



# FCC RADIO TEST REPORT

**FCC ID** : 2AA7Y-MOSHIQI003

**Equipment** : porto Q 5K

**Brand Name** : moshi

**Model Name** : 99MO022213 & 99MO022212

**Applicant** : Aevoe Inc.  
27F., NO.68, Sec. 5, Zhongxiao E. Rd., Xinyi Dist.,  
Taipei City 11065, Taiwan

**Manufacturer** : Powergene Technology Co., Ltd. Taiwan Branch  
1F-5, No.1, Wuquan 1st Rd., Xinzhuang Dist.,  
New Taipei City, Taiwan

**Standard** : 47 CFR FCC Part 15.209

The product was received on Sep. 18, 2018, and testing was started from Sep. 19, 2018 and completed on Sep. 20, 2018. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.



Approved by: Allen Lin

**SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory**

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)



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### **APPENDIX A. TEST PHOTOS**

#### **PHOTOGRAPHS OF EUT v02**



TEL : 886-3-327-3456  
FAX : 886-3-327-0973  
Report Template No.: HE1-C5 Ver2.2

## Summary of Test Result

| Report Clause | Ref Std. Clause | Test Items                        | Result (PASS/FAIL) | Remark |
|---------------|-----------------|-----------------------------------|--------------------|--------|
| 1.1.2         | 15.203          | Antenna Requirement               | PASS               | -      |
| 3.1           | 15.207          | AC Power-line Conducted Emissions | PASS               | -      |
| 3.2           | 15.209          | Transmitter Radiated Emissions    | PASS               | -      |
| 3.3           | 15.215(c)       | Emission Bandwidth                | PASS               | -      |

**Reviewed by: Jackson Tsai**

**Report Producer: Michelle Tsai**

# 1 General Description

## 1.1 Information

### 1.1.1 General Information

| Wireless Power Transfer General Information                             |                                     |                                      |                         |
|-------------------------------------------------------------------------|-------------------------------------|--------------------------------------|-------------------------|
| Frequency Range                                                         | Modulation                          | Charging Freq. (kHz)                 | Field Strength (dBuV/m) |
| 111.5-145 kHz                                                           | ASK                                 | 137.49                               | 67.98                   |
| Power Transfer Method                                                   | Output power from each primary coil | That may have multiple primary coils | Charging Method         |
| Magnetic induction and only single primary coil coupling secondary coil | <15W                                | No                                   | Client directly contact |
| Note 1: Field strength performed peak level at 3m.                      |                                     |                                      |                         |

### 1.1.2 Antenna Information

| Antenna Category                    |                                                 |
|-------------------------------------|-------------------------------------------------|
| <input type="checkbox"/>            | Equipment placed on the market without antennas |
| <input checked="" type="checkbox"/> | Integral antenna (antenna permanently attached) |
| <input type="checkbox"/>            | External antenna (dedicated antennas)           |

### 1.1.3 Type of EUT

| Operational Condition               |                                                                                                                               |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| EUT Power Type                      | From AC Adapter / Host system / Battery                                                                                       |
| Type of EUT                         |                                                                                                                               |
| <input checked="" type="checkbox"/> | Stand-alone                                                                                                                   |
| <input type="checkbox"/>            | Combined (EUT where the radio part is fully integrated within another device)<br>Combined Equipment - Brand Name / Model No.: |
| <input type="checkbox"/>            | Plug-in radio (EUT intended for a variety of host systems)<br>Host System - Brand Name / Model No.:                           |
| <input type="checkbox"/>            | Other: The EUT place with the platform.                                                                                       |

**1.1.4 Test Signal Duty Cycle**

|                                           |                                             |
|-------------------------------------------|---------------------------------------------|
| <b>Operated Mode for Worst Duty Cycle</b> |                                             |
| <input type="checkbox"/>                  | Operated normally mode for worst duty cycle |
| <input checked="" type="checkbox"/>       | Operated test mode for worst duty cycle     |
| <b>Test Signal Duty Cycle (x)</b>         |                                             |
| <input checked="" type="checkbox"/>       | 100%                                        |

**1.1.5 Table for Multiple Listing**

The model names in the following table are all refer to the identical product.

| Model Name | Description                                                               |
|------------|---------------------------------------------------------------------------|
| 99MO022213 | All the models are identical, the difference model as marketing strategy. |
| 99MO022212 |                                                                           |

## 1.2 Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ 47 CFR FCC Part 15
- ♦ ANSI C63.10-2013
- ♦ KDB 680106 D01 RF Exposure Wireless Charging Apps v03

## 1.3 Testing Location Information

| Testing Location                           |        |                                                                              |                      |
|--------------------------------------------|--------|------------------------------------------------------------------------------|----------------------|
| <input checked="" type="checkbox"/>        | HWA YA | ADD : No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)    |                      |
|                                            |        | TEL : 886-3-327-3456                                                         | FAX : 886-3-327-0973 |
| Test site Designation No. TW1190 with FCC. |        |                                                                              |                      |
| <input type="checkbox"/>                   | JHUBEI | ADD : No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County, Taiwan (R.O.C.) |                      |
|                                            |        | TEL : 886-3-656-9065                                                         | FAX : 886-3-656-9085 |
| Test site Designation No. TW0006 with FCC. |        |                                                                              |                      |

| Test Condition    | Test Site No. | Test Engineer | Test Environment | Test Date   |
|-------------------|---------------|---------------|------------------|-------------|
| AC Conduction     | TH01-HY       | Andy          | 24.5°C / 64%     | 20/Sep/2018 |
| RF Conducted      | CO04-HY       | Jerry         | 24.5°C/55.5%     | 20/Sep/2018 |
| Radiated Emission | 03CH03-HY     | Justin        | 20.5°C /56.1%    | 19/Sep/2018 |

## 1.4 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2))

| Measurement Uncertainty       |               |                          |                        |
|-------------------------------|---------------|--------------------------|------------------------|
| Test Item                     |               | Uncertainty              | Limit                  |
| Radio Frequency               |               | $\pm 6.7 \times 10^{-8}$ | $\pm 1 \times 10^{-7}$ |
| All emissions, radiated       | 9 – 150 kHz   | $\pm 2.5$ dB             | $\pm 6$ dB             |
|                               | 0.15 – 30 MHz | $\pm 2.3$ dB             | $\pm 6$ dB             |
|                               | 30 – 1000 MHz | $\pm 2.6$ dB             | $\pm 6$ dB             |
| Temperature                   |               | $\pm 0.8$ °C             | $\pm 1$ °C             |
| Humidity                      |               | $\pm 5$ %                | $\pm 5$ %              |
| DC and low frequency voltages |               | $\pm 0.9$ %              | $\pm 3$ %              |

## 2 Test Configuration of EUT

### 2.1 The Worst Case Configuration

| Modulation Mode                                                                                                                                         | Field Strength (dBuV/m at 3m) |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| ASK                                                                                                                                                     | 67.98                         |
| Wireless charger were performed all charging conditions including variable loading and non-charging operation, the worst mode is full charging loading. |                               |

### 2.2 The Worst Charger Frequencies Configuration

| Modulation Mode                                                                                           | Charger Frequencies (kHz) |
|-----------------------------------------------------------------------------------------------------------|---------------------------|
| ASK                                                                                                       | 137.49                    |
| Wireless charger frequencies are variable frequency range (111.5-145 kHz) and depend on charging loading. |                           |

### 2.3 The Worst Case Measurement Configuration

| The Worst Case Mode for Following Conformance Tests |                                                                                         |
|-----------------------------------------------------|-----------------------------------------------------------------------------------------|
| <b>Tests Item</b>                                   | AC power-line conducted emissions                                                       |
| <b>Condition</b>                                    | AC power-line conducted measurement for line and neutral<br>Test Voltage: 110Vac / 60Hz |
| <b>Operating Mode</b>                               | Operating Mode Description                                                              |
| 1                                                   | Adapter Mode                                                                            |

| The Worst Case Mode for Following Conformance Tests |                                                                                                                         |
|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| <b>Tests Item</b>                                   | Transmitter Radiated Emissions, Emission Bandwidth                                                                      |
| <b>Test Condition</b>                               | Radiated measurement                                                                                                    |
| <b>User Position</b>                                | <input type="checkbox"/> EUT will be placed in fixed position.                                                          |
|                                                     | <input checked="" type="checkbox"/> EUT will be placed in mobile position and operating multiple positions.             |
|                                                     | <input type="checkbox"/> EUT will be a hand-held or body-worn battery-powered devices and operating multiple positions. |
| <b>Operating Mode &lt; 1GHz</b>                     | Operating Mode Description                                                                                              |
| 1                                                   | Adapter Mode                                                                                                            |
| <b>Orthogonal Planes of EUT</b>                     | <b>Z Plane</b>                                                                                                          |
|                                                     |                                     |

## 2.4 Accessories

| Accessories Information |             |                                                 |            |            |
|-------------------------|-------------|-------------------------------------------------|------------|------------|
| USB Cable               | Brand Name  | moshi                                           | Model Name | 1700000239 |
|                         | Signal Line | 0.5 meter, Shielded cable, without ferrite core |            |            |

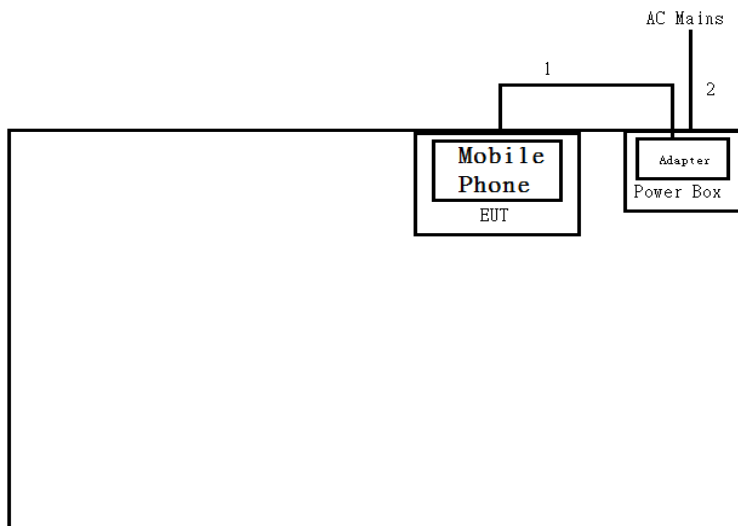
Reminder: Regarding to more detail and other information, please refer to user manual.

## 2.5 Support Equipment

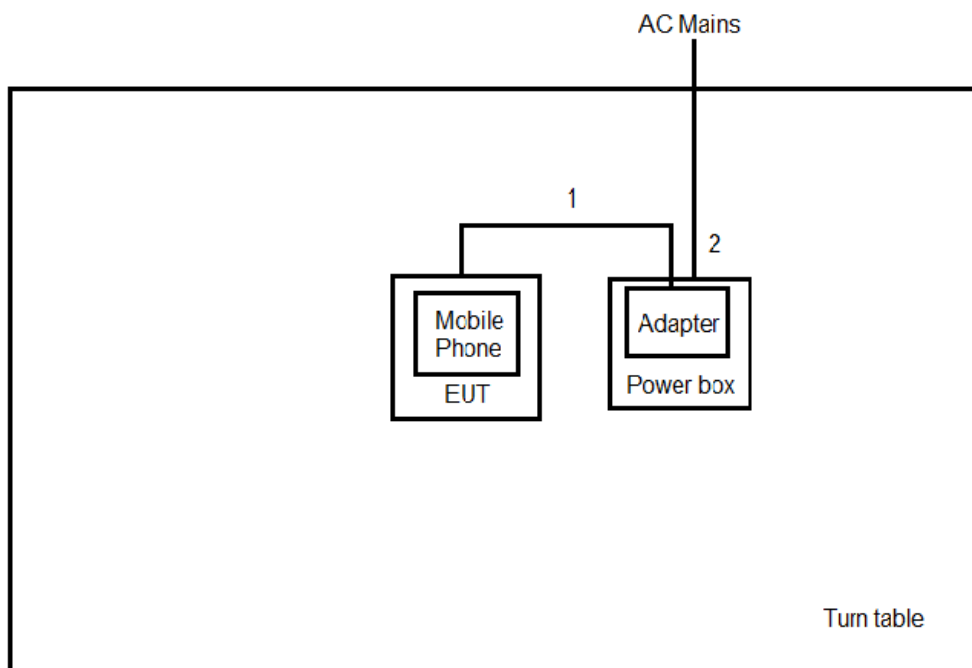
| Support Equipment – AC Conduction/Conducted/Radiated |           |            |            |            |
|------------------------------------------------------|-----------|------------|------------|------------|
| No.                                                  | Equipment | Brand Name | Model Name | FCC ID     |
| 1                                                    | iPhone    | Apple      | A1905      | BCG-E3172A |

## 2.6 Test Setup Diagram

**Test Setup Diagram – AC Line Conducted Emission Test**



| Item | Connection    | Shielded | Length(m) | Remark |
|------|---------------|----------|-----------|--------|
| 1    | USB Cable     | Yes      | 0.5       | -      |
| 2    | AC Power line | No       | 1.5       | -      |

**Test Setup Diagram - Radiated Test**


| Item | Connection    | Shielded | Length(m) | Remark |
|------|---------------|----------|-----------|--------|
| 1    | USB Cable     | Yes      | 0.5       | -      |
| 2    | AC Power line | No       | 1.8       | -      |

### 3 Transmitter Test Result

#### 3.1 AC Power-line Conducted Emissions

##### 3.1.1 AC Power-line Conducted Emissions Limit

| AC Power-line Conducted Emissions Limit                  |            |           |
|----------------------------------------------------------|------------|-----------|
| Frequency Emission (MHz)                                 | Quasi-Peak | Average   |
| 0.15-0.5                                                 | 66 - 56 *  | 56 - 46 * |
| 0.5-5                                                    | 56         | 46        |
| 5-30                                                     | 60         | 50        |
| Note 1: * Decreases with the logarithm of the frequency. |            |           |

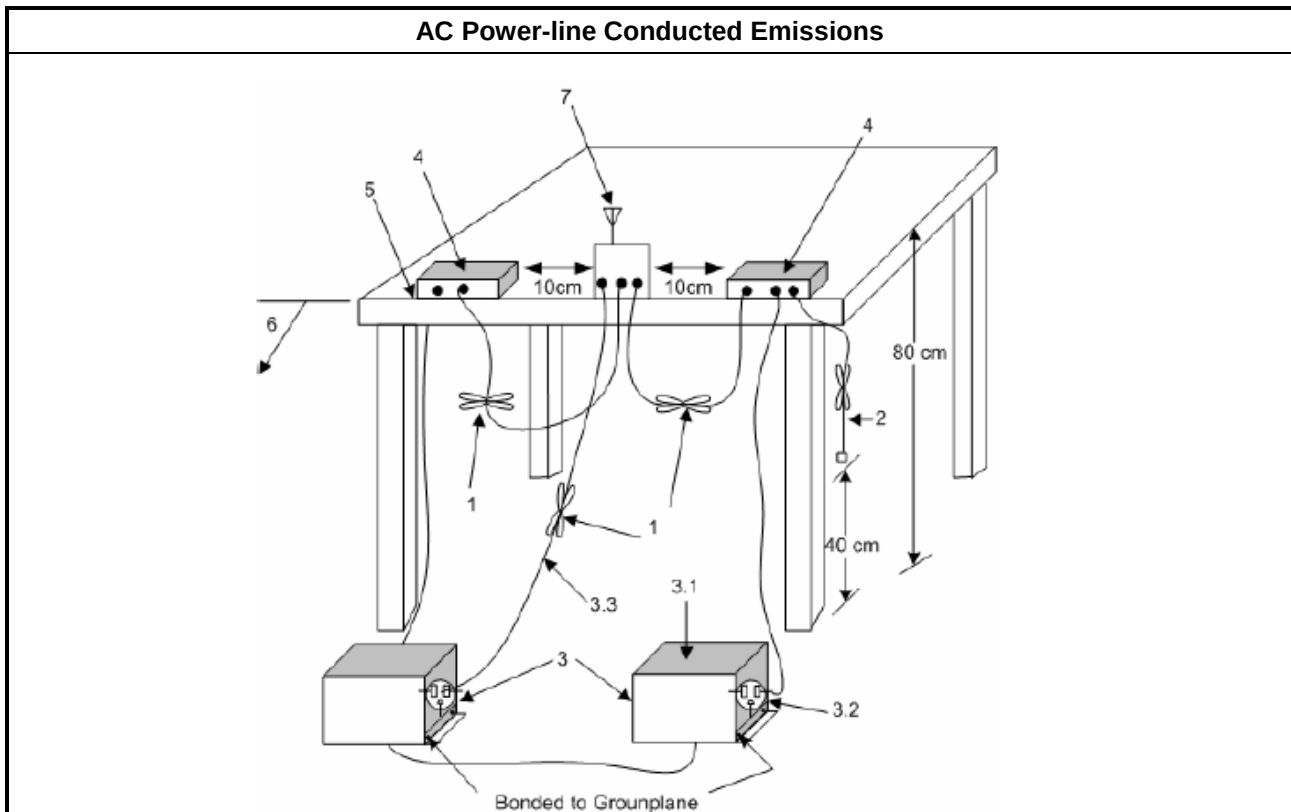
##### 3.1.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

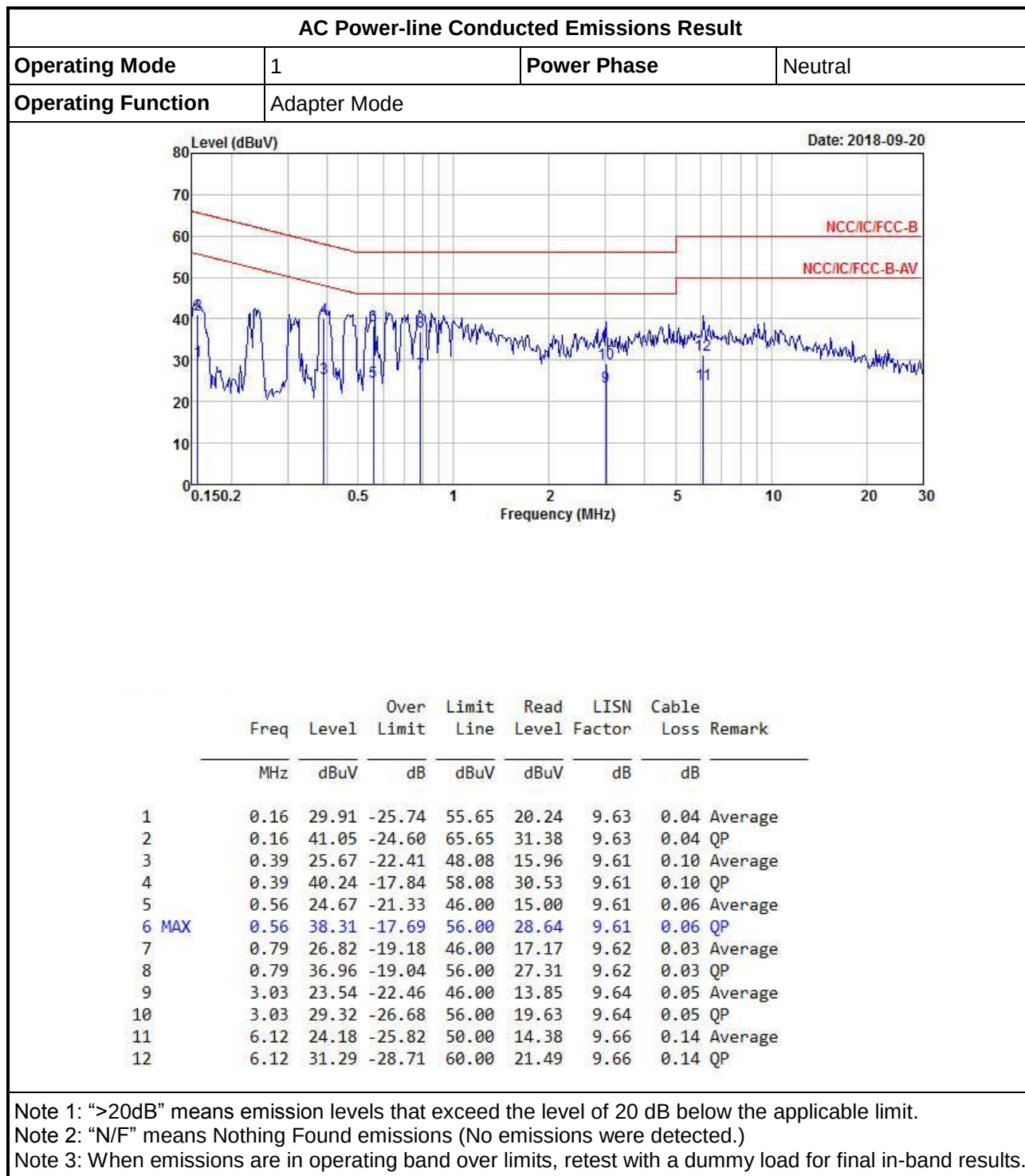
##### 3.1.3 Test Procedures

| Test Method                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> | Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <input checked="" type="checkbox"/> | If AC conducted emissions fall in operating band, then following below test method confirm final result.                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <input type="checkbox"/>            | Accept measurements done with a suitable dummy load replacing the antenna under the following conditions:<br>(1) Perform the AC line conducted tests with the antenna connected to determine compliance with FCC 15.207 limits outside the transmitter's fundamental emission band;<br>(2) Retest with a dummy load to determine compliance with FCC 15.207 limits within the transmitter's fundamental emission band.                                                                                                                          |
| <input checked="" type="checkbox"/> | For a device with a permanent antenna operating at or below 30 MHz, accept measurements done with a suitable dummy load, in lieu of the permanent antenna under the following conditions:<br>(1) Perform the AC line conducted tests with the permanent antenna to determine compliance with the FCC 15.207 limits outside the transmitter's fundamental emission band;<br>(2) Retest with a dummy load in lieu of the permanent antenna to determine compliance with the FCC 15.207 limits within the transmitter's fundamental emission band. |

### 3.1.4 Test Setup

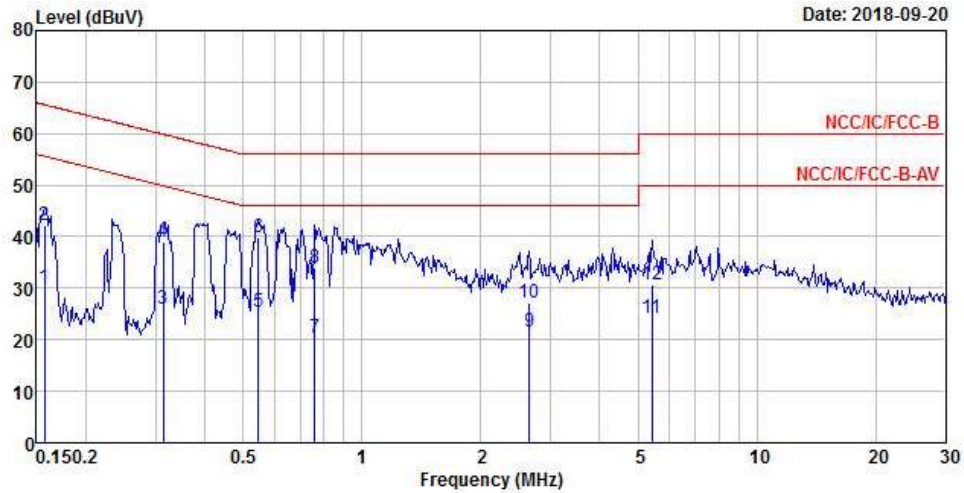


### 3.1.5 Test Result of AC Power-line Conducted Emissions



**AC Power-line Conducted Emissions Result**

|                    |              |             |      |
|--------------------|--------------|-------------|------|
| Operating Mode     | 1            | Power Phase | Line |
| Operating Function | Adapter Mode |             |      |



|       | Freq | Level | Over   | Limit | Read  | LISM   | Cable | Remark  |
|-------|------|-------|--------|-------|-------|--------|-------|---------|
|       | MHz  | dBuV  | Limit  | Line  | Level | Factor | Loss  |         |
|       |      |       | dB     | dBuV  | dBuV  | dB     | dB    |         |
| 1     | 0.16 | 29.99 | -25.61 | 55.60 | 20.33 | 9.62   | 0.04  | Average |
| 2     | 0.16 | 42.15 | -23.45 | 65.60 | 32.49 | 9.62   | 0.04  | QP      |
| 3     | 0.31 | 26.04 | -23.84 | 49.88 | 16.37 | 9.61   | 0.06  | Average |
| 4     | 0.31 | 38.85 | -21.03 | 59.88 | 29.18 | 9.61   | 0.06  | QP      |
| 5     | 0.55 | 25.40 | -20.60 | 46.00 | 15.72 | 9.61   | 0.07  | Average |
| 6 MAX | 0.55 | 39.98 | -16.02 | 56.00 | 30.30 | 9.61   | 0.07  | QP      |
| 7     | 0.76 | 20.39 | -25.61 | 46.00 | 10.75 | 9.61   | 0.03  | Average |
| 8     | 0.76 | 33.88 | -22.12 | 56.00 | 24.24 | 9.61   | 0.03  | QP      |
| 9     | 2.65 | 21.49 | -24.51 | 46.00 | 11.83 | 9.62   | 0.04  | Average |
| 10    | 2.65 | 27.17 | -28.83 | 56.00 | 17.51 | 9.62   | 0.04  | QP      |
| 11    | 5.42 | 24.27 | -25.73 | 50.00 | 14.51 | 9.64   | 0.12  | Average |
| 12    | 5.42 | 30.72 | -29.28 | 60.00 | 20.96 | 9.64   | 0.12  | QP      |

Note 1: ">20dB" means emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)

Note 3: When emissions are in operating band over limits, retest with a dummy load for final in-band results.

## 3.2 Transmitter Radiated Emissions

### 3.2.1 Transmitter Radiated Emissions Limit

| Transmitter Radiated Emissions Limit |                       |                         |                      |
|--------------------------------------|-----------------------|-------------------------|----------------------|
| Frequency Range (MHz)                | Field Strength (uV/m) | Field Strength (dBuV/m) | Measure Distance (m) |
| 0.009~0.490                          | 2400/F(kHz)           | 48.5 - 13.8             | 300                  |
| 0.490~1.705                          | 24000/F(kHz)          | 33.8 - 23               | 30                   |
| 1.705~30.0                           | 30                    | 29                      | 30                   |
| 30~88                                | 100                   | 40                      | 3                    |
| 88~216                               | 150                   | 43.5                    | 3                    |
| 216~960                              | 200                   | 46                      | 3                    |
| Above 960                            | 500                   | 54                      | 3                    |

Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.

Note 3: the frequency bands 9-90 kHz, 110-490 kHz measurements employing an average detector and other below 1GHz measurements employing a CISPR quasi-peak detector.

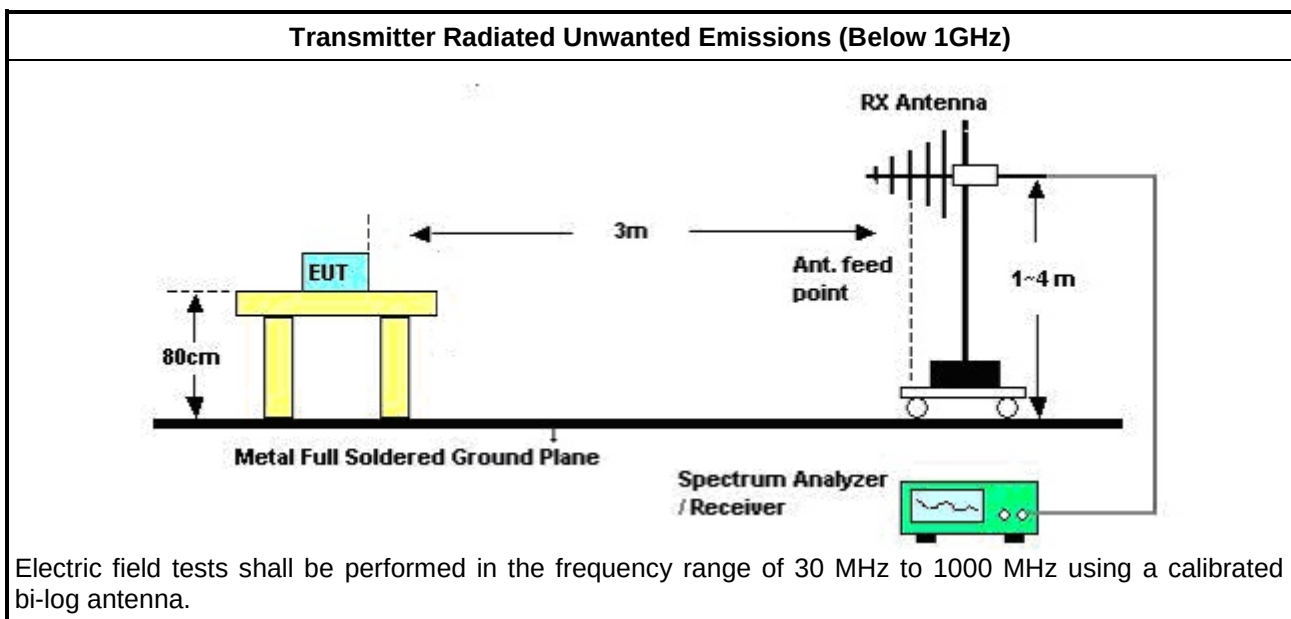
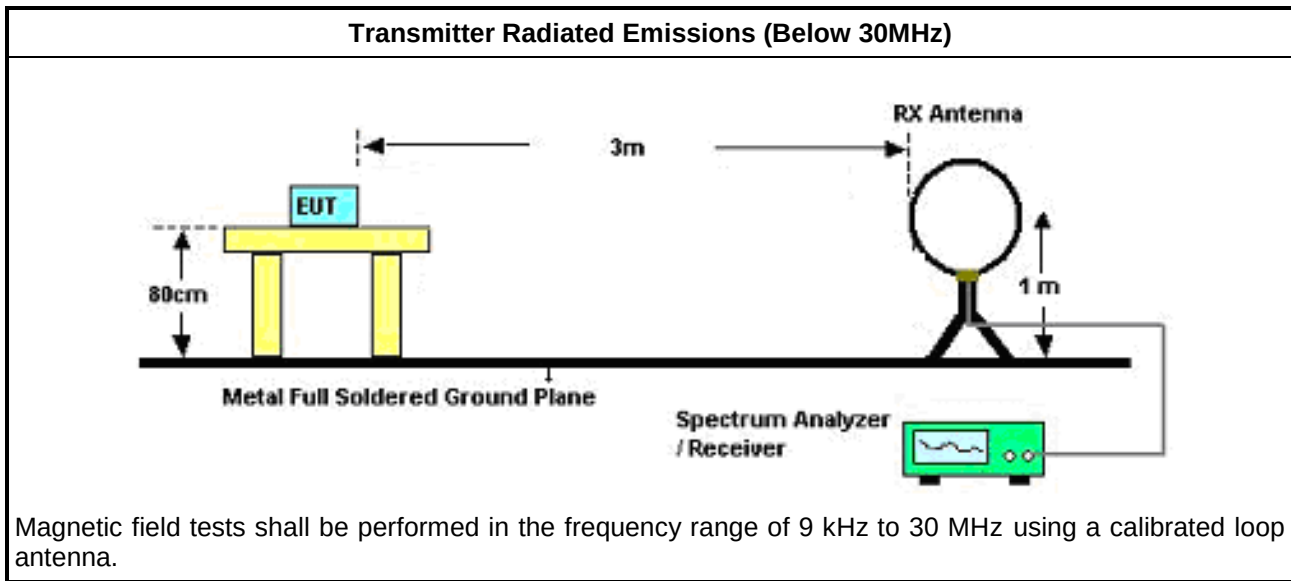
### 3.2.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

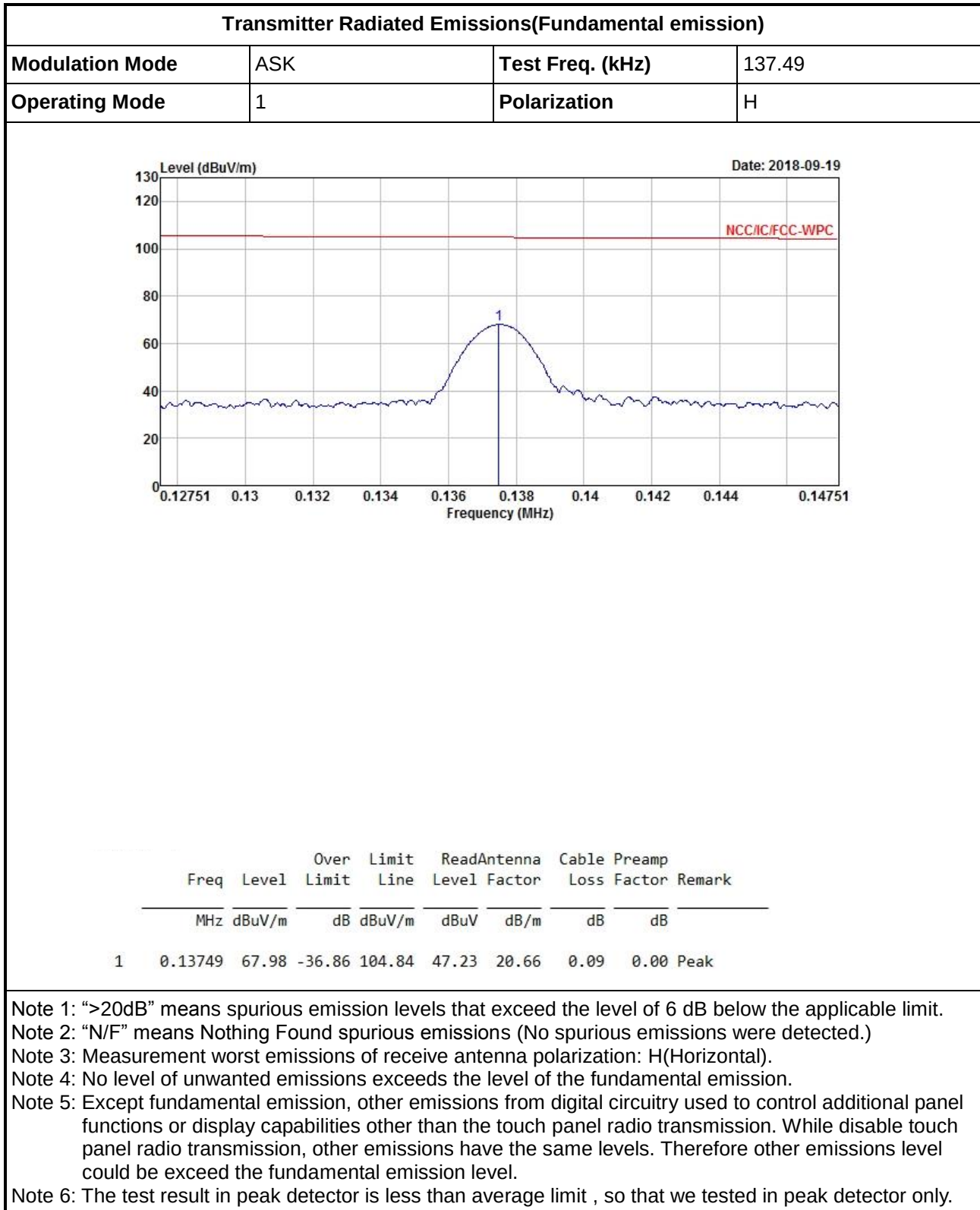
### 3.2.3 Test Procedures

| Test Method                         |                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> | Refer as ANSI C63.10, clause 6.5 for radiated emissions from 30 MHz to 1 GHz and test distance is 3m.                                                                                                                                                                                                                                                                                                                                |
| <input checked="" type="checkbox"/> | Refer as ANSI C63.10, clause 6.4 for radiated emissions from below 30 MHz the frequency bands 9-90 kHz, 110-490 kHz measurements employing an average detector and other below 30MHz measurements employing a CISPR quasi-peak detector. Test distance is 3m.                                                                                                                                                                        |
| <input checked="" type="checkbox"/> | At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the requirements; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be following below methods. |
| <input type="checkbox"/>            | The results shall be extrapolated to the specified distance by making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor.                                                                                                                                                                                                                                                |
| <input checked="" type="checkbox"/> | The results shall be by using the square of an inverse linear distance extrapolation factor (40 dB/decade).                                                                                                                                                                                                                                                                                                                          |
| <input checked="" type="checkbox"/> | For radiated measurement. Loop antenna was rotated about the horizontal and vertical axis and the equipment to be measured and the test antenna shall be oriented to obtain the maximum emitted field strength level.                                                                                                                                                                                                                |
| <input checked="" type="checkbox"/> | The any unwanted emissions level shall not exceed the fundamental emission level.                                                                                                                                                                                                                                                                                                                                                    |
| <input checked="" type="checkbox"/> | All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.                                                                                                                                                                                                                                                                                                   |

### 3.2.4 Test Setup

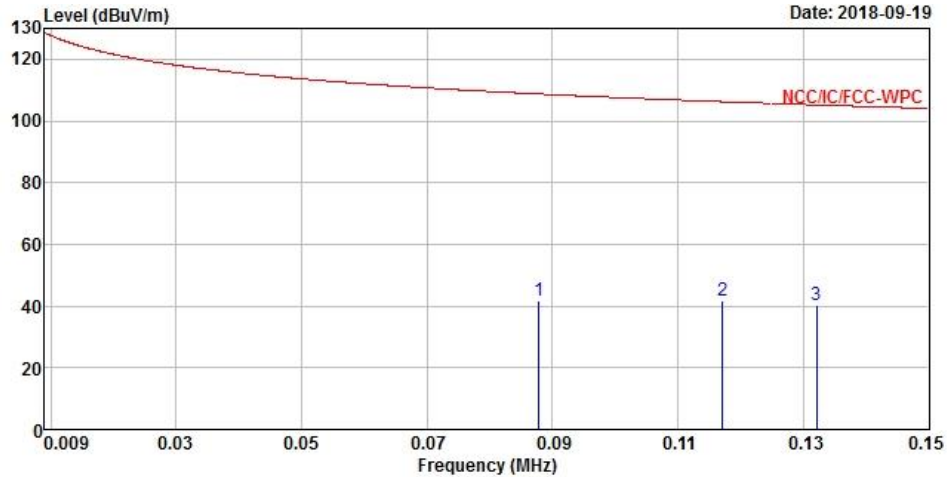


### 3.2.5 Transmitter Radiated Emissions (Below 30MHz)



**Transmitter Radiated Emissions (9 kHz – 150 kHz)**

|                        |     |                         |        |
|------------------------|-----|-------------------------|--------|
| <b>Modulation Mode</b> | ASK | <b>Test Freq. (kHz)</b> | 137.49 |
| <b>Operating Mode</b>  | 1   | <b>Polarization</b>     | H      |



|   | Freq    | Level  | Over Limit | Limit Line | ReadAntenna Level | Cable Preamp | Factor | Remark    |
|---|---------|--------|------------|------------|-------------------|--------------|--------|-----------|
|   | MHz     | dBuV/m | dB         | dBuV/m     | dBuV              | dB/m         | dB     | dB        |
| 1 | 0.08782 | 41.94  | -66.80     | 108.74     | 21.06             | 20.80        | 0.08   | 0.00 Peak |
| 2 | 0.11715 | 41.52  | -64.71     | 106.23     | 20.75             | 20.68        | 0.09   | 0.00 Peak |
| 3 | 0.13209 | 40.19  | -65.00     | 105.19     | 19.43             | 20.67        | 0.09   | 0.00 Peak |

Note 1: ">20dB" means spurious emission levels that exceed the level of 6 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

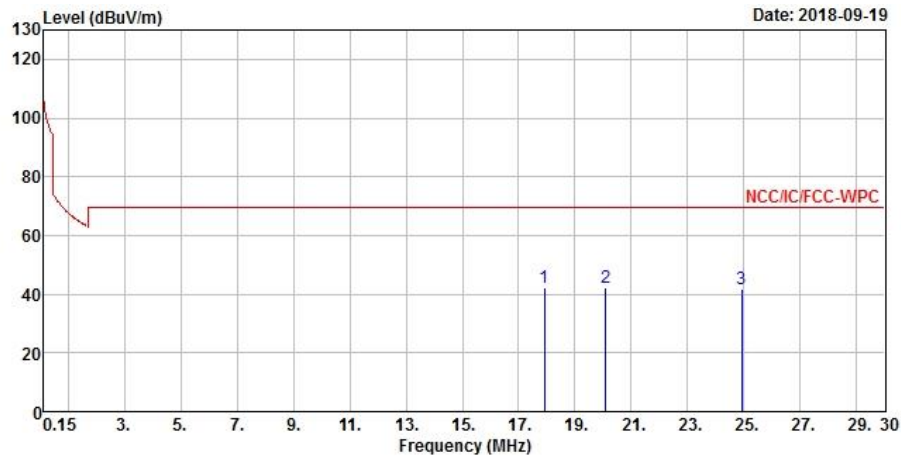
Note 3: Measurement worst emissions of receive antenna polarization: H(Horizontal).

Note 4: No level of unwanted emissions exceeds the level of the fundamental emission.

Note 5: Except fundamental emission, other emissions from digital circuitry used to control additional panel functions or display capabilities other than the touch panel radio transmission. While disable touch panel radio transmission, other emissions have the same levels. Therefore other emissions level could be exceed the fundamental emission level.

**Transmitter Radiated Emissions (150 kHz – 30 MHz)**

|                        |     |                         |        |
|------------------------|-----|-------------------------|--------|
| <b>Modulation Mode</b> | ASK | <b>Test Freq. (kHz)</b> | 137.49 |
| <b>Operating Mode</b>  | 1   | <b>Polarization</b>     | H      |



|   | Freq     | Level  | Over Limit | Limit Line | ReadAntenna Level | Cable Preamp | Loss Factor | Remark    |
|---|----------|--------|------------|------------|-------------------|--------------|-------------|-----------|
|   | MHz      | dBuV/m | dB         | dBuV/m     | dBuV              | dB/m         | dB          | dB        |
| 1 | 17.91075 | 42.14  | -27.40     | 69.54      | 19.15             | 22.21        | 0.78        | 0.00 Peak |
| 2 | 20.08980 | 42.39  | -27.15     | 69.54      | 19.17             | 22.40        | 0.82        | 0.00 Peak |
| 3 | 24.92550 | 41.79  | -27.75     | 69.54      | 18.26             | 22.55        | 0.98        | 0.00 Peak |

Note 1: ">20dB" means spurious emission levels that exceed the level of 6 dB below the applicable limit.

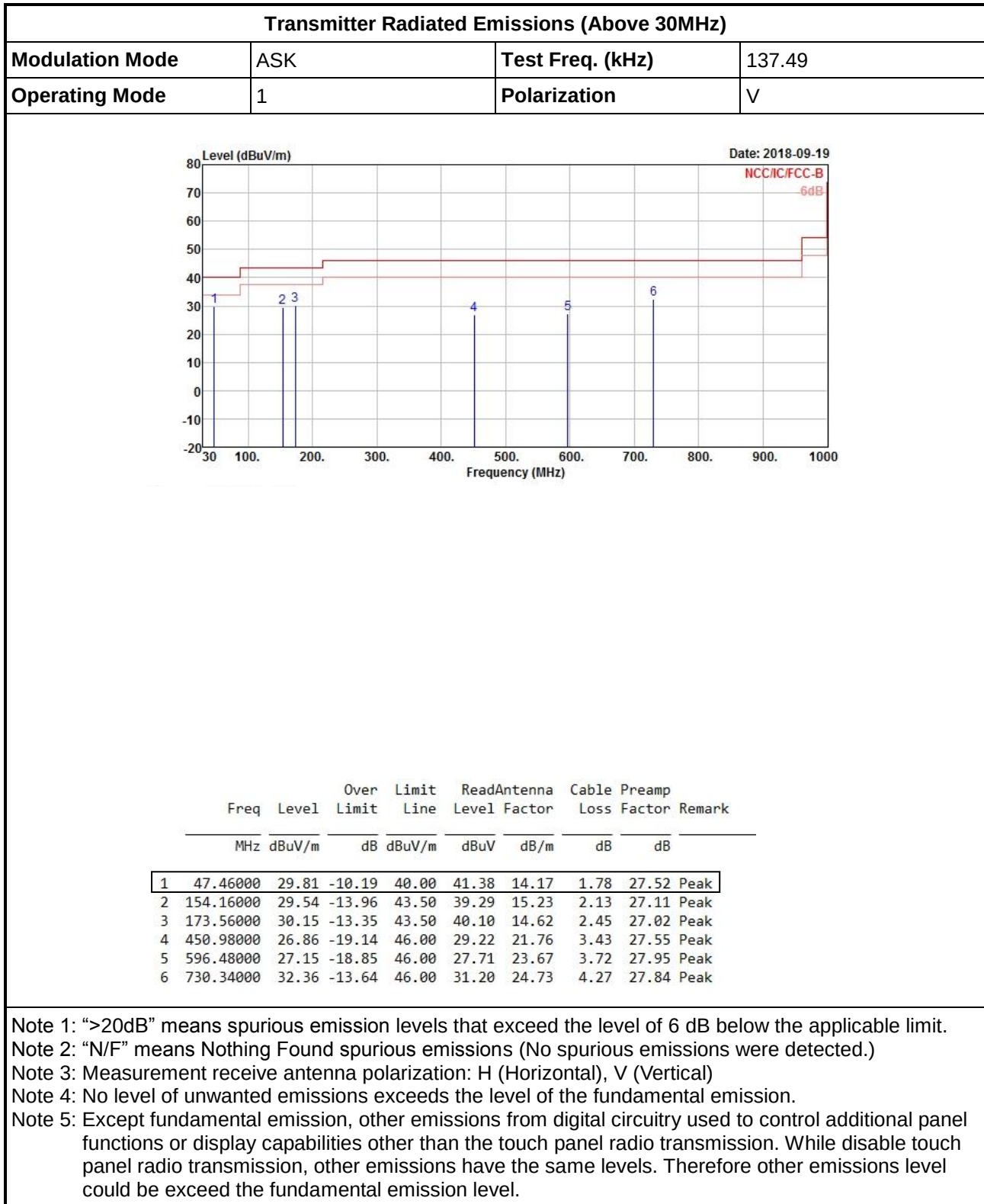
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement worst emissions of receive antenna polarization: H(Horizontal).

Note 4: No level of unwanted emissions exceeds the level of the fundamental emission.

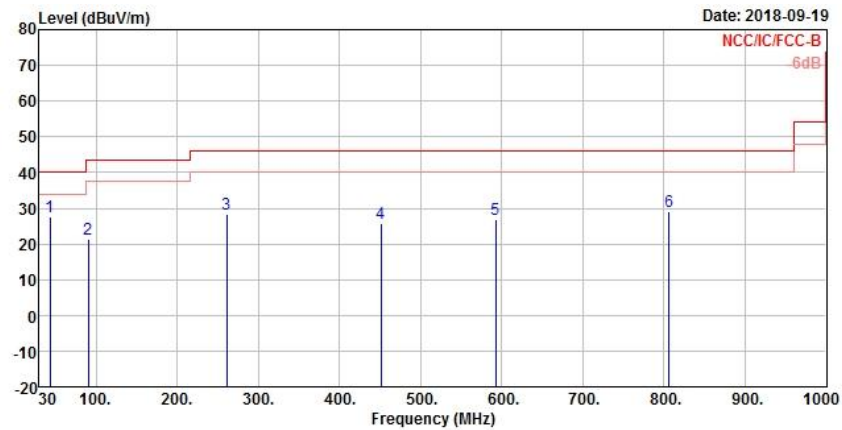
Note 5: Except fundamental emission, other emissions from digital circuitry used to control additional panel functions or display capabilities other than the touch panel radio transmission. While disable touch panel radio transmission, other emissions have the same levels. Therefore other emissions level could be exceed the fundamental emission level.

### 3.2.6 Transmitter Radiated Emissions (Above 30MHz)



**Transmitter Radiated Emissions (Above 30MHz)**

|                        |     |                         |        |
|------------------------|-----|-------------------------|--------|
| <b>Modulation Mode</b> | ASK | <b>Test Freq. (kHz)</b> | 137.49 |
| <b>Operating Mode</b>  | 1   | <b>Polarization</b>     | H      |



|   | Freq      | Level  | Over Limit | Limit Line | ReadAntenna Level | Cable Preamp | Loss Factor | Remark     |
|---|-----------|--------|------------|------------|-------------------|--------------|-------------|------------|
|   | MHz       | dBuV/m | dB         | dBuV/m     | dBuV              | dB/m         | dB          | dB         |
| 1 | 43.58000  | 27.44  | -12.56     | 40.00      | 37.13             | 16.01        | 1.83        | 27.53 Peak |
| 2 | 90.14000  | 21.28  | -22.22     | 43.50      | 32.68             | 14.12        | 1.87        | 27.39 Peak |
| 3 | 260.86000 | 28.16  | -17.84     | 46.00      | 33.76             | 18.81        | 2.33        | 26.74 Peak |
| 4 | 450.98000 | 25.75  | -20.25     | 46.00      | 28.11             | 21.76        | 3.43        | 27.55 Peak |
| 5 | 592.60000 | 26.82  | -19.18     | 46.00      | 27.40             | 23.65        | 3.71        | 27.94 Peak |
| 6 | 806.00000 | 28.94  | -17.06     | 46.00      | 26.97             | 25.00        | 4.68        | 27.71 Peak |

Note 1: ">20dB" means spurious emission levels that exceed the level of 6 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: No level of unwanted emissions exceeds the level of the fundamental emission.

Note 5: Except fundamental emission, other emissions from digital circuitry used to control additional panel functions or display capabilities other than the touch panel radio transmission. While disable touch panel radio transmission, other emissions have the same levels. Therefore other emissions level could be exceed the fundamental emission level.

### 3.3 Emission Bandwidth

#### 3.3.1 Emission Bandwidth Limit

| Emission Bandwidth Limit |
|--------------------------|
| N/A                      |

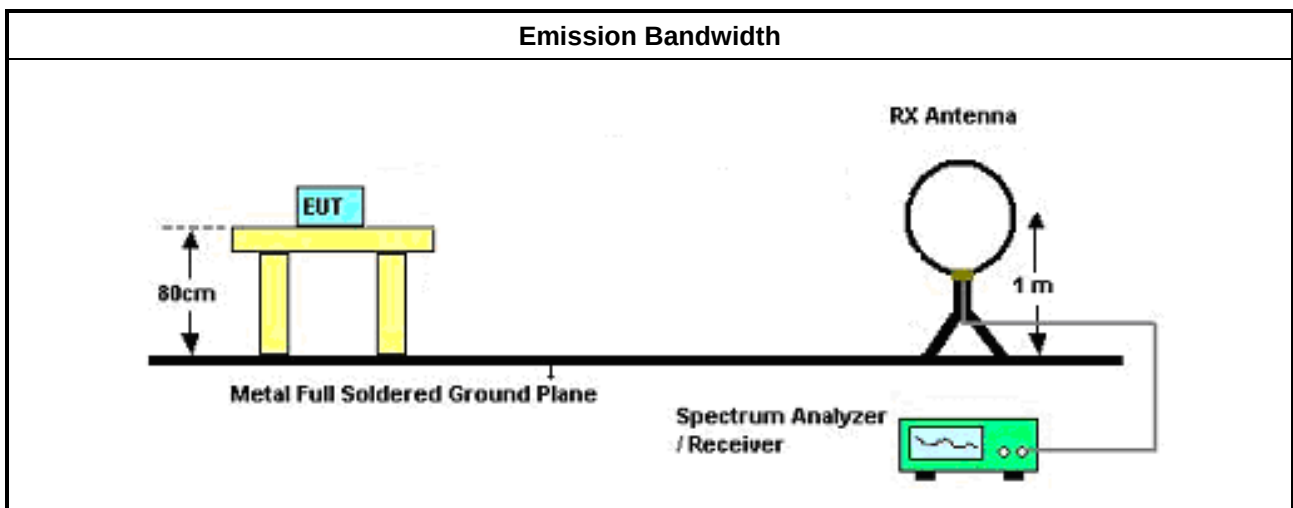
#### 3.3.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

#### 3.3.3 Test Procedures

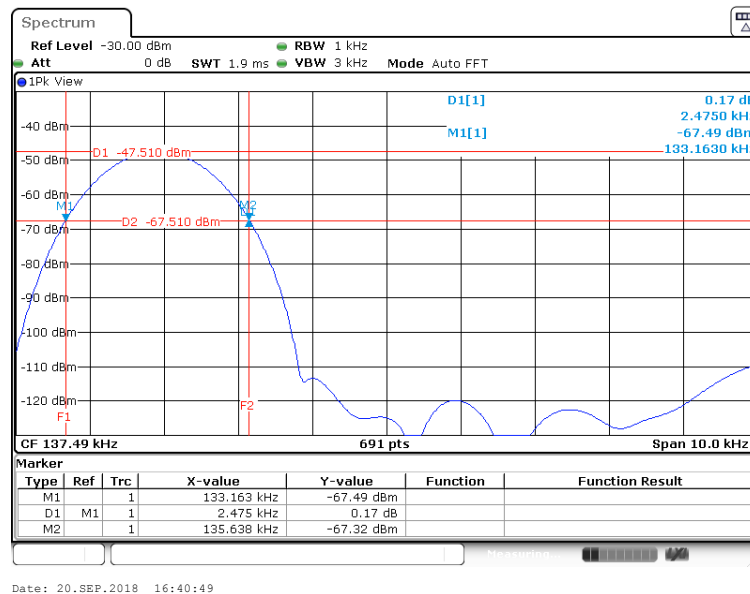
| Test Method                                                                                                                                                                                                                                               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> For the emission bandwidth refer ANSI C63.10, clause 6.9.3 for occupied bandwidth testing.                                                                                                                            |
| <input checked="" type="checkbox"/> For radiated measurement. Loop antenna was rotated about the horizontal and vertical axis and the equipment to be measured and the test antenna shall be oriented to obtain the maximum emitted field strength level. |

#### 3.3.4 Test Setup

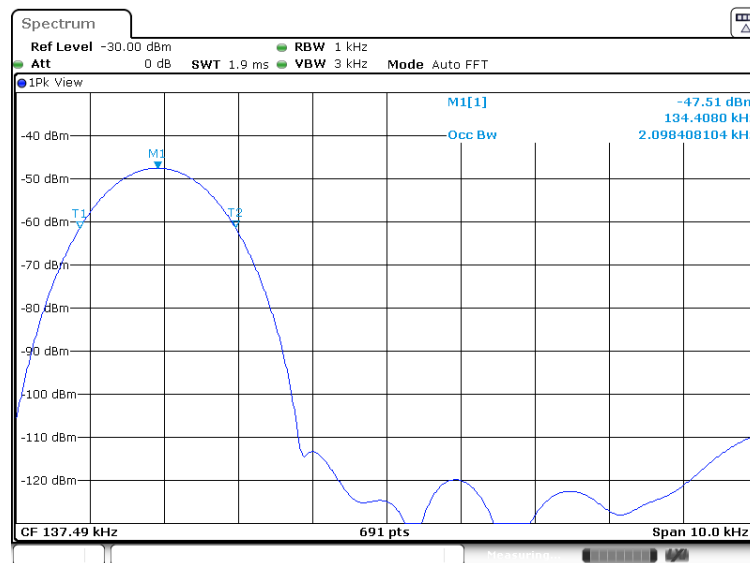


### 3.3.5 Test Result of Emission Bandwidth

| Occupied Channel Bandwidth Result |                 |                      |                     |
|-----------------------------------|-----------------|----------------------|---------------------|
| Modulation Mode                   | Frequency (kHz) | 20dB Bandwidth (kHz) | 99% Bandwidth (kHz) |
| ASK                               | 137.49          | 2.4750               | 2.0984              |
| Limit                             |                 | N/A                  | N/A                 |
| Result                            |                 | Complied             |                     |

**Emission Bandwidth Plot 20dB Bandwidth (137.49 kHz)**


Date: 20.SEP.2018 16:40:49

**Emission Bandwidth Plot 99% Bandwidth (137.49kHz)**


Date: 20.SEP.2018 16:02:50

## 4 Test Equipment and Calibration Data

### < AC Conduction >

| Instrument                           | Manufacturer | Model No.   | Serial No.     | Characteristics     | Calibration Date | Calibration Due Date |
|--------------------------------------|--------------|-------------|----------------|---------------------|------------------|----------------------|
| EMC Receiver                         | R&S          | ESR         | 102051         | 9KHz ~ 3.6GHz       | 03/May/2018      | 02/May/2019          |
| LISN                                 | R&S          | ENV216      | 101295         | 9kHz ~ 30MHz        | 17/Nov/2017      | 16/Nov/2018          |
| RF Cable-CON                         | HUBER+SUHNER | RG213/U     | 07611832020001 | 9kHz ~ 30MHz        | 06/Oct/2017      | 05/Oct/2018          |
| AC POWER                             | APC          | AFC-11005G  | F310050055     | 47Hz~63Hz<br>5~300V | NCR              | NCR                  |
| Impuls<br>Begrenzer<br>Pulse Limiter | SCHWARZBECK  | VTSD 9561-F | 9561-F041      | 9 kHz ~ 30 MHz      | 12/Oct/2017      | 11/Oct/2018          |

**NCR : Non-Calibration Require**

### < RF Conducted >

| Instrument        | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Calibration Due Date |
|-------------------|--------------|-----------|------------|-----------------|------------------|----------------------|
| Spectrum Analyzer | R&S          | FSV 40    | 101013     | 9kHz~40GHz      | 05/Feb/2018      | 04/Feb/2019          |
| Loop Antenna      | TESEQ        | HLA 6120  | 31244      | 9 kHz~30 MHz    | 16/Mar/2018      | 15/Mar/2019          |

### < Radiated Emission >

| Instrument                     | Manufacturer    | Model No.             | Serial No. | Characteristics    | Calibration Date | Calibration Due Date |
|--------------------------------|-----------------|-----------------------|------------|--------------------|------------------|----------------------|
| 3m Semi Anechoic Chamber       | SIDT FRANKONIA  | SAC-3M                | 03CH03-HY  | 30MHz ~ 1GHz<br>3m | 31/Oct/2017      | 30/Oct/2018          |
| Amplifier                      | HP              | 8447D                 | 2944A08033 | 10kHz ~ 1.3GHz     | 23/Apr/2018      | 19/Apr/2019          |
| Signal Analyzer                | R&S             | FSV40                 | 101500     | 10Hz ~ 40GHz       | 18/Jul/2018      | 17/Jul/2019          |
| EMI Test Receiver              | Rohde & Schwarz | ESCS 30               | 100354     | 9kHz ~ 2.75GHz     | 08/Dec/2017      | 07/Dec/2018          |
| RF Cable-R03m                  | Jye Bao         | RG142                 | CB021      | 9kHz ~ 1GHz        | 29/Jan/2018      | 28/Jan/2019          |
| Bilog Antenna & 5db Attenuator | SCHAFFNER/MTJ   | CBL6112D / MTJ6102-05 | 2678 / 001 | 30 MHz ~ 2 GHz     | 07/Jul/2018      | 06/Jul/2019          |
| Loop Antenna                   | TESEQ           | HLA 6120              | 31244      | 9kHz ~ 30MHz       | 28/Mar/2018      | 27/Mar/2019          |