



Test Report No.:  
GJW2024-4237-RF

## TEST REPORT

|                                |   |                                               |
|--------------------------------|---|-----------------------------------------------|
| <b>FCC ID</b>                  | : | 2BDZP-IOCAH28                                 |
| <b>Applicant</b>               | : | XIAMEN GALAXY CAMPHOL<br>TECHNOLOGY CO., LTD. |
| <b>Product Name</b>            | : | Electric Vehicle Charger                      |
| <b>Mode No.</b>                | : | See Page 4                                    |
| <b>Classification Of Test:</b> |   | <b>COMMISSION TEST</b>                        |

**CVC Testing Technology Co., Ltd.**

|                                                                                                                        |                                                                                                                                           |                                                                                                                                                    |          |
|------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| Applicant                                                                                                              |                                                                                                                                           | Name: XIAMEN GALAXY CAMPHOL TECHNOLOGY CO., LTD.<br>Address: UNIT 04,14TH FLOOR BUILDING A1,SOFTWARE PARK<br>3,JIMEI DISTRICT,XIAMEN, FUJIAN,CHINA |          |
| Manufacturer                                                                                                           |                                                                                                                                           | Name: XIAMEN GALAXY CAMPHOL TECHNOLOGY CO., LTD.<br>Address: UNIT 04,14TH FLOOR BUILDING A1,SOFTWARE PARK<br>3,JIMEI DISTRICT,XIAMEN, FUJIAN,CHINA |          |
| Equipment Under Test                                                                                                   |                                                                                                                                           | Product Name : Electric Vehicle Charger<br>Model No. : IOCAH28-50CRW4<br>Trade mark : /<br>Serial no. : /<br>Sampling : 1-1                        |          |
| Date of Receipt.                                                                                                       | 2024.7.4                                                                                                                                  | Date of Testing                                                                                                                                    | 2024.8.1 |
| Test Specification                                                                                                     |                                                                                                                                           | Test Result                                                                                                                                        |          |
| FCC CFR47 Part 15C Radio Frequency Devices<br>ANSI C63.10-2020/Cor1-2023                                               |                                                                                                                                           | PASS                                                                                                                                               |          |
| Evaluation of Test Result                                                                                              | The equipment under test was found to comply with the requirements of the standards applied.<br><br>Seal of CVC<br>Issue Date: 2024-11-01 |                                                                                                                                                    |          |
| Approved by:<br>Chen Huawen<br>     |                                                                                                                                           | Reviewed by:<br>Xu Zhenfei<br>                                  |          |
|                                                                                                                        |                                                                                                                                           | Tested by<br>Lu Wei Ji<br>                                    |          |
| Other Aspects: NONE.                                                                                                   |                                                                                                                                           |                                                                                                                                                    |          |
| Abbreviations:OK, Pass= passed Fail = failed N/A= not applicable EUT= equipment, sample(s) under tested                |                                                                                                                                           |                                                                                                                                                    |          |
| This test report relates only to the EUT, and shall not be reproduced except in full, without written approval of CVC. |                                                                                                                                           |                                                                                                                                                    |          |

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# 1. General Product Information

## 1.1 General information

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product Name            | Electric Vehicle Charger                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Model No.               | IOCAH28-50CRW4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Additional model        | IOCAHX-YZARCD<br>X: denotes for model series:<br>28: 28 series<br>Y: denotes for output current:<br>32: 32A<br>40: 40A<br>50: 50A (Without plug-connected)<br>Z: denotes for input connection method:<br>Blank: Without plug-connected<br>A: Used NEMA 6-50P plug-connected<br>B: Used NEMA 14-50P plug-connected<br>A: denotes for communication mode:<br>Blank: Standard type<br>C: Used communication protocol<br>R: denotes for RFID function:<br>R: RFID reader embedded<br>C: denotes for wireless function:<br>Blank: Standard type<br>W: Wifi and Bluetooth function embedded<br>D: denotes for 4G function:<br>Blank: Standard type<br>4: 4G function embedded |
| Power Supply            | Input voltage: 200-240Vac, 1 phase, 50/60Hz.<br>Input current:<br>For IOCAH10-32 and IOCAH28-32 series: 32A Max<br>For IOCAH10-40 and IOCAH28-40 series: 40A Max<br>For IOCAH10-50 and IOCAH28-50 series: 50A Max<br>Output voltage: Same as input voltage.<br>Output current: Same as input current.                                                                                                                                                                                                                                                                                                                                                                   |
| Serial Number(SN)       | /                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| hardware                | 1.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| software                | 202401100                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| specific power settings | Default                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Antenna Type            | Internal Antenna                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Antenna Connector       | A permanently attached antenna                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Antenna Gain            | 0 dBi (provided by client)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Beamforming gain        | Unsupported (provided by client)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Frequency Range         | 13.56MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Channel Number          | 1 Channel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Type of Modulation      | ASK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Max. Power              | -42.96dBm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Operate Temp.Range      | -30~45°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Note:                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

1. The information of the EUT is declared by the manufacturer.
2. The laboratory is not responsible for the product technical specification provided by the client.
3. EUT is an Electric Vehicle Charger function with RFID, WIFI, Bluetooth and LTE functions. The FCC ID of wireless part contains OYR-CF-813B and XMR201909EC25AFX. All models are identical except for the power rating and input lines. We test IOCAH28-50CRW4 as representative and list the result in this report.

## 2. Test Sites

### 2.1 Test Facilities

The tests and measurements refer to this report were performed by RF testing Lab. of CVC Testing Technology Co., Ltd.

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Telephone : +86-20-32293888

Fax : +86-20-32293889

FCC(Test firm designation number: CN1282)

### 2.2 Description of Non-standard Method and Deviations

The testing and measurement methods used in this report are applied by all standard methods. Not any non-standard method or deviation from the used standards was used.

### 2.3 List of Test and Measurement Instruments

Refer to **Appendix A**.

### 3. Test Configuration

#### 3.1 Test Mode

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

| Test Mode    | Antenna Delivery | Test Channel |
|--------------|------------------|--------------|
| Transmitting | 1TX              | 13.56MHz     |

The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in lie-down position (X axis) and the worst case was recorded.

In order to find the worst case condition, Pre-tests are needed at the presence of different data rate and different channels. Preliminary tests have been done on all the configurations for confirming worst case. Data rate below means worst-case rate of each test item.

Worst-case data rates and channels are shown as following table.

| Test Mode    | Data Rate |           |      |
|--------------|-----------|-----------|------|
|              | Antenna 1 | Antenna 2 | MIMO |
| Transmitting | √         | /         | /    |

| Test Items                                 | Test Antenna | Test Mode    | Test Channel |
|--------------------------------------------|--------------|--------------|--------------|
| Conducted Emissions                        | Antenna 1    | Transmitting | 13.56MHz     |
| The field strength of Fundamental Emission | Antenna 1    | Transmitting | 13.56MHz     |
| Radiated Emissions                         | Antenna 1    | Transmitting | 13.56MHz     |
| Frequency tolerance                        | Antenna 1    | Transmitting | 13.56MHz     |
| 20dB Bandwidth                             | Antenna 1    | Transmitting | 13.56MHz     |

## 4. Summary of measurement results

| Summary of measurements of results         | Clause in FCC rules          | Verdict | Note       |
|--------------------------------------------|------------------------------|---------|------------|
| Conducted Emissions                        | 15.207                       | PASS    | /          |
| The field strength of Fundamental Emission | FCC 15.225(a)&(b)&(c)        | PASS    | /          |
| Radiated Emissions                         | FCC 15.225 (d)<br>FCC 15.209 | PASS    | /          |
| Frequency tolerance                        | FCC 15.225 (e)               | PASS    | /          |
| 20dB Bandwidth                             | FCC 15.215 (c)               | PASS    | /          |
| Antenna Requirement                        | 15.203                       | PASS    | See note 1 |

Note 1: According to 15.203, it is considered sufficient to comply with the provisions of this section.

5. Measurement procedure

5.1 Conducted Emission

Ambient condition:

|             |                   |          |
|-------------|-------------------|----------|
| Temperature | Relative humidity | Pressure |
| 23°C ~25°C  | 45%~50%           | 101.3kPa |

Method of Measurement:

The EUT was setup according to ANSI C63.10-2020/Cor1-2023 for compliance to FCC 47CFR 15.247 requirements. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs) Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.

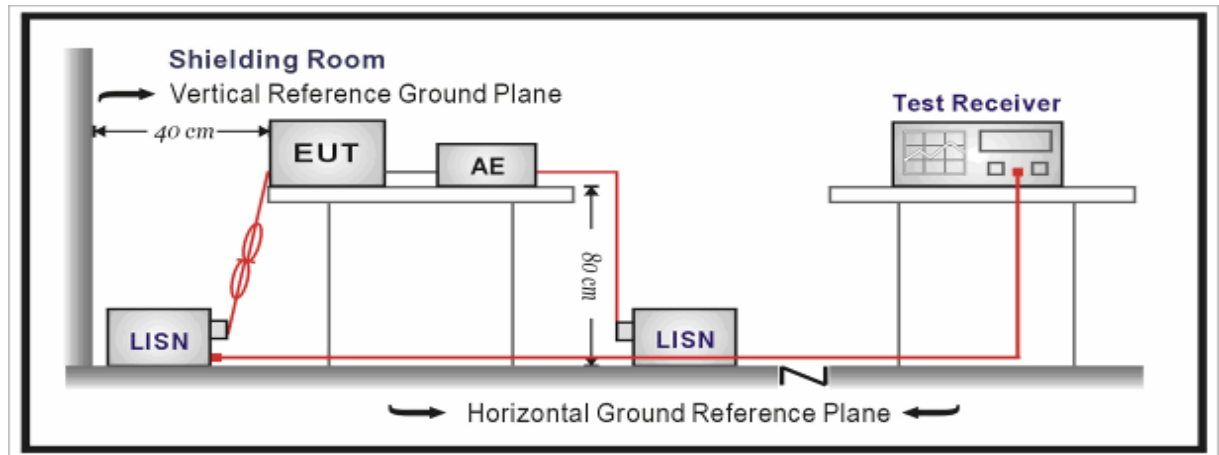
The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.

Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.

Limits:

| Frequency<br>(MHz)                                                                                         | Conducted Limits(dBμV) |           |
|------------------------------------------------------------------------------------------------------------|------------------------|-----------|
|                                                                                                            | Quasi-peak             | Average   |
| 0.15 - 0.5                                                                                                 | 66 to 56 *             | 56 to 46* |
| 0.5 - 5                                                                                                    | 56                     | 46        |
| 5 - 30                                                                                                     | 60                     | 50        |
| Note 1: The lower limit shall apply at the transition frequencies.                                         |                        |           |
| Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz. |                        |           |

## Test Setup:



## Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

Notes:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Level = Reading + Factor.

## Measurement Uncertainty:

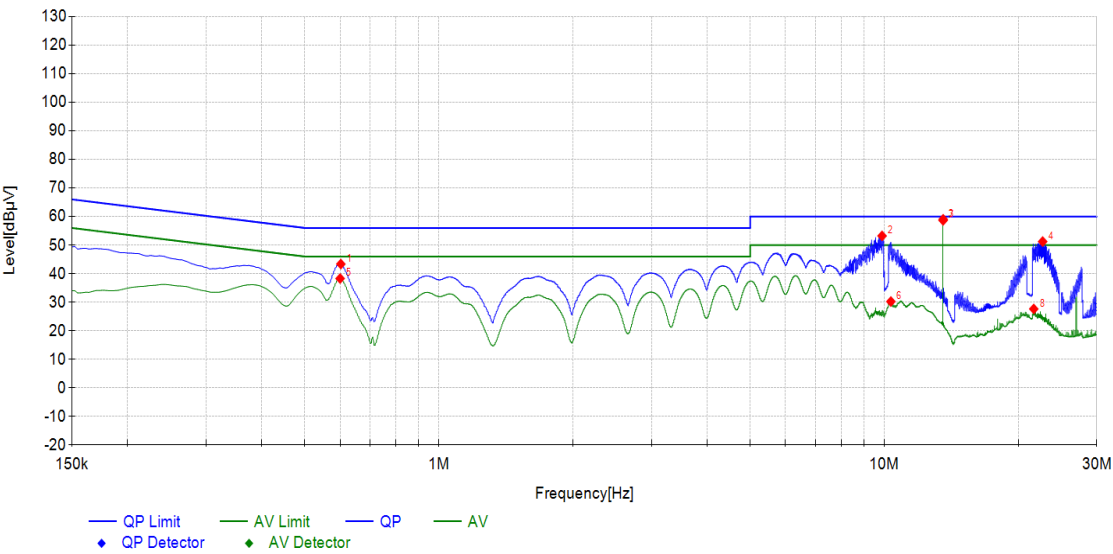
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 1.96$ .  $U = 3.12$  dB.

Test Results:

During the test, the Conducted Emission from 150kHz to 30MHz was performed in all modes with all channels, and all antennas. Transmitting, 13.56MHz, Antenna 1 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.

| Power Line   |             |             |                | L1           |              |             |          |            |
|--------------|-------------|-------------|----------------|--------------|--------------|-------------|----------|------------|
| Test channel |             |             |                | Worst-Case   |              |             |          |            |
| NO.          | Freq. [MHz] | Factor [dB] | Reading [dBμV] | Level [dBμV] | Limit [dBμV] | Margin [dB] | Detector | Pass/ Fail |
| 1            | 0.6022      | 10.28       | 33.09          | 43.37        | 56.00        | 12.63       | QP       | PASS       |
| 2            | 9.888       | 10.90       | 42.33          | 53.23        | 60.00        | 6.77        | QP       | PASS       |
| 3            | 13.56*      | 11.84       | 47.18          | 59.02        | ---          | ---         | QP       | ---        |
| 4            | 22.6838     | 11.70       | 39.54          | 51.24        | 60.00        | 8.76        | QP       | PASS       |
| 5            | 0.6         | 10.28       | 28.03          | 38.31        | 46.00        | 7.69        | AV       | PASS       |
| 6            | 10.347      | 11.00       | 19.25          | 30.25        | 50.00        | 19.75       | AV       | PASS       |
| 7            | 13.56*      | 11.84       | 46.83          | 58.67        | ---          | ---         | AV       | ---        |
| 8            | 21.6622     | 11.66       | 16.00          | 27.66        | 50.00        | 22.34       | AV       | PASS       |

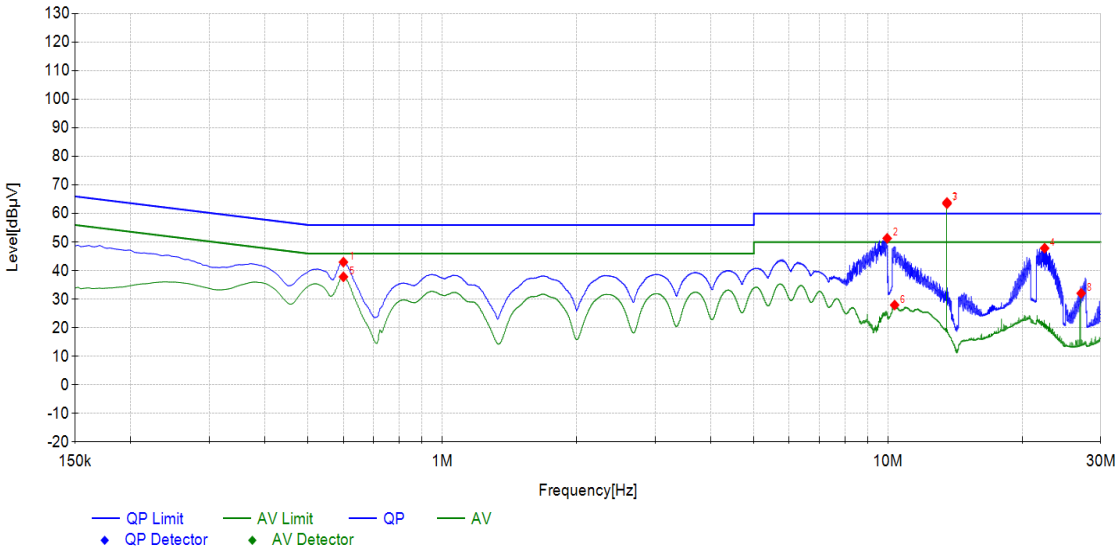
\*" fundamental frequency.



|              |            |
|--------------|------------|
| Power Line   | N          |
| Test channel | Worst-Case |

| NO. | Freq. [MHz] | Factor [dB] | Reading [dBμV] | Level [dBμV] | Limit [dBμV] | Margin [dB] | Detector | Pass/ Fail |
|-----|-------------|-------------|----------------|--------------|--------------|-------------|----------|------------|
| 1   | 0.6         | 10.23       | 32.77          | 43.00        | 56.00        | 13.00       | QP       | PASS       |
| 2   | 9.9555      | 10.62       | 40.70          | 51.32        | 60.00        | 8.68        | QP       | PASS       |
| 3   | 13.56*      | 10.95       | 52.92          | 63.87        | ---          | ---         | QP       | ---        |
| 4   | 22.4587     | 11.18       | 36.69          | 47.87        | 60.00        | 12.13       | QP       | PASS       |
| 5   | 0.6         | 10.23       | 27.62          | 37.85        | 46.00        | 8.15        | AV       | PASS       |
| 6   | 10.347      | 10.65       | 17.33          | 27.98        | 50.00        | 22.02       | AV       | PASS       |
| 7   | 13.56*      | 10.95       | 52.47          | 63.42        | ---          | ---         | AV       | ---        |
| 8   | 27.1208     | 11.32       | 20.76          | 32.08        | 50.00        | 17.92       | AV       | PASS       |

"\*" fundamental frequency.



## 5.2 Radiated Emission

Ambient condition:

| Temperature | Relative humidity | Pressure |
|-------------|-------------------|----------|
| 23°C ~25°C  | 45%~50%           | 101.3kPa |

### Method of Measurement:

The EUT was setup and tested according to ANSI C63.10-2020/Cor1-2023.

The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from Antenna to the EUT was 3 meters.

The Antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the Antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10-2020/Cor1-2023 on radiated measurement. The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

The frequency range from 30MHz to 10th harmonic is checked.

Note: When doing emission measurement above 1GHz, the horn Antenna will be bended down a little (as horn Antenna has the narrow beamwidth) in order to keeping the Antenna in the “cone of radiation” of EUT. The 3dB beamwidth is 10~60 degrees for H-plane and 10~90 degrees for E-plane.

### Limits:

§15.225

(a) The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters. (124.00dBμV/m@3m)

(b) Within the bands 13.410-13.553 MHz and 13.567-13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters. (90.50dBμV/m@3m)

(c) Within the bands 13.110-13.410 MHz and 13.710-14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters. (80.50dBμV/m@3m)

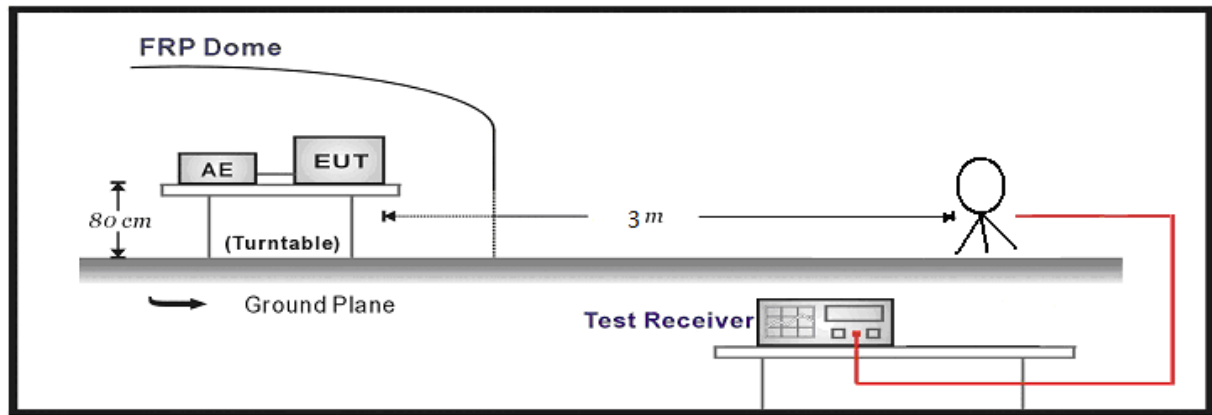
(d) The field strength of any emissions appearing outside of the 13.110– 14.010 MHz and shall not exceed the general radiated emission limits in § 15.209 as follows:

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) of FCC part 15, must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

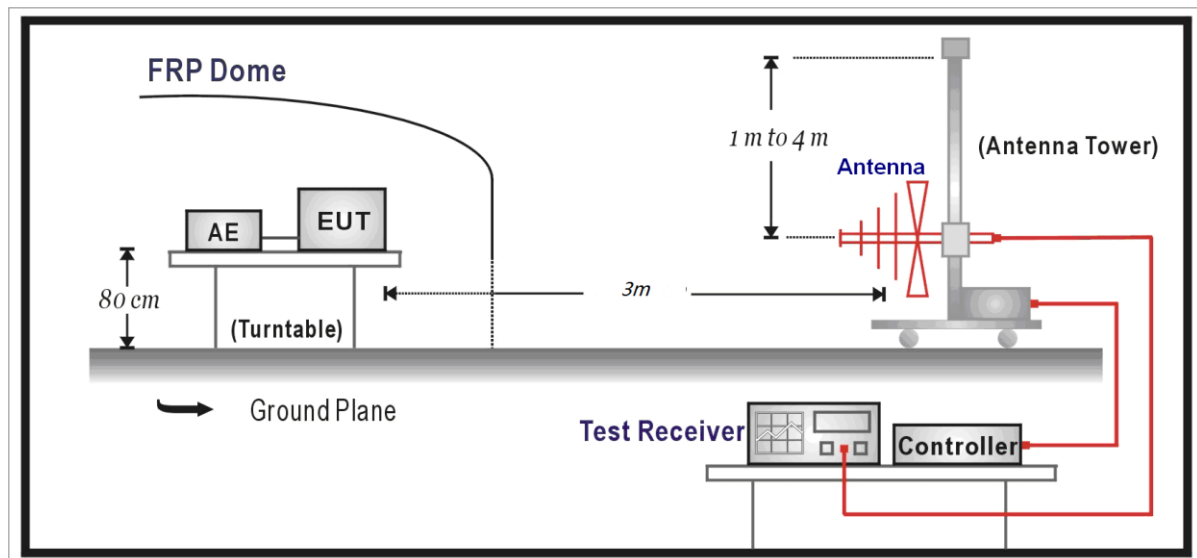
| Frequency         | Limit ( $\mu\text{V/m}$ )        | Limit ( $\text{dB}\mu\text{V/m @3m}$ ) | Remark           |
|-------------------|----------------------------------|----------------------------------------|------------------|
| 0.009MHz-0.490MHz | $2400/F(\text{kHz})@300\text{m}$ | $20\lg(24000000/F(\text{kHz}))$        | Quasi-peak Level |
| 0.490MHz~1.705MHz | $24000/F(\text{kHz})@30\text{m}$ | $20\lg(2400000/F(\text{kHz}))$         | Quasi-peak Level |
| 1.705MHz~30.0MHz  | 30@30m                           | 69.54                                  | Quasi-peak Level |
| 30MHz-88MHz       | 100@3m                           | 40.0                                   | Quasi-peak Level |
| 88MHz-216MHz      | 150@3m                           | 43.5                                   | Quasi-peak Level |
| 216MHz-960MHz     | 200@3m                           | 46.0                                   | Quasi-peak Level |
| 960MHz-1GHz       | 500@3m                           | 54.0                                   | Quasi-peak Level |
| Above 1GHz        | 500@3m                           | 54.0                                   | Average Level    |
|                   | 5000@3m                          | 74.0                                   | Peak Level       |

## Test Setup:

Below 30MHz Test Setup:



Below 1GHz Test Setup:



Measurement Data:

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Level =Reading - Factor

Factor = Preamplifier Factor – Antenna Factor–Cable Loss

Measurement Uncertainty:

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 1.96.

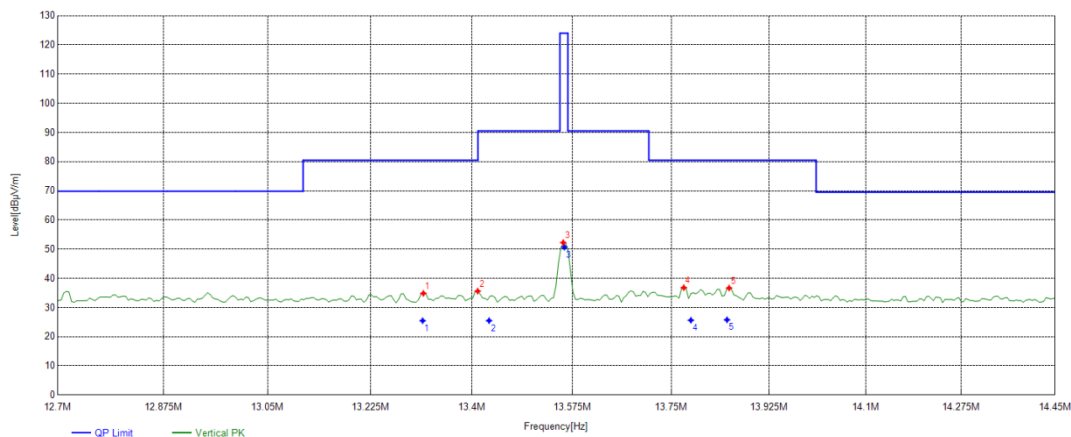
| Frequency    | Uncertainty |
|--------------|-------------|
| 9KHz-30MHz   | 3.55 dB     |
| 30MHz-200MHz | 4.19 dB     |
| 200MHz-1GHz  | 3.63 dB     |
| Above 1GHz   | 3.68 dB     |

Test Results:

Result of The field strength of Fundamental Emission

During the test, the Radiates Emission from 9kHz to 1GHz was performed in NFC all modes with all channels and all antennas. Transmitting, 13.56MHz, Antenna 1, X Polarity are selected as the worst condition. The test data of the worst-case condition was recorded in this report.

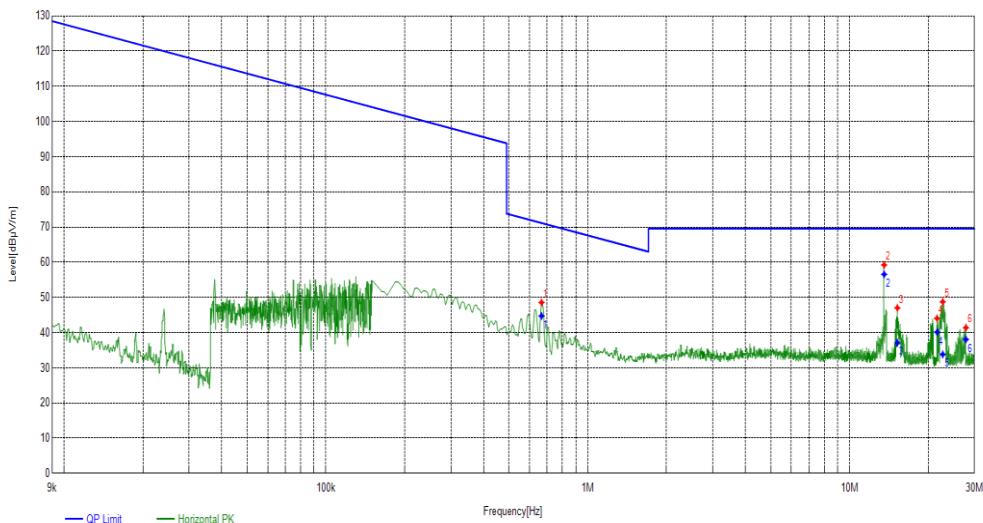
|                 |             |                   |                   |                |             |           |             |           |           |
|-----------------|-------------|-------------------|-------------------|----------------|-------------|-----------|-------------|-----------|-----------|
| Test channel    |             | 13.56MHz          |                   |                |             |           |             |           |           |
| Polarity        |             | X                 |                   |                |             |           |             |           |           |
| Suspected List  |             |                   |                   |                |             |           |             |           |           |
| Frequency [MHz] | Factor [dB] | Reading [dBμV/m]  | Level [dBμV/m]    | Limit [dBμV/m] | Margin [dB] | Detector  | Height [cm] | Angle deg | Pass/Fail |
| 13.3157         | 20.96       | 13.89             | 34.85             | 80.50          | 45.65       | PK        | 100         | 360       | PASS      |
| 13.4096         | 20.96       | 14.65             | 35.61             | 80.50          | 44.89       | PK        | 100         | 188       | PASS      |
| 13.5588         | 20.98       | 31.26             | 52.24             | 124.00         | 71.76       | PK        | 100         | 7         | PASS      |
| 13.7721         | 20.99       | 15.81             | 36.80             | 80.50          | 43.70       | PK        | 100         | 268       | PASS      |
| 13.8531         | 20.99       | 15.69             | 36.68             | 80.50          | 43.82       | PK        | 100         | 264       | PASS      |
| Final Data List |             |                   |                   |                |             |           |             |           |           |
| Frequency [MHz] | Factor [dB] | QP Value [dBμV/m] | QP Limit [dBμV/m] | QP Margin [dB] | Height [cm] | Angle [°] | Pass/Fail   |           |           |
| 13.3144         | 20.96       | 25.47             | 80.50             | 55.03          | 200         | 130       | PASS        |           |           |
| 13.4293         | 20.96       | 25.49             | 90.50             | 65.01          | 100         | 93        | PASS        |           |           |
| 13.5608         | 20.98       | 50.69             | 124.00            | 73.31          | 170         | 11        | PASS        |           |           |
| 13.7847         | 20.99       | 25.63             | 80.50             | 54.87          | 100         | 273       | PASS        |           |           |
| 13.8493         | 20.99       | 25.78             | 80.50             | 54.72          | 110         | 269       | PASS        |           |           |



Result of Radiated Emissions

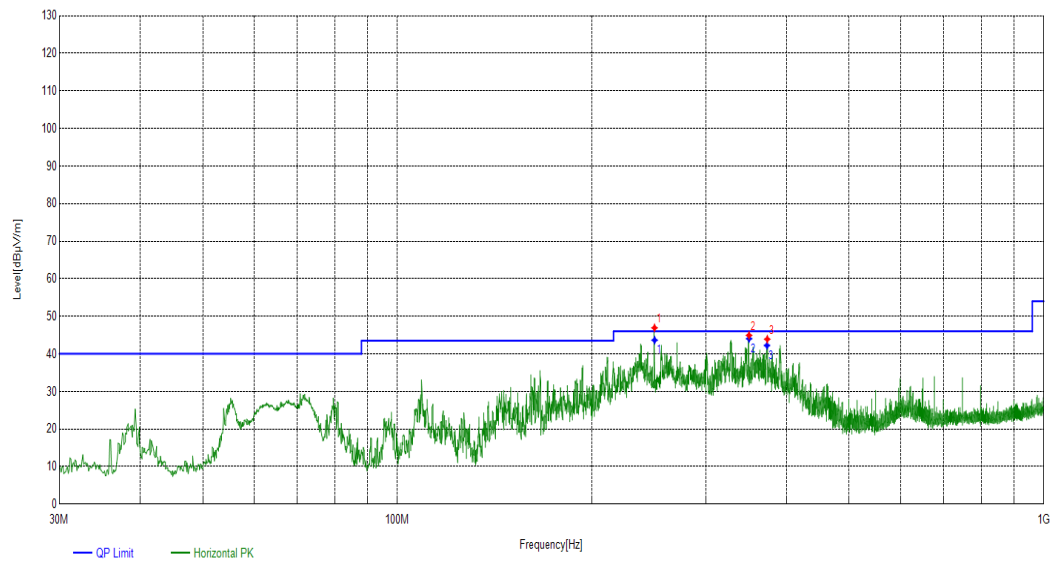
During the test, the Radiates Emission from 9kHz to 1GHz was performed in NFC all modes with all channels and all antennas. Transmitting, 13.56MHz, Antenna 1 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.

|                   |             |                   |                   |                |             |           |             |           |           |
|-------------------|-------------|-------------------|-------------------|----------------|-------------|-----------|-------------|-----------|-----------|
| Radiates Emission |             | 9k~30M            |                   |                |             |           |             |           |           |
| Test channel      |             | 13.56MHz          |                   |                |             |           |             |           |           |
| Polarity          |             | X                 |                   |                |             |           |             |           |           |
| Suspected List    |             |                   |                   |                |             |           |             |           |           |
| Frequency [MHz]   | Factor [dB] | Reading [dBμV/m]  | Level [dBμV/m]    | Limit [dBμV/m] | Margin [dB] | Detector  | Height [cm] | Angle deg | Pass/Fail |
| 0.6661            | 20.54       | 28.02             | 48.56             | 71.14          | 22.58       | PK        | 100         | 327       | PASS      |
| 13.5588           | 20.98       | 38.24             | 59.22             | 69.50          | 10.28       | PK        | 100         | 250       | PASS      |
| 15.2307           | 20.96       | 26.06             | 47.02             | 69.50          | 22.48       | PK        | 100         | 18        | PASS      |
| 21.5939           | 20.66       | 23.39             | 44.05             | 69.50          | 25.45       | PK        | 100         | 242       | PASS      |
| 22.707            | 20.63       | 28.12             | 48.75             | 69.50          | 20.75       | PK        | 100         | 96        | PASS      |
| 27.8377           | 20.77       | 20.62             | 41.39             | 69.50          | 28.11       | PK        | 100         | 190       | PASS      |
| Final Data List   |             |                   |                   |                |             |           |             |           |           |
| Frequency [MHz]   | Factor [dB] | QP Value [dBμV/m] | QP Limit [dBμV/m] | QP Margin [dB] | Height [cm] | Angle [°] | Pass/Fail   |           |           |
| 0.6661            | 20.54       | 44.74             | 71.14             | 26.40          | 100         | 327       | PASS        |           |           |
| 13.5611           | 20.98       | 56.55             | 69.50             | 12.95          | 250         | 336       | PASS        |           |           |
| 15.2307           | 20.96       | 37.10             | 69.50             | 32.40          | 100         | 18        | PASS        |           |           |
| 21.5939           | 20.66       | 40.13             | 69.50             | 29.37          | 100         | 242       | PASS        |           |           |
| 22.707            | 20.63       | 33.81             | 69.50             | 35.69          | 100         | 96        | PASS        |           |           |
| 27.8377           | 20.77       | 38.06             | 69.50             | 31.44          | 100         | 190       | PASS        |           |           |

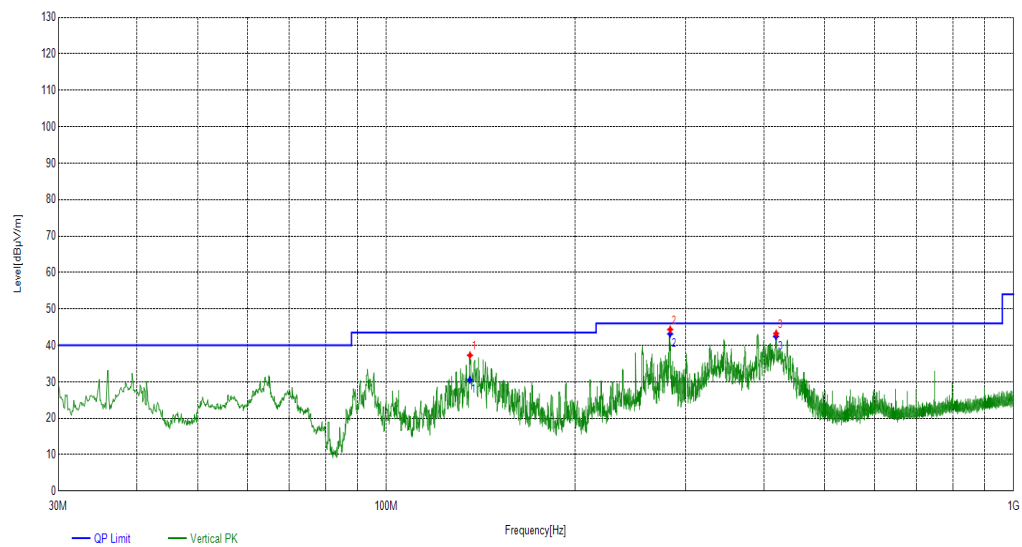




|                   |             |                   |                   |                |             |           |             |           |           |
|-------------------|-------------|-------------------|-------------------|----------------|-------------|-----------|-------------|-----------|-----------|
| Radiates Emission |             | 30M~1G            |                   |                |             |           |             |           |           |
| Test channel      |             | 13.56MHz          |                   |                |             |           |             |           |           |
| Polarity          |             | Horizontal        |                   |                |             |           |             |           |           |
| Suspected List    |             |                   |                   |                |             |           |             |           |           |
| Frequency [MHz]   | Factor [dB] | Reading [dBμV/m]  | Level [dBμV/m]    | Limit [dBμV/m] | Margin [dB] | Detector  | Height [cm] | Angle deg | Pass/Fail |
| 249.921           | 14.24       | 32.69             | 46.93             | ---            | ---         | PK        | 100         | 356       | ---       |
| 349.938           | 16.70       | 28.24             | 44.94             | ---            | ---         | PK        | 100         | 153       | ---       |
| 373.4143          | 17.26       | 26.65             | 43.91             | ---            | ---         | PK        | 100         | 166       | ---       |
| Final Data List   |             |                   |                   |                |             |           |             |           |           |
| Frequency [MHz]   | Factor [dB] | QP Value [dBμV/m] | QP Limit [dBμV/m] | QP Margin [dB] | Height [cm] | Angle [°] | Pass/Fail   |           |           |
| 249.9933          | 14.24       | 43.66             | 46.00             | 2.34           | 117         | 0         | PASS        |           |           |
| 349.9937          | 16.70       | 44.05             | 46.00             | 1.95           | 380         | 158       | PASS        |           |           |
| 373.036           | 17.26       | 42.24             | 46.00             | 3.76           | 250         | 171       | PASS        |           |           |

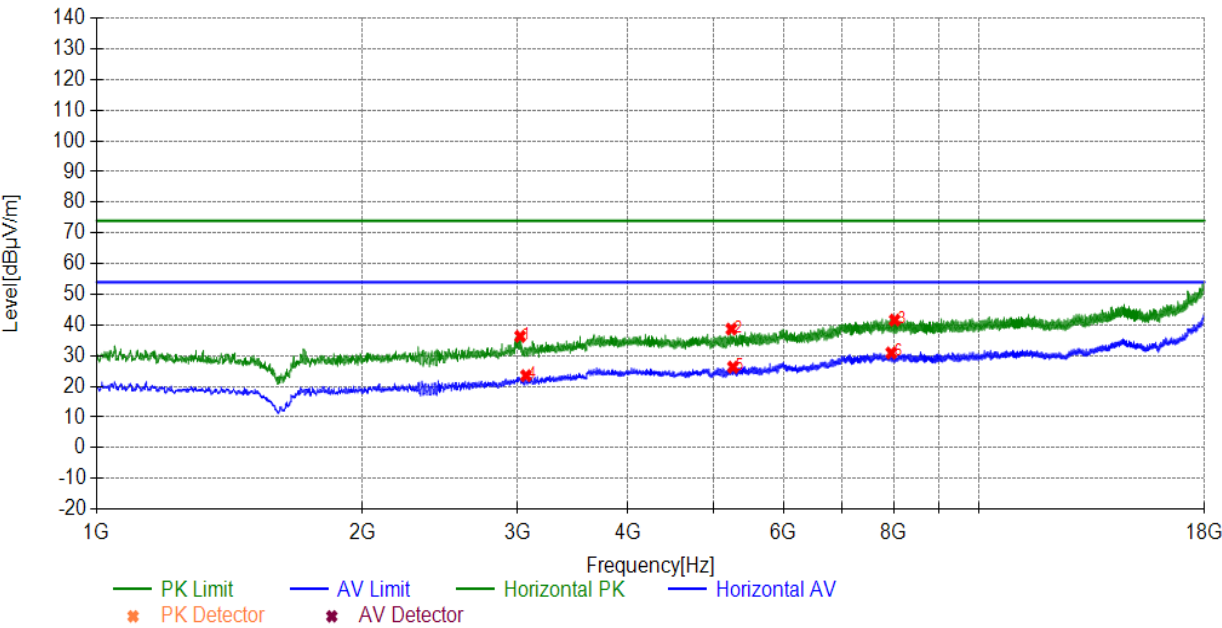


|                   |             |                   |                   |                |             |           |             |           |           |
|-------------------|-------------|-------------------|-------------------|----------------|-------------|-----------|-------------|-----------|-----------|
| Radiates Emission |             | 30M~1G            |                   |                |             |           |             |           |           |
| Test channel      |             | 13.56MHz          |                   |                |             |           |             |           |           |
| Polarity          |             | Vertical          |                   |                |             |           |             |           |           |
| Suspected List    |             |                   |                   |                |             |           |             |           |           |
| Frequency [MHz]   | Factor [dB] | Reading [dBμV/m]  | Level [dBμV/m]    | Limit [dBμV/m] | Margin [dB] | Detector  | Height [cm] | Angle deg | Pass/Fail |
| 135.9346          | 9.57        | 27.70             | 37.27             | ---            | ---         | PK        | 100         | 352       | ---       |
| 283.4863          | 15.09       | 29.27             | 44.36             | ---            | ---         | PK        | 100         | 31        | ---       |
| 418.3298          | 18.21       | 25.05             | 43.26             | ---            | ---         | PK        | 100         | 235       | ---       |
| Final Data List   |             |                   |                   |                |             |           |             |           |           |
| Frequency [MHz]   | Factor [dB] | QP Value [dBμV/m] | QP Limit [dBμV/m] | QP Margin [dB] | Height [cm] | Angle [°] | Pass/Fail   |           |           |
| 135.8519          | 9.57        | 30.54             | 43.50             | 12.96          | 300         | 349       | PASS        |           |           |
| 283.4699          | 15.09       | 43.15             | 46.00             | 2.85           | 370         | 36        | PASS        |           |           |
| 418.0514          | 18.21       | 42.43             | 46.00             | 3.57           | 350         | 231       | PASS        |           |           |

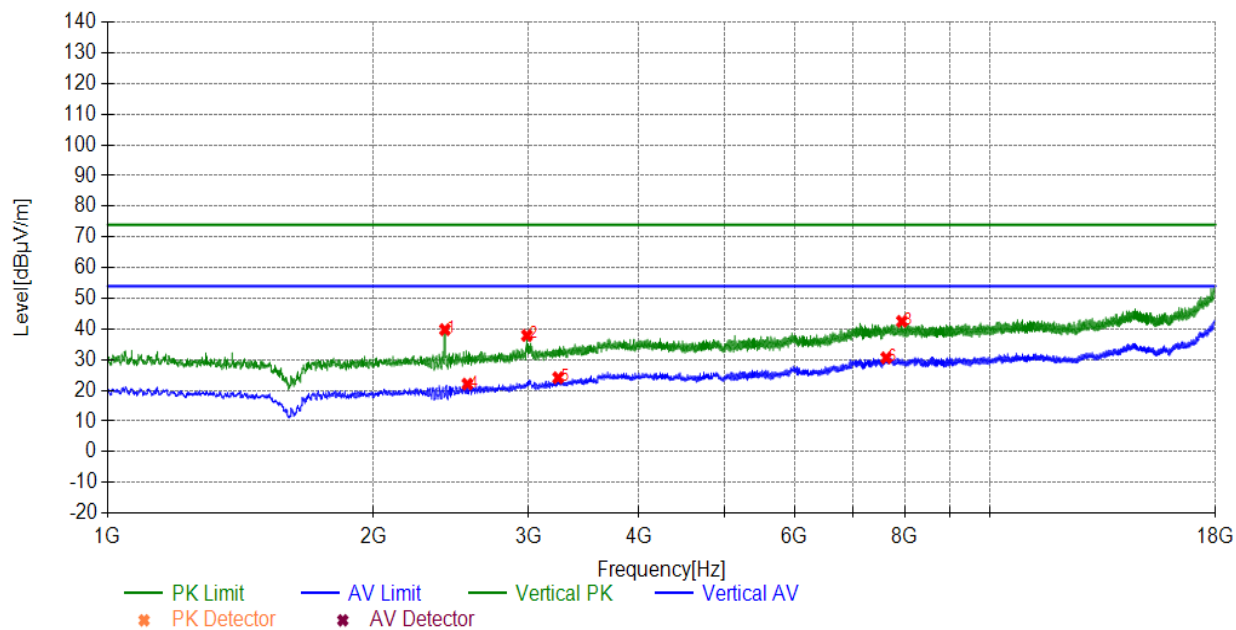


Due to the presence of certified 2.4G and 4G modules in the EUT, the entire machine will undergo high-frequency radiation testing as follows for verification.

|                   |             |                  |                |                |             |           |             |            |
|-------------------|-------------|------------------|----------------|----------------|-------------|-----------|-------------|------------|
| Radiates Emission |             | Above 1G         |                |                |             |           |             |            |
| Test channel      |             | Lowest           |                |                |             |           |             |            |
| polarization      |             | Horizontal       |                |                |             |           |             |            |
| Suspected List    |             |                  |                |                |             |           |             |            |
| Frequency [MHz]   | Factor [dB] | Reading [dBμV/m] | Level [dBμV/m] | Limit [dBμV/m] | Margin [dB] | Detect or | Height [cm] | Pass/ Fail |
| 3018.850943       | -5.00       | 41.33            | 36.33          | 74.00          | 37.67       | PK        | 150         | PASS       |
| 5236.611831       | -0.53       | 39.24            | 38.71          | 74.00          | 35.29       | PK        | 150         | PASS       |
| 8021.351068       | 5.36        | 36.27            | 41.63          | 74.00          | 32.37       | PK        | 150         | PASS       |
| 3064.753238       | -4.85       | 28.35            | 23.50          | 54.00          | 30.50       | AV        | 150         | PASS       |
| 5259.562978       | -0.48       | 26.74            | 26.26          | 54.00          | 27.74       | AV        | 150         | PASS       |
| 7949.097455       | 5.32        | 25.58            | 30.90          | 54.00          | 23.10       | AV        | 150         | PASS       |



|                   |             |                  |                |                |             |           |             |            |
|-------------------|-------------|------------------|----------------|----------------|-------------|-----------|-------------|------------|
| Radiates Emission |             | Above 1G         |                |                |             |           |             |            |
| Test channel      |             | Lowest           |                |                |             |           |             |            |
| polarization      |             | Vertical         |                |                |             |           |             |            |
| Suspected List    |             |                  |                |                |             |           |             |            |
| Frequency [MHz]   | Factor [dB] | Reading [dBμV/m] | Level [dBμV/m] | Limit [dBμV/m] | Margin [dB] | Detect or | Height [cm] | Pass/ Fail |
| 2410.220511       | -7.00       | 46.82            | 39.82          | 74.00          | 34.18       | PK        | 150         | PASS       |
| 2985.699285       | -5.12       | 43.03            | 37.91          | 74.00          | 36.09       | PK        | 150         | PASS       |
| 7943.147157       | 5.32        | 37.20            | 42.52          | 74.00          | 31.48       | PK        | 150         | PASS       |
| 2555.577779       | -6.62       | 28.69            | 22.07          | 54.00          | 31.93       | AV        | 150         | PASS       |
| 3239.011951       | -4.25       | 28.40            | 24.15          | 54.00          | 29.85       | AV        | 150         | PASS       |
| 7623.531177       | 5.23        | 25.40            | 30.63          | 54.00          | 23.37       | AV        | 150         | PASS       |



## 5.3 FREQUENCY TOLERANCE

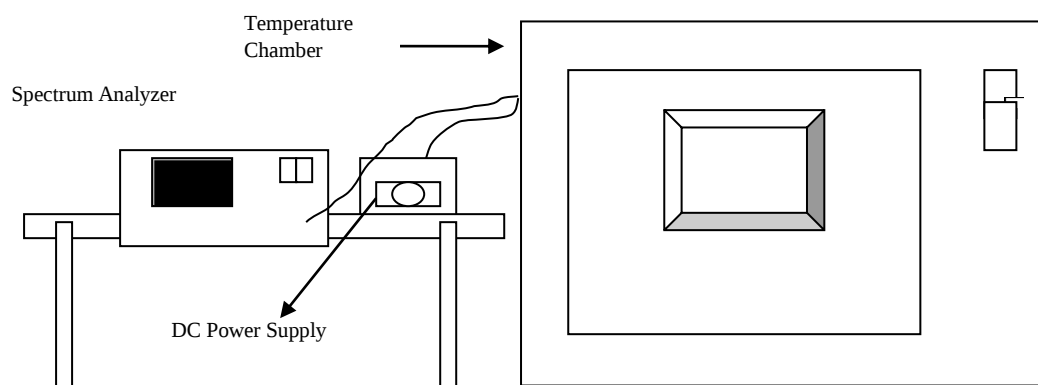
Ambient condition:

| Temperature | Relative humidity | Pressure |
|-------------|-------------------|----------|
| 23°C ~25°C  | 45%~50%           | 101.3kPa |

Method of Measurement:

- The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.
- Turn the EUT on and couple its output to a spectrum analyzer.
- Turn the EUT off and set the chamber to the highest temperature specified.
- Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
- Repeat step c) and d) with the temperature chamber set to the lowest temperature.
- The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

Test Setup:



### LIMITS OF FREQUENCY TOLERANCE

The frequency tolerance of the carrier signal shall be maintained within  $\pm 0.01\%$  (100ppm) of the operating frequency over a temperature variation of  $-20$  degrees to  $+50$  degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

Measurement Uncertainty:

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 2$ ,  $U = 936$  Hz.

Test Results:

| FREQUENCY STABILITY VERSUS TEMP. |                        |                       |                    |                       |                    |                       |                    |                       |                    |                |               |
|----------------------------------|------------------------|-----------------------|--------------------|-----------------------|--------------------|-----------------------|--------------------|-----------------------|--------------------|----------------|---------------|
| TEMP.<br>(°C)                    | POWER<br>SUPPLY<br>(V) | 0 MINUTE              |                    | 2 MINUTE              |                    | 5 MINUTE              |                    | 10 MINUTE             |                    | Limit<br>(ppm) | PASS/<br>FAIL |
|                                  |                        | Measured<br>Frequency | Frequency<br>Drift | Measured<br>Frequency | Frequency<br>Drift | Measured<br>Frequency | Frequency<br>Drift | Measured<br>Frequency | Frequency<br>Drift |                |               |
|                                  |                        | (MHz)                 | ppm                | (MHz)                 | ppm                | (MHz)                 | ppm                | (MHz)                 | ppm                |                |               |
| 50                               | 24                     | 13.5608               | 55.9896            | 13.5608               | 56.5808            | 13.5608               | 56.0550            | 13.5608               | 55.8361            | 100            | PASS          |
| 40                               | 24                     | 13.5608               | 55.9985            | 13.5608               | 56.5808            | 13.5608               | 56.6691            | 13.5608               | 55.7651            | 100            | PASS          |
| 30                               | 24                     | 13.5608               | 55.9726            | 13.5608               | 56.8636            | 13.5608               | 55.5728            | 13.5608               | 56.6576            | 100            | PASS          |
| 20                               | 24                     | 13.5608               | 56.7191            | 13.5608               | 56.0228            | 13.5608               | 55.9166            | 13.5608               | 55.5940            | 100            | PASS          |
| 10                               | 24                     | 13.5608               | 55.9822            | 13.5608               | 55.6444            | 13.5608               | 56.8337            | 13.5608               | 56.1929            | 100            | PASS          |
| 0                                | 24                     | 13.5608               | 55.6688            | 13.5608               | 55.9103            | 13.5608               | 55.5834            | 13.5608               | 56.7615            | 100            | PASS          |
| -10                              | 24                     | 13.5608               | 56.0270            | 13.5608               | 55.5750            | 13.5608               | 56.0395            | 13.5608               | 56.7372            | 100            | PASS          |
| -20                              | 24                     | 13.5608               | 56.1101            | 13.5608               | 56.4890            | 13.5608               | 56.9564            | 13.5608               | 56.8291            | 100            | PASS          |
| 20                               | 20.4                   | 13.5608               | 55.4984            | 13.5608               | 56.8000            | 13.5608               | 56.0089            | 13.5608               | 56.8949            | 100            | PASS          |
|                                  | 27.6                   | 13.5608               | 56.5517            | 13.5608               | 55.7627            | 13.5608               | 55.9925            | 13.5608               | 56.3176            | 100            | PASS          |

## 5.4 20dB BANDWIDTH MEASUREMENT

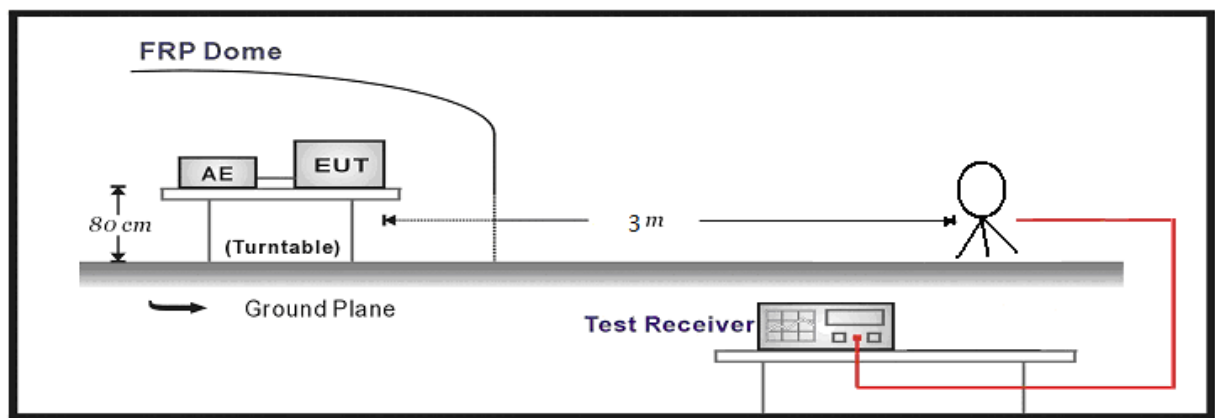
Ambient condition:

| Temperature | Relative humidity | Pressure |
|-------------|-------------------|----------|
| 23°C ~25°C  | 45%~50%           | 101.3kPa |

Method of Measurement:

The spectrum analyzer was receiving the maximum emission level. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

Test Setup:



### LIMITS OF 20dB BANDWIDTH MEASUREMENT

The 20dB bandwidth shall be specified in operating frequency band. (13.11MHz ~ 14.01MHz)

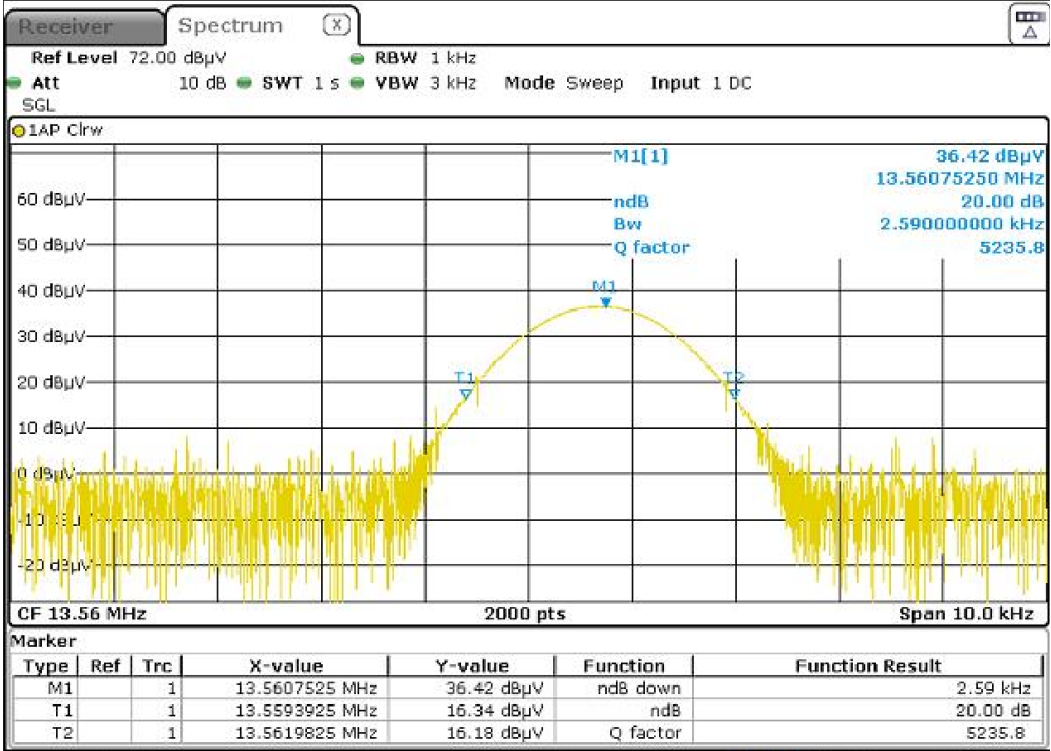
Measurement Uncertainty:

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 2$ ,  $U = 936$  Hz.

Test Results:

| Frequency (MHz) | 20dB Bandwidth (kHz) | Lower (MHz) | Upper (MHz) | Limit (MHz) | PASS/FAIL |
|-----------------|----------------------|-------------|-------------|-------------|-----------|
| 13.56           | 2.59                 | 13.5593925  | 13.5619825  | 13.11~14.01 | PASS      |

The plots of test results are attached as below.



6. Appendix A

| Test Equipment                                                                  | Type/Mode  | SERIAL NO.         | Equipment No. | Manufact<br>urer | Cal. Due   |
|---------------------------------------------------------------------------------|------------|--------------------|---------------|------------------|------------|
| Spectrum Analyzer                                                               | FSV40      | 101580             | DZ-000238-3   | R&S              | 2025/04/22 |
| 5m Semi-Anechoic Chamber                                                        | SAC-5      | SAC-5-2.0          | EM-000557     | COMTEST          | 2027/02/01 |
| EMI Test Receiver                                                               | N9038A-508 | MY532290079        | EM-000397     | Agilent          | 2025/01/13 |
| EMI Test Receiver                                                               | ESR7       | 102235             | EM-000574     | R&S              | 2025/01/13 |
| loop antenna                                                                    | HLA 6121   | 540046             | EM-000546     | TESEQ            | 2025/06/04 |
| Broadband Antenna                                                               | VULB 9163  | 9163-530           | EM-000342     | SCHWAR<br>ZBECK  | 2025/06/09 |
| Constant temperature and<br>humidity (high and low<br>temperature) test chamber | LGH-80LA   | LG20210902-A<br>10 | DZ-000328     | /                | 2025/10/09 |
| Temperature and humidity<br>meter                                               | MHO-C201   | /                  | DZ-000249-2   | Seconds<br>test  | 2025/07/28 |

| Dynacomm               | Software Release | Software Developer |
|------------------------|------------------|--------------------|
| TS+（5m,Radiation test） | JS32-RE 5.0.0    | Tonscend           |

\_\_\_\_\_ The End \_\_\_\_\_

## Important

1. The test report is invalid without the official stamp of CVC;
2. Any part photocopies of the test report are forbidden without the written permission from CVC;
3. The test report is invalid without the signatures of Author and Reviewer;
4. The test report is invalid if altered;
5. Objections to the test report must be submitted to CVC within 15 days;
6. Generally, commission test is responsible for the tested samples only;
7. As for the test result, “—” or “N” means “not applicable”, “ / ” means “not testing”, “P” means “pass” and “F” means “fail”.

Address: No.3,Tiantaiyi Road, Kaitai Avenue, Science City, Guangzhou, China (Test location)

Post Code: 510663      Tel: 020-32293888

FAX: 020 32293889      E-mail: [office@cvc.org.cn](mailto:office@cvc.org.cn)