0.65 | 35.67 | 50.00 | -14.33 | | | AVG |
| 3 | | 2293.750 | 49.52 | -0.17 | 49.35 | 70.00 | -20.65 | | | peak |
| 4 | | 2293.750 | 35.03 | -0.17 | 34.86 | 50.00 | -15.14 | | | AVG |
| 5 | | 2606.250 | 47.89 | 0.77 | 48.66 | 70.00 | -21.34 | | | peak |
| 6 | * | 2606.250 | 35.58 | 0.77 | 36.35 | 50.00 | -13.65 | | | AVG |
| 7 | | 3443.750 | 46.25 | 2.60 | 48.85 | 74.00 | -25.15 | | | peak |
| 8 | | 3443.750 | 33.83 | 2.60 | 36.43 | 54.00 | -17.57 | | | AVG |
| 9 | | 4825.000 | 45.95 | 6.38 | 52.33 | 74.00 | -21.67 | | | peak |
| 10 | | 4825.000 | 33.75 | 6.38 | 40.13 | 54.00 | -13.87 | | | AVG |
| 11 | | 5543.750 | 45.03 | 6.82 | 51.85 | 74.00 | -22.15 | | | peak |
| 12 | | 5543.750 | 32.93 | 6.82 | 39.75 | 54.00 | -14.25 | | | AVG |

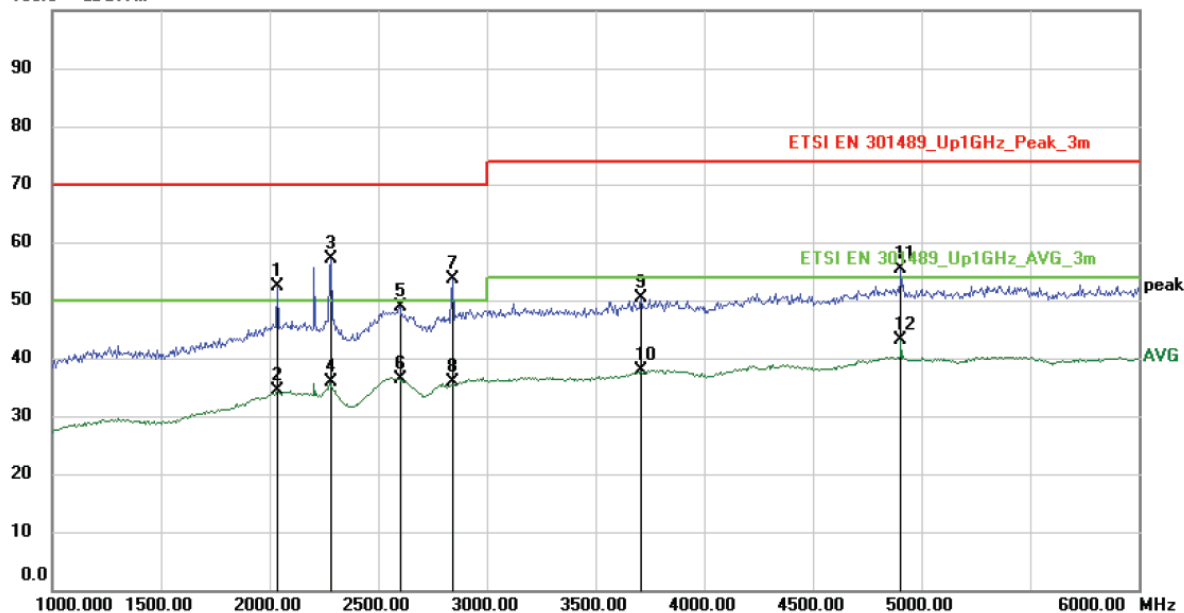


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Radiated Emission Measurement

File :R60BT Data :#11 Date: 2020/6/5 Time: 15:32:46

100.0 dBuV/m



Site Polarization: **Vertical** Temperature: 26
 Limit: ETSI EN 301489_Up1GHz_Peak_3m Power: AC230V/50Hz Humidity: 47 %
 EUT: 2.0 Multimedia Speaker Distance: 3m
 M/N: R60BT
 Mode: BT Link
 Note:

| No. Mk. | Freq. MHz | Reading Level dBuV | Correct Factor dB | Measure- ment dBuV/m | Limit dBuV/m | Over dB | Detector | Antenna Height cm | Table Degree degree | Comment |
|---------|--------------|--------------------------|-------------------------|----------------------------|-----------------|------------|----------|-------------------------|---------------------------|---------|
| 1 | 2037.500 | 53.04 | -0.77 | 52.27 | 70.00 | -17.73 | peak | | | |
| 2 | 2037.500 | 35.10 | -0.77 | 34.33 | 50.00 | -15.67 | AVG | | | |
| 3 | 2281.250 | 57.35 | -0.20 | 57.15 | 70.00 | -12.85 | peak | | | |
| 4 | 2281.250 | 36.17 | -0.20 | 35.97 | 50.00 | -14.03 | AVG | | | |
| 5 | 2600.000 | 48.08 | 0.74 | 48.82 | 70.00 | -21.18 | peak | | | |
| 6 | 2600.000 | 35.64 | 0.74 | 36.38 | 50.00 | -13.62 | AVG | | | |
| 7 | 2843.750 | 52.09 | 1.48 | 53.57 | 70.00 | -16.43 | peak | | | |
| 8 | 2843.750 | 34.32 | 1.48 | 35.80 | 50.00 | -14.20 | AVG | | | |
| 9 | 3712.500 | 47.20 | 3.17 | 50.37 | 74.00 | -23.63 | peak | | | |
| 10 | 3712.500 | 34.65 | 3.17 | 37.82 | 54.00 | -16.18 | AVG | | | |
| 11 | 4906.250 | 48.68 | 6.70 | 55.38 | 74.00 | -18.62 | peak | | | |
| 12 * | 4906.250 | 36.52 | 6.70 | 43.22 | 54.00 | -10.78 | AVG | | | |

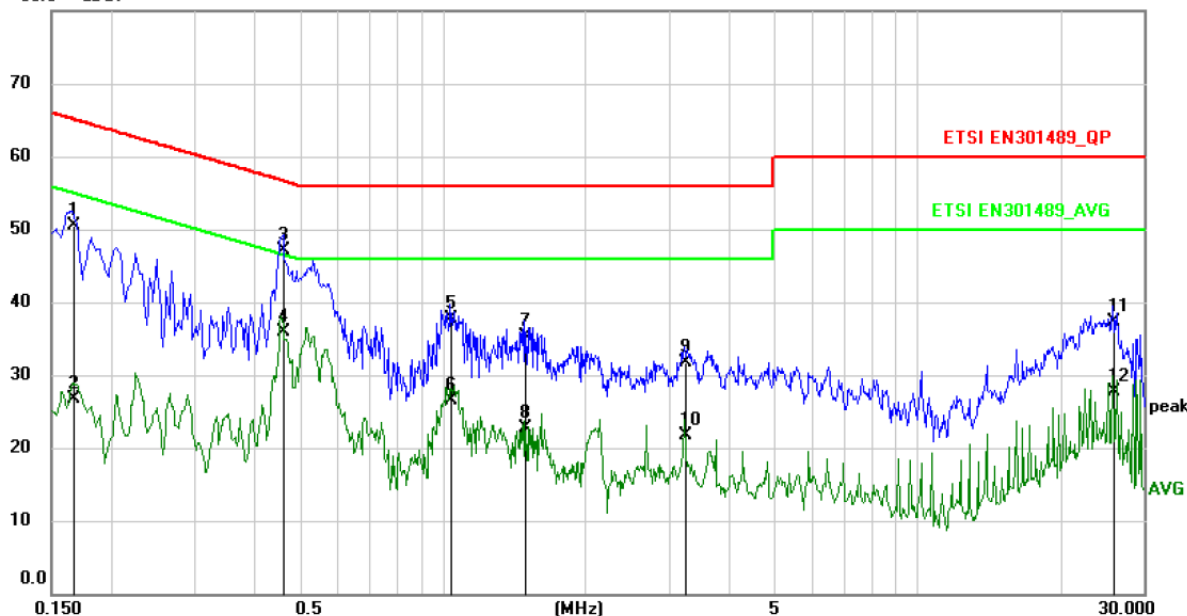


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Conducted Emission Measurement

File :R60BT Data :#9 Date: 2020/5/21 Time: 11:24:12

80.0 dBuV



Site Phase: **L1** Temperature: 26
Limit: ETSI EN301489_QP Power: AC 230V/50Hz Humidity: 50 %
EUT: FENDA
M/N: R60BT
Mode: BT Link
Note:

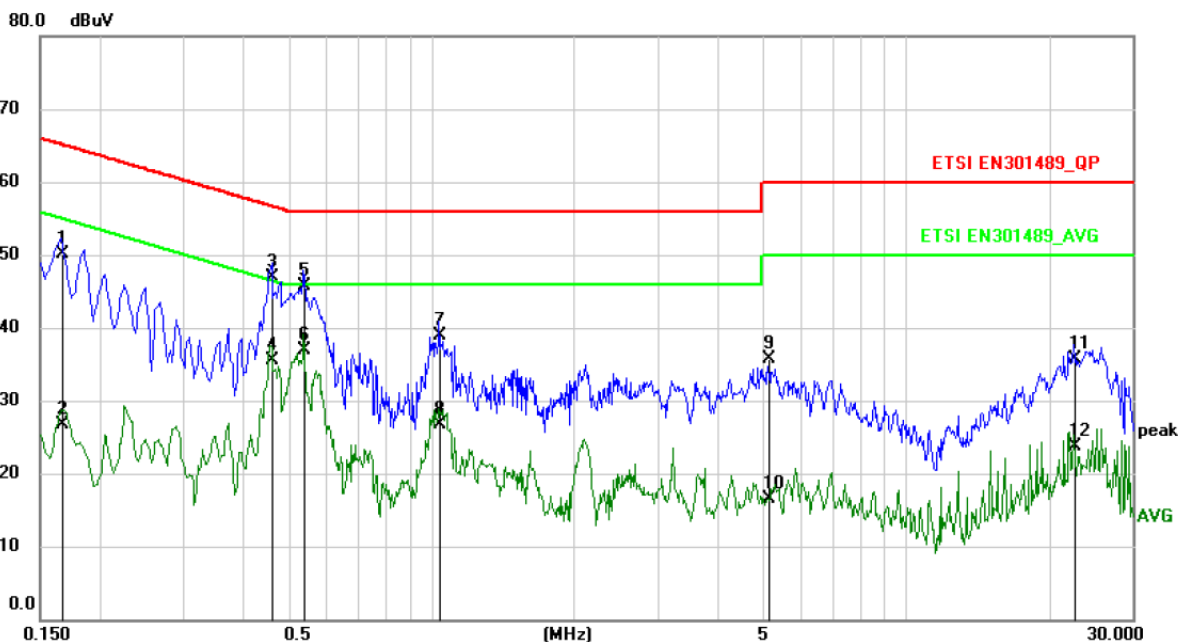
| No. | Mk. | Freq. | Reading Level | Correct Factor | Measurement | Limit | Over | Detector | Comment |
|-----|-----|---------|---------------|----------------|-------------|-------|--------|----------|---------|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | | |
| 1 | | 0.1660 | 39.90 | 10.60 | 50.50 | 65.16 | -14.66 | QP | |
| 2 | | 0.1660 | 16.20 | 10.60 | 26.80 | 55.16 | -28.36 | AVG | |
| 3 | * | 0.4620 | 36.58 | 10.62 | 47.20 | 56.66 | -9.46 | QP | |
| 4 | | 0.4620 | 25.38 | 10.62 | 36.00 | 46.66 | -10.66 | AVG | |
| 5 | | 1.0380 | 27.00 | 10.70 | 37.70 | 56.00 | -18.30 | QP | |
| 6 | | 1.0380 | 15.80 | 10.70 | 26.50 | 46.00 | -19.50 | AVG | |
| 7 | | 1.4940 | 24.70 | 10.70 | 35.40 | 56.00 | -20.60 | QP | |
| 8 | | 1.4940 | 12.00 | 10.70 | 22.70 | 46.00 | -23.30 | AVG | |
| 9 | | 3.2300 | 21.09 | 10.71 | 31.80 | 56.00 | -24.20 | QP | |
| 10 | | 3.2300 | 11.09 | 10.71 | 21.80 | 46.00 | -24.20 | AVG | |
| 11 | | 25.8300 | 26.61 | 10.79 | 37.40 | 60.00 | -22.60 | QP | |
| 12 | | 25.8300 | 17.01 | 10.79 | 27.80 | 50.00 | -22.20 | AVG | |



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Conducted Emission Measurement

File :R60BT Data :#8 Date: 2020/5/21 Time: 11:17:03



Site: Phase: **N** Temperature: 26
 Limit: ETSI EN301489_QP Power: AC 230V/50Hz Humidity: 50 %
 EUT: FENDA
 M/N: R60BT
 Mode: BT Link
 Note:

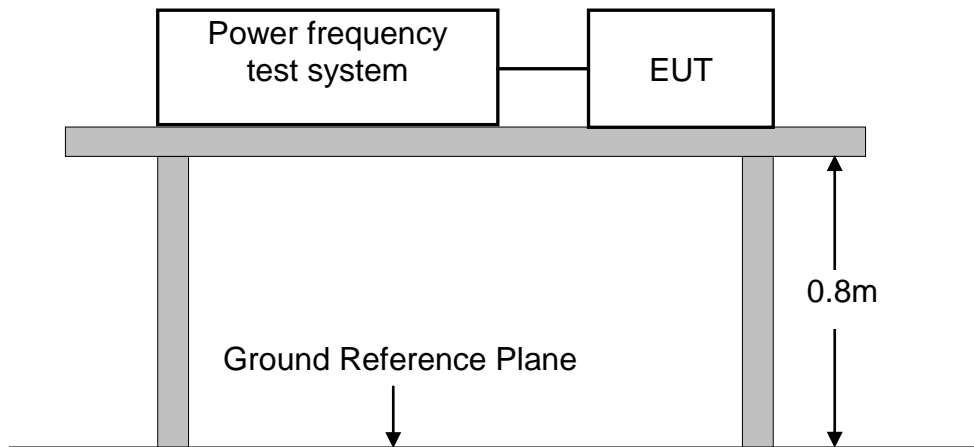
| No. Mk. | Freq. MHz | Reading Level dBuV | Correct Factor dB | Measurement dBuV | Limit dBuV | Over dB | Detector | Comment |
|---------|-----------|--------------------|-------------------|------------------|------------|---------|----------|---------|
| 1 | 0.1660 | 39.60 | 10.60 | 50.20 | 65.16 | -14.96 | QP | |
| 2 | 0.1660 | 16.10 | 10.60 | 26.70 | 55.16 | -28.46 | AVG | |
| 3 | 0.4620 | 36.28 | 10.62 | 46.90 | 56.66 | -9.76 | QP | |
| 4 | 0.4620 | 24.88 | 10.62 | 35.50 | 46.66 | -11.16 | AVG | |
| 5 | 0.5380 | 35.17 | 10.63 | 45.80 | 56.00 | -10.20 | QP | |
| 6 * | 0.5380 | 26.37 | 10.63 | 37.00 | 46.00 | -9.00 | AVG | |
| 7 | 1.0380 | 28.20 | 10.70 | 38.90 | 56.00 | -17.10 | QP | |
| 8 | 1.0380 | 16.10 | 10.70 | 26.80 | 46.00 | -19.20 | AVG | |
| 9 | 5.1339 | 24.99 | 10.71 | 35.70 | 60.00 | -24.30 | QP | |
| 10 | 5.1339 | 5.89 | 10.71 | 16.60 | 50.00 | -33.40 | AVG | |
| 11 | 22.5980 | 24.93 | 10.77 | 35.70 | 60.00 | -24.30 | QP | |
| 12 | 22.5980 | 12.93 | 10.77 | 23.70 | 50.00 | -26.30 | AVG | |

9.3 AC MAINS HARMONIC CURRENT EMISSION

LIMIT

Please refer to EN IEC 61000-3-2

TEST CONFIGURATION



| Ambient Condition of the Test Site | | | |
|------------------------------------|----------|--------------|------------------------------|
| Temperature | 22°C | Test Voltage | AC 230V/50Hz AC 110V/60Hz |
| Humidity | 49%RH | Tested by | Elias |
| Pressure | 1022mbar | | |

TEST PROCEDURE

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

TEST RESULTS

Pass

Test Mode: BT Link

According to clause 7 of EN IEC 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.

9.4 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 AC 110V/60Hz |
| Humidity | 49%RH | Tested by | Elias |
| Pressure | 1022mbar | | |

TEST PROCEDURE

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

TEST RESULTS

Pass

Test Mode: BT Link

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

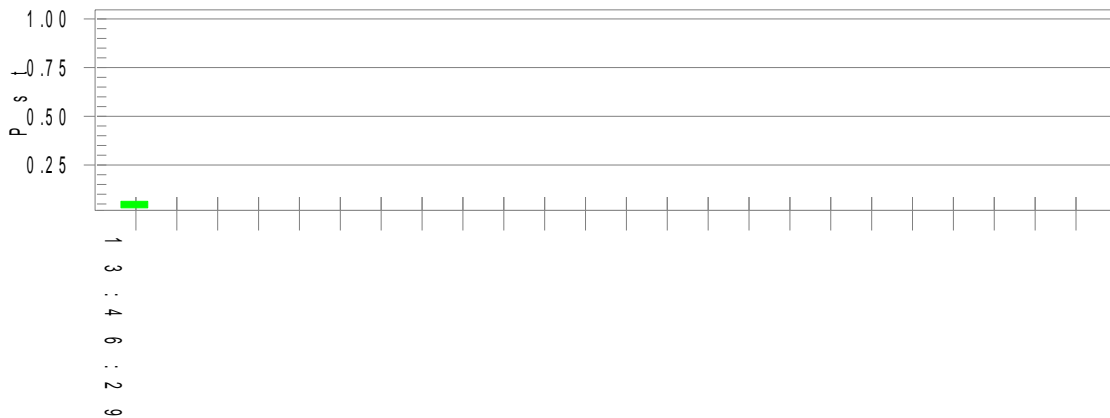
EUT: 2.0 Multimedia Speaker
 Test category: All parameters (European limits)
 Test date: 2020/5/19
 Test duration (min): 10
 Comment: BT Link
 Customer: FENDA
 M/N:R60BT
 Test Result: Pass

Tested by: Elias
 Test Margin: 100
 End time: 13:46:35
 Start time: 13:36:08
 Data file name: F-000305.cts_data

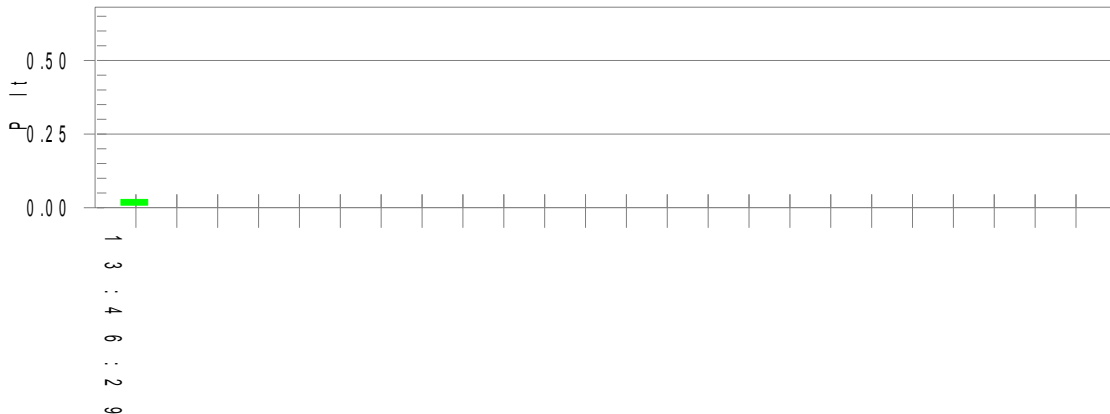
Status: Test Completed

Pst_t and limit line

European Limits



Plt and limit line

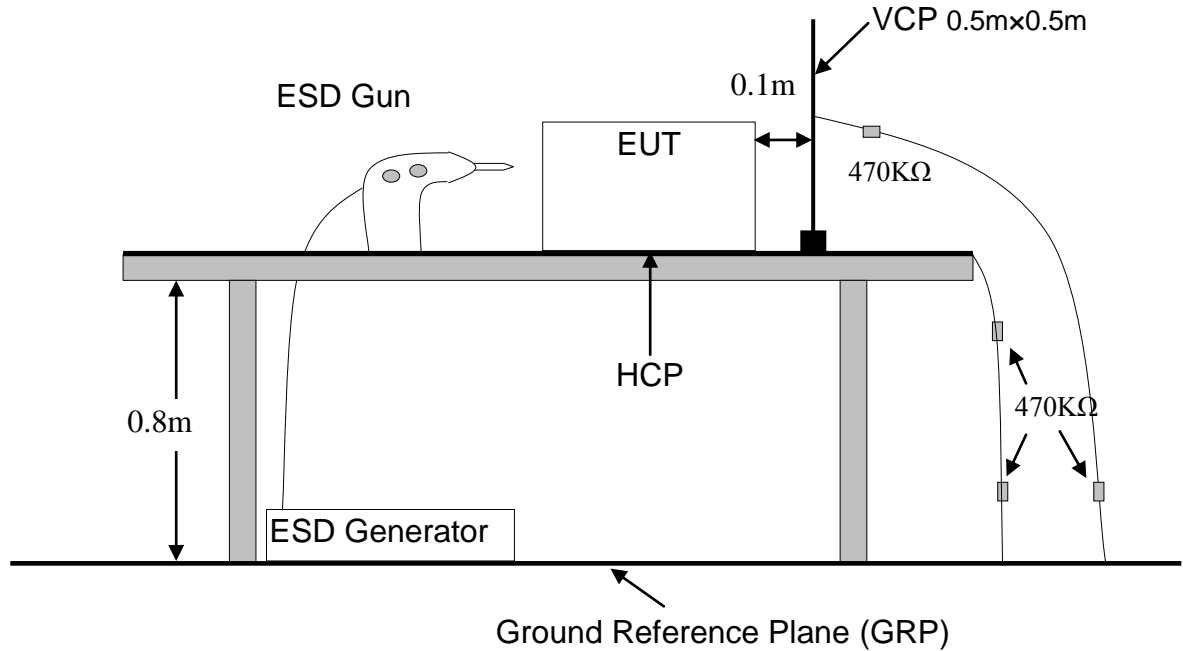


Parameter values recorded during the test:

| | | | |
|---------------------------------|--------|------------------|------------|
| Vrms at the end of test (Volt): | 230.40 | | |
| T-max (mS): | 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 |

9.5 ELECTROSTATIC DISCHARGE

TEST CONFIGURATION



TEST PROCEDURE:

Please refer to ETSI EN 301 489-1 V2.2.3 Clause 9.3.2 and EN 61000-4-2 for the measurement methods.

TEST RESULT

PASS

Please refer to following data table.

Electrostatic Discharge Test Results

| Ambient Condition: | Temp.: 25°C | R.H.: 50 % | Air Pressure: 101 kPa |
|---|---|-----------------------------------|-----------------------|
| Power Supply: | AC 230V/50Hz, AC 110V/60Hz | | |
| Test Mode: | BT Link | | |
| Ground Bond Resistance: 0.2 Ω | | | |
| Required Performance Criterion: CR & CT & B | | | |
| Test Point | Kind A-Air Discharge C-Contact Discharge | Result (Performance Criterion) | |
| (USB, AUX IN, Optical)Ports | A | A | |
| DVD Port | A | B | |
| Button, Screen | A | A | |
| Screw, USB Port | C | A | |
| Surface of EUT | A | A | |
| Indirect Discharge (HCP) | C | A | |
| Indirect Discharge (VCP) | C | A | |
| <p>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.</p> | | | |
| Test Engineer : Elias | | | |

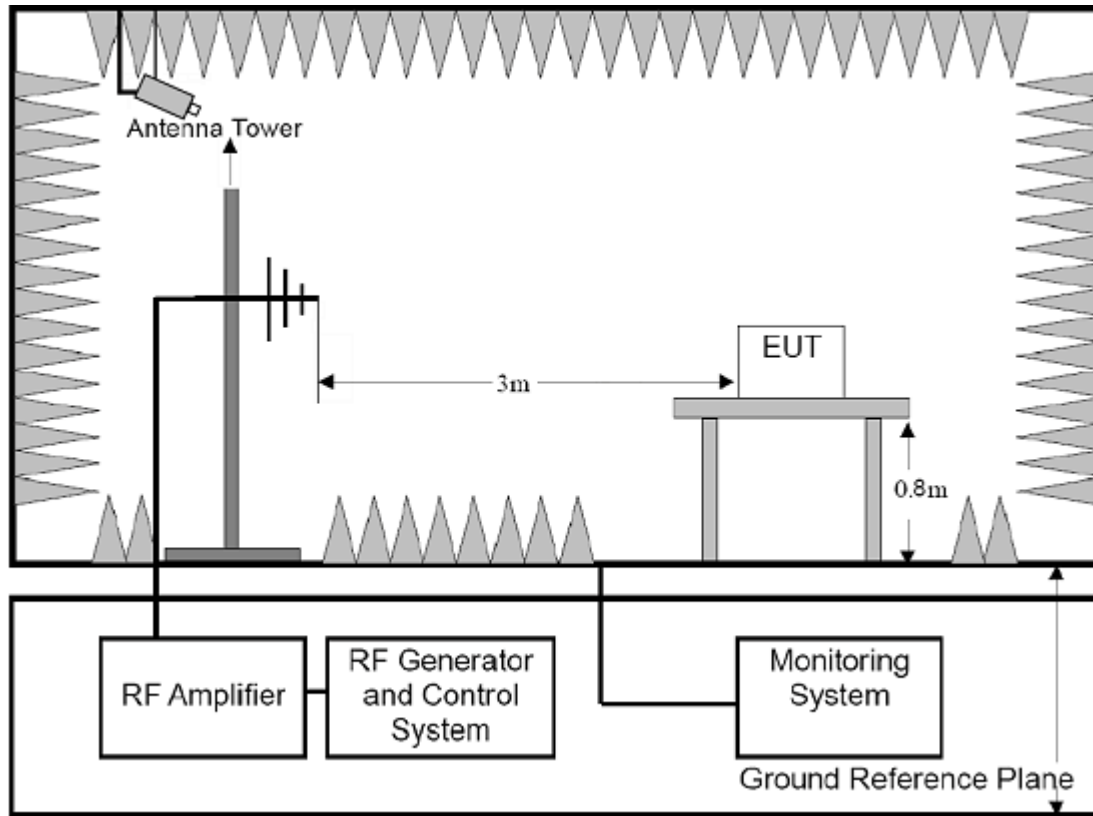
ESD TEST POINT

(★ Air Discharge) ; ☆ Direct Contact Discharge)



9.6 RF ELECTROMAGNETIC FIELD

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 V2.2.3 Clause 9.2.2 and EN 61000-4-3 for the measurement methods.

TEST RESULT

PASS

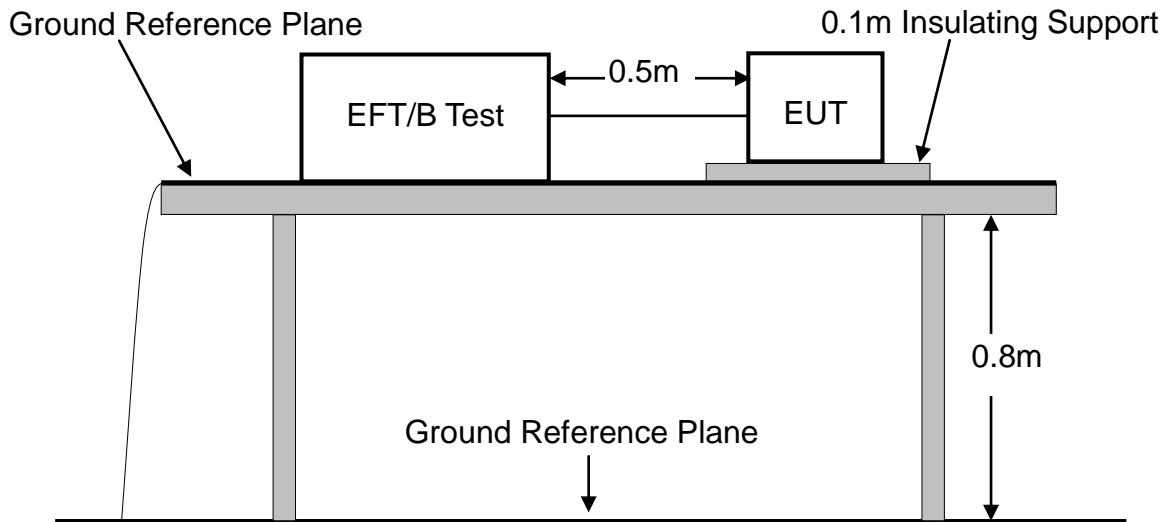
Please refer to following data table.

| Test Condition | | | |
|-----------------------|--------------|-------------------------|------------------------------|
| Temperature | 25°C | Test Voltage | AC 230V/50Hz AC 110V/60Hz |
| Humidity | 50%RH | Tested by | Rick |
| Pressure | 1010mbar | Performance Criterion | CR & CT & A |
| Frequency Range | | 80-6000 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 6000 | Front | | Pass |
| 80 to 6000 | Left | | Pass |
| 80 to 6000 | Rear | | Pass |
| 80 to 6000 | Right | | Pass |

Note: 1. The exclusion band for 2,40 GHZ equipment falling within the scope of the present document extends from 2 280 MHz to 2 603,50 MHz.
 2. During the test, the EUT did not show any abnormality.

9.7 AC MAINS FAST TRANSIENTS COMMON MODE

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 V2.2.3 Clause 9.4.2 and EN 61000-4-4 for the measurement methods.

TEST RESULT

PASS

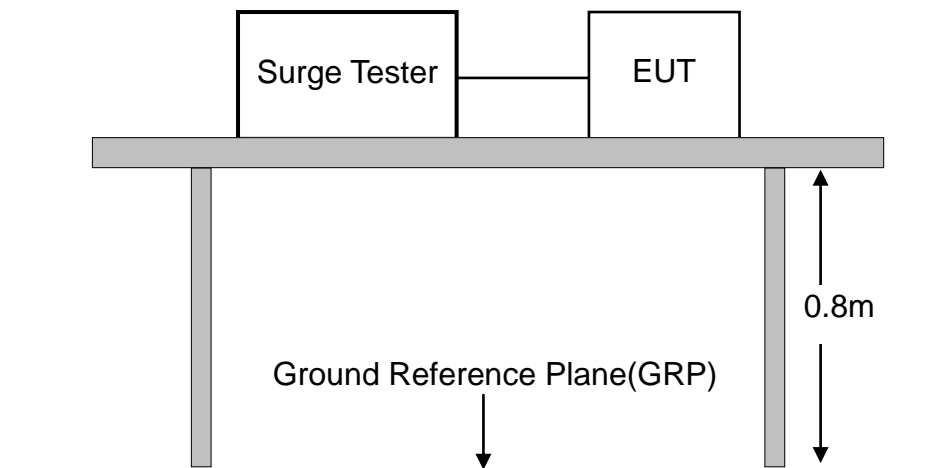
Please refer to following data table.

| Test Condition | | | |
|-------------------|----------|-----------------------|------------------------------|
| Temperature | 25°C | Test Voltage | AC 230V/50Hz AC 110V/60Hz |
| Humidity | 50%RH | Tested by | Elias |
| Pressure | 1010mbar | 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 | - | | - |
| Line + Neutral | ±1.0kV | | Pass |
| Line + PE | - | | - |
| Neutral + PE | - | | - |
| DC Power Line | - | | - |
| Signal Line | - | | - |

Note: During the test, the EUT did not show any abnormality.

9.8 AC MAINS SURGE

TEST CONFIGURATION



TEST PROCEDURE:

Please refer to ETSI EN 301 489-1 V2.2.3 Clause 9.8.2 and EN 61000-4-5 for the measurement methods.

TEST RESULT

PASS

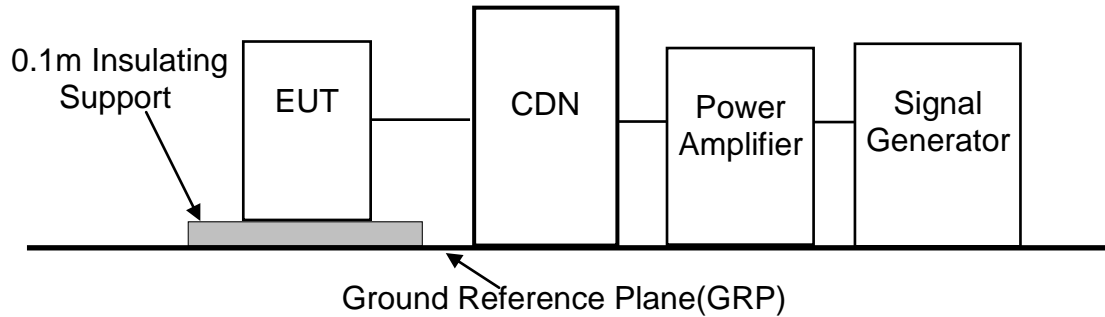
Please refer to following data table.

| Test Condition | | | |
|---------------------|----------|---|------------------------------|
| Temperature | 25°C | Test Voltage | AC 230V/50Hz AC 110V/60Hz |
| Humidity | 50%RH | Tested by | Elias |
| Pressure | 1010mbar | 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 | | 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 | - | | - |
| Neutral + PE | - | | - |
| T, R-Ground | - | | - |
| L1, 2, 3, 4-G (LAN) | - | | - |

Note: During the test, the EUT did not show any abnormality.

9.9 RADIO FREQUENCY COMMON MODE

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 V2.2.3 Clause 9.5.2, EN 61000-4-6 for the measurement methods.

TEST RESULT

PASS

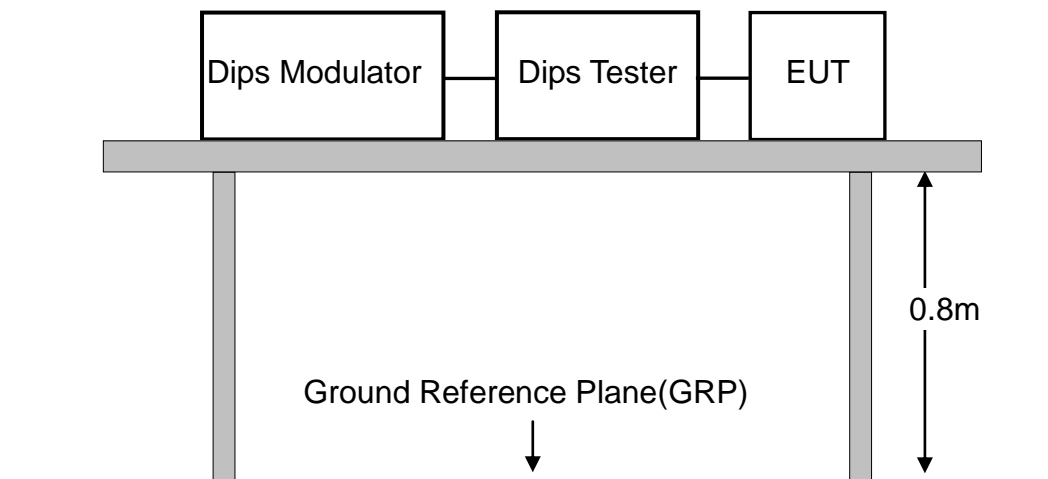
Please refer to following data table.

| Test Condition | | | |
|------------------------|-----------|-----------------------|------------------------------|
| Temperature | 25°C | Test Voltage | AC 230V/50Hz AC 110V/60Hz |
| Humidity | 50%RH | Tested by | Rick |
| Pressure | 1010mbar | 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 | - | - | |
| DC Line | - | - | |
| Signal Line | - | - | |
| Control Line | - | - | |

Note: During the test, the EUT did not show any abnormality.

9.10 VOLTAGE DIPS AND INTERRUPTION

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 V2.2.3 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 | 25°C | Test Voltage | AC 240V/50Hz AC 100V/60Hz | |
| Humidity | 50%RH | Tested by | Elias | |
| Pressure | 1010mbar | 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, but it can be recovered by user after test.

9.11 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. 13, 2020 | 1 Year |
| 2. | L.I.S.N | Rohde & Schwarz | ENV 216 | 101317 | Mar. 13, 2020 | 1 Year |
| 3. | L.I.S.N | Rohde & Schwarz | ESH2-Z5 | 893606/014 | Mar. 13, 2020 | 1 Year |
| 4. | RF Switching Unit | Compliance Direction Systems Inc. | RSU-M2 | 38311 | Mar. 13, 2020 | 1 Year |
| 5. | Test Software | EZ | EZ_EMG | N/A | N/A | N/A |

FOR RADIATED EMISSION MEASUREMENT

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|------|-------------------|-----------------|-----------|------------|---------------|---------------|
| 1. | Test Receiver | Rohde & Schwarz | ESCI7 | 100837 | Mar. 13, 2020 | 1 Year |
| 2. | Spectrum Analyzer | Rohde & Schwarz | FSU26 | 200409/026 | Mar. 13, 2020 | 1 Year |
| 3. | Antenna | Schwarzbeck | VULB9162 | 9162-010 | Mar. 23, 2020 | 1 Year |
| 4. | Loop Antenna | Schwarzbeck | FMZB 1513 | 1513-272 | Mar. 23, 2020 | 1 Year |
| 5. | Horn Antenna | COM-Power | AH-118 | 071078 | Mar. 23, 2020 | 1 Year |
| 6. | Pre-Amplifier | HP | HP 8447D | 1145A00203 | Mar. 13, 2020 | 1 Year |
| 7. | Pre-Amplifier | HP | HP 8449B | 3008A00964 | Mar. 13, 2020 | 1 Year |
| 8. | Chamber | SAEMC | 9*7*7m | N/A | Jun. 20, 2019 | 2 Year |
| 9. | Test Software | EZ | EZ_EMG | N/A | N/A | N/A |

FOR HARMONIC / FLICKER MEASUREMENT

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|------|--------------------------|------------------------|-----------|------------|---------------|---------------|
| 1. | Power Frequency Analyzer | California Instruments | PACS-1 | 72846 | Mar. 13, 2020 | 1 Year |
| 2. | 5KVA AC Power Source | California Instruments | 5001iX | 60137 | Mar. 13, 2020 | 1 Year |
| 3. | Software | California Instruments | CTS 4.2.5 | 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 | Mar. 23, 2020 | 1 Year |

FOR RF ELECTROMAGNETIC FIELD IMMUNITY TEST

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|------|------------------|--------------------|---------------------|----------------|---------------|---------------|
| 1. | Signal Generator | Agilent | N5181A | MY470701 60 | Mar. 13, 2020 | 1 Year |
| 2. | RF Switch | SKET | N/A | N/A | N/A | N/A |
| 3. | Power Amplifier | SKET | HAP80100 0M_250W | 201804008 | N/A | N/A |
| 4. | Power Amplifier | SKET | HAP0103G _75W | 201804009 | N/A | N/A |
| 5. | Power Amplifier | SKET | HAP0306G _50W | 201804010 | N/A | N/A |
| 6. | Power Meter | Agilent | E4419B | GB402014 69 | Mar. 13, 2020 | 1 Year |
| 7. | Power Sensor | Agilent | E9304A | MY414989 19 | Mar. 13, 2020 | 1 Year |
| 8. | Power Sensor | Agilent | E9300A | US392112 59 | Mar. 13, 2020 | 1 Year |
| 9. | E-Field Probe | Narda | EP-601 | N/A | Mar. 23, 2020 | 1 Year |
| 10. | Antenna | Schwarzbeck | STLP 9129 | 9129071 | N/A | N/A |
| 11. | Audio Analyzer | Rohde & Schwarz | UPV | 100894 | Mar. 13, 2020 | 1 Year |
| 12. | Chamber | Chengyu | 7*5*3.5m | N/A | Mar. 26, 2018 | 3 Year |
| 13. | Test Software | SKET | SKET_RS | N/A | N/A | N/A |

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. 13, 2020 | 1 Year |
| 2. | Coupling Clamp | EM TEST | HFK | 0311-94 | Mar. 13, 2020 | 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. 13, 2020 | 1 Year |
| 2. | Test Soft | EM TEST | lec. control | N/A | N/A | N/A |

FOR INJECTED CURRENTS IMMUNITY MEASUREMENT

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|------|-----------------------|-----------------|----------------|------------|---------------|---------------|
| 1. | Signal generator | IFR | 2023A | 2023051280 | Mar. 13, 2020 | 1 Year |
| 2. | Power Amplifier | SCHAFFNER | CBA9425 | 1022 | Mar. 13, 2020 | 1 Year |
| 3. | 6dB 50Watt Attenuator | SCHAFFNER | ATN6025 | N/A | Mar. 13, 2020 | 1 Year |
| 4. | CDN | Lioncel | CDN-M3-16 | 0170703 | Mar. 13, 2020 | 1 Year |
| 5. | CDN | Lioncel | CDN-M2-16 | 0170708 | Mar. 13, 2020 | 1 Year |
| 6. | CDN | CDSI | ADN-M5/AF 5 | 8105001 | Mar. 13, 2020 | 1 Year |
| 7. | EM Clamp | CDSI | EMCL-22 | 8192007 | Mar. 13, 2020 | 1 Year |
| 8. | Directional Coupler | SCHAFFNER | 255 | 19184 | Mar. 13, 2020 | 1 Year |
| 9. | Audio Analyzer | Rohde & Schwarz | UPV | 100894 | Mar. 13, 2020 | 1 Year |
| 10. | Test Software | EZ | EZ_CS | N/A | N/A | N/A |

FOR VOLTAGE DIPS AND INTERRUPTIONS MEASUREMENT

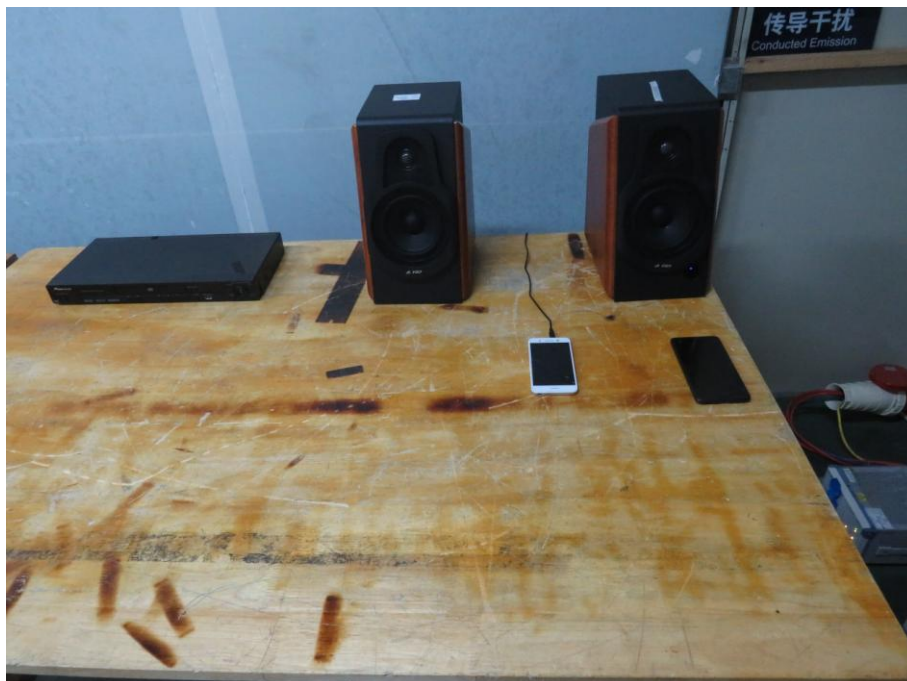
| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|------|----------------|--------------|-------------|-------------|---------------|---------------|
| 1. | Dips Tester | EM TEST | UCS500N | V1104108683 | Mar. 13, 2020 | 1 Year |
| 2. | Dips Modulator | EM TEST | V4780S2 | 0111-11 | Mar. 13, 2020 | 1 Year |
| 3. | Test Soft | EM TEST | lec.control | N/A | N/A | N/A |

APPENDIX 1 PHOTOGRPHS OF TEST SETUP

RADIATED EMISSION TEST



LINE CONDUCTED 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 E.U.T.

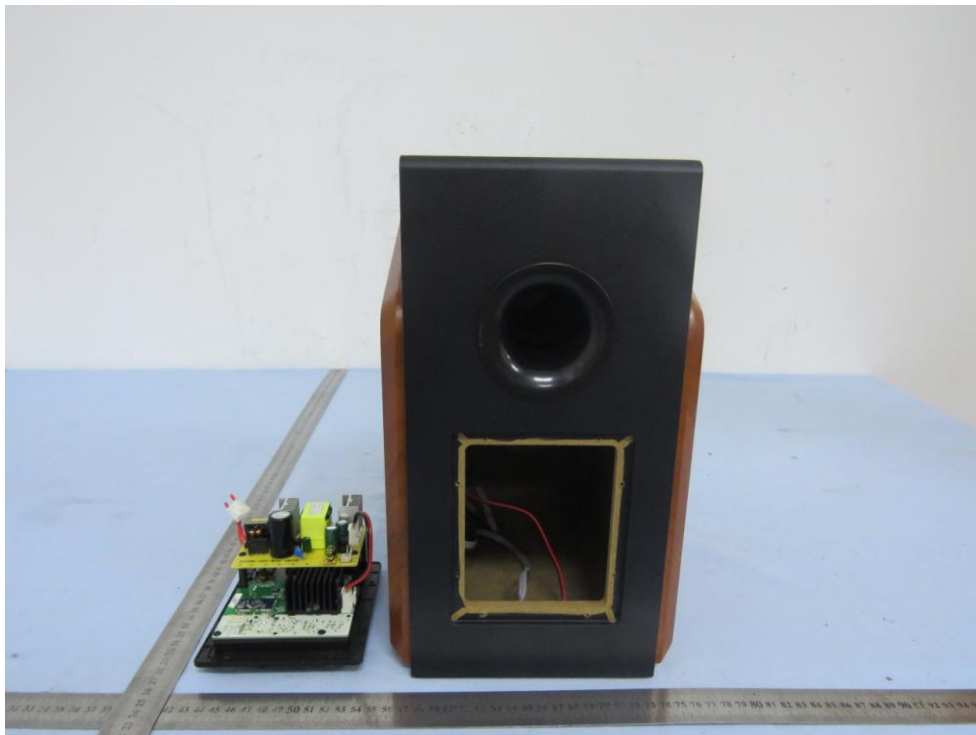


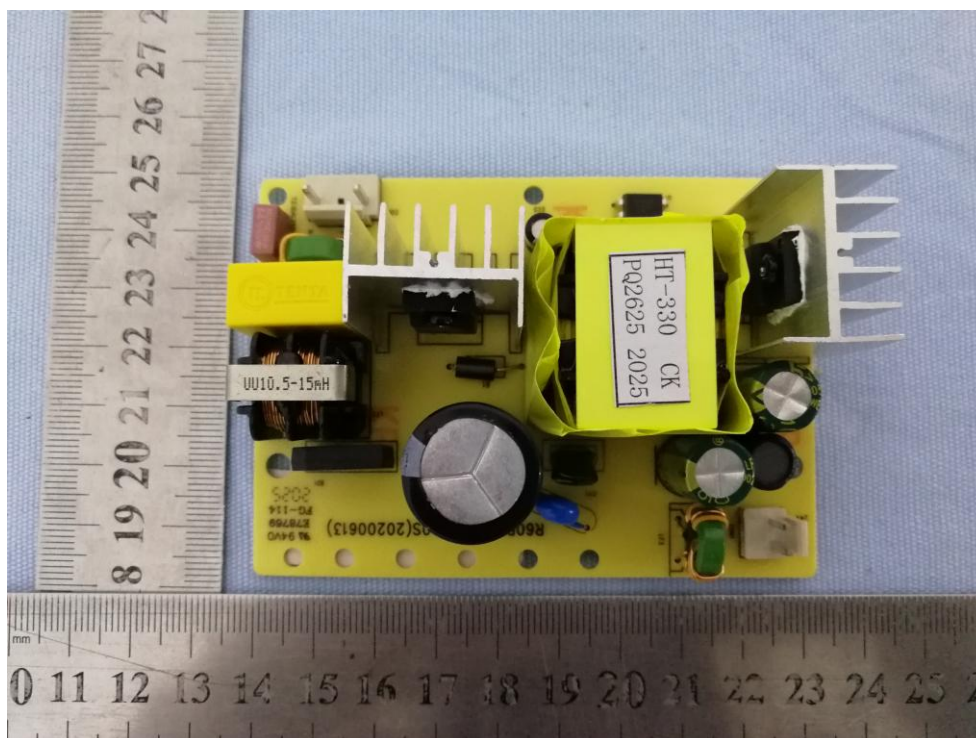
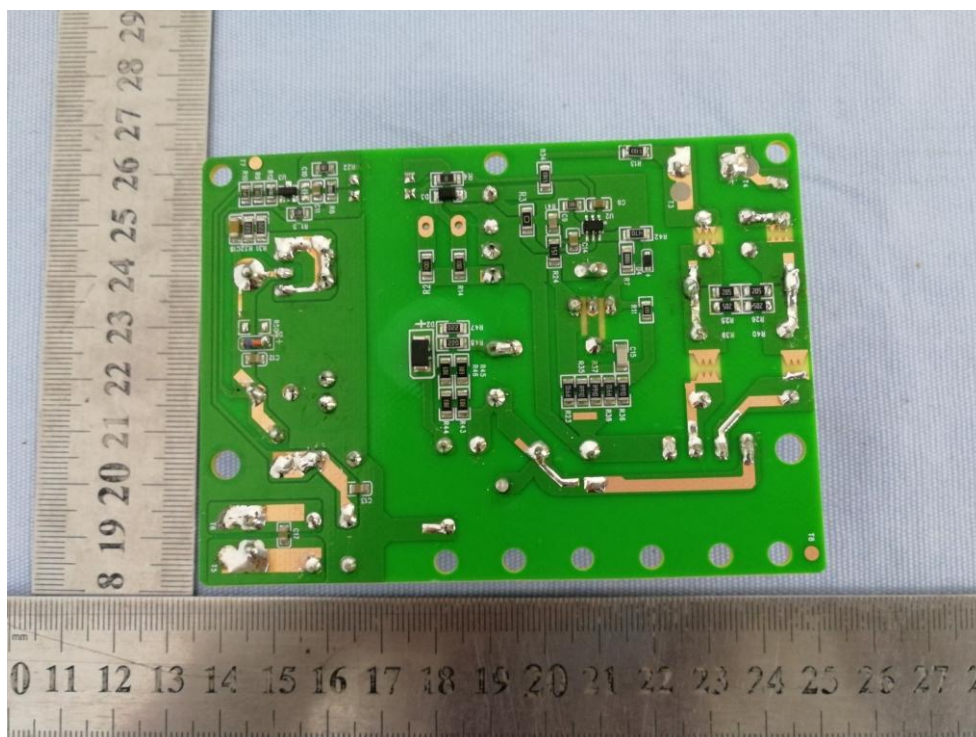


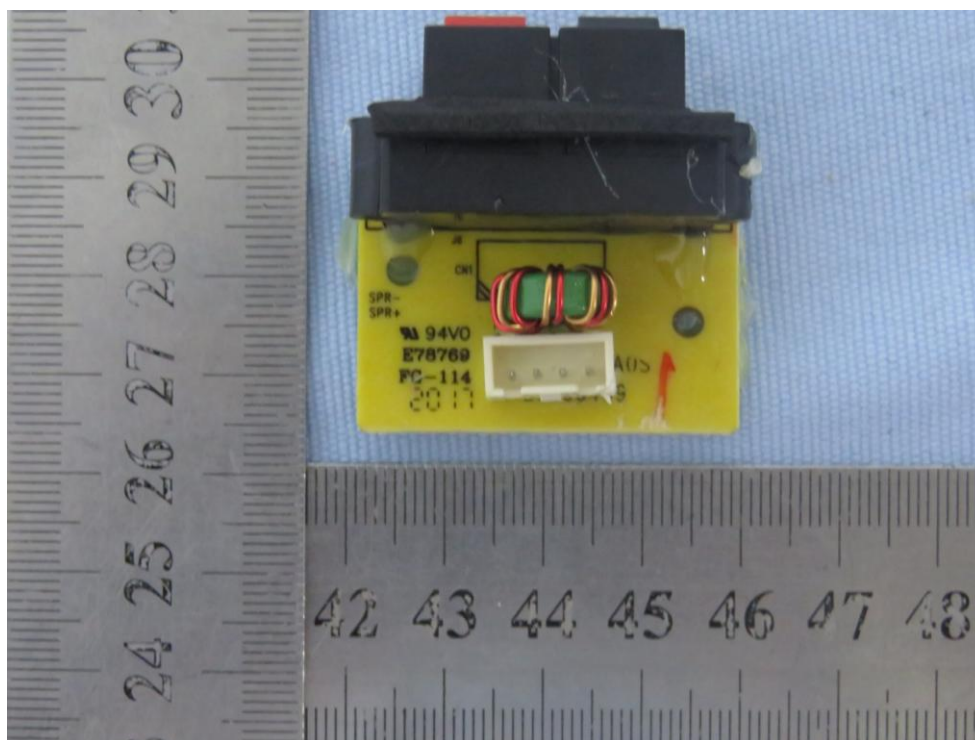
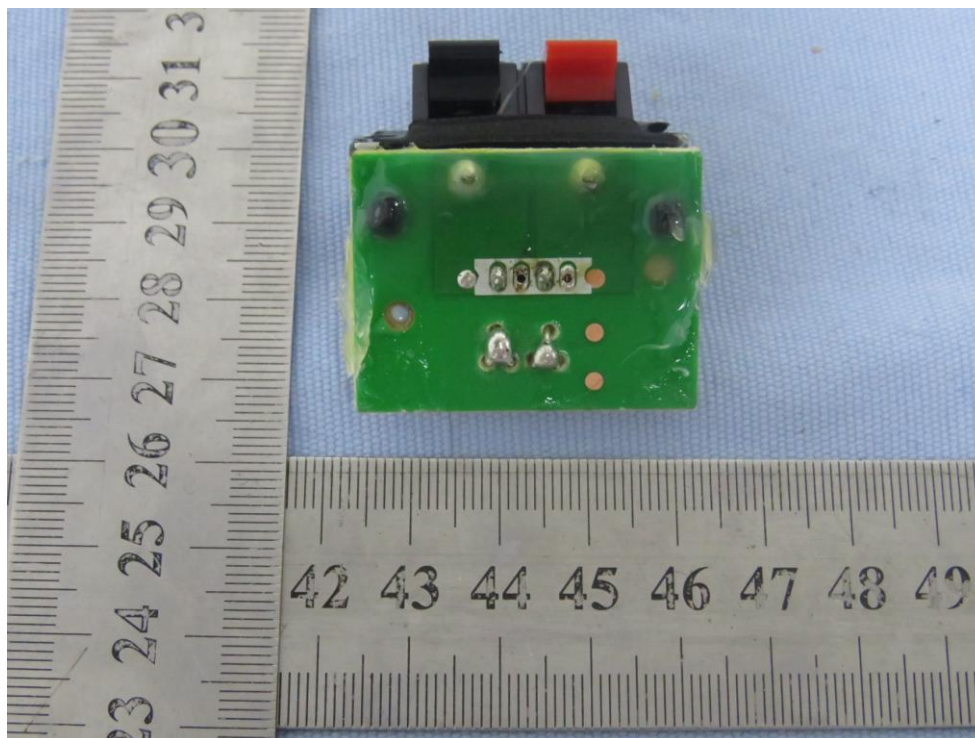












---End---