

# TEST REPORT

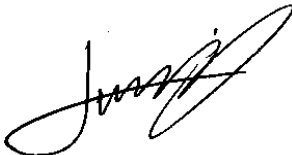
|           |                                                               |
|-----------|---------------------------------------------------------------|
| Applicant | Faurecia Clarion Electronics (Xiamen) Co., Ltd.               |
| Address   | 6F, No.40, Guanri Road, Software Park Stage II, Xiamen, China |

|                                     |                                                               |
|-------------------------------------|---------------------------------------------------------------|
| Manufacturer or Supplier            | Faurecia Clarion Electronics (Xiamen) Co., Ltd.               |
| Address                             | 6F, No.40, Guanri Road, Software Park Stage II, Xiamen, China |
| Product                             | Audio Display                                                 |
| Brand Name                          | Clarion                                                       |
| Model                               | PP-4330                                                       |
| Additional Model & Model Difference | PP4330                                                        |
| Date of tests                       | Dec. 14, 2023 ~ Dec. 21, 2023                                 |

The tests have been carried out according to the requirements of the following standard:

☒ **FCC Part 15, Subpart C, Section 15.247**

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

|                                                                                     |                                                                                      |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Tested by Andy Zhu<br>Supervisor / EMC Department                                   | Tested by Madison Luo<br>Assistant Manager / EMC Department                          |
|  |  |
|                                                                                     | Date: Jan. 04, 2024                                                                  |

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Test Report No.: RF2312WDG0114-2

## RELEASE CONTROL RECORD

| ISSUE NO.       | REASON FOR CHANGE                                                                                                                                                                                                                                                              | DATE ISSUED   |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| RF2008WDG0104-2 | Original release                                                                                                                                                                                                                                                               | Oct. 09, 2020 |
| RF2312WDG0114-2 | Based on the original report RF2008WDG0104-2 changed the company name of the applicant/Manufacturer and added the additional model, canceled the SiriusXM function, changed the front housing plate, it needed to be retested RSE (below 1GHz) items after engineer evaluated. | Jan. 04, 2024 |

## 1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

| APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247) |                     |        |                                |
|-----------------------------------------------------------|---------------------|--------|--------------------------------|
| STANDARD SECTION                                          | TEST TYPE AND LIMIT | RESULT | REMARK                         |
| 15.247(d)<br>15.209                                       | Radiated Emissions  | PASS   | Meet the requirement of limit. |

Note: This report is prepared for supplementary report.

## 2 MEASUREMENT UNCERTAINTY

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

| MEASUREMENT        | FREQUENCY     | UNCERTAINTY |
|--------------------|---------------|-------------|
| Radiated emissions | 9KHz ~ 30MHz  | 2.80dB      |
|                    | 30MHz ~ 1GMHz | 4.65dB      |

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

### 3 GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

|                              |                                                                 |
|------------------------------|-----------------------------------------------------------------|
| <b>PRODUCT</b>               | Audio Display                                                   |
| <b>BRAND</b>                 | Clarion                                                         |
| <b>MODEL NO.</b>             | PP-4330                                                         |
| <b>ADDITIONAL NO.</b>        | PP4330                                                          |
| <b>FCC ID</b>                | WY2-PP4330                                                      |
| <b>NOMINAL VOLTAGE</b>       | DC 13.2V from Battery                                           |
| <b>MODULATION TECHNOLOGY</b> | DSSS, OFDM                                                      |
| <b>MODULATION TYPE</b>       | CCK, DQPSK, DBPSK for DSSS<br>64QAM, 16QAM, QPSK, BPSK for OFDM |
| <b>OPERATING FREQUENCY</b>   | 2412-2462MHz for 11b/g/n(HT20)                                  |
| <b>PEAK OUTPUT POWER</b>     | 111.94mW(Maximum)                                               |
| <b>ANTENNA TYPE</b>          | PCB Antenna, with -0.38dBi gain                                 |
| <b>I/O PORTS</b>             | Refer to user's manual                                          |
| <b>CABLE SUPPLIED</b>        | N/A                                                             |

#### NOTES:

- This is a supplementary report of Report No: RF2008WDG0104-2. The differences between them are as follows:
  - Changed the company name of the applicant/Manufacturer and added the additional model, canceled the SiriusXM function, changed the front housing plate.

According to the above conditions, only Radiated Emission (below 1GHz) test item needs to be performed. And all data was verified to meet the requirements.
- Please refer to the EUT photo document (Reference No.: 2312WDG0114) for detailed product photo.
- Additional model PP4330 is identical with the test model PP-4330 except the model name for trading purpose.
- The EUT provides completed transmitters and receivers:

| MODULATION MODE | FUNCTION |
|-----------------|----------|
| 802.11b         | 1TX/1RX  |
| 802.11g         | 1TX/1RX  |
| 802.11n (HT20)  | 1TX/1RX  |

### 3.2 DESCRIPTION OF TEST MODES

11 channels are provided for 802.11b, 802.11g and 802.11n(HT20):

| CHANNEL | FREQUENCY | CHANNEL | FREQUENCY |
|---------|-----------|---------|-----------|
| 1       | 2412 MHz  | 7       | 2442 MHz  |
| 2       | 2417 MHz  | 8       | 2447 MHz  |
| 3       | 2422 MHz  | 9       | 2452 MHz  |
| 4       | 2427 MHz  | 10      | 2457 MHz  |
| 5       | 2432 MHz  | 11      | 2462 MHz  |
| 6       | 2437 MHz  |         |           |

#### 3.2.1 CONFIGURATION OF SYSTEM UNDER TEST

Please see section 5 photographs of the test configuration for reference.

#### 3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports.

The worst case was found when positioned on X axis for radiated emission. Following test modes were selected for the final test, and the final worst case is marked in boldface and recorded in the report:

| EUT<br>CONFIGURE<br>MODE | APPLICABLE TO |       |     |      | MODE                                    |
|--------------------------|---------------|-------|-----|------|-----------------------------------------|
|                          | RE<1G         | RE≥1G | PLC | APCM |                                         |
| <b>A</b>                 | √             | -     | -   | -    | Powered by Fully Battery with WIFI Link |

Where **RE<1G**: Radiated Emission below 1GHz  
**PLC**: Power Line Conducted Emission

**RE≥1G**: Radiated Emission above 1GHz  
**APCM**: Antenna Port Conducted Measurement

#### RADIATED EMISSION TEST (BELOW 1GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

| EUT<br>CONFIGURE<br>MODE | MODE    | AVAILABLE<br>CHANNEL | TESTED<br>CHANNEL | MODULATION<br>TECHNOLOGY | MODULATION<br>TYPE | DATA<br>RATE<br>(Mbps) |
|--------------------------|---------|----------------------|-------------------|--------------------------|--------------------|------------------------|
| A                        | 802.11b | 1 to 11              | 1                 | DSSS                     | DBPSK              | 1.0                    |

For the test results, only the worst case was shown in test report.

**TEST CONDITION:**

| APPLICABLE TO | ENVIRONMENTAL CONDITIONS | TEST VOLTAGE (SYSTEM) | TESTED BY |
|---------------|--------------------------|-----------------------|-----------|
| RE<1G         | 25deg. C, 53%RH          | DC 13.2V from Battery | Stalker   |
| RE≥1G         | N/A                      | N/A                   | N/A       |
| PLC           | N/A                      | N/A                   | N/A       |
| APCM          | N/A                      | N/A                   | N/A       |

### 3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

**FCC Part 15, Subpart C, Section 15.247**

**KDB 558074 D01 15.247 Meas Guidance v05r02**

**ANSI C63.10-2013**

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

### 3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together without other necessary accessories or support units.

## 4 TEST TYPES AND RESULTS

### 4.1. RADIATED EMISSION MEASUREMENT

#### 4.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

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

**NOTES:**

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

#### 4.1.2 TEST INSTRUMENTS

| Equipment                           | Manufacturer  | Model No.                | Serial No.  | Next Cal.   |
|-------------------------------------|---------------|--------------------------|-------------|-------------|
| EMI Test Receiver                   | Rohde&Schwarz | ESU40                    | 100449      | Jan. 10, 24 |
| Signal and Spectrum Analyzer        | Rohde&Schwarz | FSV7                     | 102331      | May. 09, 24 |
| Active Loop Antenna (9KHz -30MHz)   | SCHWARZBECK   | FMZB 1519B               | 1519B-045   | Apr. 27, 24 |
| Amplifier (9KHz -1GHz)              | Burgeon       | BPA-530                  | 100210      | Mar. 06, 24 |
| Trilog-Broadband Antenna(20M-2G)    | SCHWARZBECK   | VULB 9168                | 01282       | Aug. 21, 24 |
| Horn Antenna (1GHz -18GHz)          | ETS -Lindgren | 3117                     | 00062558    | Apr. 27, 24 |
| Horn Antenna (18GHz -40GHz)         | SCHWARZBECK   | BBHA 9170                | BBHA9170147 | Apr. 28, 24 |
| 3m Semi-anechoic Chamber            | ETS-LINDGREN  | 9m*6m*6m                 | NSEMC003    | May 22, 24  |
| Test Software                       | ADT           | ADT_Radiated V7.6.15.9.2 | N/A         | N/A         |
| Broadband Preamplifier (1GHz~18GHz) | SCHWARZBECK   | BBV9718                  | 305         | Apr. 26, 24 |
| Pre-Amplifier (18GHz-40GHz)         | EMCI          | EMC 184045               | 980102      | Jan. 16, 24 |
| BLUETOOTH TESTER                    | Rohde&Schwarz | CBT32                    | 100811      | N/A         |

**NOTES:**

1. The test was performed in 966 Chamber.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
3. The horn antenna is used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Site Registration No. is 749762.

#### 4.1.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 1.5 meters (above 1GHz) and 0.8 meters (below 1GHz) above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. For below 1GHz was used bilog antenna, and above 1GHz was used horn antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. For below 30MHz, a loop antenna with its vertical plane is place 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1.3m above the ground.
- g. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, For battery operated equipment, the equipment tests shall be perform using fresh batteries. The turntable was rotated to maximize the emission level.

#### NOTES:

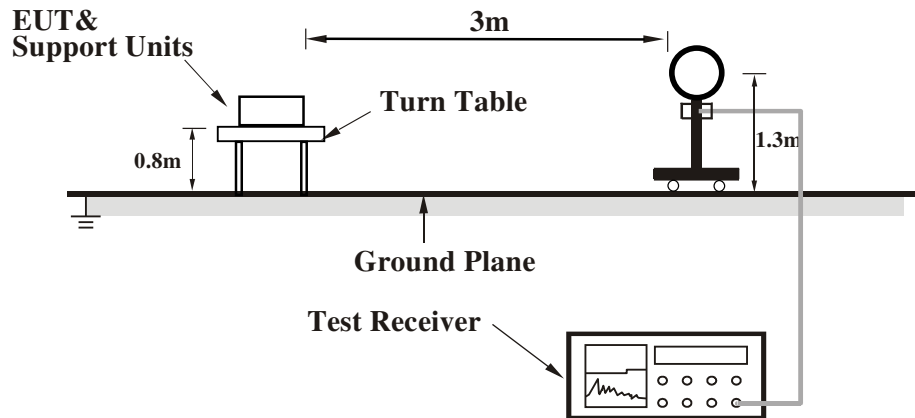
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is  $\geq 1/T$  (Duty cycle < 98%) or 10Hz(Duty cycle > 98%) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.
5. The testing of the EUT was performed on all 3 orthogonal axes, the worst-case test configuration was reported on the file test setup photo.

#### 4.1.4 DEVIATION FROM TEST STANDARD

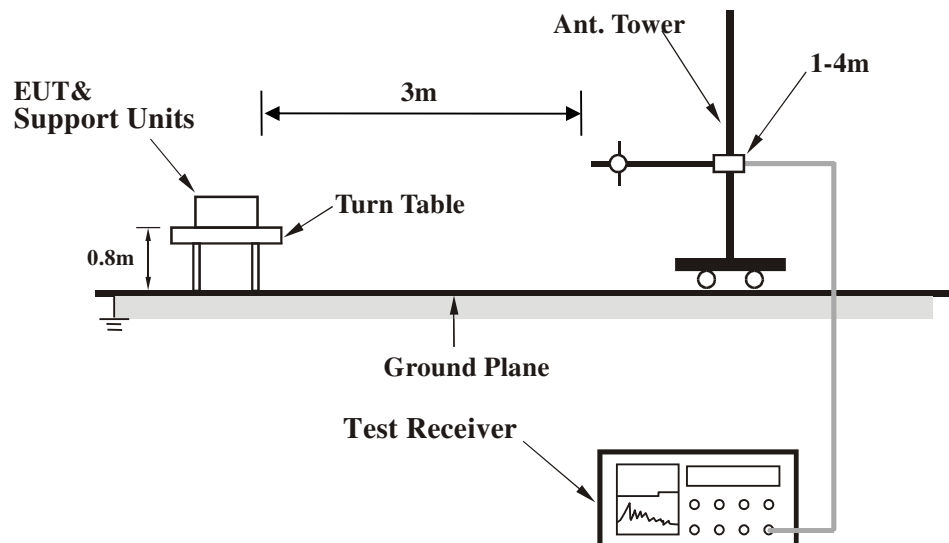
No deviation.

#### 4.1.5 TEST SETUP

##### Below 30MHz test setup

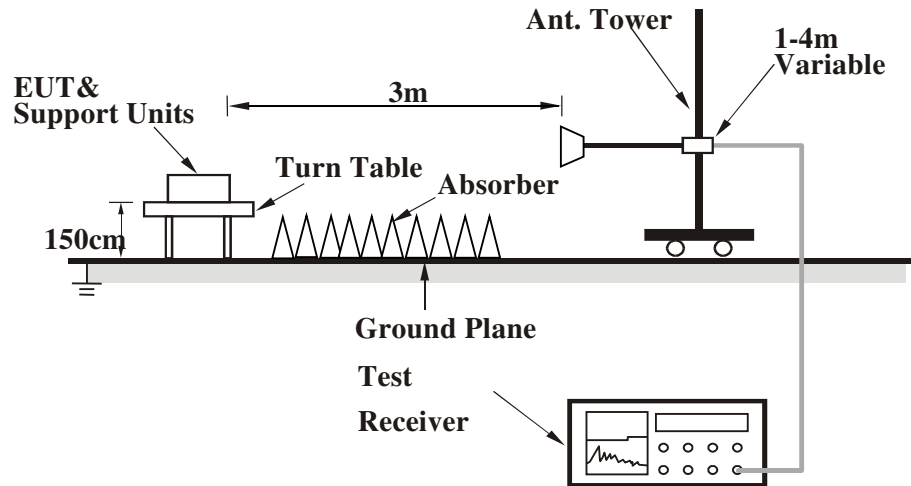


##### Below 1GHz test setup



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

## Above 1GHz test setup



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

### 4.1.6 EUT OPERATING CONDITIONS

- Placed the EUT on a testing table.
- Set the transmitter part of EUT under transmission condition continuously at specific channel frequency.
- The necessary accessories enable the EUT in full functions.

#### 4.1.7 TEST RESULTS

##### BELOW 1GHz WORST-CASE DATA:

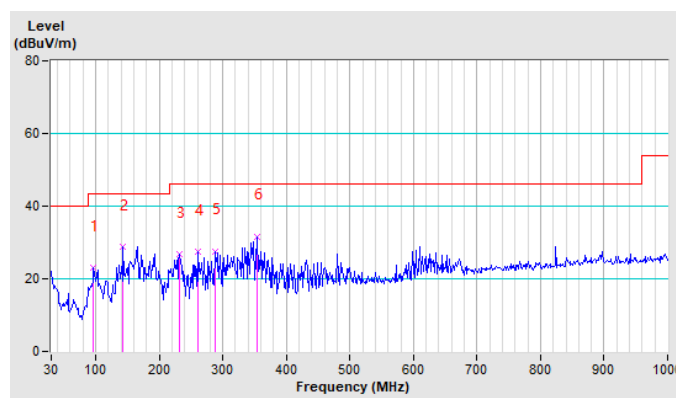
##### 802.11b

|                        |              |                              |                 |
|------------------------|--------------|------------------------------|-----------------|
| <b>CHANNEL</b>         | TX Channel 1 | <b>DETECTOR<br/>FUNCTION</b> | Quasi-Peak (QP) |
| <b>FREQUENCY RANGE</b> | 9KHz ~ 1GHz  |                              |                 |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                |                               |                   |                |                          |                            |                        |                                |
|-----------------------------------------------------|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | 96.84          | 22.96 QP                      | 43.50             | -20.54         | 3.00 H                   | 275                        | 45.14                  | -22.18                         |
| 2                                                   | 143.48         | 28.70 QP                      | 43.50             | -14.80         | 3.00 H                   | 290                        | 45.79                  | -17.09                         |
| 3                                                   | 232.08         | 26.63 QP                      | 46.00             | -19.37         | 3.00 H                   | 257                        | 45.20                  | -18.57                         |
| 4                                                   | 260.06         | 27.33 QP                      | 46.00             | -18.67         | 3.48 H                   | 158                        | 44.82                  | -17.49                         |
| 5                                                   | 288.04         | 27.62 QP                      | 46.00             | -18.38         | 3.30 H                   | 180                        | 43.97                  | -16.35                         |
| 6                                                   | 354.89         | 31.54 QP                      | 46.00             | -14.46         | 3.10 H                   | 199                        | 45.93                  | -14.39                         |

##### REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The emission levels of other frequencies were greater than 20dB margin.
4. 9KHz~30MHz have been test and test data more than 20dB margin.
5. Margin value = Emission level – Limit value.

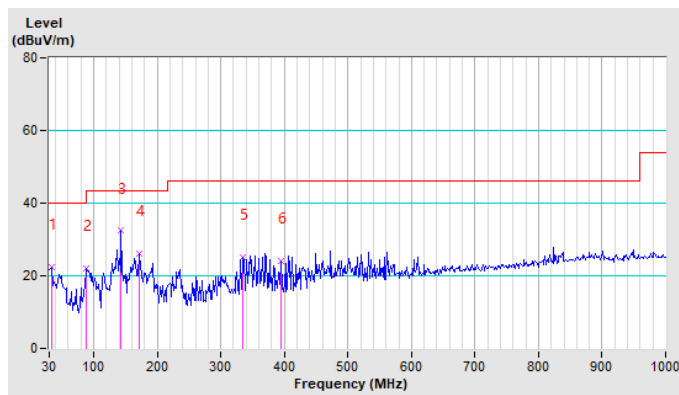


|                        |              |                              |                 |
|------------------------|--------------|------------------------------|-----------------|
| <b>CHANNEL</b>         | TX Channel 1 | <b>DETECTOR<br/>FUNCTION</b> | Quasi-Peak (QP) |
| <b>FREQUENCY RANGE</b> | 9KHz ~ 1GHz  |                              |                 |

| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M |                |                               |                   |                |                          |                            |                        |                                |
|---------------------------------------------------|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| NO.                                               | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                 | 34.66          | 22.40 QP                      | 40.00             | -17.60         | 2.00 V                   | 280                        | 41.06                  | -18.66                         |
| 2                                                 | 89.07          | 22.19 QP                      | 43.50             | -21.31         | 2.00 V                   | 263                        | 44.92                  | -22.73                         |
| 3                                                 | 143.48         | 32.43 QP                      | 43.50             | -11.07         | 1.72 V                   | 318                        | 49.52                  | -17.09                         |
| 4                                                 | 171.46         | 26.12 QP                      | 43.50             | -17.38         | 1.95 V                   | 295                        | 44.16                  | -18.04                         |
| 5                                                 | 334.68         | 25.22 QP                      | 46.00             | -20.78         | 2.00 V                   | 246                        | 40.13                  | -14.91                         |
| 6                                                 | 395.30         | 24.13 QP                      | 46.00             | -21.87         | 2.00 V                   | 232                        | 37.69                  | -13.56                         |

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The emission levels of other frequencies were greater than 20dB margin.
4. 9KHz~30MHz have been test and test data more than 20dB margin.
5. Margin value = Emission level – Limit value.





Test Report No.: RF2312WDG0114-2

## 4 PHOTOGRAPHS OF THE TEST CONFIGURATION

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



Test Report No.: RF2312WDG0114-2

## 5 APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

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

---END---