



# FCC TEST REPORT

## FCC ID:2A4HE-DH11

**Report Number**..... : ZKT-2310308254E

**Date of Test**..... Oct. 30, 2023 to Nov. 17, 2023

**Date of issue**..... : Nov. 17, 2023

**Total number of pages**..... 31

**Test Result** ..... : PASS

**Testing Laboratory**..... : Shenzhen ZKT Technology Co., Ltd.

**Address** ..... : 1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China

**Applicant's name** ..... : ShenZhen Hai Da Feng Technology Co.,Ltd.

**Address** ..... : A03, Juji Building ,Yabian Community,Baoan Avenue,Yabian Student Wai,Shajing Street,Baoan District,Shen Zhen,China.

**Manufacturer's name** ..... : ShenZhen Hai Da Feng Technology Co.,Ltd.

**Address** ..... : A03, Juji Building ,Yabian Community,Baoan Avenue,Yabian Student Wai,Shajing Street,Baoan District,Shen Zhen,China.

### Test specification:

**Standard**..... : FCC CFR Title 47 Part 15 Subpart C

**Test procedure**..... : /

**Non-standard test method** ..... : N/A

**Test Report Form No**..... : TRF-EL-107\_V0

**Test Report Form(s) Originator**..... : ZKT Testing

**Master TRF** ..... : Dated: 2020-01-06

This device described above has been tested by ZKT, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

This report shall not be reproduced except in full, without the written approval of ZKT, this document may be altered or revised by ZKT, personal only, and shall be noted in the revision of the document.

**Product name**..... : 3in1 wireless charger

**Trademark** ..... : N/A

**Model/Type reference**..... : DH11  
DH10, DH12, DH13, DH14, DH15, DH16, DH17, DH18, DH19

**Ratings**..... : Input: DC 9V2A, 9V2.7A, 12V2A  
Wireless Output phone: 15W  
Wireless Output earphone: 5W  
Wireless Output iWatch: 2.5W



**Testing procedure and testing location:**

**Testing Laboratory.....: Shenzhen ZKT Technology Co., Ltd.**

**Address.....: 1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China**

**Tested by (name + signature).....: Tom Zou**

*Tom Zou*

**Reviewer (name + signature).....: Jackson Fang**

*Jackson Fang*

**Approved (name + signature).....: Lake Xie**





## TABLE OF CONTENTS

|                                                         |           |
|---------------------------------------------------------|-----------|
| <b>1. VERSION .....</b>                                 | <b>4</b>  |
| <b>2. TEST SUMMARY .....</b>                            | <b>5</b>  |
| 2.1 TEST FACILITY .....                                 | 6         |
| 2.2 MEASUREMENT UNCERTAINTY .....                       | 6         |
| <b>3. GENERAL INFORMATION .....</b>                     | <b>7</b>  |
| 3.1 GENERAL DESCRIPTION OF EUT .....                    | 7         |
| 3.2 Test mode .....                                     | 7         |
| 3.3 Block Diagram of EUT Configuration .....            | 8         |
| 3.4 Test Conditions .....                               | 8         |
| 3.5 Description Of Support Units (Conducted Mode) ..... | 8         |
| 3.6 EQUIPMENTS LIST FOR ALL TEST ITEMS .....            | 9         |
| <b>4. CONDUCTED EMISSION TEST .....</b>                 | <b>9</b>  |
| 4.1 CONDUCTED EMISSION MEASUREMENT .....                | 11        |
| 4.1.1 POWER LINE CONDUCTED EMISSION Limits .....        | 11        |
| 4.1.2 TEST PROCEDURE .....                              | 11        |
| 4.1.3 DEVIATION FROM TEST STANDARD .....                | 11        |
| 4.1.4 TEST SETUP .....                                  | 12        |
| 4.1.5 EUT OPERATING CONDITIONS .....                    | 12        |
| 4.1.6 Test Result .....                                 | 12        |
| <b>5. RADIATED EMISSION MEASUREMENT .....</b>           | <b>15</b> |
| 5.1 Radiated Emission Limits .....                      | 15        |
| 5.2 Anechoic Chamber Test Setup Diagram .....           | 16        |
| 5.3 Test Procedure .....                                | 16        |
| 5.4 DEVIATION FROM TEST STANDARD .....                  | 16        |
| 5.5 Test Result .....                                   | 17        |
| <b>6. BANDWIDTH TEST .....</b>                          | <b>27</b> |
| <b>7. TEST SETUP PHOTO .....</b>                        | <b>31</b> |
| <b>8. EUT CONSTRUCTIONAL DETAILS .....</b>              | <b>31</b> |



## 1. VERSION

| Report No.      | Version | Description             | Approved      |
|-----------------|---------|-------------------------|---------------|
| ZKT-2310308254E | Rev.01  | Initial issue of report | Nov. 17, 2023 |
|                 |         |                         |               |
|                 |         |                         |               |



2. TEST SUMMARY

| Test Item                        | Section in CFR 47 | Result |
|----------------------------------|-------------------|--------|
| Antenna requirement              | 15.203            | Pass   |
| AC Power Line Conducted Emission | 15.207            | Pass   |
| Spurious Emission                | 15.209(a)(f)      | Pass   |
| 20dB Bandwidth                   | 15.215            | Pass   |

NOTE:  
(1) "N/A" denotes test is not applicable in this Test Report



## 2.1 TEST FACILITY

Shenzhen ZKT Technology Co., Ltd.  
Add. : 1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street,  
Bao'an District, Shenzhen, China

FCC Test Firm Registration Number: 692225  
Designation Number: CN1299  
IC Registered No.: 27033

## 2.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement  $y \pm U$ , where expanded uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95 %.

| No. | Item                                               | Uncertainty |
|-----|----------------------------------------------------|-------------|
| 1   | 3m chamber Radiated spurious emission(9KHz-30MHz)  | U=4.5dB     |
| 2   | 3m chamber Radiated spurious emission(30MHz-1GHz)  | U=4.8dB     |
| 3   | 3m chamber Radiated spurious emission(1GHz-18GHz)  | U=4.9dB     |
| 4   | 3m chamber Radiated spurious emission(18GHz-40GHz) | U=5.0dB     |
| 5   | Conducted Adjacent channel power                   | U=1.38dB    |
| 6   | Conducted output power uncertainty Above 1G        | U=1.576dB   |
| 7   | Conducted output power uncertainty below 1G        | U=1.28dB    |
| 8   | humidity uncertainty                               | U=5.3%      |
| 9   | Temperature uncertainty                            | U=0.59℃     |



### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

|                      |                                                                                                                             |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Product Name:        | 3in1 wireless charger                                                                                                       |
| Model No.:           | DH11                                                                                                                        |
| Model Difference:    | All models are of the same circuit and RF module, except with different model names. The appearance color is different      |
| Serial No.:          | DH10, DH12, DH13, DH14, DH15, DH16, DH17, DH18, DH19                                                                        |
| Hardware version:    | H1.0                                                                                                                        |
| Software version:    | S1.0                                                                                                                        |
| Operation Frequency: | Phone Coil :115KHz-205KHz<br>Earphone Coil :115KHz-205KHz<br>iWatch Coil :115KHz-330KHz                                     |
| Modulation type:     | ASK                                                                                                                         |
| Antenna Type:        | Inductive loop coil Antenna                                                                                                 |
| Antenna gain:        | 0dBi                                                                                                                        |
| Power supply:        | Input: DC 9V2A, 9V2.7A, 12V2A<br>Wireless Output phone: 15W<br>Wireless Output earphone: 5W<br>Wireless Output iWatch: 2.5W |

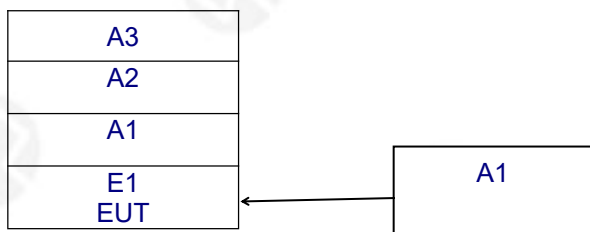
#### 3.2 Test mode

| Test Modes: | Description:                                                          |
|-------------|-----------------------------------------------------------------------|
| Mode 1      | AC Adapter+EUT +phone (Battery Status $\leq 1\%$ )                    |
| Mode 2      | AC Adapter+EUT +phone (Battery Status =50%)                           |
| Mode 3      | AC Adapter+EUT +phone (Battery Status $\geq 98\%$ )                   |
| Mode 4      | AC Adapter+EUT +Earphone(Battery Status $\leq 1\%$ )                  |
| Mode 5      | AC Adapter+EUT +Earphone (Battery Status =50%)                        |
| Mode 6      | AC Adapter+EUT +Earphone (Battery Status $\geq 98\%$ )                |
| Mode 7      | AC Adapter+EUT +Watch (Battery Status $\leq 1\%$ )                    |
| Mode 8      | AC Adapter+EUT +Watch (Battery Status =50%)                           |
| Mode 9      | AC Adapter+EUT +Watch (Battery Status $\geq 98\%$ )                   |
| Mode 10     | AC Adapter+EUT +phone + Earphone +Watch (Battery Status $\leq 1\%$ )  |
| Mode 11     | AC Adapter+EUT +phone + Earphone +Watch (Battery Status=50%)          |
| Mode 12     | AC Adapter+EUT +phone + Earphone +Watch (Battery Status $\geq 98\%$ ) |

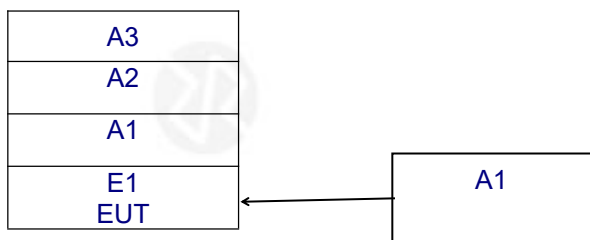


### 3.3 Block Diagram of EUT Configuration

#### Conducted Emission



#### Radiated Emission



### 3.4 Test Conditions

Temperature: 23~26℃

Relative Humidity: 54~63 %

### 3.5 Description Of Support Units (Conducted Mode)

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

| Item | Equipment             | Mfr/Brand | Model/Type No. | Series No. | Note      |
|------|-----------------------|-----------|----------------|------------|-----------|
| E1   | 3in1 wireless charger | N/A       | DH11           | See page 8 | EUT       |
| A1   | Adapter               | HUAWEI    | HW-050100B3W   | N/A        | Auxiliary |
| A2   | Phone                 | Xiaomi    | Mi 10          | N/A        | Auxiliary |
| A3   | iWatch                | iPhone    | S4             | N/A        | Auxiliary |
| A4   | Earphone              | iPhone    | AirPods Pro 2  | N/A        | Auxiliary |

| Item | Shielded Type | Ferrite Core | Length | Note                |
|------|---------------|--------------|--------|---------------------|
| C1   | NO            | NO           | 1.0M   | DC cable unshielded |
|      |               |              |        |                     |
|      |               |              |        |                     |

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.
- (3) “YES” is means “shielded” “with core”; “NO” is means “unshielded” “without core”.



### 3.6 EQUIPMENTS LIST FOR ALL TEST ITEMS

#### Radiation Test equipment

| Item | Equipment                         | Manufacturer   | Type No.        | Serial No.        | Last calibration | Calibrated until |
|------|-----------------------------------|----------------|-----------------|-------------------|------------------|------------------|
| 1    | Spectrum Analyzer (9kHz-26.5GHz)  | KEYSIGHT       | 9020A           | MY55370835        | Oct. 28, 2023    | Oct. 27, 2024    |
| 2    | Spectrum Analyzer (10kHz-39.9GHz) | R&S            | FSQ             | 100363            | Oct. 28, 2023    | Oct. 27, 2024    |
| 3    | EMI Test Receiver (9kHz-7GHz)     | R&S            | ESCI7           | 101169            | Oct. 28, 2023    | Oct. 27, 2024    |
| 4    | Bilog Antenna (30MHz-1500MHz)     | Schwarzbeck    | VULB9168        | N/A               | Nov. 02, 2023    | Nov. 01, 2024    |
| 5    | Horn Antenna (1GHz-18GHz)         | Agilent        | AH-118          | 071145            | Nov. 01, 2023    | Oct. 31, 2024    |
| 6    | Horn Antenna (15GHz-40GHz)        | A.H.System     | SAS-574         | 588               | Oct. 28, 2023    | Oct. 27, 2024    |
| 7    | Loop Antenna                      | TESEQ          | HLA6121         | 58357             | Nov. 01, 2022    | Oct. 31, 2024    |
| 8    | Amplifier (30-1000MHz)            | EM Electronics | EM330 Amplifier | 060747            | Nov. 15, 2022    | Nov. 14, 2023    |
| 9    | Amplifier (1GHz-26.5GHz)          | Agilent        | 8449B           | 3008A00315        | Oct. 28, 2023    | Oct. 27, 2024    |
| 10   | Amplifier (500MHz-40GHz)          | Quanjuda       | DLE-161         | 097               | Oct. 28, 2023    | Oct. 27, 2024    |
| 11   | Test Cable                        | N/A            | R-01            | N/A               | Oct. 28, 2023    | Oct. 27, 2024    |
| 12   | Test Cable                        | N/A            | R-02            | N/A               | Oct. 28, 2023    | Oct. 27, 2024    |
| 13   | Test Cable                        | N/A            | R-03            | N/A               | Oct. 28, 2023    | Oct. 27, 2024    |
| 14   | Test Cable                        | N/A            | RF-01           | N/A               | Oct. 28, 2023    | Oct. 27, 2024    |
| 15   | Test Cable                        | N/A            | RF-02           | N/A               | Oct. 28, 2023    | Oct. 27, 2024    |
| 16   | Test Cable                        | N/A            | RF-03           | N/A               | Oct. 28, 2023    | Oct. 27, 2024    |
| 17   | ESG Signal Generator              | Agilent        | E4421B          | N/A               | Oct. 21, 2023    | Oct. 20, 2024    |
| 18   | Signal Generator                  | Agilent        | N5182A          | N/A               | Oct. 21, 2023    | Oct. 20, 2024    |
| 19   | Magnetic Field Probe Tester       | Narda          | ELT-400         | 0-0344            | Nov. 15, 2023    | Nov. 14, 2024    |
| 20   | Wideband Radio Communication Test | R&S            | CMW500          | 106504            | Oct. 28, 2023    | Oct. 27, 2024    |
| 21   | MWRF Power Meter Test system      | MW             | MW100-RPCB      | N/A               | Oct. 21, 2023    | Oct. 20, 2024    |
| 22   | D.C. Power Supply                 | LongWei        | TPR-6405D       | N/A               | \                | \                |
| 23   | EMC Software                      | Frad           | EZ-EMC          | Ver.EMC-CON 3A1.1 | \                | \                |
| 24   | RF Software                       | MW             | MTS8310         | V2.0.0.0          | \                | \                |
| 25   | Turntable                         | MF             | MF-7802BS       | N/A               | \                | \                |
| 26   | Antenna tower                     | MF             | MF-7802BS       | N/A               | \                | \                |



Conduction Test equipment

| Item | Kind of Equipment   | Manufacturer | Type No. | Serial No.           | Last calibration | Calibrated until |
|------|---------------------|--------------|----------|----------------------|------------------|------------------|
| 1    | LISN                | R&S          | ENV216   | 101471               | Oct. 21, 2023    | Oct. 20, 2024    |
| 2    | LISN                | CYBERTEK     | EM5040A  | E1850400149          | Oct. 21, 2023    | Oct. 20, 2024    |
| 3    | Test Cable          | N/A          | C-01     | N/A                  | Oct. 21, 2023    | Oct. 20, 2024    |
| 4    | Test Cable          | N/A          | C-02     | N/A                  | Oct. 21, 2023    | Oct. 20, 2024    |
| 5    | Test Cable          | N/A          | C-03     | N/A                  | Oct. 21, 2023    | Oct. 20, 2024    |
| 6    | EMI Test Receiver   | R&S          | ESCI3    | 101393               | Oct. 28, 2023    | Oct. 27, 2024    |
| 7    | Triple-Loop Antenna | N/A          | RF300    | N/A                  | Oct. 28, 2023    | Oct. 27, 2024    |
| 8    | Absorbing Clamp     | DZ           | ZN23201  | 15034                | Oct. 31, 2023    | Oct. 30, 2024    |
| 9    | EMC Software        | Frad         | EZ-EMC   | Ver.EMC-CON<br>3A1.1 | \                | \                |



#### 4. CONDUCTED EMISSION TEST

##### 4.1 CONDUCTED EMISSION MEASUREMENT

|                       |                                      |
|-----------------------|--------------------------------------|
| Test Requirement:     | FCC Part15 C Section 15.207          |
| Test Method:          | ANSI C63.10:2013                     |
| Test Frequency Range: | 150KHz to 30MHz                      |
| Receiver setup:       | RBW=9KHz, VBW=30KHz, Sweep time=auto |

##### 4.1.1 POWER LINE CONDUCTED EMISSION Limits

| FREQUENCY (MHz) | Limit (dBuV) |           | Standard |
|-----------------|--------------|-----------|----------|
|                 | Quas-peak    | Average   |          |
| 0.15 -0.5       | 66 - 56 *    | 56 - 46 * | FCC      |
| 0.50 -5.0       | 56.00        | 46.00     | FCC      |
| 5.0 -30.0       | 60.00        | 50.00     | FCC      |

Note:

(1) \*Decreases with the logarithm of the frequency.

##### 4.1.2 TEST PROCEDURE

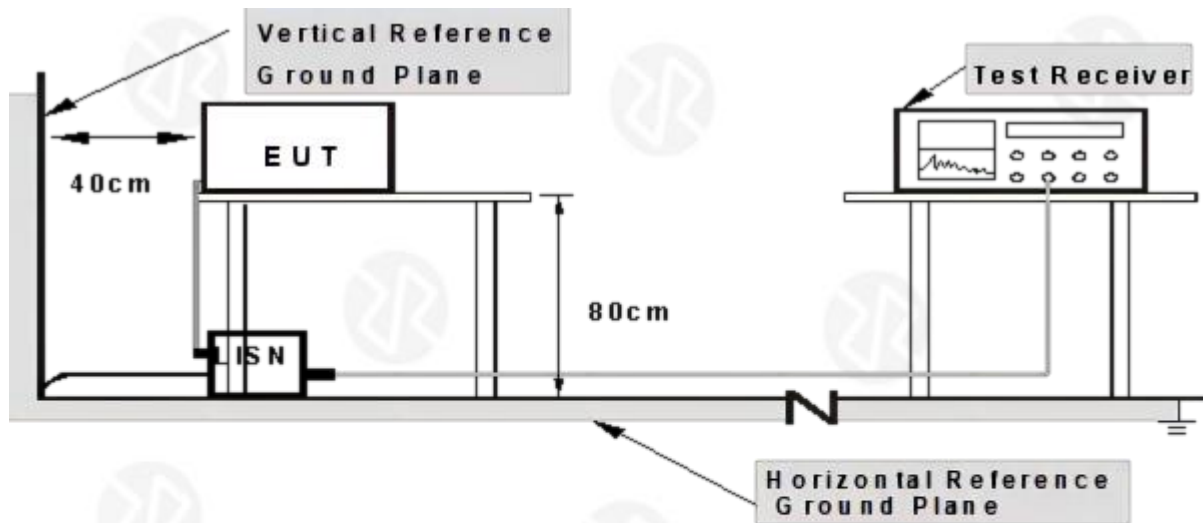
- The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

##### 4.1.3 DEVIATION FROM TEST STANDARD

No deviation



#### 4.1.4 TEST SETUP



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

#### 4.1.5 EUT OPERATING CONDITIONS

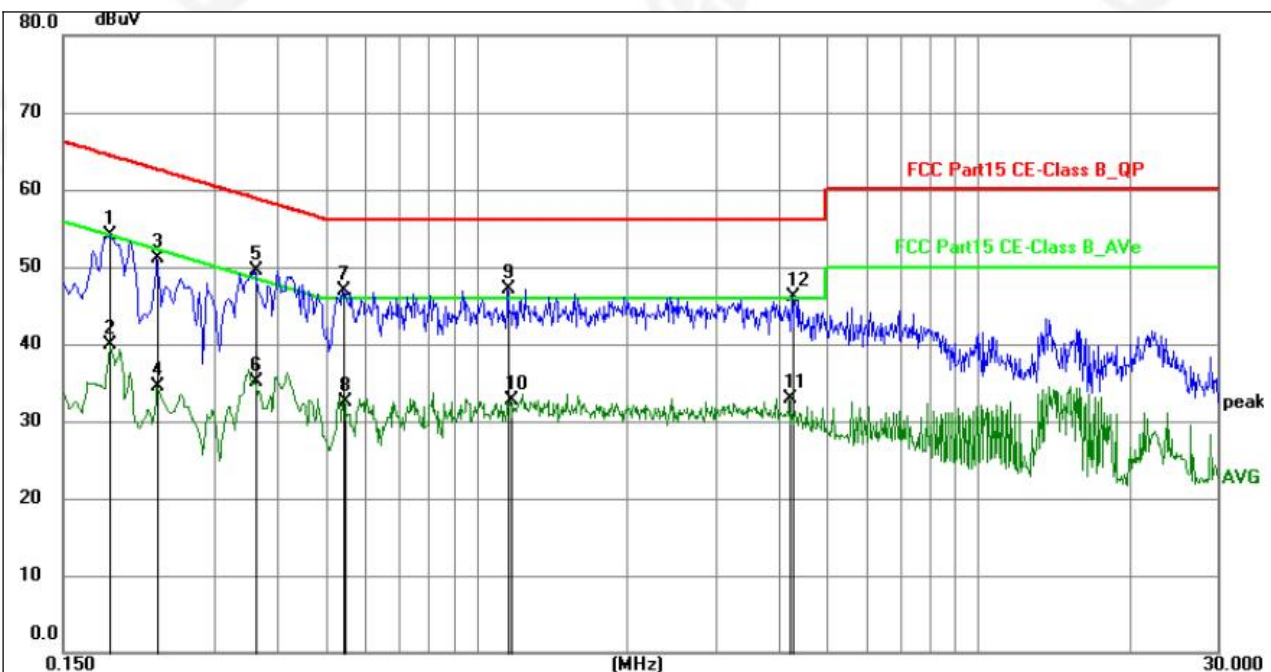
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

We pretest AC 120V and AC 230V, the worst voltage was AC 120V and the data recording in the report.

#### 4.1.6 Test Result



|                |              |                    |         |
|----------------|--------------|--------------------|---------|
| Temperature:   | 26℃          | Relative Humidity: | 54%     |
| Pressure:      | 101kPa       | Phase :            | L       |
| Test Voltage : | AC 120V/60Hz | Test Mode:         | Mode 10 |



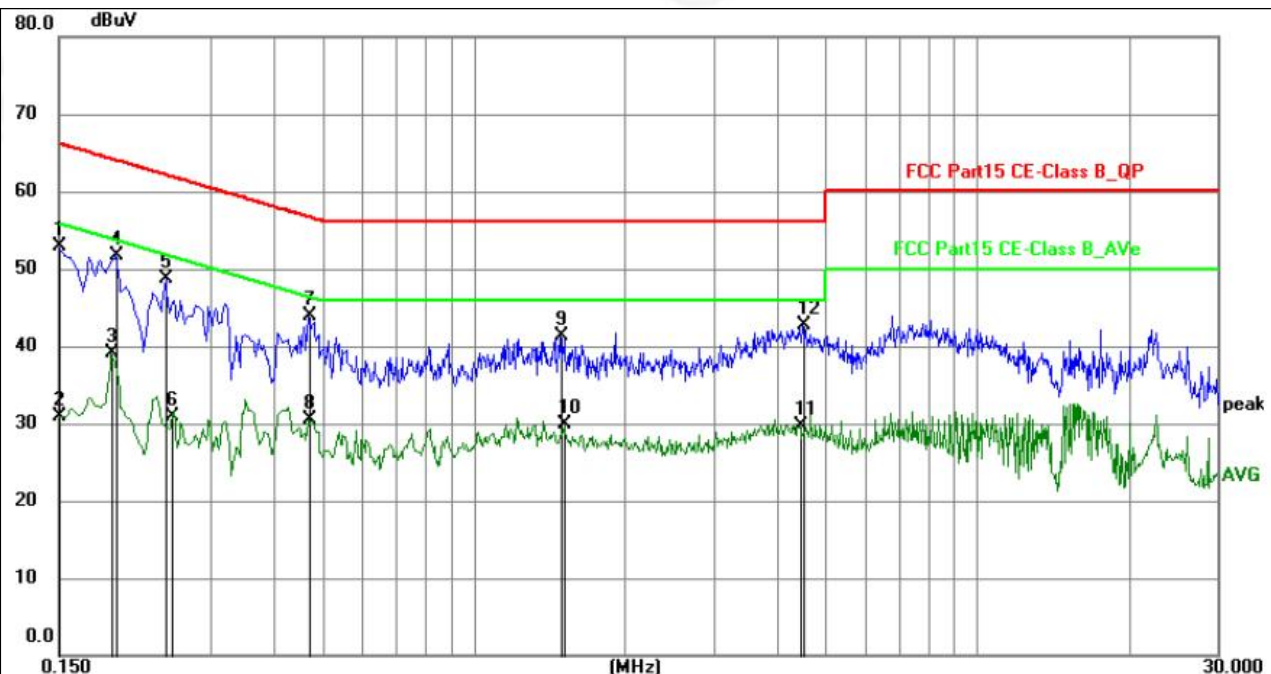
| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | P/F |
|-----|-----------------|----------------|-------------|--------------|--------------|-------------|----------|-----|
| 1   | 0.1860          | 33.56          | 20.55       | 54.11        | 64.21        | -10.10      | QP       | P   |
| 2   | 0.1860          | 19.42          | 20.55       | 39.97        | 54.21        | -14.24      | AVG      | P   |
| 3   | 0.2310          | 30.50          | 20.61       | 51.11        | 62.41        | -11.30      | QP       | P   |
| 4   | 0.2310          | 13.95          | 20.61       | 34.56        | 52.41        | -17.85      | AVG      | P   |
| 5   | 0.3615          | 28.86          | 20.62       | 49.48        | 58.69        | -9.21       | QP       | P   |
| 6   | 0.3615          | 14.48          | 20.62       | 35.10        | 48.69        | -13.59      | AVG      | P   |
| 7   | 0.5414          | 26.26          | 20.63       | 46.89        | 56.00        | -9.11       | QP       | P   |
| 8   | 0.5459          | 11.88          | 20.64       | 32.52        | 46.00        | -13.48      | AVG      | P   |
| 9   | 1.1579          | 26.35          | 20.70       | 47.05        | 56.00        | -8.95       | QP       | P   |
| 10  | 1.1713          | 11.97          | 20.69       | 32.66        | 46.00        | -13.34      | AVG      | P   |
| 11  | 4.2045          | 12.20          | 20.77       | 32.97        | 46.00        | -13.03      | AVG      | P   |
| 12  | 4.2630          | 25.26          | 20.76       | 46.02        | 56.00        | -9.98       | QP       | P   |

Notes:

- 1.An initial pre-scan was performed on the line and neutral lines with peak detector.
- 2.Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
- 3.Measurement Level = Reading level + Correct Factor



|                |              |                    |         |
|----------------|--------------|--------------------|---------|
| Temperature:   | 26°C         | Relative Humidity: | 54%     |
| Pressure:      | 101kPa       | Phase :            | N       |
| Test Voltage : | AC 120V/60Hz | Test Mode:         | Mode 10 |



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | P/F |
|-----|-----------------|----------------|-------------|--------------|--------------|-------------|----------|-----|
| 1   | 0.1500          | 32.61          | 20.23       | 52.84        | 66.00        | -13.16      | QP       | P   |
| 2   | 0.1500          | 10.74          | 20.23       | 30.97        | 56.00        | -25.03      | AVG      | P   |
| 3   | 0.1905          | 18.58          | 20.43       | 39.01        | 54.01        | -15.00      | AVG      | P   |
| 4   | 0.1949          | 31.35          | 20.45       | 51.80        | 63.83        | -12.03      | QP       | P   |
| 5   | 0.2445          | 28.18          | 20.49       | 48.67        | 61.94        | -13.27      | QP       | P   |
| 6   | 0.2521          | 10.40          | 20.49       | 30.89        | 51.69        | -20.80      | AVG      | P   |
| 7   | 0.4695          | 23.39          | 20.55       | 43.94        | 56.52        | -12.58      | QP       | P   |
| 8   | 0.4695          | 10.00          | 20.55       | 30.55        | 46.52        | -15.97      | AVG      | P   |
| 9   | 1.4910          | 20.63          | 20.72       | 41.35        | 56.00        | -14.65      | QP       | P   |
| 10  | 1.5135          | 9.27           | 20.72       | 29.99        | 46.00        | -16.01      | AVG      | P   |
| 11  | 4.4385          | 8.94           | 20.76       | 29.70        | 46.00        | -16.30      | AVG      | P   |
| 12  | 4.5240          | 21.85          | 20.76       | 42.61        | 56.00        | -13.39      | QP       | P   |

Notes:

- 1.An initial pre-scan was performed on the line and neutral lines with peak detector.
- 2.Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
- 3.Measurement Level = Reading level + Correct Factor



## 5. RADIATED EMISSION MEASUREMENT

|                       |                             |            |        |        |            |
|-----------------------|-----------------------------|------------|--------|--------|------------|
| Test Requirement:     | FCC Part15 C Section 15.209 |            |        |        |            |
| Test Method:          | ANSI C63.10:2013            |            |        |        |            |
| Test Frequency Range: | 9kHz to 1GHz                |            |        |        |            |
| Test site:            | Measurement Distance: 3m    |            |        |        |            |
| Receiver setup:       | Frequency                   | Detector   | RBW    | VBW    | Value      |
|                       | 9KHz-150KHz                 | Quasi-peak | 200Hz  | 600Hz  | Quasi-peak |
|                       | 150KHz-30MHz                | Quasi-peak | 9KHz   | 30KHz  | Quasi-peak |
|                       | 30MHz-1GHz                  | Quasi-peak | 100KHz | 300KHz | Quasi-peak |
|                       | Above 1GHz                  | Peak       | 1MHz   | 3MHz   | Peak       |
|                       |                             | Peak       | 1MHz   | 10Hz   | Average    |

### 5.1 Radiated Emission Limits

#### Limits for frequency below 30MHz

| Frequency   | Limit (uV/m) | Measurement Distance(m) | Remark           |
|-------------|--------------|-------------------------|------------------|
| 0.009-0.490 | 2400/F(kHz)  | 300                     | Quasi-peak Value |
| 0.490-1.705 | 24000/F(kHz) | 30                      | Quasi-peak Value |
| 1.705-30    | 30           | 30                      | Quasi-peak Value |

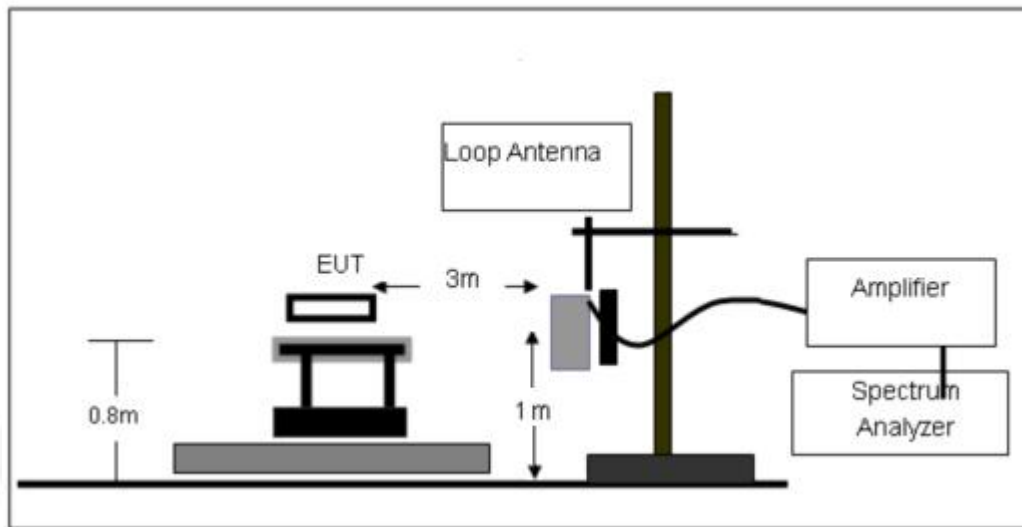
#### Limits for frequency Above 30MHz

| Frequency     | Limit (dBuV/m @3m) | Remark           |
|---------------|--------------------|------------------|
| 30MHz-88MHz   | 40.00              | Quasi-peak Value |
| 88MHz-216MHz  | 43.50              | Quasi-peak Value |
| 216MHz-960MHz | 46.00              | Quasi-peak Value |
| 960MHz-1GHz   | 54.00              | Quasi-peak Value |
| Above 1GHz    | 54.00              | Average Value    |
|               | 74.00              | Peak Value       |

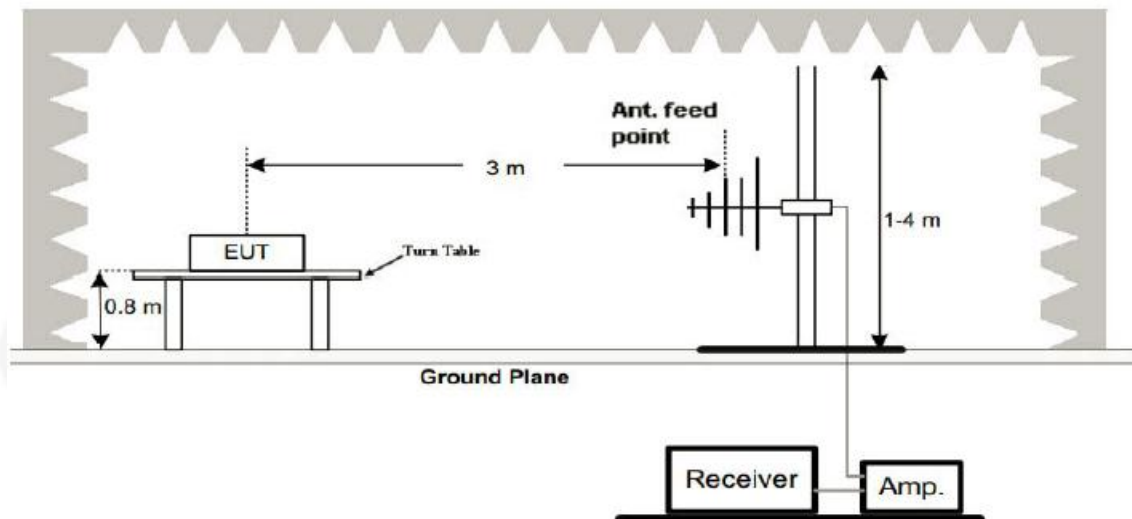


## 5.2 Anechoic Chamber Test Setup Diagram

### (A) Radiated Emission Test-Up Frequency Below 30MHz



### (B) Radiated Emission Test-Up Frequency 30MHz~1GHz



The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209 and FCC 15.205 limits.

## 5.3 Test Procedure

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on an antenna tower. The antenna can move up and down between 1 to 4 meters to find out the maximum emission level. Broadband antenna (calibrated by dipole antenna) are used as a receiving antenna. Both horizontal and vertical polarization of the antenna are set on measurement.

## 5.4 DEVIATION FROM TEST STANDARD

No deviation



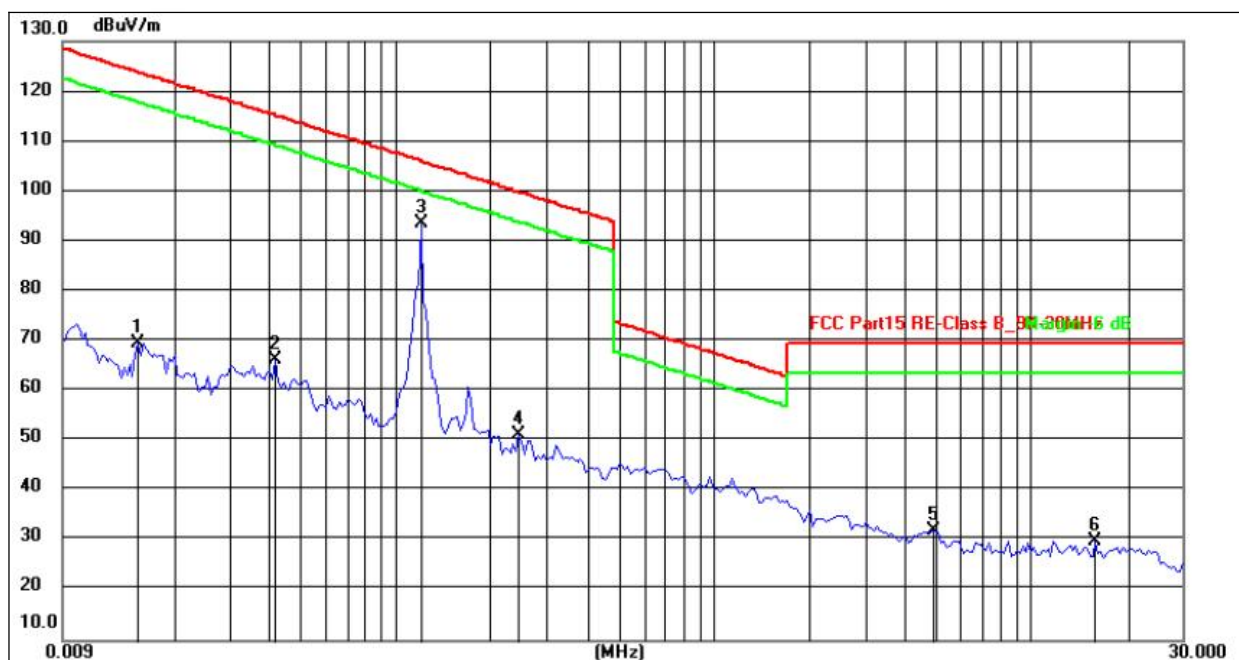
## 5.5 Test Result

### Measurement data:

Note: Limit dBuV/m @3m = Limit dBuV/m @300m+ 80  
Limit dBuV/m @3m = Limit dBuV/m @30m + 40

9 kHz~30 MHz

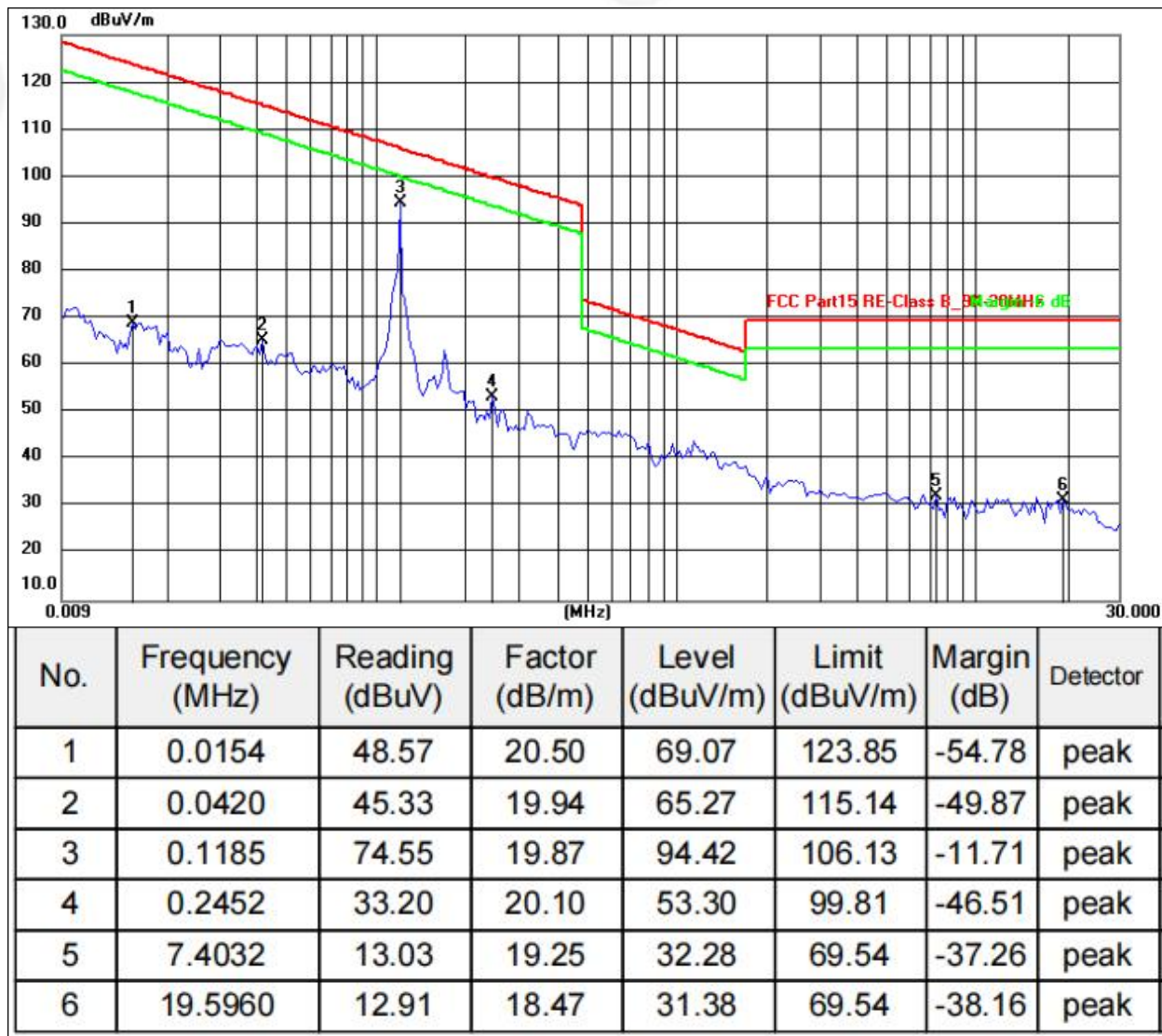
|               |              |                    |         |
|---------------|--------------|--------------------|---------|
| Temperature:  | 26℃          | Relative Humidity: | 54%     |
| Pressure:     | 101kPa       | Polarization:      | Coaxial |
| Test Voltage: | AC 120V/60Hz | Test Mode:         | Mode 1  |



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1   | 0.0154          | 49.07          | 20.50         | 69.57          | 123.85         | -54.28      | peak     |
| 2   | 0.0420          | 46.33          | 19.94         | 66.27          | 115.14         | -48.87      | peak     |
| 3   | 0.1185          | 73.55          | 19.87         | 93.42          | 106.13         | -12.71      | peak     |
| 4   | 0.2452          | 31.20          | 20.10         | 51.30          | 99.81          | -48.51      | peak     |
| 5   | 4.9348          | 12.59          | 19.47         | 32.06          | 69.54          | -37.48      | peak     |
| 6   | 15.9991         | 11.20          | 18.82         | 30.02          | 69.54          | -39.52      | peak     |



|               |              |                    |          |
|---------------|--------------|--------------------|----------|
| Temperature:  | 26℃          | Relative Humidity: | 54%      |
| Pressure:     | 101kPa       | Polarization:      | Coplaner |
| Test Voltage: | AC 120V/60Hz | Test Mode:         | Mode 1   |

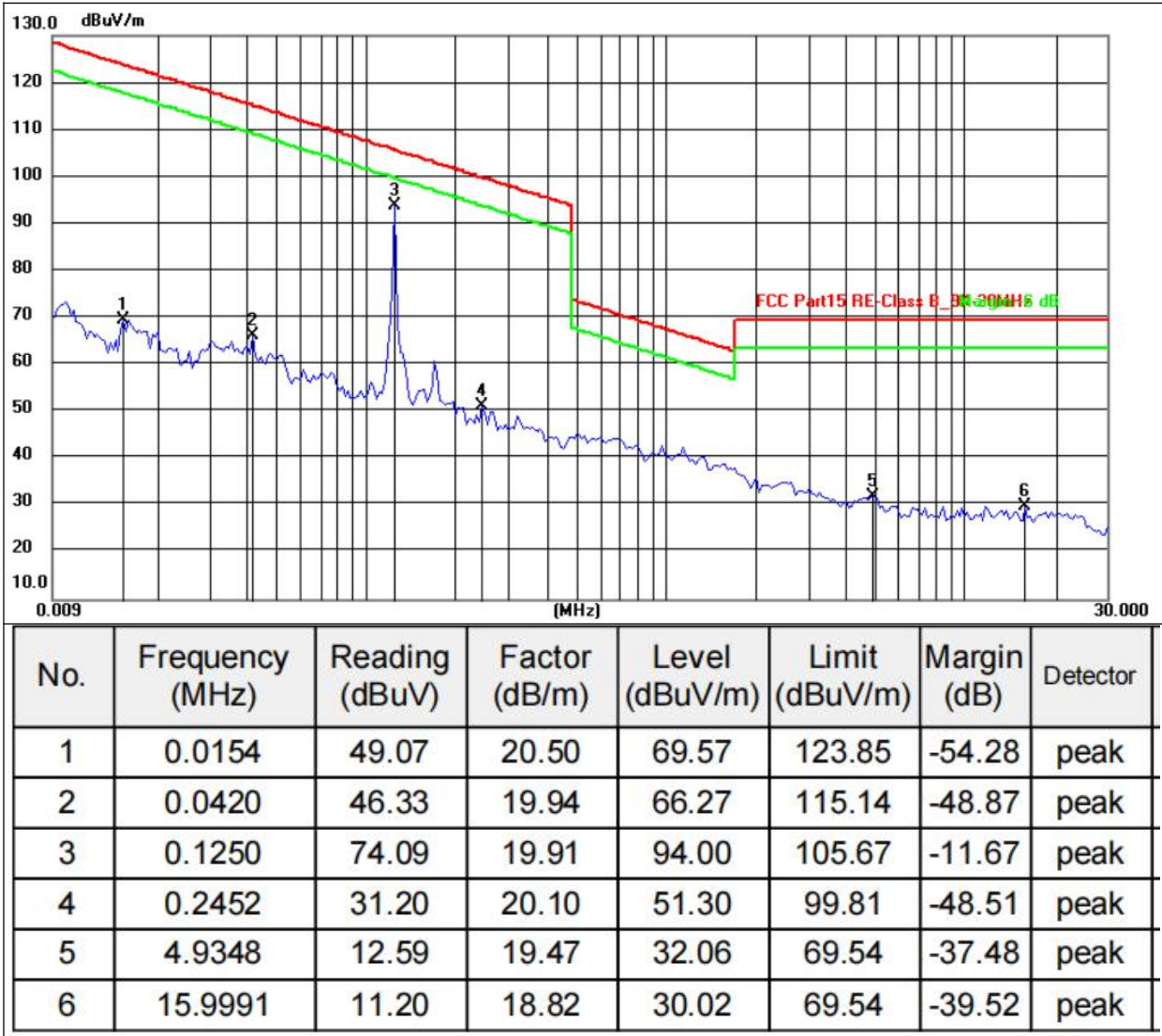


Remarks:

- 1.Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
- 2.The emission levels of other frequencies are very lower than the limit and not show in test report.

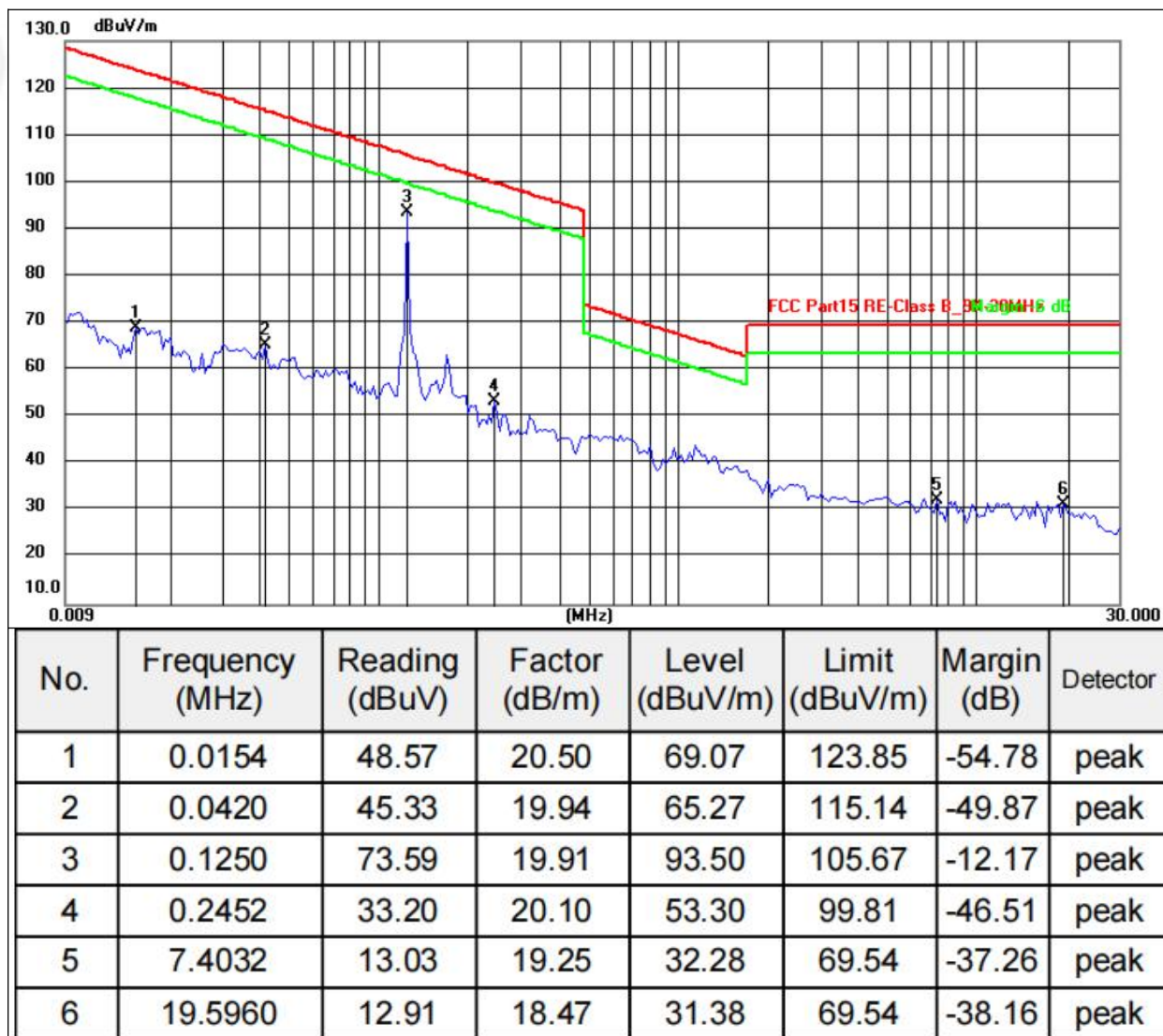


|               |              |                    |         |
|---------------|--------------|--------------------|---------|
| Temperature:  | 26℃          | Relative Humidity: | 54%     |
| Pressure:     | 101kPa       | Polarization:      | Coaxial |
| Test Voltage: | AC 120V/60Hz | Test Mode:         | Mode 4  |





|               |              |                    |          |
|---------------|--------------|--------------------|----------|
| Temperature:  | 26℃          | Relative Humidity: | 54%      |
| Pressure:     | 101kPa       | Polarization:      | Coplaner |
| Test Voltage: | AC 120V/60Hz | Test Mode:         | Mode 4   |

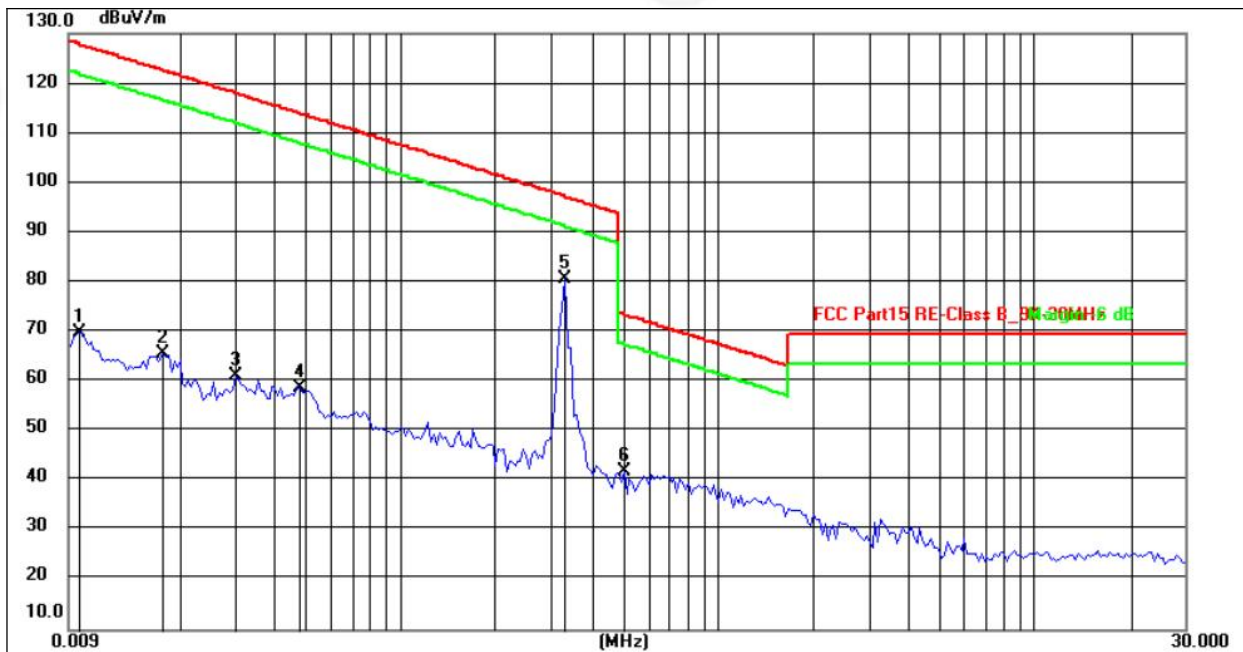


Remarks:

- 1.Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
- 2.The emission levels of other frequencies are very lower than the limit and not show in test report.



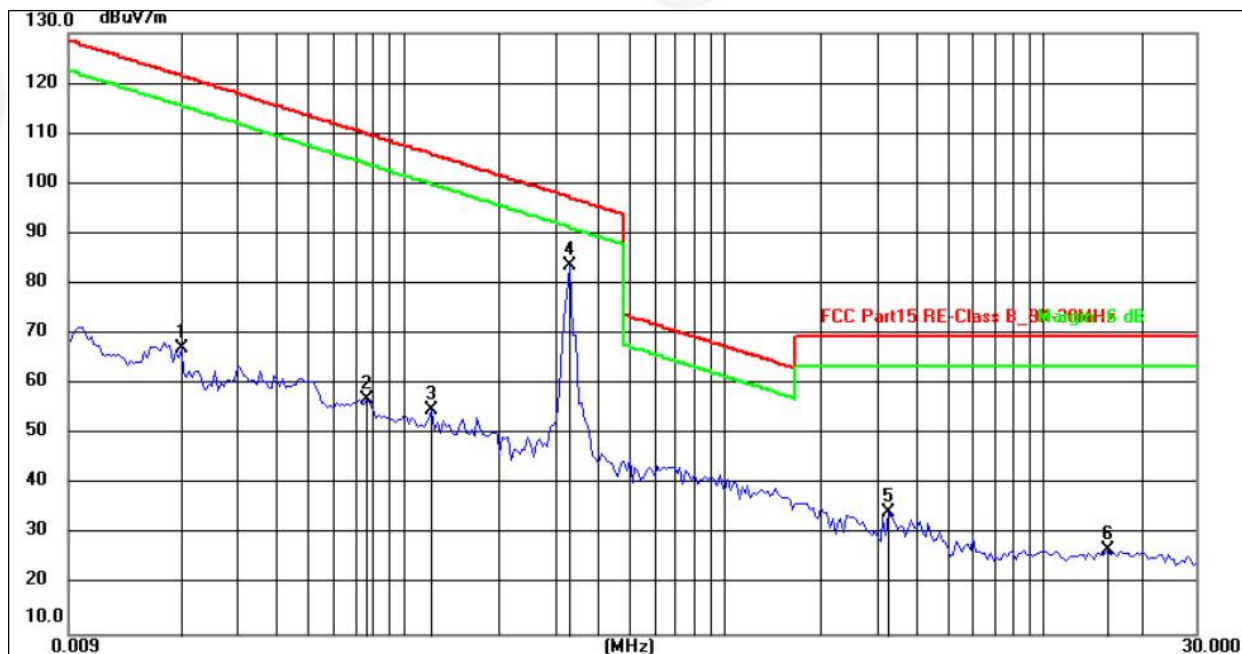
|               |              |                    |         |
|---------------|--------------|--------------------|---------|
| Temperature:  | 26℃          | Relative Humidity: | 54%     |
| Pressure:     | 101kPa       | Polarization:      | Coaxial |
| Test Voltage: | AC 120V/60Hz | Test Mode:         | Mode 7  |



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1   | 0.0097          | 69.95          | 0.05          | 70.00          | 127.87         | -57.87      | peak     |
| 2   | 0.0177          | 45.28          | 20.47         | 65.75          | 122.65         | -56.90      | peak     |
| 3   | 0.0303          | 40.81          | 20.21         | 61.02          | 117.98         | -56.96      | peak     |
| 4   | 0.0483          | 38.93          | 19.79         | 58.72          | 113.93         | -55.21      | peak     |
| 5   | 0.3270          | 60.59          | 20.13         | 80.72          | 97.31          | -16.59      | peak     |
| 6   | 0.5090          | 21.85          | 20.21         | 42.06          | 73.47          | -31.41      | peak     |



|               |              |                    |          |
|---------------|--------------|--------------------|----------|
| Temperature:  | 26℃          | Relative Humidity: | 54%      |
| Pressure:     | 101kPa       | Polarization:      | Coplaner |
| Test Voltage: | AC 120V/60Hz | Test Mode:         | Mode 7   |



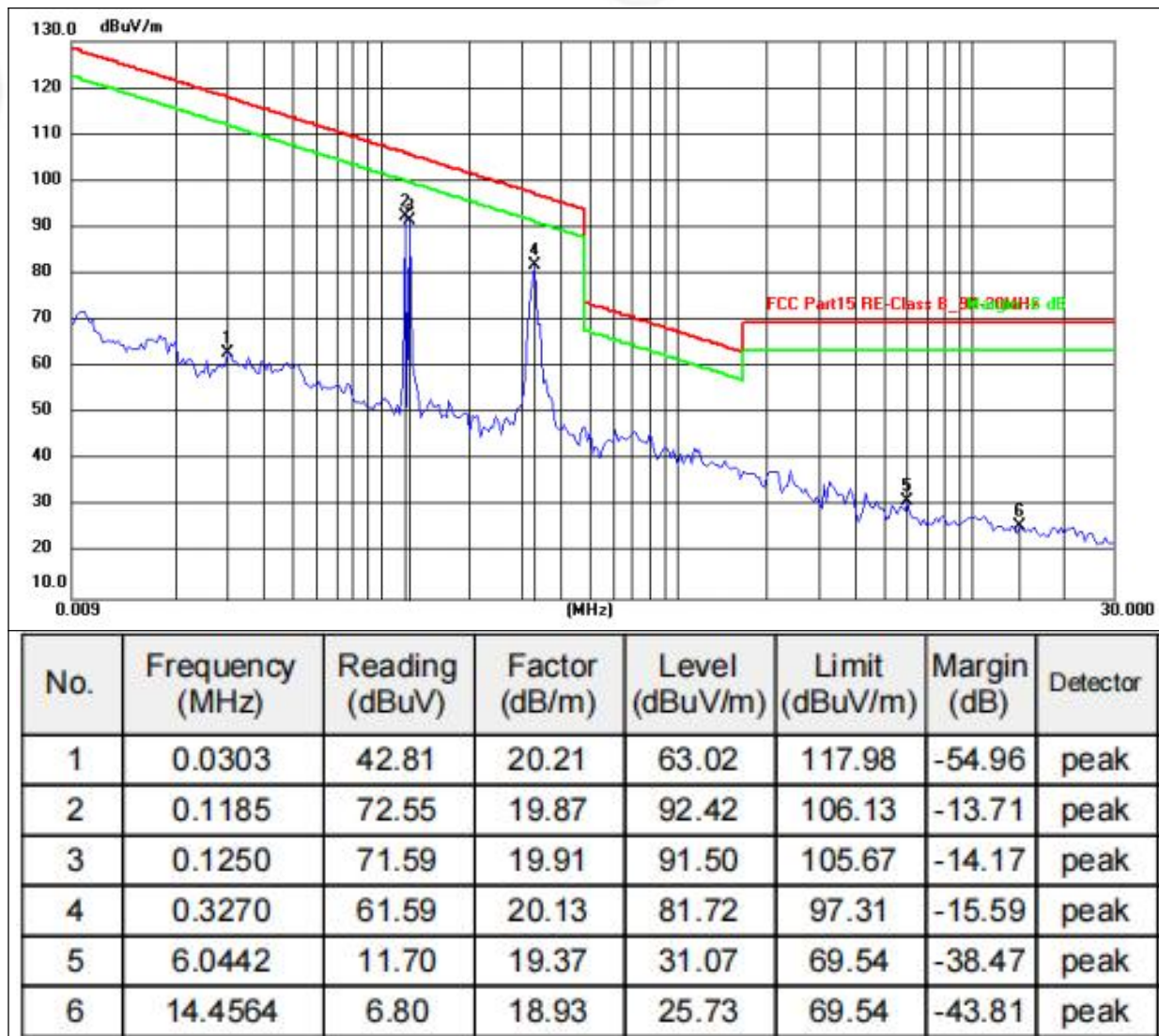
| No. | Frequency (MHz) | Reading (dBUV) | Factor (dB/m) | Level (dBUV/m) | Limit (dBUV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1   | 0.0200          | 46.56          | 20.45         | 67.01          | 121.58         | -54.57      | peak     |
| 2   | 0.0772          | 37.13          | 19.85         | 56.98          | 109.85         | -52.87      | peak     |
| 3   | 0.1231          | 35.03          | 19.90         | 54.93          | 105.80         | -50.87      | peak     |
| 4   | 0.3270          | 63.59          | 20.13         | 83.72          | 97.31          | -13.59      | peak     |
| 5   | 3.2894          | 14.82          | 19.63         | 34.45          | 69.54          | -35.09      | peak     |
| 6   | 15.9991         | 8.20           | 18.82         | 27.02          | 69.54          | -42.52      | peak     |

Remarks:

- 1.Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
- 2.The emission levels of other frequencies are very lower than the limit and not show in test report.

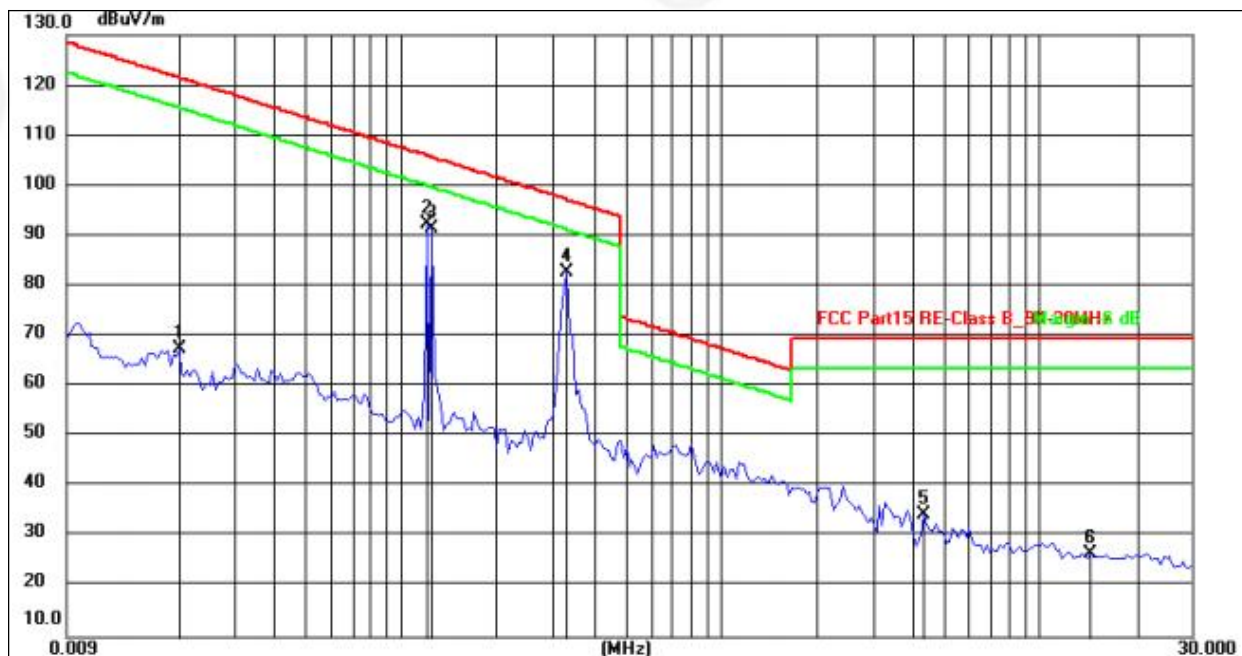


|               |              |                    |         |
|---------------|--------------|--------------------|---------|
| Temperature:  | 26℃          | Relative Humidity: | 54%     |
| Pressure:     | 101kPa       | Polarization:      | Coaxial |
| Test Voltage: | AC 120V/60Hz | Test Mode:         | Mode 10 |





|               |              |                    |          |
|---------------|--------------|--------------------|----------|
| Temperature:  | 26℃          | Relative Humidity: | 54%      |
| Pressure:     | 101kPa       | Polarization:      | Coplaner |
| Test Voltage: | AC 120V/60Hz | Test Mode:         | Mode 10  |



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1   | 0.0200          | 47.06          | 20.45         | 67.51          | 121.58         | -54.07      | peak     |
| 2   | 0.1185          | 72.55          | 19.87         | 92.42          | 106.13         | -13.71      | peak     |
| 3   | 0.1250          | 71.59          | 19.91         | 91.50          | 105.67         | -14.17      | peak     |
| 4   | 0.3270          | 62.59          | 20.13         | 82.72          | 97.31          | -14.59      | peak     |
| 5   | 4.3695          | 14.97          | 19.52         | 34.49          | 69.54          | -35.05      | peak     |
| 6   | 14.4564         | 7.80           | 18.93         | 26.73          | 69.54          | -42.81      | peak     |

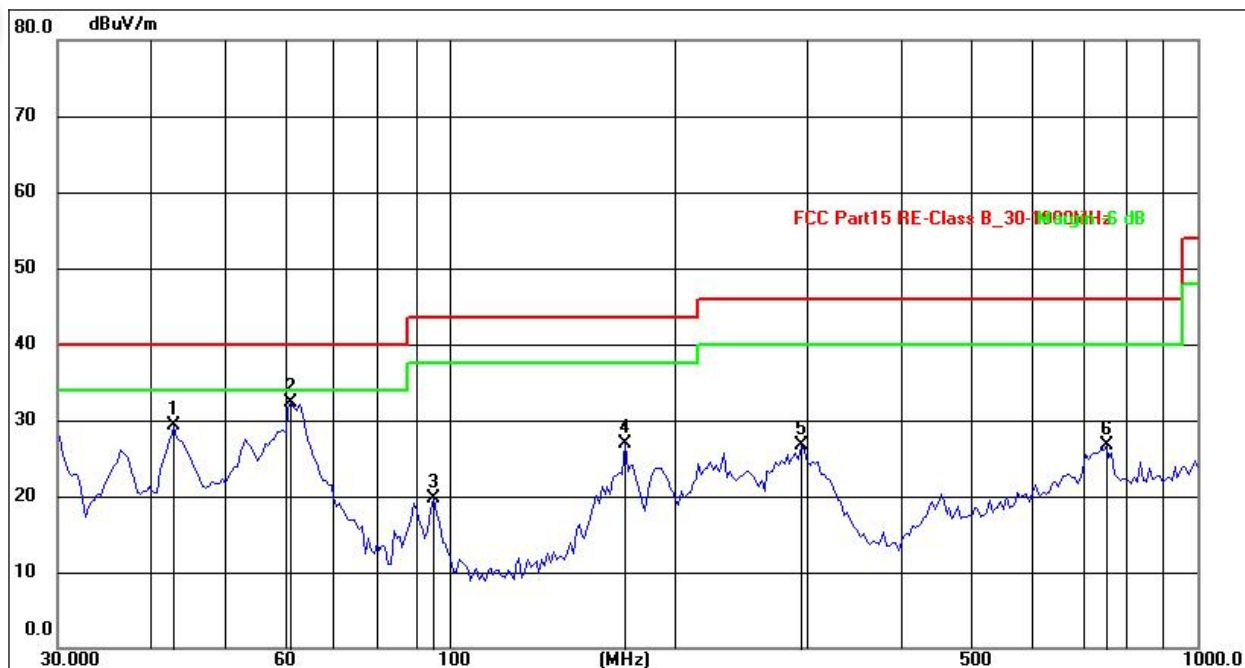
Remarks:

- 1.Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
- 2.The emission levels of other frequencies are very lower than the limit and not show in test report.



30MHz-1GHz

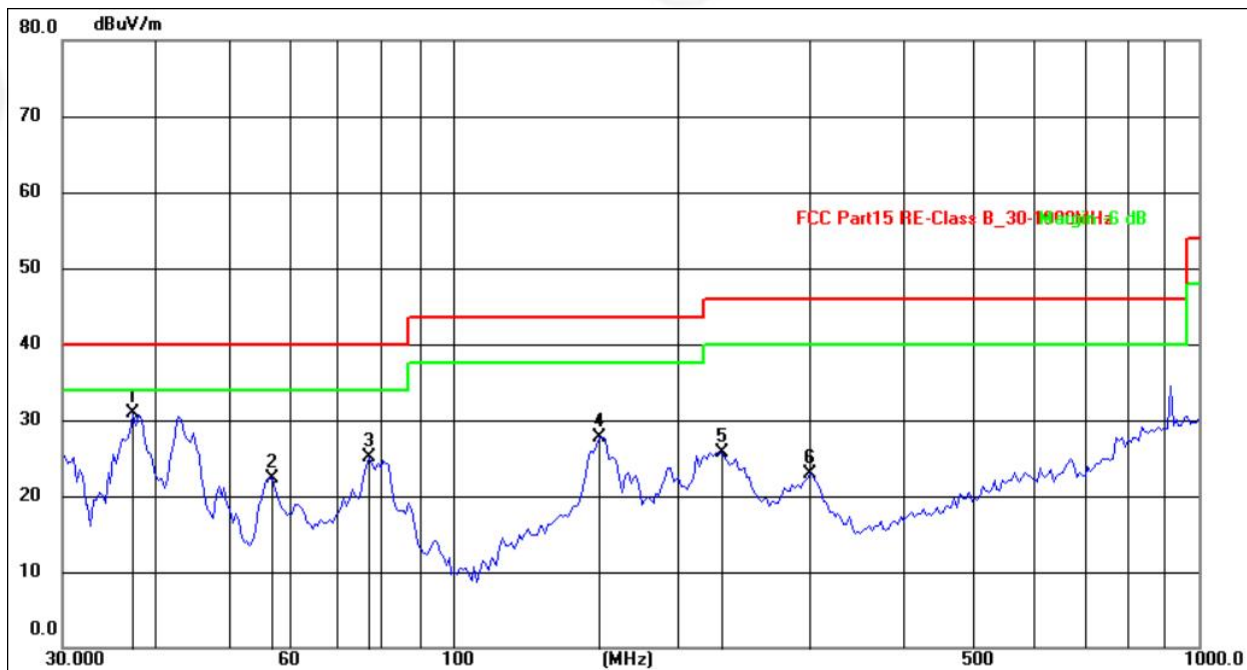
|               |              |                    |            |
|---------------|--------------|--------------------|------------|
| Temperature:  | 26℃          | Relative Humidity: | 54%        |
| Pressure:     | 101 kPa      | Polarization:      | Horizontal |
| Test Voltage: | AC 120V/60Hz | Test Mode:         | Mode 10    |



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1   | 42.9750         | 43.36          | -14.10        | 29.26          | 40.00          | -10.74      | QP       |
| 2   | 61.5618         | 46.97          | -14.66        | 32.31          | 40.00          | -7.69       | QP       |
| 3   | 95.4269         | 39.65          | -19.99        | 19.66          | 43.50          | -23.84      | QP       |
| 4   | 171.6933        | 44.14          | -17.15        | 26.99          | 43.50          | -16.51      | QP       |
| 5   | 295.6648        | 43.13          | -16.41        | 26.72          | 46.00          | -19.28      | QP       |
| 6   | 755.3873        | 33.46          | -6.85         | 26.61          | 46.00          | -19.39      | QP       |



|               |              |                    |          |
|---------------|--------------|--------------------|----------|
| Temperature:  | 26℃          | Relative Humidity: | 54%      |
| Pressure:     | 101kPa       | Polarization:      | Vertical |
| Test Voltage: | AC 120V/60Hz | Test Mode:         | Mode 10  |



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1   | 37.3509         | 48.09          | -17.26        | 30.83          | 40.00          | -9.17       | QP       |
| 2   | 57.3922         | 40.39          | -18.05        | 22.34          | 40.00          | -17.66      | QP       |
| 3   | 77.3210         | 46.38          | -21.19        | 25.19          | 40.00          | -14.81      | QP       |
| 4   | 157.2828        | 47.98          | -20.28        | 27.70          | 43.50          | -15.80      | QP       |
| 5   | 229.2930        | 46.04          | -20.33        | 25.71          | 46.00          | -20.29      | QP       |
| 6   | 300.8942        | 41.29          | -18.30        | 22.99          | 46.00          | -23.01      | QP       |

Remarks:

- 1.Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
- 2.The emission levels of other frequencies are very lower than the limit and not show in test report.



## 6. BANDWIDTH TEST

1. Set RBW in 1% to 5% of the bandwidth
2. Set the video bandwidth (VBW)  $\geq 3 \times$  RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 20 dB relative to the maximum level measured in the fundamental emission.

### TEST SETUP

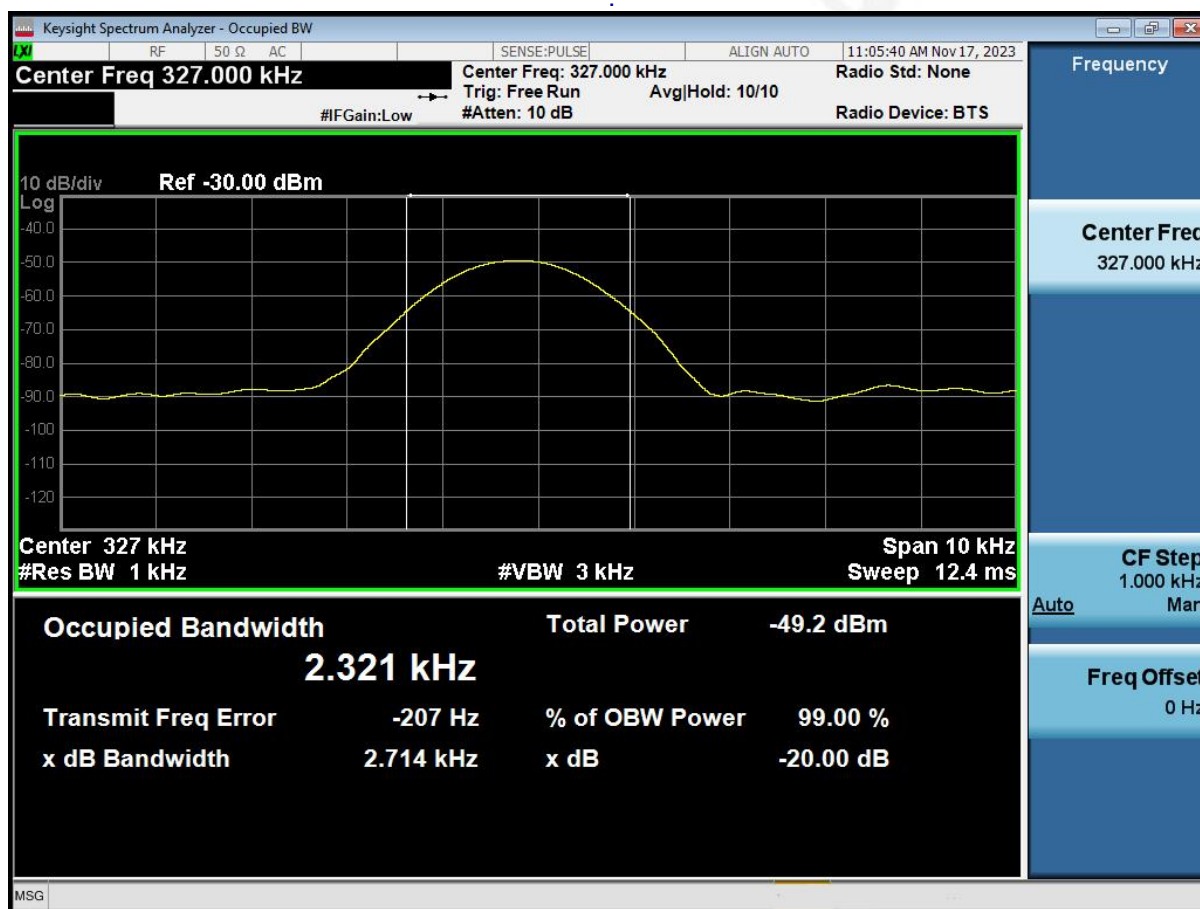
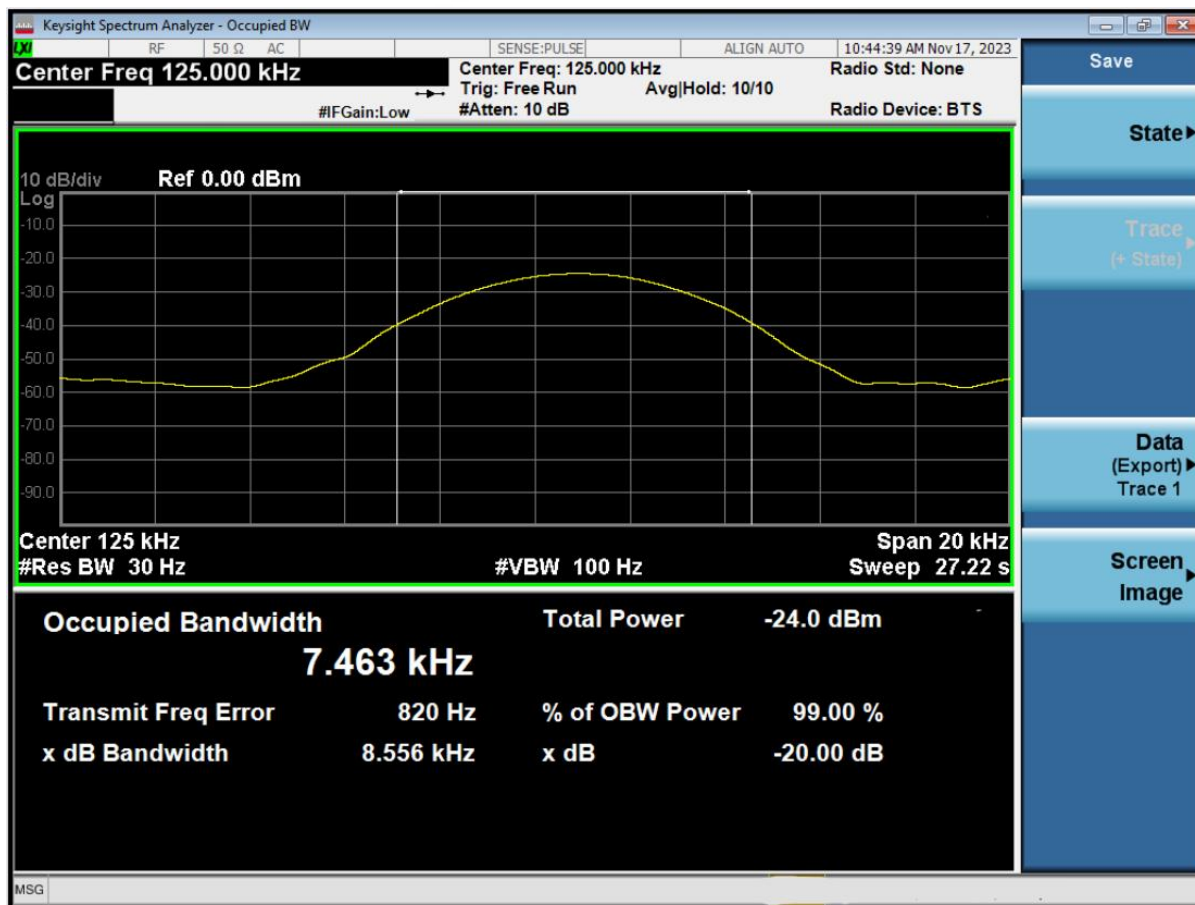




|              |        |                    |     |
|--------------|--------|--------------------|-----|
| Temperature: | 26 °C  | Relative Humidity: | 54% |
| Pressure:    | 101kPa |                    |     |

| Coil   | Frequency (KHz) | 20dB bandwidth (KHz) | Result |
|--------|-----------------|----------------------|--------|
| Coil 1 | 118.500         | 12.56                | Pass   |
| Coil 2 | 125.000         | 8.556                | Pass   |
| Coil 3 | 327.00          | 2.714                | Pass   |







## 7. ANTENNA REQUIREMENT

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| Standard requirement:                                                                                                                                                                                                                                                                                                                                                                                                                                                     | FCC Part15 C Section 15.203 |
| 15.203 requirement:<br>An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. |                             |
| EUT Antenna:                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                             |
| The antenna is Loop antenna, the best case gain of the antennas is 0dBi, reference to the appendix II for details                                                                                                                                                                                                                                                                                                                                                         |                             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                             |



## 8. TEST SETUP PHOTO

Reference to the appendix I for details.

## 9. EUT CONSTRUCTIONAL DETAILS

Reference to the appendix II for details.

\*\*\*\*\* END OF REPORT \*\*\*\*\*