# 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. | : | Bluetooth Speaker |
| Brand Name | : | F&D |
| Model No. | : | W20, W22, W40, W47, W45 (For model difference refer to section 1) |
| Measurement Standard | : | Draft ETSI EN 301 489-1 v 2.2.0: 2017,<br>Draft ETSI EN 301 489-17 v 3.2.0: 2017 |
| Date of Receiver | : | September 13, 2018 |
| Date of Test | : | September 13, 2018 to November 02, 2018 |
| Date of Report | : | November 02, 2018 |

This Test Report is Issued Under the Authority of :

| Prepared by | Approved & Authorized Signer |
|---|---|
| Rose Hu / Engineer | 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.

TEL: +86-769-22022444 FAX: +86-769-22022799 Web: www.ntc-c.com
Address: Building D, Gaosheng Science & Technology Park, Zhouxi Longxi Road, Nancheng District, Dongguan City, Guangdong, China

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# Revision History of This Test Report

| Report Number | Description | Issued Date |
|---|---|---|
| NTC1809120EV00 | Initial Issue | 2018-11-02 |
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# 1. GENERAL INFORMATION

## PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST

| | | |
|---|---|---|
| E.U.T. | : | Bluetooth Speaker |
| Main model number | : | W20 |
| Additional Model number | : | W22, W40, W47, W45 |
| Brand Name | : | F&D |
| Power Supply | : | DC 18V come from adater |
| Adapter | : | Manufacturer: Zhongshan Baolijin Electronic Co., Ltd.<br>M/N: BLJ15W180100P1-V<br>Input: AC100-240V 50/60Hz 0.6A<br>Output: DC 18V 1000mA |
| Test Voltage | : | AC 230V 50Hz |
| Operating Temperature Range | : | 0°C to 35°C (Declaration by manufacturer) |
| Model Difference Description | : | These models have the same circuitry, electrical mechanical, PCB Layout and physical construction. The difference in model number. |
| Adaptive/Non-Adaptive Equipment | : | Adaptive equipment |
| HW | : | V01 |
| SW | : | V01 |
| Receicer Category | : | Category 2 |
| Note | : | N/A |

**Technical Specification:**

**For BT Function**

| | | |
|---|---|---|
| Frequency | : | 2402-2480MHz |
| Bluetooth Version | : | V4.2+EDR |
| Modulation | : | GFSK, π/4-DQPSK, 8DPSK |
| Number of Channel | : | 79 |
| Channel space | : | 1MHz |
| Antenna Type | : | PCB |
| Antenna Gain | : | 0dBi (Declaration by manufacturer) |

# 2. SUMMARY OF TEST RESULTS

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

| Draft ETSI EN 301 489-1 v 2.2.0: 2017/ Draft ETSI EN 301 489-17 v 3.2.0: 2017 | | | |
|---|---|---|---|
| **EMISSION** | | | |
| **Standard** | **Test Type** | **Result** | **Remarks** |
| EN 55032: 2015 | 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 Draft ETSI EN 301 489-1 V2.2.0, 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, 2019
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 46405-9743

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

# 6. SUPPORT EQUIPMENT

| | | |
|---|---|---|
| Mobile Phone | : | Manufacturer: HUAWEI<br>M/N: HUAWEI TAG-TL00<br>S/N: TAG-TL00C01B166 |
| Mobile Phone | | Manufacturer: vivo<br>M/N: Y51 |
| Mobile Phone | | Manufacturer: HUAWEI<br>M/N: TRT-AL00A |
| iPhone | : | Manufacturer: Apple<br>M/N: MD235CH/A<br>S/N: DX3K5T1FDTC0 |
| iPhone | : | Manufacturer: Apple<br>M/N: MG492CH/A<br>S/N: F1MPLG6NG5MQ |

# 7. PERFORMANCE CRITERIA

| Draft ETSI EN301489-17 v 3.2.0: 2017 | | |
|---|---|---|
| **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.<br>Shall be no degradation of performance (see note 3). Shall be no loss of function.<br>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.<br>Shall operate as intended after recovering.<br>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.<br>Shall operate as intended after recovering.<br>Shall be no degradation of performance (see note 3). |

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.

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.

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.

## Performance Criteria For Continuous Phenomena (CT & CR)

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

## Performance Criteria For Transitent Phenomena (TT & TR)

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

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

## 8.1 RADIATED EMISSION LIMIT

According standard Draft ETSI EN 301 489-1 v 2.2.0 Clause 8.2.3, Table 3 and EN 55032: 2015 Clause 6, Table 6, Class B

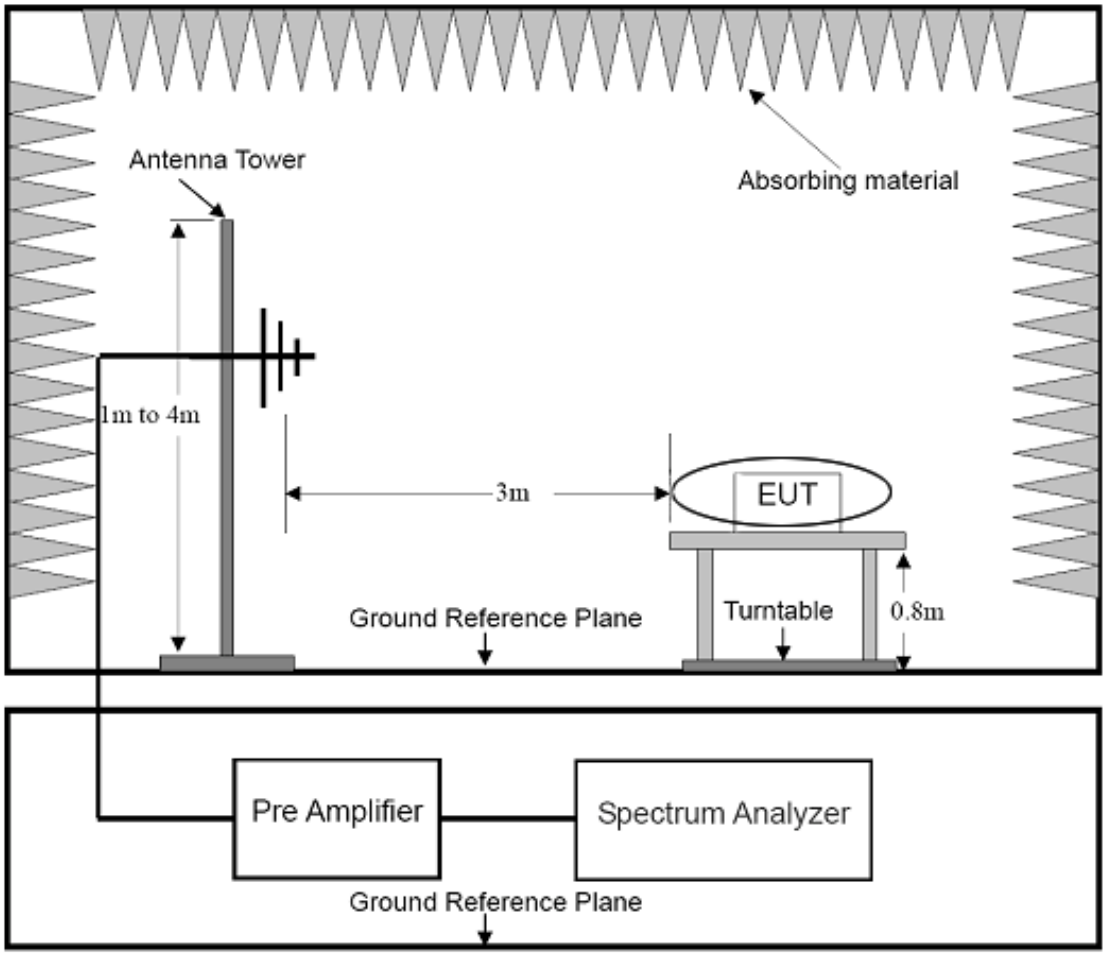
### Limits for radiated disturbance Blow 1GHz

| FREQUENCY (MHz) | DISTANCE (Meters) | FIELD STRENGTHS LIMIT (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.<br>(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 draft Draft ETSI EN 301 489-1 V2.2.0 Clause 8.2.3 and EN 55032: 2015 Clause 6 for the measurement methods.

## TEST RESULT

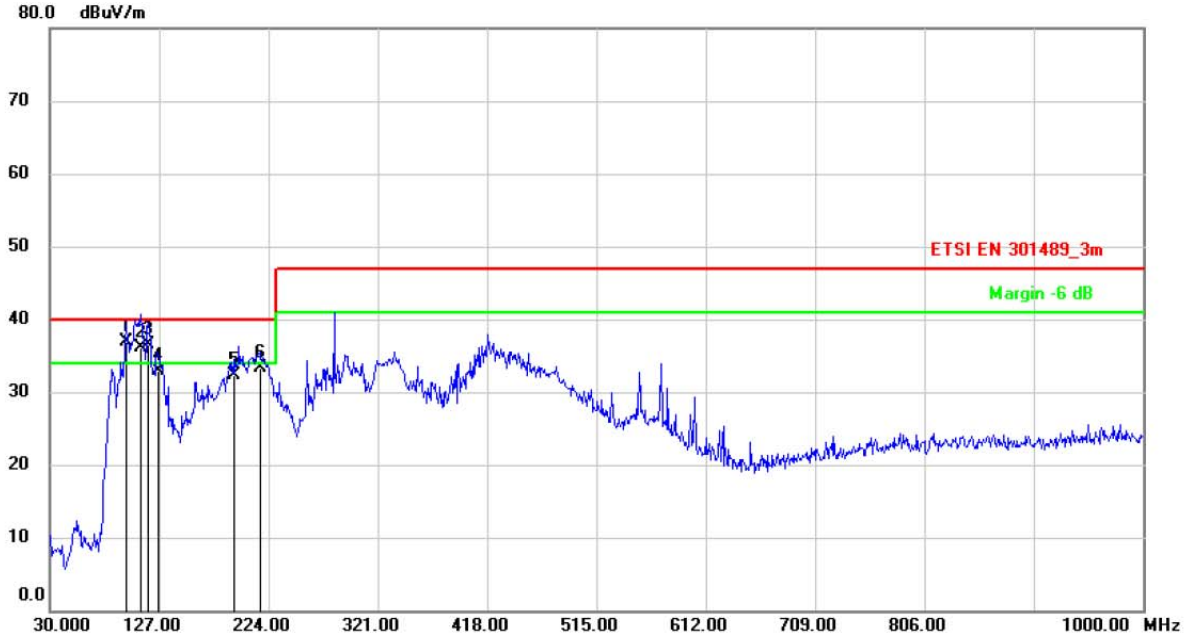
**PASS**

Please refer to following data tables.

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

**Radiated Emission Measurement**

File :W20 副本 Data :#22 Date: 2018-10-19 Time: 12:19:21




Site
Limit: ETSI EN 301489_3m
EUT: Bluetooth Speaker
M/N: W20
Mode: BT Link
Note:

Polarization: *Horizontal*
Power: AC 230V/50Hz
Distance: 3m

Temperature: 26
Humidity: 47 %

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | Antenna Height | Table Degree | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | cm | degree | Comment |
| 1 | * | 97.9000 | 49.30 | -12.40 | 36.90 | 40.00 | -3.10 | QP | | | |
| 2 | ! | 110.5100 | 48.36 | -12.26 | 36.10 | 40.00 | -3.90 | QP | | | |
| 3 | ! | 117.3000 | 49.96 | -13.46 | 36.50 | 40.00 | -3.50 | QP | | | |
| 4 | | 126.0300 | 47.63 | -14.73 | 32.90 | 40.00 | -7.10 | QP | | | |
| 5 | | 192.9600 | 45.88 | -13.48 | 32.40 | 40.00 | -7.60 | QP | | | |
| 6 | | 216.2400 | 46.48 | -13.08 | 33.40 | 40.00 | -6.60 | QP | | | |

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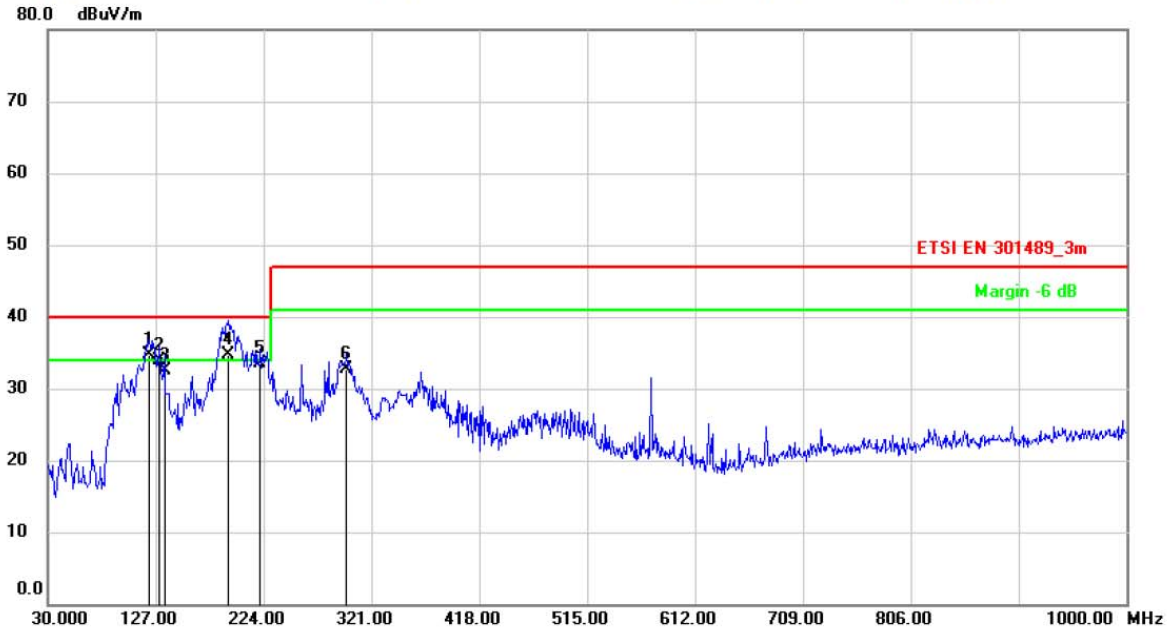
Tel:+86-769-22022444 Fax:+86-769-22022799
Web: Http://www.ntc-c.com

## Radiated Emission Measurement

File :W20 副本 Data :#21 Date: 2018-10-19 Time: 12:14:06




Site
Limit: ETSI EN 301489_3m
EUT: Bluetooth Speaker
M/N: W20
Mode: BT Link
Note:

Polarization: *Vertical*
Power: AC 230V/50Hz
Distance: 3m

Temperature: 26
Humidity: 47 %

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | Antenna Height | Table Degree | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | cm | degree | Comment |
| 1 | * | 121.1800 | 51.98 | -17.18 | 34.80 | 40.00 | -5.20 | QP | | | |
| 2 | | 129.9100 | 52.05 | -18.15 | 33.90 | 40.00 | -6.10 | QP | | | |
| 3 | | 134.7600 | 50.96 | -18.36 | 32.60 | 40.00 | -7.40 | QP | | | |
| 4 | ! | 191.9900 | 51.31 | -16.51 | 34.80 | 40.00 | -5.20 | QP | | | |
| 5 | | 221.0900 | 49.41 | -15.91 | 33.50 | 40.00 | -6.50 | QP | | | |
| 6 | | 298.6900 | 45.30 | -12.50 | 32.80 | 47.00 | -14.20 | QP | | | |

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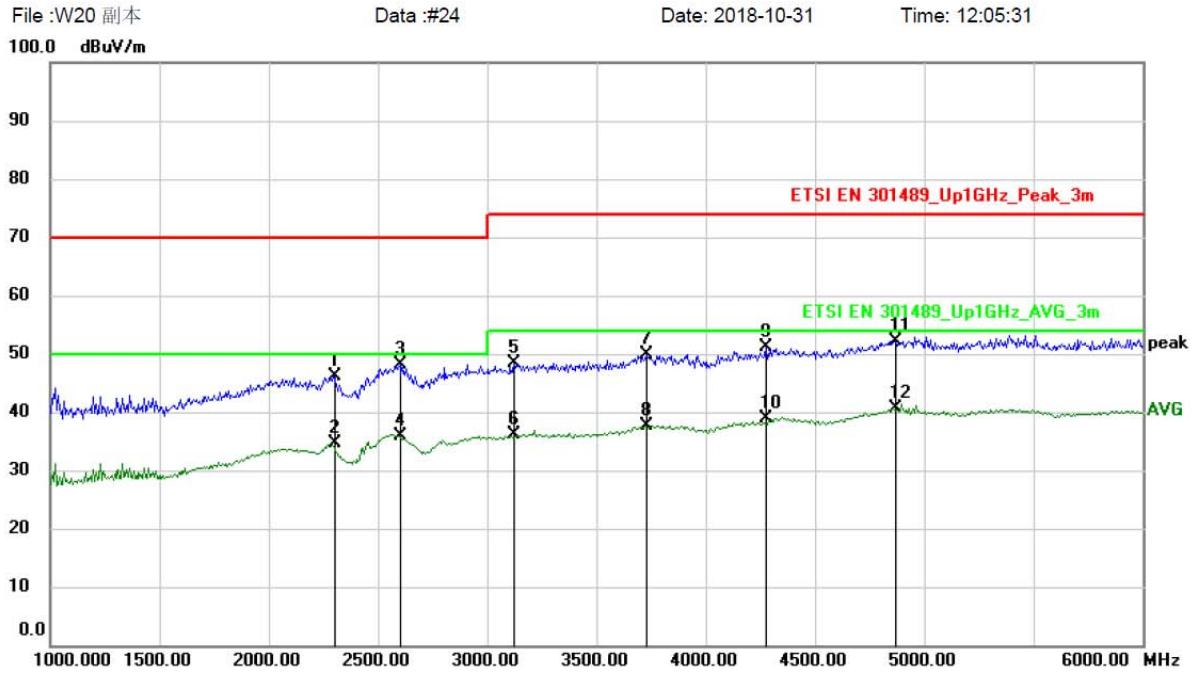
Tel:+86-769-22022444 Fax:+86-769-22022799
Web: Http://www.ntc-c.com

## Radiated Emission Measurement




Site
Limit: ETSI EN 301489_Up1GHz_Peak_3m
EUT: Bluetooth Speaker
M/N: W20
Mode: BT Link
Note:

Polarization: *Horizontal*
Power: AC230V/50Hz
Distance: 3m

Temperature: 26
Humidity: 47 %

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | Antenna Height | Table Degree | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | cm | degree | Comment |
| 1 | | 2300.000 | 46.32 | -0.14 | 46.18 | 70.00 | -23.82 | peak | | | |
| 2 | | 2300.000 | 34.66 | -0.14 | 34.52 | 50.00 | -15.48 | AVG | | | |
| 3 | | 2600.000 | 47.30 | 0.74 | 48.04 | 70.00 | -21.96 | peak | | | |
| 4 | | 2600.000 | 35.20 | 0.74 | 35.94 | 50.00 | -14.06 | AVG | | | |
| 5 | | 3125.000 | 46.37 | 1.95 | 48.32 | 74.00 | -25.68 | peak | | | |
| 6 | | 3125.000 | 34.14 | 1.95 | 36.09 | 54.00 | -17.91 | AVG | | | |
| 7 | | 3731.250 | 46.57 | 3.21 | 49.78 | 74.00 | -24.22 | peak | | | |
| 8 | | 3731.250 | 34.38 | 3.21 | 37.59 | 54.00 | -16.41 | AVG | | | |
| 9 | | 4275.000 | 46.63 | 4.60 | 51.23 | 74.00 | -22.77 | peak | | | |
| 10 | | 4275.000 | 34.21 | 4.60 | 38.81 | 54.00 | -15.19 | AVG | | | |
| 11 | | 4868.750 | 45.64 | 6.55 | 52.19 | 74.00 | -21.81 | peak | | | |
| 12 | * | 4868.750 | 34.04 | 6.55 | 40.59 | 54.00 | -13.41 | AVG | | | |

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Tel:+86-769-22022444 Fax:+86-769-22022799
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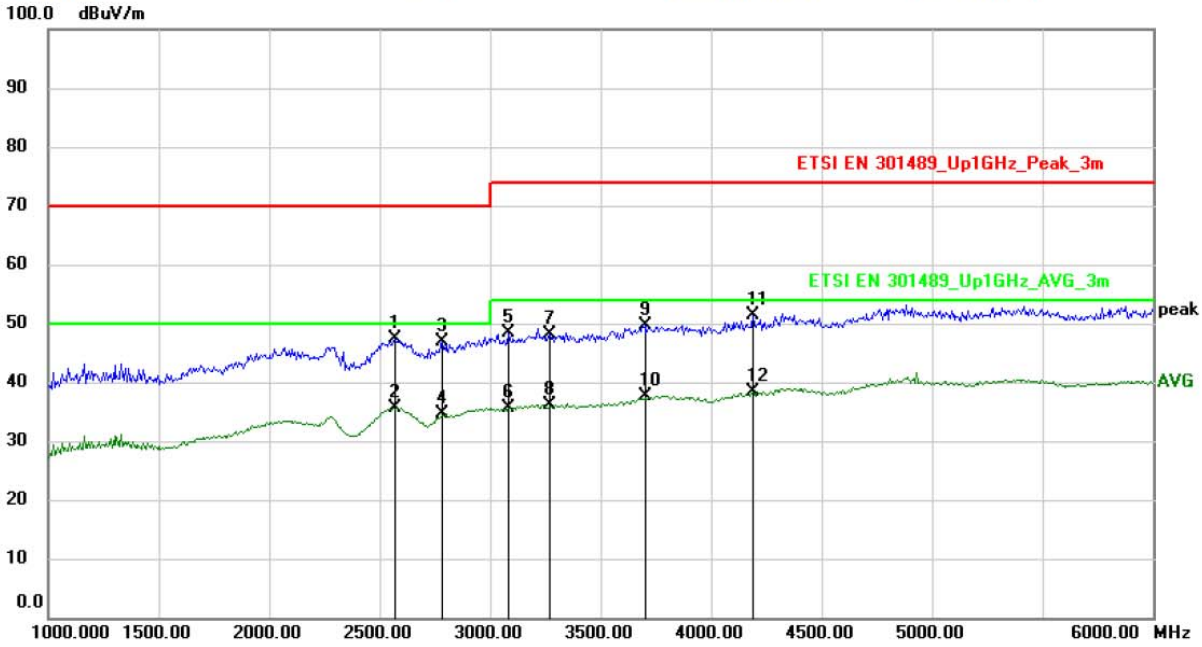
## Radiated Emission Measurement

File :W20 副本 Data :#23 Date: 2018-10-31 Time: 11:57:41




Site
Limit: ETSI EN 301489_Up1GHz_Peak_3m
EUT: Bluetooth Speaker
M/N: W20
Mode: BT Link
Note:

Polarization: *Vertical*
Power: AC230V/50Hz
Distance: 3m

Temperature: 26
Humidity: 47 %

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | Antenna Height | Table Degree | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | cm | degree | Comment |
| 1 | | 2568.750 | 46.84 | 0.64 | 47.48 | 70.00 | -22.52 | peak | | | |
| 2 | * | 2568.750 | 35.00 | 0.64 | 35.64 | 50.00 | -14.36 | AVG | | | |
| 3 | | 2781.250 | 45.43 | 1.34 | 46.77 | 70.00 | -23.23 | peak | | | |
| 4 | | 2781.250 | 33.17 | 1.34 | 34.51 | 50.00 | -15.49 | AVG | | | |
| 5 | | 3081.250 | 46.36 | 1.90 | 48.26 | 74.00 | -25.74 | peak | | | |
| 6 | | 3081.250 | 33.80 | 1.90 | 35.70 | 54.00 | -18.30 | AVG | | | |
| 7 | | 3268.750 | 45.98 | 2.14 | 48.12 | 74.00 | -25.88 | peak | | | |
| 8 | | 3268.750 | 33.98 | 2.14 | 36.12 | 54.00 | -17.88 | AVG | | | |
| 9 | | 3700.000 | 46.43 | 3.15 | 49.58 | 74.00 | -24.42 | peak | | | |
| 10 | | 3700.000 | 34.46 | 3.15 | 37.61 | 54.00 | -16.39 | AVG | | | |
| 11 | | 4187.500 | 47.00 | 4.42 | 51.42 | 74.00 | -22.58 | peak | | | |
| 12 | | 4187.500 | 34.03 | 4.42 | 38.45 | 54.00 | -15.55 | AVG | | | |

## 8.2 AC POWER CONDUCTED EMISSION

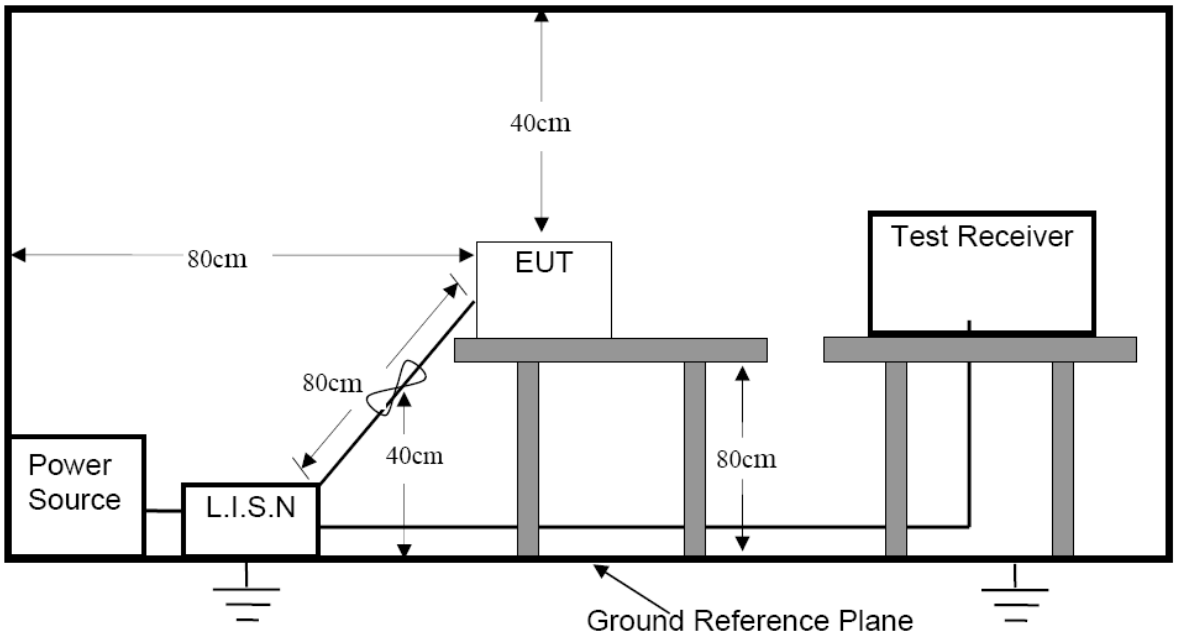
### LIMIT

According to standard Draft ETSI EN 301 489-1 V2.2.0 Clause 8.3.3, Table 8 and EN 55032: 2015 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 Draft ETSI EN 301 489-1 V2.2.0 Clause 8.3.3 and EN 55032: 2015Clause 5 for the measurement methods.

### TEST RESULTS

**PASS**

Please refer to following data tables.

Dongguan NTC Co., Ltd.
Tel: +86-769-22022444 Fax: +86-769-22022799
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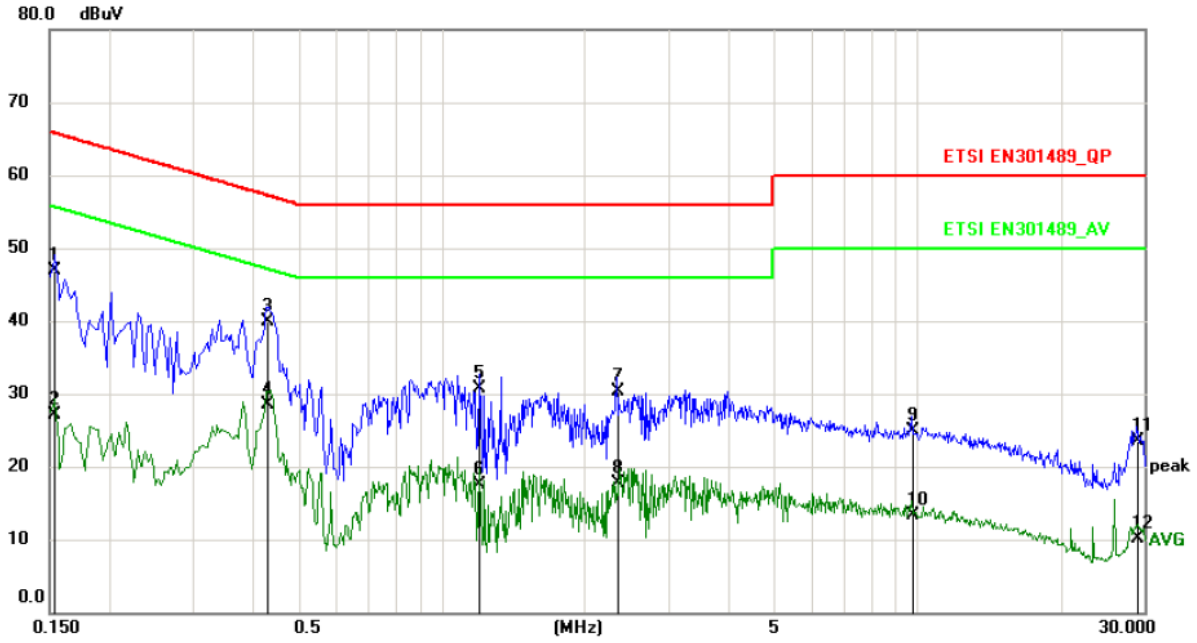
## Conducted Emission Measurement

File :W20 Data :#6 Date: 2018-10-13 Time: 18:22:10




Site
Limit: ETSI EN301489_QP
EUT: Bluetooth Speaker
M/N: W20
Mode: TX+RX
Note:

Phase: L1
Power: AC230V/50Hz

Temperature: 26
Humidity: 50 %

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | | 0.1539 | 36.39 | 10.61 | 47.00 | 65.79 | -18.79 | QP | |
| 2 | | 0.1539 | 16.59 | 10.61 | 27.20 | 55.79 | -28.59 | AVG | |
| 3 | * | 0.4300 | 29.38 | 10.62 | 40.00 | 57.25 | -17.25 | QP | |
| 4 | | 0.4300 | 17.88 | 10.62 | 28.50 | 47.25 | -18.75 | AVG | |
| 5 | | 1.2018 | 20.05 | 10.65 | 30.70 | 56.00 | -25.30 | QP | |
| 6 | | 1.2018 | 6.95 | 10.65 | 17.60 | 46.00 | -28.40 | AVG | |
| 7 | | 2.3340 | 19.65 | 10.65 | 30.30 | 56.00 | -25.70 | QP | |
| 8 | | 2.3340 | 7.05 | 10.65 | 17.70 | 46.00 | -28.30 | AVG | |
| 9 | | 9.7139 | 14.23 | 10.67 | 24.90 | 60.00 | -35.10 | QP | |
| 10 | | 9.7139 | 2.73 | 10.67 | 13.40 | 50.00 | -36.60 | AVG | |
| 11 | | 28.9860 | 12.92 | 10.68 | 23.60 | 60.00 | -36.40 | QP | |
| 12 | | 28.9860 | -0.48 | 10.68 | 10.20 | 50.00 | -39.80 | AVG | |

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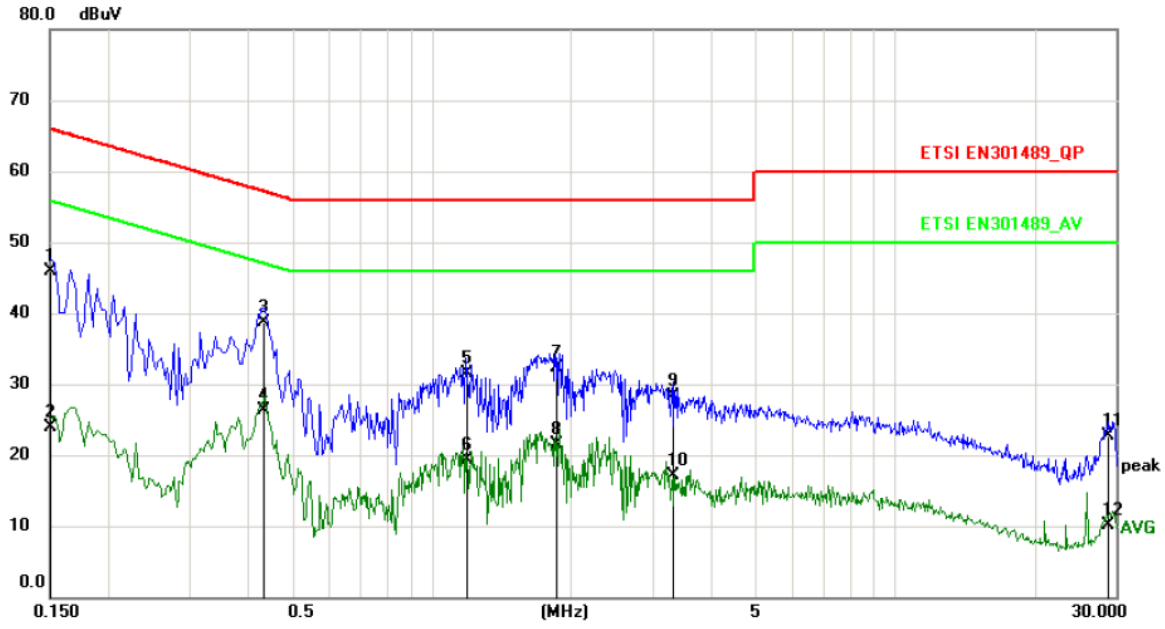
**Conducted Emission Measurement**

File :W20 Data :#5 Date: 2018-10-13 Time: 18:15:24




Site
Limit: ETSI EN301489_QP
EUT: Bluetooth Speaker
M/N: W20
Mode: TX+RX
Note:

Phase: N
Power: AC230V/50Hz

Temperature: 26
Humidity: 50 %

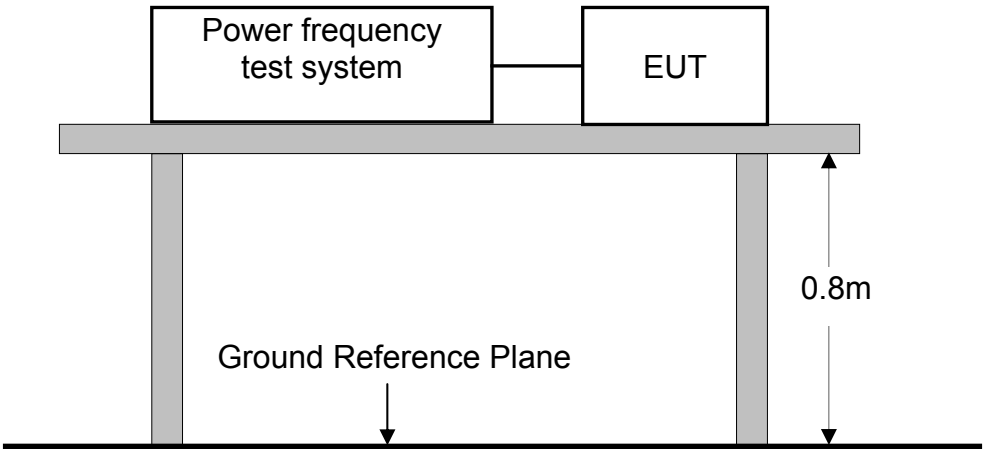
| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | | 0.1500 | 35.29 | 10.61 | 45.90 | 66.00 | -20.10 | QP | |
| 2 | | 0.1500 | 13.29 | 10.61 | 23.90 | 56.00 | -32.10 | AVG | |
| 3 | * | 0.4339 | 28.08 | 10.62 | 38.70 | 57.18 | -18.48 | QP | |
| 4 | | 0.4339 | 15.68 | 10.62 | 26.30 | 47.18 | -20.88 | AVG | |
| 5 | | 1.1900 | 20.95 | 10.65 | 31.60 | 56.00 | -24.40 | QP | |
| 6 | | 1.1900 | 8.75 | 10.65 | 19.40 | 46.00 | -26.60 | AVG | |
| 7 | | 1.8580 | 21.65 | 10.65 | 32.30 | 56.00 | -23.70 | QP | |
| 8 | | 1.8580 | 10.85 | 10.65 | 21.50 | 46.00 | -24.50 | AVG | |
| 9 | | 3.3220 | 17.64 | 10.66 | 28.30 | 56.00 | -27.70 | QP | |
| 10 | | 3.3220 | 6.44 | 10.66 | 17.10 | 46.00 | -28.90 | AVG | |
| 11 | | 28.8260 | 12.02 | 10.68 | 22.70 | 60.00 | -37.30 | QP | |
| 12 | | 28.8260 | -0.48 | 10.68 | 10.20 | 50.00 | -39.80 | AVG | |

## 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

Pass

Test Mode: TX+RX

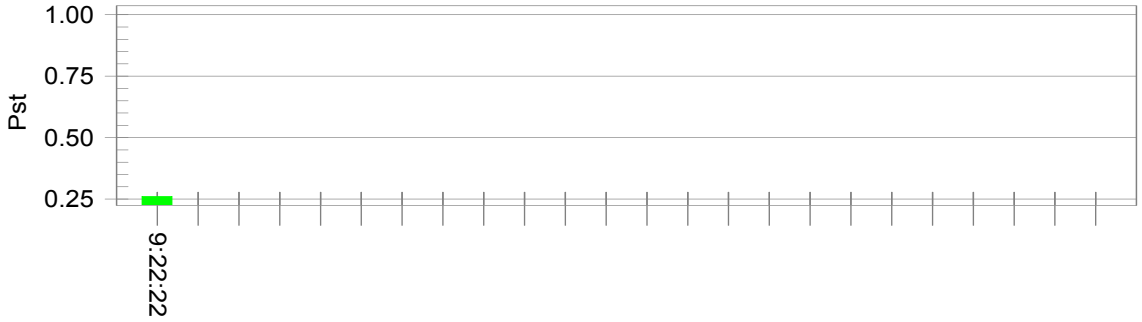
# Flicker Test Summary per EN/IEC61000-3-3 Ed. 3.0 (2013) (Run time)

**EUT: Bluetooth Speaker**
**Test category: All parameters (European limits)**
**Test date: 2018/10/16**
**Test duration (min): 10**
**Comment: BT Mode**
**Customer: FENDA**
**M/N:W20**
**Test Result: Pass**

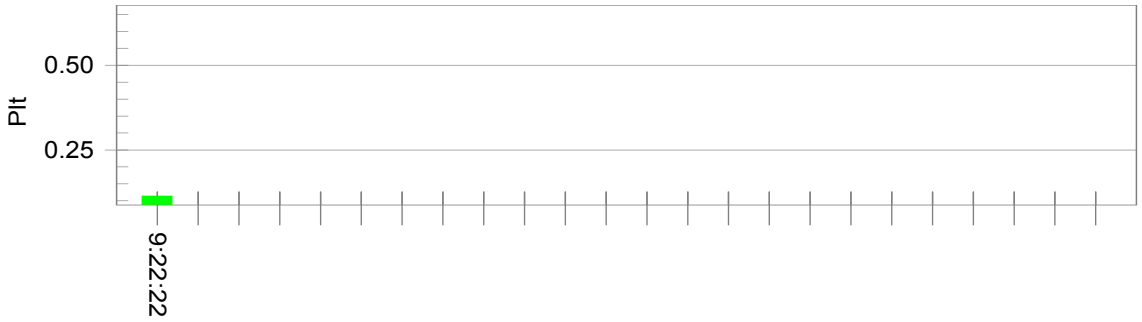
**Tested by: Ivan**
**Test Margin: 100**
**Start time: 9:11:51 End time: 9:22:23**
**Data file name: F-000205.cts_data**

**Status: Test Completed**

**Psti and limit line** **European Limits**




**Plt and limit line**

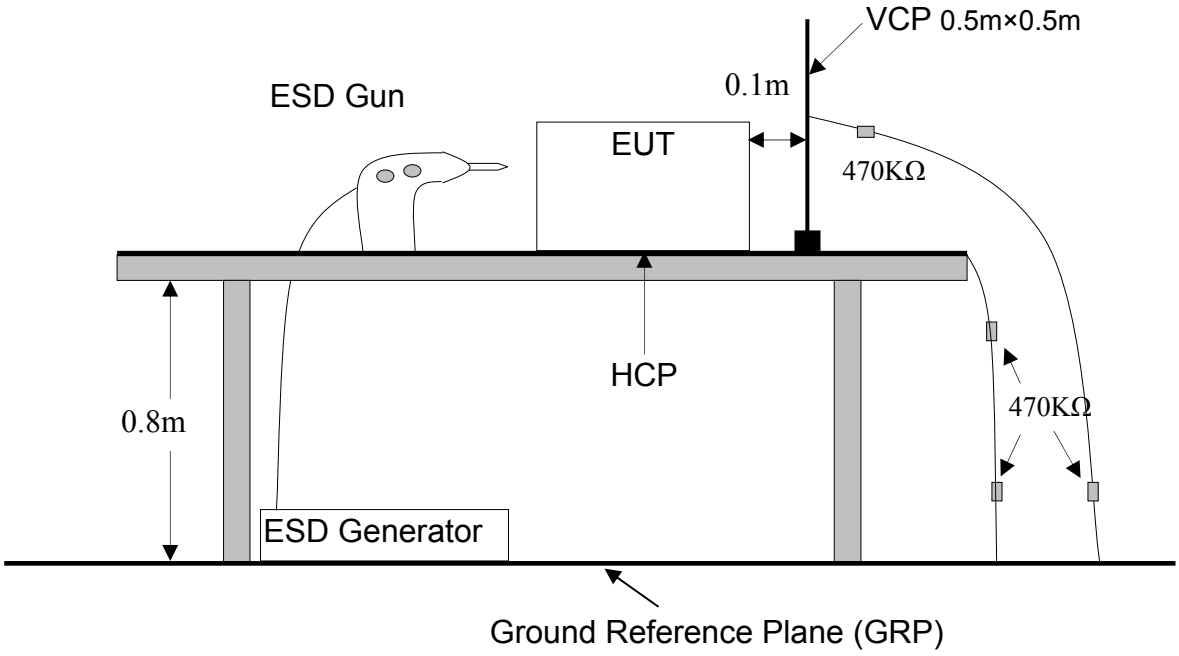



**Parameter values recorded during the test:**

| | | | |
|---|---|---|---|
| **Vrms at the end of test (Volt):** | **231.95** | | |
| **Highest dt (%):** | **0.00** | **Test limit (%):** | **N/A N/A** |
| **T-max (mS):** | **0** | **Test limit (mS):** | **500.0 Pass** |
| **Highest dc (%):** | **0.00** | **Test limit (%):** | **3.30 Pass** |
| **Highest dmax (%):** | **-0.04** | **Test limit (%):** | **4.00 Pass** |
| **Highest Pst (10 min. period):** | **0.261** | **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 Draft ETSI EN 301 489-1 V2.2.0 Clause 9.3.2 and EN 61000-4-2 for the measurement methods.

## TEST RESULT

**PASS**

Please refer to following data table.

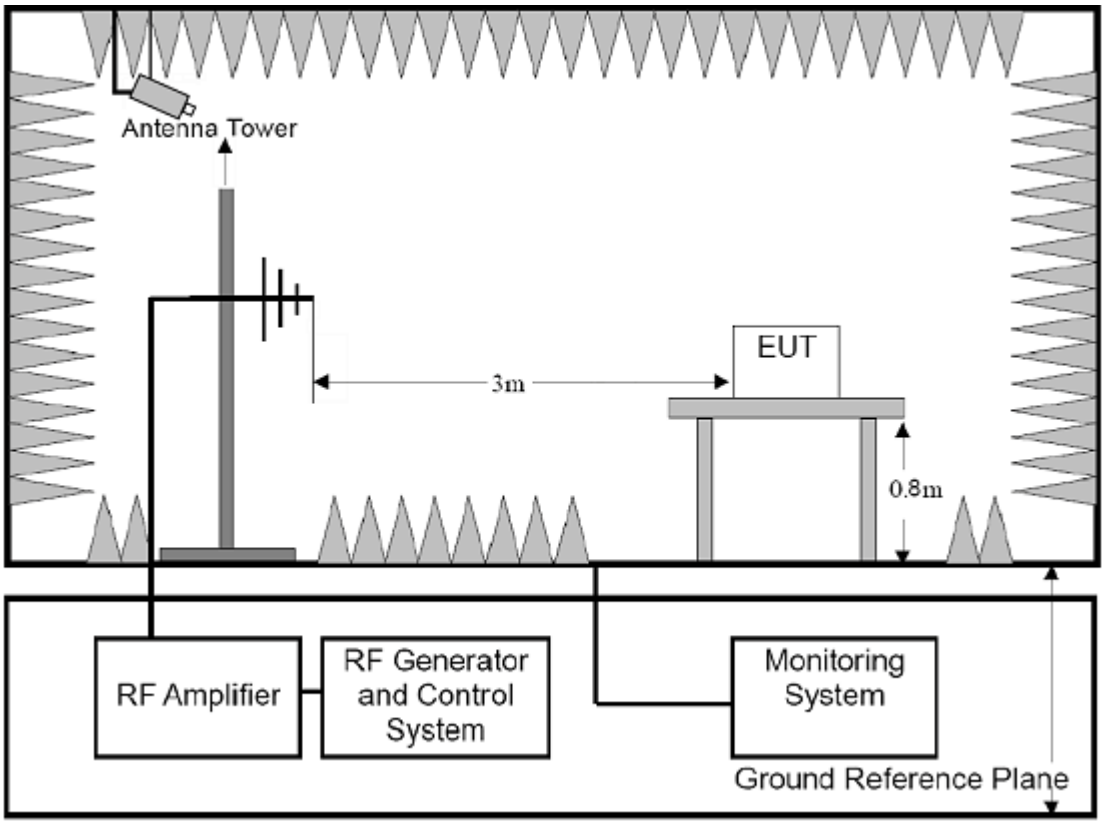
| Test Condition | | | |
|---|---|---|---|
| Temperature | 25°C | Test Voltage | AC 230V/50Hz |
| Humidity | 51%RH | Tested by | IVAN |
| Pressure | 1010mbar | Performance Criterion : | CR & CT & B |
| Ground Bond Resistance | | 0.2 Ω | |
| Time Between Each Discharge: | | >1 second | |
| Test Mode | | TX+RX | |
| Test Level | | ± 2.0, ± 4.0, ±8.0 kV (Air Discharge)<br>± 2.0, ±4.0 kV (Contact Discharge)<br>± 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*: In test mode, the sound of EUT muting occurs during the test, but it can be resumed by itself after test.**

# 8.6 RF ELECTROMAGNETIC FIELD

## TEST CONFIGURATION




## TEST PROCEDURE

Please refer to Draft ETSI EN 301 489-1 V2.2.0 Clause 9.2.2 and EN61000-4-3 for the measurement methods.

## TEST RESULT

**PASS**

Please refer to following data table.

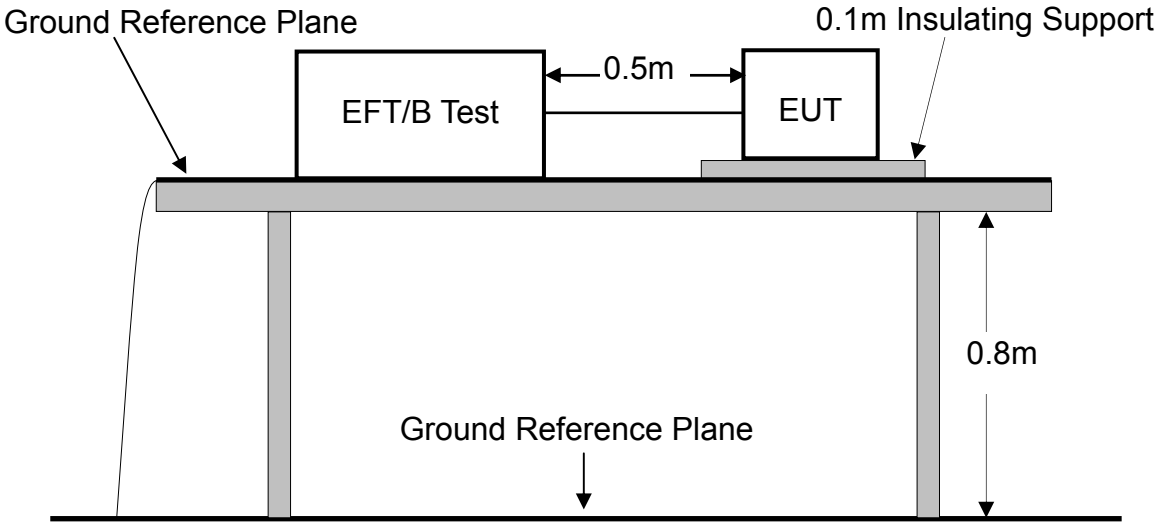
| Test Condition | | | |
|---|---|---|---|
| Temperature | 25°C | Test Voltage | AC 230V/50Hz |
| Humidity | 48%RH | Tested by | IVAN |
| Pressure | 1010mbar | Performance Criterion | CR & CT & A |
| Frequency Range | | 80-6000 MHz | |
| Test Modulation | | 1kHz, 80% AM | |
| Dwell time | | 1 second | |
| Frequency Step | | 1% | |
| Antenna Polarization | | Horizontal and Vertical | |
| Test Mode | | TX+RX | |
| 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: 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.**

# 8.7 AC MAINS FAST TRANSIENTS COMMON MODE

## TEST CONFIGURATION




## TEST PROCEDURE

Please refer to Draft ETSI EN 301 489-1 V2.2.0 Clause 9.4.2 and EN 61000-4-4 for the measurement methods.

## TEST RESULT

**PASS**

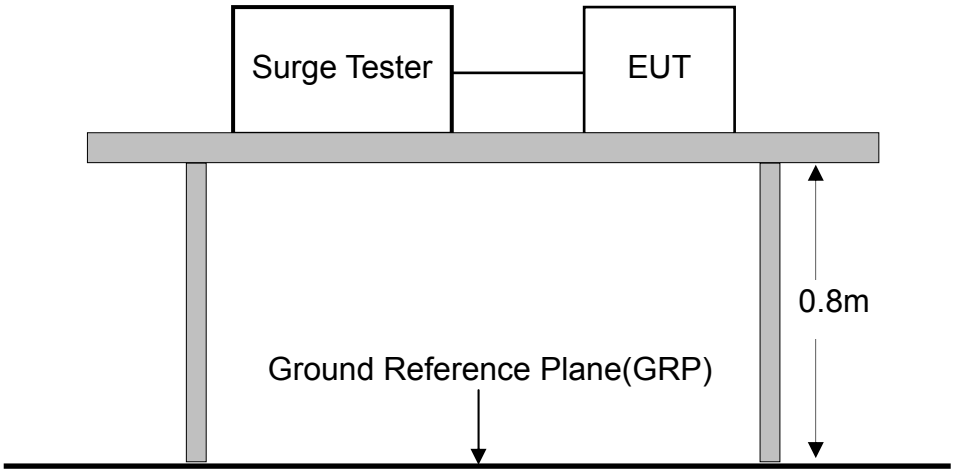
Please refer to following data table.

| Test Condition | | | |
|---|---|---|---|
| Temperature | 25°C | Test Voltage | AC 230V/50Hz |
| Humidity | 51%RH | Tested by | IVAN |
| 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 | | TX+RX | |
| 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 | - | - |

## 8.8 AC MAINS SURGE

### TEST CONFIGURATION




### TEST PROCEDURE:

Please refer to Draft ETSI EN 301 489-1 V2.2.0 Clause 9.8.2 and EN 61000-4-5 for the measurement methods.

### TEST RESULT

**PASS**

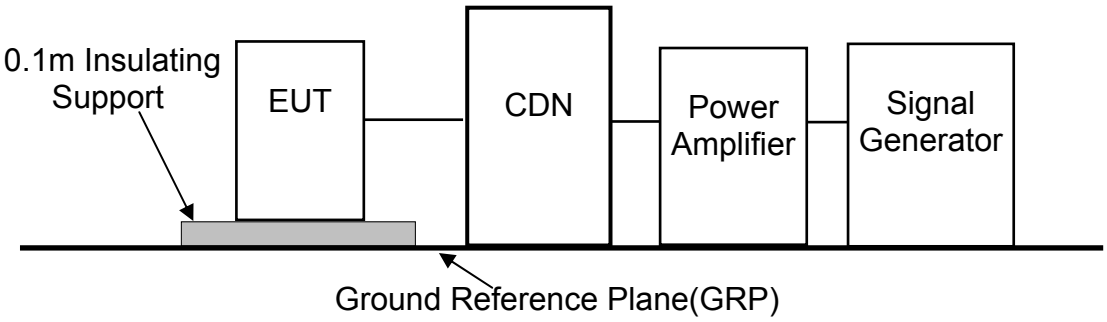
Please refer to following data table.

| Test Condition | | | |
|---|---|---|---|
| Temperature | 25°C | Test Voltage | AC 230V/50Hz |
| Humidity | 52%RH | Tested by | IVAN |
| 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 | | 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 | - | - |
| Neutral + PE | - | - |
| T, R-Ground | - | - |
| L1, 2, 3, 4-G (LAN) | - | - |

## 8.9 RADIO FREQUENCY COMMON MODE

### TEST CONFIGURATION




### TEST PROCEDURE

Please refer to Draft ETSI EN 301 489-1 V2.2.0 Clause 9.5.2, EN61000-4-6 for the measurement methods.

### TEST RESULT

**PASS**

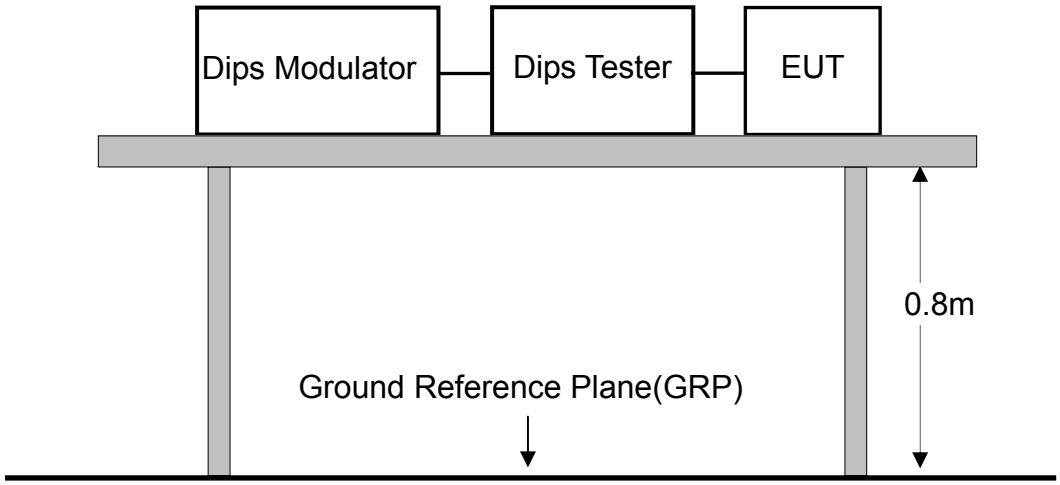
Please refer to following data table.

| Test Condition | | | |
|---|---|---|---|
| Temperature | 25°C | Test Voltage | AC 230V/50Hz |
| Humidity | 51%RH | Tested by | IVAN |
| 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 | | TX+RX | |
| 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 | - | - |

# 8.10 VOLTAGE DIPS AND INTERRUPTION

## TEST CONFIGURATION




## TEST PROCEDURE

Please refer to Draft ETSI EN 301 489-1 V2.2.0 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 230V 50Hz |
| Humidity | 51%RH | Tested by | IVAN |
| 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 | | 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 was turned off, but it could recover by users after test.**

## 8.11 TEST EQUIPMENT LIST

### FOR MAINS TERMINALS DISTURBANCE VOLTAGE TEST

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|---|---|---|---|---|---|---|
| 1. | Test Receiver | Rohde & Schwarz | ESCI | 101152 | Mar. 14, 2018 | 1 Year |
| 2. | L.I.S.N | Rohde & Schwarz | ENV 216 | 101317 | Mar. 14, 2018 | 1 Year |
| 3. | L.I.S.N | Rohde & Schwarz | ESH2-Z5 | 893606/014 | Mar. 14, 2018 | 1 Year |
| 4. | RF Switching Unit | Compliance Direction Systems Inc. | RSU-M2 | 38311 | Mar.14, 2018 | 1 Year |
| 5. | Test Software | EZ | EZ_EMC | 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. 14, 2018 | 1 Year |
| 2. | Antenna | Schwarzbeck | VULB9162 | 9162-010 | Mar. 23, 2018 | 1 Year |
| 3. | Positioning Controller | UC | UC 3000 | N/A | N/A | N/A |
| 4. | Color Monitor | SUNSPO | SP-140A | N/A | N/A | N/A |
| 5. | Single Phase Power Line Filter | SAEMC | PF201A-32 | 110210 | N/A | N/A |
| 6. | 3 Phase Power Line Filter | SAEMC | PF401A-200 | 110318 | N/A | N/A |
| 7. | DC Power Filter | SAEMC | PF301A-200 | 110245 | N/A | N/A |
| 8. | Spectrum Analyzer | Rohde & Schwarz | FSU26 | 200409/026 | Mar. 14, 2018 | 1 Year |
| 9. | Horn Antenna | COM-Power | AH-118 | 071078 | Mar. 23, 2018 | 1 Year |
| 10. | Loop Antenna | Schwarzbeck | FMZB 1513 | 1513-272 | Apr. 24, 2018 | 1 Year |
| 11. | Pre-Amplifier | HP | HP 8449B | 3008A00964 | Mar. 14, 2018 | 1 Year |
| 12. | Pre-Amplifier | HP | HP 8447D | 1145A00203 | Mar. 14, 2018 | 1 Year |
| 13. | Test Software | EZ | EZ_EMC | N/A | N/A | N/A |

### FOR HARMONIC / FLICKER MEASUREMENT

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|---|---|---|---|---|---|---|
| 1. | Power Frequency Analyser | California Instruments | PACS-1 | 72846 | Mar. 14, 2018 | 1 Year |
| 2. | 5KVA AC Power Source | California Instruments | 500liX | 60137 | Mar. 14, 2018 | 1 Year |
| 3. | 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 | Mar. 23, 2018 | 1 Year |

## FOR RF ELECTROMAGNETIC FIELD IMMUNITY TEST

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|---|---|---|---|---|---|---|
| 1. | Signal Generator | Agilent | N5181A | MY47070160 | Apr. 24, 2018 | 1 Year |
| 2. | RF Switch | SKET | N/A | N/A | N/A | N/A |
| 3. | Power Amplifier | SKET | HAP801000M_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 | GB40201469 | Apr.24,2018 | 1 Year |
| 7. | Power Sensor | Agilent | E9300A | MY41498919 | Apr.24,2018 | 1 Year |
| 8. | Power Sensor | Agilent | E9300A | US39211259 | Apr.24,2018 | 1 Year |
| 9. | E-Field Probe | Narda | EP-601 | N/A | Apr.24,2018 | 1 Year |
| 10. | Antenna | Schwarzbeck | STLP 9129 | 9129071 | Apr.24,2018 | 2 Year |
| 11. | Audio Analyzer | Rohde & Schwarz | UPV | 100894 | Mar. 23, 2018 | 1 Year |
| 12. | Chamber | Chengyu | 7*5*3.5m | N/A | Mar.26,2018 | 2 Year |
| 13. | Test Software | EZ | EZ_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. 14, 2018 | 1 Year |
| 2. | Coupling Clamp | EM TEST | HFK | 0311-94 | Mar. 14, 2018 | 1 Year |
| 3. | Test Soft | EM TEST | Iec. 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. 14, 2018 | 1 Year |
| 2. | Test Soft | EM TEST | lec. control | N/A | N/A | N/A |

## FOR INJECTED CURRENTS IMMUNITY MEASUREMENT

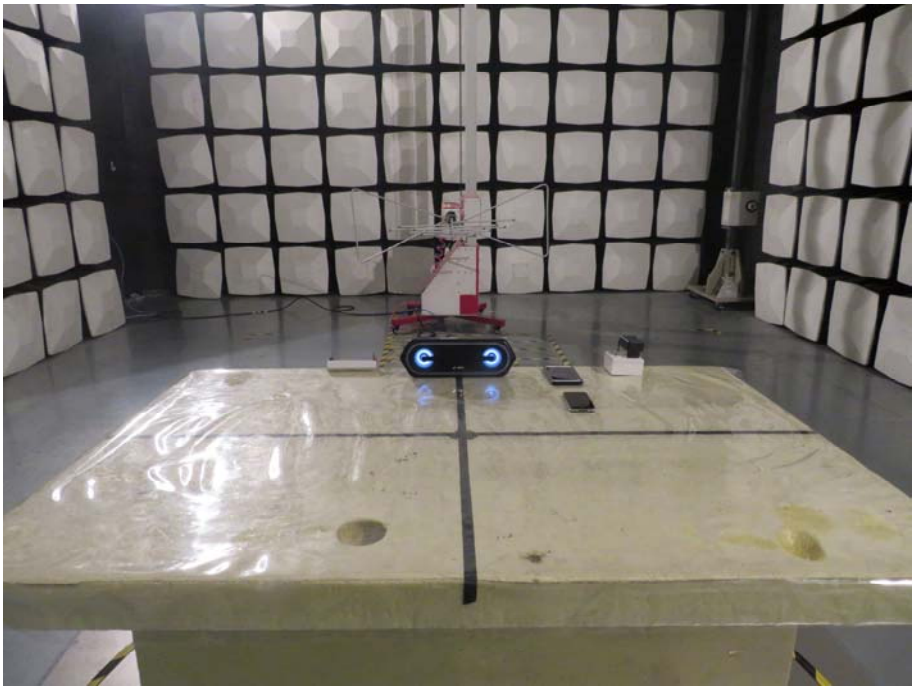
| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|---|---|---|---|---|---|---|
| 1. | Signal Generator | IFR | 2023A | N/A | Mar. 14, 2018 | 1 Year |
| 2. | Power Amplifier | SCHAFFNER | CBA9425 | 1022 | Mar. 14, 2018 | 1 Year |
| 3. | 6dB 50Watt Attenuator | SCHAFFNER | ATN6025 | N/A | Mar. 14, 2018 | 1 Year |
| 4. | CDN | Lioncel | CDN-M3-16 | 0170708 | Mar. 14, 2018 | 1 Year |
| 5. | CDN | Lioncel | CDN-M2-16 | 0170723 | Mar. 14, 2018 | 1 Year |
| 6. | Directional Coupler | SCHAFFNER | 255 | 19184 | Mar. 14, 2018 | 1 Year |
| 7. | Dips Modulator | EM TEST | V4780S2 | 0111-11 | Mar. 14, 2018 | 1 Year |
| 8. | Audio Analyzer | Rohde & Schwarz | UPV | 100894 | Mar. 23, 2018 | 1 Year |
| 9. | Test Software | EZ | EZ_CS | N/A | N/A | N/A |

## FOR VOLTAGE DIPS AND INTERRUPTIONS MEASUREMENT

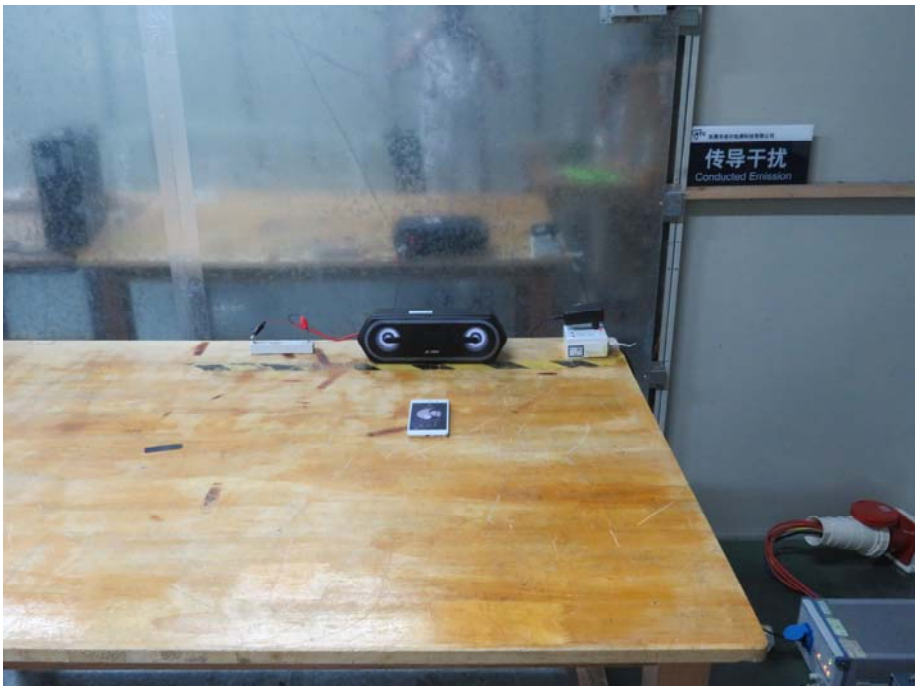
| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|---|---|---|---|---|---|---|
| 1. | Dips Tester | EM TEST | UCS500N | V1104108683 | Mar. 14, 2018 | 1 Year |
| 2. | Test Soft | EM TEST | lec.control | N/A | N/A | N/A |
| 3. | Dips Modulator | EM TEST | V4780S2 | 0111-11 | Mar. 14, 2018 | 1 Year |

# APPENDIX 1
# PHOTOGRPHS OF TEST SETUP

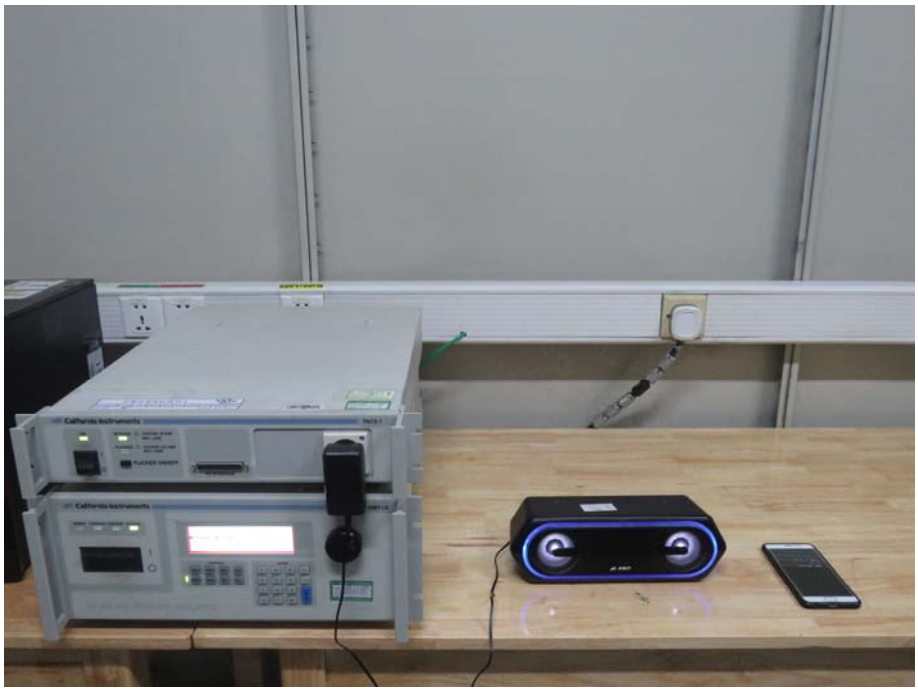
## RADIATED EMISSION TEST



## 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

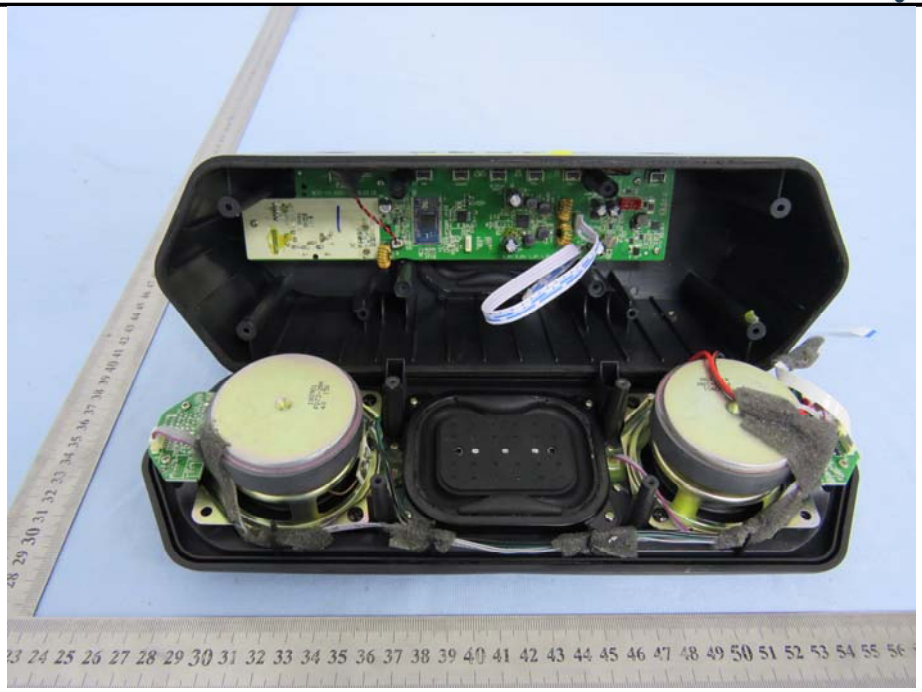
# RADIO FREQUENCY COMMON MODE TEST

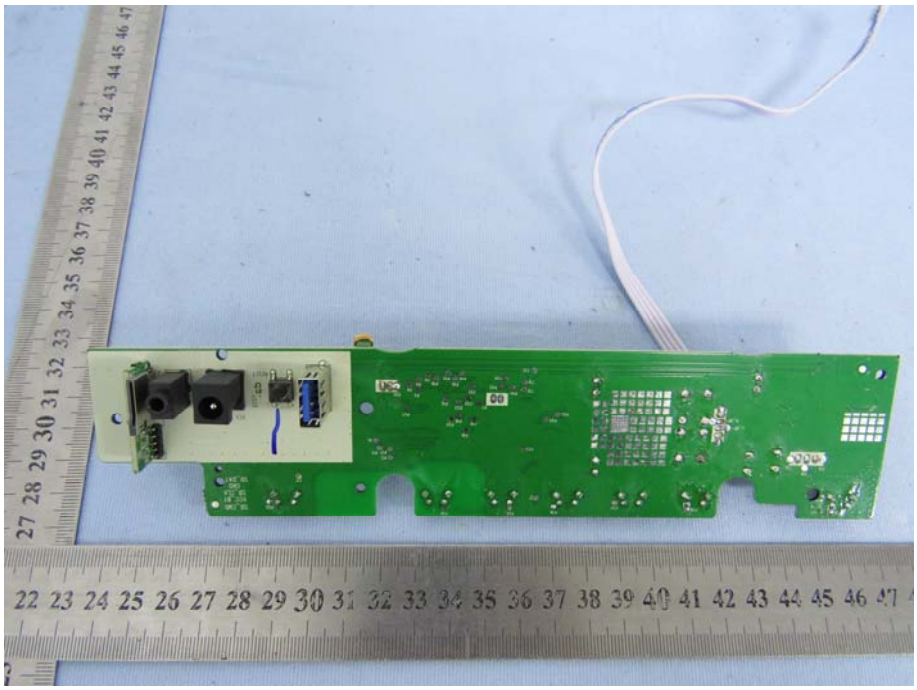
# Photos of the EUT

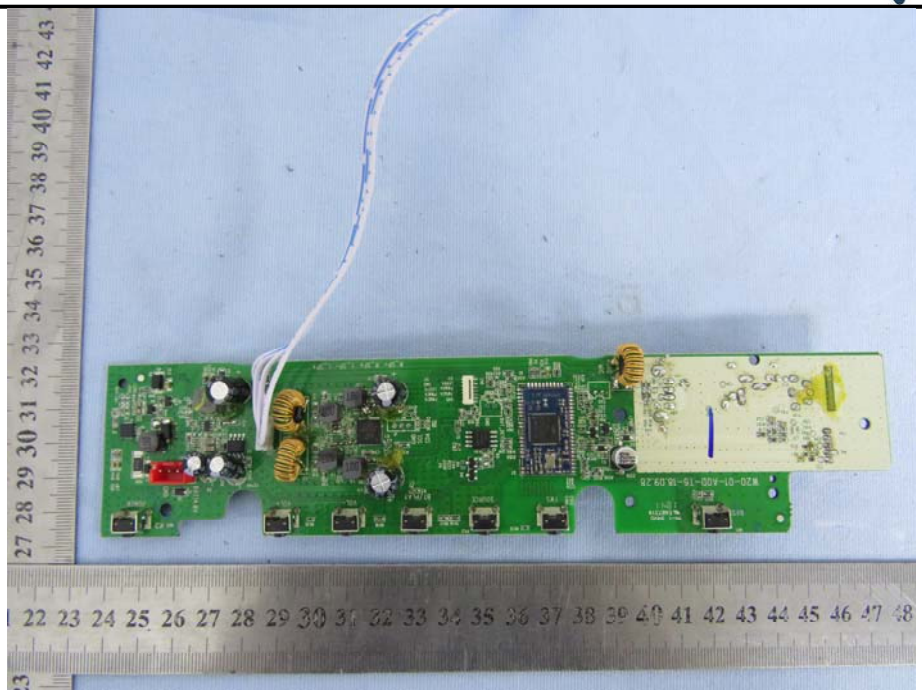

F&D

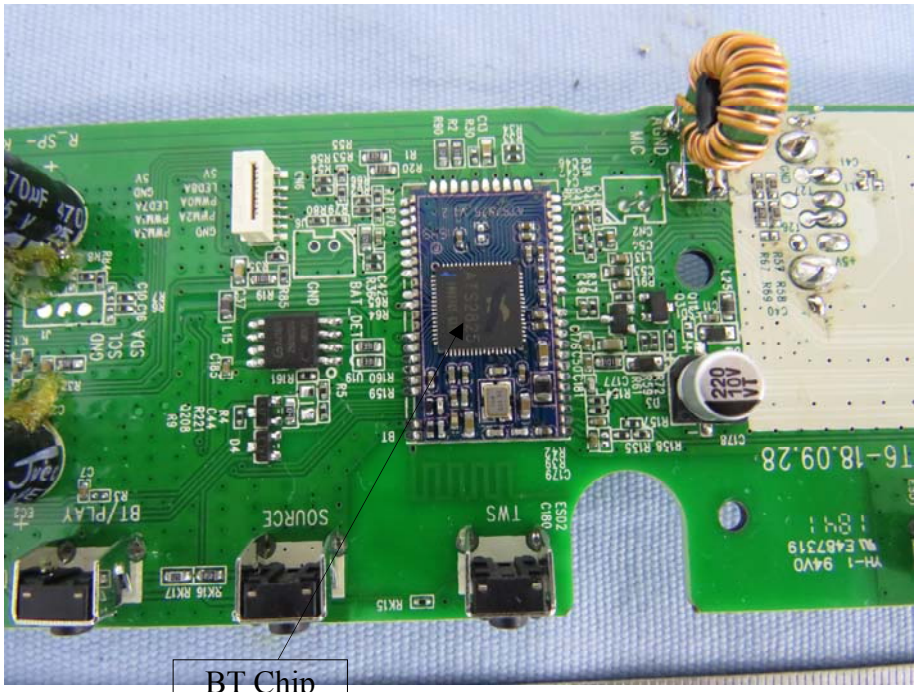

X-BASS
Light
Source


MODEL: BLJ15W180100P1-V
INPUT: 100-240V~50/60Hz 0.6A
OUTPUT: 18V 1000mA
Zhongshan Baolijin Electronic Co., Ltd.
Made in China










---End---