# TEST REPORT

**Product Name : Tablet**
**Model Number : LNG-PRN-0137**
**Contains FCC ID : 2AAGE9260NG**

| | | |
|---|---|---|
| Prepared for | : | Chengdu Vantron Technology Co., Ltd. |
| Address | : | No.5 GaoPeng Road, Hi-Tech Zone, Chengdu, SiChuan, ChengDu, China |
| Prepared by | : | EMTEK (SHENZHEN) CO., LTD. |
| Address | : | Building 69, Majialong Industry Zone,Nanshan District, Shenzhen, Guangdong, China |
| | | Tel: (0755) 26954280 |
| | | Fax: (0755) 26954282 |
| Report Number | : | ENS2208310090W00203R |
| Date(s) of Tests | : | January 4, 2023 to January 11, 2023 |
| Date of issue | : | January 11, 2023 |

## TABLE OF CONTENTS

# 1 TEST RESULT CERTIFICATION

| | | |
|---|---|---|
| Applicant | : | Chengdu Vantron Technology Co., Ltd. |
| Address | : | No.5 GaoPeng Road, Hi-Tech Zone, Chengdu, SiChuan, ChengDu, China |
| Manufacturer | : | Chengdu Vantron Technology Co., Ltd. |
| Address | : | No.5 GaoPeng Road, Hi-Tech Zone, Chengdu, SiChuan, ChengDu, China |
| EUT | : | Tablet |
| Model Name | : | LNG-PRN-0137 |
| Trademark | : | Vantron |

Measurement Procedure Used:

| APPLICABLE STANDARDS | |
|---|---|
| **STANDARD** | **TEST RESULT** |
| FCC 47 CFR Part 2, Subpart J<br>FCC 47 CFR Part 15, Subpart C | **PASS** |
| IC RSS-GEN, Issue 5(04-2018)+A1(03-2019)+A2(02-2021)<br>IC RSS-247 Issue 2(02-2017) | **PASS** |

The above equipment was tested by EMTEK(SHENZHEN) CO., LTD. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 2, Part 15.247, IC RSS-247 Issue 2 and IC RSS-GEN, Issue 5.

The test results of this report relate only to the tested sample identified in this report.

Date of Test : January 4, 2023 to January 11, 2023

Prepared by : Luo peiye/Editor

Reviewer : Joe Xia/Supervisor

Approve & Authorized Signer : Lisa Wang/Manager

# Modified History

| Version | Report No. | Revision Date | Summary |
|---|---|---|---|
| Ver.1.0 | ENS2208310090W00203R | / | Original Report |
| | | | |

Note: This change is to request approval for Portable category specific host Tablet, Antenna Type is FPC antenna, According to the requirements for antenna Change in KDB178919 D01 Permissive Change Policy v06, the antenna types are different and the gain value becomes smaller, Radiated Spurious Emission tests were performed to verify RF compliance, and the results of other test items remained unchanged based on the original report:170524-01.TR04

## 2 EUT TECHNICAL DESCRIPTION

| Characteristics | Description |
|---|---|
| **Product:** | Tablet |
| **Model Number:** | LNG-PRN-0137 |
| **Sample Number:** | 2# |
| **IEEE 802.11 WLAN Mode Supported:** | 802.11b<br>802.11g<br>802.11n(20MHz channel bandwidth)<br>802.11n(40MHz channel bandwidth) |
| **Modulation:** | DSSS with DBPSK/DQPSK/CCK for 802.11b;<br>OFDM with BPSK/QPSK/16QAM/64QAM for 802.11g/n; |
| **Operating Frequency Range:** | 2412-2472MHz for 802.11b/g/n(HT20)<br>2422-2462MHz for 802.11n(HT40) |
| **Number of Channels:** | 13 channels for 802.11b/g/n(HT20)<br>11 Channels for 802.11n(HT40) |
| **Antenna Type:** | FPC Antenna |
| **Antenna Gain:** | Antenna 1:1.64dBi<br>Antenna 1:1.64dBi |
| **Power Supply:** | AC 120V/60Hz |
| **Date of Received** | January 4, 2023 |
| **Temperature Range** | 0-40℃ |

*Note: for more details, please refer to the User's manual of the EUT.*

## 3 SUMMARY OF TEST RESULT

| FCC PartClause | IC Part Clause | Test Parameter | Verdict | Remark |
|---|---|---|---|---|
| 15.247(d)<br>15.209<br>15.205 | RSS-Gen 8.9<br>RSS-Gen 8.10<br>RSS-Gen 6.13<br>RSS-247 3.3<br>RSS-2475.5 | Radiated Spurious Emission | PASS | |
| NOTE1:N/A (Not Applicable)<br>NOTE2:According to FCC OET KDB 558074, the report use radiated measurements in the restricted frequency bands. In addition, the radiated test is also performed to ensure the emissions emanating from the device cabinet also comply with the applicable limits. | | | | |

RELATED SUBMITTAL(S) / GRANT(S):

This submittal(s) (test report) is intended for **Contains FCC ID:2AAGE9260NG** filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rules.

# 4 TEST METHODOLOGY

## 4.1 GENERAL DESCRIPTION OF APPLIED STANDARDS

According to its specifications, the EUT must comply with the requirements of the following standards:
FCC 47 CFR Part 2, Subpart J
FCC 47 CFR Part 15, Subpart C
IC RSS-GEN, Issue 5(04-2018)+A1(03-2019)+A2(02-2021)
IC RSS-247 Issue 2(02-2017)
FCC KDB 558074 D01 15.247 Meas Guidance v05r02
FCC KDB 662911 D01 Multiple Transmitter Output v02r01

## 4.2 MEASUREMENT EQUIPMENT USED

**Conducted Emission Test Equipment**

| Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|---|---|---|---|---|---|
| EMI Test Receiver | Rohde & Schwarz | ESCI | 101384 | 2022/5/14 | 1Year |
| AMN | Rohde & Schwarz | ENV216 | 101161 | 2022/5/14 | 1Year |
| AMN | Kyoritsu | KNW-407 | 8-1492-9 | 2022/5/15 | 1Year |

**For Spurious Emissions Test**

| Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|---|---|---|---|---|---|
| Pre-Amplifier | HP | 8447F | 2944A07999 | 2022/5/14 | 1Year |
| EMI Test Receiver | Rohde & Schwarz | ESCI | 101414 | 2022/5/14 | 1Year |
| Bilog Antenna | Schwarzbeck | VULB9163 | 712 | 2022/7/5 | 2 Year |
| Horn antenna | Schwarzbeck | BBHA9120D | 9120D-1178 | 2022/7/4 | 2 Year |
| Pre-Amplifie | Lunar EM | LNA1G18-48 | J101113101000 1 | 2022/5/15 | 1Year |
| Spectrum Analyzer | Rohde & Schwarz | FSV40 | 100967 | 2022/5/14 | 1Year |
| Horn antenna | Schwarzbeck | BBHA9170 | 9170-399 | 2021/6/12 | 2 Year |
| Cable | H+B | NmSm-05-C15052 | N/A | 2022/5/15 | 1 Year |
| Cable | H+B | NmSm-2-C15201 | N/A | 2022/5/15 | 1 Year |
| Cable | H+B | NmNm-7-C15702 | N/A | 2022/5/15 | 1 Year |
| Cable | H+B | SAC-40G-1 | 414 | 2022/5/15 | 1 Year |
| Cable | H+B | SUCOFLEX104 | MY14871/4 | 2022/5/15 | 1 Year |
| Cable | H+B | BLU18A-NmSm-650 0 | D8501 | 2022/5/15 | 1 Year |
| Band reject Filter(50dB) | WI/DE | WRCGV-2400(2400-2485MHz) | 2 | 2022/5/15 | 1 Year |

**For other test items:**

| Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|---|---|---|---|---|---|
| Signal Analyzer | Agilent | N9010A | MY53470879 | 2022/5/14 | 1Year |
| Vector Signal Generater | Agilent | N5182B | MY53050878 | 2022/5/14 | 1Year |
| Analog Signal Generator | Agilent | N5171B | MY53050553 | 2022/5/14 | 1Year |
| Power Meter | Agilent | PS-X10-100 | \ | 2022/5/15 | 1Year |
| Blocking Box | THEDA | AD211 | TW5451140 | 2022/5/14 | 1Year |

| | | | | | |
|---|---|---|---|---|---|
| Switchgroup | THEDA | ETF-025(VASC6) | TW5451008 | N/A | N/A |
| MIMO Matrix Switch | THEDA | 4P5TM18 | TW5451009 | N/A | N/A |
| Temperature&Humidity Chamber | ESPEC | EL-02KA | 12107166 | 2022/7/3 | 1 Year |

### 4.3 DESCRIPTION OF TEST MODES

The EUT has been tested under its typical operating condition.
The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

Test of channel included the lowest and middle and highest frequency to perform the test, then record on this report.

Those data rates (802.11b: 1 Mbps; 802.11g: 6 Mbps; 802.11n (HT20): MCS0; 802.11n (HT40): MCS0;) were used for all test.

Pre-defined engineering program for regulatory testing used to control the EUT for staying in continuous transmitting and receiving mode is programmed.
Frequency and Channel list for 802.11 b/g/n(HT20):

| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|---|---|
| 1 | 2412 | 5 | 2432 | 9 | 2452 |
| 2 | 2417 | 6 | 2437 | 10 | 2457 |
| 3 | 2422 | 7 | 2442 | 11 | 2462 |
| 4 | 2427 | 8 | 2447 | 12 | 2467 |
| 13 | 2472 | | | | |

Frequency and Channel list for 802.11n(HT40):

| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|---|---|
| 3 | 2422 | 6 | 2437 | 9 | 2452 |
| 4 | 2427 | 7 | 2442 | 10 | 2457 |
| 5 | 2432 | 8 | 2447 | 11 | 2462 |

Test Frequency and Channel for 802.11 b/g/n(HT20):

| Lowest Frequency | | Middle Frequency | | Highest Frequency | |
|---|---|---|---|---|---|
| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 1 | 2412 | 7 | 2442 | 11 | 2462 |

Test out of band emissions：

| Lowest Frequency | | Middle Frequency | | Highest Frequency | |
|---|---|---|---|---|---|
| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 1 | 2412 | / | / | 11 | 2462 |
| | | | | 12 | 2467 |
| | | | | 13 | 2472 |

Test Frequency and channel for 802.11n(HT40):

| Lowest Frequency | | Middle Frequency | | Highest Frequency | |
|---|---|---|---|---|---|
| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 3 | 2422 | 6 | 2437 | 9 | 2452 |
| | | | | | |
| | | | | | |

Test out of band emissions：

| Lowest Frequency | | Middle Frequency | | Highest Frequency | |
|---|---|---|---|---|---|
| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 3 | 2422 | / | / | 9 | 2452 |
| | | | | 11 | 2462 |
| | | | | | |

# 5 FACILITIES AND ACCREDITATIONS

## 5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at:

EMTEK (Shenzhen) Co., Ltd.
Building 69, Majialong Industry Zone District, Nanshan District, Shenzhen, China
The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

## 5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with preselectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, “Radio Interference Measuring Apparatus and Measurement Methods.”

## 5.3 LABORATORY ACCREDITATIONS AND LISTINGS

| Site Description | | |
|---|---|---|
| EMC Lab. | : | **Accredited by CNAS**<br>The Certificate Registration Number is L2291.<br>The Laboratory has been assessed and proved to be in compliance with CNAS-CL01 (identical to ISO/IEC 17025:2017)<br><br>**Accredited by FCC**<br>Designation Number: CN1204<br>Test Firm Registration Number: 882943<br><br>**Accredited by A2LA**<br>The Certificate Number is 4321.01.<br><br>Accredited by Industry Canada<br>The Conformity Assessment Body Identifier is CN0008 |
| Name of Firm | : | EMTEK (SHENZHEN) CO., LTD. |
| Site Location | : | Building 69, Majialong Industry Zone,<br>Nanshan District, Shenzhen, Guangdong, China |

# 6 TEST SYSTEM UNCERTAINTY

The following measurement uncertainty levels have been estimated for tests performed on the apparatus:

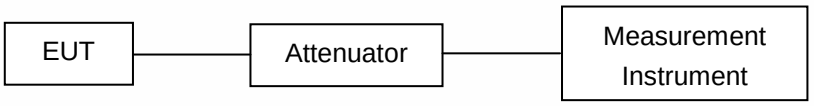
| Test Parameter | Measurement Uncertainty |
|---|---|
| Radio Frequency | ±1x10^-5 |
| Maximum Peak Output Power Test | ±1.0dB |
| Conducted Emissions Test | ±2.0dB |
| Radiated Emission Test | ±2.0dB |
| Power Density | ±2.0dB |
| Occupied Bandwidth Test | ±1.0dB |
| Band Edge Test | ±3dB |
| All emission, radiated | ±3dB |
| Antenna Port Emission | ±3dB |
| Temperature | ±0.5℃ |
| Humidity | ±3% |

Measurement Uncertainty for a level of Confidence of 95%

# 7 SETUP OF EQUIPMENT UNDER TEST

## 7.1 RADIO FREQUENCY TEST SETUP 1

The WLAN component's antenna ports(s) of the EUT are connected to the measurement instrument per an appropriate attenuator. The EUT is controlled by PC/software to emit the specified signals for the purpose of measurements.




## 7.2 RADIO FREQUENCY TEST SETUP 2

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.10. The test distance is 3m.The setup is according to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 and CAN/CSA-CEI/IEC CISPR 22.
The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).

Below 30MHz：
The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna (loop antenna). The Antenna should be positioned with its plane vertical at the specified distance from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. The center of the loop shall be 1 m above the ground. For certain applications, the loop antenna plane may also need to be positioned horizontally at the specified distance from the EUT.

Above 30MHz：
The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).

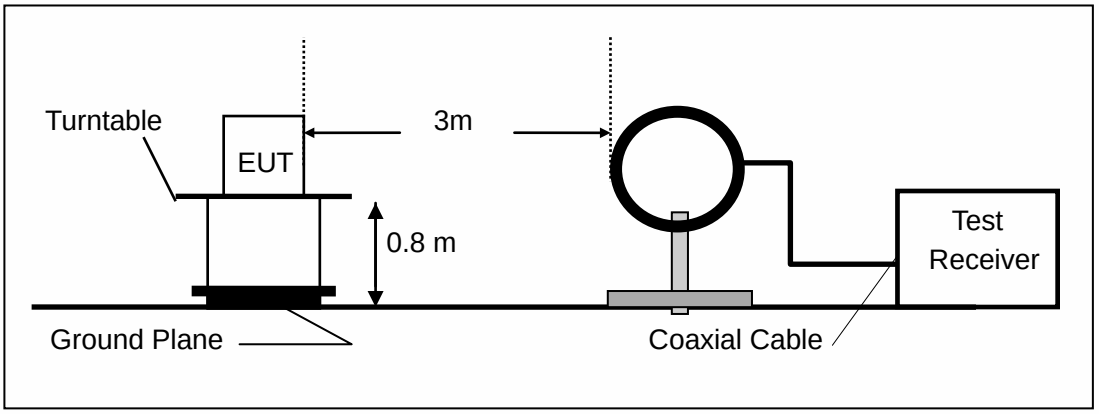
Above 1GHz:
The EUT is placed on a turntable 1.5 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).

Measurements shall be taken, using the following steps, at a test site that has been validated using the procedures of ANSI C63.4 or the latest CISPR 16-1-4 for measurements above 1 GHz, so as to simulate a near free-space environment (see RSS-Gen for applicable versions of ANSI and CISPR standards).
(1) Line the ground plane with absorbers between the transmitter and the receive antenna to minimize reflections. The absorbers used should have a minimum-rated attenuation of 20 dB through the measurement frequency range of interest. The absorbers shall be positioned to replicate the layout used when compliance with the applicable acceptability criterion was achieved, as set forth in the aforementioned standards on site validation.
(2) Set the height of the receive antenna to 1.5 m. The receive antenna must be one that was designed and fabricated to operate over the entire frequency range of interest, for example, an appropriate standard gain horn.
(3) The distance between the receive antenna and the radiating source shall be sufficient in order to ensure far-field conditions.
(4) Mount the transmitter at a height of 1.5 m.
(5) Configure the device under test (DUT) to produce the maximum power spectral density as measured while assessing compliance with Section 6.2.2 (i.e. channel frequency, modulation type and data rate). If the DUT is equipped with a detachable antenna and the antenna is intended for remote installation (i.e.

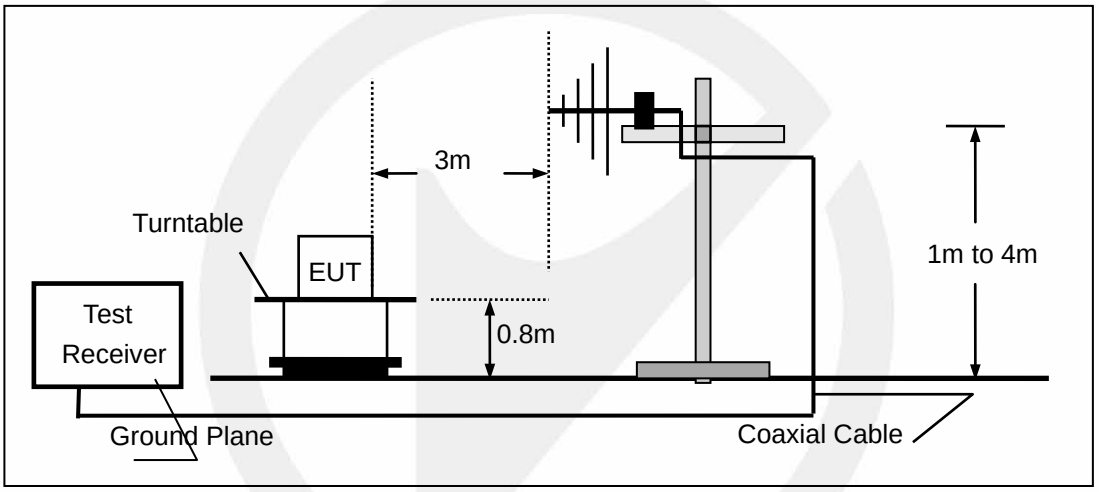
tower-mounted), the DUT may be substituted with a suitable signal generator. The level and frequency settings on the generator shall be set so as to reproduce the maximum power spectral density, measured within a 1 MHz bandwidth, obtained while assessing compliance to Section 6.2.2.
(6) Position the transmitter or the radiating antenna so that elevation pattern measurements can be taken.
(7) Find the 0° reference point in the horizontal plane.
(8) Care should be taken when positioning the receive antenna to avoid cross-polarization. Antennas of known mounting polarization should be assessed with the receive antenna oriented in the same polarity. If the polarization of the transmit antenna is unknown or the transmit antenna can be mounted in either polarization, e.i.r.p. measurements should be performed to find which
mounting polarity provides the highest e.i.r.p. value. Testing shall be carried out with the receive antenna and the DUT mounted in each polarity.
(9) The emission shall be centred on the display of the spectrum analyzer with the following settings:
i. If the power spectral density of the DUT was assessed with a peak detector and the antenna cannot be detached from the DUT, the spectrum analyzer shall be set to a peak detector with a resolution bandwidth and video bandwidth of 1 MHz.
ii. If the power spectral density of the DUT was assessed using a sample detector with power averaging and the antenna cannot be detached from the DUT, the spectrum analyzer shall be set to a sample detector, configured to produce 100 power averages and set with a resolution bandwidth, as well as a video bandwidth of 1 MHz.
iii. If the antenna can be detached from the DUT, a continuous wave (CW) signal equal to that of the power spectral density measurement may be used, the spectrum analyzer shall be set to peak detector with a resolution bandwidth and video bandwidth of 1 MHz.

(10) Rotate the turntable 360° recording the field strength at each step. Throughout the main beam of the antenna, the step size shall be kept to a maximum of 1°.
Once outside the main beam of the antenna, the maximum step size shall be as follows, when compared to the requirements of Section 6.2.2:
i. Between 0° and 8°, maximum step size of 2°;
ii. Between 8° and 40°, maximum step size of 4°;
iii. Between 40° and 45°, maximum step size of 1°;
iv. Between 45° and 90°, maximum step size of 5°.
Once the mask reaches 90°, the mask will be inverted and the step size will follow in the same manner as above.
For the purpose of this procedure, the main beam of the antenna is defined as the 3 dB beamwidth.
(11) Convert the measured field strength values in terms of e.i.r.p. density (dBW/1 MHz) using the following equation:
□ □ □ □ □ □ □ □ e.i.r.p density(dBW/MHz)=10log((E*r)$^2$/30)
E = field strength in V/m
r = measurement distance in metres
(12) Plot the results against the emission mask with reference to the horizontal plane.
(13) Using the plot, the 0° can be rotated to determine the worst-case installation tilt angle.
(14) Testing shall be performed using the highest gain antenna for every antenna type, if applicable.
(15) Antenna type(s), antenna model number(s), and worst-case tilt angle(s) necessary to remain compliant with the elevation mask requirement set forth in Section 6.2.2(3) of RSS-247 shall be clearly indicated in the user manual.
The following figure is an example of a polar elevation mask measured using the Method 1 reference to dBµV/m at 3 m.

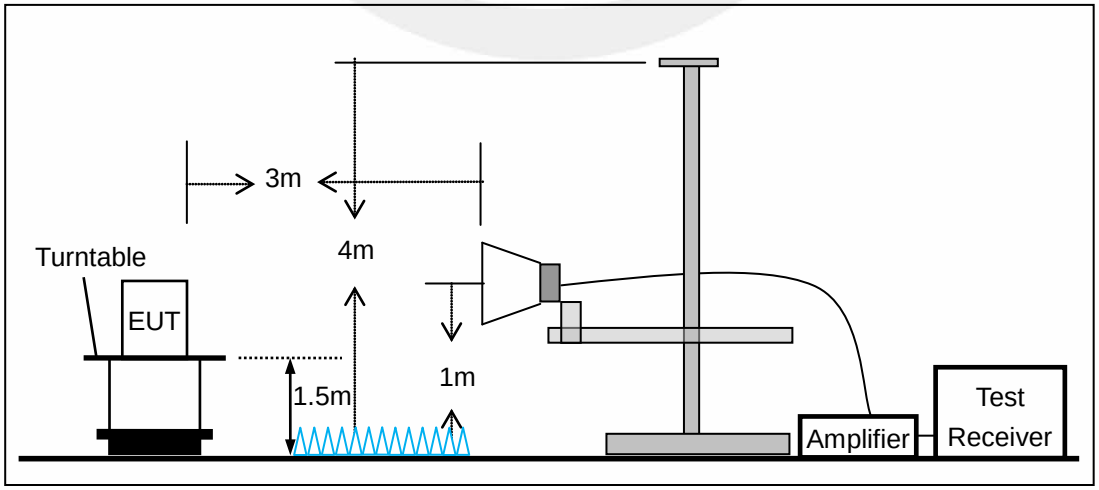
(a) Radiated Emission Test Set-Up, Frequency Below 30MHz




(b) Radiated Emission Test Set-Up, Frequency Below 1000MHz

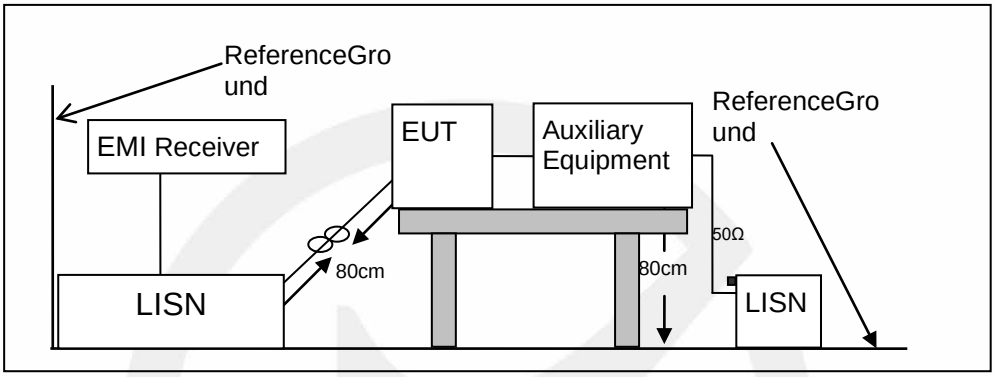



(c) Radiated Emission Test Set-Up, Frequency above 1000MHz

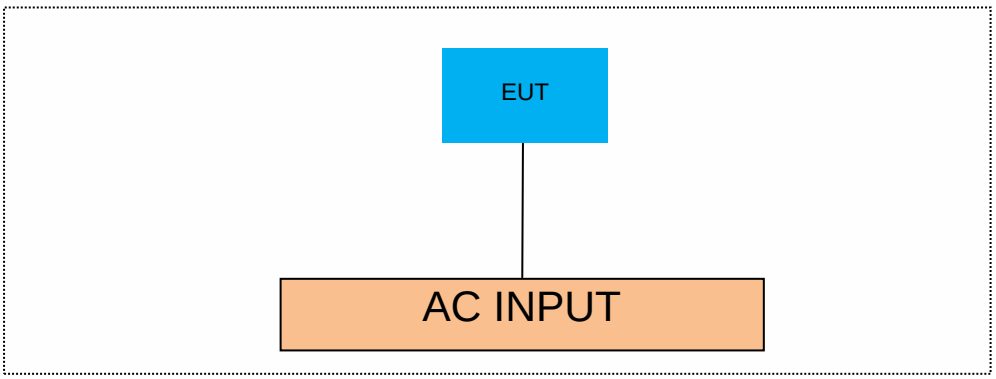


### 7.3 CONDUCTED EMISSION TEST SETUP

The mains cable of the EUT (maybe per AC/DC Adapter) must be connected to LISN. The LISN shall be placed 0.8 m from the boundary of EUT and bonded to a ground reference plane for LISN mounted on top of the ground reference plane. This distance is between the closest points of the LISN and the EUT. All other units of the EUT and associated equipment shall be at least 0.8m from the LISN.
Ground connections, where required for safety purposes, shall be connected to the reference ground point of the LISN and, where not otherwise provided or specified by the manufacturer, shall be of same length as the mains cable and run parallel to the mains connection at a separation distance of not more than 0.8 m.
According to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-Peak and average detector mode.



## 7.4 BLOCK DIAGRAM CONFIGURATION OF TEST SYSTEM




## 7.5 SUPPORT EQUIPMENT

| EUT Cable List and Details | | | |
|---|---|---|---|
| Cable Description | Length (m) | Shielded/Unshielded | With / Without Ferrite |
| / | / | / | / |

| Auxiliary Cable List and Details | | | |
|---|---|---|---|
| Cable Description | Length (m) | Shielded/Unshielded | With / Without Ferrite |
| / | / | / | / |

| Auxiliary Equipment List and Details | | | |
|---|---|---|---|
| Description | Manufacturer | Model | Serial Number |
| / | / | / | / |

***Notes:***

1. *All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.*
2. *Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.*

## 7.6 RADIATED SPURIOUS EMISSION

### 7.6.1 Applicable Standard

According to FCC Part 15.247(d),15.205, 15.209 and KDB 558074 D01 15.247 Meas Guidancev05r02
According to IC RSS-Gen and RSS-247

### 7.6.2 Conformance Limit

According to FCC Part 15.247(d): radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).
According to FCC Part15.205, Restricted bands
According to IC RSS-Gen 8.10: radiated emissions which fall in the restricted bands, must also comply with the radiated emission limits.
According to IC RSS-Gen, Restricted bands

| MHz | MHz | MHz | GHz |
|---|---|---|---|
| 0.090-0.110 | 16.42-16.423 | 399.9-410 | 4.5-5.15 |
| 10.495-0.505 | 16.69475-16.69525 | 608-614 | 5.35-5.46 |
| 2.1735-2.1905 | 16.80425-16.80475 | 960-1240 | 7.25-7.75 |
| 4.125-4.128 | 25.5-25.67 | 1300-1427 | 8.025-8.5 |
| 4.17725-4.17775 | 37.5-38.25 | 1435-1626.5 | 9.0-9.2 |
| 4.20725-4.20775 | 73-74.6 | 1645.5-1646.5 | 9.3-9.5 |
| 6.215-6.218 | 74.8-75.2 | 1660-1710 | 10.6-12.7 |
| 6.26775-6.26825 | 123-138 | 2200-2300 | 14.47-14.5 |
| 8.291-8.294 | 149.9-150.05 | 2310-2390 | 15.35-16.2 |
| 8.362-8.366 | 156.52475-156.52525 | 2483.5-2500 | 17.7-21.4 |
| 8.37625-8.38675 | 156.7-156.9 | 2690-2900 | 22.01-23.12 |
| 8.41425-8.41475 | 162.0125-167.17 | 3260-3267 | 23.6-24.0 |
| 12.29-12.293 | 167.72-173.2 | 3332-3339 | 31.2-31.8 |
| 12.51975-12.52025 | 240-285 | 3345.8-3358 | 36.43-36.5 |
| 12.57675-12.57725 | 322-335.4 | 3600-4400 | (2) |
| 13.36-13.41 | | | |

According toFCC Part15.205the level of any transmitter spurious emission in Restricted bands shall not exceed the level of the emission specified in the following table
According to IC RSS-Gen 8.9, the level of any transmitter spurious emission in Restricted bands shall not exceed the level of the emission specified in the following table

| Restricted Frequency(MHz) | Field Strength (μV/m) | Field Strength (dBμV/m) | Measurement Distance |
|---|---|---|---|
| 0.009-0.490 | 2400/F(KHz) | 20 log (uV/m) | 300 |
| 0.490-1.705 | 24000/F(KHz) | 20 log (uV/m) | 30 |
| 1.705-30 | 30 | 29.5 | 30 |
| 30-88 | 100 | 40 | 3 |
| 88-216 | 150 | 43.5 | 3 |
| 216-960 | 200 | 46 | 3 |
| Above 960 | 500 | 54 | 3 |

### 7.6.3 Test Configuration

Test according to clause 6.2 radio frequency test setup

### 7.6.4 Test Procedure

This test is required for any spurious emission that falls in a Restricted Band, as defined in Section 15.205. It must be performed with the highest gain of each type of antenna proposed for use with the EUT. Use the following spectrum analyzer settings:
For Above 1GHz:
The EUT was placed on a turn table which is 1.5m above ground plane.
Maximum procedure was performed on the highest emissions to ensure EUT compliance.
Span = wide enough to fully capture the emission being measured

RBW = 1 MHz
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold
For Below 1GHz:
The EUT was placed on a turn table which is 0.8m above ground plane.
Maximum procedure was performed on the highest emissions to ensure EUT compliance.
Span = wide enough to fully capture the emission being measured
RBW = 100 kHz for
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold
For Below 30MHz:
The EUT was placed on a turn table which is 0.8m above ground plane.
Maximum procedure was performed on the highest emissions to ensure EUT compliance.
Span = wide enough to fully capture the emission being measured
RBW = 9kHz
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold
For Below 150KHz:
The EUT was placed on a turn table which is 0.8m above ground plane.
Maximum procedure was performed on the highest emissions to ensure EUT compliance.
Span = wide enough to fully capture the emission being measured
RBW = 200Hz
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold
Follow the guidelines in ANSI C63.10 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization, etc. A pre-amp and a high pass filter are required for this test, in order to provide the measuring system with sufficient sensitivity. Allow the trace to stabilize. The peak reading of the emission, after being corrected by the antenna factor, cable loss, pre-amp gain, etc., is the peak field strength, which must comply with the limit. Submit this data.
Now set the VBW to 10 Hz, while maintaining all of the other instrument settings. This peak level, once corrected, must comply with the limit. If the dwell time per channel of the hopping signal is less than 100 ms, then the reading obtained with the 10 Hz VBW may be further adjusted by a “duty cycle correction factor”, derived from 20log(dwell time/100 ms), in an effort to demonstrate compliance with the limit. Submit this data.
Repeat above procedures until all frequency measured was complete.

### 7.6.5 Test Results

| | |
|---|---|
| Temperature: | 26° C |
| Relative Humidity: | 54% |
| ATM Pressure: | 1011 mbar |

■ Spurious Emission below 30MHz(9KHz to 30MHz)

| Freq. (MHz) | Ant.Pol. H/V | Emission Level(dBuV/m) PK | Emission Level(dBuV/m) AV | Limit 3m(dBuV/m) PK | Limit 3m(dBuV/m) AV | Over(dB) PK | Over(dB) AV |
|---|---|---|---|---|---|---|---|
| -- | -- | -- | -- | -- | -- | -- | -- |

Note: the amplitude of spurious emission that is attenuated by more than 20dB below the permissible

limit has no need to be reported.
Distance extrapolation factor =40log(Specific distance/ test distance)( dB);
Limit line=Specific limits(dBuV) + distance extrapolation factor

■ Spurious Emission Above 1GHz(1GHz to 25GHz)
All theantenna(Antenna 1&2)and modes(802.11b/g/n)have been tested and the worst(Antenna 1,802.11n(HT20)) resultrecorded was report as below:

Test mode: 802.11n(HT20) Frequency: Channel 1: 2412MHz

| Freq. (MHz) | Ant.Pol. | Emission Level(dBuV/m) | | Limit 3m(dBuV/m) | | Over(dB) | |
|---|---|---|---|---|---|---|---|
| | H/V | PK | AV | PK | AV | PK | AV |
| 11308.12 | V | 60.52 | 46.82 | 74.00 | 54.00 | -13.48 | -7.18 |
| 14647.5 | V | 63.62 | 48.46 | 74.00 | 54.00 | -10.38 | -5.54 |
| 17626.87 | V | 69.25 | 50.14 | 74.00 | 54.00 | -4.75 | -3.86 |
| 11491.87 | H | 60.66 | 47.43 | 74.00 | 54.00 | -13.34 | -6.57 |
| 14617.5 | H | 63.26 | 49.41 | 74.00 | 54.00 | -10.74 | -4.59 |
| 17636.25 | H | 68.86 | 49.84 | 74.00 | 54.00 | -5.14 | -4.16 |

Test mode: 802.11n(HT20) Frequency: Channel 7: 2442MHz

| Freq. (MHz) | Ant.Pol. | Emission Level(dBuV/m) | | Limit 3m(dBuV/m) | | Over(dB) | |
|---|---|---|---|---|---|---|---|
| | H/V | PK | AV | PK | AV | PK | AV |
| 11319.37 | V | 60.04 | 46.10 | 74.00 | 54.00 | -13.96 | -7.90 |
| 14553.75 | V | 63.72 | 48.65 | 74.00 | 54.00 | -10.28 | -5.35 |
| 17983.12 | V | 69.64 | 49.21 | 74.00 | 54.00 | -4.36 | -4.79 |
| 11458.12 | H | 59.81 | 46.31 | 74.00 | 54.00 | -14.19 | -25.50 |
| 14626.87 | H | 63.63 | 49.24 | 74.00 | 54.00 | -10.37 | -19.20 |
| 17600.62 | H | 68.93 | 50.32 | 74.00 | 54.00 | -5.07 | -8.80 |

Test mode: 802.11n(HT20) Frequency: Channel 11: 2462MHz

| Freq. (MHz) | Ant.Pol. | Emission Level(dBuV/m) | | Limit 3m(dBuV/m) | | Over(dB) | |
|---|---|---|---|---|---|---|---|
| | H/V | PK | AV | PK | AV | PK | AV |
| 11505 | V | 60.49 | 46.78 | 74.00 | 54.00 | -13.51 | -7.22 |
| 14647.5 | V | 64.47 | 49.09 | 74.00 | 54.00 | -9.53 | -4.91 |
| 17625 | V | 69.78 | 50.18 | 74.00 | 54.00 | -4.22 | -3.82 |
| 11540.62 | H | 60.18 | 46.72 | 74.00 | 54.00 | -13.82 | -7.28 |
| 14626.87 | H | 63.51 | 49.31 | 74.00 | 54.00 | -10.49 | -4.69 |
| 17971.87 | H | 69.41 | 48.37 | 74.00 | 54.00 | -4.59 | -5.63 |

**Note:** (1) All Readings are Peak Value (VBW=3MHz) and Average Value (VBW=10Hz).
(2) Emission Level= Reading Level+Correct Factor.
(3) Correct Factor= Ant_F + Cab_L - Preamp
(4) The reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

■ Spurious Emission in Restricted Band 2310-2390MHz and 2483.5-2500MHz

All the antenna(Antenna 1&2) and modes(802.11b/g/n) have been tested and the worst(Antenna 1,802.11n(HT20)) resultrecorded was report as below:

| Test mode: | 802.11n(HT20) | Frequency: | Channel 1: 2412MHz |
|---|---|---|---|

| Frequency (MHz) | Polarity | PK(dBuV/m) (VBW=3MHz) | Limit 3m (dBuV/m) | AV(dBuV/m) (VBW=10Hz) | Limit 3m (dBuV/m) |
|---|---|---|---|---|---|
| 2325.35 | H | 44.91 | 74.00 | 41.77 | 54.00 |
| 2326.63 | V | 44.97 | 74.00 | 41.45 | 54.00 |

| Test mode: | 802.11n(HT20) | Frequency: | Channel 11: 2462MHz |
|---|---|---|---|

| Frequency (MHz) | Polarity | PK(dBuV/m) (VBW=3MHz) | Limit 3m (dBuV/m) | AV(dBuV/m) (VBW=10Hz) | Limit 3m (dBuV/m) |
|---|---|---|---|---|---|
| 2484.24 | H | 46.18 | 74.00 | 43.19 | 54.00 |
| 2484.21 | V | 46.75 | 74.00 | 43.62 | 54.00 |

| Test mode: | 802.11n(HT20) | Frequency: | Channel 12: 2467MHz |
|---|---|---|---|

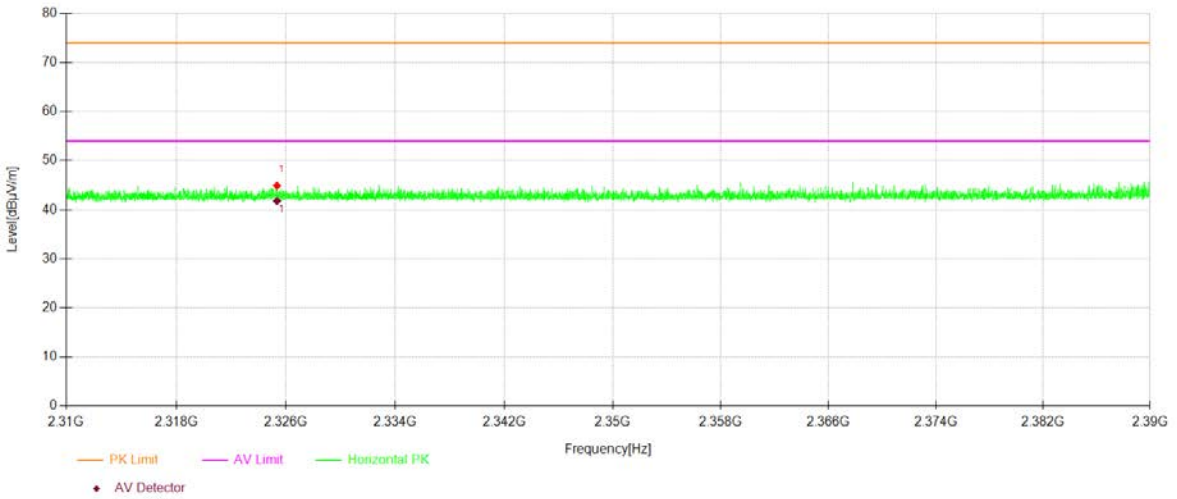
| Frequency (MHz) | Polarity | PK(dBuV/m) (VBW=3MHz) | Limit 3m (dBuV/m) | AV(dBuV/m) (VBW=10Hz) | Limit 3m (dBuV/m) |
|---|---|---|---|---|---|
| 2483.71 | H | 54.32 | 74.00 | 39.00 | 54.00 |
| 2483.62 | V | 66.99 | 74.00 | 48.99 | 54.00 |

| Test mode: | 802.11n(HT20) | Frequency: | Channel 13: 2472MHz |
|---|---|---|---|

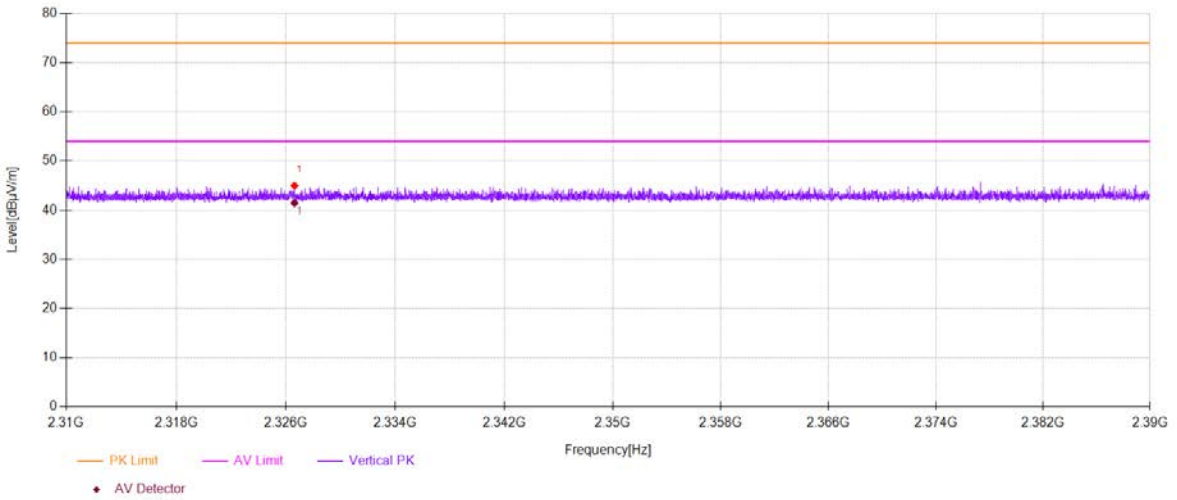
| Frequency (MHz) | Polarity | PK(dBuV/m) (VBW=3MHz) | Limit 3m (dBuV/m) | AV(dBuV/m) (VBW=10Hz) | Limit 3m (dBuV/m) |
|---|---|---|---|---|---|
| 2483.59 | H | 56.74 | 74.00 | 46.19 | 54.00 |
| 2483.68 | V | 67.18 | 74.00 | 50.97 | 54.00 |

**Note:** (1) All Readings are Peak Value (VBW=3MHz) and Average Value (VBW=10Hz).
(2) Emission Level= Reading Level+Correct Factor.
(3) Correct Factor= Ant_F + Cab_L - Preamp
(4) The reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

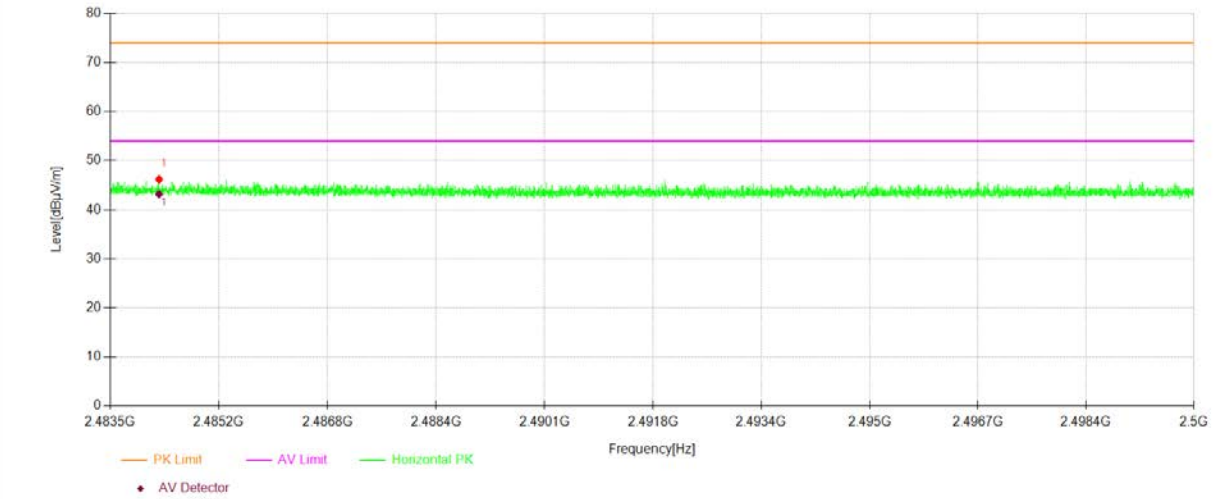
| Test Model | Spurious Emission in Restricted Band 2310-2390MHz | | | |
|---|---|---|---|---|
| | 802.11n(HT20) | Channel 1: 2412MHz | VBW=3MHz | Polarity: H |



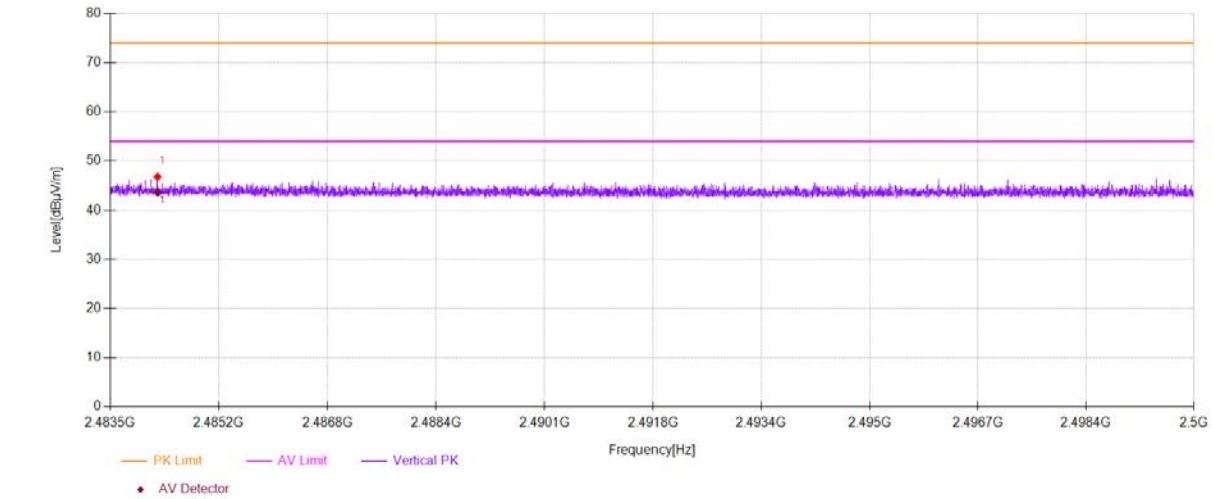

| Test Model | Spurious Emission in Restricted Band 2310-2390MHz | | | |
|---|---|---|---|---|
| | 802.11n(HT20) | Channel 1: 2412MHz | VBW=3MHz | Polarity: V |



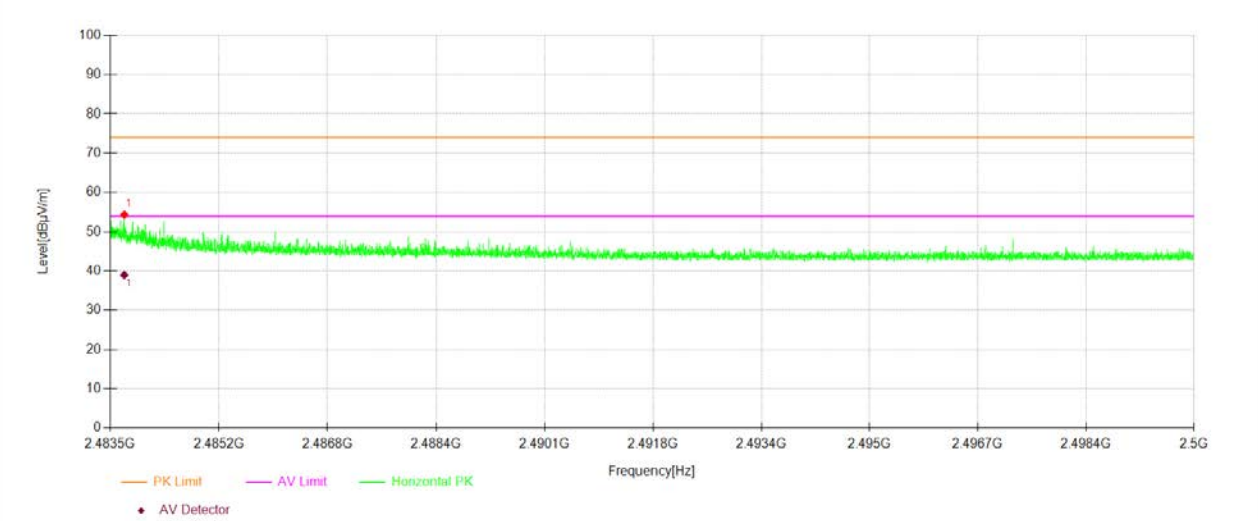
| Test Model | Spurious Emission in Restricted Band 2483.5-2500MHz | | | |
|---|---|---|---|---|
| | 802.11n(HT20) | Channel 11: 2462MHz | VBW=3MHz | Polarity: H |



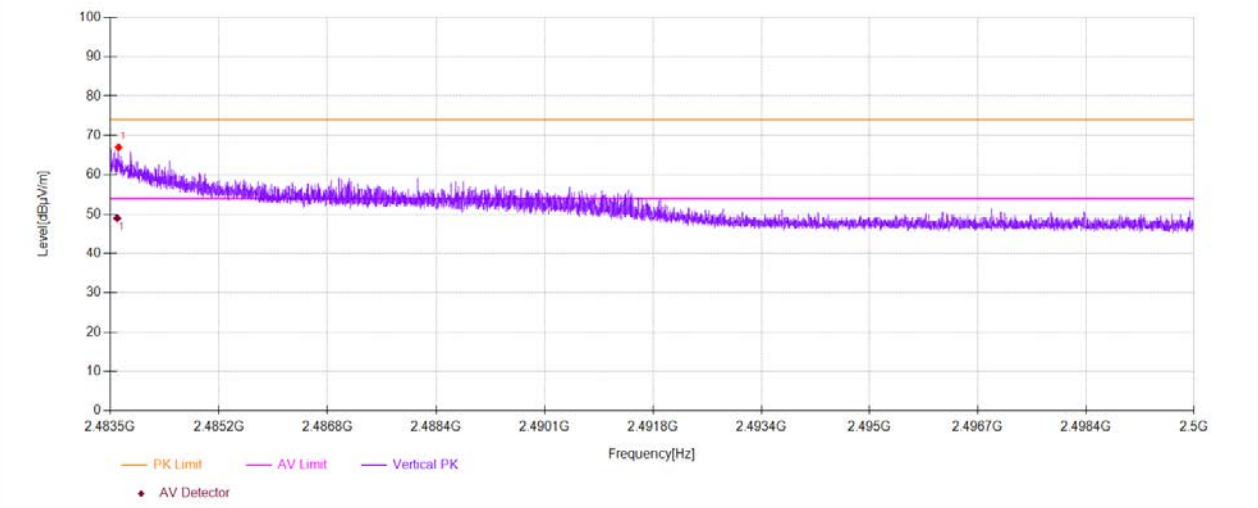

| Test Model | Spurious Emission in Restricted Band2483.5-2500MHz | | | |
|---|---|---|---|---|
| | 802.11n(HT20) | Channel 11: 2462MHz | VBW=3MHz | Polarity: V |



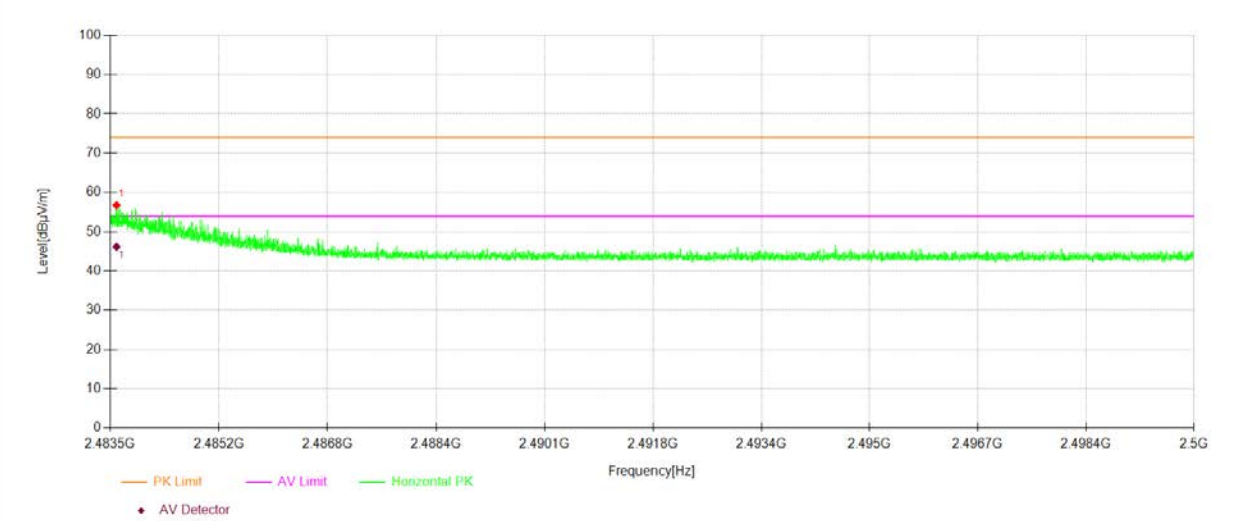
| Test Model | Spurious Emission in Restricted Band 2483.5-2500MHz | | | |
|---|---|---|---|---|
| | 802.11n(HT20) | Channel 12: 2467MHz | VBW=3MHz | Polarity: H |



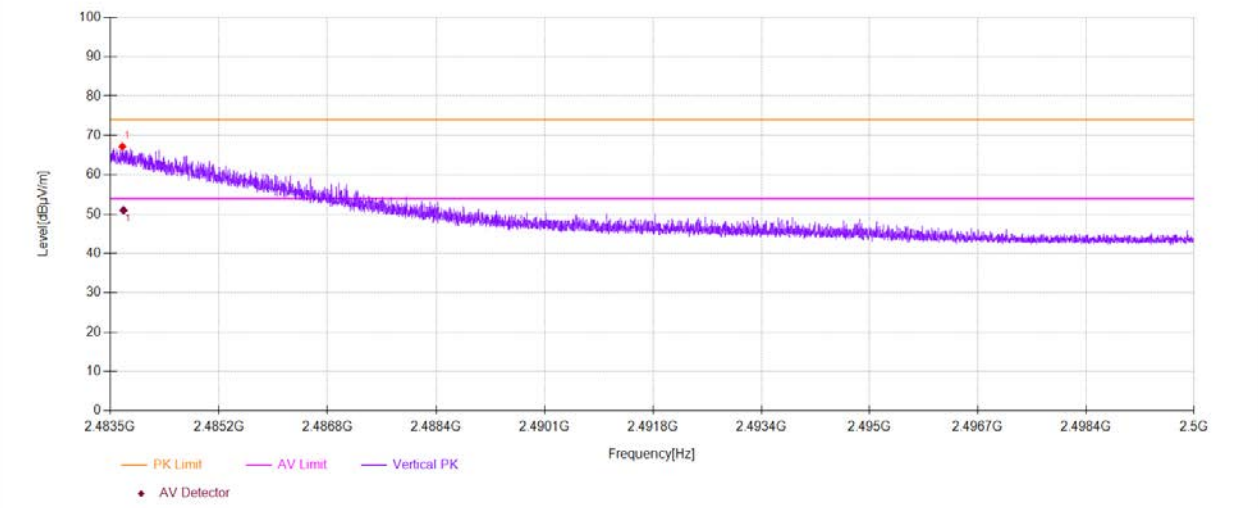

| Test Model | Spurious Emission in Restricted Band2483.5-2500MHz | | | |
|---|---|---|---|---|
| | 802.11n(HT20) | Channel 12: 2467MHz | VBW=3MHz | Polarity: V |



| Test Model | Spurious Emission in Restricted Band 2483.5-2500MHz | | | |
|---|---|---|---|---|
| | 802.11n(HT20) | Channel 13: 2472MHz | VBW=3MHz | Polarity: H |



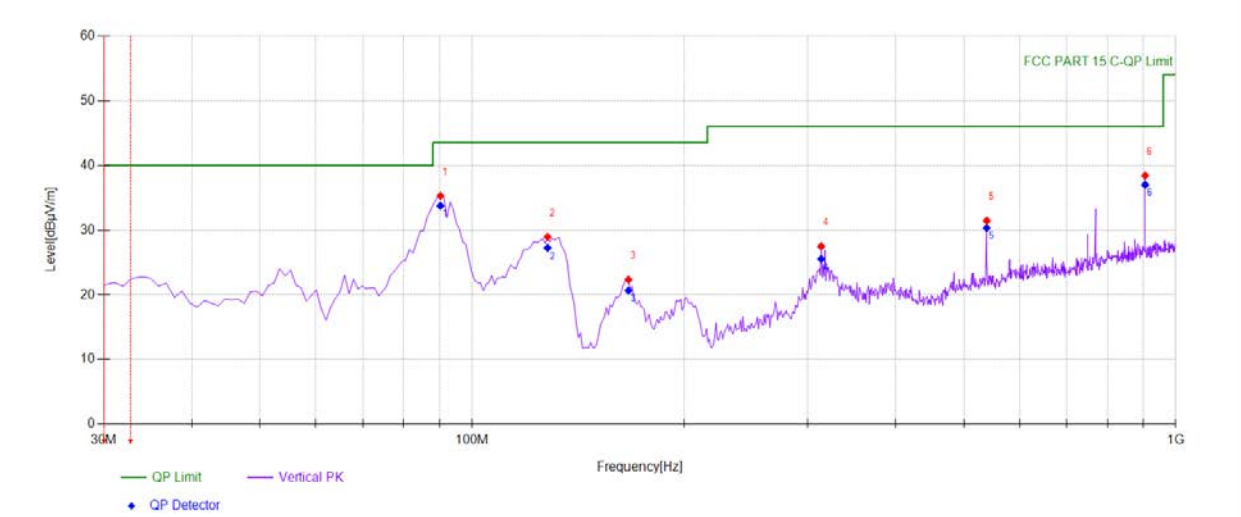

| Test Model | Spurious Emission in Restricted Band2483.5-2500MHz | | | |
|---|---|---|---|---|
| | 802.11n(HT20) | Channel 13: 2472MHz | VBW=3MHz | Polarity: V |



■ Spurious Emission below 1GHz (30MHz to 1GHz)

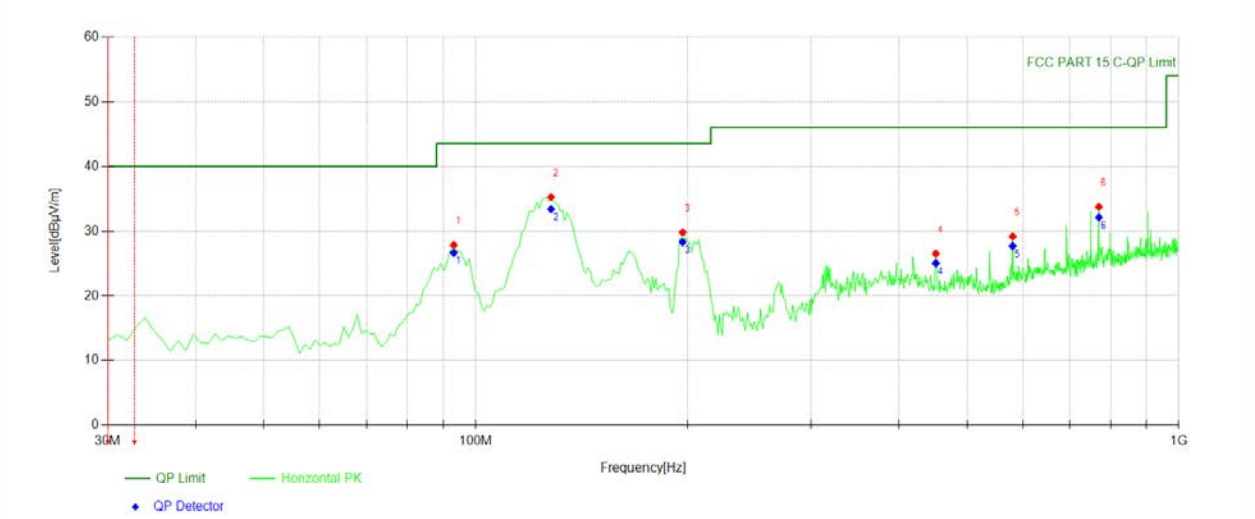
All the antenna(Antenna 1&2) and modes(802.11b/g/n) have been tested and the worst(Antenna 1,802.11n(HT20)) resultrecorded was report as below:

| Mode: | 11N20 2412 |
|---|---|



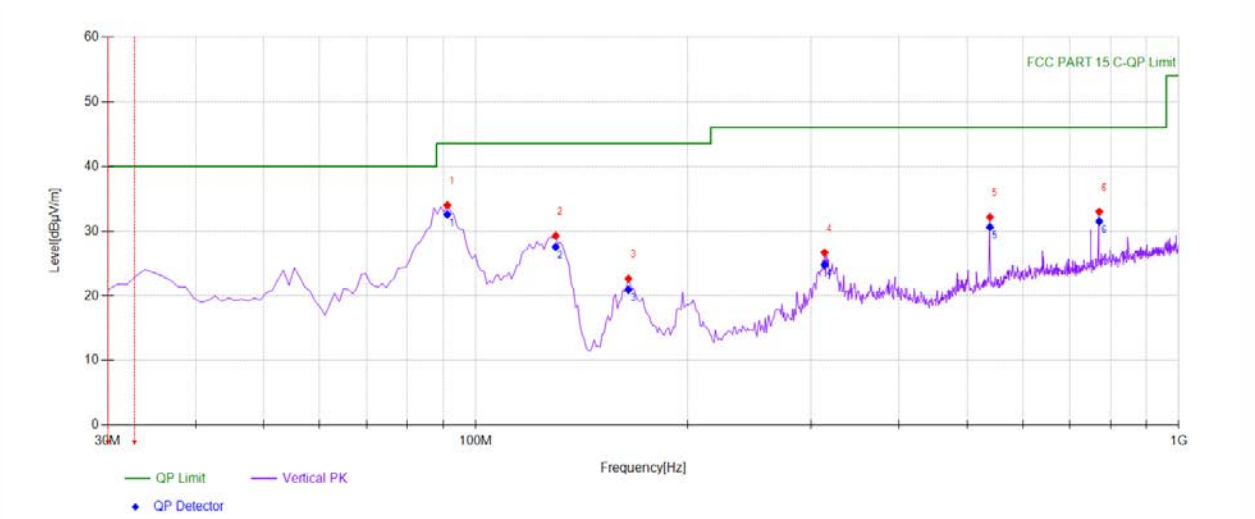

| Suspected Data List | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | Reading [dBµV] | Factor [dB/m] | Level [dBµV/m] | Detector | Limit [dBµV/m] | Margin [dB] | Polarity | Angle[°] | Height[cm] |
| 1 | 90.2002 | 54.39 | -19.12 | 35.27 | PK | 43.50 | 8.23 | Vertical | 141 | 100 |
| 2 | 128.0681 | 47.72 | -18.79 | 28.93 | PK | 43.50 | 14.57 | Vertical | 196 | 100 |
| 3 | 166.9069 | 41.51 | -19.16 | 22.35 | PK | 43.50 | 21.15 | Vertical | 224 | 100 |
| 4 | 313.5235 | 41.64 | -14.14 | 27.50 | PK | 46.00 | 18.50 | Vertical | 311 | 100 |
| 5 | 538.7888 | 40.70 | -9.26 | 31.44 | PK | 46.00 | 14.56 | Vertical | 113 | 100 |
| 6 | 904.8448 | 41.24 | -2.82 | 38.42 | PK | 46.00 | 7.58 | Vertical | 109 | 100 |

| Mode: | 11N20 2412 |
|---|---|




| Suspected Data List | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | Reading [dBµV] | Factor [dB/m] | Level [dBµV/m] | Detector | Limit [dBµV/m] | Margin [dB] | Polarity | Angle[°] | Height[cm] |
| 1 | 93.1131 | 46.28 | -18.43 | 27.85 | PK | 43.50 | 15.65 | Horizontal | 113 | 100 |
| 2 | 128.0681 | 54.04 | -18.79 | 35.25 | PK | 43.50 | 8.25 | Horizontal | 329 | 100 |
| 3 | 197.007 | 47.11 | -17.31 | 29.80 | PK | 43.50 | 13.70 | Horizontal | 100 | 100 |
| 4 | 451.4014 | 37.64 | -11.12 | 26.52 | PK | 46.00 | 19.48 | Horizontal | 118 | 100 |
| 5 | 580.5405 | 36.31 | -7.14 | 29.17 | PK | 46.00 | 16.83 | Horizontal | 360 | 100 |
| 6 | 769.8799 | 38.77 | -5.01 | 33.76 | PK | 46.00 | 12.24 | Horizontal | 122 | 100 |

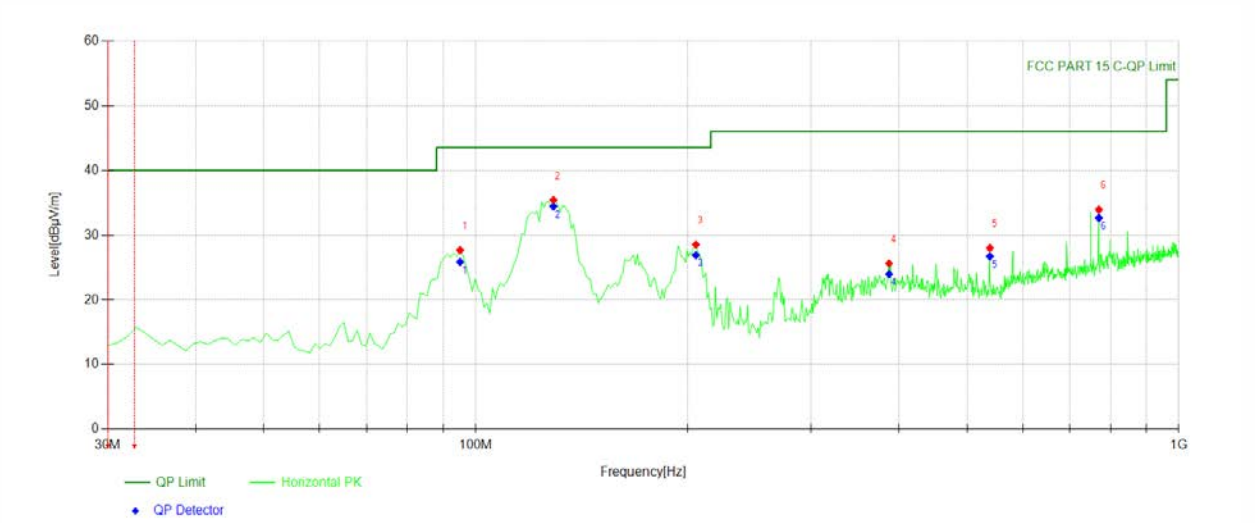
| Mode: | 11N20 2442 |
|---|---|




**Suspected Data List**

| NO. | Freq. [MHz] | Reading [dBμV] | Factor [dB/m] | Level [dBμV/m] | Detector | Limit [dBμV/m] | Margin [dB] | Polarity | Angle[°] | Height[cm] |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 91.1712 | 52.88 | -18.88 | 34.00 | PK | 43.50 | 9.50 | Vertical | 72 | 100 |
| 2 | 130.01 | 48.27 | -19.00 | 29.27 | PK | 43.50 | 14.23 | Vertical | 329 | 100 |
| 3 | 164.965 | 41.94 | -19.29 | 22.65 | PK | 43.50 | 20.85 | Vertical | 265 | 100 |
| 4 | 313.5235 | 40.81 | -14.14 | 26.67 | PK | 46.00 | 19.33 | Vertical | 307 | 100 |
| 5 | 538.7888 | 41.41 | -9.26 | 32.15 | PK | 46.00 | 13.85 | Vertical | 113 | 100 |
| 6 | 770.8509 | 37.97 | -4.97 | 33.00 | PK | 46.00 | 13.00 | Vertical | 49 | 100 |

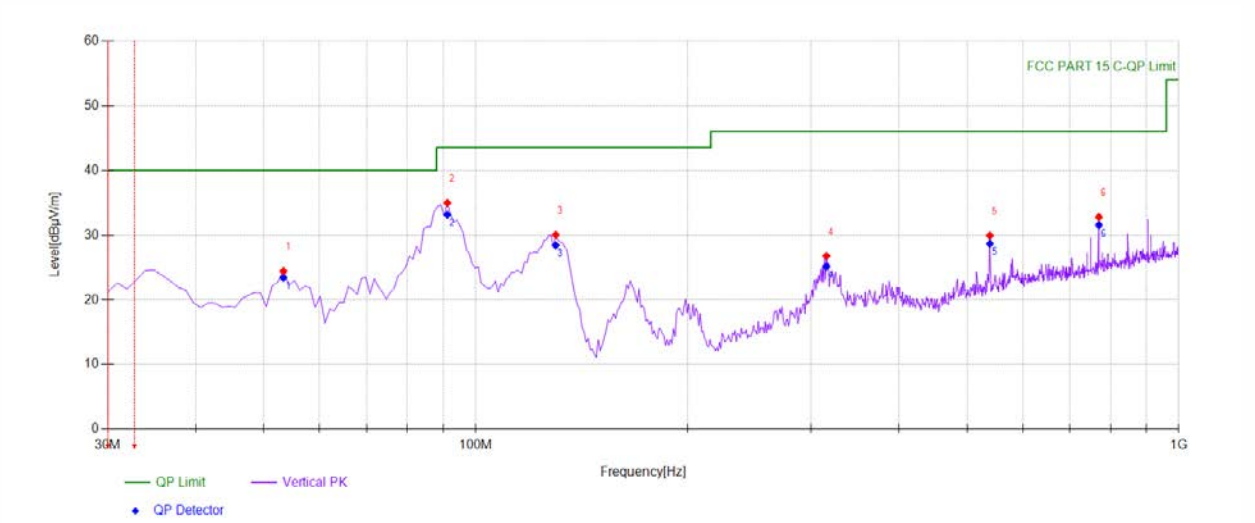
| Mode: | 11N20 2442 |
|---|---|




**Suspected Data List**

| NO. | Freq. [MHz] | Reading [dBµV] | Factor [dB/m] | Level [dBµV/m] | Detector | Limit [dBµV/m] | Margin [dB] | Polarity | Angle[°] | Height[cm] |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 95.0551 | 45.64 | -17.97 | 27.67 | PK | 43.50 | 15.83 | Horizontal | 120 | 100 |
| 2 | 129.039 | 54.32 | -18.90 | 35.42 | PK | 43.50 | 8.08 | Horizontal | 280 | 100 |
| 3 | 205.7457 | 45.67 | -17.13 | 28.54 | PK | 43.50 | 14.96 | Horizontal | 101 | 100 |
| 4 | 387.3173 | 37.44 | -11.83 | 25.61 | PK | 46.00 | 20.39 | Horizontal | 139 | 100 |
| 5 | 538.7888 | 37.25 | -9.26 | 27.99 | PK | 46.00 | 18.01 | Horizontal | 186 | 100 |
| 6 | 769.8799 | 38.94 | -5.01 | 33.93 | PK | 46.00 | 12.07 | Horizontal | 130 | 100 |

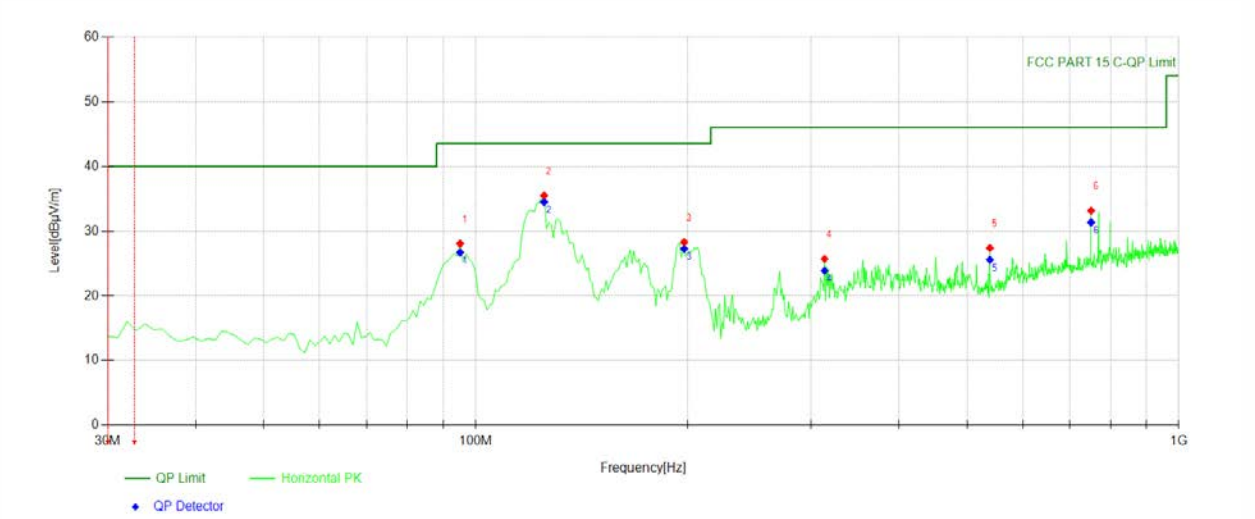
| Mode: | 11N20 2462 |
|---|---|




**Suspected Data List**

| NO. | Freq. [MHz] | Reading [dBµV] | Factor [dB/m] | Level [dBµV/m] | Detector | Limit [dBµV/m] | Margin [dB] | Polarity | Angle[°] | Height[cm] |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 53.3033 | 42.08 | -17.65 | 24.43 | PK | 40.00 | 15.57 | Vertical | 268 | 100 |
| 2 | 91.1712 | 53.85 | -18.88 | 34.97 | PK | 43.50 | 8.53 | Vertical | 114 | 100 |
| 3 | 130.01 | 49.05 | -19.00 | 30.05 | PK | 43.50 | 13.45 | Vertical | 198 | 100 |
| 4 | 315.4655 | 40.92 | -14.14 | 26.78 | PK | 46.00 | 19.22 | Vertical | 320 | 100 |
| 5 | 538.7888 | 39.20 | -9.26 | 29.94 | PK | 46.00 | 16.06 | Vertical | 315 | 100 |
| 6 | 769.8799 | 37.81 | -5.01 | 32.80 | PK | 46.00 | 13.20 | Vertical | 30 | 100 |

| Mode: | 11N20 2462 |
|---|---|




| Suspected Data List | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | Reading [dBµV] | Factor [dB/m] | Level [dBµV/m] | Detector | Limit [dBµV/m] | Margin [dB] | Polarity | Angle[°] | Height[cm] |
| 1 | 95.0551 | 46.03 | -17.97 | 28.06 | PK | 43.50 | 15.44 | Horizontal | 124 | 100 |
| 2 | 125.1552 | 53.98 | -18.47 | 35.51 | PK | 43.50 | 7.99 | Horizontal | 293 | 100 |
| 3 | 197.978 | 45.54 | -17.25 | 28.29 | PK | 43.50 | 15.21 | Horizontal | 96 | 100 |
| 4 | 313.5235 | 39.84 | -14.14 | 25.70 | PK | 46.00 | 20.30 | Horizontal | 54 | 100 |
| 5 | 538.7888 | 36.65 | -9.26 | 27.39 | PK | 46.00 | 18.61 | Horizontal | 185 | 100 |
| 6 | 750.4605 | 38.49 | -5.33 | 33.16 | PK | 46.00 | 12.84 | Horizontal | 242 | 100 |

*** End of Report ***