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# TEST REPORT

| | |
|---|---|
| **Report No. ..... :** | **CHTEW21100006** Report Verification: |
| **Project No.....:** | **SHT2107003404EW** |
| **FCC ID ..... :** | **2AYEZ-TE620** |
| **Applicant's name ..... :** | **Telo Communication (Shenzhen) Co., Ltd** |
| Address.....: | 6/F, No.42 Liuxian 1st Road, Bao'an District, Shenzhen, China |
| **Test item description ..... :** | **TE620** |
| Trade Mark .....: | TELOX, Telo Systems |
| Model/Type reference.....: | TE620 |
| Listed Model(s) .....: | TELOX-TE620,Telo-TE620,TE620A,TE620B,TE620C, TE620D,TE620E,TE620F,TE620G,TE620H,TE620J,TE620K, TE620L,TE620M,TE620Q,TE620R,TE620S,TE620T,TE620U, TE620V,TE620X,TE620Y |
| **Standard ..... :** | **FCC CFR Title 47 Part 15 Subpart C Section 15.247** |
| Date of receipt of test sample.....: | Sep. 10, 2021 |
| Date of testing.....: | Sep. 11, 2021- Oct. 08, 2021 |
| Date of issue.....: | Oct. 09, 2021 |
| **Result.....:** | **PASS** |

| | | |
|---|---|---|
| Compiled by ( Position+Printed name+Signature): | File administrator Silvia Li | Silvia Li |
| Supervised by (Position+Printed name+Signature): | Project Engineer Aaron Fang | Aaron.Fang |
| Approved by (Position+Printed name+Signature): | RF Manager Hans Hu | Hans Hu |

| | |
|---|---|
| **Testing Laboratory Name ..... :** | **Shenzhen Huatongwei International Inspection Co., Ltd.** |
| Address.....: | 1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China |

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# 1. TEST STANDARDS AND REPORT VERSION

## 1.1. Test Standards

The tests were performed according to following standards:

– FCC Rules Part 15.247: Frequency Hopping, Direct Spread Spectrum and Hybrid Systems that are in operation within the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz

– ANSI C63.10:2013: American National Standard for Testing Unlicensed Wireless Devices

– KDB 558074 D01 15.247 Meas Guidance v05r02: Guidance for Compliance Measurements on Digital Transmission System, Frequency Hopping Spread Spectrum System, and Hybrid System Devices Operating under Section 15.247 of The FCC Rules

## 1.2. Report version

| Revision No. | Date of issue | Description |
|---|---|---|
| N/A | 2021-10-09 | We have spot check test on the product, and the result have no major different from the value in the module report, which meets the requirements of reference module certification from KDB 484596. |
| | | |
| | | |
| | | |
| | | |

# 2. TEST DESCRIPTION

| Report clause | Test Items | Standard Requirement | Result |
|---|---|---|---|
| 5.1 | Antenna Requirement | 15.203/15.247(c) | PASS* |
| 5.2 | AC Conducted Emission | 15.207 | PASS |
| 5.3 | Peak Output Power | 15.247(b)(3) | PASS* |
| 5.4 | Power Spectral Density | 15.247(e) | PASS |
| 5.5 | 6dB Bandwidth | 15.247(a)(2) | PASS* |
| 5.6 | 99% Occupied Bandwidth | - | PASS*1 |
| 5.7 | Duty cycle | - | PASS*1 |
| 5.8 | Conducted Band Edge and Spurious Emission | 15.247(d)/15.205 | PASS* |
| 5.9 | Radiated Band Edge Emission | 15.205/15.209 | PASS |
| 5.10 | Radiated Spurious Emission | 15.247(d)/15.205/15.209 | PASS |

Note:

– The measurement uncertainty is not included in the test result.

– *1: No requirement on standard, only report these test data.

– * reference to module report , which FCC ID is XMR202005SC200RNA

# 3. SUMMARY

## 3.1. Client Information

| | |
|---|---|
| Applicant: | Telo Communication (Shenzhen) Co., Ltd |
| Address: | 6/F, No.42 Liuxian 1st Road, Bao'an District, Shenzhen, China |
| Manufacturer: | Telo Communication (Shenzhen) Co., Ltd |
| Address: | 6/F, No.42 Liuxian 1st Road, Bao'an District, Shenzhen, China |

## 3.2. Product Description

| | |
|---|---|
| Name of EUT: | TE620 |
| Trade Mark: | TELOX, Telo Systems |
| Model No.: | TE620 |
| Listed Model(s): | TELOX-TE620,Telo-TE620, TE620A, TE620B, TE620C, TE620D, TE620E, TE620F, TE620G, TE620H, TE620J, TE620K, TE620L, TE620M, TE620Q, TE620R, TE620S, TE620T, TE620U, TE620V, TE620X, TE620Y |
| Power supply: | DC 3.8V |
| Battery Information: | DC 3.8V; 5000mAh |
| Adapter Information: | Model: SR-D505<br>Input: AC100-240V, 50/60Hz, 0.3A<br>Output: 5.0Vdc, 2.0A<br>Manufacturer:SHENZHEN SNROX ELECTRONIC CO.,LTD |
| Hardware version: | TE620 V2.2 |
| Software version: | TE620_INT_V7_20210902 |

## 3.3. Radio Specification Description

| | |
|---|---|
| Support type*2: | 802.11b, 802.11g, 802.11n(HT20), 802.11n(HT40) |
| Modulation: | DSSS for 802.11b<br>OFDM for 802.11g/802.11n(HT20)/802.11n(HT40) |
| Operation frequency: | 2412MHz~2462MHz for 802.11b/802.11g/802.11n(HT20)<br>2422MHz~2452MHz for 802.11n(HT40) |
| Channel number: | 11 for 802.11b/802.11g/802.11n(HT20)<br>7 for 802.11n(HT40) |
| Channel separation: | 5MHz |
| Antenna type: | PIFA Antenna |
| Antenna gain: | 0.5dBi |

Note:

*2: only show the RF function associated with this report.

## 3.4. Testing Laboratory Information

| | | |
|---|---|---|
| Laboratory Name | Shenzhen Huatongwei International Inspection Co., Ltd. | |
| Laboratory Location | 1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China | |
| Connect information: | Phone: 86-755-26715499<br>E-mail: cs@szhtw.com.cn<br>http://www.szhtw.com.cn | |
| Qualifications | Type | Accreditation Number |
| | FCC | 762235 |

# 4. TEST CONFIGURATION

## 4.1. Test frequency list

According to section 15.31(m), regards to the operating frequency range over 10 MHz, must select three channels which were tested. The Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, please see the below blue front.

| 802.11b/802.11g/802.11n(HT20) | | 802.11n(HT40) | |
|---|---|---|---|
| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| **01** | **2412** | **03** | **2422** |
| 02 | 2417 | 04 | 2427 |
| . : | . : | . : | . : |
| **06** | **2437** | **06** | **2437** |
| . : | . : | . : | . : |
| 10 | 2457 | 08 | 2447 |
| **11** | **2462** | **09** | **2452** |

## 4.2. Descriptions of Test mode

Preliminary tests were performed in different data rates, final test modes are considering the modulation and worse data rates as below table.

| Modulation | Data rate |
|---|---|
| 802.11b | 1Mbps |
| 802.11g | 6Mbps |
| 802.11n(HT20) | MCS0 |
| 802.11n(HT40) | MCS0 |

## 4.3. Test mode

| For RF test items |
|---|
| The engineering test program was provided and enabled to make EUT continuous transmit. |
| For AC power line conducted emissions: |
| The EUT was set to connect with the WLAN AP under large package sizes transmission. |
| For Radiated spurious emissions test item: |
| The engineering test program was provided and enabled to make EUT continuous transmit.<br>The EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data Recorded in the report. |

## 4.4. Support unit used in test configuration and system

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

The following peripheral devices and interface cables were connected during the measurement:

| Whether support unit is used? | | | | | |
|---|---|---|---|---|---|
| ✓ No | | | | | |
| Item | Equipement | Trade Name | Model No. | FCC ID | Power cord |
| 1 | | | | | |
| 2 | | | | | |

## 4.5. Testing environmental condition

| Type | Requirement | Actual |
|---|---|---|
| Temperature: | 15~35°C | 25°C |
| Relative Humidity: | 25~75% | 50% |
| Air Pressure: | 860~1060mbar | 1000mbar |

## 4.6. Measurement uncertainty

| Test Item | Measurement Uncertainty |
|---|---|
| AC Conducted Emission (150kHz~30MHz) | 3.02 dB |
| Radiated Emission (30MHz~1000MHz | 4.90 dB |
| Radiated Emissions (1GHz~25GHz) | 4.96 dB |
| Peak Output Power | 0.51 dB |
| Power Spectral Density | 0.51 dB |
| Conducted Spurious Emission | 0.51 dB |
| 6dB Bandwidth | 70 Hz |

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

## 4.7. Equipment Used during the Test

| ● Conducted Emission | | | | | | | |
|---|---|---|---|---|---|---|---|
| Used | Test Equipment | Manufacturer | Equipment No. | Model No. | Serial No. | Last Cal. Date (YY-MM-DD) | Next Cal. Date (YY-MM-DD) |
| ● | Shielded Room | Albatross projects | HTWE0114 | N/A | N/A | 2021/9/13 | 2022/9/12 |
| ● | EMI Test Receiver | R&S | HTWE0111 | ESCI | 101247 | 2021/9/13 | 2022/9/12 |
| ● | Artificial Mains | SCHWARZBECK | HTWE0113 | NNLK 8121 | 573 | 2021/9/13 | 2022/9/12 |
| ● | Pulse Limiter | R&S | HTWE0033 | ESH3-Z2 | 100499 | 2021/9/13 | 2022/9/12 |
| ● | RF Connection Cable | HUBER+SUHNER | HTWE0113-02 | ENVIROFLEX_142 | EF-NM-BNCM-2M | 2021/9/13 | 2022/9/12 |
| ● | Test Software | R&S | N/A | ES-K1 | N/A | N/A | N/A |

| ● Radiated emission-6th test site | | | | | | | |
|---|---|---|---|---|---|---|---|
| Used | Test Equipment | Manufacturer | Equipment No. | Model No. | Serial No. | Last Cal. Date (YY-MM-DD) | Next Cal. Date (YY-MM-DD) |
| ● | Semi-Anechoic Chamber | Albatross projects | HTWE0127 | SAC-3m-02 | C11121 | 2018/09/30 | 2022/09/29 |
| ● | EMI Test Receiver | R&S | HTWE0099 | ESCI | 100900 | 2021/9/14 | 2022/9/13 |
| ● | Loop Antenna | R&S | HTWE0170 | HFH2-Z2 | 100020 | 2021/04/06 | 2022/04/05 |
| ● | Ultra-Broadband Antenna | SCHWARZBECK | HTWE0123 | VULB9163 | 538 | 2021/04/06 | 2022/04/05 |
| ● | Pre-Amplifer | SCHWARZBECK | HTWE0295 | BBV 9742 | N/A | 2020/11/13 | 2021/11/12 |
| ● | RF Connection Cable | HUBER+SUHNER | HTWE0062-01 | N/A | N/A | 2021/02/26 | 2022/02/25 |
| ● | RF Connection Cable | HUBER+SUHNER | HTWE0062-02 | SUCOFLEX104 | 501184/4 | 2021/02/26 | 2022/02/25 |
| ● | Test Software | R&S | N/A | ES-K1 | N/A | N/A | N/A |

| ● Radiated emission-7th test site | | | | | | | |
|---|---|---|---|---|---|---|---|
| Used | Test Equipment | Manufacturer | Equipment No. | Model No. | Serial No. | Last Cal. Date (YY-MM-DD) | Next Cal. Date (YY-MM-DD) |
| ● | Semi-Anechoic Chamber | Albatross projects | HTWE0122 | SAC-3m-01 | N/A | 2018/09/27 | 2022/09/26 |
| ● | Spectrum Analyzer | R&S | HTWE0098 | FSP40 | 100597 | 2021/9/13 | 2022/9/12 |
| ● | Horn Antenna | SCHWARZBECK | HTWE0126 | 9120D | 1011 | 2020/04/01 | 2023/03/31 |
| ● | Broadband Horn Antenna | SCHWARZBECK | HTWE0103 | BBHA9170 | BBHA9170472 | 2020/4/27 | 2023/4/27 |
| ● | Pre-amplifier | CD | HTWE0071 | PAP-0102 | 12004 | 2020/11/13 | 2021/11/12 |
| ● | Broadband Pre-amplifier | SCHWARZBECK | HTWE0201 | BBV 9718 | 9718-248 | 2021/03/05 | 2022/03/04 |
| ● | RF Connection Cable | HUBER+SUHNER | HTWE0120-01 | 6m 18GHz S Serisa | N/A | 2021/02/26 | 2022/02/25 |
| ● | RF Connection Cable | HUBER+SUHNER | HTWE0120-02 | 6m 3GHz RG Serisa | N/A | 2021/02/26 | 2022/02/25 |
| ● | RF Connection Cable | HUBER+SUHNER | HTWE0120-03 | 6m 3GHz RG Serisa | N/A | 2021/02/26 | 2022/02/25 |
| ● | RF Connection Cable | HUBER+SUHNER | HTWE0120-04 | 6m 3GHz RG Serisa | N/A | 2021/02/26 | 2022/02/25 |
| ● | RF Connection Cable | HUBER+SUHNER | HTWE0121-01 | 6m 18GHz S Serisa | N/A | 2021/02/26 | 2022/02/25 |
| ● | Test Software | Audix | N/A | E3 | N/A | N/A | N/A |

| ● | RF Conducted Method | | | | | |
|---|---|---|---|---|---|---|
| Used | Test Equipment | Manufacturer | Model No. | Serial No. | Last Cal. Date (YY-MM-DD) | Next Cal. Date (YY-MM-DD) |
| ● | Signal and spectrum Analyzer | R&S | FSV40 | 100048 | 2020/10/19 | 2021/10/18 |
| ● | Spectrum Analyzer | Agilent | N9020A | MY50510187 | 2020/10/19 | 2021/10/18 |
| ● | Power Meter | Anritsu | ML249A | N/A | 2020/10/19 | 2021/10/18 |
| ○ | Radio communication tester | R&S | CMW500 | 137688-Lv | 2020/10/19 | 2021/10/18 |

# 5. TEST CONDITIONS AND RESULTS

## 5.1. Antenna Requirement

**Requirement**

**FCC CFR Title 47 Part 15 Subpart C Section 15.203:**

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

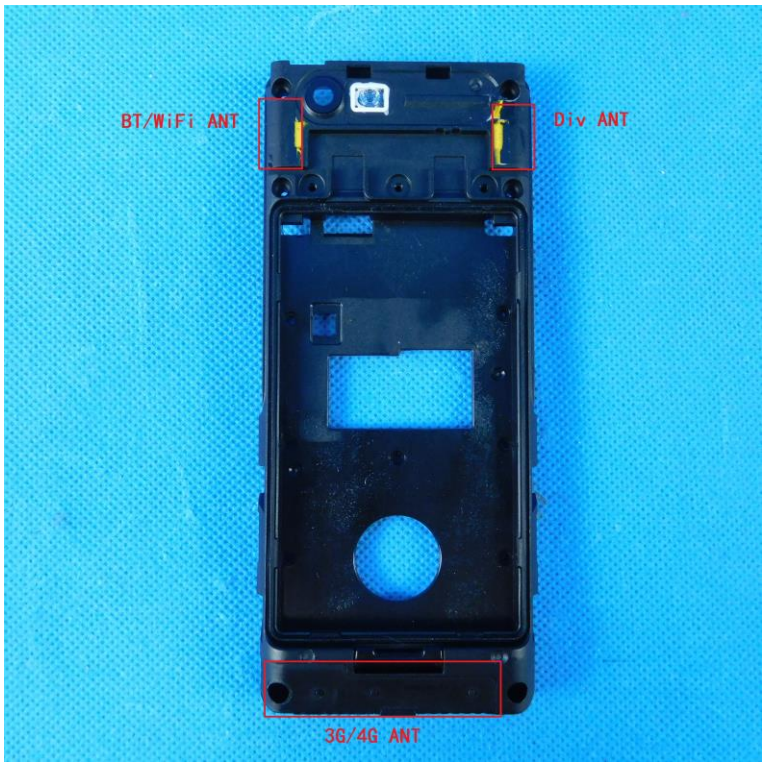
**FCC CFR Title 47 Part 15 Subpart C Section 15.247(c) (1)(i):**

(i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

**TEST RESULT**

☒ **Passed** ☐ **Not Applicable**

The antenna type is a PIFA antenna, the directional gain of the antenna less than 6 dBi, please refer to the below antenna photo.



## 5.2. AC Conducted Emission

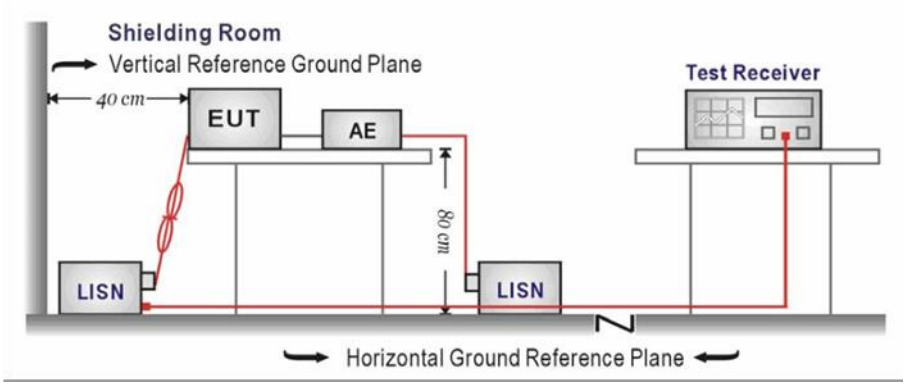
**LIMIT**

**FCC CFR Title 47 Part 15 Subpart C Section 15.207**

| Frequency range (MHz) | Limit (dBuV) | |
|---|---|---|
| | Quasi-peak | Average |
| 0.15-0.5 | 66 to 56* | 56 to 46* |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |

* Decreases with the logarithm of the frequency.

**TEST CONFIGURATION**




**TEST PROCEDURE**

1. The EUT was setup according to ANSI C63.10 requirements.
2. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface.
3. The EUT and simulators are connected to the main power through a line impedances stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment.
4. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)
5. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.
6. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
7. Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.
8. During the above scans, the emissions were maximized by cable manipulation.

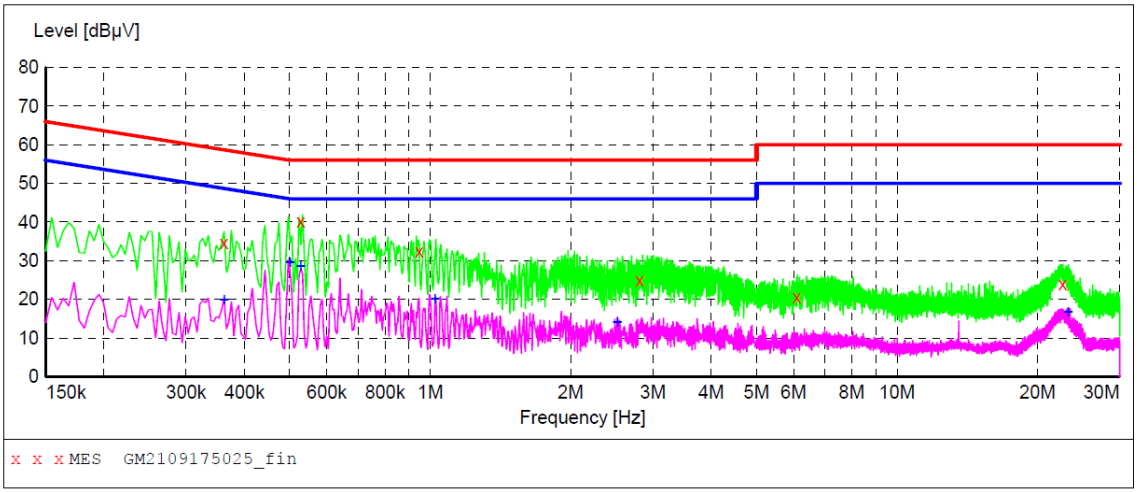
**TEST MODE:**

Please refer to the clause 4.2

**TEST RESULT**

☒ **Passed** ☐ **Not Applicable**

| Test Line: | L |
|---|---|




***MEASUREMENT RESULT: "GM2109175025_fin"***

9/17/2021 10:38AM

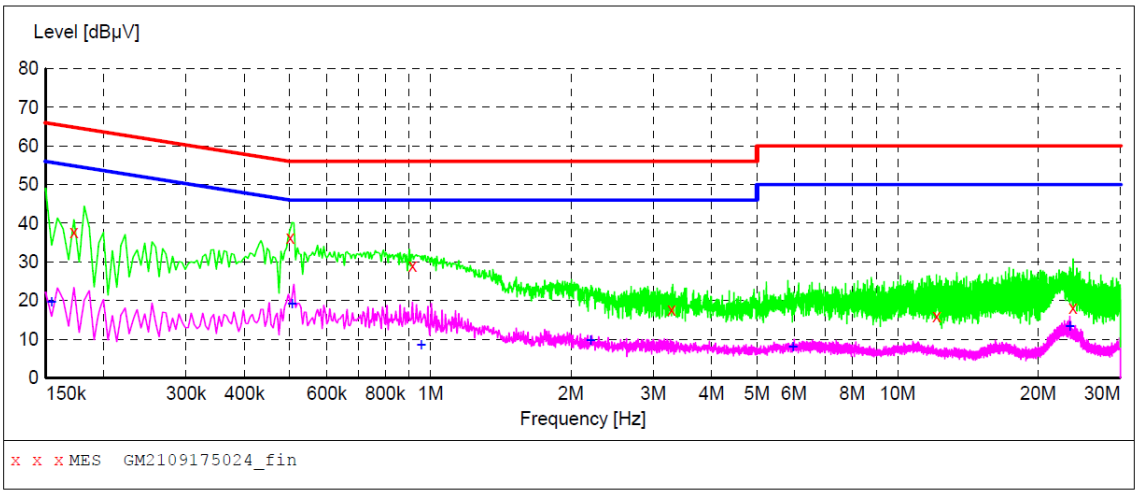
| Frequency MHz | Level dBµV | Transd dB | Limit dBµV | Margin dB | Detector | Line | PE |
|---|---|---|---|---|---|---|---|
| 0.361500 | 34.60 | 10.2 | 59 | 24.1 | QP | L1 | GND |
| 0.528000 | 40.10 | 10.2 | 56 | 15.9 | QP | L1 | GND |
| 0.946500 | 32.30 | 10.2 | 56 | 23.7 | QP | L1 | GND |
| 2.809500 | 24.90 | 10.2 | 56 | 31.1 | QP | L1 | GND |
| 6.099000 | 20.70 | 10.2 | 60 | 39.3 | QP | L1 | GND |
| 22.632000 | 23.90 | 10.3 | 60 | 36.1 | QP | L1 | GND |

***MEASUREMENT RESULT: "GM2109175025_fin2"***

9/17/2021 10:38AM

| Frequency MHz | Level dBµV | Transd dB | Limit dBµV | Margin dB | Detector | Line | PE |
|---|---|---|---|---|---|---|---|
| 0.361500 | 19.80 | 10.2 | 49 | 28.9 | AV | L1 | GND |
| 0.501000 | 29.50 | 10.2 | 46 | 16.5 | AV | L1 | GND |
| 0.528000 | 28.50 | 10.2 | 46 | 17.5 | AV | L1 | GND |
| 1.023000 | 20.20 | 10.2 | 46 | 25.8 | AV | L1 | GND |
| 2.517000 | 14.10 | 10.2 | 46 | 31.9 | AV | L1 | GND |
| 23.284500 | 16.80 | 10.3 | 50 | 33.2 | AV | L1 | GND |

| Test Line: | N |
|---|---|




***MEASUREMENT RESULT: "GM2109175024_fin"***

9/17/2021 10:34AM

| Frequency MHz | Level dBµV | Transd dB | Limit dBµV | Margin dB | Detector | Line | PE |
|---|---|---|---|---|---|---|---|
| 0.172500 | 37.70 | 10.2 | 65 | 27.1 | QP | N | GND |
| 0.501000 | 36.20 | 10.2 | 56 | 19.8 | QP | N | GND |
| 0.915000 | 29.00 | 10.2 | 56 | 27.0 | QP | N | GND |
| 3.282000 | 17.60 | 10.2 | 56 | 38.4 | QP | N | GND |
| 12.124500 | 16.10 | 10.3 | 60 | 43.9 | QP | N | GND |
| 23.725500 | 18.10 | 10.3 | 60 | 41.9 | QP | N | GND |

***MEASUREMENT RESULT: "GM2109175024_fin2"***

9/17/2021 10:34AM

| Frequency MHz | Level dBµV | Transd dB | Limit dBµV | Margin dB | Detector | Line | PE |
|---|---|---|---|---|---|---|---|
| 0.154500 | 19.70 | 10.2 | 56 | 36.1 | AV | N | GND |
| 0.505500 | 19.10 | 10.2 | 46 | 26.9 | AV | N | GND |
| 0.955500 | 8.50 | 10.2 | 46 | 37.5 | AV | N | GND |
| 2.202000 | 9.80 | 10.2 | 46 | 36.2 | AV | N | GND |
| 5.968500 | 8.00 | 10.2 | 50 | 42.0 | AV | N | GND |
| 23.379000 | 13.30 | 10.3 | 50 | 36.7 | AV | N | GND |

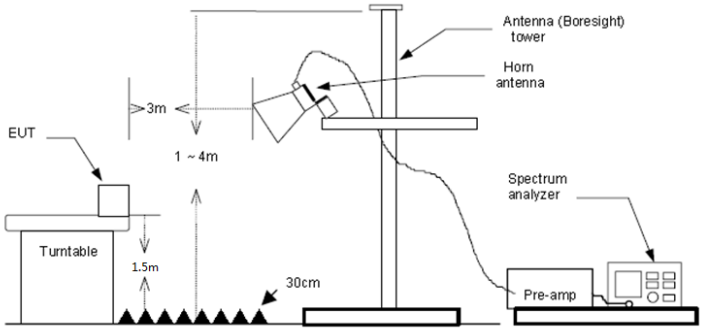
## 5.3. Radiated Band edge Emission

**LIMIT**

**FCC CFR Title 47 Part 15 Subpart C Section 15.247 (d):**

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, Radiated Emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the Radiated Emissions limits specified in §15.209(a) (see §15.205(c)).

**TEST CONFIGURATION**




**TEST PROCEDURE**

1. The EUT was setup and tested according to ANSI C63.10 .
2. The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT waspositioned such that the distance from antenna to the EUT was 3 meters.
4. The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. Thisis repeated for both horizontal and vertical polarization of the antenna. In order to find themaximum emission, all of the interface cables were manipulated according to ANSI C63.10 on radiated measurement.
5. Use the following spectrum analyzer settings:
   a) Span shall wide enough to fully capture the emission being measured
   b) Set RBW=100kHz for <1GHz, VBW=3*RBW, Sweep time=auto, Detector=peak, Trace=max hold
   c) Set RBW=1MHz, VBW=3MHz for >1GHz, Sweep time=auto, Detector=peak, Trace=max hold for Peak measurement

      For average measurement:

      – VBW=10Hz, When duty cycle is no less than 98 percent
      – VBW≥1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation, so refer to this clasue 5.6 duty cycle.

**TEST MODE:**

Please refer to the clause 4.2

**TEST RESULT**

☒ **Passed** ☐ **Not Applicable**

Note:

1) Level= Reading + Factor; Factor =Antenna Factor+ Cable Loss- Preamp Factor
2) Over Limit = Level– Limit
3) Average measurement was not performed if peak level is lower than average limit(54 dBuV/m).

| Type | 802.11b | Test channel | CH01 | Polarity | Horizontal |
|---|---|---|---|---|---|

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Aux dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2310.00 | 37.69 | 27.96 | 5.43 | 37.56 | 20.00 | 53.52 | 74.00 | -20.48 | Peak |
| 2 | 2390.01 | 39.29 | 27.72 | 5.53 | 37.45 | 20.00 | 55.09 | 74.00 | -18.91 | Peak |

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Aux dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2310.00 | 32.16 | 27.96 | 5.43 | 37.56 | 20.00 | 47.99 | 54.00 | -6.01 | Average |
| 2 | 2390.01 | 32.34 | 27.72 | 5.53 | 37.45 | 20.00 | 48.14 | 54.00 | -5.86 | Average |

| Type | 802.11b | Test channel | CH01 | Polarity | Vertical |
|---|---|---|---|---|---|

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Aux dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2310.00 | 40.14 | 27.96 | 5.43 | 37.56 | 20.00 | 55.97 | 74.00 | -18.03 | Peak |
| 2 | 2390.01 | 39.57 | 27.72 | 5.53 | 37.45 | 20.00 | 55.37 | 74.00 | -18.63 | Peak |

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Aux dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2310.00 | 32.33 | 27.96 | 5.43 | 37.56 | 20.00 | 48.16 | 54.00 | -5.84 | Average |
| 2 | 2390.01 | 31.55 | 27.72 | 5.53 | 37.45 | 20.00 | 47.35 | 54.00 | -6.65 | Average |

| Type | 802.11b | Test channel | CH11 | Polarity | Horizontal |
|---|---|---|---|---|---|

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Aux dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2483.49 | 31.32 | 27.43 | 5.64 | 37.26 | 20.00 | 47.13 | 54.00 | -6.87 | Average |
| 2 | 2500.00 | 32.00 | 27.40 | 5.66 | 37.26 | 20.00 | 47.80 | 54.00 | -6.20 | Average |

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Aux dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2483.49 | 38.22 | 27.43 | 5.64 | 37.26 | 20.00 | 54.03 | 74.00 | -19.97 | Peak |
| 2 | 2500.00 | 39.10 | 27.40 | 5.66 | 37.26 | 20.00 | 54.90 | 74.00 | -19.10 | Peak |

| Type | 802.11b | Test channel | CH11 | Polarity | Vertical |
|---|---|---|---|---|---|

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Aux dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2483.49 | 32.16 | 27.43 | 5.64 | 37.26 | 20.00 | 47.97 | 54.00 | -6.03 | Average |
| 2 | 2500.00 | 31.65 | 27.40 | 5.66 | 37.26 | 20.00 | 47.45 | 54.00 | -6.55 | Average |

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Aux dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2483.49 | 38.60 | 27.43 | 5.64 | 37.26 | 20.00 | 54.41 | 74.00 | -19.59 | Peak |
| 2 | 2500.00 | 38.20 | 27.40 | 5.66 | 37.26 | 20.00 | 54.00 | 74.00 | -20.00 | Peak |

| Type | 802.11g | Test channel | CH01 | Polarity | Horizontal |
|---|---|---|---|---|---|

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Aux dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2310.00 | 27.04 | 27.96 | 5.43 | 37.56 | 20.00 | 42.87 | 54.00 | -11.13 | Average |
| 2 | 2390.01 | 28.45 | 27.72 | 5.53 | 37.45 | 20.00 | 44.25 | 54.00 | -9.75 | Average |

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Aux dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2310.00 | 38.86 | 27.96 | 5.43 | 37.56 | 20.00 | 54.69 | 74.00 | -19.31 | Peak |
| 2 | 2390.01 | 41.27 | 27.72 | 5.53 | 37.45 | 20.00 | 57.07 | 74.00 | -16.93 | Peak |

| Type | 802.11g | Test channel | CH01 | Polarity | Vertical |
|---|---|---|---|---|---|

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Aux dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2310.00 | 27.12 | 27.96 | 5.43 | 37.56 | 20.00 | 42.95 | 54.00 | -11.05 | Average |
| 2 | 2390.01 | 27.99 | 27.72 | 5.53 | 37.45 | 20.00 | 43.79 | 54.00 | -10.21 | Average |

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Aux dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2310.00 | 38.57 | 27.96 | 5.43 | 37.56 | 20.00 | 54.40 | 74.00 | -19.60 | Peak |
| 2 | 2390.01 | 41.65 | 27.72 | 5.53 | 37.45 | 20.00 | 57.45 | 74.00 | -16.55 | Peak |

| Type | 802.11g | Test channel | CH11 | Polarity | Horizontal |
|---|---|---|---|---|---|

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Aux dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2483.49 | 45.67 | 27.43 | 5.64 | 37.26 | 20.00 | 61.48 | 74.00 | -12.52 | Peak |
| 2 | 2484.35 | 49.99 | 27.43 | 5.64 | 37.26 | 20.00 | 65.80 | 74.00 | -8.20 | Peak |
| 3 | 2500.00 | 37.51 | 27.40 | 5.66 | 37.26 | 20.00 | 53.31 | 74.00 | -20.69 | Peak |

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Aux dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2483.49 | 31.56 | 27.43 | 5.64 | 37.26 | 20.00 | 47.37 | 54.00 | -6.63 | Average |
| 2 | 2500.00 | 26.71 | 27.40 | 5.66 | 37.26 | 20.00 | 42.51 | 54.00 | -11.49 | Average |

| Type | 802.11g | Test channel | CH11 | Polarity | Vertical |
|---|---|---|---|---|---|

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Aux dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2483.49 | 47.24 | 27.43 | 5.64 | 37.26 | 20.00 | 63.05 | 74.00 | -10.95 | Peak |
| 2 | 2483.96 | 48.00 | 27.43 | 5.64 | 37.26 | 20.00 | 63.81 | 74.00 | -10.19 | Peak |
| 3 | 2500.00 | 37.61 | 27.40 | 5.66 | 37.26 | 20.00 | 53.41 | 74.00 | -20.59 | Peak |

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Aux dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2483.49 | 31.01 | 27.43 | 5.64 | 37.26 | 20.00 | 46.82 | 54.00 | -7.18 | Average |
| 2 | 2500.00 | 26.77 | 27.40 | 5.66 | 37.26 | 20.00 | 42.57 | 54.00 | -11.43 | Average |

| Type | 802.11n(HT20) | Test channel | CH01 | Polarity | Horizontal |
|---|---|---|---|---|---|

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Aux dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2310.00 | 38.62 | 27.96 | 5.43 | 37.56 | 20.00 | 54.45 | 74.00 | -19.55 | Peak |
| 2 | 2390.01 | 41.68 | 27.72 | 5.53 | 37.45 | 20.00 | 57.48 | 74.00 | -16.52 | Peak |

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Aux dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2310.00 | 27.15 | 27.96 | 5.43 | 37.56 | 20.00 | 42.98 | 54.00 | -11.02 | Average |
| 2 | 2390.01 | 28.22 | 27.72 | 5.53 | 37.45 | 20.00 | 44.02 | 54.00 | -9.98 | Average |

| Type | 802.11n(HT20) | Test channel | CH01 | Polarity | Vertical |
|---|---|---|---|---|---|

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Aux dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2310.00 | 38.20 | 27.96 | 5.43 | 37.56 | 20.00 | 54.03 | 74.00 | -19.97 | Peak |
| 2 | 2390.01 | 41.50 | 27.72 | 5.53 | 37.45 | 20.00 | 57.30 | 74.00 | -16.70 | Peak |

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Aux dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2310.00 | 26.99 | 27.96 | 5.43 | 37.56 | 20.00 | 42.82 | 54.00 | -11.18 | Average |
| 2 | 2390.01 | 27.92 | 27.72 | 5.53 | 37.45 | 20.00 | 43.72 | 54.00 | -10.28 | Average |

| Type | 802.11n(HT20) | Test channel | CH11 | Polarity | Horizontal |
|---|---|---|---|---|---|

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Aux dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2483.49 | 33.53 | 27.43 | 5.64 | 37.26 | 20.00 | 49.34 | 54.00 | -4.66 | Average |
| 2 | 2500.00 | 26.53 | 27.40 | 5.66 | 37.26 | 20.00 | 42.33 | 54.00 | -11.67 | Average |

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Aux dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2483.49 | 49.71 | 27.43 | 5.64 | 37.26 | 20.00 | 65.52 | 74.00 | -8.48 | Peak |
| 2 | 2483.79 | 52.16 | 27.43 | 5.64 | 37.26 | 20.00 | 67.97 | 74.00 | -6.03 | Peak |
| 3 | 2500.00 | 38.36 | 27.40 | 5.66 | 37.26 | 20.00 | 54.16 | 74.00 | -19.84 | Peak |

| Type | 802.11n(HT20) | Test channel | CH11 | Polarity | Vertical |
|---|---|---|---|---|---|

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Aux dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2483.49 | 32.41 | 27.43 | 5.64 | 37.26 | 20.00 | 48.22 | 54.00 | -5.78 | Average |
| 2 | 2500.00 | 26.59 | 27.40 | 5.66 | 37.26 | 20.00 | 42.39 | 54.00 | -11.61 | Average |

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Aux dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2483.49 | 48.30 | 27.43 | 5.64 | 37.26 | 20.00 | 64.11 | 74.00 | -9.89 | Peak |
| 2 | 2484.31 | 51.73 | 27.43 | 5.64 | 37.26 | 20.00 | 67.54 | 74.00 | -6.46 | Peak |
| 3 | 2500.00 | 38.09 | 27.40 | 5.66 | 37.26 | 20.00 | 53.89 | 74.00 | -20.11 | Peak |

| Type | 802.11n(HT40) | Test channel | CH03 | Polarity | Horizontal |
|---|---|---|---|---|---|

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Aux dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2310.00 | 37.77 | 27.96 | 5.43 | 37.56 | 20.00 | 53.60 | 74.00 | -20.40 | Peak |
| 2 | 2389.76 | 40.59 | 27.72 | 5.53 | 37.45 | 20.00 | 56.39 | 74.00 | -17.61 | Peak |
| 3 | 2389.99 | 38.45 | 27.72 | 5.53 | 37.45 | 20.00 | 54.25 | 74.00 | -19.75 | Peak |

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Aux dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2310.00 | 26.93 | 27.96 | 5.43 | 37.56 | 20.00 | 42.76 | 54.00 | -11.24 | Average |
| 2 | 2389.99 | 27.08 | 27.72 | 5.53 | 37.45 | 20.00 | 42.88 | 54.00 | -11.12 | Average |

| Type | 802.11n(HT40) | Test channel | CH03 | Polarity | Vertical |
|---|---|---|---|---|---|

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Aux dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2310.00 | 38.00 | 27.96 | 5.43 | 37.56 | 20.00 | 53.83 | 74.00 | -20.17 | Peak |
| 2 | 2329.37 | 41.48 | 27.88 | 5.45 | 37.54 | 20.00 | 57.27 | 74.00 | -16.73 | Peak |
| 3 | 2389.99 | 38.20 | 27.72 | 5.53 | 37.45 | 20.00 | 54.00 | 74.00 | -20.00 | Peak |

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Aux dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2310.00 | 27.07 | 27.96 | 5.43 | 37.56 | 20.00 | 42.90 | 54.00 | -11.10 | Average |
| 2 | 2389.99 | 26.96 | 27.72 | 5.53 | 37.45 | 20.00 | 42.76 | 54.00 | -11.24 | Average |

| Type | 802.11n(HT40) | Test channel | CH09 | Polarity | Horizontal |
|---|---|---|---|---|---|

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Aux dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2483.50 | 37.92 | 27.43 | 5.64 | 37.26 | 20.00 | 53.73 | 74.00 | -20.27 | Peak |
| 2 | 2500.00 | 37.87 | 27.40 | 5.66 | 37.26 | 20.00 | 53.67 | 74.00 | -20.33 | Peak |

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Aux dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2483.50 | 26.78 | 27.43 | 5.64 | 37.26 | 20.00 | 42.59 | 54.00 | -11.41 | Average |
| 2 | 2500.00 | 26.62 | 27.40 | 5.66 | 37.26 | 20.00 | 42.42 | 54.00 | -11.58 | Average |

| Type | 802.11n(HT40) | Test channel | CH09 | Polarity | Vertical |
|---|---|---|---|---|---|

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Aux dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2483.50 | 38.66 | 27.43 | 5.64 | 37.26 | 20.00 | 54.47 | 74.00 | -19.53 | Peak |
| 2 | 2500.00 | 38.94 | 27.40 | 5.66 | 37.26 | 20.00 | 54.74 | 74.00 | -19.26 | Peak |

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Aux dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2483.50 | 26.81 | 27.43 | 5.64 | 37.26 | 20.00 | 42.62 | 54.00 | -11.38 | Average |
| 2 | 2500.00 | 26.71 | 27.40 | 5.66 | 37.26 | 20.00 | 42.51 | 54.00 | -11.49 | Average |

## 5.4. Radiated Spurious Emission

**LIMIT**

**FCC CFR Title 47 Part 15 Subpart C Section 15.209**

| Frequency | Limit (dBuV/m) | Value |
|---|---|---|
| 0.009 MHz ~0.49 MHz | 2400/F(kHz) @300m | Quasi-peak |
| 0.49 MHz ~ 1.705 MHz | 24000/F(kHz) @30m | Quasi-peak |
| 1.705 MHz ~30 MHz | 30 @30m | Quasi-peak |

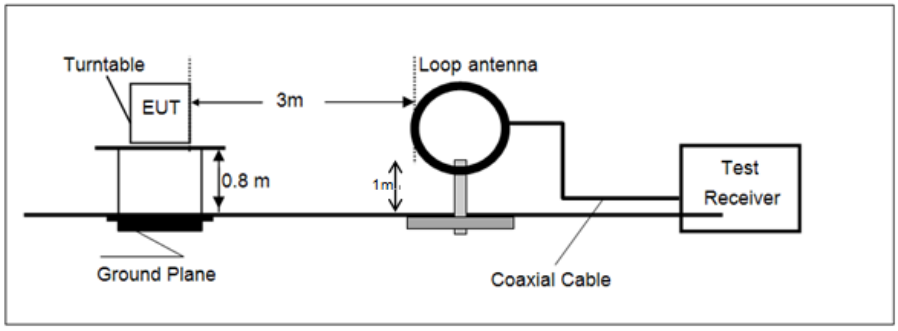
Note: Limit dBuV/m @3m = Limit dBuV/m @300m + 40*log(300/3)= Limit dBuV/m @300m +80,

Limit dBuV/m @3m = Limit dBuV/m @30m +40*log(30/3)= Limit dBuV/m @30m + 40.

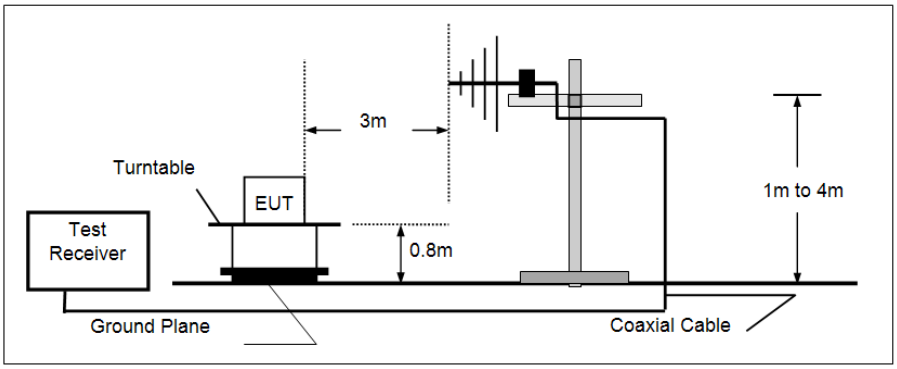
| Frequency | Limit (dBuV/m @3m) | Value |
|---|---|---|
| 30MHz~88MHz | 40.00 | Quasi-peak |
| 88MHz~216MHz | 43.50 | Quasi-peak |
| 216MHz~960MHz | 46.00 | Quasi-peak |
| 960MHz~1GHz | 54.00 | Quasi-peak |
| Above 1GHz | 54.00 | Average |
| | 74.00 | Peak |

**TEST CONFIGURATION**

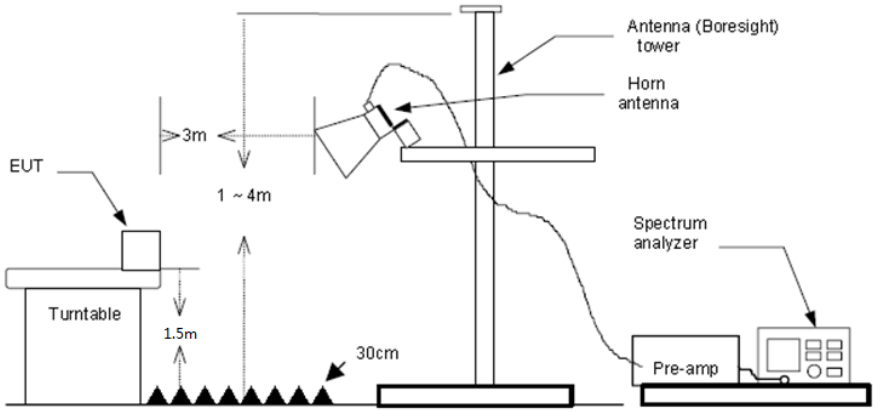
- 9 kHz ~ 30 MHz




- 30 MHz ~ 1 GHz




- Above 1 GHz




**TEST PROCEDURE**

1. The EUT was setup and tested according to ANSI C63.10 .
2. The EUT is placed on a turn table which is 0.8 meter above ground for below 1 GHz, and 1.5 m for above 1 GHz. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT was set 3 meters from the receiving antenna, which was mounted on the top of a variable height antenna tower.
4. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
5. Set to the maximum power setting and enable the EUT transmit continuously.
6. Use the following spectrum analyzer settings
   a) Span shall wide enough to fully capture the emission being measured;
   b) Below 1 GHz:

      RBW=120 kHz, VBW=300 kHz, Sweep=auto, Detector function=peak, Trace=max hold;

      If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
   c) Set RBW=1MHz, VBW=3MHz for >1GHz, Sweep time=auto, Detector=peak, Trace=max hold for Peak measurement

      For average measurement:

      – VBW=10Hz, When duty cycle is no less than 98 percent
      – VBW≥1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation, so refer to this clasue 5.6 duty cycle.

**TEST MODE:**

Please refer to the clause 4.2

**TEST RESULT**

☒ **Passed** ☐ **Not Applicable**

Note:

1) Level= Reading + Factor/Transd; Factor/Transd =Antenna Factor+ Cable Loss- Preamp Factor
2) Over Limit = Level– Limit
3) Average measurement was not performed if peak level is lower than average limit(54 dBuV/m) for above 1GHz.

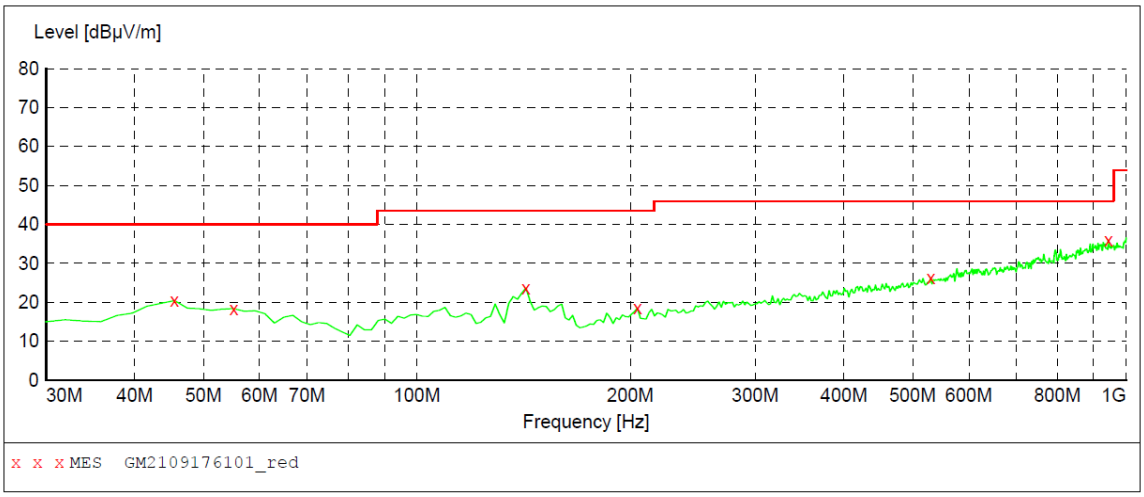
**TEST DATA FOR 9 kHz ~ 30 MHz**

The EUT was pre-scanned this frequency band, found the radiated level 20dB lower than the limit, so don't show data on this report.

**TEST DATA FOR 30 MHz ~ 1000 MHz**

Have pre-scan all test channel, found CH06 of 802.11B which it was worst case, so only show the worst case's data on this report.

| Polarization: | Horizontal |
|---|---|

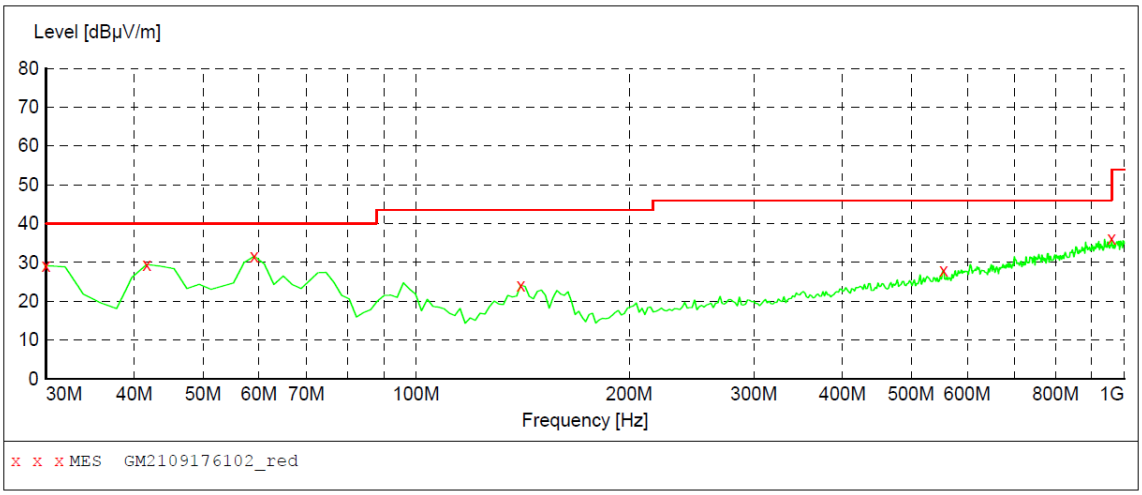



***MEASUREMENT RESULT: "GM2109176101_red"***

9/17/2021 5:35PM

| Frequency MHz | Level dBµV/m | Transd dB | Limit dBµV/m | Margin dB | Det. | Height cm | Azimuth deg | Polarization |
|---|---|---|---|---|---|---|---|---|
| 45.520000 | 20.40 | -8.8 | 40.0 | 19.6 | QP | 100.0 | 66.00 | HORIZONTAL |
| 55.220000 | 18.40 | -9.1 | 40.0 | 21.6 | QP | 100.0 | 38.00 | HORIZONTAL |
| 142.520000 | 23.70 | -14.2 | 43.5 | 19.8 | QP | 100.0 | 317.00 | HORIZONTAL |
| 204.600000 | 18.50 | -10.4 | 43.5 | 25.0 | QP | 100.0 | 191.00 | HORIZONTAL |
| 530.520000 | 26.30 | -0.9 | 46.0 | 19.7 | QP | 100.0 | 339.00 | HORIZONTAL |
| 943.740000 | 36.00 | 7.8 | 46.0 | 10.0 | QP | 100.0 | 0.00 | HORIZONTAL |

| Polarization: | Vertical |
|---|---|




***MEASUREMENT RESULT: "GM2109176102_red"***

9/17/2021 5:37PM

| Frequency MHz | Level dBµV/m | Transd dB | Limit dBµV/m | Margin dB | Det. | Height cm | Azimuth deg | Polarization |
|---|---|---|---|---|---|---|---|---|
| 30.000000 | 29.20 | -12.4 | 40.0 | 10.8 | QP | 100.0 | 249.00 | VERTICAL |
| 41.640000 | 29.50 | -9.6 | 40.0 | 10.5 | QP | 100.0 | 316.00 | VERTICAL |
| 59.100000 | 31.60 | -9.7 | 40.0 | 8.4 | QP | 100.0 | 337.00 | VERTICAL |
| 140.580000 | 24.10 | -14.1 | 43.5 | 19.4 | QP | 100.0 | 249.00 | VERTICAL |
| 555.740000 | 28.00 | -0.2 | 46.0 | 18.0 | QP | 100.0 | 50.00 | VERTICAL |
| 959.260000 | 36.20 | 8.0 | 46.0 | 9.8 | QP | 100.0 | 38.00 | VERTICAL |

**TEST DATA FOR 1 GHz ~ 25 GHz**

| Type | 802.11b | Test channel | CH01 | Polarity | Horizontal |
|---|---|---|---|---|---|

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 3143.98 | 40.25 | 29.00 | 6.37 | 37.21 | 38.41 | 74.00 | -35.59 | Peak |
| 2 | 4821.76 | 37.24 | 31.40 | 8.50 | 35.24 | 41.90 | 74.00 | -32.10 | Peak |
| 3 | 8042.90 | 33.56 | 37.19 | 11.02 | 33.31 | 48.46 | 74.00 | -25.54 | Peak |
| 4 | 11486.41 | 33.36 | 40.86 | 12.73 | 36.38 | 50.57 | 74.00 | -23.43 | Peak |

| Type | 802.11b | Test channel | CH01 | Polarity | Vertical |
|---|---|---|---|---|---|

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 3135.99 | 40.30 | 29.00 | 6.36 | 37.25 | 38.41 | 74.00 | -35.59 | Peak |
| 2 | 5762.24 | 40.12 | 31.92 | 9.57 | 34.86 | 46.75 | 74.00 | -27.25 | Peak |
| 3 | 8063.40 | 32.44 | 37.20 | 11.08 | 33.32 | 47.40 | 74.00 | -26.60 | Peak |
| 4 | 11370.05 | 32.97 | 40.54 | 12.68 | 36.45 | 49.74 | 74.00 | -24.26 | Peak |

| Type | 802.11b | Test channel | CH06 | Polarity | Horizontal |
|---|---|---|---|---|---|

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 3143.98 | 40.29 | 29.00 | 6.37 | 37.21 | 38.45 | 74.00 | -35.55 | Peak |
| 2 | 5086.52 | 34.92 | 32.20 | 8.92 | 35.46 | 40.58 | 74.00 | -33.42 | Peak |
| 3 | 8083.96 | 32.62 | 37.20 | 11.15 | 33.32 | 47.65 | 74.00 | -26.35 | Peak |
| 4 | 11370.05 | 32.54 | 40.54 | 12.68 | 36.45 | 49.31 | 74.00 | -24.69 | Peak |

| Type | 802.11b | Test channel | CH06 | Polarity | Vertical |
|---|---|---|---|---|---|

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 3151.99 | 39.31 | 29.00 | 6.38 | 37.18 | 37.51 | 74.00 | -36.49 | Peak |
| 2 | 5762.24 | 38.89 | 31.92 | 9.57 | 34.86 | 45.52 | 74.00 | -28.48 | Peak |
| 3 | 8002.06 | 32.81 | 37.10 | 10.91 | 33.31 | 47.51 | 74.00 | -26.49 | Peak |
| 4 | 11663.19 | 32.08 | 40.28 | 12.80 | 36.39 | 48.77 | 74.00 | -25.23 | Peak |

| Type | 802.11b | Test channel | CH11 | Polarity | Horizontal |
|---|---|---|---|---|---|

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 3151.99 | 39.92 | 29.00 | 6.38 | 37.18 | 38.12 | 74.00 | -35.88 | Peak |
| 2 | 5138.58 | 36.29 | 32.05 | 8.96 | 35.45 | 41.85 | 74.00 | -32.15 | Peak |
| 3 | 8063.40 | 32.62 | 37.20 | 11.08 | 33.32 | 47.58 | 74.00 | -26.42 | Peak |
| 4 | 11399.03 | 31.77 | 40.60 | 12.69 | 36.43 | 48.63 | 74.00 | -25.37 | Peak |

| Type | 802.11b | Test channel | CH11 | Polarity | Vertical |
|---|---|---|---|---|---|

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 3472.12 | 38.41 | 28.99 | 6.76 | 36.58 | 37.58 | 74.00 | -36.42 | Peak |
| 2 | 5762.24 | 39.48 | 31.92 | 9.57 | 34.86 | 46.11 | 74.00 | -27.89 | Peak |
| 3 | 7800.94 | 32.93 | 36.60 | 10.68 | 33.20 | 47.01 | 74.00 | -26.99 | Peak |
| 4 | 10916.26 | 32.31 | 40.60 | 12.52 | 36.74 | 48.69 | 74.00 | -25.31 | Peak |

| Type | 802.11g | Test channel | CH01 | Polarity | Horizontal |
|---|---|---|---|---|---|

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 3143.98 | 39.72 | 29.00 | 6.37 | 37.21 | 37.88 | 74.00 | -36.12 | Peak |
| 2 | 4996.69 | 34.63 | 31.87 | 8.81 | 35.24 | 40.07 | 74.00 | -33.93 | Peak |
| 3 | 8083.96 | 32.49 | 37.20 | 11.15 | 33.32 | 47.52 | 74.00 | -26.48 | Peak |
| 4 | 10888.51 | 32.48 | 40.57 | 12.52 | 36.76 | 48.81 | 74.00 | -25.19 | Peak |

| Type | 802.11g | Test channel | CH01 | Polarity | Vertical |
|---|---|---|---|---|---|

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 4086.46 | 36.79 | 30.00 | 7.46 | 36.31 | 37.94 | 74.00 | -36.06 | Peak |
| 2 | 5762.24 | 39.35 | 31.92 | 9.57 | 34.86 | 45.98 | 74.00 | -28.02 | Peak |
| 3 | 8083.96 | 32.73 | 37.20 | 11.15 | 33.32 | 47.76 | 74.00 | -26.24 | Peak |
| 4 | 10916.26 | 32.18 | 40.60 | 12.52 | 36.74 | 48.56 | 74.00 | -25.44 | Peak |

| Type | 802.11g | Test channel | CH06 | Polarity | Horizontal |
|---|---|---|---|---|---|

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 3135.99 | 39.87 | 29.00 | 6.36 | 37.25 | 37.98 | 74.00 | -36.02 | Peak |
| 2 | 4785.08 | 36.31 | 31.40 | 8.41 | 35.36 | 40.76 | 74.00 | -33.24 | Peak |
| 3 | 8022.46 | 32.67 | 37.14 | 10.95 | 33.31 | 47.45 | 74.00 | -26.55 | Peak |
| 4 | 10427.37 | 33.98 | 39.93 | 12.46 | 37.21 | 49.16 | 74.00 | -24.84 | Peak |

| Type | 802.11g | Test channel | CH06 | Polarity | Vertical |
|---|---|---|---|---|---|

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 3854.08 | 37.80 | 29.80 | 7.22 | 36.85 | 37.97 | 74.00 | -36.03 | Peak |
| 2 | 5762.24 | 35.86 | 31.92 | 9.57 | 34.86 | 42.49 | 74.00 | -31.51 | Peak |
| 3 | 8104.56 | 33.16 | 37.18 | 11.21 | 33.33 | 48.22 | 74.00 | -25.78 | Peak |
| 4 | 10888.51 | 32.17 | 40.57 | 12.52 | 36.76 | 48.50 | 74.00 | -25.50 | Peak |

| Type | 802.11g | Test channel | CH11 | Polarity | Horizontal |
|---|---|---|---|---|---|

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 3143.98 | 39.96 | 29.00 | 6.37 | 37.21 | 38.12 | 74.00 | -35.88 | Peak |
| 2 | 4664.81 | 36.30 | 31.26 | 8.18 | 35.94 | 39.80 | 74.00 | -34.20 | Peak |
| 3 | 8125.22 | 32.31 | 37.10 | 11.28 | 33.36 | 47.33 | 74.00 | -26.67 | Peak |
| 4 | 11486.41 | 31.77 | 40.86 | 12.73 | 36.38 | 48.98 | 74.00 | -25.02 | Peak |

| Type | 802.11g | Test channel | CH11 | Polarity | Vertical |
|---|---|---|---|---|---|

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 4024.52 | 37.18 | 29.95 | 7.40 | 36.29 | 38.24 | 74.00 | -35.76 | Peak |
| 2 | 5762.24 | 40.25 | 31.92 | 9.57 | 34.86 | 46.88 | 74.00 | -27.12 | Peak |
| 3 | 8104.56 | 32.29 | 37.18 | 11.21 | 33.33 | 47.35 | 74.00 | -26.65 | Peak |
| 4 | 10888.51 | 33.09 | 40.57 | 12.52 | 36.76 | 49.42 | 74.00 | -24.58 | Peak |

| Type | 802.11n(HT20) | Test channel | CH01 | Polarity | Horizontal |
|---|---|---|---|---|---|

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 3143.98 | 39.36 | 29.00 | 6.37 | 37.21 | 37.52 | 74.00 | -36.48 | Peak |
| 2 | 5112.49 | 35.13 | 32.15 | 8.95 | 35.47 | 40.76 | 74.00 | -33.24 | Peak |
| 3 | 8063.40 | 33.06 | 37.20 | 11.08 | 33.32 | 48.02 | 74.00 | -25.98 | Peak |
| 4 | 11486.41 | 32.72 | 40.86 | 12.73 | 36.38 | 49.93 | 74.00 | -24.07 | Peak |

| Type | 802.11n(HT20) | Test channel | CH01 | Polarity | Vertical |
|---|---|---|---|---|---|

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 4223.95 | 36.98 | 30.15 | 7.69 | 36.07 | 38.75 | 74.00 | -35.25 | Peak |
| 2 | 5762.24 | 40.49 | 31.92 | 9.57 | 34.86 | 47.12 | 74.00 | -26.88 | Peak |
| 3 | 7981.72 | 32.78 | 37.03 | 10.89 | 33.31 | 47.39 | 74.00 | -26.61 | Peak |
| 4 | 10916.26 | 32.05 | 40.60 | 12.52 | 36.74 | 48.43 | 74.00 | -25.57 | Peak |

| Type | 802.11n(HT20) | Test channel | CH06 | Polarity | Horizontal |
|---|---|---|---|---|---|

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 3135.99 | 39.92 | 29.00 | 6.36 | 37.25 | 38.03 | 74.00 | -35.97 | Peak |
| 2 | 5086.52 | 35.28 | 32.20 | 8.92 | 35.46 | 40.94 | 74.00 | -33.06 | Peak |
| 3 | 8063.40 | 32.30 | 37.20 | 11.08 | 33.32 | 47.26 | 74.00 | -26.74 | Peak |
| 4 | 10888.51 | 32.38 | 40.57 | 12.52 | 36.76 | 48.71 | 74.00 | -25.29 | Peak |

| Type | 802.11n(HT20) | Test channel | CH06 | Polarity | Vertical |
|---|---|---|---|---|---|

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 3241.50 | 39.82 | 28.73 | 6.51 | 36.87 | 38.19 | 74.00 | -35.81 | Peak |
| 2 | 5762.24 | 39.35 | 31.92 | 9.57 | 34.86 | 45.98 | 74.00 | -28.02 | Peak |
| 3 | 8063.40 | 32.57 | 37.20 | 11.08 | 33.32 | 47.53 | 74.00 | -26.47 | Peak |
| 4 | 11341.14 | 31.64 | 40.48 | 12.67 | 36.46 | 48.33 | 74.00 | -25.67 | Peak |

| Type | 802.11n(HT20) | Test channel | CH11 | Polarity | Horizontal |
|---|---|---|---|---|---|

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 3463.29 | 38.82 | 28.95 | 6.76 | 36.56 | 37.97 | 74.00 | -36.03 | Peak |
| 2 | 5164.81 | 35.40 | 31.91 | 8.96 | 35.44 | 40.83 | 74.00 | -33.17 | Peak |
| 3 | 8063.40 | 32.55 | 37.20 | 11.08 | 33.32 | 47.51 | 74.00 | -26.49 | Peak |
| 4 | 11545.04 | 31.69 | 40.76 | 12.75 | 36.37 | 48.83 | 74.00 | -25.17 | Peak |

| Type | 802.11n(HT20) | Test channel | CH11 | Polarity | Vertical |
|---|---|---|---|---|---|

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 3543.55 | 38.05 | 29.27 | 6.84 | 36.78 | 37.38 | 74.00 | -36.62 | Peak |
| 2 | 4821.76 | 36.40 | 31.40 | 8.50 | 35.24 | 41.06 | 74.00 | -32.94 | Peak |
| 3 | 8063.40 | 33.03 | 37.20 | 11.08 | 33.32 | 47.99 | 74.00 | -26.01 | Peak |
| 4 | 11197.71 | 32.34 | 40.30 | 12.61 | 36.55 | 48.70 | 74.00 | -25.30 | Peak |

| Type | 802.11n(HT40) | Test channel | CH03 | Polarity | Horizontal |
|---|---|---|---|---|---|

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 3143.98 | 40.36 | 29.00 | 6.37 | 37.21 | 38.52 | 74.00 | -35.48 | Peak |
| 2 | 5060.69 | 34.77 | 32.20 | 8.89 | 35.41 | 40.45 | 74.00 | -33.55 | Peak |
| 3 | 8042.90 | 32.53 | 37.19 | 11.02 | 33.31 | 47.43 | 74.00 | -26.57 | Peak |
| 4 | 12429.54 | 32.10 | 39.24 | 13.44 | 35.64 | 49.14 | 74.00 | -24.86 | Peak |

| Type | 802.11n(HT40) | Test channel | CH03 | Polarity | Vertical |
|---|---|---|---|---|---|

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 3160.03 | 39.12 | 28.98 | 6.40 | 37.15 | 37.35 | 74.00 | -36.65 | Peak |
| 2 | 4366.07 | 37.57 | 30.53 | 7.97 | 36.16 | 39.91 | 74.00 | -34.09 | Peak |
| 3 | 5762.24 | 39.75 | 31.92 | 9.57 | 34.86 | 46.38 | 74.00 | -27.62 | Peak |
| 4 | 8002.06 | 32.74 | 37.10 | 10.91 | 33.31 | 47.44 | 74.00 | -26.56 | Peak |

| Type | 802.11n(HT40) | Test channel | CH06 | Polarity | Horizontal |
|---|---|---|---|---|---|

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 3143.98 | 39.90 | 29.00 | 6.37 | 37.21 | 38.06 | 74.00 | -35.94 | Peak |
| 2 | 5047.83 | 35.24 | 32.19 | 8.87 | 35.37 | 40.93 | 74.00 | -33.07 | Peak |
| 3 | 8083.96 | 31.97 | 37.20 | 11.15 | 33.32 | 47.00 | 74.00 | -27.00 | Peak |
| 4 | 11515.68 | 31.20 | 40.85 | 12.74 | 36.37 | 48.42 | 74.00 | -25.58 | Peak |

| Type | 802.11n(HT40) | Test channel | CH06 | Polarity | Vertical |
|---|---|---|---|---|---|

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 4086.46 | 36.86 | 30.00 | 7.46 | 36.31 | 38.01 | 74.00 | -35.99 | Peak |
| 2 | 5762.24 | 40.06 | 31.92 | 9.57 | 34.86 | 46.69 | 74.00 | -27.31 | Peak |
| 3 | 8083.96 | 32.51 | 37.20 | 11.15 | 33.32 | 47.54 | 74.00 | -26.46 | Peak |
| 4 | 10507.31 | 33.53 | 40.01 | 12.47 | 37.08 | 48.93 | 74.00 | -25.07 | Peak |

| Type | 802.11n(HT40) | Test channel | CH09 | Polarity | Horizontal |
|---|---|---|---|---|---|

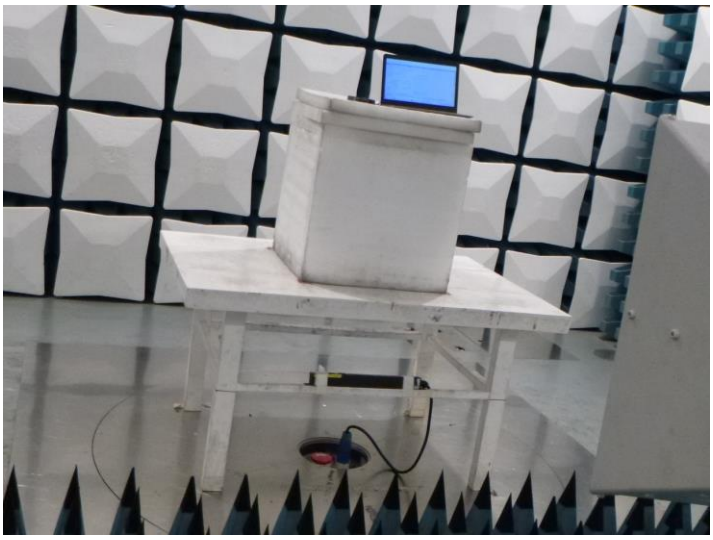
| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 3151.99 | 40.11 | 29.00 | 6.38 | 37.18 | 38.31 | 74.00 | -35.69 | Peak |
| 2 | 5086.52 | 35.32 | 32.20 | 8.92 | 35.46 | 40.98 | 74.00 | -33.02 | Peak |
| 3 | 8125.22 | 32.38 | 37.10 | 11.28 | 33.36 | 47.40 | 74.00 | -26.60 | Peak |
| 4 | 10860.83 | 32.12 | 40.48 | 12.51 | 36.78 | 48.33 | 74.00 | -25.67 | Peak |

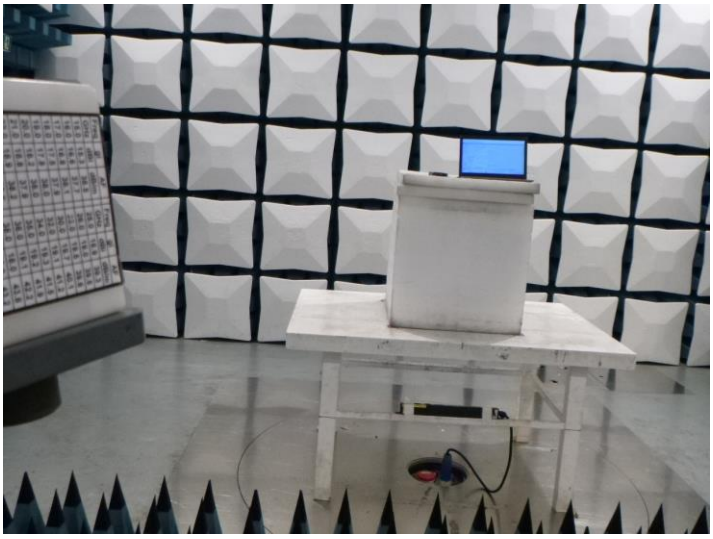
| Type | 802.11n(HT40) | Test channel | CH09 | Polarity | Vertical |
|---|---|---|---|---|---|

| Mark | Frequency MHz | Reading dBuV/m | Antenna dB | Cable dB | Preamp dB | Level dBuV/m | Limit dBuV/m | Over limit | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 3844.28 | 37.78 | 29.78 | 7.20 | 36.89 | 37.87 | 74.00 | -36.13 | Peak |
| 2 | 5762.24 | 39.94 | 31.92 | 9.57 | 34.86 | 46.57 | 74.00 | -27.43 | Peak |
| 3 | 8042.90 | 32.37 | 37.19 | 11.02 | 33.31 | 47.27 | 74.00 | -26.73 | Peak |
| 4 | 10860.83 | 32.55 | 40.48 | 12.51 | 36.78 | 48.76 | 74.00 | -25.24 | Peak |

# 6. TEST SETUP PHOTOS

Radiated Emission



AC Conducted Emission

## 7. EXTERANAL AND INTERNAL PHOTOS

Reference to the test report No. : CHTEW21100001.

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