# TEST REPORT

| | |
|---|---|
| Applicant | Digital Gallery Global Limited |
| Address | Flat 20, 11/F, BLK A, Hoi Luen Industrial Centre, 55 Hoi Yuen Road, Kwun Tong, Kowloon, Hong Kong |

| | |
|---|---|
| Manufacturer or Supplier | Nosanky Electronic Technology Co. Ltd |
| Address | 301 Blk A No. 12 Silianhuamao Industrial Zone Henggang Street Longgang District Shenzhen China |
| Product | Qi Wireless Charging Power Station Alarm Clock |
| Brand Name | SHARP |
| Model | SPC237A |
| Additional Model & Model Difference | SPC237, SPC237B, SPC237D, SPC237BL, SPC237AMZ, SPC237OP |
| Date of tests | Jul. 14 to Aug. 04, 2020 |

The submitted sample of the above equipment has been tested for according to the requirements of the following standards:

☒ **FCC Part 15, Subpart C**

**CONCLUSION: The submitted sample was found to COMPLY with the test requirement**

| Tested by Evans He<br>Project Engineer/ EMC Department | Approved by David Huang<br>Supervisor / EMC Department |
|---|---|
| Evans He | David Huang<br>Date: Aug. 05, 2020 |

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# RELEASE CONTROL RECORD

| ISSUE NO. | REASON FOR CHANGE | DATE ISSUED |
|---|---|---|
| RF200710S003 | Original release | Aug. 05, 2020 |

# 1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

| APPLIED STANDARD: FCC Part 15, Subpart C | | | |
|---|---|---|---|
| **STANDARD SECTION** | **TEST TYPE AND LIMIT** | **RESULT** | **REMARK** |
| §15.203 | Antenna Requirement | PASS | No antenna connector is used. |
| §15.207 | AC Power Conducted Emission | PASS | Meet the requirement of limit. |
| §15.209 | Radiated Emission | PASS | Meet the requirement of limit. |
| §15.215 (c) | 20dB Bandwidth | PASS | Meet the requirement of limit. |

# 2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

| MEASUREMENT | FREQUENCY | UNCERTAINTY |
|---|---|---|
| Conducted emissions | 9kHz~30MHz | 2.70dB |
| Radiated emissions | 9KHz ~ 30MHz | 2.16dB |
| | 30MHz ~ 1GMHz | 3.74dB |

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

# 3 GENERAL INFORMATION

## 3.1 GENERAL DESCRIPTION OF EUT

| | |
|---|---|
| **PRODUCT** | Qi Wireless Charging Power Station Alarm Clock |
| **MODEL NO.** | SPC237A |
| **ADDITIONAL MODELS** | SPC237, SPC237B, SPC237D, SPC237BL, SPC237AMZ, SPC237OP |
| **FCC ID** | P5FSPC237A |
| **POWER SUPPLY** | AC 120V / 60Hz and DC 3V(1.5V*AA*2) from battery |
| **MODULATION TYPE** | ASK |
| **OPERATING FREQUENCY** | 110KHz ~ 206KHz |
| **ANTENNA TYPE** | Coil Antenna |
| **CABLE SUPPLIED** | AC Line: Unshielded, Non-Detachable 1.73m |

**NOTE:**

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.
3. Please refer to the EUT photo document (Reference No.: 200710S003) for detailed product photo.
4. Additional models (see about table) are identical with the test model SPC237A except the color of the appearance、trade name and model name for trading purose.

## 3.2 DESCRIPTION OF TEST MODES

The EUT was tested under the following modes the final worst mode was marked in boldface and recorded in this report.

| TEST FREQUENCY | TEST MODE | TEST VOLTAGE |
|---|---|---|
| **144.3298KHz** | **wireless charging** | **AC 120V / 60Hz and DC 3V from battery** |
| 144.3568KHz | Standby | |

## 3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**FCC Part 15, Subpart C**
**ANSI C63.10-2013**

All test items have been performed and recorded as per the above standards.

## 3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| NO. | PRODUCT | BRAND | MODEL NO. | SERIAL NO. | FCC ID |
|---|---|---|---|---|---|
| 1 | Wireless charging test stand | N/A | N/A | N/A | N/A |

| NO. | DESCRIPTION OF THE ABOVE SUPPORT UNITS |
|---|---|
| 1 | N/A |

# 4 EMISSION TEST

## 4.1 CONDUCTED EMISSION MEASUREMENT

### 4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

| FREQUENCY (MHz) | Class A (dBuV) | | Class B (dBuV) | |
|---|---|---|---|---|
| | Quasi-peak | Average | Quasi-peak | Average |
| 0.15 - 0.5 | 79 | 66 | 66 - 56 | 56 - 46 |
| 0.50 - 5.0 | 73 | 60 | 56 | 46 |
| 5.0 - 30.0 | 73 | 60 | 60 | 50 |

**NOTES**: (1) The lower limit shall apply at the transition frequencies.
(2) The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
(3) All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

### 4.1.2 TEST INSTRUMENTS

| Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|---|---|---|---|---|---|
| EMI Test Receiver | Rohde&Schwarz | ESCS30 | 8471241027 | Mar. 24,20 | Mar. 24,21 |
| Artificial Mains Network | SCHWARZBECK | 8127 | 8127713 | Mar. 24,20 | Mar. 24,21 |
| ISN | Com-Power | ISN T800 | 34373 | Mar. 24,20 | Mar. 24,21 |
| Test software | EZ-EMC | ICP-03A1 | N/A | N/A | N/A |

**NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
2. The test was performed in shielding room 553.

### 4.1.3 TEST PROCEDURE

The basic test procedure was in accordance with ANSI C63.4:2014 (section 7).

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20dB) were not recorded.

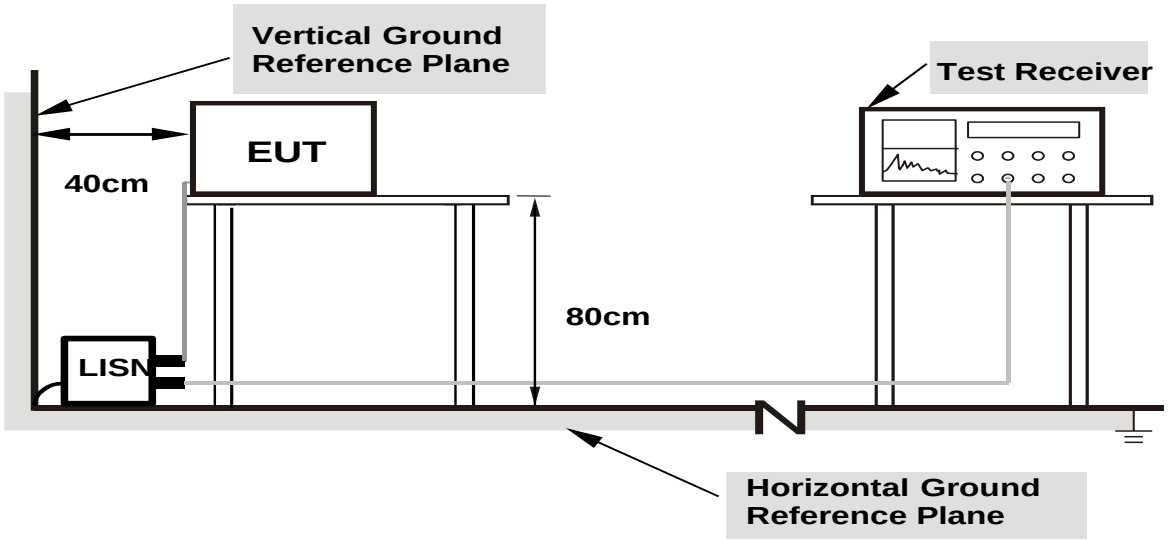
**NOTE:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

### 4.1.4 DEVIATION FROM TEST STANDARD

No deviation.

### 4.1.5 TEST SETUP




**Note: 1.Support units were connected to second LISN.**
**2.Both of LISNs (AMN) are 80cm from EUT and at least 80cm from other units and other metal planes support units.**

### 4.1.6 EUT OPERATING CONDITIONS

a. Turned on the power of all equipment.

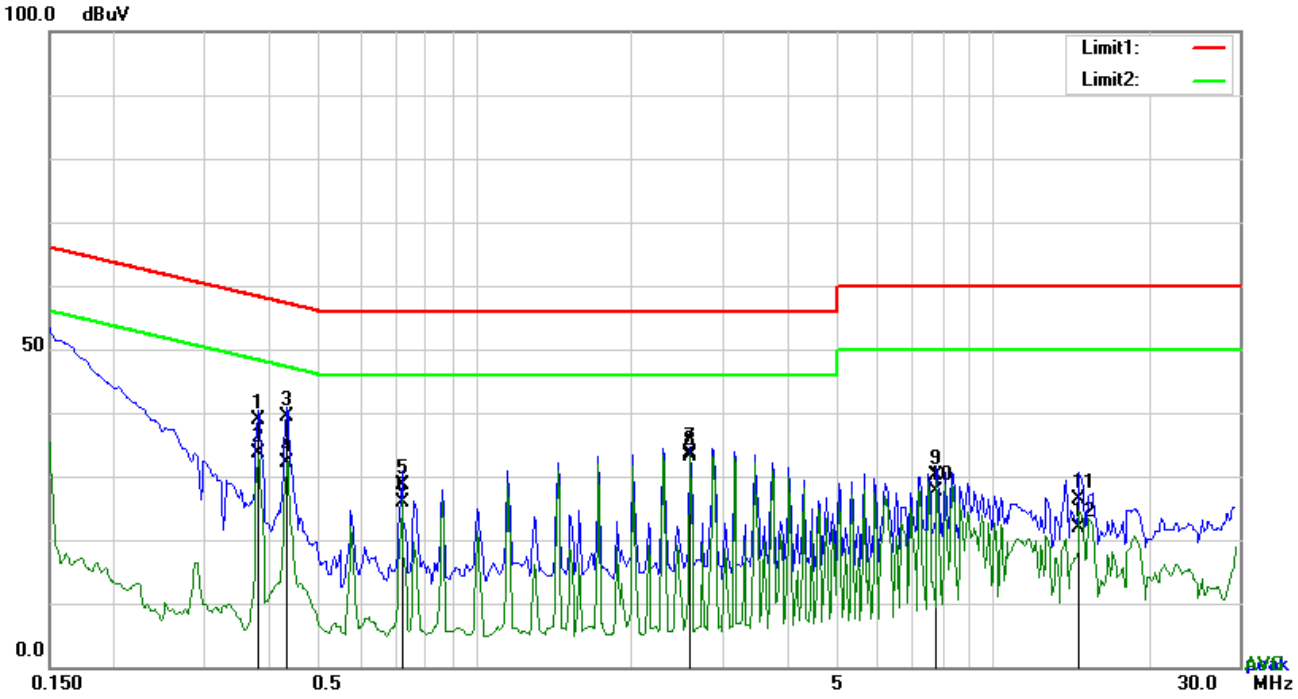
b. EUT was operated according to the type description in manufacturer's specifications or the User's Manual.

## 4.1.7 TEST RESULTS

| TEST MODE | wireless charging | 6DB BANDWIDTH | 9 kHz |
|---|---|---|---|
| TEST VOLTAGE | AC 120V / 60Hz and DC 3V from battery | PHASE | Line (L) |
| ENVIRONMENTAL CONDITIONS | 25.2deg. C, 51% RH | TESTED BY | Evans He |

| No. | P/L | Frequency (MHz) | Reading (dBuV) | Detector | Corrected (dB} | Result (dBuV) | Limit (dBuV) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| 1 | L1 | 0.3801 | 28.83 | QP | 10.11 | 38.94 | 58.28 | -19.34 |
| 2 | L1 | 0.3801 | 23.42 | AVG | 10.11 | 33.53 | 48.28 | -14.75 |
| 3 | L1 | 0.4308 | 29.16 | QP | 10.10 | 39.26 | 57.24 | -17.98 |
| 4 | L1 | 0.4308 | 22.05 | AVG | 10.10 | 32.15 | 47.24 | -15.09 |
| 5 | L1 | 0.7233 | 18.54 | QP | 10.11 | 28.65 | 56.00 | -27.35 |
| 6 | L1 | 0.7233 | 15.74 | AVG | 10.11 | 25.85 | 46.00 | -20.15 |
| 7 | L1 | 2.5953 | 23.38 | QP | 10.16 | 33.54 | 56.00 | -22.46 |
| 8 | L1 | 2.5953 | 22.91 | AVG | 10.16 | 33.07 | 46.00 | -12.93 |
| 9 | L1 | 7.7892 | 19.99 | QP | 10.23 | 30.22 | 60.00 | -29.78 |
| 10 | L1 | 7.7892 | 17.35 | AVG | 10.23 | 27.58 | 50.00 | -22.42 |
| 11 | L1 | 14.7117 | 15.95 | QP | 10.33 | 26.28 | 60.00 | -33.72 |
| 12 | L1 | 14.7117 | 11.43 | AVG | 10.33 | 21.76 | 50.00 | -28.24 |

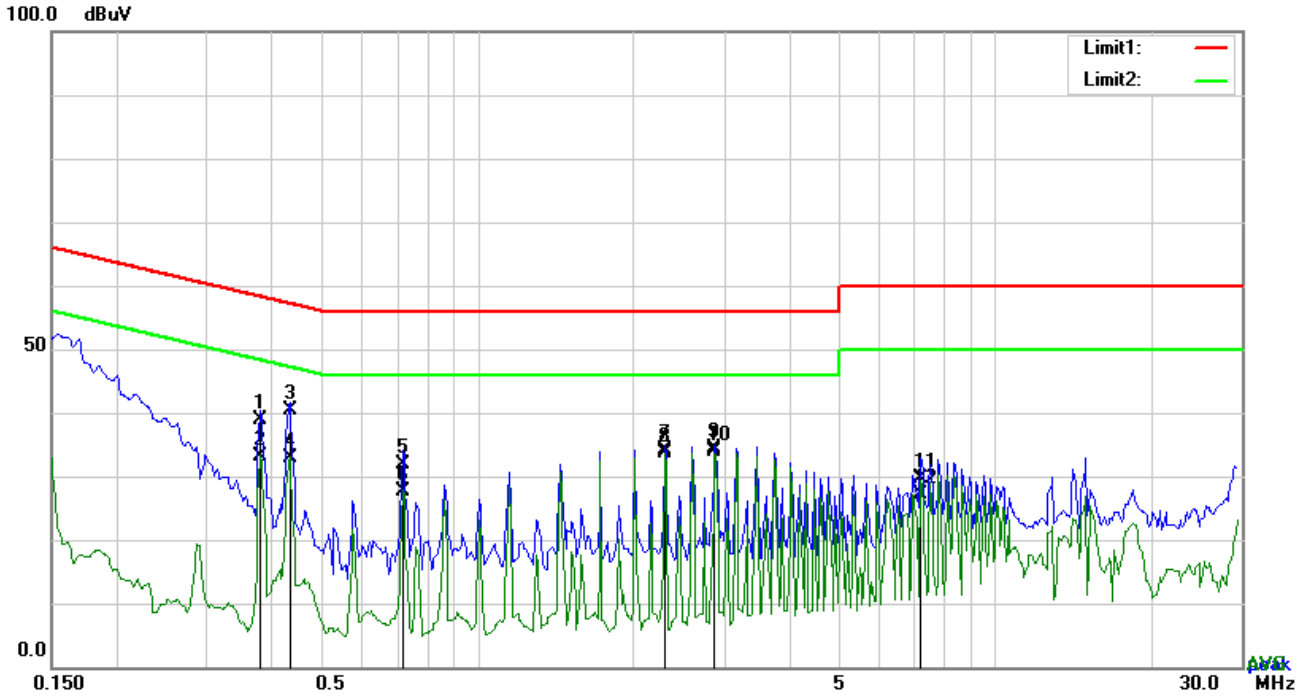
**REMARKS:** The emission levels of other frequencies were very low against the limit.



| TEST MODE | wireless charging | 6DB BANDWIDTH | 9 kHz |
|---|---|---|---|
| TEST VOLTAGE | AC 120V / 60Hz and DC 3V from battery | PHASE | Neutral (N) |
| ENVIRONMENTAL CONDITIONS | 25.2deg. C, 51% RH | TESTED BY | Evans He |

| No. | P/L | Frequency (MHz) | Reading (dBuV) | Detector | Corrected (dB} | Result (dBuV) | Limit (dBuV) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| 1 | N | 0.3801 | 28.77 | QP | 10.13 | 38.90 | 58.28 | -19.38 |
| 2 | N | 0.3801 | 23.09 | AVG | 10.13 | 33.22 | 48.28 | -15.06 |
| 3 | N | 0.4347 | 30.17 | QP | 10.12 | 40.29 | 57.16 | -16.87 |
| 4 | N | 0.4347 | 22.76 | AVG | 10.12 | 32.88 | 47.16 | -14.28 |
| 5 | N | 0.7194 | 21.83 | QP | 10.13 | 31.96 | 56.00 | -24.04 |
| 6 | N | 0.7194 | 17.50 | AVG | 10.13 | 27.63 | 46.00 | -18.37 |
| 7 | N | 2.3067 | 23.91 | QP | 10.17 | 34.08 | 56.00 | -21.92 |
| 8 | N | 2.3067 | 23.44 | AVG | 10.17 | 33.61 | 46.00 | -12.39 |
| 9 | N | 2.8839 | 24.11 | QP | 10.18 | 34.29 | 56.00 | -21.71 |
| 10 | N | 2.8839 | 23.66 | AVG | 10.18 | 33.84 | 46.00 | -12.16 |
| 11 | N | 7.2081 | 19.40 | QP | 10.23 | 29.63 | 60.00 | -30.37 |
| 12 | N | 7.2081 | 16.78 | AVG | 10.23 | 27.01 | 50.00 | -22.99 |

**REMARKS:** The emission levels of other frequencies were very low against the limit.



## 4.2 RADIATED EMISSION MEASUREMENT

### 4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

TEST STANDARD: FCC Part 15, Subpart C, Section 15.209

Emissions radiated outside of the specified bands, shall be according to the general radiated limits as following:

| FREQUENCIES (MHz) | FIELD STRENGTH (microvolts/meter) | MEASUREMENT DISTANCE (meters) |
|---|---|---|
| 0.009 – 0.490 | 2400/F(kHz) | 300 |
| 0.490 – 1.705 | 24000/F(kHz) | 30 |
| 1.705 – 30.0 | 30 | 30 |
| 30 – 88 | 100 | 3 |
| 88 – 216 | 150 | 3 |
| 216 - 960 | 200 | 3 |
| Above 960 | 500 | 3 |

**NOTE**:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.
4. The measured field strength was extrapolated to distance 30 meters, using the formula that the limit of field strength varies as the inverse distance square (40dB per decade of distance)

## 4.2.2 TEST INSTRUMENTS

**FREQUENCY 9KHz-30MHz**

| Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|---|---|---|---|---|---|
| EMI Test Receiver | Rohde&Schwarz | ESL6 | 1300.5001K06 -100262-eQ | Mar. 24,20 | Mar. 24,21 |
| Active Antenna | CMO-POWER | AL-130 | 121031 | Mar. 27, 20 | Mar. 26, 21 |
| 3m Semi-anechoic Chamber | SAEMC | 9m*6m*6m | N/A | Mar. 24, 20 | Mar. 24, 21 |
| Test Software | EZ-EMC | ICP-03A1 | N/A | N/A | N/A |

**NOTES:** 1. The test was performed in 3m Chamber.
2. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
3. The FCC Site Registration No. is 535293.

**FREQUENCY 30MHz-1GHz**

| Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|---|---|---|---|---|---|
| EMI Test Receiver | Rohde&Schwarz | ESL6 | 1300.5001K06 -100262-eQ | Mar. 24,20 | Mar. 24,21 |
| Bilog Antenna | Sunol Sciences | JB6 | A110712 | Apr. 08, 20 | Apr. 07, 21 |
| Active Antenna | CMO-POWER | AL-130 | 121031 | Mar. 27, 20 | Mar. 26, 21 |
| Signal Amplifier | HP | 8447E | 443008 | Mar. 24, 20 | Mar. 24, 21 |
| 3m Semi-anechoic Chamber | SAEMC | 9m*6m*6m | N/A | Mar. 24, 20 | Mar. 24, 21 |
| Test Software | EZ-EMC | ICP-03A1 | N/A | N/A | N/A |

**NOTES:** 1. The test was performed in 3m Chamber.
2. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
3. The FCC Site Registration No. is 535293.

### 4.2.3 TEST PROCEDURE

< Below 30MHz >

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters Semi-anechoic chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

<30MHz~1GHz >

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

**NOTE:**

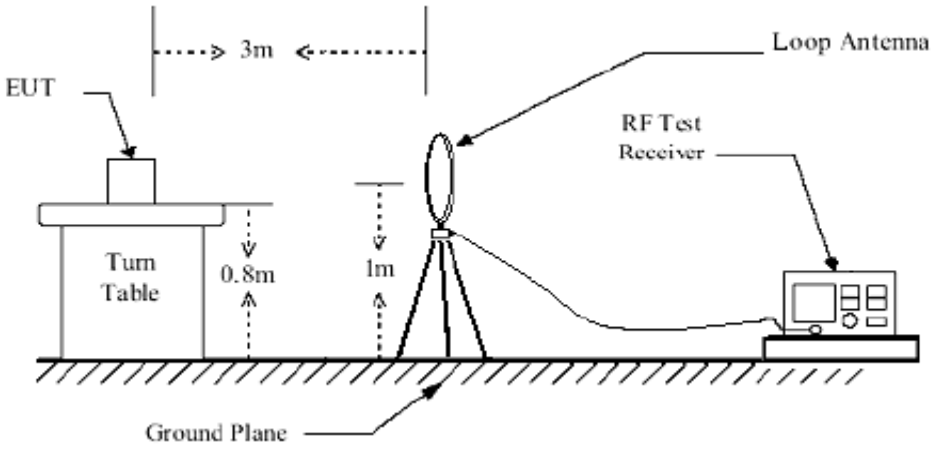
1. The resolution bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
3. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) - Pre-amplifier Gain (dB).
4. Margin value = Emission level – Limit value.

### 4.2.4 DEVIATION FROM TEST STANDARD

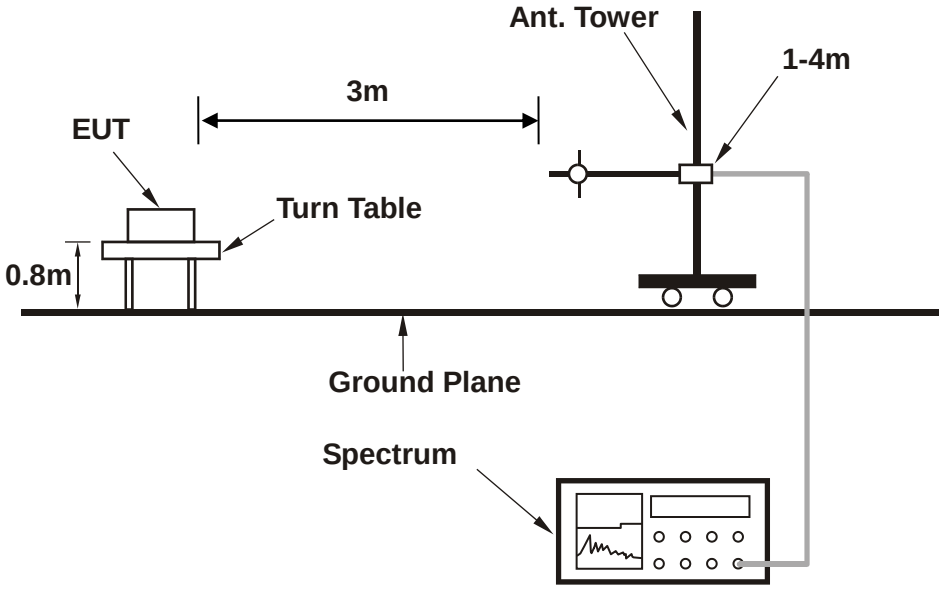
No deviation.

## 4.2.5 TEST SETUP

**Below 30MHz test setup**




**Below 1GHz test setup**




**Note:** For the actual test configuration, please refer to the attached file (Test Setup Photo).

## 4.2.6 EUT OPERATING CONDITIONS

a. Turn on the power supply of the EUT.

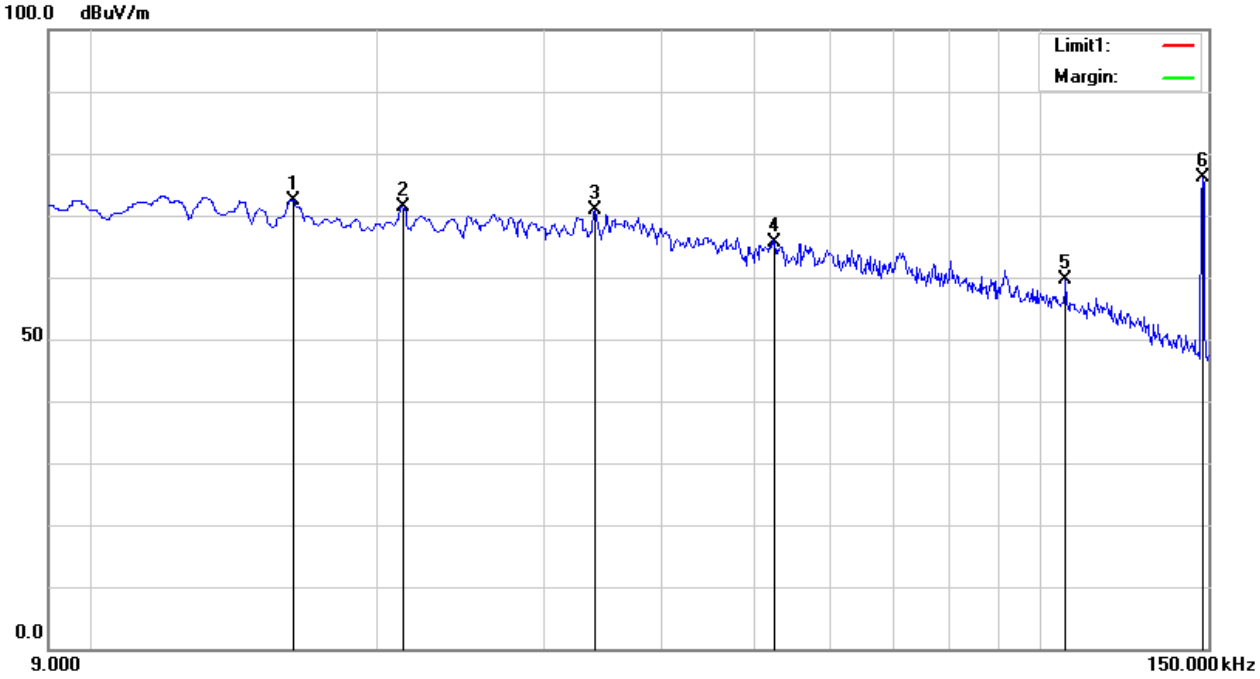
b. EUT was operated according to the type description in manufacturer's specifications or the User's Manual.

## 4.2.7 TEST RESULTS

| TEST MODE | wireless charging | FREQUENCY RANGE | 9 -150KHz |
|---|---|---|---|
| TEST VOLTAGE | AC 120V / 60Hz and DC 3V from battery | DETECTOR FUNCTION & RESOLUTION BANDWIDTH | Quasi-Peak, 200Hz |
| ENVIRONMENTAL CONDITIONS | 26.3deg. C, 54% RH | TESTED BY: Evans He | |

| ANTENNA POLARITY & TEST DISTANCE: PARALLEL AT 3M | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| No. | Frequency | Reading | Ant_F | Cab_L | Result | Limit | Margin | Height | Degree |
| | (MHz) | (dBuV/m) | (dB/m) | (dB) | (dBuV/m) | (dBuV/m) | (dB) | (cm) | ( ° ) |
| 1 | 0.0163 | 57.49 | 14.82 | 0.01 | 72.32 | 123.36 | -51.04 | 100 | 20 |
| 2 | 0.0213 | 56.86 | 14.56 | 0.01 | 71.43 | 121.04 | -49.61 | 100 | 156 |
| 3 | 0.034 | 56.57 | 14.18 | 0.02 | 70.77 | 116.97 | -46.2 | 100 | 71 |
| 4 | 0.0524 | 51.81 | 13.72 | 0.02 | 65.55 | 113.22 | -47.67 | 100 | 157 |
| 5 | 0.1061 | 45.57 | 14.11 | 0.03 | 59.71 | 107.09 | -47.38 | 100 | 328 |
| 6 | 0.1482 | 61.82 | 14.2 | 0.03 | 76.05 | 104.19 | -28.14 | 100 | 110 |

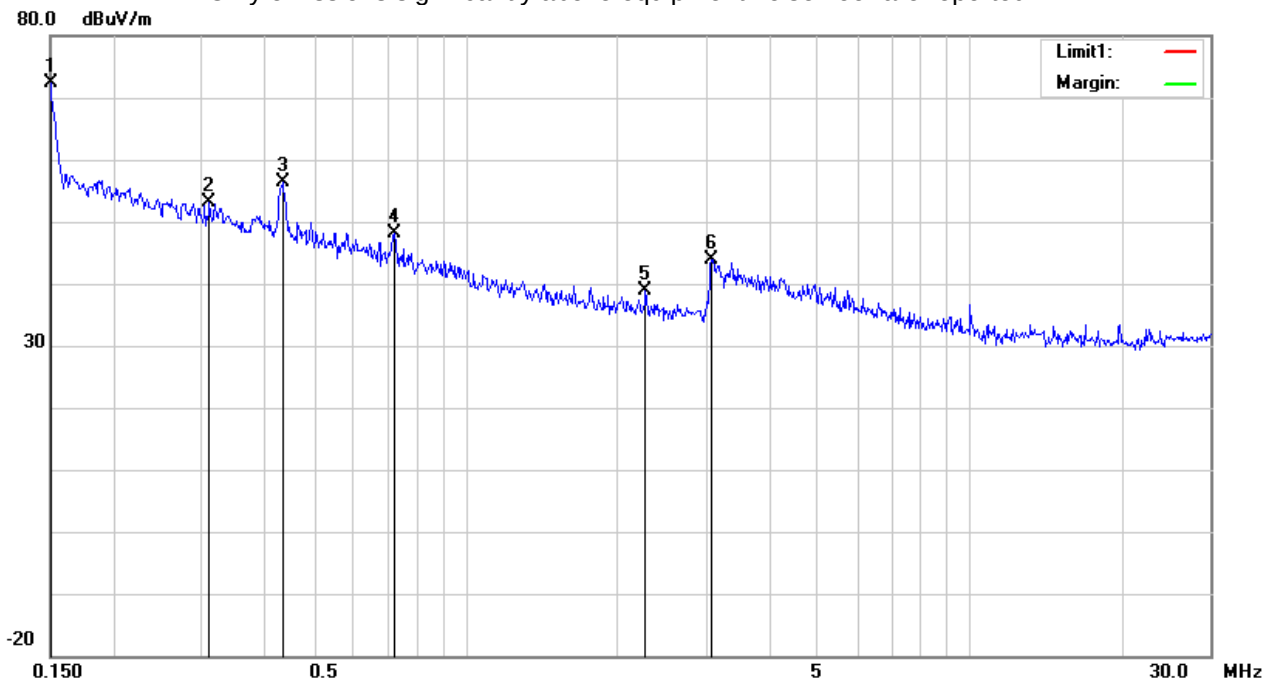
**REMARKS:** 1. Peak detector quick scan is showed on the graph and final quasi-peak detector data is measured corresponding to relevant limit and recorded in the data table.
2. Negative sign (-) in the margin column signify levels below the limit.
3. Frequency range scanned: 0.009-0.15MHz.
4. Only emissions significantly above equipment noise floor are reported.



| | | | |
|---|---|---|---|
| **TEST MODE** | wireless charging | **FREQUENCY RANGE** | 150KHz-30MHz |
| **TEST VOLTAGE** | AC 120V / 60Hz and DC 3V from battery | **DETECTOR FUNCTION & RESOLUTION BANDWIDTH** | Quasi-Peak, 200Hz |
| **ENVIRONMENTAL CONDITIONS** | 26.3deg. C, 54% RH | **TESTED BY**: Evans He | |

| ANTENNA POLARITY & TEST DISTANCE: PARALLEL AT 3M | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| No. | Frequency | Reading | Ant_F | Cab_L | Result | Limit | Margin | Height | Degree |
| | (MHz) | (dBuV/m) | (dB/m) | (dB) | (dBuV/m) | (dBuV/m) | (dB) | (cm) | ( ° ) |
| 1 | 0.15 | 58.12 | 14.2 | 0.03 | 72.35 | 104.08 | -31.73 | 100 | 216 |
| 2 | 0.31 | 38.78 | 14.26 | 0.04 | 53.08 | 97.78 | -44.7 | 100 | 318 |
| 3 | 0.4328 | 42.01 | 14.22 | 0.04 | 56.27 | 94.88 | -38.61 | 100 | 39 |
| 4 | 0.7198 | 34.19 | 13.89 | 0.04 | 48.12 | 70.46 | -22.34 | 100 | 248 |
| 5 | 2.2726 | 24.55 | 14.34 | 0.04 | 38.93 | 69.54 | -30.61 | 100 | 231 |
| 6 | 3.0738 | 29.5 | 14.44 | 0.05 | 43.99 | 69.54 | -25.55 | 100 | 322 |

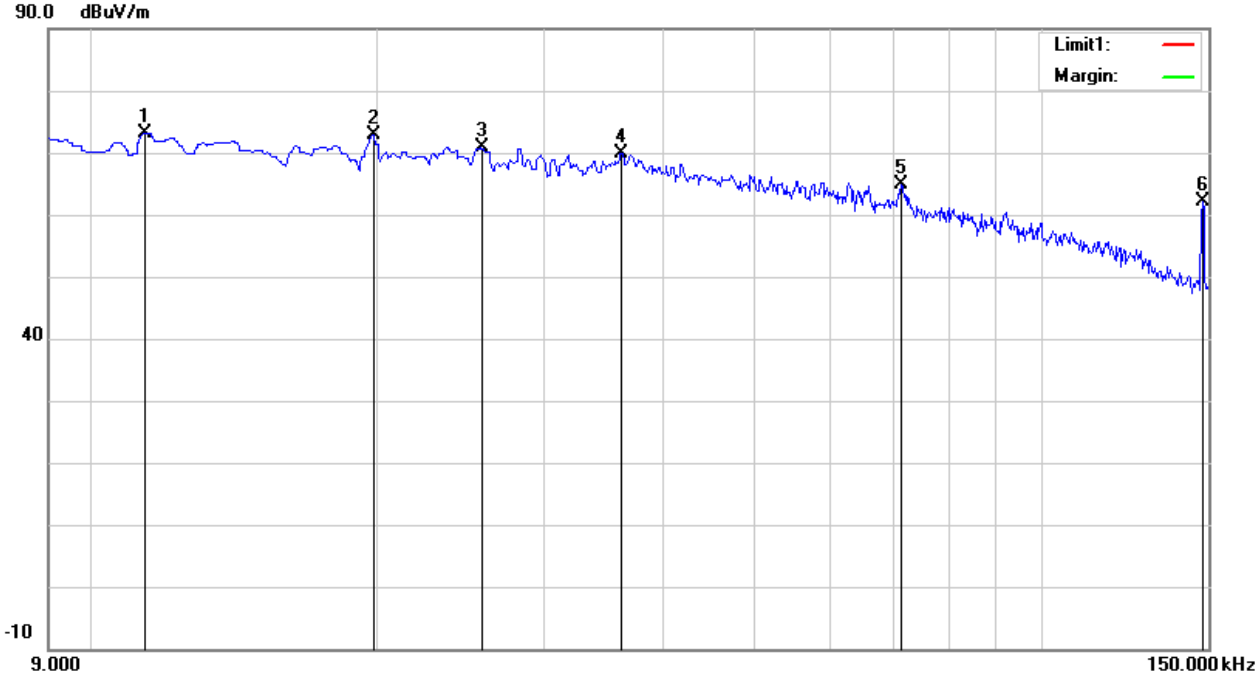
**REMARKS:** 1. Peak detector quick scan is showed on the graph and final quasi-peak detector data is measured corresponding to relevant limit and recorded in the data table.
2. Negative sign (-) in the margin column signify levels below the limit.
3. Frequency range scanned: 0.15-30MHz.
4. Only emissions significantly above equipment noise floor are reported.



| | | | |
|---|---|---|---|
| **TEST MODE** | wireless charging | **FREQUENCY RANGE** | 9 -150KHz |
| **TEST VOLTAGE** | AC 120V / 60Hz and DC 3V from battery | **DETECTOR FUNCTION & RESOLUTION BANDWIDTH** | Quasi-Peak, 200Hz |
| **ENVIRONMENTAL CONDITIONS** | 26.3deg. C, 54% RH | **TESTED BY**: Evans He | |

| ANTENNA POLARITY & TEST DISTANCE: PERPENDICYLARL AT 3M | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| No. | Frequency | Reading | Ant_F | Cab_L | Result | Limit | Margin | Height | Degree |
| | (MHz) | (dBuV/m) | (dB/m) | (dB) | (dBuV/m) | (dBuV/m) | (dB) | (cm) | ( ° ) |
| 1 | 0.0114 | 58.1 | 15.12 | 0.01 | 73.23 | 126.47 | -53.24 | 100 | 270 |
| 2 | 0.0199 | 58.23 | 14.61 | 0.01 | 72.85 | 121.63 | -48.78 | 100 | 165 |
| 3 | 0.0258 | 56.32 | 14.43 | 0.01 | 70.76 | 119.37 | -48.61 | 100 | 25 |
| 4 | 0.0361 | 55.76 | 14.12 | 0.02 | 69.9 | 116.45 | -46.55 | 100 | 332 |
| 5 | 0.0713 | 50.91 | 13.87 | 0.02 | 64.8 | 110.54 | -45.74 | 100 | 74 |
| 6 | 0.1482 | 47.96 | 14.2 | 0.03 | 62.19 | 104.19 | -42 | 100 | 92 |

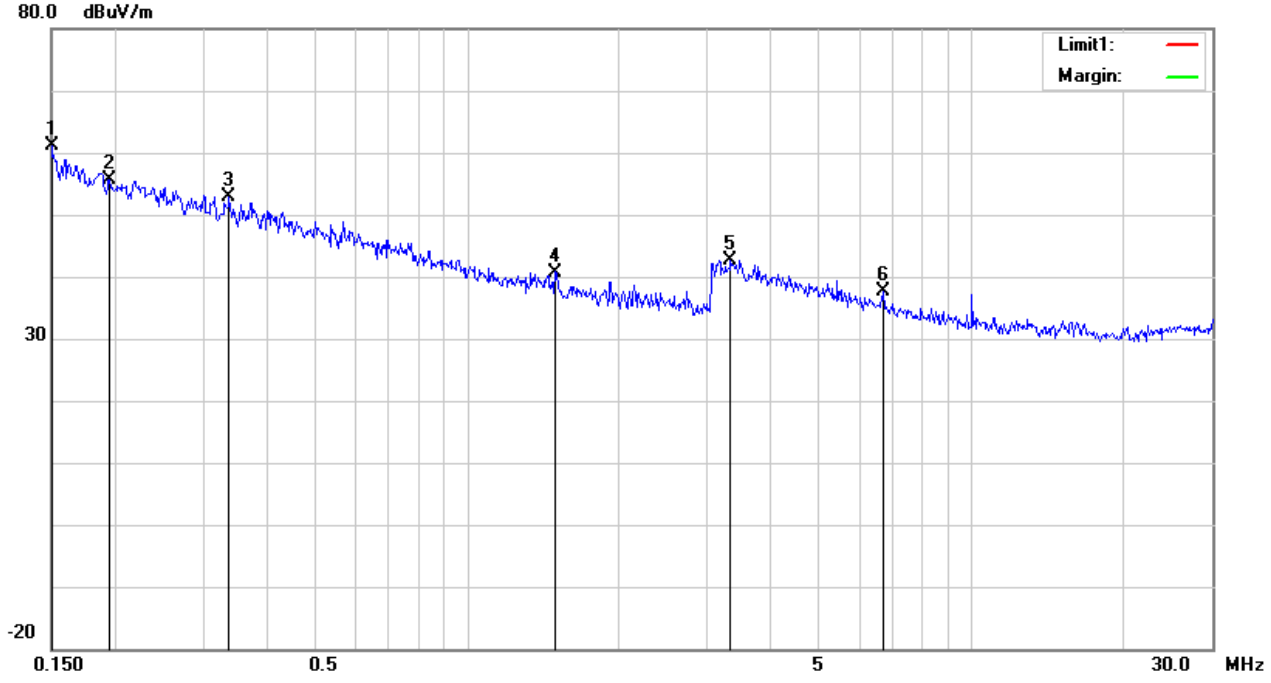
**REMARKS:** 1. Peak detector quick scan is showed on the graph and final quasi-peak detector data is measured corresponding to relevant limit and recorded in the data table.
2. Negative sign (-) in the margin column signify levels below the limit.
3. Frequency range scanned: 0.009-0.15MHz.
4. Only emissions significantly above equipment noise floor are reported.



| | | | |
|---|---|---|---|
| **TEST MODE** | wireless charging | **FREQUENCY RANGE** | 150KHz-30MHz |
| **TEST VOLTAGE** | AC 120V / 60Hz and DC 3V from battery | **DETECTOR FUNCTION & RESOLUTION BANDWIDTH** | Quasi-Peak, 200Hz |
| **ENVIRONMENTAL CONDITIONS** | 26.3deg. C, 54% RH | **TESTED BY**: Evans He | |

| ANTENNA POLARITY & TEST DISTANCE: PERPENDICYLARL AT 3M | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| No. | Frequency | Reading | Ant_F | Cab_L | Result | Limit | Margin | Height | Degree |
| | (MHz) | (dBuV/m) | (dB/m) | (dB) | (dBuV/m) | (dBuV/m) | (dB) | (cm) | ( ° ) |
| 1 | 0.15 | 47.01 | 14.2 | 0.03 | 61.24 | 104.08 | -42.84 | 100 | 114 |
| 2 | 0.1955 | 41.26 | 14.29 | 0.03 | 55.58 | 101.78 | -46.2 | 100 | 332 |
| 3 | 0.3374 | 38.67 | 14.25 | 0.04 | 52.96 | 97.04 | -44.08 | 100 | 159 |
| 4 | 1.4953 | 26.81 | 13.9 | 0.04 | 40.75 | 64.11 | -23.36 | 100 | 42 |
| 5 | 3.3281 | 28.2 | 14.48 | 0.05 | 42.73 | 69.54 | -26.81 | 100 | 159 |
| 6 | 6.6978 | 22.96 | 14.56 | 0.05 | 37.57 | 69.54 | -31.97 | 100 | 327 |

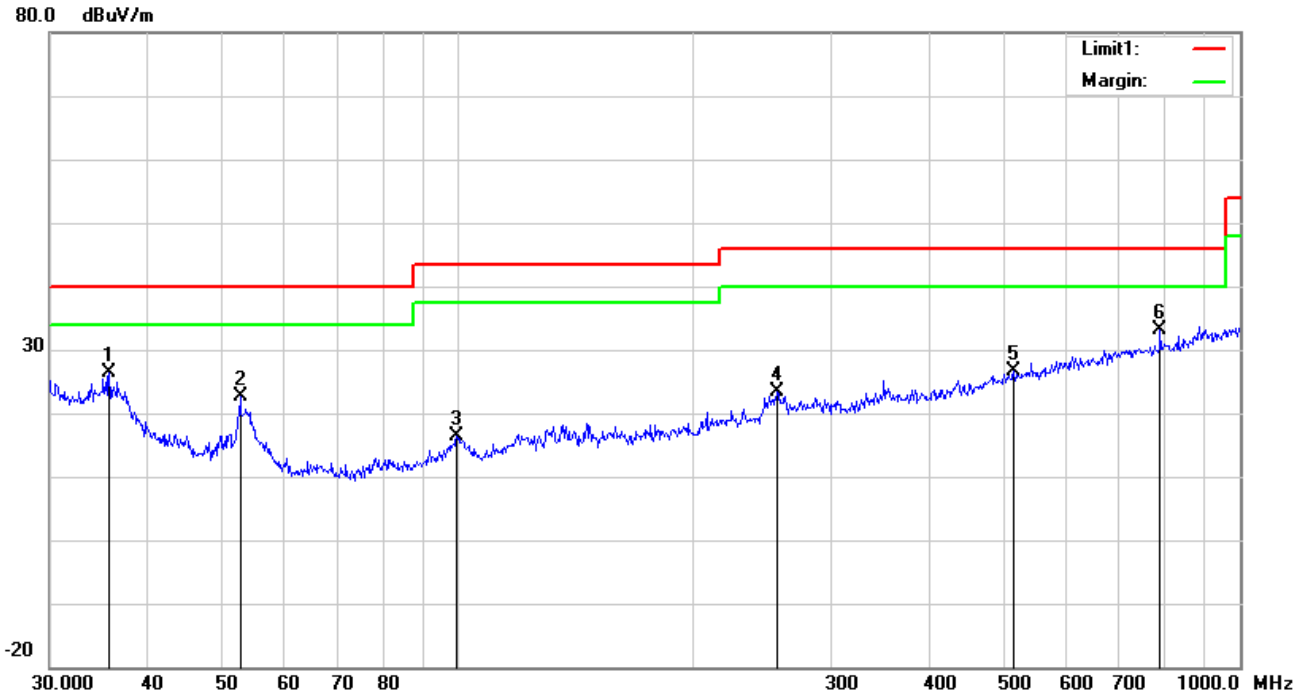
**REMARKS:** 1. Peak detector quick scan is showed on the graph and final quasi-peak detector data is measured corresponding to relevant limit and recorded in the data table.
2. Negative sign (-) in the margin column signify levels below the limit.
3. Frequency range scanned: 0.15-30MHz
4. Only emissions significantly above equipment noise floor are reported.



| TEST MODE | wireless charging | FREQUENCY RANGE | 30-1000MHz |
|---|---|---|---|
| TEST VOLTAGE | AC 120V / 60Hz and DC 3V from battery | DETECTOR FUNCTION & RESOLUTION BANDWIDTH | Quasi-Peak, 120kHz |
| ENVIRONMENTAL CONDITIONS | 26.3deg. C, 54% RH | TESTED BY: Evans He | |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| No. | Frequency | Reading | Ant_F | PA_G | Cab_L | Result | Limit | Margin | Height | Degree |
| | (MHz) | (dBuV/m) | (dB/m) | (dB) | (dB) | (dBuV/m) | (dBuV/m) | (dB) | (cm) | ( ° ) |
| 1 | 35.7491 | 32.29 | 16.27 | 22.25 | 0.16 | 26.47 | 40.00 | -13.53 | 300 | 264 |
| 2 | 52.5753 | 37.33 | 7.55 | 22.39 | 0.25 | 22.74 | 40.00 | -17.26 | 200 | 121 |
| 3 | 99.5281 | 29.35 | 8.65 | 22.32 | 0.82 | 16.50 | 43.50 | -27.00 | 200 | 151 |
| 4 | 255.6231 | 31.76 | 12.17 | 22.29 | 1.62 | 23.26 | 46.00 | -22.74 | 200 | 201 |
| 5 | 513.6331 | 27.27 | 18.97 | 21.78 | 2.17 | 26.63 | 46.00 | -19.37 | 100 | 116 |
| 6 | 790.6188 | 29.67 | 22.11 | 21.17 | 2.54 | 33.15 | 46.00 | -12.85 | 287 | 360 |

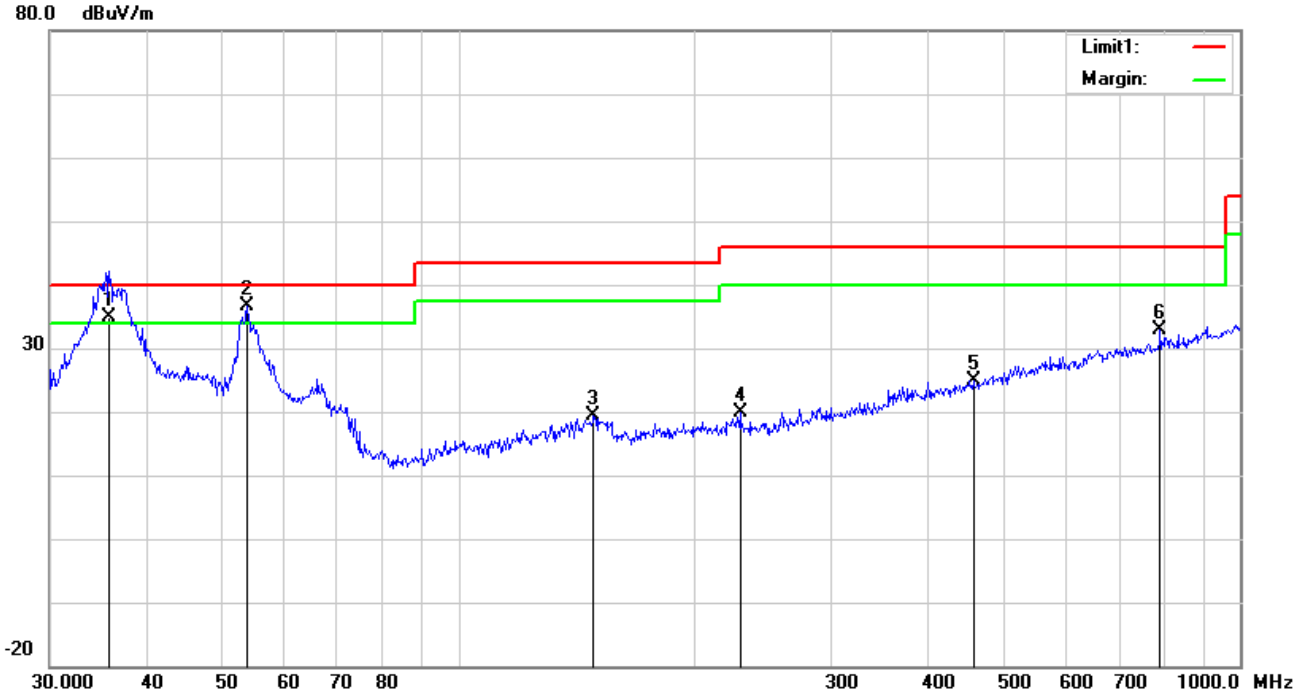
**REMARKS:**
1. Peak detector quick scan is showed on the graph and final quasi-peak detector data is measured corresponding to relevant limit and recorded in the data table.
2. Negative sign (-) in the margin column signify levels below the limit.
3. Frequency range scanned: 30MHz to 1000MHz.
4. Only emissions significantly above equipment noise floor are reported.



| | | | |
|---|---|---|---|
| **TEST MODE** | wireless charging | **FREQUENCY RANGE** | 30-1000MHz |
| **TEST VOLTAGE** | AC 120V / 60Hz and DC 3V from battery | **DETECTOR FUNCTION & RESOLUTION BANDWIDTH** | Quasi-Peak, 120kHz |
| **ENVIRONMENTAL CONDITIONS** | 26.3deg. C, 54% RH | **TESTED BY**: Evans He | |

| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| No. | Frequency | Reading | Ant_F | PA_G | Cab_L | Result | Limit | Margin | Height | Degree |
| | (MHz) | (dBuV/m) | (dB/m) | (dB) | (dB) | (dBuV/m) | (dBuV/m) | (dB) | (cm) | ( ° ) |
| 1 | 35.7491 | 40.62 | 16.27 | 22.25 | 0.16 | 34.80 | 40.00 | -5.20 | 100 | 168 |
| 2 | 53.6932 | 51.28 | 7.48 | 22.39 | 0.25 | 36.62 | 40.00 | -3.38 | 300 | 112 |
| 3 | 148.9625 | 29.56 | 10.93 | 22.35 | 1.26 | 19.40 | 43.50 | -24.10 | 300 | 96 |
| 4 | 229.2931 | 29.15 | 11.49 | 22.33 | 1.59 | 19.90 | 46.00 | -26.10 | 100 | 84 |
| 5 | 455.9058 | 27.31 | 17.41 | 21.90 | 2.02 | 24.84 | 46.00 | -21.16 | 100 | 321 |
| 6 | 790.6188 | 29.32 | 22.11 | 21.17 | 2.54 | 32.80 | 46.00 | -13.20 | 100 | 318 |

**REMARKS:**
1. Peak detector quick scan is showed on the graph and final quasi-peak detector data is measured corresponding to relevant limit and recorded in the data table.
2. Negative sign (-) in the margin column signify levels below the limit.
3. Frequency range scanned: 30MHz to 1000MHz.
4. Only emissions significantly above equipment noise floor are reported.



## 4.3. 20dB BANDWIDTH MEASUREMENT

### 4.3.1 LIMITS OF 20dB BANDWIDTH MEASUREMENT

The field strength of any emissions appearing between the band edges and out of band shall be attenuated at least 20 dB below the level of the unmodulated carrier or to the general limits in Section 15.209.

### 4.3.2 TEST INSTRUMENTS

| Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|---|---|---|---|---|---|
| Wireless Connectivity Tester | R&S | CMW270 | 1201.0002K75 | Dec. 18, 19 | Dec. 17, 20 |
| MXA VEXTOR SIGNAL | Agilent | n5182a | MY50140530 | Mar. 24,20 | Mar. 24,21 |
| MXA signal analyzer | Agilent | n9020a | MY49100060 | Mar. 24,20 | Mar. 24,21 |
| RF Control Unit | Tonscend | JS0806-2 | 188060112 | Mar. 24,20 | Mar. 24,21 |
| Signal Generation | Agilent | E4421B | US40051152 | Dec. 18, 19 | Dec. 17, 20 |
| DC Power Supply | Agilent | E3640A | MY40004013 | Mar. 30,20 | Mar. 30,21 |
| Programmable Temperature & Humidity Chamber | Hongjin | HYC-TH-225 DH | DG-180746 | Mar. 24,20 | Mar. 24,21 |
| Test System | Tonscend | JS 1120-3 | N/A | N/A | N/A |
| Power Splitter | Weinschel | 1580-1 | TL177 | Mar. 27,20 | Mar. 27,21 |

**NOTE:**

1. The test was performed in RF Oven room.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

### 4.3.3 TEST PROCEDURE

a. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.

b. Turn on the EUT, then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.

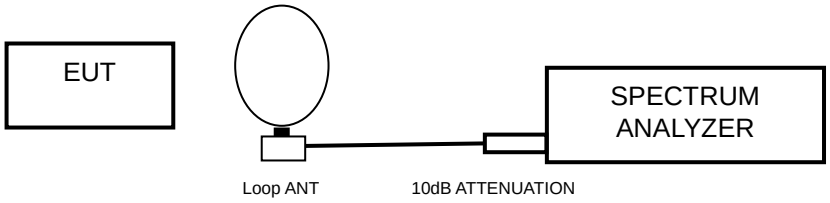
c. Measure the frequency difference of two frequencies that were attenuated 20dB from the reference level. Record the frequency difference as the emission bandwidth.

d. Repeat above procedures until all frequencies measured were complete.

### 4.3.4 DEVIATION FROM TEST STANDARD

No deviation.

### 4.3.5 TEST SETUP



### 4.3.6 EUT OPERATING CONDITION

a. Turn on the EUT.

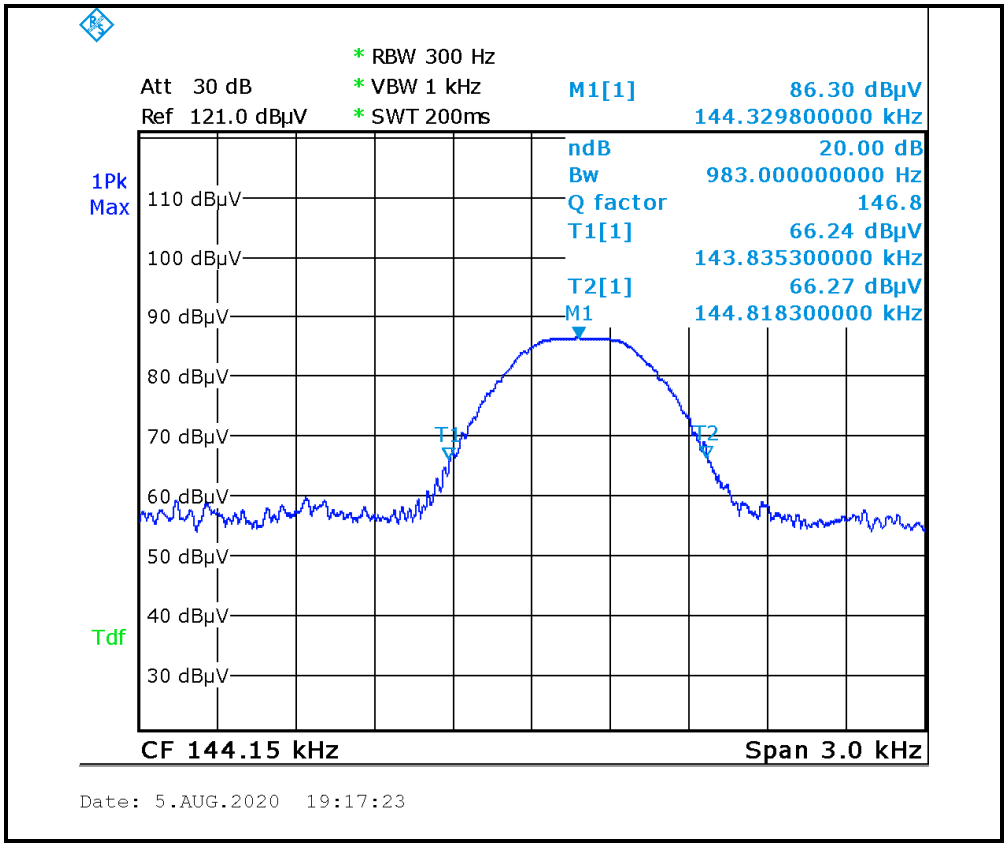
b. The EUT tested in charging mode and standby mode respectively.

### 4.3.7 TEST RESULTS

| TEST MODE | CHANNEL FREQUENCY (KHz) | 20dB BANDWIDTH (Hz) |
|---|---|---|
| Charging + Transmiting | 144.3298 | 983 |

| Lower & Upper Test Frequency Point (MHz) | Test Frequency (KHz) | P/F |
|---|---|---|
| Lower | 143.8353 | PASS |
| Upper | 144.8183 | PASS |

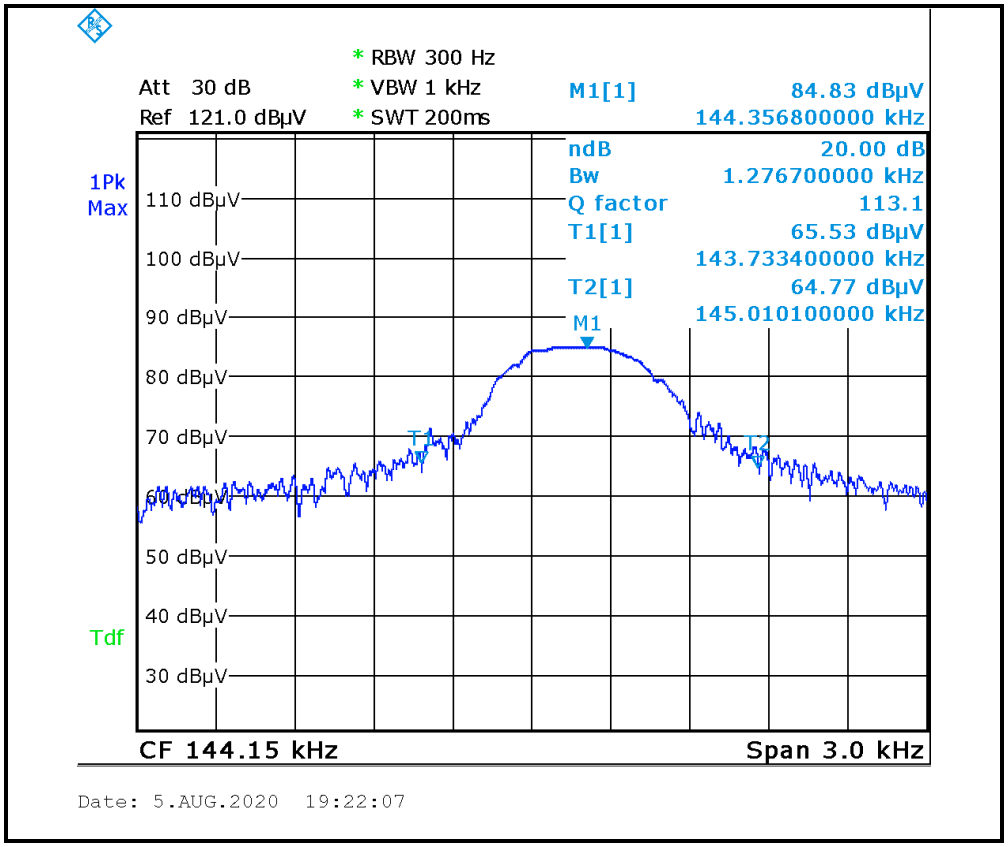
**Test Data:**



| TEST MODE | CHANNEL FREQUENCY (KHz) | 20dB BANDWIDTH (kHz) |
|---|---|---|
| Standby + Transmiting | 144.3568 | 1.2767 |

| Lower & Upper Test Frequency Point (MHz) | Test Frequency (KHz) | P/F |
|---|---|---|
| Lower | 143.7334 | PASS |
| Upper | 145.0101 | PASS |

**Test Data:**



# 5 PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).

# 6 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications were made to the EUT by the lab during the test.

**---END---**