# FCC Radio Test Report

## *FCC ID: 2A4HH-TD-A8-BL*

### Original Grant

| | | |
|---|---|---|
| **Report No.** | : | TBR-C-202202-0062-2 |
| **Applicant** | : | Chenghang Yiwushi Wangluo Keji Youxiangongsi |
| **Equipment Under Test (EUT)** | | |
| **EUT Name** | : | 3 in 1 Charging Station |
| **Model No.** | : | TD-A8-BL |
| **Series Model No.** | : | ST-A8-BL, ST-A8-RG, ST-A8-W,TD-A8-RG, TD-A8-WH, TD-A8-L, TA-A8-SG, TD-A8-SL, TD-A8-TG, TD-A8-CP, TD-A8-PR, TD-A8-GR, TD-A8-PK, TD-A8-Y, TD-A8-R |
| **Brand Name** | : | Tadalol |
| **Sample ID** | : | 202202-0062_01-01-1 |
| **Receipt Date** | : | 2022-02-15 |
| **Test Date** | : | 2022-02-15 to 2022-02-23 |
| **Issue Date** | : | 2022-02-23 |
| **Standards** | : | FCC Part 15, Subpart C(15.209) |
| **Test Method** | : | ANSI C63.10: 2013 |
| **Conclusions** | : | **PASS**<br>In the configuration tested, the EUT complied with the standards specified above |
| **Test/Witness Engineer** | : | Camille Li |
| **Engineer Supervisor** | : | Ivan Su |
| **Engineer Manager** | : | Ray Lai |

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.

TB-RF-074-1.0

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# Revision History

| Report No. | Version | Description | Issued Date |
|---|---|---|---|
| TBR-C-202202-0062-2 | Rev.01 | Initial issue of report | 2022-02-23 |
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# 1. General Information about EUT

## 1.1 Client Information

| | | |
|---|---|---|
| **Applicant** | : | Chenghang Yiwushi Wangluo Keji Youxiangongsi |
| **Address** | : | 10dong2danyuan305shi beiyuanjiedaochoushanerqu Yiwushi, jinhuashi zhejiangsheng, China |
| **Manufacturer** | : | Chenghang Yiwushi Wangluo Keji Youxiangongsi |
| **Address** | : | 10dong2danyuan305shi beiyuanjiedaochoushanerqu Yiwushi, jinhuashi zhejiangsheng, China |

## 1.2 General Description of EUT (Equipment Under Test)

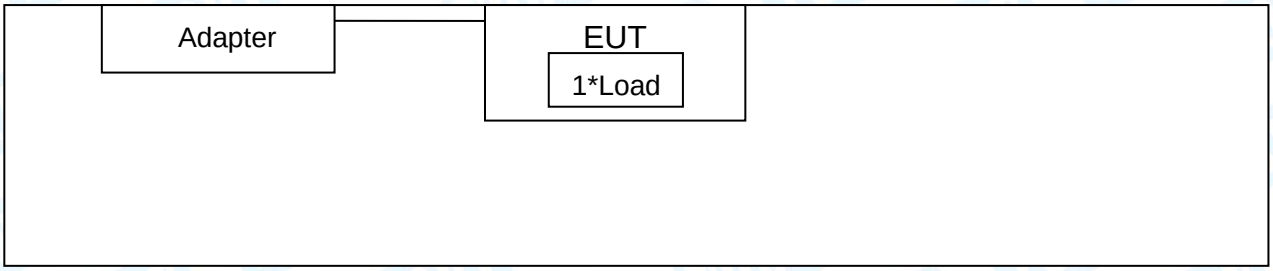
| | | | |
|---|---|---|---|
| **EUT Name** | : | 3 in 1 Charging Station | |
| **Model(s)** | : | TD-A8-BL, ST-A8-BL, ST-A8-RG, ST-A8-W,TD-A8-RG, TD-A8-WH, TD-A8-L, TA-A8-SG, TD-A8-SL, TD-A8-TG, TD-A8-CP, TD-A8-PR, TD-A8-GR, TD-A8-PK, TD-A8-Y, TD-A8-R | |
| **Model Difference** | : | All PCB boards and circuit diagrams are the same, color and model are different, the internal structure is the same. | |
| **Product Description** | : | Operation Frequency: | 300KHz-350KHz |
| | | Modulation Type: | ASK |
| | | Antenna: | Coil Antenna |
| **Power Rating** | : | For Adapter:<br>Input: AC 100-240V~ 50/60Hz<br>Output: DC 5V, 2.1A-3A<br>Phone: DC 5V, 2A (Max)<br>Watch: DC5V, 500mA (Max)<br>Earphone:5V, 500mA (Max)<br>Wireless Charging: 2.5W(Max) | |
| **Software Version** | : | V1.0 | |
| **Hardware Version** | : | V1.2 | |
| **Connecting I/O Port(S)** | : | Please refer to the User's Manual | |

**Note:**

(1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

## 1.3 Block Diagram Showing the Configuration of System Tested

**Charging + TX Mode**




## 1.4 Description of Support Units

| Equipment Information | | | | |
|---|---|---|---|---|
| **Name** | **Model** | **S/N** | **Manufacturer** | **Used "√"** |
| Watch | ------- | ------- | Apple | √ |
| **Remark:** the USB Cable and adapter provided by the Applicant, The Load provided by TOBY test lab. | | | | |

## 1.5 Description of Test Mode

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned follow was evaluated respectively.

| Pretest Mode | |
|---|---|
| **Final Test Mode** | **Description** |
| Mode 1 | AC/DC Adapter + EUT + Full load |
| Mode 2 | AC/DC Adapter + EUT + Half load |
| Mode 3 | AC/DC Adapter + EUT + Empty load |
| **For Conducted Test** | |
| **Final Test Mode** | **Description** |
| Mode 1 | AC/DC Adapter + EUT + Full load |
| **For Radiated Test** | |
| **Final Test Mode** | **Description** |
| Mode 1 | AC/DC Adapter + EUT + Full load |
| **For Bandwidth Test** | |
| **Final Test Mode** | **Description** |
| Mode 1 | AC/DC Adapter + EUT + Full load |

**Note:**

(1) For all test, we have verified the construction and function in typical operation. And all the test modes were carried out with the EUT in transmitting operation in maximum power with all kinds of data rate.
According to ANSI C63.10 standards, All test modes were pre-tested, but we only recorded the worst case in this report.

(2) During the testing procedure, the continuously transmitting with the maximum power mode was programmed by the customer.

(3) The EUT is considered a portable unit; in normal use it was positioned on X-plane. The worst case was found positioned on X-plane. Therefore only the test data of this X-plane was used for radiated emission measurement test.

## 1.6 Description of Test Software Setting

During testing channel& Power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of RF setting.

| Test Software Version | N/A |
|---|---|
| Frequency | 300-350KHz |

## 1.7 Measurement Uncertainty

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

| Test Item | Parameters | Expanded Uncertainty ($U_{Lab}$) |
|---|---|---|
| Conducted Emission | Level Accuracy:<br>9kHz~150kHz<br>150kHz to 30MHz | ±3.50 dB<br>±3.10 dB |
| Radiated Emission | Level Accuracy:<br>9kHz to 30 MHz | ±4.60 dB |
| Radiated Emission | Level Accuracy:<br>30MHz to 1000 MHz | ±4.50 dB |
| Radiated Emission | Level Accuracy:<br>Above 1000MHz | ±4.20 dB |

## 1.8 Test Facility

The testing report were performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at 1A/F., Bldg.6, Yusheng Industrial Zone, The National Road No.107 Xixiang Section 467, Xixiang, Bao'an, Shenzhen, Guangdong, China. At the time of testing, the following bodies accredited the Laboratory:

**CNAS (L5813)**

The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

**A2LA Certificate No.: 4750.01**

The laboratory has been accredited by American Association for Laboratory Accreditation(A2LA) to ISO/IEC 17025：2017 General Requirements for the Competence of Testing and Calibration Laboratories for the technical competence in the field of Electrical Testing. And the A2LA Certificate No.: 4750.01. FCC Accredited Test Site Number: 854351.Designation Number: CN1223

**IC Registration No.: (11950A)**

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A.

## 2. Test Summary

| FCC Part 15 Subpart C(15.209) | | | |
|---|---|---|---|
| **Standard Section** | **Test Item** | **Judgment** | **Remark** |
| 15.203 | Antenna Requirement | PASS | N/A |
| 15.207(a) | Conducted Emission | PASS | N/A |
| 15.209(a)(f) | Radiated emissions | PASS | N/A |
| 15.215 | Bandwidth | PASS | N/A |
| **Note:** N/A is an abbreviation for Not Applicable. | | | |

## 3. Test Software

| Test Item | Test Software | Manufacturer | Version No. |
|---|---|---|---|
| Conducted Emission | EZ-EMC | EZ | CDI-03A2 |
| Radiation Emission | EZ-EMC | EZ | FA-03A2RE |

# 4. Test Equipment

| Conducted Emission Test | | | | | |
|---|---|---|---|---|---|
| **Equipment** | **Manufacturer** | **Model No.** | **Serial No.** | **Last Cal.** | **Cal. Due Date** |
| EMI Test Receiver | Rohde & Schwarz | ESCI | 100321 | Jul. 02, 2021 | Jul. 01, 2022 |
| RF Switching Unit | Compliance Direction Systems Inc | RSU-A4 | 34403 | Jul. 02, 2021 | Jul. 01, 2022 |
| AMN | SCHWARZBECK | NNBL 8226-2 | 8226-2/164 | Jul. 02, 2021 | Jul. 01, 2022 |
| LISN | Rohde & Schwarz | ENV216 | 101131 | Jul. 02, 2021 | Jul. 01, 2022 |
| **Radiation Emission Test** | | | | | |
| **Equipment** | **Manufacturer** | **Model No.** | **Serial No.** | **Last Cal.** | **Cal. Due Date** |
| Spectrum Analyzer | Agilent | E4407B | MY45106456 | Jul. 02, 2021 | Jul. 01, 2022 |
| EMI Test Receiver | Rohde & Schwarz | ESPI | 100010/007 | Jul. 02, 2021 | Jul. 01, 2022 |
| Bilog Antenna | ETS-LINDGREN | 3142E | 00117537 | Mar.01, 2020 | Feb. 28, 2022 |
| Horn Antenna | ETS-LINDGREN | 3117 | 00143207 | Mar.01, 2020 | Feb. 28, 2022 |
| Loop Antenna | SCHWARZBECK | FMZB 1519 B | 1519B-059 | Jul. 06, 2021 | Jul. 05, 2022 |
| Pre-amplifier | Sonoma | 310N | 185903 | Feb. 25, 2021 | Feb. 24, 2022 |
| Pre-amplifier | HP | 8449B | 3008A00849 | Feb. 25, 2021 | Feb. 24, 2022 |
| Cable | HUBER+SUHNER | 100 | SUCOFLEX | Feb. 25, 2021 | Feb. 24, 2022 |
| Positioning Controller | ETS-LINDGREN | 2090 | N/A | N/A | N/A |
| **Antenna Conducted Emission** | | | | | |
| **Equipment** | **Manufacturer** | **Model No.** | **Serial No.** | **Last Cal.** | **Cal. Due Date** |
| Spectrum Analyzer | Agilent | E4407B | MY45106456 | Jul. 02, 2021 | Jul. 01, 2022 |
| Spectrum Analyzer | Rohde & Schwarz | ESPI | 100010/007 | Jul. 02, 2021 | Jul. 01, 2022 |
| MXA Signal Analyzer | Agilent | N9020A | MY49100060 | Sep. 10, 2021 | Sep. 09, 2022 |
| Vector Signal Generator | Agilent | N5182A | MY50141294 | Sep. 10, 2021 | Sep. 09, 2022 |
| Analog Signal Generator | Agilent | N5181A | MY50141953 | Sep. 10, 2021 | Sep. 09, 2022 |
| RF Power Sensor | DARE!! Instruments | RadiPowerRPR3006W | 17I00015SNO26 | Sep. 10, 2021 | Sep. 09, 2022 |
| | DARE!! Instruments | RadiPowerRPR3006W | 17I00015SNO29 | Sep. 10, 2021 | Sep. 09, 2022 |
| | DARE!! Instruments | RadiPowerRPR3006W | 17I00015SNO31 | Sep. 10, 2021 | Sep. 09, 2022 |
| | DARE!! Instruments | RadiPowerRPR3006W | 17I00015SNO33 | Sep. 10, 2021 | Sep. 09, 2022 |

# 5. Conducted Emission Test

## 5.1 Test Standard and Limit

### 5.1.1Test Standard

FCC Part 15.207

### 5.1.2 Test Limit

**Conducted Emission Test Limit**

| Frequency | Maximum RF Line Voltage (dBμV) | |
|---|---|---|
| | Quasi-peak Level | Average Level |
| 150kHz~500kHz | 66 ~ 56 * | 56 ~ 46 * |
| 500kHz~5MHz | 56 | 46 |
| 5MHz~30MHz | 60 | 50 |

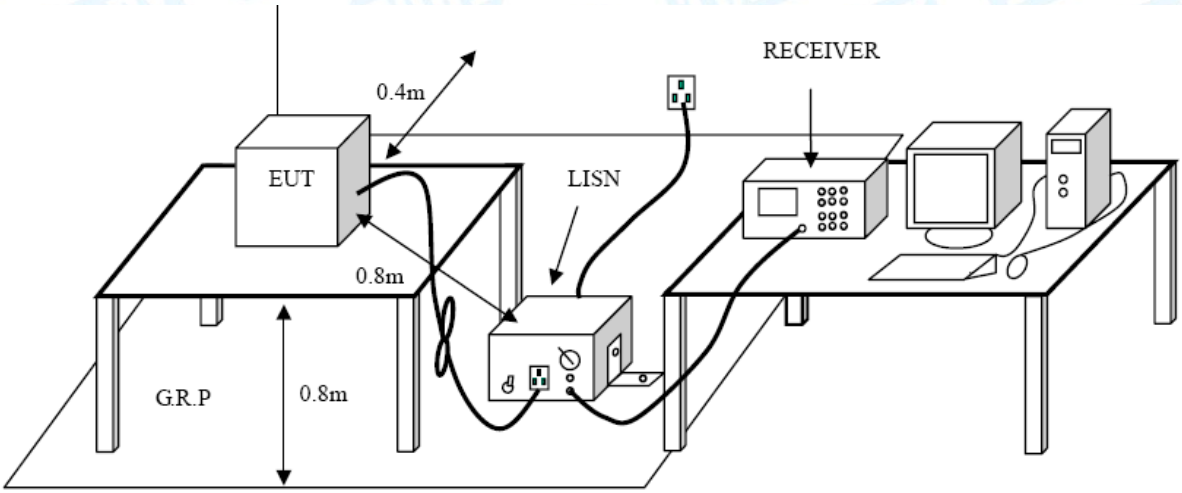
Notes:

(1) *Decreasing linearly with logarithm of the frequency.

(2) The lower limit shall apply at the transition frequencies.

(3) The limit decrease in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

## 5.2 Test Setup



## 5.3 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.

The bandwidth of EMI test receiver is set at 9 kHz, and the test frequency band is from 0.15MHz to 30MHz.

## 5.4 Deviation From Test Standard

No deviation

## 5.5 EUT Operating Mode

Please refer to the description of test mode.

## 5.6 Test Data

Please refer to the Attachment A.

# 6. Radiated Emission Test

## 6.1 Test Standard and Limit

### 6.1.1 Test Standard

FCC Part 15.209(a)(f)

### 6.1.2 Test Limit

**Radiated Emission Limits ( 9 kHz~1000 MHz)**

| Frequency (MHz | Field Strength (microvolt/meter) | Measurement Distance (meters) |
|---|---|---|
| 0.009~0.490 | 2400/F(KHz) | 300 |
| 0.490~1.705 | 24000/F(KHz) | 30 |
| 1.705~30.0 | 30 | 30 |
| 30~88 | 100 | 3 |
| 88~216 | 150 | 3 |
| 216~960 | 200 | 3 |
| Above 960 | 500 | 3 |
| Note: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector. | | |

**Radiated Emission Limit (Above 1000MHz)**

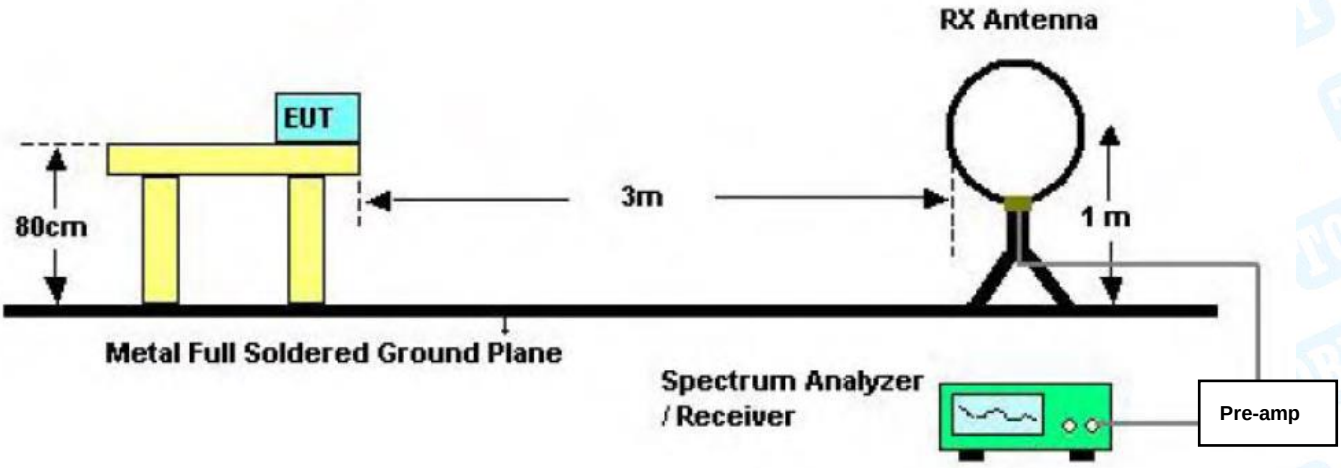
| Frequency (MHz) | Distance of 3m (dBuV/m) | |
|---|---|---|
| | Peak | Average |
| Above 1000 | 74 | 54 |

**Note:**

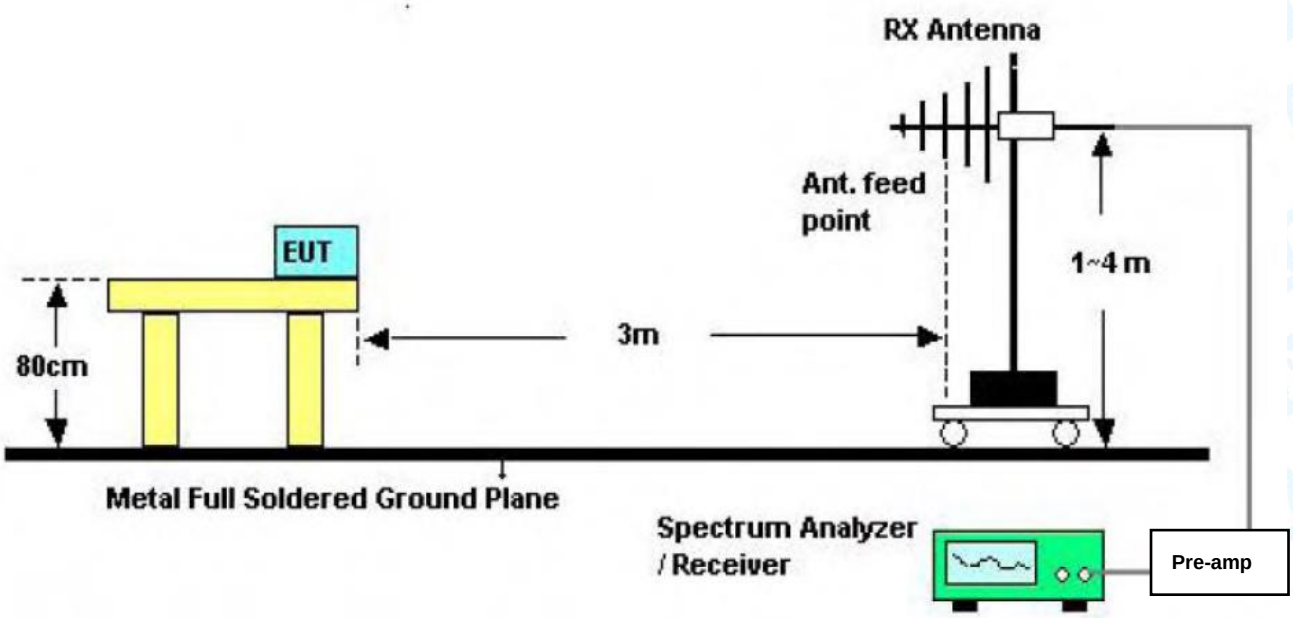
(1) The tighter limit applies at the band edges.

(2) Emission Level(dBuV/m)=20log Emission Level(uV/m)

6.2 Test Setup




Below 30MHz Test Setup




Below 1000MHz Test Setup

## 6.3 Test Procedure

(1) Measurements at frequency 9KHz~30MHz and Below 1GHz. The EUT was placed on a rotating 0.8m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The table was rotated 360 degrees to determine the position of the highest radiation.

(2) 9KHz~30MHz the test antenna 1m away from the ground, Both 0° and 90° antenna are set to make measurement.
Below 1GHz the test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.

(3) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.

(4) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Bellow 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.

(5) Testing frequency range below 1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection.

(6) Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.

(7) For 9kHz to 150kHz, Set the spectrum analyzer as:
RBW= 200Hz, VBW =1kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.
For 150kHz to 30MHz, Set the spectrum analyzer as:
RBW= 9KHz, VBW =30kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple

(8) For the actual test configuration, please see the test setup photo.

## 6.4 Deviation From Test Standard

No deviation

## 6.5 EUT Operating Condition

The Equipment Under Test was set to Continual Transmitting in maximum power.

## 6.6 Test Data

Please refer to the Attachment B.

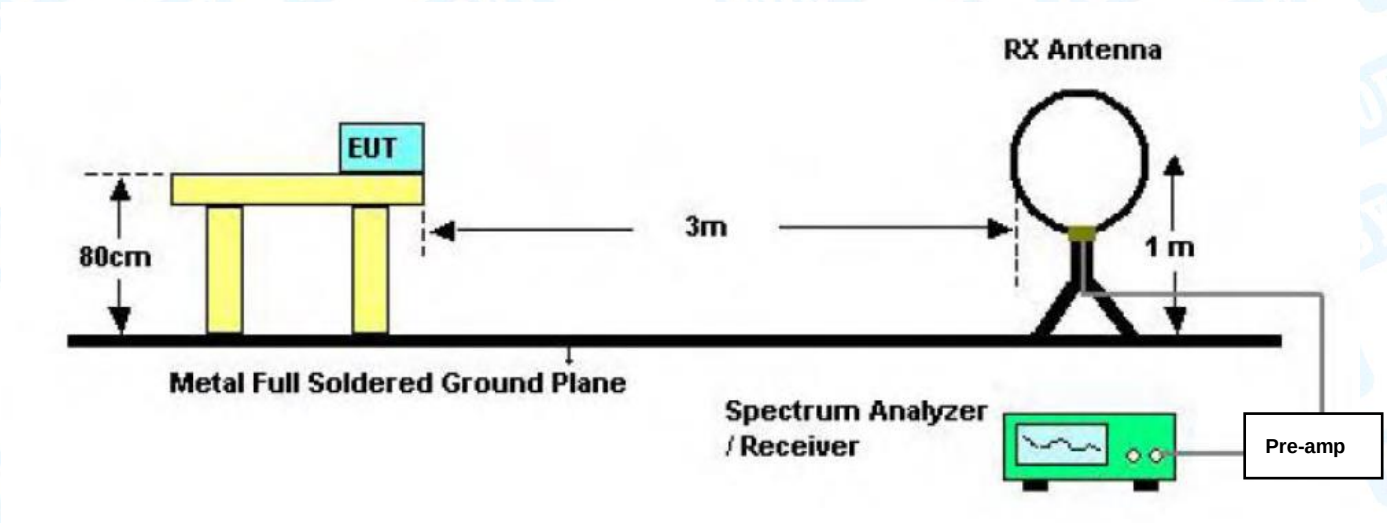
# 7. Bandwidth Measurement

## 7.1 Test Standard and Limit

### 7.1.1 Test Standard

FCC Part 15.215

## 7.2 Test Setup




## 7.3 Test Procedure

1. The transmitter shall be operated at its maximum carrier power measured under normal test conditions;
2. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.
3. The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the occupied bandwidth (OBW) and video bandwidth (VBW) shall be approximately 3x RBW.

## 7.4 Deviation From Test Standard

No deviation

## 7.5 EUT Operating Condition

The Equipment Under Test was set to Continual Transmitting in maximum power.

## 7.6 Test Data

Please refer to the Attachment C.

# 8. Antenna Requirement

## 8.1 Standard Requirement

### 8.1.1 Standard

FCC Part 15.203

### 8.1.2 Requirement

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 shall be considered sufficient to comply with the provisions of this Section. 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.

## 8.2 Deviation From Test Standard

No deviation

## 8.3 Antenna Connected Construction

The antenna is Coil Antenna, and the antenna connector is de-signed with permanent attachment and no consideration of replacement. Please see the EUT photo for details.

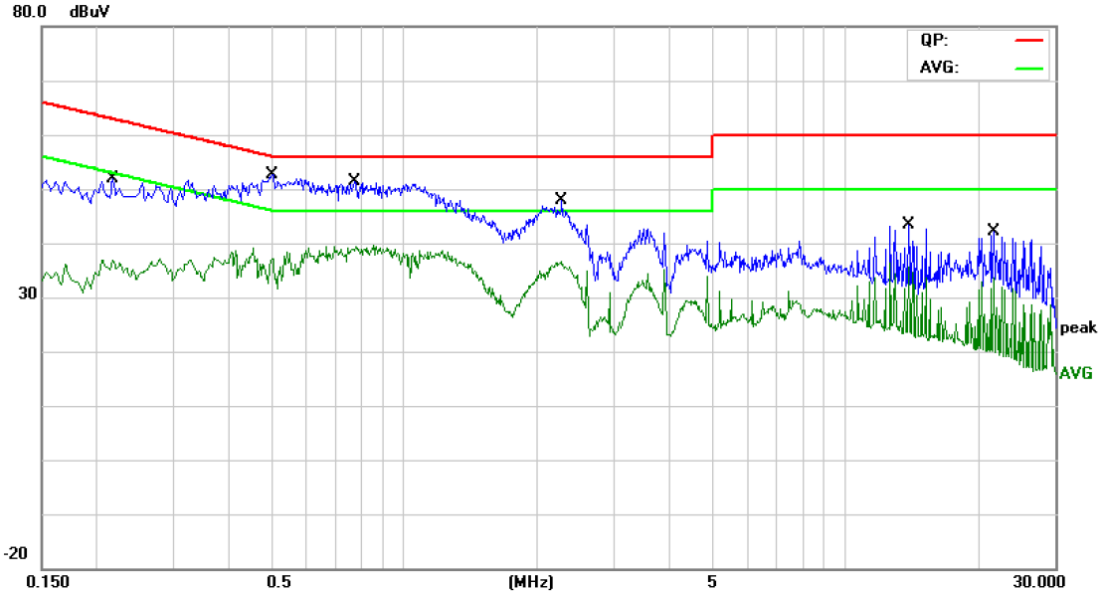
## 8.4 Result

The EUT antenna is a Coil Antenna. It complies with the standard requirement.

| Antenna Type |
|---|
| ☒Permanent attached antenna |
| ☐Unique connector antenna |
| ☐Professional installation antenna |

# Attachment A-- Conducted Emission Test Data

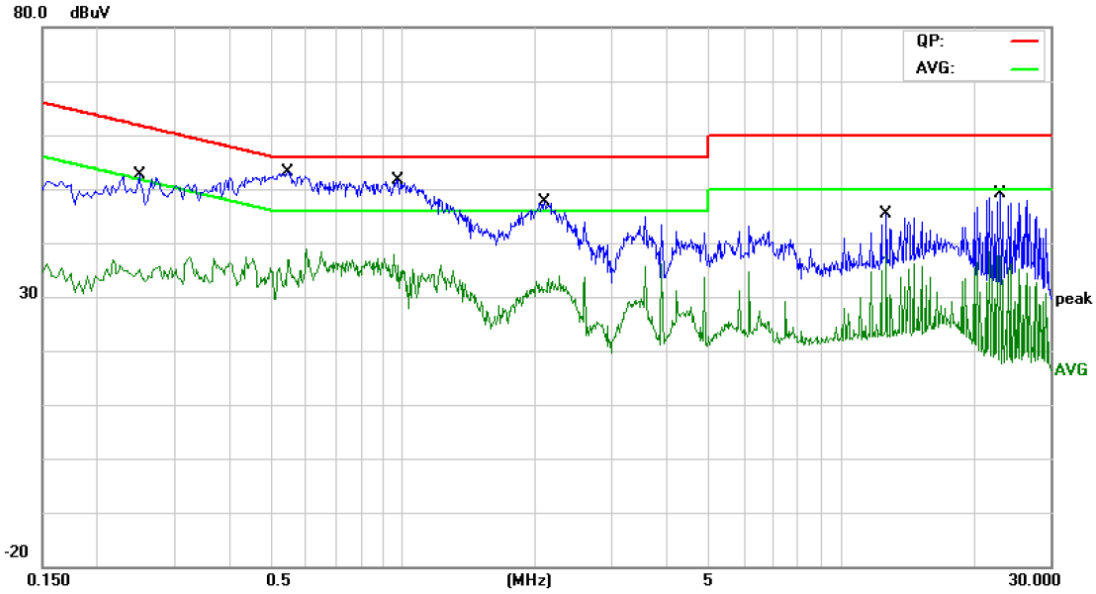
| | | | |
|---|---|---|---|
| **Temperature:** | 24.4℃ | **Relative Humidity:** | 44% |
| **Test Voltage:** | AC 120V/60 Hz | | |
| **Terminal:** | Line | | |
| **Test Mode:** | Mode 1 | | |
| **Remark:** | Only worse case is reported. | | |




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | |
|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector |
| 1 | | 0.2180 | 34.05 | 11.65 | 45.70 | 62.89 | -17.19 | QP |
| 2 | | 0.2180 | 23.64 | 11.65 | 35.29 | 52.89 | -17.60 | AVG |
| 3 | * | 0.5020 | 39.19 | 11.51 | 50.70 | 56.00 | -5.30 | QP |
| 4 | | 0.5020 | 24.87 | 11.51 | 36.38 | 46.00 | -9.62 | AVG |
| 5 | | 0.7700 | 34.81 | 11.39 | 46.20 | 56.00 | -9.80 | QP |
| 6 | | 0.7700 | 26.66 | 11.39 | 38.05 | 46.00 | -7.95 | AVG |
| 7 | | 2.2740 | 31.64 | 10.38 | 42.02 | 56.00 | -13.98 | QP |
| 8 | | 2.2740 | 25.54 | 10.38 | 35.92 | 46.00 | -10.08 | AVG |
| 9 | | 13.9620 | 28.47 | 10.31 | 38.78 | 60.00 | -21.22 | QP |
| 10 | | 13.9620 | 19.02 | 10.31 | 29.33 | 50.00 | -20.67 | AVG |
| 11 | | 21.7500 | 28.12 | 10.56 | 38.68 | 60.00 | -21.32 | QP |
| 12 | | 21.7500 | 15.98 | 10.56 | 26.54 | 50.00 | -23.46 | AVG |

**Remark:**
**1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)**
**2. Margin (dB) =QuasiPeak/Average (dBuV)-Limit (dBuV)**

| | | | |
|---|---|---|---|
| **Temperature:** | 24.4℃ | **Relative Humidity:** | 44% |
| **Test Voltage:** | AC 120V/60 Hz | | |
| **Terminal:** | Neutral | | |
| **Test Mode:** | Mode 1 | | |
| **Remark:** | Only worse case is reported | | |



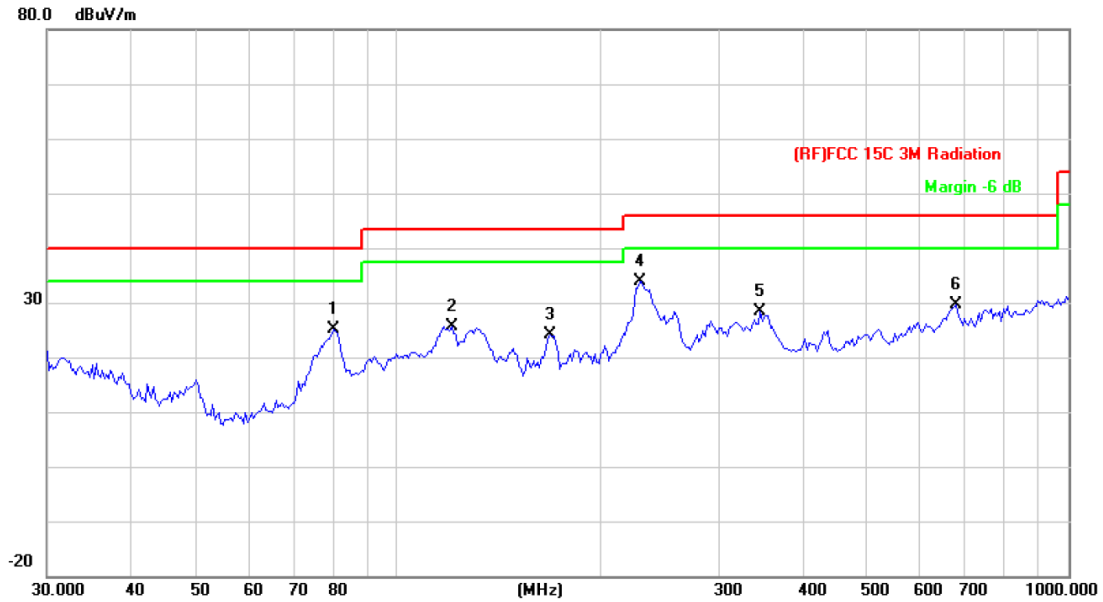

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | |
|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector |
| 1 | | 0.2500 | 34.74 | 11.62 | 46.36 | 61.75 | -15.39 | QP |
| 2 | | 0.2500 | 21.28 | 11.62 | 32.90 | 51.75 | -18.85 | AVG |
| 3 | * | 0.5460 | 39.26 | 11.49 | 50.75 | 56.00 | -5.25 | QP |
| 4 | | 0.5460 | 23.20 | 11.49 | 34.69 | 46.00 | -11.31 | AVG |
| 5 | | 0.9780 | 35.32 | 11.21 | 46.53 | 56.00 | -9.47 | QP |
| 6 | | 0.9780 | 21.95 | 11.21 | 33.16 | 46.00 | -12.84 | AVG |
| 7 | | 2.1099 | 32.98 | 10.42 | 43.40 | 56.00 | -12.60 | QP |
| 8 | | 2.1099 | 20.23 | 10.42 | 30.65 | 46.00 | -15.35 | AVG |
| 9 | | 12.6660 | 30.74 | 10.25 | 40.99 | 60.00 | -19.01 | QP |
| 10 | | 12.6660 | 20.81 | 10.25 | 31.06 | 50.00 | -18.94 | AVG |
| 11 | | 23.0620 | 35.98 | 10.55 | 46.53 | 60.00 | -13.47 | QP |
| 12 | | 23.0620 | 24.80 | 10.55 | 35.35 | 50.00 | -14.65 | AVG |

**Remark:**
**1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)**
**2. Margin (dB) =QuasiPeak/Average (dBuV)-Limit (dBuV)**

# Attachment B-- Radiated Emission Test Data

## 30MHz~1GHz

| | | | |
|---|---|---|---|
| **Temperature:** | 24.3℃ | **Relative Humidity:** | 45% |
| **Test Voltage:** | AC 120V/60 Hz | | |
| **Ant. Pol.** | Horizontal | | |
| **Test Mode:** | Mode 1 | | |
| **Remark:** | Only worse case is reported | | |

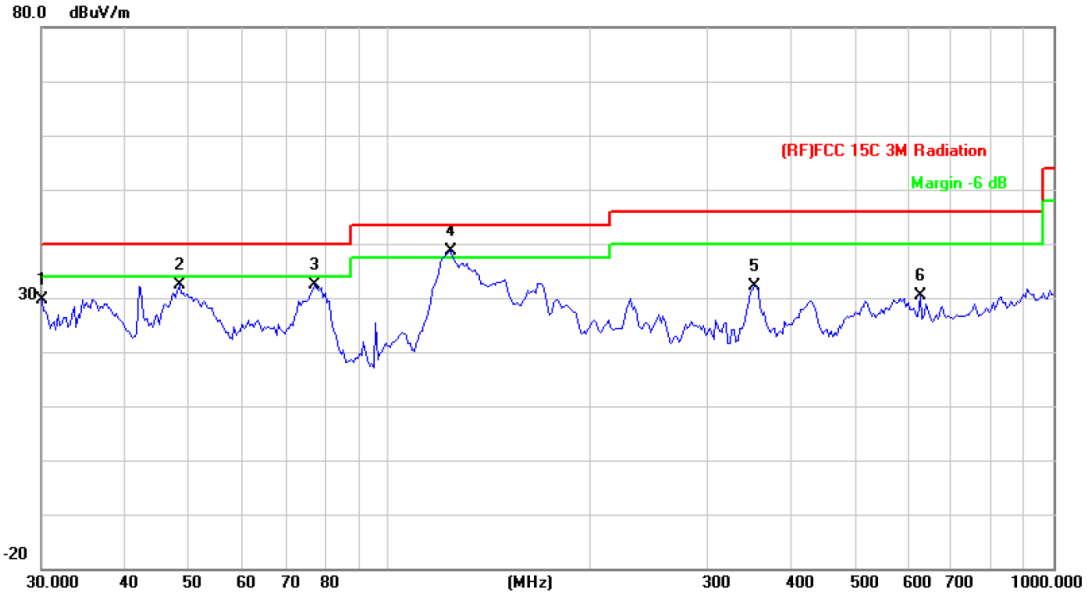



| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | |
|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB/m | dBuV/m | dBuV/m | dB | Detector |
| 1 | | 80.0806 | 47.72 | -22.66 | 25.06 | 40.00 | -14.94 | peak |
| 2 | | 120.2766 | 48.15 | -22.44 | 25.71 | 43.50 | -17.79 | peak |
| 3 | | 168.4138 | 44.87 | -20.72 | 24.15 | 43.50 | -19.35 | peak |
| 4 | * | 229.2931 | 52.37 | -18.46 | 33.91 | 46.00 | -12.09 | peak |
| 5 | | 346.8092 | 43.23 | -14.80 | 28.43 | 46.00 | -17.57 | peak |
| 6 | | 679.9600 | 36.79 | -7.27 | 29.52 | 46.00 | -16.48 | peak |

*:Maximum data x:Over limit !:over margin

**Remark:**
**1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)**
**2. QuasiPeak (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)**
**3. Margin (dB) = QuasiPeak (dBμV/m)-Limit QPK(dBμV/m)**

| | | | |
|---|---|---|---|
| **Temperature:** | 24.3℃ | **Relative Humidity:** | 45% |
| **Test Voltage:** | AC 120V/60 Hz | | |
| **Ant. Pol.** | Vertical | | |
| **Test Mode:** | Mode 1 | | |
| **Remark:** | Only worse case is reported | | |



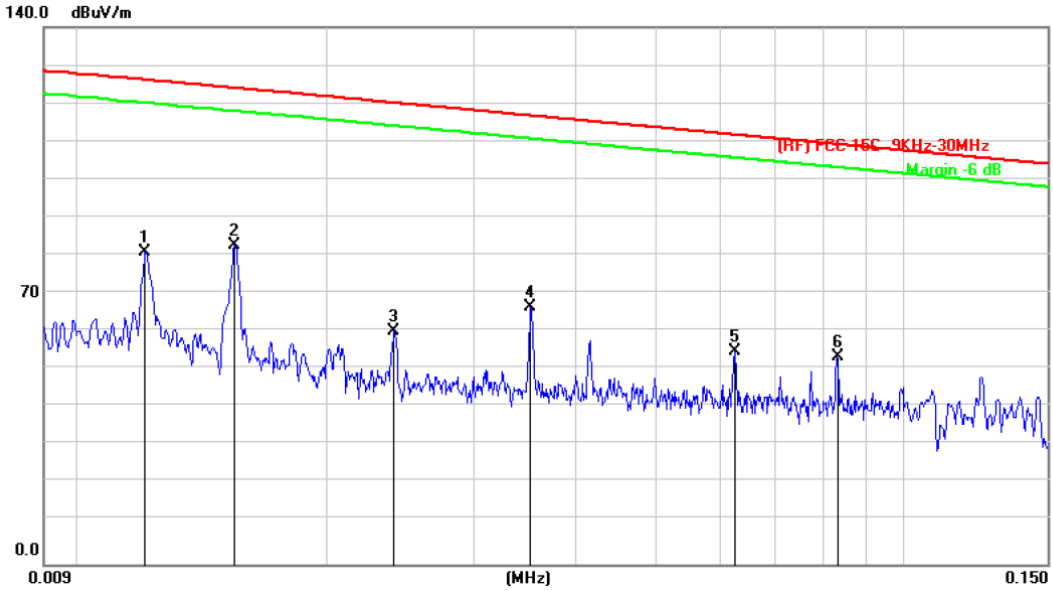

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | |
|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB/m | dBuV/m | dBuV/m | dB | Detector |
| 1 | | 30.0000 | 43.13 | -13.40 | 29.73 | 40.00 | -10.27 | peak |
| 2 | | 48.3318 | 55.35 | -23.00 | 32.35 | 40.00 | -7.65 | peak |
| 3 | | 77.3212 | 55.24 | -22.94 | 32.30 | 40.00 | -7.70 | peak |
| 4 | * | 123.6985 | 61.19 | -22.48 | 38.71 | 43.50 | -4.79 | peak |
| 5 | | 354.1831 | 46.73 | -14.50 | 32.23 | 46.00 | -13.77 | peak |
| 6 | | 629.4772 | 38.54 | -8.18 | 30.36 | 46.00 | -15.64 | peak |

*:Maximum data x:Over limit !:over margin

**Remark:**
**1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)**
**2. QuasiPeak (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)**
**3. Margin (dB) = QuasiPeak (dBμV/m)-Limit QPK(dBμV/m)**

**9KMz-30MHz**

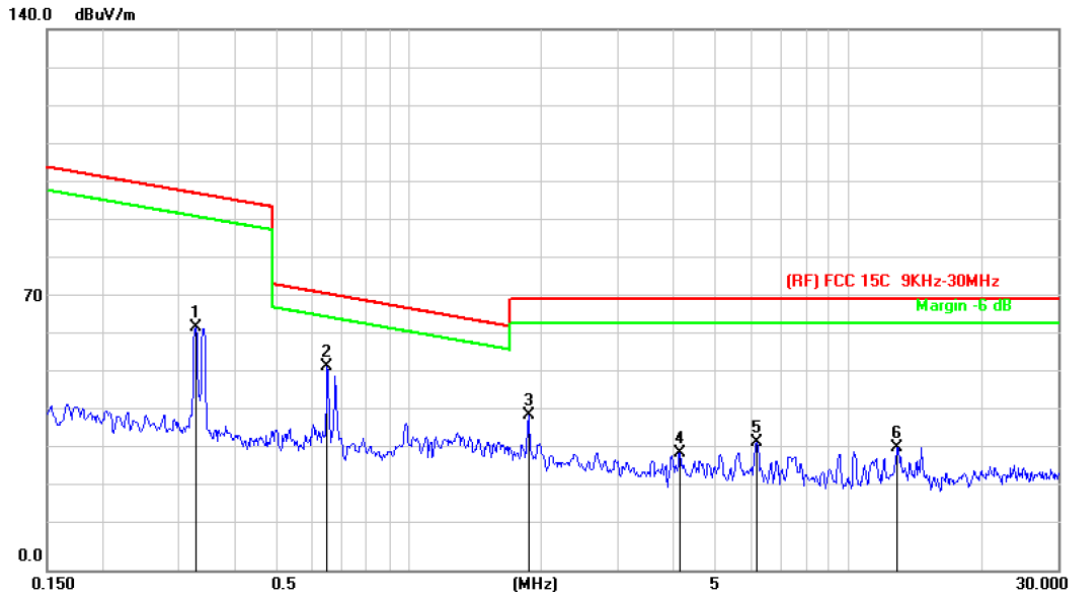
| | | | |
|---|---|---|---|
| **Temperature:** | 23.5℃ | **Relative Humidity:** | 46% |
| **Test Voltage:** | AC 120V/60 Hz | | |
| **Ant. Pol.** | Ant. 0° | | |
| **Test Mode:** | Mode 1 | | |
| **Remark:** | N/A | | |




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | |
|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB/m | dBuV/m | dBuV/m | dB | Detector |
| 1 | | 0.0120 | 90.63 | -9.31 | 81.32 | 126.30 | -44.98 | peak |
| 2 | * | 0.0154 | 92.35 | -9.31 | 83.04 | 124.13 | -41.09 | peak |
| 3 | | 0.0240 | 70.17 | -9.31 | 60.86 | 120.26 | -59.40 | peak |
| 4 | | 0.0352 | 76.57 | -9.38 | 67.19 | 116.93 | -49.74 | peak |
| 5 | | 0.0624 | 65.17 | -9.60 | 55.57 | 111.94 | -56.37 | peak |
| 6 | | 0.0831 | 63.55 | -9.51 | 54.04 | 109.45 | -55.41 | peak |

**Remark:**
**1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)**
**2. QuasiPeak/AVG(dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)**
**3. Margin (dB) = QuasiPeak/AVG (dBμV/m)-Limit QPK/AVG(dBμV/m)**

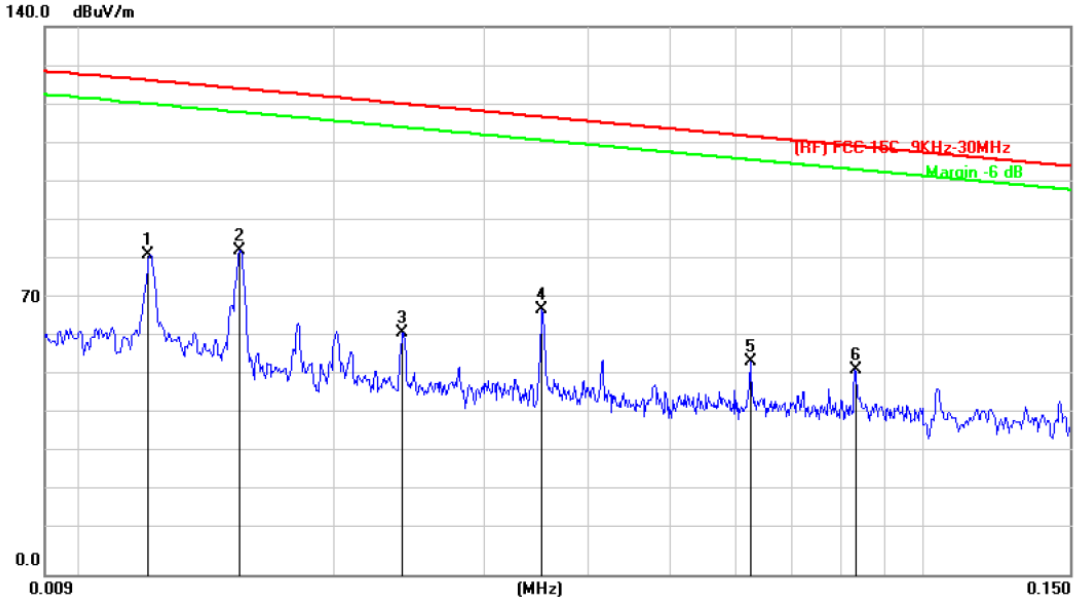
| | | | |
|---|---|---|---|
| **Temperature:** | 23.5℃ | **Relative Humidity:** | 46% |
| **Test Voltage:** | AC 120V/60 Hz | | |
| **Ant. Pol.** | Ant. 0° | | |
| **Test Mode:** | Mode 1 | | |
| **Remark:** | N/A | | |




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | |
|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB/m | dBuV/m | dBuV/m | dB | Detector |
| 1 | | 0.3268 | 72.88 | -10.18 | 62.70 | 97.53 | -34.83 | peak |
| 2 | * | 0.6508 | 63.92 | -11.38 | 52.54 | 71.50 | -18.96 | peak |
| 3 | | 1.8680 | 51.70 | -11.71 | 39.99 | 70.00 | -30.01 | peak |
| 4 | | 4.1137 | 42.05 | -11.85 | 30.20 | 70.00 | -39.80 | peak |
| 5 | | 6.1860 | 44.65 | -11.73 | 32.92 | 70.00 | -37.08 | peak |
| 6 | | 12.9199 | 43.90 | -12.12 | 31.78 | 70.00 | -38.22 | peak |

**Remark:**
**1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)**
**2. QuasiPeak/AVG(dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)**
**3. Margin (dB) = QuasiPeak/AVG (dBμV/m)-Limit QPK/AVG(dBμV/m)**

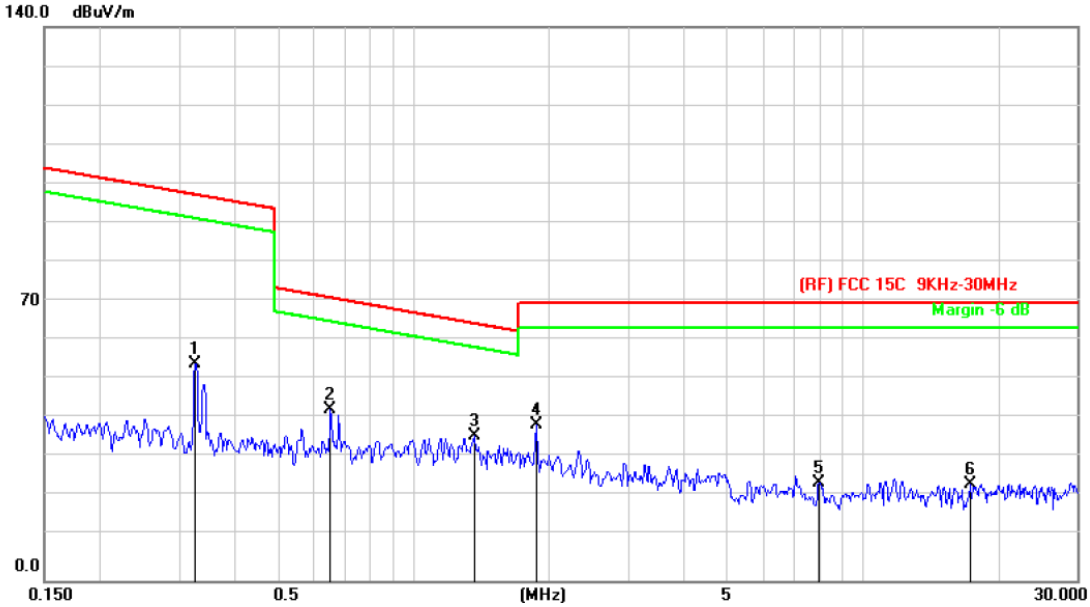
| | | | |
|---|---|---|---|
| **Temperature:** | 23.5℃ | **Relative Humidity:** | 46% |
| **Test Voltage:** | AC 120V/60 Hz | | |
| **Ant. Pol.** | Ant. 90° | | |
| **Test Mode:** | Mode 1 | | |
| **Remark:** | N/A | | |




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | |
|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB/m | dBuV/m | dBuV/m | dB | Detector |
| 1 | | 0.0120 | 90.90 | -9.31 | 81.59 | 126.30 | -44.71 | peak |
| 2 | * | 0.0154 | 92.14 | -9.31 | 82.83 | 124.13 | -41.30 | peak |
| 3 | | 0.0240 | 71.21 | -9.31 | 61.90 | 120.26 | -58.36 | peak |
| 4 | | 0.0352 | 77.05 | -9.38 | 67.67 | 116.93 | -49.26 | peak |
| 5 | | 0.0624 | 64.03 | -9.60 | 54.43 | 111.94 | -57.51 | peak |
| 6 | | 0.0831 | 61.92 | -9.51 | 52.41 | 109.45 | -57.04 | peak |

**Remark:**
**1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)**
**2. QuasiPeak/AVG(dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)**
**3. Margin (dB) = QuasiPeak/AVG (dBμV/m)-Limit QPK/AVG(dBμV/m)**

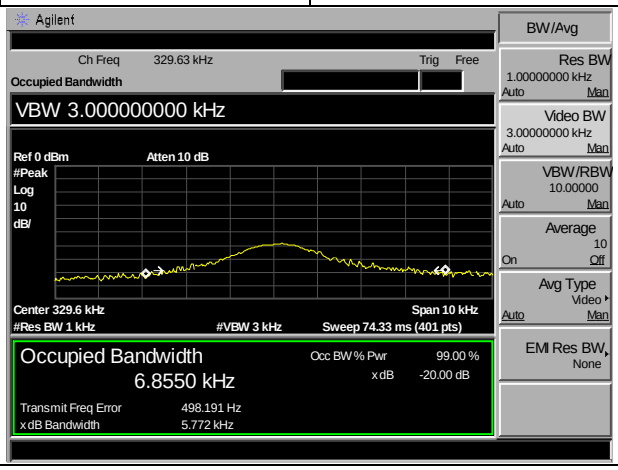
| | | | |
|---|---|---|---|
| **Temperature:** | 23.5℃ | **Relative Humidity:** | 46% |
| **Test Voltage:** | AC 120V/60 Hz | | |
| **Ant. Pol.** | Ant. 90° | | |
| **Test Mode:** | Mode 1 | | |
| **Remark:** | N/A | | |




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | |
|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB/m | dBuV/m | dBuV/m | dB | Detector |
| 1 | | 0.3251 | 64.97 | -10.17 | 54.80 | 97.57 | -42.77 | peak |
| 2 | * | 0.6508 | 54.71 | -11.38 | 43.33 | 71.50 | -28.17 | peak |
| 3 | | 1.3593 | 48.29 | -11.70 | 36.59 | 65.00 | -28.41 | peak |
| 4 | | 1.8680 | 51.20 | -11.71 | 39.49 | 70.00 | -30.51 | peak |
| 5 | | 7.9774 | 36.42 | -11.64 | 24.78 | 70.00 | -45.22 | peak |
| 6 | | 17.2908 | 36.86 | -12.42 | 24.44 | 70.00 | -45.56 | peak |

**Remark:**
**1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)**
**2. QuasiPeak/AVG(dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)**
**3. Margin (dB) = QuasiPeak/AVG (dBμV/m)-Limit QPK/AVG(dBμV/m)**

# Attachment C-- Bandwidth Measurement Data

| Frequency (KHz) | 20 dBc Bandwidth (kHz) | 99% OBW (kHz) | Result |
|---|---|---|---|
| 329.6 | 5.772 | 6.8550 | PASS |
|  | | | |
| | | | |



-----END OF REPORT------