

# FCC Radio Test Report

## FCC ID: 2APRB-WNVR-WNIP2

### Original Grant

**Report No.** : TB-FCC175702

**Applicant** : Guangzhou Juan Intelligent Tech Joint Stock Co.,Ltd

**Equipment Under Test (EUT)**

**EUT Name** : Wireless Network Video Recorder

**Model No.** : WNVR-WNIP2-V2

**Series Model No.** : WNIP2-4L1, CL-2WNP1-2L, CL-2WNP1-4L, CL-2WNP1-8L, WNIP21L-2-B, WNIP21L-4-B, WNIP21L-8-B, WNVR-WNIP2, WNVR-WNIP2-1-V2, WNVR-WNIP2-V3, WNVR-WNIP2-1-V3

**Sample ID** : TBBJ-20200911-06-1#&TBBJ-20200911-06-2#

**Brand Name** : NIGHT OWL

**Receipt Date** : 2020-09-14

**Test Date** : 2020-09-15 to 2020-10-23

**Issue Date** : 2020-10-23

**Standards** : FCC Part 15, Subpart C 15.247

**Test Method** : ANSI C63.10: 2013

**Conclusions** : **PASS**

In the configuration tested, the EUT complied with the standards specified above,  
The EUT technically complies with the FCC and IC requirements

**Test/Witness Engineer** :  Jack Deng

**Engineer Supervisor** :  Ivan Su

**Authorized Signatory** :  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.

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## Revision History

| Report No.   | Version | Description             | Issued Date |
|--------------|---------|-------------------------|-------------|
| TB-FCC172675 | Rev.01  | Initial issue of report | 2020-05-22  |
| TB-FCC175702 | Rev.02  | FCC ID Change II        | 2020-09-21  |
|              |         |                         |             |
|              |         |                         |             |
|              |         |                         |             |
|              |         |                         |             |
|              |         |                         |             |
|              |         |                         |             |
|              |         |                         |             |
|              |         |                         |             |
|              |         |                         |             |
|              |         |                         |             |

# 1. General Information about EUT

## 1.1 Client Information

|                     |   |                                                                                          |
|---------------------|---|------------------------------------------------------------------------------------------|
| <b>Applicant</b>    | : | Guangzhou Juan Intelligent Tech Joint Stock Co.,Ltd                                      |
| <b>Address</b>      | : | No.2 Plant ,West of Shanxi country , Dashi street, Panyu District, Guangzhou City, China |
| <b>Manufacturer</b> | : | Guangzhou Juan Intelligent Tech Joint Stock Co.,Ltd                                      |
| <b>Address</b>      | : | No.2 Plant ,West of Shanxi country , Dashi street, Panyu District, Guangzhou City, China |

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

|                            |   |                                                                                                                                                                     |                                                                                                      |
|----------------------------|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| <b>EUT Name</b>            | : | Wireless Network Video Recorder                                                                                                                                     |                                                                                                      |
| <b>Models No.</b>          | : | WNVR-WNIP2-V2, WNIP2-4L1, CL-2WNP1-2L, CL-2WNP1-4L, CL-2WNP1-8L, WNIP21L-2-B, WNIP21L-4-B, WNIP21L-8-B, WNVR-WNIP2, WNVR-WNIP2-1-V2, WNVR-WNIP2-V3, WNVR-WNIP2-1-V3 |                                                                                                      |
| <b>Model Different</b>     | : | All these model product are identical the same, for commercial use with different model number.                                                                     |                                                                                                      |
| <b>Product Description</b> | : | Operation Frequency:                                                                                                                                                | 802.11b/g/n(HT20): 2412MHz~2462MHz<br>802.11n(HT40): 2422MHz~2452MHz                                 |
|                            |   | Number of Channel:                                                                                                                                                  | 802.11b/g/n(HT20):11 channels <b>see note(3)</b><br>802.11n(HT40): 7 channels <b>see note(3)</b>     |
|                            |   | Antenna Gain:                                                                                                                                                       | Please see Note(4)                                                                                   |
|                            |   | Modulation Type:                                                                                                                                                    | 802.11b: DSSS(CCK, DQPSK, DBPSK)<br>802.11g/n:OFDM(BPSK,QPSK,16QAM,64QAM)                            |
|                            |   | Bit Rate of Transmitter:                                                                                                                                            | Using 20MHz bandwidth, data rate up to 173.3 Mbps<br>Using 40MHz bandwidth, data rate up to 400 Mbps |
| <b>Power Rating</b>        | : | Adapter(CS-1202000):<br>Input: AC 100-240V, 50/60Hz, 1.5A<br>Output: DC 12V, 2A                                                                                     |                                                                                                      |
| <b>Software Version</b>    | : | WNVR-WNIP2_20200905,<br>WNVR-WNIP2-1-V2_20201014                                                                                                                    |                                                                                                      |
| <b>Hardware Version</b>    | : | Hi3536D_V198,<br>SSR621Q_V102                                                                                                                                       |                                                                                                      |

### Note:

- (1) This Test Report is FCC Part 15.247 for 802.11b/g/n, the test procedure follows the FCC KDB 558074 D01 v05r02 and KDB 662911 D01 Multiple Transmitter Output v02r01.
- (2) For a more detailed features description, please refer to the User's Manual.

## (3) Channel List:

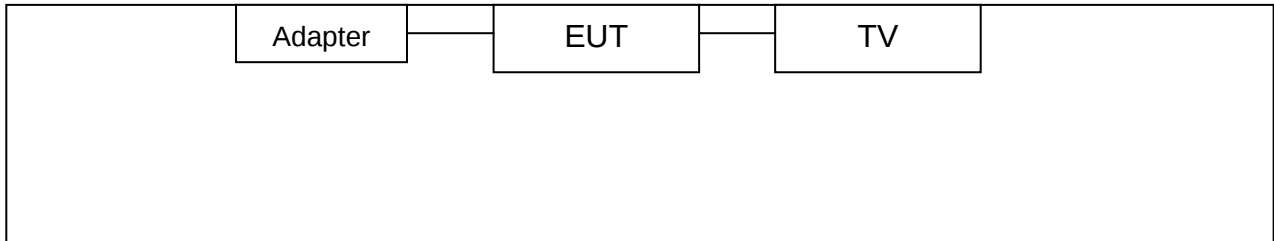
| Channel                                                                  | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|--------------------------------------------------------------------------|-----------------|---------|-----------------|---------|-----------------|
| 01                                                                       | 2412            | 05      | 2432            | 09      | 2452            |
| 02                                                                       | 2417            | 06      | 2437            | 10      | 2457            |
| 03                                                                       | 2422            | 07      | 2442            | 11      | 2462            |
| 04                                                                       | 2427            | 08      | 2447            |         |                 |
| Note: CH 01~CH 11 for 802.11b/g/n(HT20)<br>CH 03~CH 09 for 802.11n(HT40) |                 |         |                 |         |                 |

## (4) Antenna information

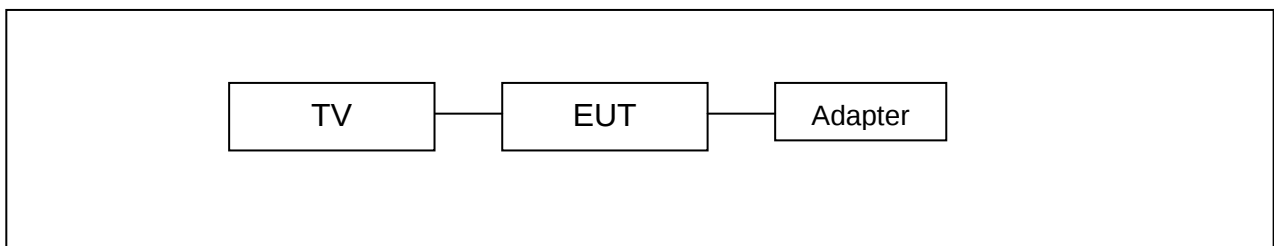
| Mode                                                                                                                                                                                   | TX Antenna (s) |              | Remark            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|--------------|-------------------|
| 802.11b                                                                                                                                                                                | 2              |              | ANT. A+ ANT. B    |
| 802.11g                                                                                                                                                                                | 2              |              | ANT. A+ ANT. B    |
| 802.11n(HT20)                                                                                                                                                                          | 2              |              | ANT. A+ ANT. B    |
| 802.11n(HT40)                                                                                                                                                                          | 2              |              | ANT. A+ ANT. B    |
| Antenna                                                                                                                                                                                | Brand          | Type         | Antenna Gain(dBi) |
| ANT. A                                                                                                                                                                                 | N/A            | External Ant | 5.0               |
| ANT. B                                                                                                                                                                                 | N/A            | External Ant | 5.0               |
| Note:<br>For MIMO mode: $\text{Directional Gain} = \text{ANT. Gain} + 10 \cdot \text{LOG}(N_{\text{ANT}}) = 8.01\text{dBi}$<br>2.4G working with 802.11b/g/n(HT20/HT40) has MIMO mode. |                |              |                   |

### 1.3 Block Diagram Showing the Configuration of System Tested

#### Conducted Test



#### Radiated Test



### 1.4 Description of Support Units

| Name    | Model      | S/N | Manufacturer | Used “√” |
|---------|------------|-----|--------------|----------|
| TV      | /          | /   | /            | √        |
| Adapter | CS-1202000 |     |              | √        |

## 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.

| For Conducted Test                                                                                                                          |                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| Final Test Mode                                                                                                                             | Description                           |
| Mode 1                                                                                                                                      | Charging with TX B Mode               |
| For Radiated and RF Conducted Test                                                                                                          |                                       |
| Final Test Mode                                                                                                                             | Description                           |
| Mode 2                                                                                                                                      | TX Mode B Mode Channel 01/06/11       |
| Mode 3                                                                                                                                      | TX Mode G Mode Channel 01/06/11       |
| Mode 4                                                                                                                                      | TX Mode N(HT20) Mode Channel 01/06/11 |
| Mode 5                                                                                                                                      | TX Mode N(HT40) Mode Channel 03/06/09 |
| <b>Note : (1)The adapter and antenna gain provided by the applicant, the verified for the RF conduction test provided by TOBY test lab.</b> |                                       |

### 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, the measurements are performed at the highest, Middle, lowest available channels, and the worst case data rate as follows:
  - 802.11b Mode: CCK (1 Mbps)
  - 802.11g Mode: OFDM (6 Mbps)
  - 802.11n (HT20) Mode: MCS 0 (6.5 Mbps)
  - 802.11n (HT40) Mode: MCS 0 (30 Mbps)
- (2) During the testing procedure, the continuously transmitting with the maximum power mode was programmed by the customer.
- (3) The EUT is considered a Mobile device; 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 WLAN.

| Test Software: Xshell                           |             |         |            |        |
|-------------------------------------------------|-------------|---------|------------|--------|
| Test Mode: Continuously transmitting            |             |         |            |        |
| Mode                                            | Data Rate   | Channel | Parameters |        |
|                                                 |             |         | ANT. A     | ANT. B |
| 802.11b                                         | CCK/ 1Mbps  | 01      | 43         | 23     |
|                                                 | CCK/ 1Mbps  | 06      | 44         | 23     |
|                                                 | CCK/ 1Mbps  | 11      | 45         | 25     |
|                                                 |             |         | Parameters |        |
|                                                 |             |         | ANT. A     | ANT. B |
| 802.11g                                         | OFDM/ 6Mbps | 01      | 46         | 27     |
|                                                 | OFDM/ 6Mbps | 06      | 46         | 27     |
|                                                 | OFDM/ 6Mbps | 11      | 46         | 27     |
| 802.11n(20)                                     | MCS 0       | 01      | 46         | 27     |
|                                                 | MCS 0       | 06      | 46         | 27     |
|                                                 | MCS 0       | 11      | 48         | 27     |
| 802.11n(40)                                     | MCS 0       | 03      | 46         | 25     |
|                                                 | MCS 0       | 06      | 46         | 25     |
|                                                 | MCS 0       | 09      | 46         | 25     |
| Note:(1) The report only showed the worst case. |             |         |            |        |

## 1.7 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 %.

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

## 1.8 Test Facility

The testing was 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.

### **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(15.247)                                                                                                                                                                                                                                   |                                        |                                            |          |        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|--------------------------------------------|----------|--------|
| Standard Section<br>FCC                                                                                                                                                                                                                                         | Test Item                              | Test Sample(s)                             | Judgment | Remark |
| 15.203                                                                                                                                                                                                                                                          | Antenna Requirement                    | N/A                                        | N/A      | Note 3 |
| 15.207                                                                                                                                                                                                                                                          | Conducted Emission                     | TBBJ-20200911-06-1#<br>TBBJ-20200911-06-2# | PASS     | N/A    |
| 15.205                                                                                                                                                                                                                                                          | Restricted Bands                       | N/A                                        | N/A      | Note 3 |
| 15.247(a)(2)                                                                                                                                                                                                                                                    | 6dB Bandwidth                          | N/A                                        | N/A      | Note 3 |
| 15.247(b)                                                                                                                                                                                                                                                       | Peak Output Power                      | N/A                                        | N/A      | Note 3 |
| 15.247(e)                                                                                                                                                                                                                                                       | Power Spectral Density                 | N/A                                        | N/A      | Note 3 |
| 15.247(d)                                                                                                                                                                                                                                                       | Band Edge                              | N/A                                        | N/A      | Note 3 |
| 15.247(d)&15.209                                                                                                                                                                                                                                                | Transmitter Radiated Spurious Emission | TBBJ-20200911-06-1#<br>TBBJ-20200911-06-2# | PASS     | N/A    |
| <b>Note:</b> (1) “/” for no requirement for this test item.<br>(2)N/A is an abbreviation for Not Applicable.<br>(3) the test data please refer to the original report TB-FCC172675.<br>(4) the EUT has two type of main PCB with same of RF module and antenna. |                                        |                                            |          |        |

## 3. Test Software

| Test Item                | Test Software | Manufacturer | Version No. |
|--------------------------|---------------|--------------|-------------|
| Conducted Emission       | EZ-EMC        | EZ           | CDI-03A2    |
| Radiation Emission       | EZ-EMC        | EZ           | FA-03A2RE   |
| RF Conducted Measurement | MTS-8310      | MWRFTest     | V2.0.0.0    |

## 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. 06, 2020 | Jul. 05, 2021 |
| RF Switching Unit          | Compliance Direction Systems Inc | RSU-A4            | 34403         | Jul. 06, 2020 | Jul. 05, 2021 |
| AMN                        | SCHWARZBECK                      | NNBL 8226-2       | 8226-2/164    | Jul. 06, 2020 | Jul. 05, 2021 |
| LISN                       | Rohde & Schwarz                  | ENV216            | 101131        | Jul. 06, 2020 | Jul. 05, 2021 |
| Radiation Emission Test    |                                  |                   |               |               |               |
| Equipment                  | Manufacturer                     | Model No.         | Serial No.    | Last Cal.     | Cal. Due Date |
| Spectrum Analyzer          | Agilent                          | E4407B            | MY45106456    | Jul. 06, 2020 | Jul. 05, 2021 |
| EMI Test Receiver          | Rohde & Schwarz                  | ESPI              | 100010/007    | Jul. 06, 2020 | Jul. 05, 2021 |
| Spectrum Analyzer          | Rohde & Schwarz                  | FSV40-N           | 102197        | Jul. 06, 2020 | Jul. 05, 2021 |
| Bilog Antenna              | ETS-LINDGREN                     | 3142E             | 00117537      | Mar.01, 2020  | Feb. 28, 2021 |
| Horn Antenna               | ETS-LINDGREN                     | 3117              | 00143207      | Mar.01, 2020  | Feb. 28, 2022 |
| Horn Antenna               | ETS-LINDGREN                     | BBHA 9170         | BBHA9170582   | Mar.01, 2020  | Feb. 28, 2022 |
| Loop Antenna               | SCHWARZBECK                      | FMZB 1519 B       | 1519B-059     | Jul. 06, 2020 | Jul. 05, 2021 |
| Pre-amplifier              | Sonoma                           | 310N              | 185903        | Mar.01, 2020  | Feb. 28, 2021 |
| Pre-amplifier              | HP                               | 8449B             | 3008A00849    | Mar.01, 2020  | Feb. 28, 2021 |
| Pre-amplifier              | SKET                             | LNPA_1840G-50     | SK201904032   | Mar.01, 2020  | Feb. 28, 2021 |
| Cable                      | HUBER+SUHNER                     | 100               | SUCOFLEX      | Mar.01, 2020  | Feb. 28, 2021 |
| 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. 06, 2020 | Jul. 05, 2021 |
| Spectrum Analyzer          | Rohde & Schwarz                  | ESCI              | 100010/007    | Jul. 06, 2020 | Jul. 05, 2021 |
| MXA Signal Analyzer        | Agilent                          | N9020A            | MY49100060    | Jul. 06, 2020 | Jul. 05, 2021 |
| Vector Signal Generator    | Agilent                          | N5182A            | MY50141294    | Mar.01, 2020  | Feb. 28, 2021 |
| Analog Signal Generator    | Agilent                          | N5181A            | MY50141953    | Mar.01, 2020  | Feb. 28, 2021 |
| RF Power Sensor            | DARE!! Instruments               | RadiPowerRPR3006W | 17I00015SNO26 | Mar.01, 2020  | Feb. 28, 2021 |
|                            | DARE!! Instruments               | RadiPowerRPR3006W | 17I00015SNO29 | Jul. 06, 2020 | Jul. 05, 2021 |
|                            | DARE!! Instruments               | RadiPowerRPR3006W | 17I00015SNO31 | Mar.01, 2020  | Feb. 28, 2021 |
|                            | DARE!! Instruments               | RadiPowerRPR3006W | 17I00015SNO33 | Mar.01, 2020  | Feb. 28, 2021 |

## 5. Conducted Emission Test

### 5.1 Test Standard and Limit

#### 5.1.1 Test Standard

FCC Part 15.207

#### 5.1.2 Test Limit

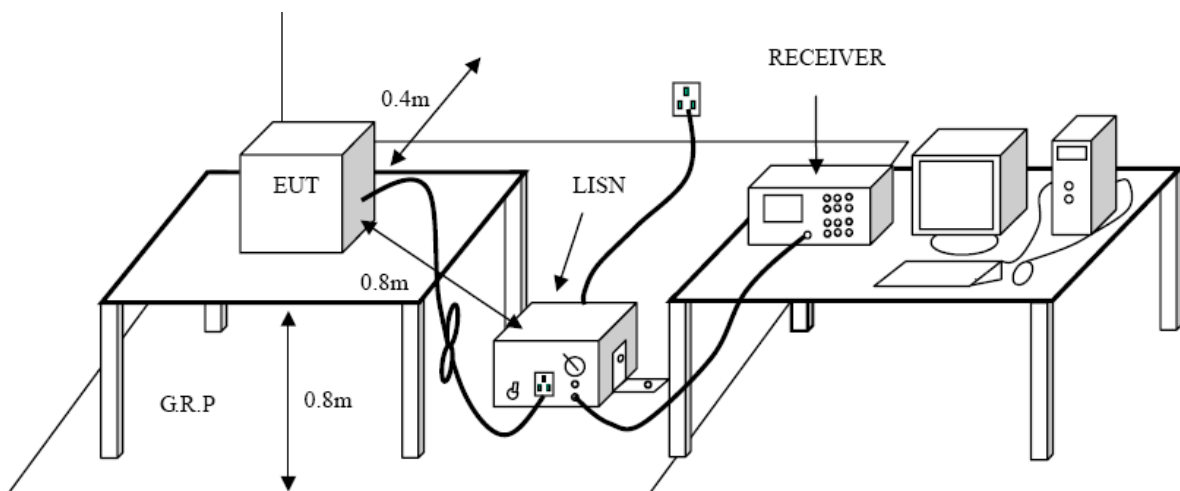
**Conducted Emission Test Limit**

| Frequency     | Maximum RF Line Voltage (dB $\mu$ V) |               |
|---------------|--------------------------------------|---------------|
|               | 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

- (1) 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.
- (2) 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.
- (3) 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.
- (4) LISN at least 80 cm from nearest part of EUT chassis.
- (5) The bandwidth of EMI test receiver is set at 9kHz, 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

#### 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                             |

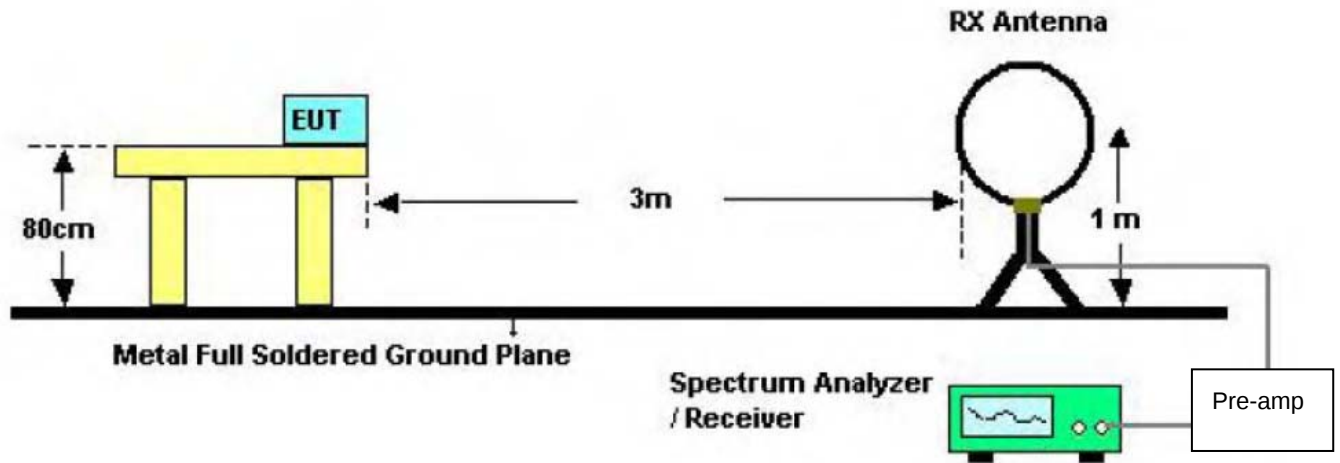
**Radiated Emission Limit (Above 1000MHz)**

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

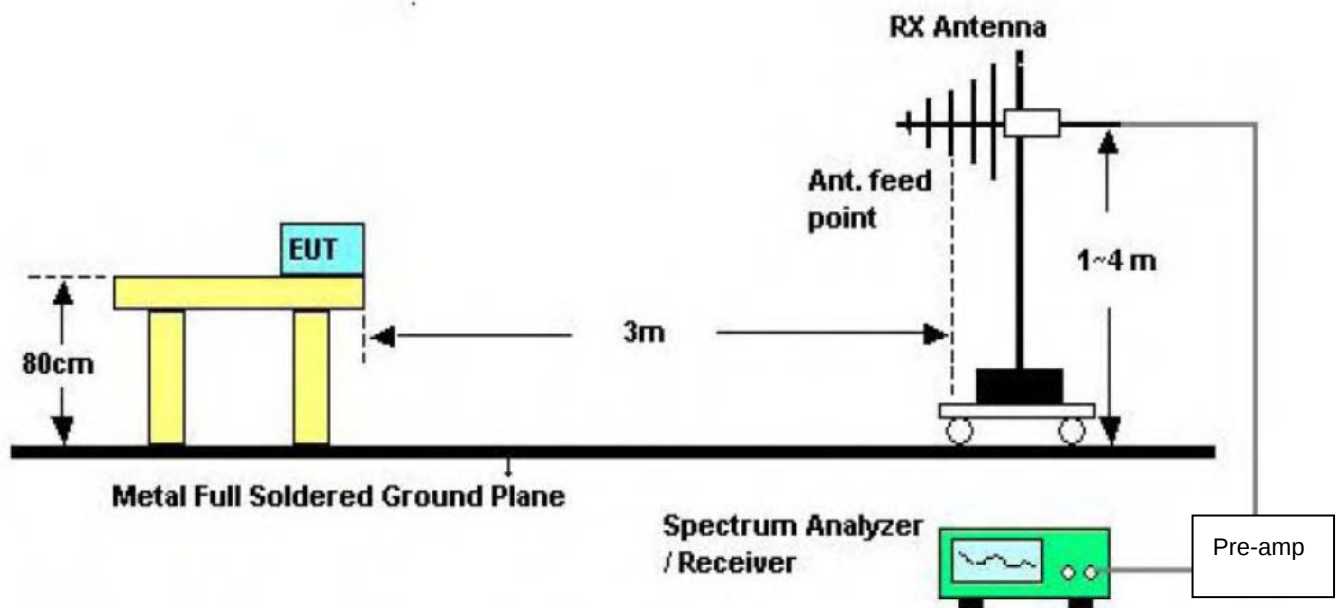
**Note:**

- (1) The tighter limit applies at the band edges.
- (2) Emission Level(dBuV/m)=20log Emission Level(uV/m)

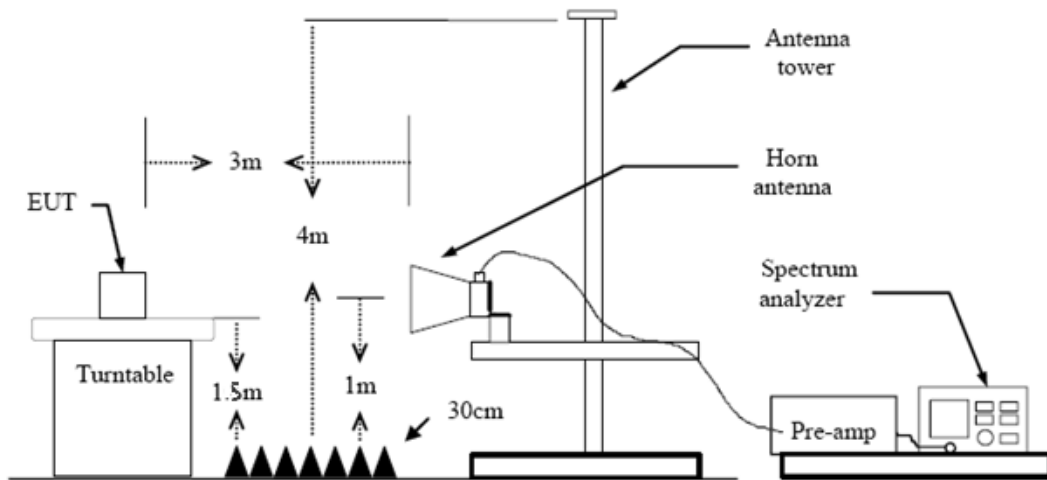
## 6.2 Test Setup



Below 30MHz Test Setup



Below 1000MHz Test Setup



Above 1GHz Test Setup

### 6.3 Test Procedure

- (1) Measurements at frequency above 1GHz. The EUT was placed on a rotating 1.5m 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 RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.
- (2) Measurements at frequency 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 RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.
- (3) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.
- (4) 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.
- (5) 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.
- (6) Testing frequency range below 1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection.
- (7) 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.
- (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.

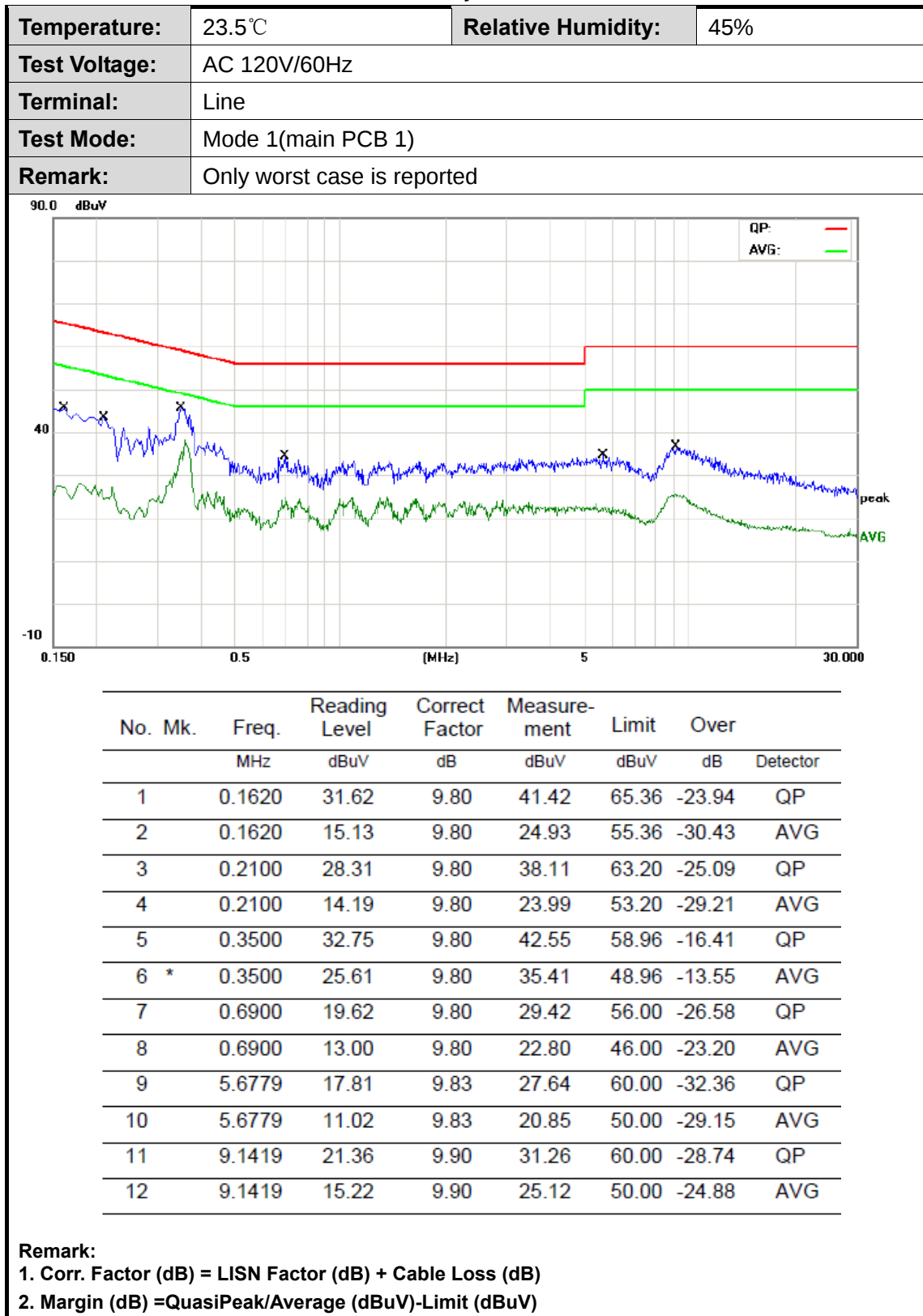
#### 6.6 Test Data

Remark: During testing 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.

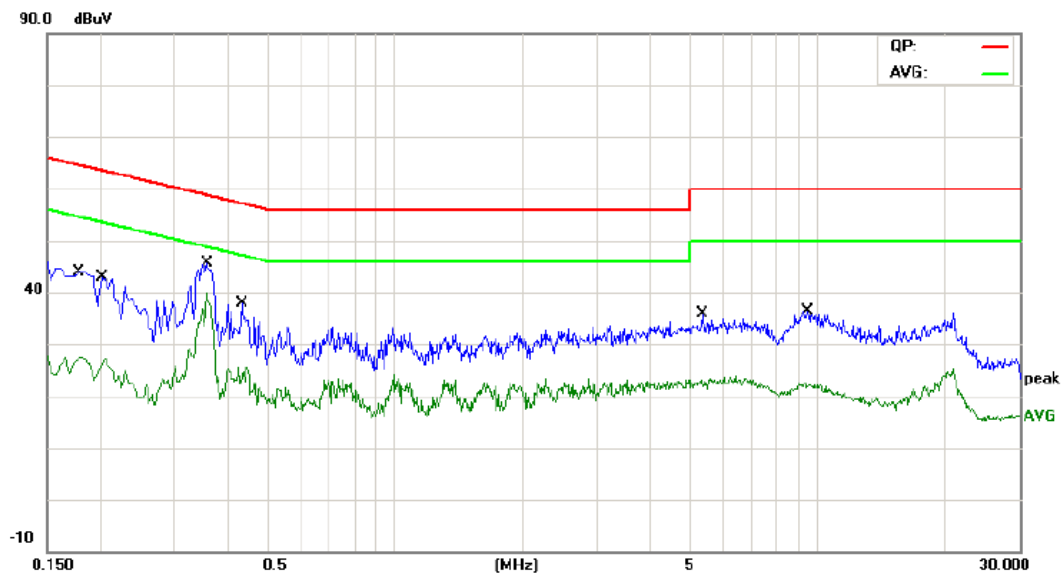
Please refer to the Attachment B.

## Attachment A-- Conducted Emission Test Data

Remark: All channels have been tested and Shows only the worst channels.



|               |                             |                    |     |
|---------------|-----------------------------|--------------------|-----|
| Temperature:  | 23.5℃                       | Relative Humidity: | 45% |
| Test Voltage: | AC 120V/60Hz                |                    |     |
| Terminal:     | Neutral                     |                    |     |
| Test Mode:    | Mode 1(main PCB 1)          |                    |     |
| Remark:       | Only worst case is reported |                    |     |



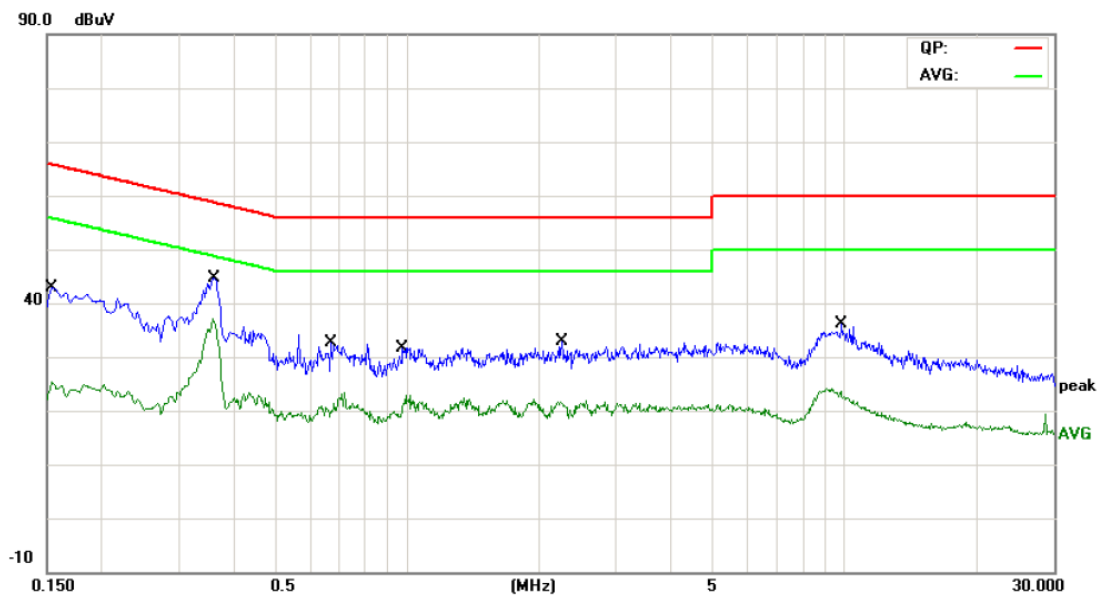
| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV | Limit<br>dBuV | Over<br>dB | Detector |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|------------|----------|
| 1   |     | 0.1780       | 30.09                    | 9.80                    | 39.89                    | 64.57         | -24.68     | QP       |
| 2   |     | 0.1780       | 14.80                    | 9.80                    | 24.60                    | 54.57         | -29.97     | AVG      |
| 3   |     | 0.2029       | 29.30                    | 9.80                    | 39.10                    | 63.49         | -24.39     | QP       |
| 4   |     | 0.2029       | 16.02                    | 9.80                    | 25.82                    | 53.49         | -27.67     | AVG      |
| 5   |     | 0.3580       | 33.51                    | 9.80                    | 43.31                    | 58.77         | -15.46     | QP       |
| 6   | *   | 0.3580       | 26.18                    | 9.80                    | 35.98                    | 48.77         | -12.79     | AVG      |
| 7   |     | 0.4340       | 21.84                    | 9.80                    | 31.64                    | 57.18         | -25.54     | QP       |
| 8   |     | 0.4340       | 13.19                    | 9.80                    | 22.99                    | 47.18         | -24.19     | AVG      |
| 9   |     | 5.3500       | 18.30                    | 9.82                    | 28.12                    | 60.00         | -31.88     | QP       |
| 10  |     | 5.3500       | 11.64                    | 9.82                    | 21.46                    | 50.00         | -28.54     | AVG      |
| 11  |     | 9.4700       | 19.88                    | 9.90                    | 29.78                    | 60.00         | -30.22     | QP       |
| 12  |     | 9.4700       | 11.26                    | 9.90                    | 21.16                    | 50.00         | -28.84     | AVG      |

Remark:

1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)

2. Margin (dB) =QuasiPeak/Average (dBuV)-Limit (dBuV)

|               |                             |                    |     |
|---------------|-----------------------------|--------------------|-----|
| Temperature:  | 23.5℃                       | Relative Humidity: | 45% |
| Test Voltage: | AC 120V/60Hz                |                    |     |
| Terminal:     | Line                        |                    |     |
| Test Mode:    | Mode 1(main PCB 2)          |                    |     |
| Remark:       | Only worst case is reported |                    |     |



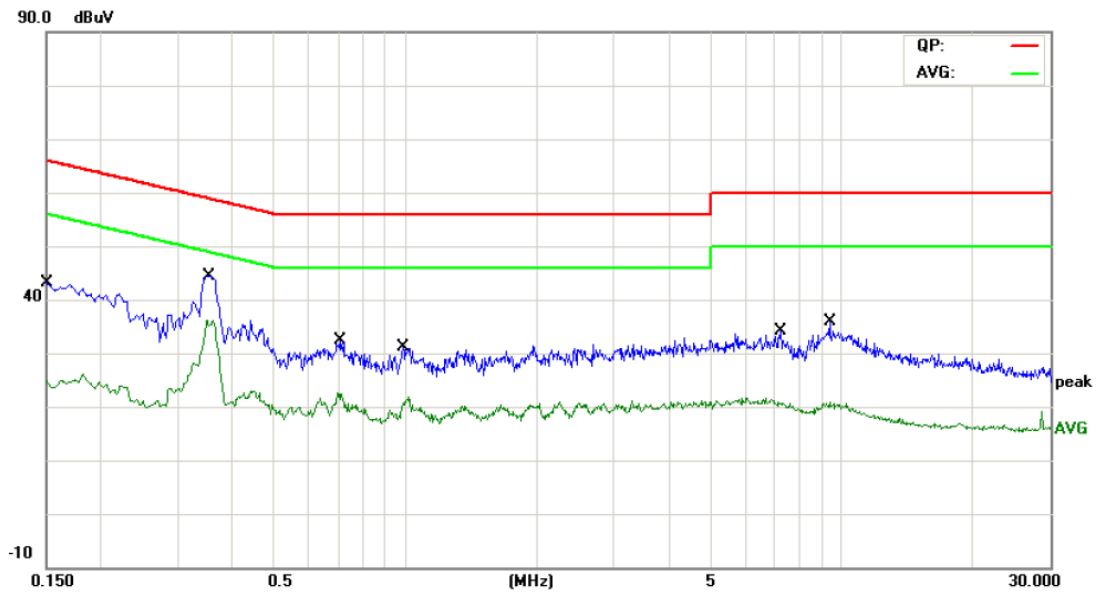
| No. | Mk. | Freq.  | Reading Level | Correct Factor | Measurement | Limit | Over   |          |
|-----|-----|--------|---------------|----------------|-------------|-------|--------|----------|
|     |     | MHz    | dBuV          | dB             | dBuV        | dBuV  | dB     | Detector |
| 1   |     | 0.1539 | 29.17         | 9.70           | 38.87       | 65.78 | -26.91 | QP       |
| 2   |     | 0.1539 | 13.49         | 9.70           | 23.19       | 55.78 | -32.59 | AVG      |
| 3   |     | 0.3620 | 31.23         | 9.70           | 40.93       | 58.68 | -17.75 | QP       |
| 4   | *   | 0.3620 | 25.79         | 9.70           | 35.49       | 48.68 | -13.19 | AVG      |
| 5   |     | 0.6700 | 14.55         | 9.70           | 24.25       | 56.00 | -31.75 | QP       |
| 6   |     | 0.6700 | 8.79          | 9.70           | 18.49       | 46.00 | -27.51 | AVG      |
| 7   |     | 0.9780 | 16.08         | 9.79           | 25.87       | 56.00 | -30.13 | QP       |
| 8   |     | 0.9780 | 10.03         | 9.79           | 19.82       | 46.00 | -26.18 | AVG      |
| 9   |     | 2.2500 | 15.78         | 9.75           | 25.53       | 56.00 | -30.47 | QP       |
| 10  |     | 2.2500 | 11.13         | 9.75           | 20.88       | 46.00 | -25.12 | AVG      |
| 11  |     | 9.8380 | 18.73         | 9.80           | 28.53       | 60.00 | -31.47 | QP       |
| 12  |     | 9.8380 | 12.25         | 9.80           | 22.05       | 50.00 | -27.95 | AVG      |

Remark:

1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)

2. Margin (dB) = QuasiPeak/Average (dBuV) - Limit (dBuV)

|               |                             |                    |     |
|---------------|-----------------------------|--------------------|-----|
| Temperature:  | 23.5℃                       | Relative Humidity: | 45% |
| Test Voltage: | AC 120V/60Hz                |                    |     |
| Terminal:     | Neutral                     |                    |     |
| Test Mode:    | Mode 1(main PCB 2)          |                    |     |
| Remark:       | Only worst case is reported |                    |     |



| No. | Mk. | Freq.  | Reading | Correct | Measure- | Limit | Over   |          |
|-----|-----|--------|---------|---------|----------|-------|--------|----------|
|     |     | MHz    | Level   | Factor  | ment     |       |        | Detector |
|     |     |        | dBuV    | dB      | dBuV     | dBuV  | dB     |          |
| 1   |     | 0.1500 | 29.07   | 9.80    | 38.87    | 65.99 | -27.12 | QP       |
| 2   |     | 0.1500 | 13.04   | 9.80    | 22.84    | 55.99 | -33.15 | AVG      |
| 3   |     | 0.3540 | 31.49   | 9.80    | 41.29    | 58.87 | -17.58 | QP       |
| 4   | *   | 0.3540 | 25.31   | 9.80    | 35.11    | 48.87 | -13.76 | AVG      |
| 5   |     | 0.7100 | 16.98   | 9.80    | 26.78    | 56.00 | -29.22 | QP       |
| 6   |     | 0.7100 | 11.74   | 9.80    | 21.54    | 46.00 | -24.46 | AVG      |
| 7   |     | 0.9860 | 15.58   | 9.80    | 25.38    | 56.00 | -30.62 | QP       |
| 8   |     | 0.9860 | 9.51    | 9.80    | 19.31    | 46.00 | -26.69 | AVG      |
| 9   |     | 7.2140 | 15.73   | 9.90    | 25.63    | 60.00 | -34.37 | QP       |
| 10  |     | 7.2140 | 10.14   | 9.90    | 20.04    | 50.00 | -29.96 | AVG      |
| 11  |     | 9.3660 | 17.46   | 9.90    | 27.36    | 60.00 | -32.64 | QP       |
| 12  |     | 9.3660 | 9.69    | 9.90    | 19.59    | 50.00 | -30.41 | 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

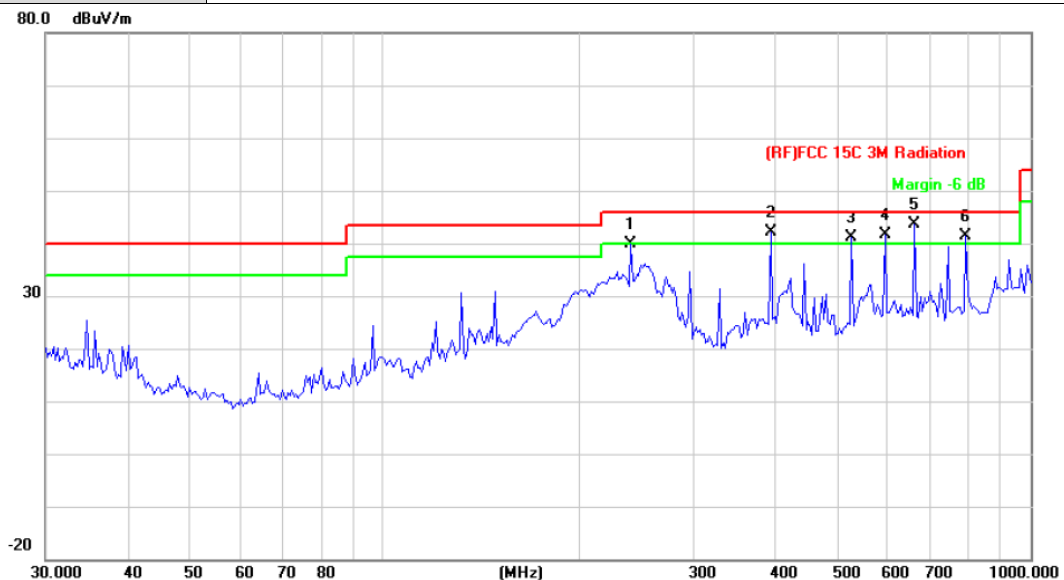
### 9KHz~150KHz

From 9KHz to 30MHz: Conclusion: PASS

Note: The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

### 30MHz~1GHz

|               |                                |                    |     |
|---------------|--------------------------------|--------------------|-----|
| Temperature:  | 23.5℃                          | Relative Humidity: | 40% |
| Test Voltage: | AC 120V/60HZ                   |                    |     |
| Ant. Pol.     | Horizontal                     |                    |     |
| Test Mode:    | TX B Mode 2412MHz (main PCB 1) |                    |     |
| Remark:       | Only worst case is reported.   |                    |     |



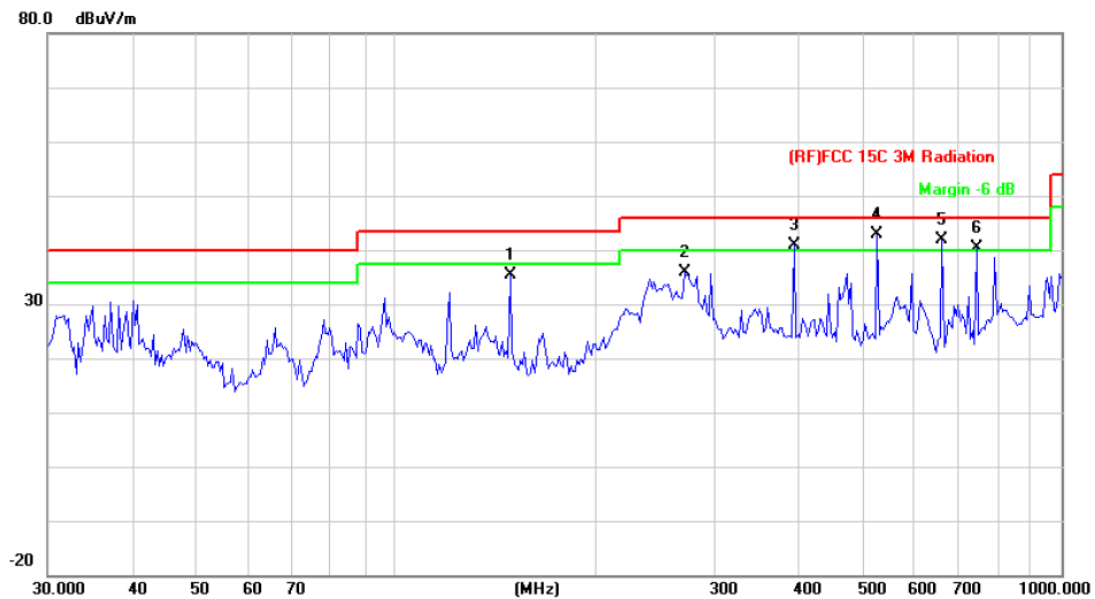
| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB/m | Measure-<br>ment<br>dBuV/m | Limit<br>dBuV/m | Over<br>dB | Detector |
|-----|-----|--------------|--------------------------|---------------------------|----------------------------|-----------------|------------|----------|
| 1   |     | 240.8303     | 57.54                    | -17.72                    | 39.82                      | 46.00           | -6.18      | QP       |
| 2   | !   | 396.2414     | 54.60                    | -12.48                    | 42.12                      | 46.00           | -3.88      | QP       |
| 3   | !   | 528.2458     | 50.82                    | -9.60                     | 41.22                      | 46.00           | -4.78      | QP       |
| 4   | !   | 595.1327     | 50.05                    | -8.37                     | 41.68                      | 46.00           | -4.32      | QP       |
| 5   | *   | 661.1504     | 51.25                    | -7.70                     | 43.55                      | 46.00           | -2.45      | QP       |
| 6   | !   | 793.3958     | 47.11                    | -5.78                     | 41.33                      | 46.00           | -4.67      | QP       |

\*: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:  | 23.5°C                         | Relative Humidity: | 40% |
| Test Voltage: | AC 120V/60HZ                   |                    |     |
| Ant. Pol.     | Vertical                       |                    |     |
| Test Mode:    | TX B Mode 2412MHz (main PCB 1) |                    |     |
| Remark:       | Only worst case is reported.   |                    |     |



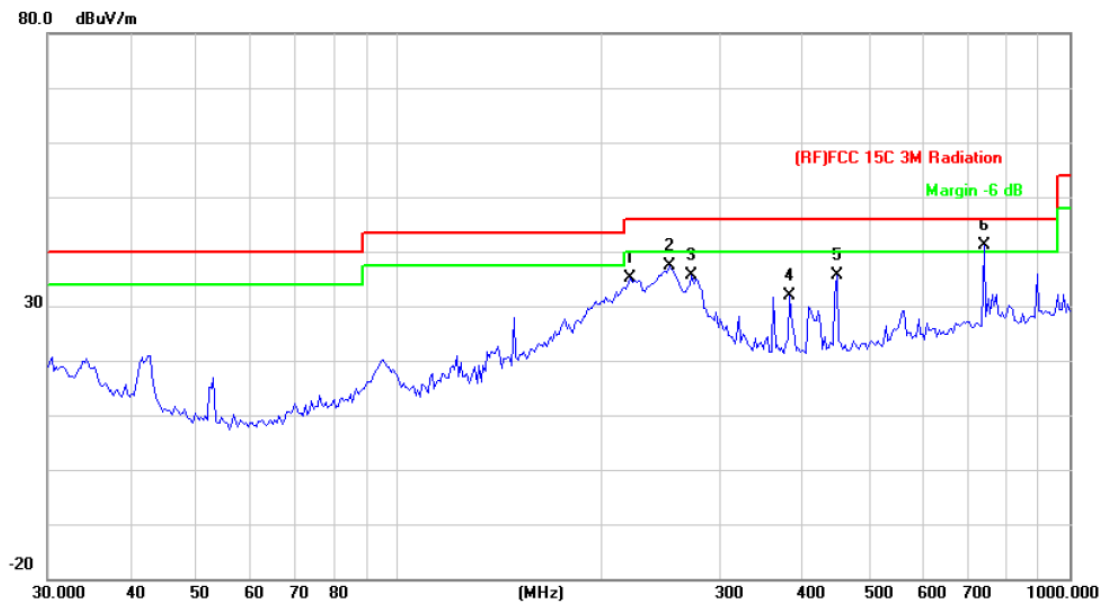
| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB/m | Measure-<br>ment<br>dBuV/m | Limit<br>dBuV/m | Over<br>dB | Detector |
|-----|-----|--------------|--------------------------|---------------------------|----------------------------|-----------------|------------|----------|
| 1   |     | 148.4410     | 56.86                    | -21.51                    | 35.35                      | 43.50           | -8.15      | QP       |
| 2   |     | 271.3245     | 52.74                    | -16.82                    | 35.92                      | 46.00           | -10.08     | QP       |
| 3   | !   | 396.2414     | 53.45                    | -12.48                    | 40.97                      | 46.00           | -5.03      | QP       |
| 4   | *   | 528.2458     | 52.43                    | -9.60                     | 42.83                      | 46.00           | -3.17      | QP       |
| 5   | !   | 661.1504     | 49.49                    | -7.70                     | 41.79                      | 46.00           | -4.21      | QP       |
| 6   | !   | 744.8660     | 47.06                    | -6.62                     | 40.44                      | 46.00           | -5.56      | QP       |

\*: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:  | 23.5°C                         | Relative Humidity: | 40% |
| Test Voltage: | AC 120V/60HZ                   |                    |     |
| Ant. Pol.     | Horizontal                     |                    |     |
| Test Mode:    | TX B Mode 2412MHz (main PCB 2) |                    |     |
| Remark:       | Only worst case is reported.   |                    |     |



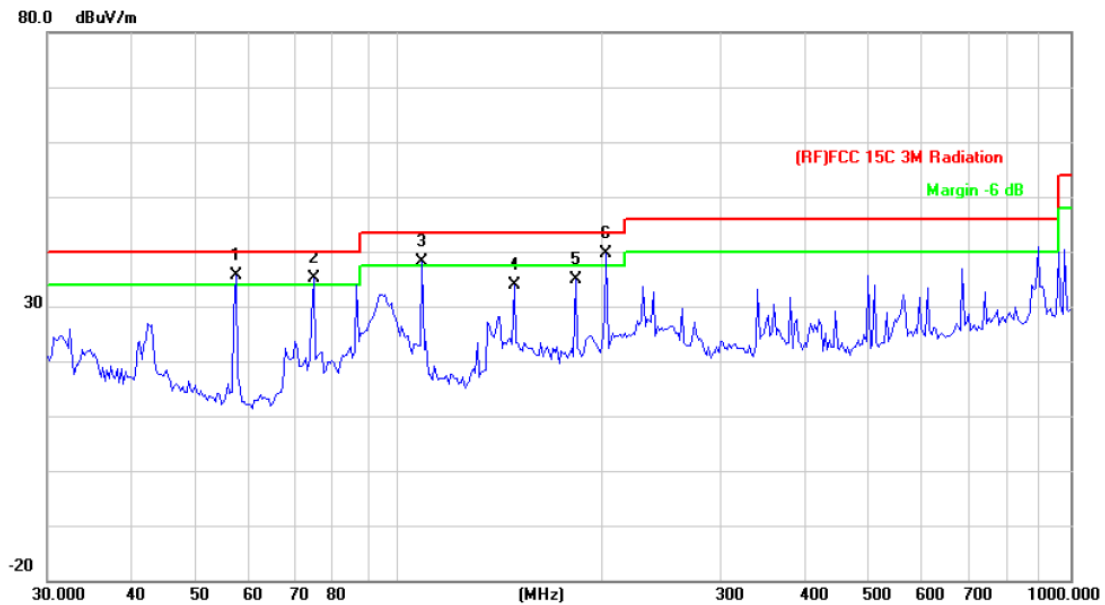
| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB/m | Measure-<br>ment<br>dBuV/m | Limit<br>dBuV/m | Over<br>dB | Detector |
|-----|-----|--------------|--------------------------|---------------------------|----------------------------|-----------------|------------|----------|
| 1   |     | 221.3921     | 53.97                    | -18.78                    | 35.19                      | 46.00           | -10.81     | QP       |
| 2   |     | 252.9482     | 54.48                    | -17.16                    | 37.32                      | 46.00           | -8.68      | QP       |
| 3   |     | 273.2341     | 52.42                    | -16.79                    | 35.63                      | 46.00           | -10.37     | QP       |
| 4   |     | 382.5879     | 45.06                    | -13.12                    | 31.94                      | 46.00           | -14.06     | QP       |
| 5   |     | 449.5558     | 47.53                    | -11.94                    | 35.59                      | 46.00           | -10.41     | QP       |
| 6   | *   | 744.8661     | 47.76                    | -6.62                     | 41.14                      | 46.00           | -4.86      | QP       |

\*: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:  | 23.5°C                         | Relative Humidity: | 40% |
| Test Voltage: | AC 120V/60HZ                   |                    |     |
| Ant. Pol.     | Vertical                       |                    |     |
| Test Mode:    | TX B Mode 2412MHz (main PCB 2) |                    |     |
| Remark:       | Only worst case is reported.   |                    |     |



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB/m | Measure-<br>ment<br>dBuV/m | Limit<br>dBuV/m | Over<br>dB | Detector |
|-----|-----|--------------|--------------------------|---------------------------|----------------------------|-----------------|------------|----------|
| 1   | !   | 57.1914      | 59.62                    | -23.88                    | 35.74                      | 40.00           | -4.26      | QP       |
| 2   | !   | 74.6568      | 58.13                    | -22.96                    | 35.17                      | 40.00           | -4.83      | QP       |
| 3   | !   | 108.2667     | 60.44                    | -22.24                    | 38.20                      | 43.50           | -5.30      | QP       |
| 4   |     | 148.4410     | 55.29                    | -21.51                    | 33.78                      | 43.50           | -9.72      | QP       |
| 5   |     | 183.2005     | 54.84                    | -20.01                    | 34.83                      | 43.50           | -8.67      | QP       |
| 6   | *   | 203.5227     | 59.31                    | -19.76                    | 39.55                      | 43.50           | -3.95      | QP       |

\*: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)

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