



Shenzhen DL Testing Technology Co., Ltd.

Report No.:DLE-251104004R

# FCC TEST REPORT

## FCC ID:2BSWR-DC409X

Applicant: 70 Inc.  
Address: 2447 Pacific Coast Hwy. Unit #200, Hermosa Beach, CA 90254  
Manufacturer: 70 Inc.  
Address: 2447 Pacific Coast Hwy. Unit #200, Hermosa Beach, CA 90254  
EUT: Digital camera  
Trade Mark: dijie  
Model Number: DC409X  
Date of Receipt: Sep. 22, 2025  
Test Date: Sep. 22, 2025 - Nov. 19, 2025  
Date of Report: Nov. 19, 2025  
Prepared By: Shenzhen DL Testing Technology Co., Ltd.  
Address: 101-201, Building C, Shuanghuan, No.8, Baoqing Roa Baolong Industrial Zone, Baolong Street, Longgang Shenzhen, Guangdong, China  
Applicable Standards: FCC CFR Title 47 Part 15 Subpart C Section 15.247  
ANSI C63.10:2020  
Test Result: Pass  
Report Number: DLE-251104004R

Prepared (Test Engineer): Dimon Tan

Reviewer (Supervisor): Jack Bu

Approved (Manager): Jade Yang



This test report is based on a single evaluation of one sample of above mentioned products. It is not permitted to be duplicated in extracts without written approval of Shenzhen DL Testing Technology Co., Ltd.



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## 1. VERSION

| Report No.     | Version | Description             | Approved      |
|----------------|---------|-------------------------|---------------|
| DLE-251104004R | Rev.01  | Initial issue of report | Nov. 19, 2025 |
|                |         |                         |               |



## 2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

| FCC Part15 (15.247) , Subpart C |                                       |        |        |
|---------------------------------|---------------------------------------|--------|--------|
| Standard Section                | Test Item                             | Result | Remark |
| FCC part 15.203/15.247 (c)      | Antenna requirement                   | PASS   |        |
| FCC part 15.207                 | AC Power Line Conducted Emission      | PASS   |        |
| FCC part 15.247 (b)(3)          | Conducted Peak Output Power           | PASS   |        |
| FCC part 15.247 (a)(2)          | 6dB Occupied Bandwidth                | PASS   |        |
| FCC part 15.247 (e)             | Power Spectral Density                | PASS   |        |
| FCC part 15.247(d)              | Band Edge/Conducted spurious emission | PASS   |        |
| FCC part 15.205/15.209          | Spurious Emission                     | PASS   |        |
| ANSI C63.10:2020                | Duty cycle                            | PASS   |        |

**NOTE:**

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



## 2.1 TEST FACILITY

Test lab: Shenzhen DL Testing Technology Co., Ltd.

Address: 101-201, Building C, Shuanghuan, No.8, Baoqing Roa Baolong Industrial Zone, Baolong Street, Longgang Shenzhen, Guangdong, China

FCC Test Firm Registration Number: 854456

Designation Number: CN1307

IC Registered No.:CN0118

ISED Registration number: 27485

## 2.2 MEASUREMENT UNCERTAINTY

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

| No. | Item                                              | Uncertainty |
|-----|---------------------------------------------------|-------------|
| 1   | 3m camber Radiated spurious emission(9KHz-30MHz)  | U=4.5dB     |
| 2   | 3m camber Radiated spurious emission(30MHz-1GHz)  | U=4.8dB     |
| 3   | 3m chamber Radiated spurious emission(1GHz-6GHz)  | U=4.9dB     |
| 4   | 3m chamber Radiated spurious emission(6GHz-40GHz) | U=5.0dB     |
| 5   | Conducted disturbance                             | U=3.2dB     |
| 6   | RF Band Edge                                      | U=1.68dB    |
| 7   | RF power conducted                                | U=1.86dB    |
| 8   | RF conducted Spurious Emission                    | U=2.2dB     |
| 9   | RF Occupied Bandwidth                             | U=1.8dB     |
| 10  | RF Power Spectral Density                         | U=1.75dB    |
| 11  | humidity uncertainty                              | U=5.3%      |
| 12  | Temperature uncertainty                           | U=0.59°C    |
| 13  | Duty Cycle                                        | U=1.3dB     |



### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

|                        |                                                                                                                     |
|------------------------|---------------------------------------------------------------------------------------------------------------------|
| Product Name:          | Digital camera                                                                                                      |
| Model No.:             | DC409X                                                                                                              |
| Model Different.:      | N/A                                                                                                                 |
| Serial No.:            | N/A                                                                                                                 |
| Hardware Version:      | H1.0                                                                                                                |
| Software Version:      | S1.0                                                                                                                |
| Sample(s) Status:      | Engineer sample                                                                                                     |
| Channel numbers:       | 802.11b/g/n20: 11 CH<br>802.11n40: 7 CH                                                                             |
| Channel separation:    | 5MHz                                                                                                                |
| Modulation technology: | 802.11b:<br>Direct Sequence Spread Spectrum(DSSS)<br>802.11g/n:<br>Orthogonal Frequency Division Multiplexing(OFDM) |
| Data Rate              | 802.11b: 1/2/5.5/11Mbit/s<br>802.11g: 6/9/12/24/18/36/48/54Mbit/s<br>802.11n20/n40: MCS0-MCS7                       |
| Antenna Type:          | FPC Antenna                                                                                                         |
| Antenna gain:          | 1.73dBi                                                                                                             |
| Power supply:          | Input: 5V--- 1A<br>Battery: 3.7V, 1500mAh, 5.55Wh                                                                   |



| Operation Frequency each of channel |           |         |           |         |           |         |           |
|-------------------------------------|-----------|---------|-----------|---------|-----------|---------|-----------|
| Channel                             | Frequency | Channel | Frequency | Channel | Frequency | Channel | Frequency |
| 1                                   | 2412MHz   | 4       | 2427MHz   | 7       | 2442MHz   | 10      | 2457MHz   |
| 2                                   | 2417MHz   | 5       | 2432MHz   | 8       | 2447MHz   | 11      | 2462MHz   |
| 3                                   | 2422MHz   | 6       | 2437MHz   | 9       | 2452MHz   |         |           |

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

| Test channel    | Frequency (MHz) |           |
|-----------------|-----------------|-----------|
|                 | 802.11b/g/n20   | 802.11n40 |
| Lowest channel  | 2412MHz         | 2422MHz   |
| Middle channel  | 2437MHz         | 2437MHz   |
| Highest channel | 2462MHz         | 2452MHz   |

### 3.2 DESCRIPTION OF TEST MODES

|                                                                                                                                                                                                                                                                                                                                      |                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Transmitting mode                                                                                                                                                                                                                                                                                                                    | Keep the EUT in continuously transmitting mode |
| Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.<br>For battery operated equipment, the equipment tests shall be performed using a new battery. |                                                |

|                                                                                                                                                                                                              |         |         |               |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------|---------------|--|
| We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows: |         |         |               |  |
| Pre-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.                                                                                                         |         |         |               |  |
| Mode                                                                                                                                                                                                         | 802.11b | 802.11g | 802.11n20/n40 |  |
| Data rate                                                                                                                                                                                                    | 1Mbps   | 6Mbps   | MCS0(HT0)     |  |

|                   |         |
|-------------------|---------|
| Test Software     | MMPT    |
| Power level setup | Default |

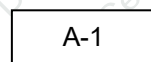


### 3.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

#### Conducted Emission



#### Radiated Emission



### 3.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

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

| Item | Equipment      | Mfr/Brand | Model/Type No. | Series No. | Note      |
|------|----------------|-----------|----------------|------------|-----------|
| E-1  | Digital camera | dijie     | DC409X         | N/A        | EUT       |
| A-1  | Power adapter  | N/A       | X569           | N/A        | Auxiliary |
|      |                |           |                |            |           |

| Item | Shielded Type | Ferrite Core | Length | Note |
|------|---------------|--------------|--------|------|
|      |               |              |        |      |
|      |               |              |        |      |
|      |               |              |        |      |

#### Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.
- (3) EUT tested with full-charged battery.



## 3.5EQUIPMENTS LIST FOR ALL TEST ITEMS

## Radiation test, Band-edge test and 6db bandwidth test equipment

| Item | Equipment                        | Manufacturer    | Type No.  | Serial No. | Last calibration | Calibrated until |
|------|----------------------------------|-----------------|-----------|------------|------------------|------------------|
| 1    | Spectrum Analyzer (9kHz-26.5GHz) | Agilent         | E4408B    | MY50140780 | Nov. 01, 2024    | Oct. 31, 2025    |
| 2    | Test Receiver (9kHz-7GHz)        | R&S             | ESRP7     | 101393     | Nov. 01, 2024    | Oct. 31, 2025    |
| 3    | Bilog Antenna (30MHz-1GHz)       | R&S             | VULB9162  | 00306      | Nov. 01, 2024    | Oct. 31, 2025    |
| 4    | Horn Antenna (1GHz-18GHz)        | Schwarzbeck     | BBHA9120D | 02139      | Nov. 01, 2024    | Oct. 31, 2025    |
| 5    | Horn Antenna (18GHz-40GHz)       | A.H. Systems    | SAS-574   | 588        | Nov. 01, 2024    | Oct. 31, 2025    |
| 6    | Amplifier (9kHz-6GHz)            | Schwarzbeck     | BBV9743B  | 00153      | Nov. 01, 2024    | Oct. 31, 2025    |
| 7    | Amplifier (1GHz-18GHz)           | EMEC            | EM01G8GA  | 00270      | Nov. 01, 2024    | Oct. 31, 2025    |
| 8    | Amplifier (18GHz-40GHz)          | Quanjuda        | DLE-161   | 97         | Nov. 01, 2024    | Oct. 31, 2025    |
| 9    | Loop Antenna (9kHz-30MHz)        | Schwarzbeck     | FMZB1519B | 00014      | Nov. 01, 2024    | Oct. 31, 2025    |
| 10   | RF cables1 (9kHz-1GHz)           | ChengYu         | 966       | 004        | Nov. 01, 2024    | Oct. 31, 2025    |
| 11   | RF cables2 (1GHz-40GHz)          | ChengYu         | 966       | 003        | Nov. 01, 2024    | Oct. 31, 2025    |
| 12   | Antenna connector                | Florida RF Labs | N/A       | RF 01#     | Nov. 01, 2024    | Oct. 31, 2025    |
| 13   | Power probe                      | KEYSIGHT        | U2021XA   | MY55210018 | Nov. 01, 2024    | Oct. 31, 2025    |
| 14   | Signal Analyzer 9kHz-26.5GHz     | Agilent         | N9020A    | MY55370280 | Nov. 01, 2024    | Oct. 31, 2025    |
| 15   | Test Receiver 20kHz-40GHz        | R&S             | ESU 40    | 100376     | Nov. 01, 2024    | Oct. 31, 2025    |
| 16   | D.C. Power Supply                | LongWei         | PS-305D   | 010964729  | Nov. 01, 2024    | Oct. 31, 2025    |

## Conduction Test equipment

| Item | Equipment         | Manufacturer | Type No. | Serial No. | Last calibration | Calibrated until |
|------|-------------------|--------------|----------|------------|------------------|------------------|
| 1    | 843 Shielded Room | ChengYu      | 843 Room | 843        | Nov. 01, 2024    | Oct. 31, 2025    |
| 2    | EMI Receiver      | R&S          | ESR      | 101421     | Nov. 01, 2024    | Oct. 31, 2025    |
| 3    | LISN              | R&S          | ENV216   | 102417     | Nov. 01, 2024    | Oct. 31, 2025    |
| 4    | 843 Cable 1#      | ChengYu      | CE Cable | 001        | Nov. 01, 2024    | Oct. 31, 2025    |

## Other

| Item | Name                         | Manufacturer | Model   | Software version |
|------|------------------------------|--------------|---------|------------------|
| 1    | EMC Conduction Test System   | FALA         | EZ EMC  | EMC-CON 3A1.1    |
| 2    | EMC radiation test system    | FALA         | EZ EMC  | FA-03A2          |
| 3    | RF test system               | MAIWEI       | MTS8310 | 2.0.0.0          |
| 4    | RF communication test system | MAIWEI       | MTS8200 | 2.0.0.0          |



Shenzhen DL Testing Technology Co., Ltd.

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## Radiation test, Band-edge test and 6db bandwidth test equipment

| Item | Equipment                           | Manufacturer    | Type No.  | Serial No. | Last calibration | Calibrated until |
|------|-------------------------------------|-----------------|-----------|------------|------------------|------------------|
| 1    | Spectrum Analyzer<br>(9kHz-26.5GHz) | Agilent         | E4408B    | MY50140780 | Oct. 25, 2025    | Oct. 24, 2026    |
| 2    | Test Receiver<br>(9kHz-7GHz)        | R&S             | ESRP7     | 101393     | Oct. 27, 2025    | Oct. 24, 2026    |
| 3    | Bilog Antenna<br>(30MHz-1GHz)       | R&S             | VULB9162  | 00306      | Oct. 27, 2025    | Oct. 26, 2026    |
| 4    | Horn Antenna<br>(1GHz-18GHz)        | Schwarzbeck     | BBHA9120D | 02139      | Oct. 25, 2025    | Oct. 26, 2026    |
| 5    | Horn Antenna<br>(18GHz-40GHz)       | A.H. Systems    | SAS-574   | 588        | Oct. 25, 2025    | Oct. 24, 2026    |
| 6    | Amplifier<br>(9KHz-6GHz)            | Schwarzbeck     | BBV9743B  | 00153      | Oct. 25, 2025    | Oct. 24, 2026    |
| 7    | Amplifier<br>(1GHz-18GHz)           | EMEC            | EM01G8GA  | 00270      | Oct. 25, 2025    | Oct. 24, 2026    |
| 8    | Amplifier<br>(18GHz-40GHz)          | Quanjuda        | DLE-161   | 97         | Oct. 25, 2025    | Oct. 24, 2026    |
| 9    | Loop Antenna<br>(9KHz-30MHz)        | Schwarzbeck     | FMZB1519B | 00014      | Oct. 25, 2025    | Oct. 24, 2026    |
| 10   | RF cables1<br>(9kHz-1GHz)           | ChengYu         | 966       | 004        | Oct. 25, 2025    | Oct. 24, 2026    |
| 11   | RF cables2<br>(1GHz-40GHz)          | ChengYu         | 966       | 003        | Oct. 25, 2025    | Oct. 24, 2026    |
| 12   | Antenna connector                   | Florida RF Labs | N/A       | RF 01#     | Oct. 25, 2025    | Oct. 24, 2026    |
| 13   | Power probe                         | KEYSIGHT        | U2021XA   | MY55210018 | Oct. 25, 2025    | Oct. 24, 2026    |
| 14   | Signal Analyzer<br>9kHz-26.5GHz     | Agilent         | N9020A    | MY55370280 | Oct. 25, 2025    | Oct. 24, 2026    |
| 15   | Test Receiver<br>20kHz-40GHz        | R&S             | ESU 40    | 100376     | Oct. 25, 2025    | Oct. 24, 2026    |
| 16   | D.C. Power Supply                   | LongWei         | PS-305D   | 010964729  | Oct. 25, 2025    | Oct. 24, 2026    |

## Conduction Test equipment

| Item | Equipment         | Manufacturer | Type No. | Serial No. | Last calibration | Calibrated until |
|------|-------------------|--------------|----------|------------|------------------|------------------|
| 1    | 843 Shielded Room | YIHENG       | 843 Room | 843        | Nov. 05, 2023    | Nov. 04, 2026    |
| 2    | EMI Receiver      | R&S          | ESR      | 101421     | Oct. 25, 2025    | Oct. 24, 2026    |
| 3    | LISN              | R&S          | ENV216   | 102417     | Oct. 25, 2025    | Oct. 24, 2026    |
| 4    | 843 Cable 1#      | ChengYu      | CE Cable | 001        | Oct. 25, 2025    | Oct. 24, 2026    |



#### 4. EMC EMISSION TEST

##### 4.1 CONDUCTED EMISSION MEASUREMENT

|                       |                                      |
|-----------------------|--------------------------------------|
| Test Requirement:     | FCC Part15 C Section 15.207          |
| Test Method:          | ANSI C63.10:2020                     |
| Test Frequency Range: | 150KHz to 30MHz                      |
| Receiver setup:       | RBW=9KHz, VBW=30KHz, Sweep time=auto |

##### 4.1.1 POWER LINE CONDUCTED EMISSION Limits

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

Note:

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

##### 4.1.2 TEST PROCEDURE

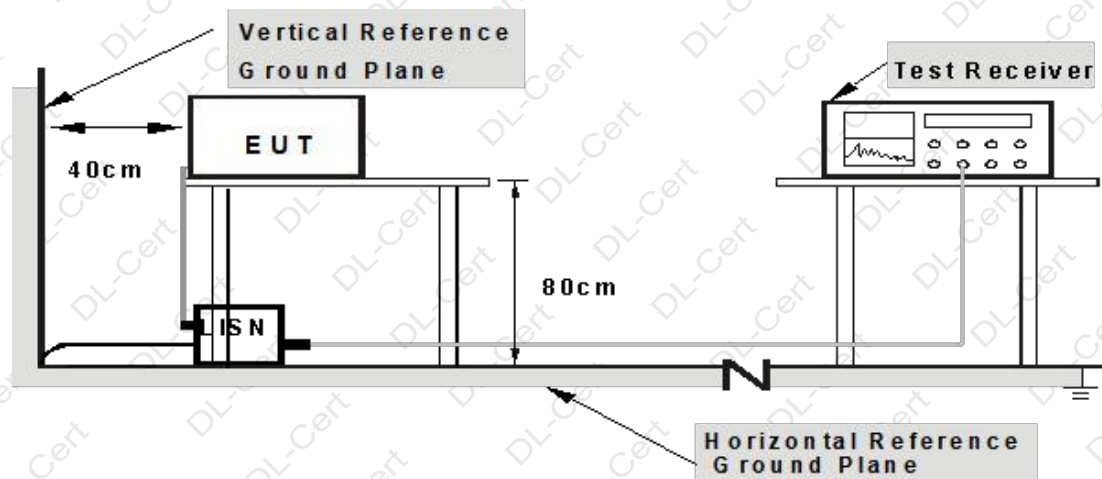
- The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.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

##### 4.1.3 DEVIATION FROM TEST STANDARD

No deviation



#### 4.1.4 TEST SETUP



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

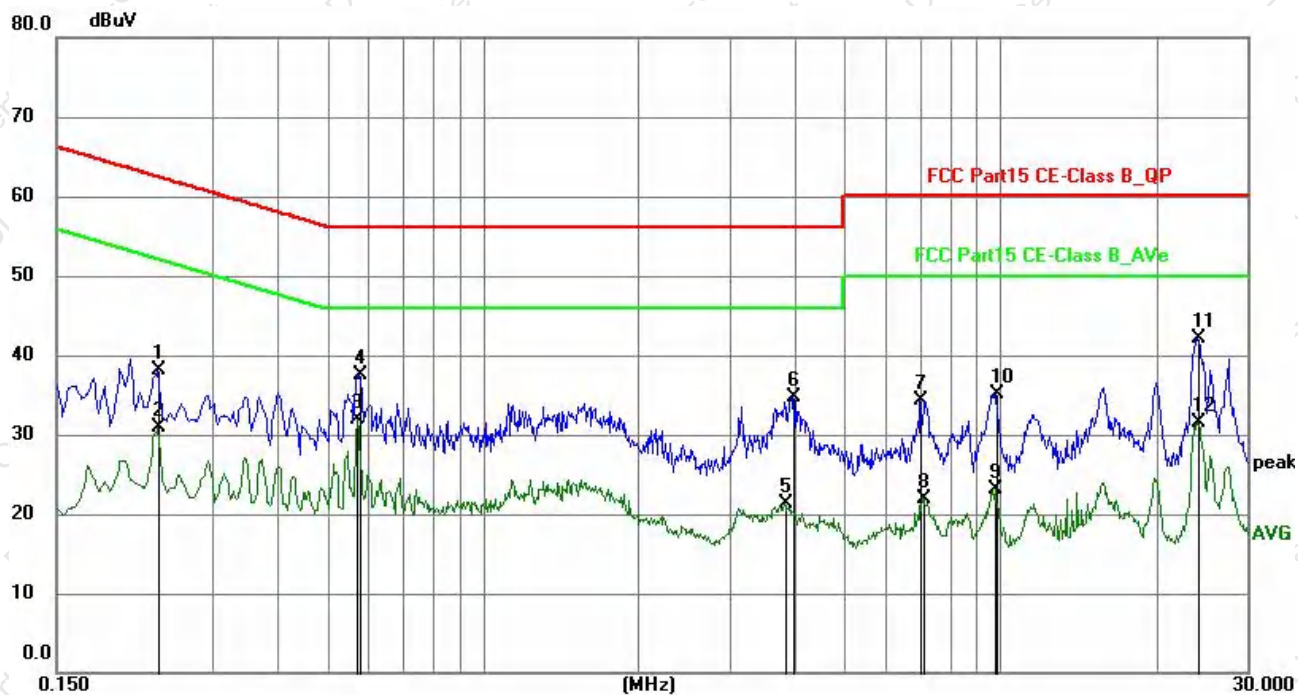
#### 4.1.5 EUT OPERATING CONDITIONS

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



## 4.1.6 TEST RESULT

|               |              |                    |                        |
|---------------|--------------|--------------------|------------------------|
| Temperature:  | 26℃          | Relative Humidity: | 54%                    |
| Pressure:     | 101 kPa      | Polarization:      | L                      |
| Test Voltage: | AC 120V/60Hz | Test Mode:         | TX 802.11n20 - 2412MHz |



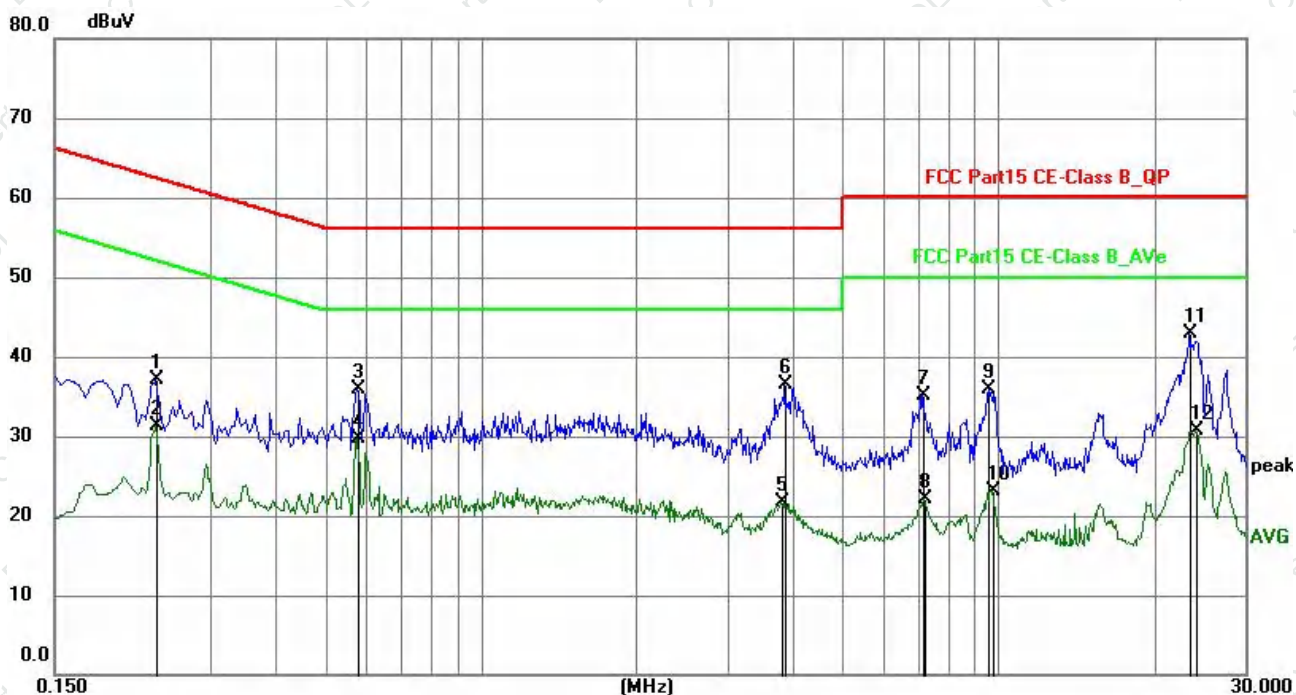
| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | P/F | Remark |
|-----|-----------------|----------------|-------------|--------------|--------------|-------------|----------|-----|--------|
| 1   | 0.2354          | 17.73          | 20.37       | 38.10        | 62.26        | -24.16      | QP       | P   |        |
| 2   | 0.2354          | 10.57          | 20.37       | 30.94        | 52.26        | -21.32      | AVG      | P   |        |
| 3   | 0.5728          | 11.69          | 20.29       | 31.98        | 46.00        | -14.02      | AVG      | P   |        |
| 4   | 0.5774          | 17.30          | 20.29       | 37.59        | 56.00        | -18.41      | QP       | P   |        |
| 5   | 3.8309          | 1.04           | 20.34       | 21.38        | 46.00        | -24.62      | AVG      | P   |        |
| 6   | 3.9750          | 14.36          | 20.34       | 34.70        | 56.00        | -21.30      | QP       | P   |        |
| 7   | 7.0214          | 13.91          | 20.39       | 34.30        | 60.00        | -25.70      | QP       | P   |        |
| 8   | 7.0709          | 1.61           | 20.39       | 22.00        | 50.00        | -28.00      | AVG      | P   |        |
| 9   | 9.7620          | 2.62           | 20.46       | 23.08        | 50.00        | -26.92      | AVG      | P   |        |
| 10  | 9.8520          | 14.73          | 20.46       | 35.19        | 60.00        | -24.81      | QP       | P   |        |
| 11  | 24.0450         | 21.50          | 20.61       | 42.11        | 60.00        | -17.89      | QP       | P   |        |
| 12  | 24.0450         | 10.81          | 20.61       | 31.42        | 50.00        | -18.58      | AVG      | P   |        |

## Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi - Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Reading level + Correct Factor.
4. Correct Factor = Lism factor+ Cable loss factor + limiter factor.
5. Margin = Measurement Level-Limit.
6. The test data shows only the worst case TX 802.11n20 - 2412MHz.



|               |              |                    |                        |
|---------------|--------------|--------------------|------------------------|
| Temperature:  | 26℃          | Relative Humidity: | 54%                    |
| Pressure:     | 101 kPa      | Polarization:      | N                      |
| Test Voltage: | AC 120V/60Hz | Test Mode:         | TX 802.11n20 - 2412MHz |



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | P/F | Remark |
|-----|-----------------|----------------|-------------|--------------|--------------|-------------|----------|-----|--------|
| 1   | 0.2355          | 16.72          | 20.36       | 37.08        | 62.25        | -25.17      | QP       | P   |        |
| 2   | 0.2355          | 10.96          | 20.36       | 31.32        | 52.25        | -20.93      | AVG      | P   |        |
| 3   | 0.5774          | 15.60          | 20.30       | 35.90        | 56.00        | -20.10      | QP       | P   |        |
| 4   | 0.5774          | 9.45           | 20.30       | 29.75        | 46.00        | -16.25      | AVG      | P   |        |
| 5   | 3.8130          | 1.47           | 20.33       | 21.80        | 46.00        | -24.20      | AVG      | P   |        |
| 6   | 3.8715          | 16.09          | 20.33       | 36.42        | 56.00        | -19.58      | QP       | P   |        |
| 7   | 7.1655          | 14.72          | 20.40       | 35.12        | 60.00        | -24.88      | QP       | P   |        |
| 8   | 7.2015          | 1.65           | 20.40       | 22.05        | 50.00        | -27.95      | AVG      | P   |        |
| 9   | 9.5550          | 15.35          | 20.46       | 35.81        | 60.00        | -24.19      | QP       | P   |        |
| 10  | 9.7350          | 2.61           | 20.47       | 23.08        | 50.00        | -26.92      | AVG      | P   |        |
| 11  | 23.4690         | 22.24          | 20.62       | 42.86        | 60.00        | -17.14      | QP       | P   |        |
| 12  | 24.0540         | 10.13          | 20.64       | 30.77        | 50.00        | -19.23      | AVG      | P   |        |

## Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi - Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Reading level + Correct Factor.
4. Correct Factor = Liss factor+ Cable loss factor + limiter factor.
5. Margin = Measurement Level-Limit.
6. The test data shows only the worst case TX 802.11n20 - 2412MHz.



## 4.2 RADIATED EMISSION MEASUREMENT

|                       |                             |            |        |        |            |
|-----------------------|-----------------------------|------------|--------|--------|------------|
| Test Requirement:     | FCC Part15 C Section 15.209 |            |        |        |            |
| Test Method:          | ANSI C63.10:2020            |            |        |        |            |
| Test Frequency Range: | 9kHz to 25GHz               |            |        |        |            |
| Test site:            | Measurement Distance: 3m    |            |        |        |            |
| Receiver setup:       | Frequency                   | Detector   | RBW    | VBW    | Value      |
|                       | 9KHz-150KHz                 | Quasi-peak | 200Hz  | 600Hz  | Quasi-peak |
|                       | 150KHz-30MHz                | Quasi-peak | 9KHz   | 30KHz  | Quasi-peak |
|                       | 30MHz-1GHz                  | Quasi-peak | 100KHz | 300KHz | Quasi-peak |
|                       | Above 1GHz                  | Peak       | 1MHz   | 3MHz   | Peak       |
|                       |                             | Peak       | 1MHz   | 10Hz   | Average    |

## 4.2.1 RADIATED EMISSION LIMITS

| Frequencies<br>(MHz) | Field Strength<br>(micorvolts/meter) | Measurement Distance<br>(meters) |
|----------------------|--------------------------------------|----------------------------------|
| 0.009~0.490          | 2400/F(KHz)                          | 300                              |
| 0.490~1.705          | 24000/F(KHz)                         | 30                               |
| 1.705~30.0           | 30                                   | 30                               |
| 30~88                | 100                                  | 3                                |
| 88~216               | 150                                  | 3                                |
| 216~960              | 200                                  | 3                                |
| Above 960            | 500                                  | 3                                |

## LIMITS OF RADIATED EMISSION MEASUREMENT

| FREQUENCY (MHz) | Limit (dBuV/m) (at 3M) |         |
|-----------------|------------------------|---------|
|                 | PEAK                   | AVERAGE |
| Above 1000      | 74                     | 54      |

## Notes:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).



#### 4.2.2 TEST PROCEDURE

Below 1GHz test procedure as below:

- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of variable-height antenna tower.
- The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Above 1GHz test procedure as below:

- Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 meter to 1.5 meter( Above 18GHz the distance is 1 meter and table is 1.5 meter).
- Test the EUT in the lowest channel ,the middle channel ,the Highest channel

Note:

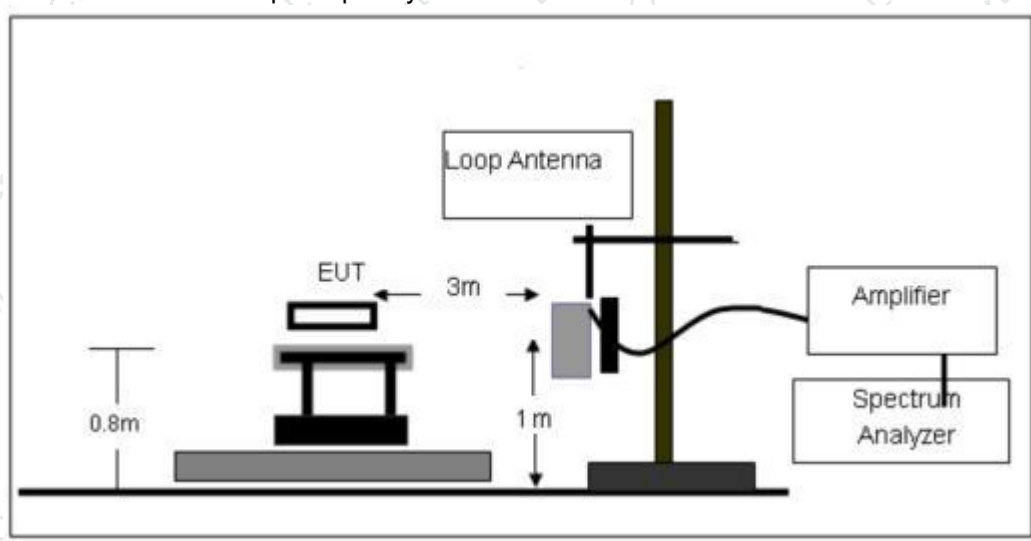
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

#### 4.2.3 DEVIATION FROM TEST STANDARD

No deviation

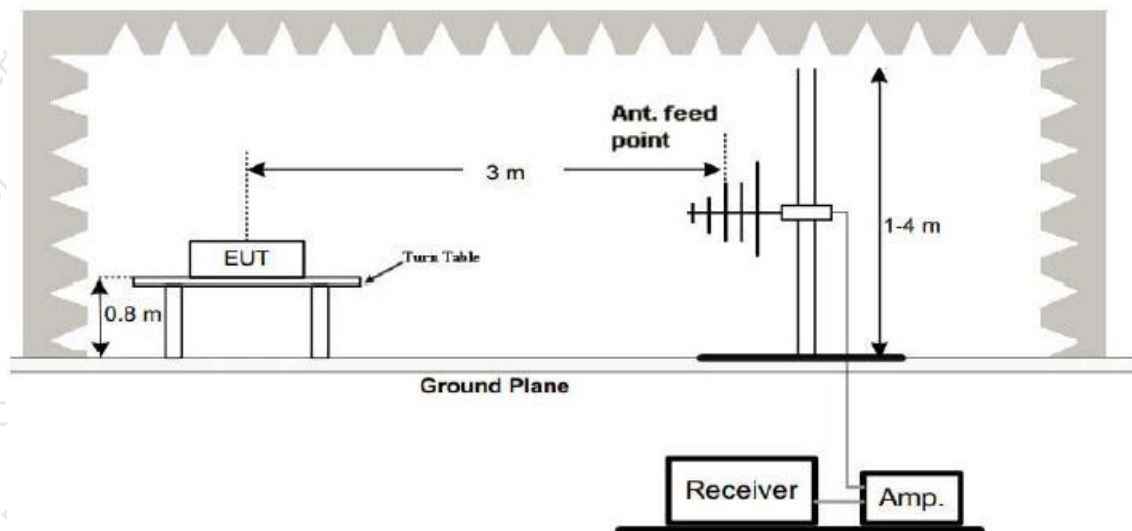
#### 4.2.4 TEST SETUP

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

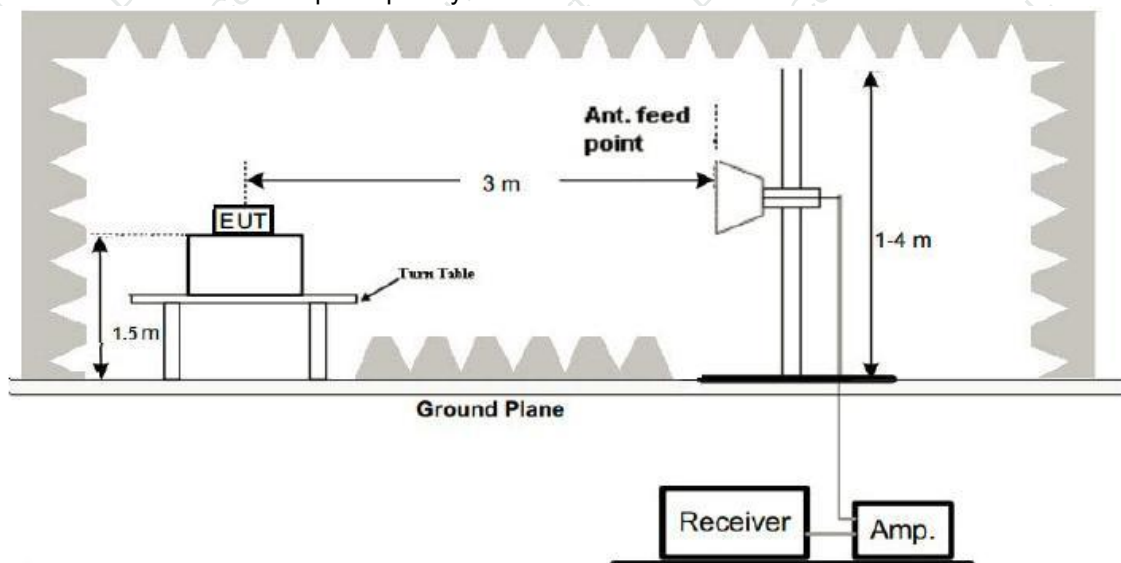




## (B) Radiated Emission Test-Up Frequency 30MHz~1GHz



## (C) Radiated Emission Test-Up Frequency Above 1GHz



## 4.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 4.2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

## 4.2.6 TEST RESULTS

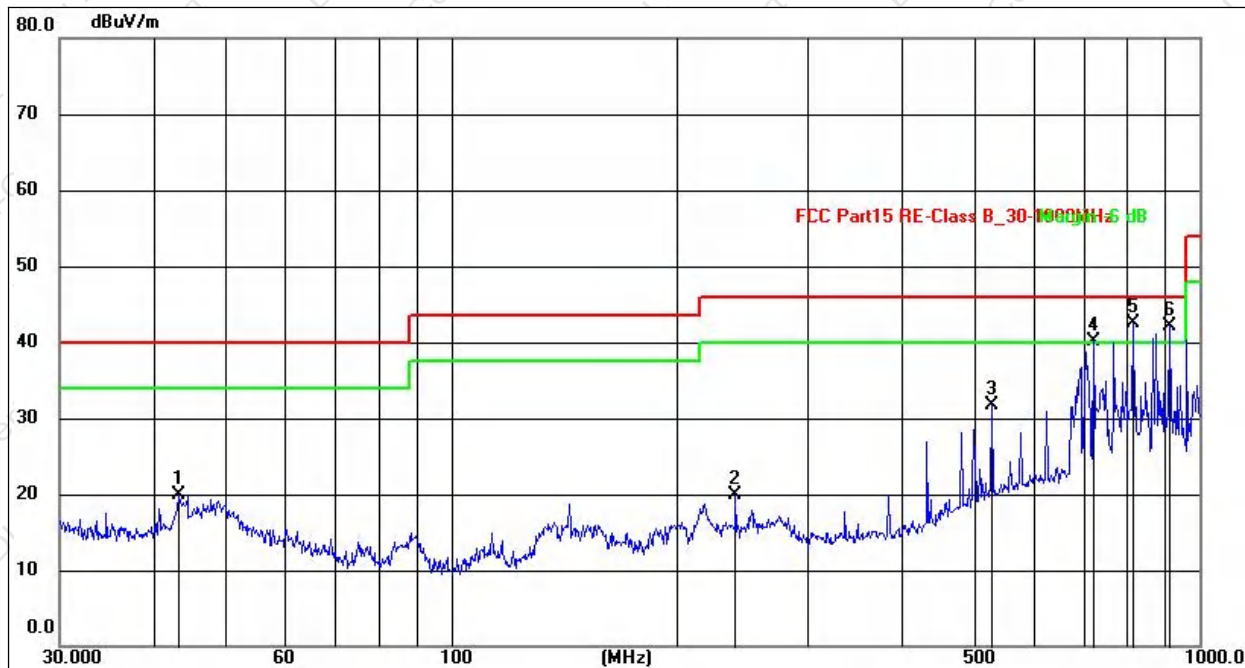
Between 9KHz – 30MHz

The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o) & RSS-Gen 6.13, the test result no need to reported.



Between 30MHz – 1GHz

|               |         |                    |                        |
|---------------|---------|--------------------|------------------------|
| Temperature:  | 26℃     | Relative Humidity: | 54%                    |
| Pressure:     | 101 kPa | Polarization:      | Horizontal             |
| Test Voltage: | DC 3.7V | Test Mode :        | TX 802.11n20 - 2412MHz |



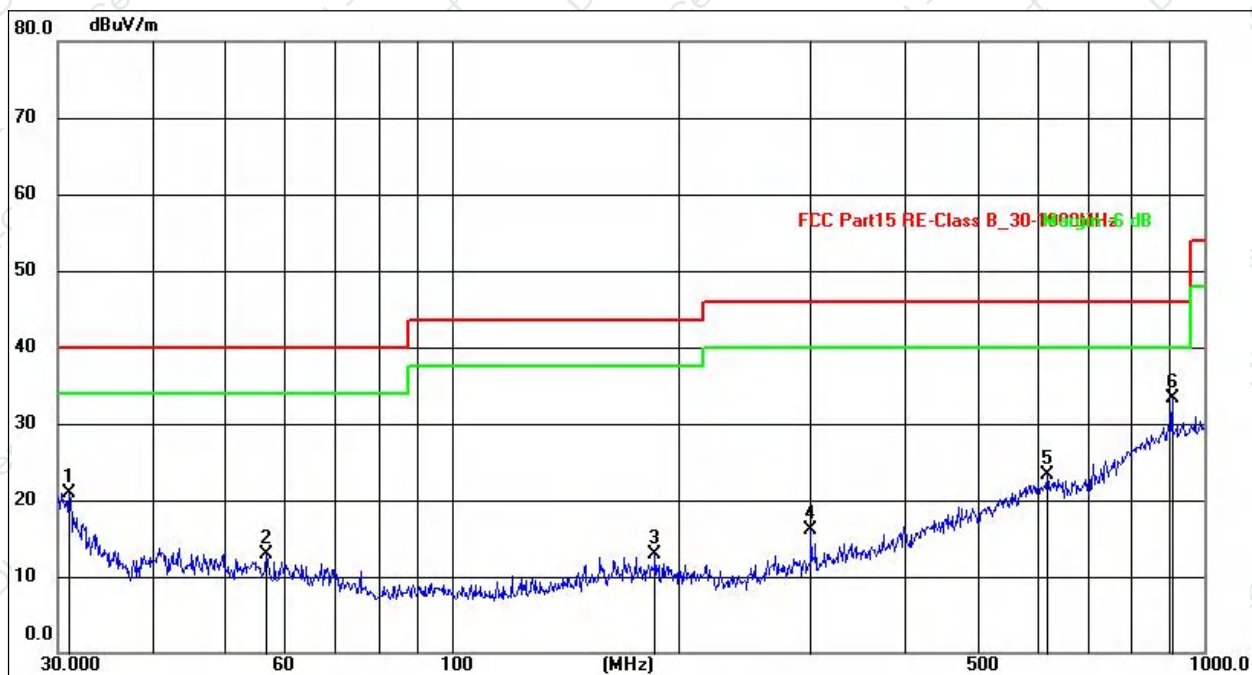
| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1   | 43.2014         | 33.95          | -14.00        | 19.95          | 40.00          | -20.05      | QP       |
| 2   | 239.9873        | 35.85          | -15.92        | 19.93          | 46.00          | -26.07      | QP       |
| 3   | 528.2458        | 42.03          | -10.28        | 31.75          | 46.00          | -14.25      | QP       |
| 4   | 721.7258        | 46.60          | -6.48         | 40.12          | 46.00          | -5.88       | QP       |
| 5   | 815.9678        | 49.17          | -6.66         | 42.51          | 46.00          | -3.49       | QP       |
| 6   | 912.8618        | 48.43          | -6.41         | 42.02          | 46.00          | -3.98       | QP       |

## Remarks:

1. An initial pre-scan was performed on the peak detector.
2. Quasi - Peak measurement were performed at the frequencies with maximized peak emission.
3. The emission levels of other frequencies are very lower than the limit and not show in test report.
4. Final Level = Reading level + Correct Factor.
5. Correct Factor = Antenna factor+ Cable loss factor - Amplifier factor.
6. Margin = Measurement Level-Limit.
7. The test data shows only the worst case TX 802.11n20 - 2412MHz.



|               |         |                    |                        |
|---------------|---------|--------------------|------------------------|
| Temperature:  | 26°C    | Relative Humidity: | 54%                    |
| Pressure:     | 101kPa  | Polarization:      | Vertical               |
| Test Voltage: | DC 3.7V | Test Mode :        | TX 802.11n20 - 2412MHz |



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1   | 31.0704         | 39.05          | -18.16        | 20.89          | 40.00          | -19.11      | QP       |
| 2   | 56.7916         | 30.69          | -17.88        | 12.81          | 40.00          | -27.19      | QP       |
| 3   | 186.4406        | 32.83          | -19.85        | 12.98          | 43.50          | -30.52      | QP       |
| 4   | 300.3672        | 33.97          | -17.89        | 16.08          | 46.00          | -29.92      | QP       |
| 5   | 618.5366        | 30.62          | -7.34         | 23.28          | 46.00          | -22.72      | QP       |
| 6   | 906.4823        | 33.78          | -0.39         | 33.39          | 46.00          | -12.61      | QP       |

## Remarks:

1. An initial pre-scan was performed on the peak detector.
2. Quasi - Peak measurement were performed at the frequencies with maximized peak emission.
3. The emission levels of other frequencies are very lower than the limit and not show in test report.
4. Final Level = Reading level + Correct Factor.
5. Correct Factor = Antenna factor+ Cable loss factor - Amplifier factor.
6. Margin = Measurement Level-Limit.
7. The test data shows only the worst case TX 802.11n20 - 2412MHz.



1GHz~25GHz

802.11b

| Polar<br>(H/V)      | Frequency | Meter<br>Reading | Pre-ampl<br>ifier | Cable<br>Loss | Antenna<br>Factor | Emission<br>Level | Limits       | Margin | Detect<br>or<br>Type |
|---------------------|-----------|------------------|-------------------|---------------|-------------------|-------------------|--------------|--------|----------------------|
|                     | (MHz)     | (dBuV)           | (dB)              | (dB)          | (dB)              | (dBuV/m)          | (dBuV/<br>m) | (dB)   |                      |
| Low Channel:2412MHz |           |                  |                   |               |                   |                   |              |        |                      |
| V                   | 4824.00   | 52.29            | 30.55             | 5.77          | 24.66             | 52.17             | 74.00        | -21.83 | PK                   |
| V                   | 4824.00   | 43.86            | 30.55             | 5.77          | 24.66             | 43.74             | 54.00        | -10.26 | AV                   |
| V                   | 7236.00   | 53.94            | 30.33             | 6.32          | 24.55             | 54.48             | 74.00        | -19.52 | PK                   |
| V                   | 7236.00   | 43.51            | 30.33             | 6.32          | 24.55             | 44.05             | 54.00        | -9.95  | AV                   |
| V                   | 9648.00   | 52.15            | 30.85             | 7.45          | 24.69             | 53.44             | 74.00        | -20.56 | PK                   |
| V                   | 9648.00   | 43.92            | 30.85             | 7.45          | 24.69             | 45.21             | 54.00        | -8.79  | AV                   |
| V                   | 12060.00  | 50.51            | 31.02             | 8.99          | 25.57             | 54.05             | 74.00        | -19.95 | PK                   |
| V                   | 12060.00  | 43.56            | 31.02             | 8.99          | 25.57             | 47.10             | 54.00        | -6.90  | AV                   |
| H                   | 4824.00   | 54.18            | 30.55             | 5.77          | 24.66             | 54.06             | 74.00        | -19.94 | PK                   |
| H                   | 4824.00   | 43.32            | 30.55             | 5.77          | 24.66             | 43.20             | 54.00        | -10.80 | AV                   |
| H                   | 7236.00   | 53.72            | 30.33             | 6.32          | 24.55             | 54.26             | 74.00        | -19.74 | PK                   |
| H                   | 7236.00   | 43.02            | 30.33             | 6.32          | 24.55             | 43.56             | 54.00        | -10.44 | AV                   |
| H                   | 9648.00   | 51.33            | 30.85             | 7.45          | 24.69             | 52.62             | 74.00        | -21.38 | PK                   |
| H                   | 9648.00   | 43.87            | 30.85             | 7.45          | 24.69             | 45.16             | 54.00        | -8.84  | AV                   |
| H                   | 12060.00  | 54.70            | 31.02             | 8.99          | 25.57             | 58.24             | 74.00        | -15.76 | PK                   |
| H                   | 12060.00  | 43.82            | 31.02             | 8.99          | 25.57             | 47.36             | 54.00        | -6.64  | AV                   |

| Polar<br>(H/V)         | Frequency | Meter<br>Reading | Pre-ampl<br>ifier | Cable<br>Loss | Antenna<br>Factor | Emission<br>Level | Limits       | Margin | Detect<br>or<br>Type |
|------------------------|-----------|------------------|-------------------|---------------|-------------------|-------------------|--------------|--------|----------------------|
|                        | (MHz)     | (dBuV)           | (dB)              | (dB)          | (dB)              | (dBuV/m)          | (dBuV/<br>m) | (dB)   |                      |
| Middle Channel:2437MHz |           |                  |                   |               |                   |                   |              |        |                      |
| V                      | 4874.00   | 53.41            | 30.55             | 5.77          | 24.66             | 53.29             | 74.00        | -20.71 | PK                   |
| V                      | 4874.00   | 43.49            | 30.55             | 5.77          | 24.66             | 43.37             | 54.00        | -10.63 | AV                   |
| V                      | 7311.00   | 50.12            | 30.33             | 6.32          | 24.55             | 50.66             | 74.00        | -23.34 | PK                   |
| V                      | 7311.00   | 43.40            | 30.33             | 6.32          | 24.55             | 43.94             | 54.00        | -10.06 | AV                   |
| V                      | 9748.00   | 52.72            | 30.85             | 7.45          | 24.69             | 54.01             | 74.00        | -19.99 | PK                   |
| V                      | 9748.00   | 43.86            | 30.85             | 7.45          | 24.69             | 45.15             | 54.00        | -8.85  | AV                   |
| V                      | 12185.00  | 52.85            | 31.02             | 8.99          | 25.57             | 56.39             | 74.00        | -17.61 | PK                   |
| V                      | 12185.00  | 43.82            | 31.02             | 8.99          | 25.57             | 47.36             | 54.00        | -6.64  | AV                   |
| H                      | 4874.00   | 54.93            | 30.55             | 5.77          | 24.66             | 54.81             | 74.00        | -19.19 | PK                   |
| H                      | 4874.00   | 43.68            | 30.55             | 5.77          | 24.66             | 43.56             | 54.00        | -10.44 | AV                   |
| H                      | 7311.00   | 53.97            | 30.33             | 6.32          | 24.55             | 54.51             | 74.00        | -19.49 | PK                   |
| H                      | 7311.00   | 43.19            | 30.33             | 6.32          | 24.55             | 43.73             | 54.00        | -10.27 | AV                   |
| H                      | 9748.00   | 53.90            | 30.85             | 7.45          | 24.69             | 55.19             | 74.00        | -18.81 | PK                   |
| H                      | 9748.00   | 43.38            | 30.85             | 7.45          | 24.69             | 44.67             | 54.00        | -9.33  | AV                   |
| H                      | 12185.00  | 51.42            | 31.02             | 8.99          | 25.57             | 54.96             | 74.00        | -19.04 | PK                   |
| H                      | 12185.00  | 43.37            | 31.02             | 8.99          | 25.57             | 46.91             | 54.00        | -7.09  | AV                   |



| Polar<br>(H/V)       | Frequency<br>(MHz) | Meter<br>Reading<br>(dBuV) | Pre-ampli<br>fier<br>(dB) | Cable<br>Loss<br>(dB) | Antenna<br>Factor<br>(dB) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/<br>m) | Margin<br>(dB) | Detect<br>or<br>Type |
|----------------------|--------------------|----------------------------|---------------------------|-----------------------|---------------------------|-------------------------------|------------------------|----------------|----------------------|
| High Channel:2462MHz |                    |                            |                           |                       |                           |                               |                        |                |                      |
| V                    | 4924.00            | 50.01                      | 30.55                     | 5.77                  | 24.66                     | 49.89                         | 74.00                  | -24.11         | PK                   |
| V                    | 4924.00            | 43.04                      | 30.55                     | 5.77                  | 24.66                     | 42.92                         | 54.00                  | -11.08         | AV                   |
| V                    | 7386.00            | 50.47                      | 30.33                     | 6.32                  | 24.55                     | 51.01                         | 74.00                  | -22.99         | PK                   |
| V                    | 7386.00            | 43.23                      | 30.33                     | 6.32                  | 24.55                     | 43.77                         | 54.00                  | -10.23         | AV                   |
| V                    | 9848.00            | 51.39                      | 30.85                     | 7.45                  | 24.69                     | 52.68                         | 74.00                  | -21.32         | PK                   |
| V                    | 9848.00            | 43.37                      | 30.85                     | 7.45                  | 24.69                     | 44.66                         | 54.00                  | -9.34          | AV                   |
| V                    | 12310.00           | 53.35                      | 31.02                     | 8.99                  | 25.57                     | 56.89                         | 74.00                  | -17.11         | PK                   |
| V                    | 12310.00           | 43.49                      | 31.02                     | 8.99                  | 25.57                     | 47.03                         | 54.00                  | -6.97          | AV                   |
| H                    | 4924.00            | 50.83                      | 30.55                     | 5.77                  | 24.66                     | 50.71                         | 74.00                  | -23.29         | PK                   |
| H                    | 4924.00            | 43.60                      | 30.55                     | 5.77                  | 24.66                     | 43.48                         | 54.00                  | -10.52         | AV                   |
| H                    | 7386.00            | 50.84                      | 30.33                     | 6.32                  | 24.55                     | 51.38                         | 74.00                  | -22.62         | PK                   |
| H                    | 7386.00            | 43.87                      | 30.33                     | 6.32                  | 24.55                     | 44.41                         | 54.00                  | -9.59          | AV                   |
| H                    | 9848.00            | 54.63                      | 30.85                     | 7.45                  | 24.69                     | 55.92                         | 74.00                  | -18.08         | PK                   |
| H                    | 9848.00            | 43.04                      | 30.85                     | 7.45                  | 24.69                     | 44.33                         | 54.00                  | -9.67          | AV                   |
| H                    | 12310.00           | 50.26                      | 31.02                     | 8.99                  | 25.57                     | 53.80                         | 74.00                  | -20.20         | PK                   |
| H                    | 12310.00           | 43.39                      | 31.02                     | 8.99                  | 25.57                     | 46.93                         | 54.00                  | -7.07          | AV                   |

## Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,

Margin= Emission Level - Limit

2. If peak below the average limit, the average emission was no test.

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



## 802.11g

| Polar<br>(H/V)      | Frequency | Meter<br>Reading | Pre-ampl<br>ifier | Cable<br>Loss | Antenna<br>Factor | Emission<br>Level | Limits       | Margin | Detect<br>or<br>Type |
|---------------------|-----------|------------------|-------------------|---------------|-------------------|-------------------|--------------|--------|----------------------|
|                     | (MHz)     | (dBuV)           | (dB)              | (dB)          | (dB)              | (dBuV/m)          | (dBuV/<br>m) | (dB)   |                      |
| Low Channel:2412MHz |           |                  |                   |               |                   |                   |              |        |                      |
| V                   | 4824.00   | 52.67            | 30.55             | 5.77          | 24.66             | 52.55             | 74.00        | -21.45 | PK                   |
| V                   | 4824.00   | 44.00            | 30.55             | 5.77          | 24.66             | 43.88             | 54.00        | -10.12 | AV                   |
| V                   | 7236.00   | 50.61            | 30.33             | 6.32          | 24.55             | 51.15             | 74.00        | -22.85 | PK                   |
| V                   | 7236.00   | 43.33            | 30.33             | 6.32          | 24.55             | 43.87             | 54.00        | -10.13 | AV                   |
| V                   | 9648.00   | 50.16            | 30.85             | 7.45          | 24.69             | 51.45             | 74.00        | -22.55 | PK                   |
| V                   | 9648.00   | 43.24            | 30.85             | 7.45          | 24.69             | 44.53             | 54.00        | -9.47  | AV                   |
| V                   | 12060.00  | 53.19            | 31.02             | 8.99          | 25.57             | 56.73             | 74.00        | -17.27 | PK                   |
| V                   | 12060.00  | 43.75            | 31.02             | 8.99          | 25.57             | 47.29             | 54.00        | -6.71  | AV                   |
| H                   | 4824.00   | 53.82            | 30.55             | 5.77          | 24.66             | 53.70             | 74.00        | -20.30 | PK                   |
| H                   | 4824.00   | 43.35            | 30.55             | 5.77          | 24.66             | 43.23             | 54.00        | -10.77 | AV                   |
| H                   | 7236.00   | 51.39            | 30.33             | 6.32          | 24.55             | 51.93             | 74.00        | -22.07 | PK                   |
| H                   | 7236.00   | 43.86            | 30.33             | 6.32          | 24.55             | 44.40             | 54.00        | -9.60  | AV                   |
| H                   | 9648.00   | 54.46            | 30.85             | 7.45          | 24.69             | 55.75             | 74.00        | -18.25 | PK                   |
| H                   | 9648.00   | 43.10            | 30.85             | 7.45          | 24.69             | 44.39             | 54.00        | -9.61  | AV                   |
| H                   | 12060.00  | 50.55            | 31.02             | 8.99          | 25.57             | 54.09             | 74.00        | -19.91 | PK                   |
| H                   | 12060.00  | 43.96            | 31.02             | 8.99          | 25.57             | 47.50             | 54.00        | -6.50  | AV                   |

| Polar<br>(H/V)         | Frequency | Meter<br>Reading | Pre-amp<br>lifier | Cable<br>Loss | Antenna<br>Factor | Emission<br>Level | Limits       | Margin | Detect<br>or<br>Type |
|------------------------|-----------|------------------|-------------------|---------------|-------------------|-------------------|--------------|--------|----------------------|
|                        | (MHz)     | (dBuV)           | (dB)              | (dB)          | (dB)              | (dBuV/m)          | (dBuV/<br>m) | (dB)   |                      |
| Middle Channel:2437MHz |           |                  |                   |               |                   |                   |              |        |                      |
| V                      | 4874.00   | 54.27            | 30.55             | 5.77          | 24.66             | 54.15             | 74.00        | -19.85 | PK                   |
| V                      | 4874.00   | 43.91            | 30.55             | 5.77          | 24.66             | 43.79             | 54.00        | -10.21 | AV                   |
| V                      | 7311.00   | 53.74            | 30.33             | 6.32          | 24.55             | 54.28             | 74.00        | -19.72 | PK                   |
| V                      | 7311.00   | 43.66            | 30.33             | 6.32          | 24.55             | 44.20             | 54.00        | -9.80  | AV                   |
| V                      | 9748.00   | 51.42            | 30.85             | 7.45          | 24.69             | 52.71             | 74.00        | -21.29 | PK                   |
| V                      | 9748.00   | 43.74            | 30.85             | 7.45          | 24.69             | 45.03             | 54.00        | -8.97  | AV                   |
| V                      | 12185.00  | 53.83            | 31.02             | 8.99          | 25.57             | 57.37             | 74.00        | -16.63 | PK                   |
| V                      | 12185.00  | 43.25            | 31.02             | 8.99          | 25.57             | 46.79             | 54.00        | -7.21  | AV                   |
| H                      | 4874.00   | 53.88            | 30.55             | 5.77          | 24.66             | 53.76             | 74.00        | -20.24 | PK                   |
| H                      | 4874.00   | 43.14            | 30.55             | 5.77          | 24.66             | 43.02             | 54.00        | -10.98 | AV                   |
| H                      | 7311.00   | 51.50            | 30.33             | 6.32          | 24.55             | 52.04             | 74.00        | -21.96 | PK                   |
| H                      | 7311.00   | 43.59            | 30.33             | 6.32          | 24.55             | 44.13             | 54.00        | -9.87  | AV                   |
| H                      | 9748.00   | 51.56            | 30.85             | 7.45          | 24.69             | 52.85             | 74.00        | -21.15 | PK                   |
| H                      | 9748.00   | 43.65            | 30.85             | 7.45          | 24.69             | 44.94             | 54.00        | -9.06  | AV                   |
| H                      | 12185.00  | 50.85            | 31.02             | 8.99          | 25.57             | 54.39             | 74.00        | -19.61 | PK                   |
| H                      | 12185.00  | 43.68            | 31.02             | 8.99          | 25.57             | 47.22             | 54.00        | -6.78  | AV                   |



| Polar<br>(H/V)       | Frequency | Meter<br>Reading | Pre-ampl<br>ifier | Cable<br>Loss | Antenna<br>Factor | Emission<br>Level | Limits       | Margin | Detect<br>or<br>Type |
|----------------------|-----------|------------------|-------------------|---------------|-------------------|-------------------|--------------|--------|----------------------|
|                      | (MHz)     | (dBuV)           | (dB)              | (dB)          | (dB)              | (dBuV/m)          | (dBuV/<br>m) | (dB)   |                      |
| High Channel:2462MHz |           |                  |                   |               |                   |                   |              |        |                      |
| V                    | 4924.00   | 54.16            | 30.55             | 5.77          | 24.66             | 54.04             | 74.00        | -19.96 | PK                   |
| V                    | 4924.00   | 43.16            | 30.55             | 5.77          | 24.66             | 43.04             | 54.00        | -10.96 | AV                   |
| V                    | 7386.00   | 51.23            | 30.33             | 6.32          | 24.55             | 51.77             | 74.00        | -22.23 | PK                   |
| V                    | 7386.00   | 43.86            | 30.33             | 6.32          | 24.55             | 44.40             | 54.00        | -9.60  | AV                   |
| V                    | 9848.00   | 54.58            | 30.85             | 7.45          | 24.69             | 55.87             | 74.00        | -18.13 | PK                   |
| V                    | 9848.00   | 43.05            | 30.85             | 7.45          | 24.69             | 44.34             | 54.00        | -9.66  | AV                   |
| V                    | 12310.00  | 52.48            | 31.02             | 8.99          | 25.57             | 56.02             | 74.00        | -17.98 | PK                   |
| V                    | 12310.00  | 43.81            | 31.02             | 8.99          | 25.57             | 47.35             | 54.00        | -6.65  | AV                   |
| H                    | 4924.00   | 54.08            | 30.55             | 5.77          | 24.66             | 53.96             | 74.00        | -20.04 | PK                   |
| H                    | 4924.00   | 43.41            | 30.55             | 5.77          | 24.66             | 43.29             | 54.00        | -10.71 | AV                   |
| H                    | 7386.00   | 52.18            | 30.33             | 6.32          | 24.55             | 52.72             | 74.00        | -21.28 | PK                   |
| H                    | 7386.00   | 43.45            | 30.33             | 6.32          | 24.55             | 43.99             | 54.00        | -10.01 | AV                   |
| H                    | 9848.00   | 54.09            | 30.85             | 7.45          | 24.69             | 55.38             | 74.00        | -18.62 | PK                   |
| H                    | 9848.00   | 43.19            | 30.85             | 7.45          | 24.69             | 44.48             | 54.00        | -9.52  | AV                   |
| H                    | 12310.00  | 52.13            | 31.02             | 8.99          | 25.57             | 55.67             | 74.00        | -18.33 | PK                   |
| H                    | 12310.00  | 43.88            | 31.02             | 8.99          | 25.57             | 47.42             | 54.00        | -6.58  | AV                   |

## Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,  
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.



## 802.11n20

| Polar<br>(H/V)      | Frequency<br>(MHz) | Meter<br>Reading<br>(dBuV) | Pre-ampl<br>ifier<br>(dB) | Cable<br>Loss<br>(dB) | Antenna<br>Factor<br>(dB) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/<br>m) | Margin<br>(dB) | Detect<br>or<br>Type |
|---------------------|--------------------|----------------------------|---------------------------|-----------------------|---------------------------|-------------------------------|------------------------|----------------|----------------------|
| Low Channel:2412MHz |                    |                            |                           |                       |                           |                               |                        |                |                      |
| V                   | 4824.00            | 52.01                      | 30.55                     | 5.77                  | 24.66                     | 51.89                         | 74.00                  | -22.11         | PK                   |
| V                   | 4824.00            | 43.48                      | 30.55                     | 5.77                  | 24.66                     | 43.36                         | 54.00                  | -10.64         | AV                   |
| V                   | 7236.00            | 53.31                      | 30.33                     | 6.32                  | 24.55                     | 53.85                         | 74.00                  | -20.15         | PK                   |
| V                   | 7236.00            | 43.57                      | 30.33                     | 6.32                  | 24.55                     | 44.11                         | 54.00                  | -9.89          | AV                   |
| V                   | 9648.00            | 52.06                      | 30.85                     | 7.45                  | 24.69                     | 53.35                         | 74.00                  | -20.65         | PK                   |
| V                   | 9648.00            | 43.37                      | 30.85                     | 7.45                  | 24.69                     | 44.66                         | 54.00                  | -9.34          | AV                   |
| V                   | 12060.00           | 50.60                      | 31.02                     | 8.99                  | 25.57                     | 54.14                         | 74.00                  | -19.86         | PK                   |
| V                   | 12060.00           | 43.28                      | 31.02                     | 8.99                  | 25.57                     | 46.82                         | 54.00                  | -7.18          | AV                   |
| H                   | 4824.00            | 52.56                      | 30.55                     | 5.77                  | 24.66                     | 52.44                         | 74.00                  | -21.56         | PK                   |
| H                   | 4824.00            | 43.75                      | 30.55                     | 5.77                  | 24.66                     | 43.63                         | 54.00                  | -10.37         | AV                   |
| H                   | 7236.00            | 54.93                      | 30.33                     | 6.32                  | 24.55                     | 55.47                         | 74.00                  | -18.53         | PK                   |
| H                   | 7236.00            | 43.35                      | 30.33                     | 6.32                  | 24.55                     | 43.89                         | 54.00                  | -10.11         | AV                   |
| H                   | 9648.00            | 54.69                      | 30.85                     | 7.45                  | 24.69                     | 55.98                         | 74.00                  | -18.02         | PK                   |
| H                   | 9648.00            | 43.23                      | 30.85                     | 7.45                  | 24.69                     | 44.52                         | 54.00                  | -9.48          | AV                   |
| H                   | 12060.00           | 50.69                      | 31.02                     | 8.99                  | 25.57                     | 54.23                         | 74.00                  | -19.77         | PK                   |
| H                   | 12060.00           | 43.03                      | 31.02                     | 8.99                  | 25.57                     | 46.57                         | 54.00                  | -7.43          | AV                   |

| Polar<br>(H/V)         | Frequency<br>(MHz) | Meter<br>Reading<br>(dBuV) | Pre-ampl<br>ifier<br>(dB) | Cable<br>Loss<br>(dB) | Antenna<br>Factor<br>(dB) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/<br>m) | Margin<br>(dB) | Detect<br>or<br>Type |
|------------------------|--------------------|----------------------------|---------------------------|-----------------------|---------------------------|-------------------------------|------------------------|----------------|----------------------|
| Middle Channel:2437MHz |                    |                            |                           |                       |                           |                               |                        |                |                      |
| V                      | 4874.00            | 54.78                      | 30.55                     | 5.77                  | 24.66                     | 54.66                         | 74.00                  | -19.34         | PK                   |
| V                      | 4874.00            | 43.11                      | 30.55                     | 5.77                  | 24.66                     | 42.99                         | 54.00                  | -11.01         | AV                   |
| V                      | 7311.00            | 52.63                      | 30.33                     | 6.32                  | 24.55                     | 53.17                         | 74.00                  | -20.83         | PK                   |
| V                      | 7311.00            | 43.25                      | 30.33                     | 6.32                  | 24.55                     | 43.79                         | 54.00                  | -10.21         | AV                   |
| V                      | 9748.00            | 53.76                      | 30.85                     | 7.45                  | 24.69                     | 55.05                         | 74.00                  | -18.95         | PK                   |
| V                      | 9748.00            | 43.59                      | 30.85                     | 7.45                  | 24.69                     | 44.88                         | 54.00                  | -9.12          | AV                   |
| V                      | 12185.00           | 50.55                      | 31.02                     | 8.99                  | 25.57                     | 54.09                         | 74.00                  | -19.91         | PK                   |
| V                      | 12185.00           | 43.77                      | 31.02                     | 8.99                  | 25.57                     | 47.31                         | 54.00                  | -6.69          | AV                   |
| H                      | 4874.00            | 51.21                      | 30.55                     | 5.77                  | 24.66                     | 51.09                         | 74.00                  | -22.91         | PK                   |
| H                      | 4874.00            | 43.37                      | 30.55                     | 5.77                  | 24.66                     | 43.25                         | 54.00                  | -10.75         | AV                   |
| H                      | 7311.00            | 53.73                      | 30.33                     | 6.32                  | 24.55                     | 54.27                         | 74.00                  | -19.73         | PK                   |
| H                      | 7311.00            | 43.54                      | 30.33                     | 6.32                  | 24.55                     | 44.08                         | 54.00                  | -9.92          | AV                   |
| H                      | 9748.00            | 53.76                      | 30.85                     | 7.45                  | 24.69                     | 55.05                         | 74.00                  | -18.95         | PK                   |
| H                      | 9748.00            | 43.84                      | 30.85                     | 7.45                  | 24.69                     | 45.13                         | 54.00                  | -8.87          | AV                   |
| H                      | 12185.00           | 52.18                      | 31.02                     | 8.99                  | 25.57                     | 55.72                         | 74.00                  | -18.28         | PK                   |
| H                      | 12185.00           | 43.73                      | 31.02                     | 8.99                  | 25.57                     | 47.27                         | 54.00                  | -6.73          | AV                   |



| Polar<br>(H/V)       | Frequency | Meter<br>Reading | Pre-ampl<br>ifier | Cable<br>Loss | Antenna<br>Factor | Emission<br>Level | Limits       | Margin | Detect<br>or<br>Type |
|----------------------|-----------|------------------|-------------------|---------------|-------------------|-------------------|--------------|--------|----------------------|
|                      | (MHz)     | (dBuV)           | (dB)              | (dB)          | (dB)              | (dBuV/m)          | (dBuV/<br>m) | (dB)   |                      |
| High Channel:2462MHz |           |                  |                   |               |                   |                   |              |        |                      |
| V                    | 4924.00   | 51.97            | 30.55             | 5.77          | 24.66             | 51.85             | 74.00        | -22.15 | PK                   |
| V                    | 4924.00   | 43.37            | 30.55             | 5.77          | 24.66             | 43.25             | 54.00        | -10.75 | AV                   |
| V                    | 7386.00   | 52.28            | 30.33             | 6.32          | 24.55             | 52.82             | 74.00        | -21.18 | PK                   |
| V                    | 7386.00   | 43.34            | 30.33             | 6.32          | 24.55             | 43.88             | 54.00        | -10.12 | AV                   |
| V                    | 9848.00   | 53.34            | 30.85             | 7.45          | 24.69             | 54.63             | 74.00        | -19.37 | PK                   |
| V                    | 9848.00   | 43.09            | 30.85             | 7.45          | 24.69             | 44.38             | 54.00        | -9.62  | AV                   |
| V                    | 12310.00  | 51.98            | 31.02             | 8.99          | 25.57             | 55.52             | 74.00        | -18.48 | PK                   |
| V                    | 12310.00  | 43.36            | 31.02             | 8.99          | 25.57             | 46.90             | 54.00        | -7.10  | AV                   |
| H                    | 4924.00   | 52.29            | 30.55             | 5.77          | 24.66             | 52.17             | 74.00        | -21.83 | PK                   |
| H                    | 4924.00   | 43.14            | 30.55             | 5.77          | 24.66             | 43.02             | 54.00        | -10.98 | AV                   |
| H                    | 7386.00   | 53.37            | 30.33             | 6.32          | 24.55             | 53.91             | 74.00        | -20.09 | PK                   |
| H                    | 7386.00   | 43.76            | 30.33             | 6.32          | 24.55             | 44.30             | 54.00        | -9.70  | AV                   |
| H                    | 9848.00   | 54.13            | 30.85             | 7.45          | 24.69             | 55.42             | 74.00        | -18.58 | PK                   |
| H                    | 9848.00   | 43.50            | 30.85             | 7.45          | 24.69             | 44.79             | 54.00        | -9.21  | AV                   |
| H                    | 12310.00  | 51.07            | 31.02             | 8.99          | 25.57             | 54.61             | 74.00        | -19.39 | PK                   |
| H                    | 12310.00  | 43.69            | 31.02             | 8.99          | 25.57             | 47.23             | 54.00        | -6.77  | AV                   |

## Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier, Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.



## 802.11n40

| Polar<br>(H/V)      | Frequenc<br>y | Meter<br>Reading | Pre-ampli<br>fier | Cable<br>Loss | Antenna<br>Factor | Emission<br>Level | Limits       | Margin | Detect<br>or<br>Type |
|---------------------|---------------|------------------|-------------------|---------------|-------------------|-------------------|--------------|--------|----------------------|
|                     | (MHz)         | (dBuV)           | (dB)              | (dB)          | (dB)              | (dBuV/m)          | (dBuV/<br>m) | (dB)   |                      |
| Low Channel:2422MHz |               |                  |                   |               |                   |                   |              |        |                      |
| V                   | 4844.00       | 50.33            | 30.55             | 5.77          | 24.66             | 50.21             | 74.00        | -23.79 | PK                   |
| V                   | 4844.00       | 43.81            | 30.55             | 5.77          | 24.66             | 43.69             | 54.00        | -10.31 | AV                   |
| V                   | 7266.00       | 52.01            | 30.33             | 6.32          | 24.55             | 52.55             | 74.00        | -21.45 | PK                   |
| V                   | 7266.00       | 43.12            | 30.33             | 6.32          | 24.55             | 43.66             | 54.00        | -10.34 | AV                   |
| V                   | 9688.00       | 53.08            | 30.85             | 7.45          | 24.69             | 54.37             | 74.00        | -19.63 | PK                   |
| V                   | 9688.00       | 43.55            | 30.85             | 7.45          | 24.69             | 44.84             | 54.00        | -9.16  | AV                   |
| V                   | 12110.00      | 50.15            | 31.02             | 8.99          | 25.57             | 53.69             | 74.00        | -20.31 | PK                   |
| V                   | 12110.00      | 43.94            | 31.02             | 8.99          | 25.57             | 47.48             | 54.00        | -6.52  | AV                   |
| H                   | 4844.00       | 54.15            | 30.55             | 5.77          | 24.66             | 54.03             | 74.00        | -19.97 | PK                   |
| H                   | 4844.00       | 43.58            | 30.55             | 5.77          | 24.66             | 43.46             | 54.00        | -10.54 | AV                   |
| H                   | 7266.00       | 50.52            | 30.33             | 6.32          | 24.55             | 51.06             | 74.00        | -22.94 | PK                   |
| H                   | 7266.00       | 43.91            | 30.33             | 6.32          | 24.55             | 44.45             | 54.00        | -9.55  | AV                   |
| H                   | 9688.00       | 52.99            | 30.85             | 7.45          | 24.69             | 54.28             | 74.00        | -19.72 | PK                   |
| H                   | 9688.00       | 43.19            | 30.85             | 7.45          | 24.69             | 44.48             | 54.00        | -9.52  | AV                   |
| H                   | 12110.00      | 50.38            | 31.02             | 8.99          | 25.57             | 53.92             | 74.00        | -20.08 | PK                   |
| H                   | 12110.00      | 43.53            | 31.02             | 8.99          | 25.57             | 47.07             | 54.00        | -6.93  | AV                   |

| Polar<br>(H/V)         | Frequenc<br>y | Meter<br>Reading | Pre-ampli<br>fier | Cable<br>Loss | Antenna<br>Factor | Emission<br>Level | Limits       | Margin | Detect<br>or<br>Type |
|------------------------|---------------|------------------|-------------------|---------------|-------------------|-------------------|--------------|--------|----------------------|
|                        | (MHz)         | (dBuV)           | (dB)              | (dB)          | (dB)              | (dBuV/m)          | (dBuV/<br>m) | (dB)   |                      |
| Middle Channel:2437MHz |               |                  |                   |               |                   |                   |              |        |                      |
| V                      | 4874.00       | 50.24            | 30.55             | 5.77          | 24.66             | 50.12             | 74.00        | -23.88 | PK                   |
| V                      | 4874.00       | 43.55            | 30.55             | 5.77          | 24.66             | 43.43             | 54.00        | -10.57 | AV                   |
| V                      | 7311.00       | 54.25            | 30.33             | 6.32          | 24.55             | 54.79             | 74.00        | -19.21 | PK                   |
| V                      | 7311.00       | 43.18            | 30.33             | 6.32          | 24.55             | 43.72             | 54.00        | -10.28 | AV                   |
| V                      | 9748.00       | 51.68            | 30.85             | 7.45          | 24.69             | 52.97             | 74.00        | -21.03 | PK                   |
| V                      | 9748.00       | 43.74            | 30.85             | 7.45          | 24.69             | 45.03             | 54.00        | -8.97  | AV                   |
| V                      | 12185.00      | 51.41            | 31.02             | 8.99          | 25.57             | 54.95             | 74.00        | -19.05 | PK                   |
| V                      | 12185.00      | 43.48            | 31.02             | 8.99          | 25.57             | 47.02             | 54.00        | -6.98  | AV                   |
| H                      | 4874.00       | 51.94            | 30.55             | 5.77          | 24.66             | 51.82             | 74.00        | -22.18 | PK                   |
| H                      | 4874.00       | 43.51            | 30.55             | 5.77          | 24.66             | 43.39             | 54.00        | -10.61 | AV                   |
| H                      | 7311.00       | 52.65            | 30.33             | 6.32          | 24.55             | 53.19             | 74.00        | -20.81 | PK                   |
| H                      | 7311.00       | 43.98            | 30.33             | 6.32          | 24.55             | 44.52             | 54.00        | -9.48  | AV                   |
| H                      | 9748.00       | 51.48            | 30.85             | 7.45          | 24.69             | 52.77             | 74.00        | -21.23 | PK                   |
| H                      | 9748.00       | 43.55            | 30.85             | 7.45          | 24.69             | 44.84             | 54.00        | -9.16  | AV                   |
| H                      | 12185.00      | 50.76            | 31.02             | 8.99          | 25.57             | 54.30             | 74.00        | -19.70 | PK                   |
| H                      | 12185.00      | 43.48            | 31.02             | 8.99          | 25.57             | 47.02             | 54.00        | -6.98  | AV                   |



| Polar<br>(H/V)       | Frequency | Meter<br>Reading | Pre-amp<br>lifier | Cable<br>Loss | Antenna<br>Factor | Emission<br>Level | Limits       | Margin | Detect<br>or<br>Type |
|----------------------|-----------|------------------|-------------------|---------------|-------------------|-------------------|--------------|--------|----------------------|
|                      | (MHz)     | (dBuV)           | (dB)              | (dB)          | (dB)              | (dBuV/m)          | (dBuV/<br>m) | (dB)   |                      |
| High Channel:2452MHz |           |                  |                   |               |                   |                   |              |        |                      |
| V                    | 4904.00   | 50.44            | 30.55             | 5.77          | 24.66             | 50.32             | 74.00        | -23.68 | PK                   |
| V                    | 4904.00   | 43.70            | 30.55             | 5.77          | 24.66             | 43.58             | 54.00        | -10.42 | AV                   |
| V                    | 7356.00   | 50.84            | 30.33             | 6.32          | 24.55             | 51.38             | 74.00        | -22.62 | PK                   |
| V                    | 7356.00   | 43.79            | 30.33             | 6.32          | 24.55             | 44.33             | 54.00        | -9.67  | AV                   |
| V                    | 9808.00   | 51.72            | 30.85             | 7.45          | 24.69             | 53.01             | 74.00        | -20.99 | PK                   |
| V                    | 9808.00   | 43.38            | 30.85             | 7.45          | 24.69             | 44.67             | 54.00        | -9.33  | AV                   |
| V                    | 12260.00  | 53.96            | 31.02             | 8.99          | 25.57             | 57.50             | 74.00        | -16.50 | PK                   |
| V                    | 12260.00  | 43.64            | 31.02             | 8.99          | 25.57             | 47.18             | 54.00        | -6.82  | AV                   |
| H                    | 4904.00   | 54.34            | 30.55             | 5.77          | 24.66             | 54.22             | 74.00        | -19.78 | PK                   |
| H                    | 4904.00   | 43.33            | 30.55             | 5.77          | 24.66             | 43.21             | 54.00        | -10.79 | AV                   |
| H                    | 7356.00   | 53.50            | 30.33             | 6.32          | 24.55             | 54.04             | 74.00        | -19.96 | PK                   |
| H                    | 7356.00   | 43.51            | 30.33             | 6.32          | 24.55             | 44.05             | 54.00        | -9.95  | AV                   |
| H                    | 9808.00   | 54.62            | 30.85             | 7.45          | 24.69             | 55.91             | 74.00        | -18.09 | PK                   |
| H                    | 9808.00   | 43.86            | 30.85             | 7.45          | 24.69             | 45.15             | 54.00        | -8.85  | AV                   |
| H                    | 12260.00  | 54.19            | 31.02             | 8.99          | 25.57             | 57.73             | 74.00        | -16.27 | PK                   |
| H                    | 12260.00  | 43.65            | 31.02             | 8.99          | 25.57             | 47.19             | 54.00        | -6.81  | AV                   |

## Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier, Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.



## 5. RADIATED BAND EMISSION MEASUREMENT

### 5.1 TEST REQUIREMENT

|                       |                                                                                                    |          |      |      |         |
|-----------------------|----------------------------------------------------------------------------------------------------|----------|------|------|---------|
| Test Requirement:     | FCC Part15 C Section 15.209 and 15.205                                                             |          |      |      |         |
| Test Method:          | ANSI C63.10:2020                                                                                   |          |      |      |         |
| Test Frequency Range: | All of the restrict bands were tested, only the worst band's (2310MHz to 2500MHz) data was showed. |          |      |      |         |
| Test site:            | Measurement Distance: 3m                                                                           |          |      |      |         |
| Receiver setup:       | Frequency                                                                                          | Detector | RBW  | VBW  | Value   |
|                       | Above                                                                                              | Peak     | 1MHz | 3MHz | Peak    |
|                       | 1GHz                                                                                               | Average  | 1MHz | 3MHz | Average |

### LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

| FREQUENCY (MHz) | Class B (dBuV/m) (at 3M) |         |
|-----------------|--------------------------|---------|
|                 | PEAK                     | AVERAGE |
| Above 1000      | 74                       | 54      |

#### Notes:

- The limit for radiated test was performed according to FCC PART 15C.
- The tighter limit applies at the band edges.
- Emission level (dBuV/m)=20log Emission level (uV/m).

### 5.2 TEST PROCEDURE

Above 1GHz test procedure as below:

- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dBmargin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- Test the EUT in the lowest channel, the Highest channel

#### Note:

Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

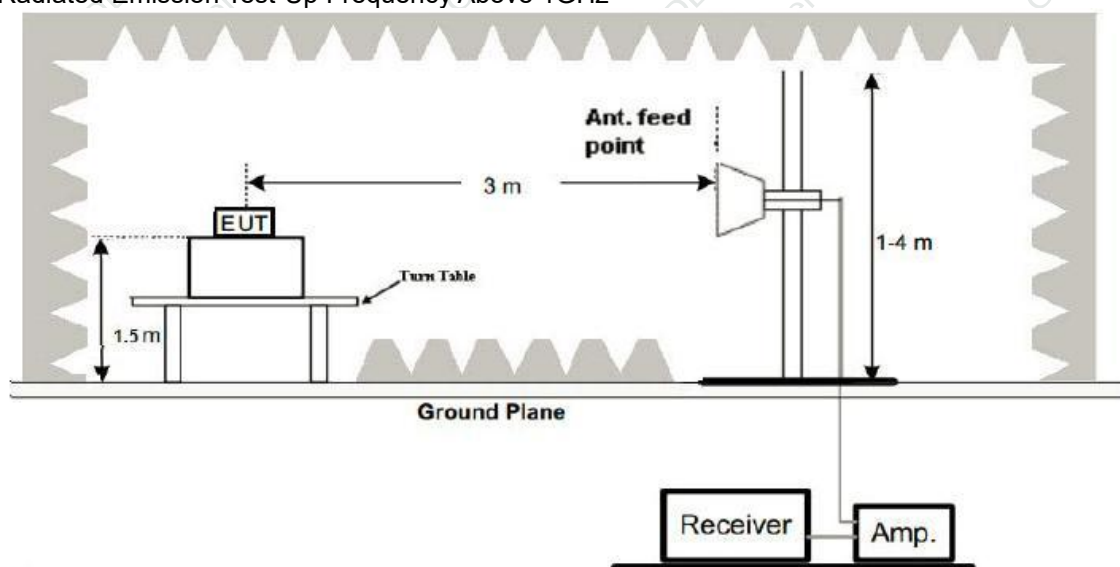


### 5.3 DEVIATION FROM TEST STANDARD

No deviation

### 5.4 TEST SETUP

Radiated Emission Test-Up Frequency Above 1GHz



### 5.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 5.5 Unless otherwise a special operating condition is specified in the follows during the testing.



## 5.6 TEST RESULT

|         | Polar<br>(H/V)       | Frequency<br>(MHz) | Meter<br>Reading<br>(dBuV) | Pre-<br>amplifier<br>(dB) | Cable<br>Loss<br>(dB) | Antenna<br>Factor<br>(dB/m) | Emission<br>level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Dete<br>ctor<br>Type | Result |
|---------|----------------------|--------------------|----------------------------|---------------------------|-----------------------|-----------------------------|-------------------------------|-------------------|----------------|----------------------|--------|
| 802.11b | LowChannel 2412MHz   |                    |                            |                           |                       |                             |                               |                   |                |                      |        |
|         | H                    | 2310.00            | 54.59                      | 30.22                     | 4.85                  | 23.98                       | 53.20                         | 74.00             | -20.80         | PK                   | PASS   |
|         | H                    | 2310.00            | 44.69                      | 30.22                     | 4.85                  | 23.98                       | 43.30                         | 54.00             | -10.70         | AV                   | PASS   |
|         | H                    | 2390.00            | 53.37                      | 30.22                     | 4.85                  | 23.98                       | 51.98                         | 74.00             | -22.02         | PK                   | PASS   |
|         | H                    | 2390.00            | 44.53                      | 30.22                     | 4.85                  | 23.98                       | 43.14                         | 54.00             | -10.86         | AV                   | PASS   |
|         | V                    | 2310.00            | 53.19                      | 30.22                     | 4.85                  | 23.98                       | 51.80                         | 74.00             | -22.20         | PK                   | PASS   |
|         | V                    | 2310.00            | 44.19                      | 30.22                     | 4.85                  | 23.98                       | 42.80                         | 54.00             | -11.20         | AV                   | PASS   |
|         | V                    | 2390.00            | 53.50                      | 30.22                     | 4.85                  | 23.98                       | 52.11                         | 74.00             | -21.89         | PK                   | PASS   |
|         | V                    | 2390.00            | 44.63                      | 30.22                     | 4.85                  | 23.98                       | 43.24                         | 54.00             | -10.76         | AV                   | PASS   |
|         | HighChannel 2462MHz  |                    |                            |                           |                       |                             |                               |                   |                |                      |        |
|         | H                    | 2483.50            | 53.02                      | 30.22                     | 4.85                  | 23.98                       | 51.63                         | 74.00             | -22.37         | PK                   | PASS   |
|         | H                    | 2483.50            | 44.54                      | 30.22                     | 4.85                  | 23.98                       | 43.15                         | 54.00             | -10.85         | AV                   | PASS   |
|         | H                    | 2500.00            | 53.20                      | 30.22                     | 4.85                  | 23.98                       | 51.81                         | 74.00             | -22.19         | PK                   | PASS   |
|         | H                    | 2500.00            | 44.50                      | 30.22                     | 4.85                  | 23.98                       | 43.11                         | 54.00             | -10.89         | AV                   | PASS   |
|         | V                    | 2483.50            | 53.56                      | 30.22                     | 4.85                  | 23.98                       | 52.17                         | 74.00             | -21.83         | PK                   | PASS   |
|         | V                    | 2483.50            | 44.58                      | 30.22                     | 4.85                  | 23.98                       | 43.19                         | 54.00             | -10.81         | AV                   | PASS   |
|         | V                    | 2500.00            | 53.51                      | 30.22                     | 4.85                  | 23.98                       | 52.12                         | 74.00             | -21.88         | PK                   | PASS   |
|         | V                    | 2500.00            | 44.73                      | 30.22                     | 4.85                  | 23.98                       | 43.34                         | 54.00             | -10.66         | AV                   | PASS   |
| 802.11g | LowChannel 2412MHz   |                    |                            |                           |                       |                             |                               |                   |                |                      |        |
|         | H                    | 2310.00            | 53.68                      | 30.22                     | 4.85                  | 23.98                       | 52.29                         | 74.00             | -21.71         | PK                   | PASS   |
|         | H                    | 2310.00            | 44.58                      | 30.22                     | 4.85                  | 23.98                       | 43.19                         | 54.00             | -10.81         | AV                   | PASS   |
|         | H                    | 2390.00            | 54.42                      | 30.22                     | 4.85                  | 23.98                       | 53.03                         | 74.00             | -20.97         | PK                   | PASS   |
|         | H                    | 2390.00            | 44.16                      | 30.22                     | 4.85                  | 23.98                       | 42.77                         | 54.00             | -11.23         | AV                   | PASS   |
|         | V                    | 2310.00            | 54.64                      | 30.22                     | 4.85                  | 23.98                       | 53.25                         | 74.00             | -20.75         | PK                   | PASS   |
|         | V                    | 2310.00            | 44.79                      | 30.22                     | 4.85                  | 23.98                       | 43.40                         | 54.00             | -10.60         | AV                   | PASS   |
|         | V                    | 2390.00            | 53.37                      | 30.22                     | 4.85                  | 23.98                       | 51.98                         | 74.00             | -22.02         | PK                   | PASS   |
|         | V                    | 2390.00            | 44.34                      | 30.22                     | 4.85                  | 23.98                       | 42.95                         | 54.00             | -11.05         | AV                   | PASS   |
|         | High Channel 2462MHz |                    |                            |                           |                       |                             |                               |                   |                |                      |        |
|         | H                    | 2483.50            | 54.47                      | 30.22                     | 4.85                  | 23.98                       | 53.08                         | 74.00             | -20.92         | PK                   | PASS   |
|         | H                    | 2483.50            | 44.21                      | 30.22                     | 4.85                  | 23.98                       | 42.82                         | 54.00             | -11.18         | AV                   | PASS   |
|         | H                    | 2500.00            | 54.50                      | 30.22                     | 4.85                  | 23.98                       | 53.11                         | 74.00             | -20.89         | PK                   | PASS   |
|         | H                    | 2500.00            | 44.04                      | 30.22                     | 4.85                  | 23.98                       | 42.65                         | 54.00             | -11.35         | AV                   | PASS   |
|         | V                    | 2483.50            | 54.67                      | 30.22                     | 4.85                  | 23.98                       | 53.28                         | 74.00             | -20.72         | PK                   | PASS   |
|         | V                    | 2483.50            | 44.61                      | 30.22                     | 4.85                  | 23.98                       | 43.22                         | 54.00             | -10.78         | AV                   | PASS   |
|         | V                    | 2500.00            | 53.77                      | 30.22                     | 4.85                  | 23.98                       | 52.38                         | 74.00             | -21.62         | PK                   | PASS   |
|         | V                    | 2500.00            | 44.02                      | 30.22                     | 4.85                  | 23.98                       | 42.63                         | 54.00             | -11.37         | AV                   | PASS   |

## Remark:

Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier, Margin= Emission Level - Limit



|                                                                                                                                | Polar<br>(H/V)       | Frequency<br>(MHz) | Meter<br>Reading<br>(dBuV) | Pre-<br>amplifier<br>(dB) | Cable<br>Loss<br>(dB) | Antenna<br>Factor<br>(dB/m) | Emission<br>level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Dete<br>ctor<br>Type | Result |
|--------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------------|----------------------------|---------------------------|-----------------------|-----------------------------|-------------------------------|-------------------|----------------|----------------------|--------|
| 802.11<br>n20                                                                                                                  | LowChannel 2412MHz   |                    |                            |                           |                       |                             |                               |                   |                |                      |        |
|                                                                                                                                | H                    | 2310.00            | 53.90                      | 30.22                     | 4.85                  | 23.98                       | 52.51                         | 74.00             | -21.49         | PK                   | PASS   |
|                                                                                                                                | H                    | 2310.00            | 44.73                      | 30.22                     | 4.85                  | 23.98                       | 43.34                         | 54.00             | -10.66         | AV                   | PASS   |
|                                                                                                                                | H                    | 2390.00            | 54.75                      | 30.22                     | 4.85                  | 23.98                       | 53.36                         | 74.00             | -20.64         | PK                   | PASS   |
|                                                                                                                                | H                    | 2390.00            | 44.14                      | 30.22                     | 4.85                  | 23.98                       | 42.75                         | 54.00             | -11.25         | AV                   | PASS   |
|                                                                                                                                | V                    | 2310.00            | 53.90                      | 30.22                     | 4.85                  | 23.98                       | 52.51                         | 74.00             | -21.49         | PK                   | PASS   |
|                                                                                                                                | V                    | 2310.00            | 44.53                      | 30.22                     | 4.85                  | 23.98                       | 43.14                         | 54.00             | -10.86         | AV                   | PASS   |
|                                                                                                                                | V                    | 2390.00            | 53.43                      | 30.22                     | 4.85                  | 23.98                       | 52.04                         | 74.00             | -21.96         | PK                   | PASS   |
|                                                                                                                                | V                    | 2390.00            | 44.57                      | 30.22                     | 4.85                  | 23.98                       | 43.18                         | 54.00             | -10.82         | AV                   | PASS   |
|                                                                                                                                | HighChannel 2462MHz  |                    |                            |                           |                       |                             |                               |                   |                |                      |        |
|                                                                                                                                | H                    | 2483.50            | 54.81                      | 30.22                     | 4.85                  | 23.98                       | 53.42                         | 74.00             | -20.58         | PK                   | PASS   |
|                                                                                                                                | H                    | 2483.50            | 44.80                      | 30.22                     | 4.85                  | 23.98                       | 43.41                         | 54.00             | -10.59         | AV                   | PASS   |
|                                                                                                                                | H                    | 2500.00            | 54.91                      | 30.22                     | 4.85                  | 23.98                       | 53.52                         | 74.00             | -20.48         | PK                   | PASS   |
|                                                                                                                                | H                    | 2500.00            | 44.33                      | 30.22                     | 4.85                  | 23.98                       | 42.94                         | 54.00             | -11.06         | AV                   | PASS   |
|                                                                                                                                | V                    | 2483.50            | 54.54                      | 30.22                     | 4.85                  | 23.98                       | 53.15                         | 74.00             | -20.85         | PK                   | PASS   |
|                                                                                                                                | V                    | 2483.50            | 44.82                      | 30.22                     | 4.85                  | 23.98                       | 43.43                         | 54.00             | -10.57         | AV                   | PASS   |
|                                                                                                                                | V                    | 2500.00            | 53.32                      | 30.22                     | 4.85                  | 23.98                       | 51.93                         | 74.00             | -22.07         | PK                   | PASS   |
|                                                                                                                                | V                    | 2500.00            | 44.70                      | 30.22                     | 4.85                  | 23.98                       | 43.31                         | 54.00             | -10.69         | AV                   | PASS   |
| 802.11<br>n40                                                                                                                  | LowChannel 2422MHz   |                    |                            |                           |                       |                             |                               |                   |                |                      |        |
|                                                                                                                                | H                    | 2310.00            | 53.77                      | 30.22                     | 4.85                  | 23.98                       | 52.38                         | 74.00             | -21.62         | PK                   | PASS   |
|                                                                                                                                | H                    | 2310.00            | 44.25                      | 30.22                     | 4.85                  | 23.98                       | 42.86                         | 54.00             | -11.14         | AV                   | PASS   |
|                                                                                                                                | H                    | 2390.00            | 54.50                      | 30.22                     | 4.85                  | 23.98                       | 53.11                         | 74.00             | -20.89         | PK                   | PASS   |
|                                                                                                                                | H                    | 2390.00            | 44.84                      | 30.22                     | 4.85                  | 23.98                       | 43.45                         | 54.00             | -10.55         | AV                   | PASS   |
|                                                                                                                                | V                    | 2310.00            | 54.38                      | 30.22                     | 4.85                  | 23.98                       | 52.99                         | 74.00             | -21.01         | PK                   | PASS   |
|                                                                                                                                | V                    | 2310.00            | 44.23                      | 30.22                     | 4.85                  | 23.98                       | 42.84                         | 54.00             | -11.16         | AV                   | PASS   |
|                                                                                                                                | V                    | 2390.00            | 53.73                      | 30.22                     | 4.85                  | 23.98                       | 52.34                         | 74.00             | -21.66         | PK                   | PASS   |
|                                                                                                                                | V                    | 2390.00            | 44.31                      | 30.22                     | 4.85                  | 23.98                       | 42.92                         | 54.00             | -11.08         | AV                   | PASS   |
|                                                                                                                                | High Channel 2452MHz |                    |                            |                           |                       |                             |                               |                   |                |                      |        |
|                                                                                                                                | H                    | 2483.50            | 54.60                      | 30.22                     | 4.85                  | 23.98                       | 53.21                         | 74.00             | -20.79         | PK                   | PASS   |
|                                                                                                                                | H                    | 2483.50            | 44.14                      | 30.22                     | 4.85                  | 23.98                       | 42.75                         | 54.00             | -11.25         | AV                   | PASS   |
|                                                                                                                                | H                    | 2500.00            | 53.39                      | 30.22                     | 4.85                  | 23.98                       | 52.00                         | 74.00             | -22.00         | PK                   | PASS   |
|                                                                                                                                | H                    | 2500.00            | 44.12                      | 30.22                     | 4.85                  | 23.98                       | 42.73                         | 54.00             | -11.27         | AV                   | PASS   |
|                                                                                                                                | V                    | 2483.50            | 54.90                      | 30.22                     | 4.85                  | 23.98                       | 53.51                         | 74.00             | -20.49         | PK                   | PASS   |
|                                                                                                                                | V                    | 2483.50            | 44.30                      | 30.22                     | 4.85                  | 23.98                       | 42.91                         | 54.00             | -11.09         | AV                   | PASS   |
|                                                                                                                                | V                    | 2500.00            | 53.69                      | 30.22                     | 4.85                  | 23.98                       | 52.30                         | 74.00             | -21.70         | PK                   | PASS   |
|                                                                                                                                | V                    | 2500.00            | 44.49                      | 30.22                     | 4.85                  | 23.98                       | 43.10                         | 54.00             | -10.90         | AV                   | PASS   |
| <b>Remark:</b><br>Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier, Margin= Emission Level - Limit |                      |                    |                            |                           |                       |                             |                               |                   |                |                      |        |



## 6. POWER SPECTRAL DENSITY TEST

|                   |                                         |
|-------------------|-----------------------------------------|
| Test Requirement: | FCC Part15 C Section 15.247 (e)         |
| Test Method:      | KDB558074 D0115.247 Meas Guidancev05r02 |

### 6.1 APPLIED PROCEDURES / LIMIT

| FCC Part15 (15.247) , Subpart C |                        |           |                       |        |
|---------------------------------|------------------------|-----------|-----------------------|--------|
| Section                         | Test Item              | Limit     | Frequency Range (MHz) | Result |
| 15.247                          | Power Spectral Density | 8dBm/3kHz | 2400-2483.5           | PASS   |

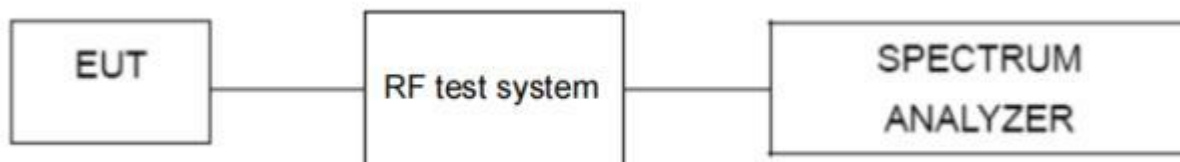
### 6.2 TEST PROCEDURE

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS bandwidth.
3. Set the RBW to:  $3\text{ kHz} \leq \text{RBW} \leq 100\text{ kHz}$ .
4. Set the VBW  $\geq 3 \times \text{RBW}$ .
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level within the RBW.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

### 6.3 DEVIATION FROM STANDARD

No deviation.

### 6.4 TEST SETUP



### 6.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 6.4 Unless otherwise a special operating condition is specified in the follows during the testing.



## 6.6 TEST RESULT

|               |        |                     |         |
|---------------|--------|---------------------|---------|
| Temperature : | 26℃    | Relative Humidity : | 54%     |
| Pressure :    | 101kPa | Test Voltage :      | DC 3.7V |

| Test Mode | Frequency (MHz) | Power Spectral Density (dBm/3kHz) | Limit (dBm/3kHz) | Result |
|-----------|-----------------|-----------------------------------|------------------|--------|
| 802.11b   | 2412            | -22.179                           | 8                | PASS   |
|           | 2437            | -21.885                           | 8                | PASS   |
|           | 2462            | -23.599                           | 8                | PASS   |
| 802.11g   | 2412            | -26.556                           | 8                | PASS   |
|           | 2437            | -26.882                           | 8                | PASS   |
|           | 2462            | -27.85                            | 8                | PASS   |
| 802.11n20 | 2412            | -26.155                           | 8                | PASS   |
|           | 2437            | -27.25                            | 8                | PASS   |
|           | 2462            | -28.088                           | 8                | PASS   |
| 802.11n40 | 2422            | -26.829                           | 8                | PASS   |
|           | 2437            | -28.259                           | 8                | PASS   |
|           | 2452            | -29.157                           | 8                | PASS   |



## Test Graphs

## PSD NVNT b 2412MHz



## PSD NVNT b 2437MHz

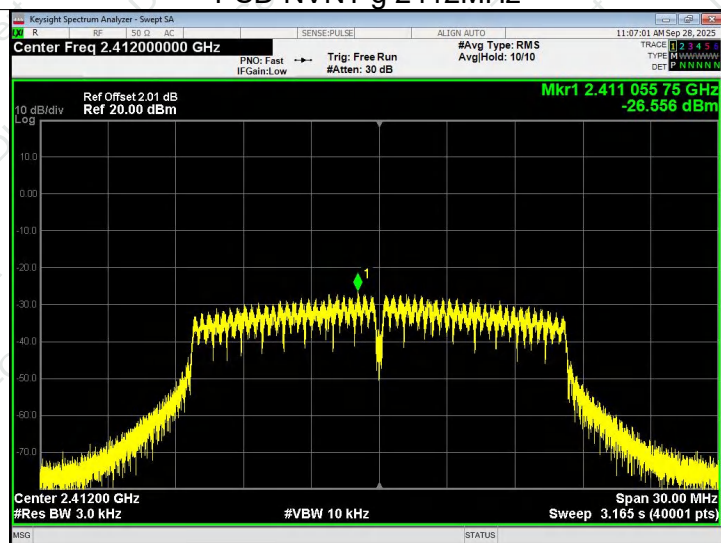


## PSD NVNT b 2462MHz

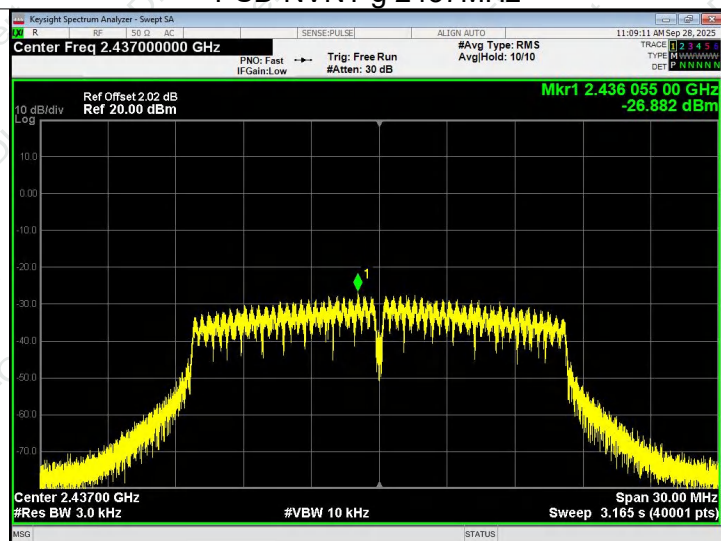




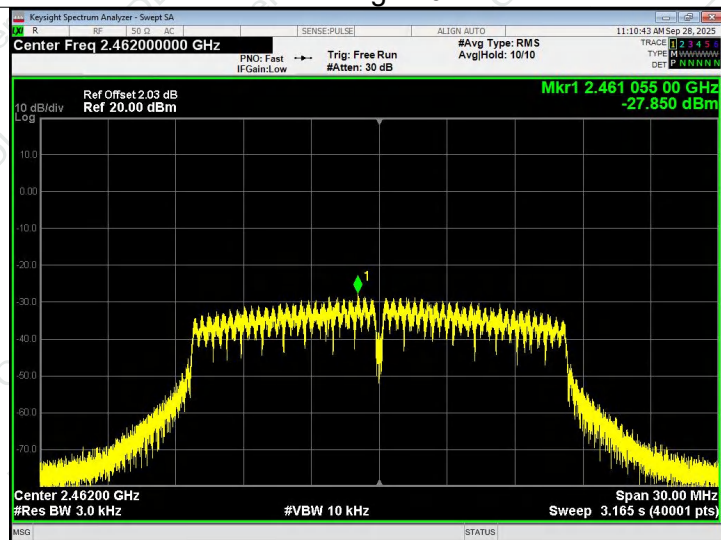
## PSD NVNT g 2412MHz



## PSD NVNT g 2437MHz

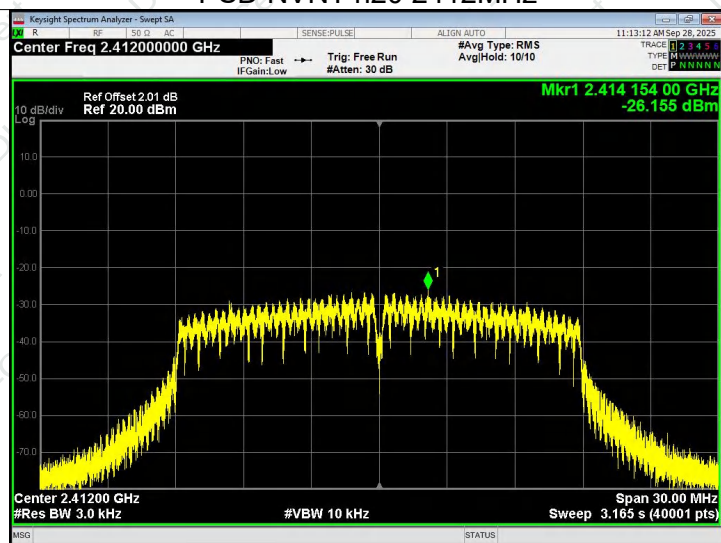


## PSD NVNT g 2462MHz

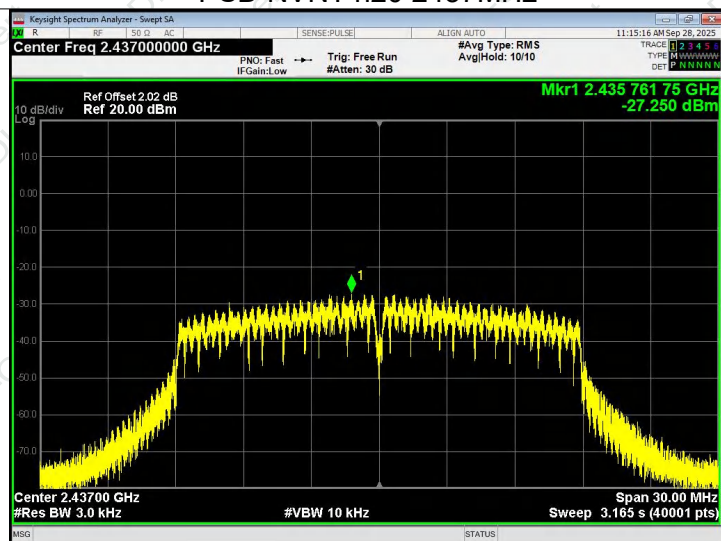




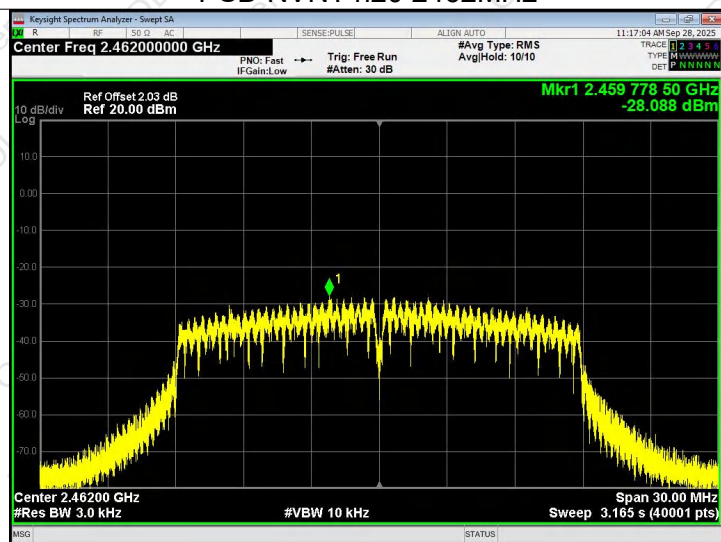
## PSD NVNT n20 2412MHz



## PSD NVNT n20 2437MHz

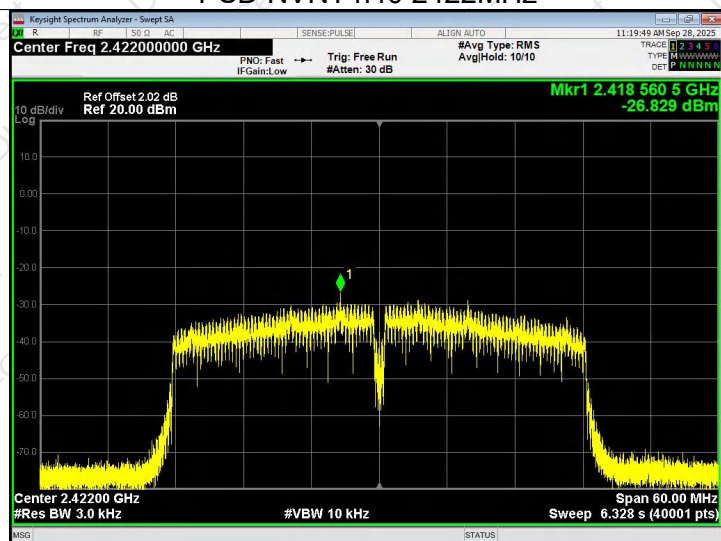


## PSD NVNT n20 2462MHz

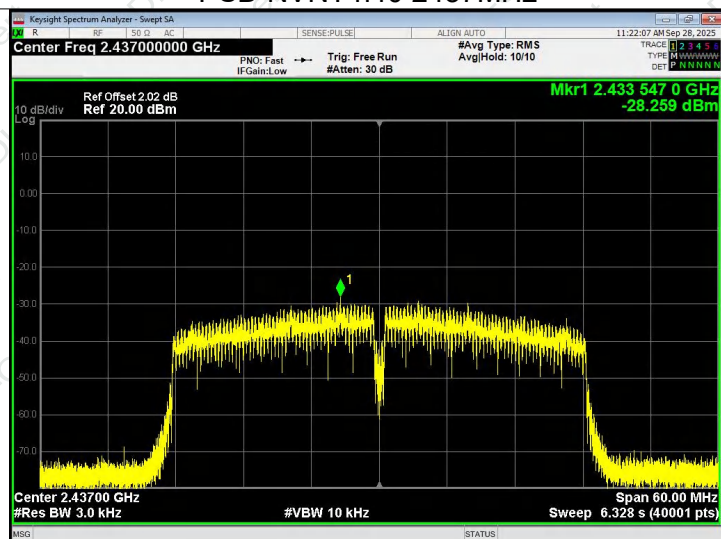




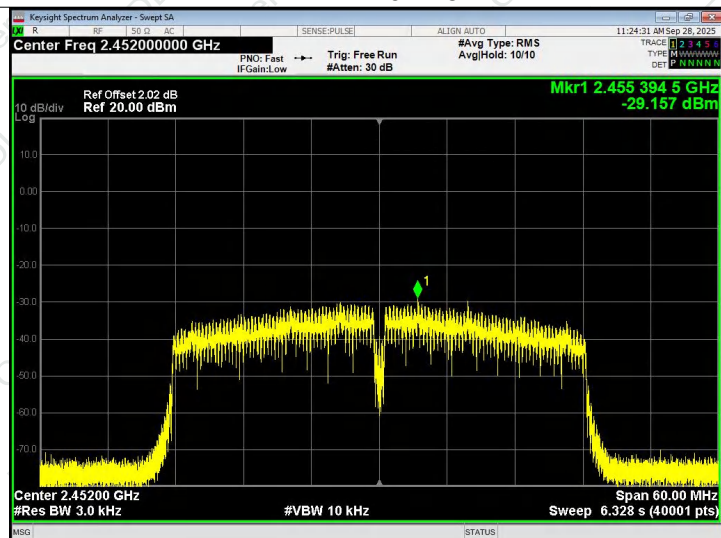
## PSD NVNT n40 2422MHz



## PSD NVNT n40 2437MHz



## PSD NVNT n40 2452MHz





## 7. 6DB OCCUPIED BANDWIDTH

|                   |                                         |
|-------------------|-----------------------------------------|
| Test Requirement: | FCC Part15 C Section 15.247 (a)(2)      |
| Test Method:      | KDB558074 D0115.247 Meas Guidancev05r02 |

### 7.1 APPLIED PROCEDURES / LIMIT

| FCC Part15 (15.247) , Subpart C |           |                                                  |                       |        |
|---------------------------------|-----------|--------------------------------------------------|-----------------------|--------|
| Section                         | Test Item | Limit                                            | Frequency Range (MHz) | Result |
| 15.247(a)(2)                    | Bandwidth | $\geq 500\text{KHz}$<br>(6dB Occupied Bandwidth) | 2400-2483.5           | PASS   |

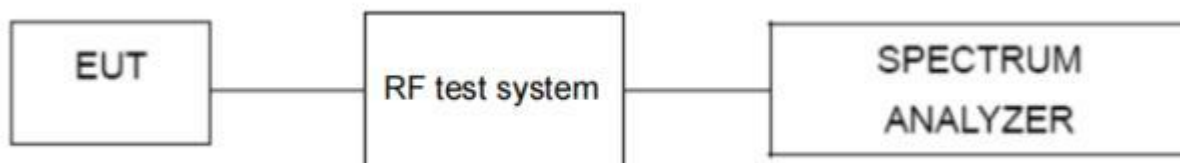
### 7.2 TEST PROCEDURE

1. Set RBW = shall be in the range of 1% to 5% of the OBW but not less than 100 kHz.
2. Set the video bandwidth (VBW)  $\geq 3 * \text{RBW}$ .
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

### 7.3 DEVIATION FROM STANDARD

No deviation.

### 7.4 TEST SETUP



### 7.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 7.4 Unless otherwise a special operating condition is specified in the follows during the testing.



## 7.6 TEST RESULT

|               |        |                     |         |
|---------------|--------|---------------------|---------|
| Temperature : | 26℃    | Relative Humidity : | 54%     |
| Pressure :    | 101kPa | Test Voltage :      | DC 3.7V |
| Test Mode :   | TX     |                     |         |

| Test Mode | Test Channel<br>(MHz) | 6dB Occupied Bandwidth<br>(MHz) | Limit<br>(kHz) | Result |
|-----------|-----------------------|---------------------------------|----------------|--------|
| 802.11b   | 2412                  | 8.33                            | >500           | Pass   |
|           | 2437                  | 8.728                           |                |        |
|           | 2462                  | 8.686                           |                |        |
| 802.11g   | 2412                  | 16.335                          | >500           | Pass   |
|           | 2437                  | 16.363                          |                |        |
|           | 2462                  | 16.216                          |                |        |
| 802.11n20 | 2412                  | 17.074                          | >500           | Pass   |
|           | 2437                  | 17.107                          |                |        |
|           | 2462                  | 17.078                          |                |        |
| 802.11n40 | 2422                  | 35.635                          | >500           | Pass   |
|           | 2437                  | 35.139                          |                |        |
|           | 2452                  | 34.959                          |                |        |