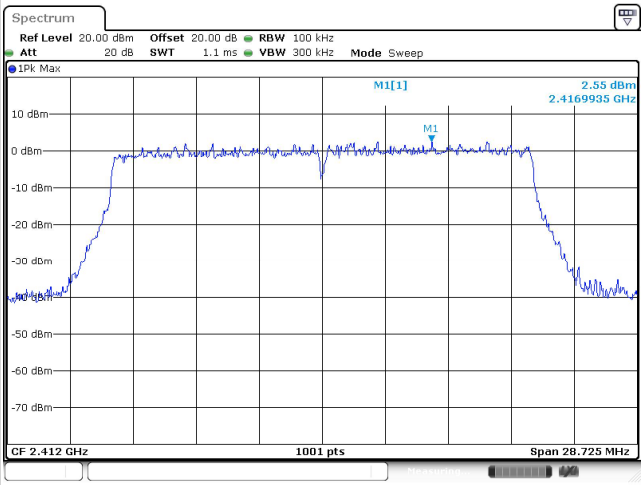
**<TXBF Mode>**

**Number of TX = 2, Ant. 6 (Measured)**

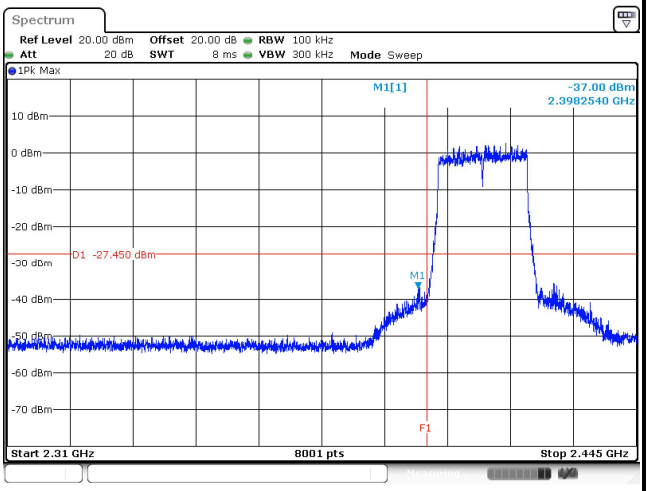
| Test Mode : | 802.11ax HE20 | Test Channel : | 01 Full RU |
|---|---|---|---|

**100kHz PSD reference Level**



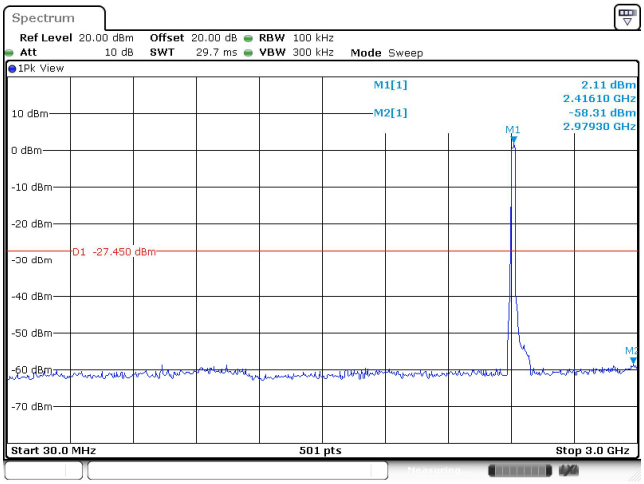

Date: 21.JUL.2022 19:47:09

**Low Channel Plot**



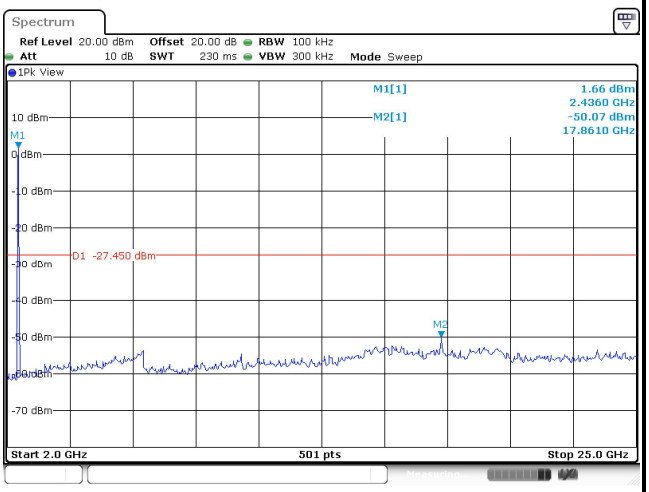

Date: 21.JUL.2022 19:47:17

**Spurious Emission 30MHz~3GHz**



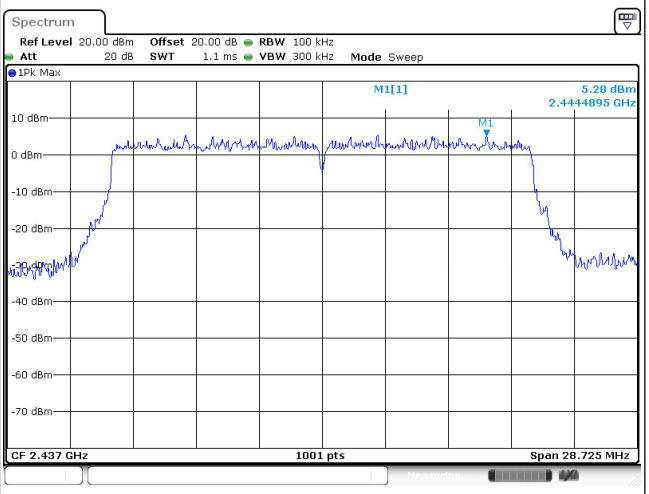

Date: 21.JUL.2022 19:47:33

**Spurious Emission 2GHz~25GHz**

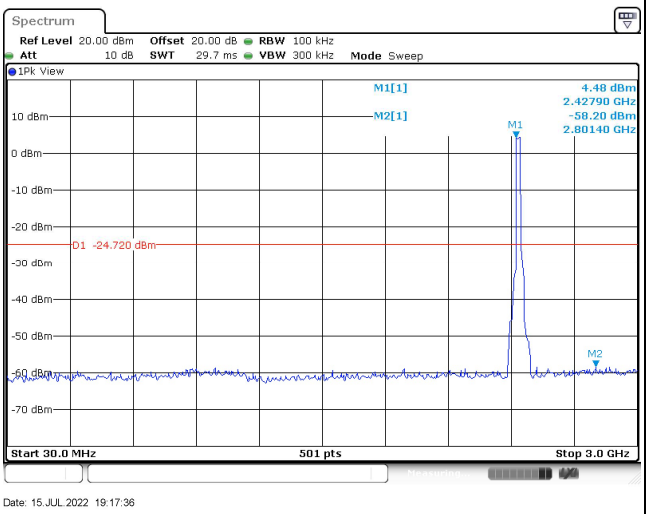
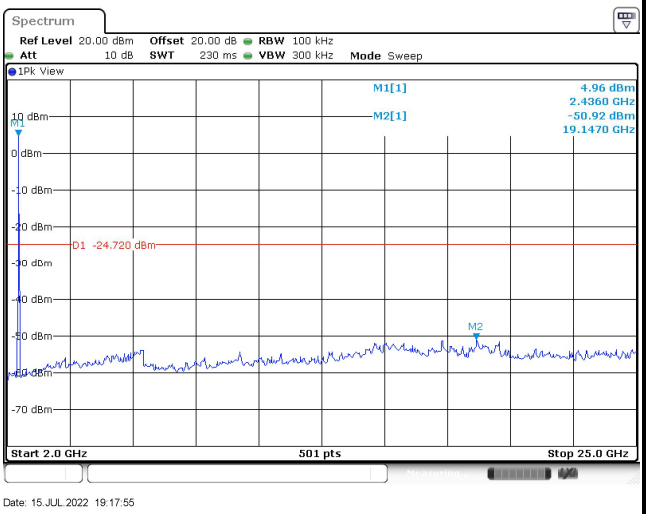



Date: 21.JUL.2022 19:47:45

| Test Mode : | 802.11ax HE20 | Test Channel : | 06 Full RU |
|---|---|---|---|

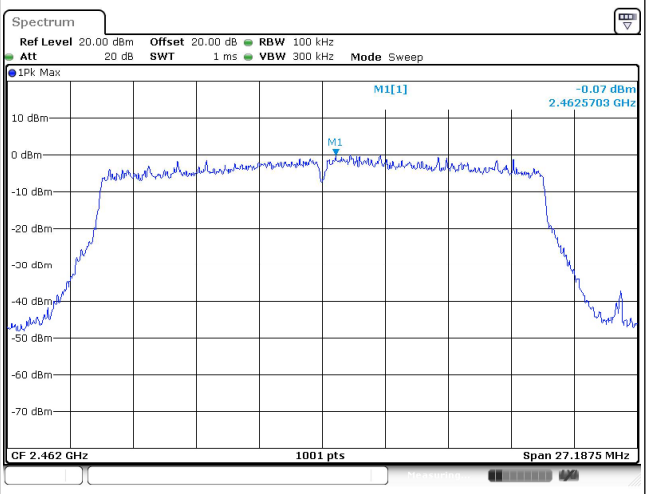
| 100kHz PSD reference Level | Mid Channel Plot |
|---|---|
|  | |



| Spurious Emission 30MHz~3GHz | Spurious Emission 2GHz~25GHz |
|---|---|
|  |  |

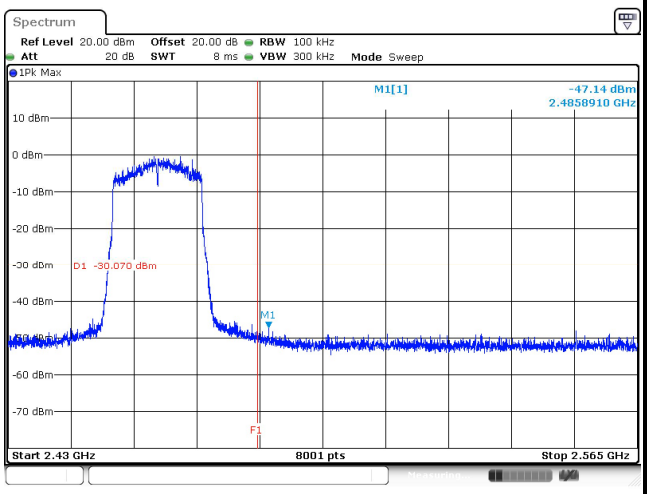
| Test Mode : | 802.11ax HE20 | Test Channel : | 11 Full RU |
|---|---|---|---|

## 100kHz PSD reference Level



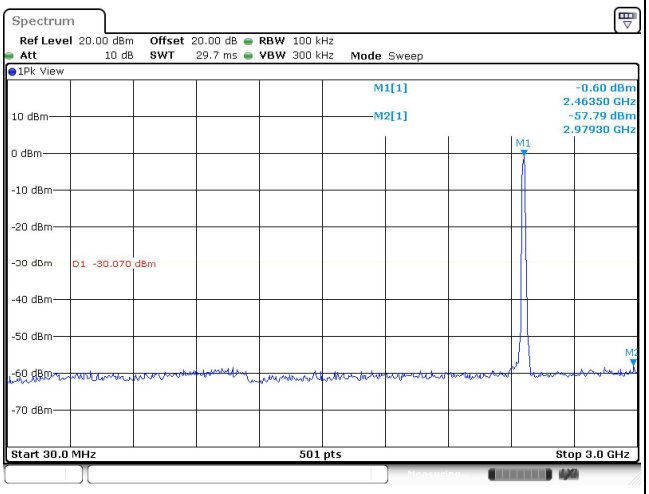

Date: 16.JUL.2022 00:36:03

## High Channel Plot



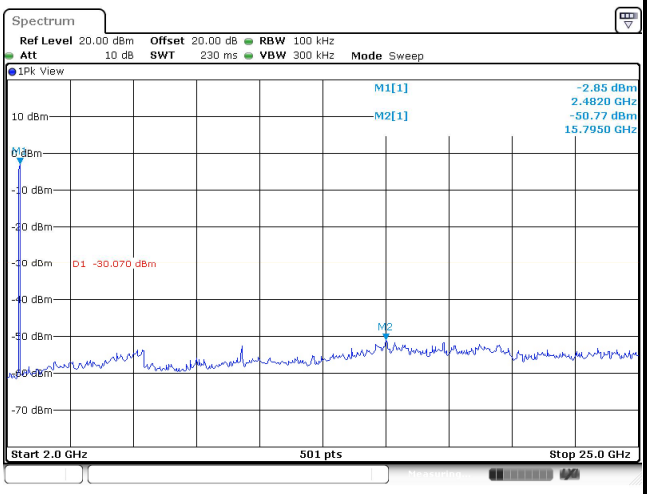

Date: 16.JUL.2022 00:37:23

## Spurious Emission 30MHz~3GHz




Date: 16.JUL.2022 00:37:46

## Spurious Emission 2GHz~25GHz

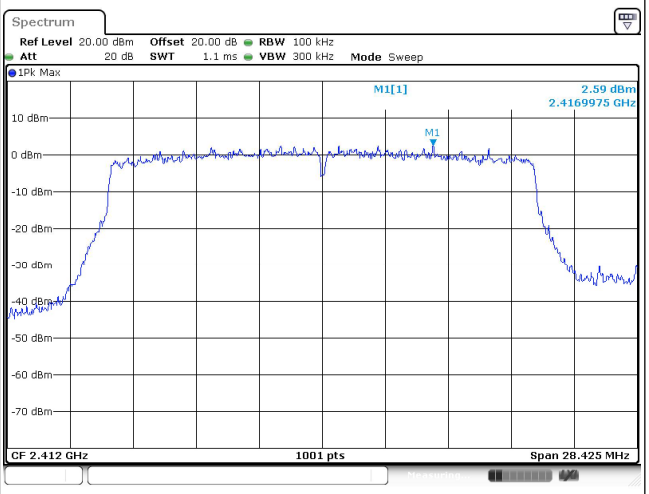



Date: 16.JUL.2022 00:37:57

**Number of TX = 2, Ant. 7 (Measured)**

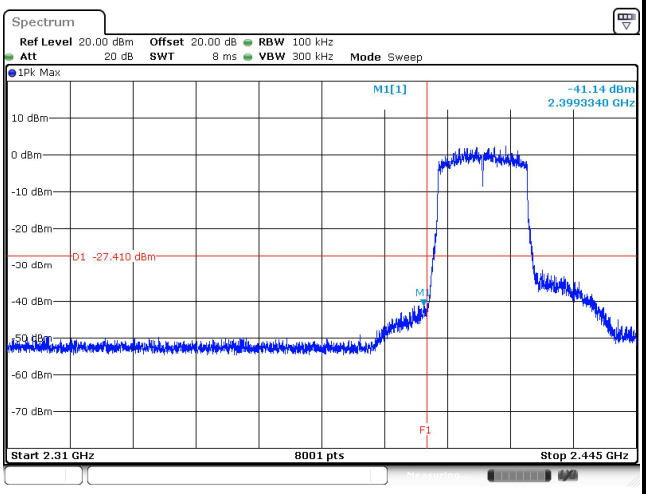
| Test Mode : | 802.11ax HE20 | Test Channel : | 01 Full RU |
|---|---|---|---|

**100kHz PSD reference Level**



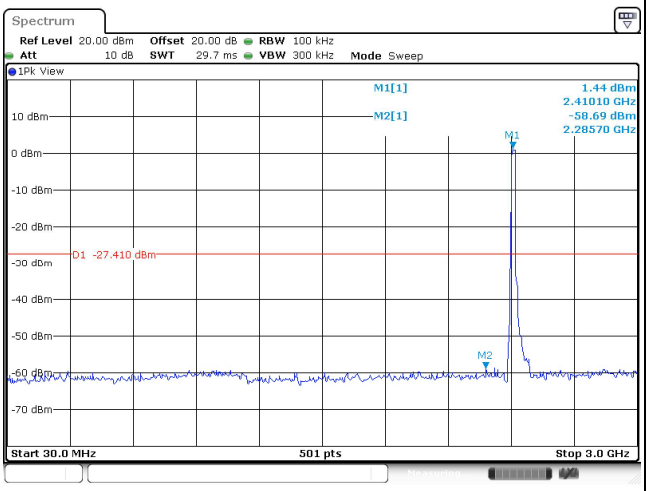

Date: 21.JUL.2022 19:49:04

**Low Channel Plot**



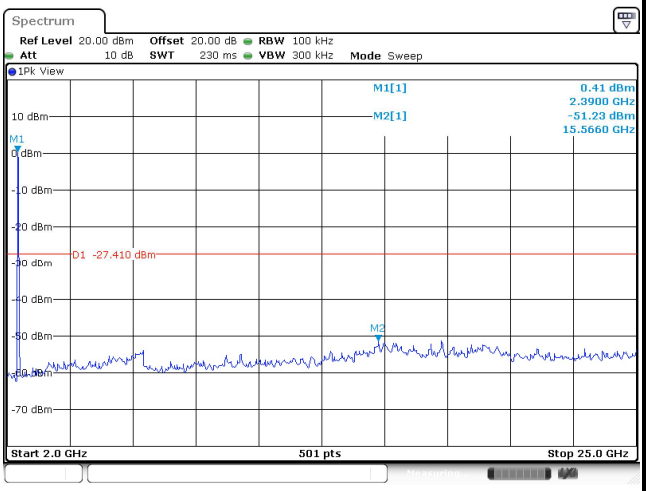

Date: 21.JUL.2022 19:49:33

**Spurious Emission 30MHz~3GHz**



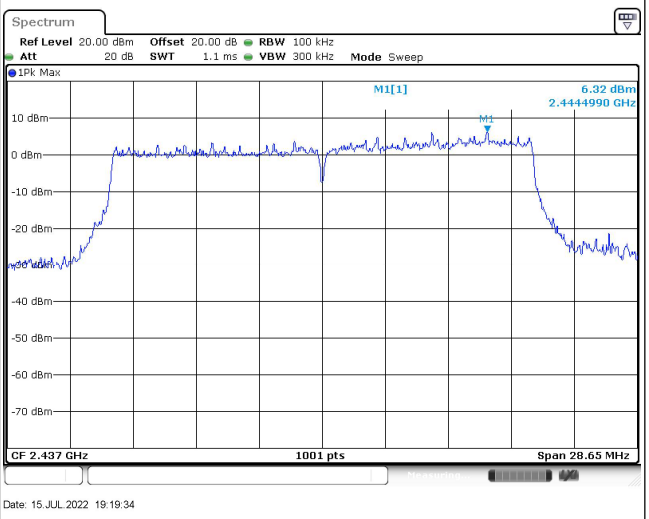

Date: 21.JUL.2022 19:49:49

**Spurious Emission 2GHz~25GHz**

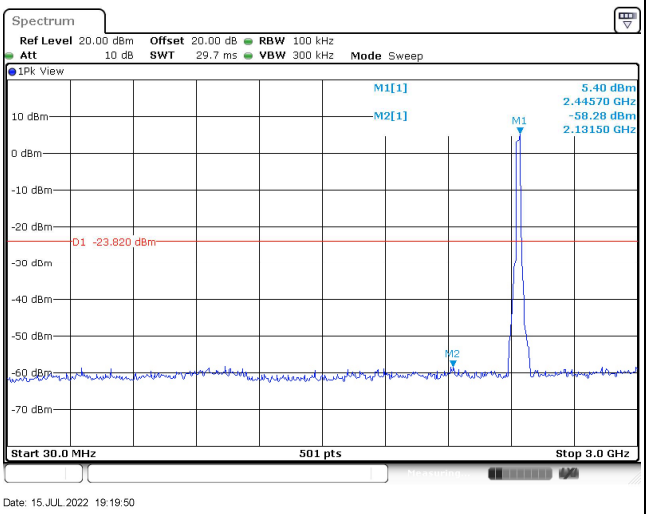
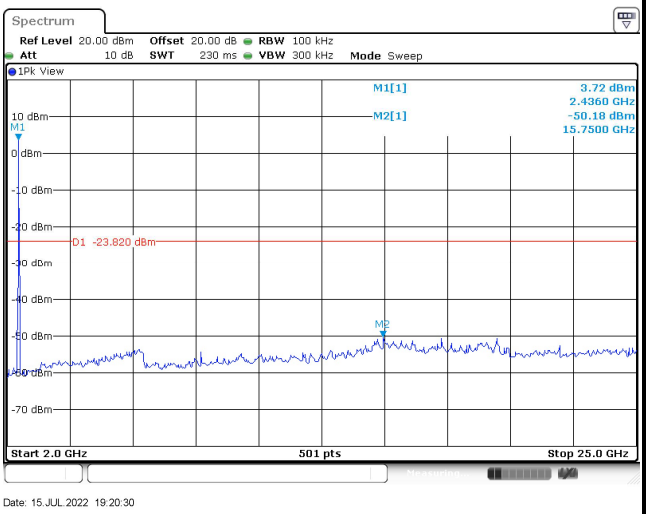



Date: 21.JUL.2022 19:50:02

| Test Mode : | 802.11ax HE20 | Test Channel : | 06 Full RU |
|---|---|---|---|

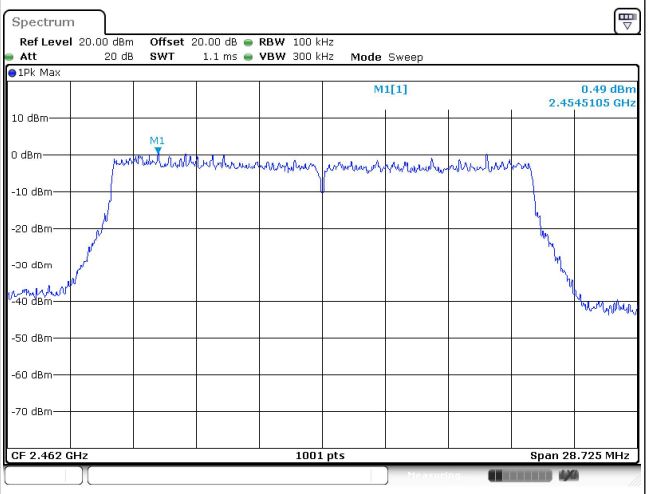
| 100kHz PSD reference Level | Mid Channel Plot |
|---|---|
|  | |



| Spurious Emission 30MHz~3GHz | Spurious Emission 2GHz~25GHz |
|---|---|
|  |  |

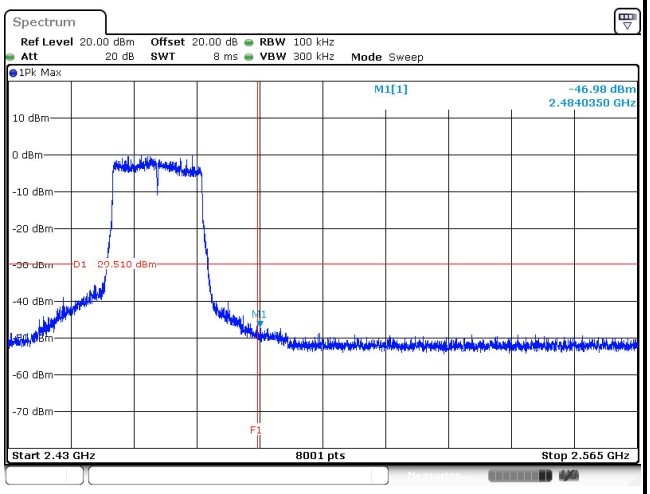
| Test Mode : | 802.11ax HE20 | Test Channel : | 11 Full RU |
|---|---|---|---|

**100kHz PSD reference Level**



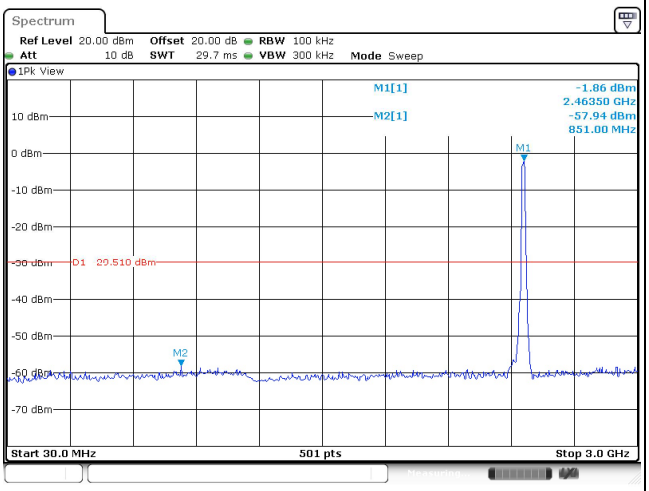

Date: 16.JUL.2022 00:39:09

**High Channel Plot**



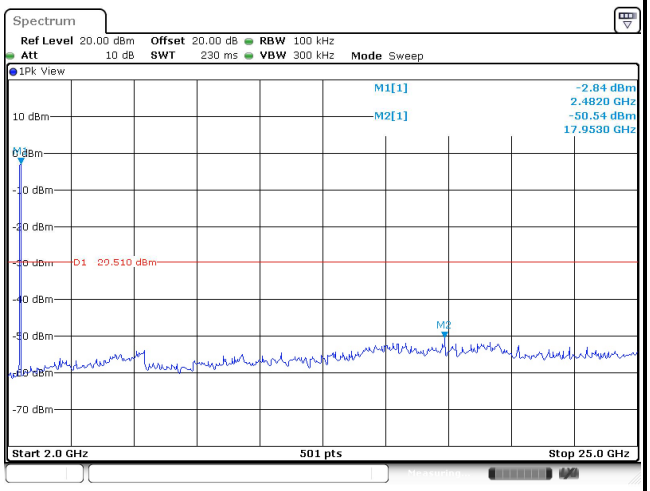

Date: 16.JUL.2022 00:40:43

**Spurious Emission 30MHz~3GHz**




Date: 16.JUL.2022 00:41:01

**Spurious Emission 2GHz~25GHz**




Date: 16.JUL.2022 00:41:13

## 3.5 Radiated Band Edges and Spurious Emission Measurement

### 3.5.1 Limit of Radiated band edge and Spurious Emission Measurement

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device is measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the limits as below.

| Frequency (MHz) | Field Strength (microvolts/meter) | Measurement Distance (meters) |
|---|---|---|
| 0.009 – 0.490 | 2400/F(kHz) | 300 |
| 0.490 – 1.705 | 24000/F(kHz) | 30 |
| 1.705 – 30.0 | 30 | 30 |
| 30 – 88 | 100 | 3 |
| 88 – 216 | 150 | 3 |
| 216 - 960 | 200 | 3 |
| Above 960 | 500 | 3 |

### 3.5.2 Measuring Instruments

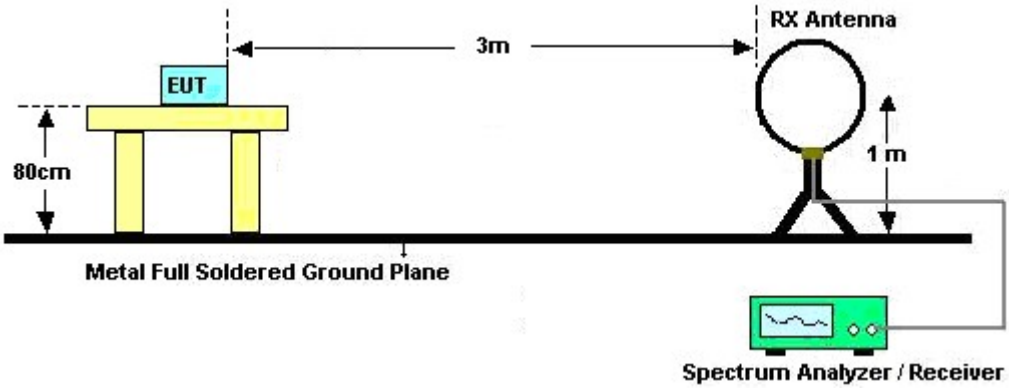
Please refer to the measuring equipment list in this test report.

### 3.5.3 Test Procedures

1. The testing follows the ANSI C63.10 Section 11.12.1 Radiated emission measurements.
2. The EUT is arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT is placed on a turntable with 0.8 meter for frequency below 1 GHz and 1.5 meter for frequency above 1 GHz respectively above ground.
4. The EUT is set 3 meters away from the receiving antenna, which is mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. Radiated testing below 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading. When there is no suspected emission found and the emission level is with at least 6 dB margin against QP limit line, the position is marked as "-".
7. Radiated testing above 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading for scanning all frequencies. When there is no suspected emission found and the harmonic emission level is with at least 6 dB margin against average limit line, the position is marked as "-".
8. Use the following spectrum analyzer settings:
   (1) Span shall wide enough to fully capture the emission being measured;
   (2) Set RBW = 100 kHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
   (3) Set RBW = 1 MHz, VBW= 3 MHz for f ≥ 1 GHz for peak measurement.
   For average measurement:
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

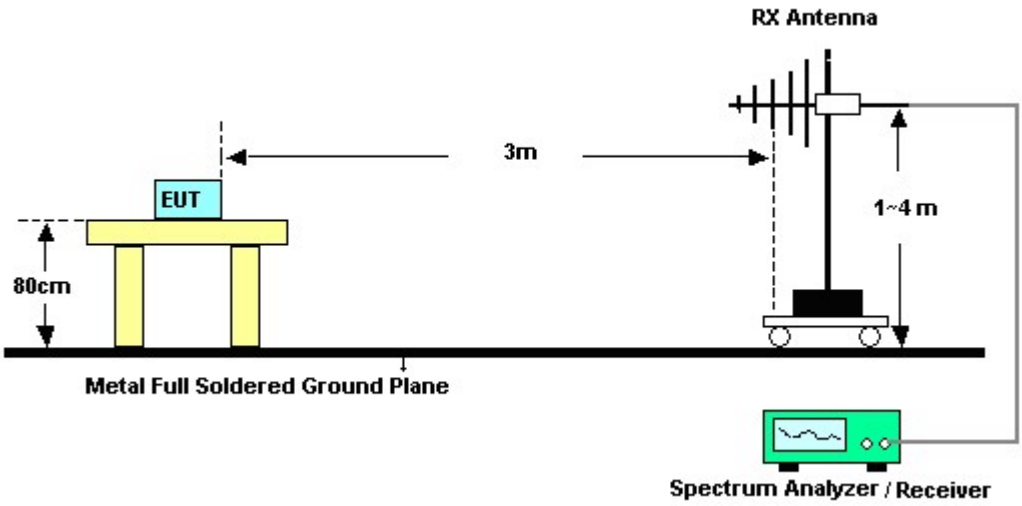
### 3.5.4 Test Setup

**For radiated emissions below 30MHz**

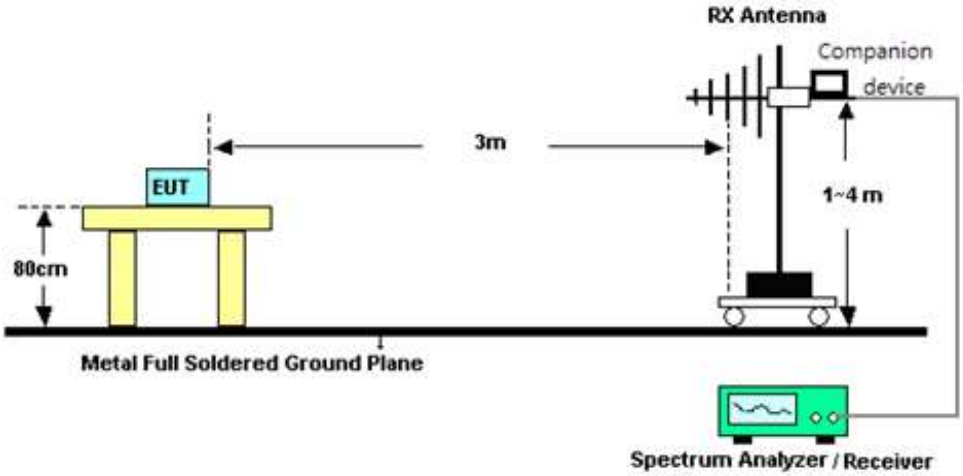



**For radiated emissions from 30MHz to 1GHz**

**<CDD Mode>**

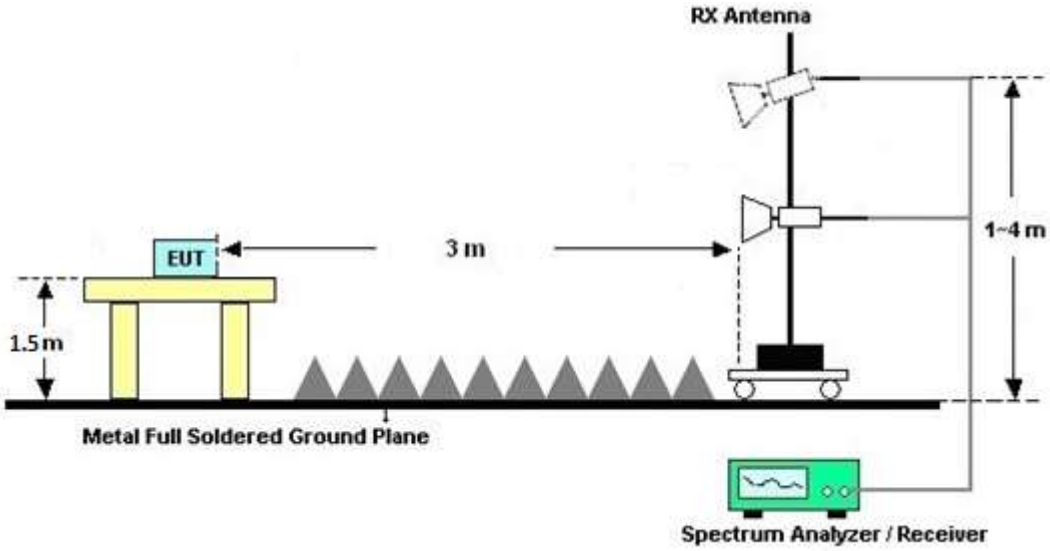



**<TXBF Modes>**

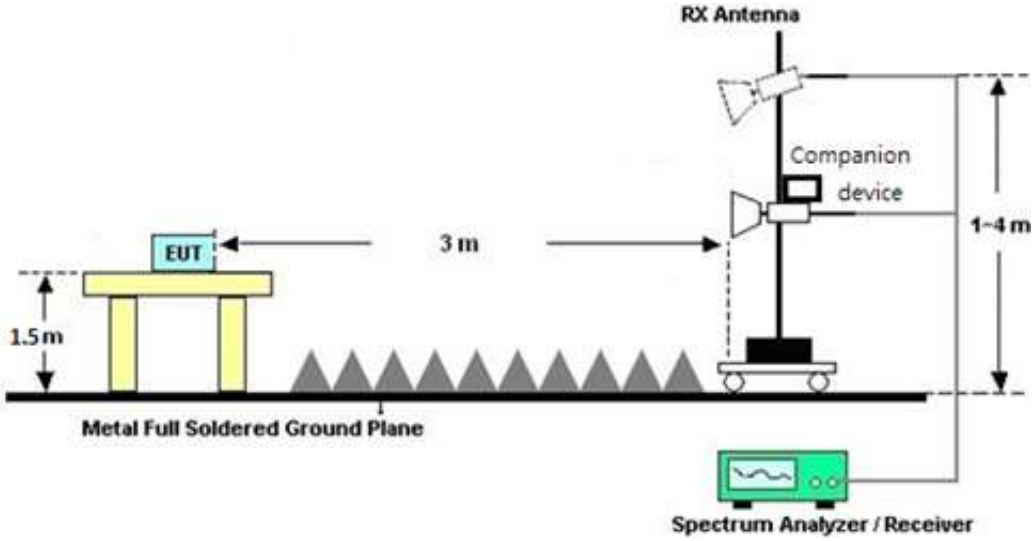


**For radiated test from 1GHz to 18GHz**

**<CDD Mode>**

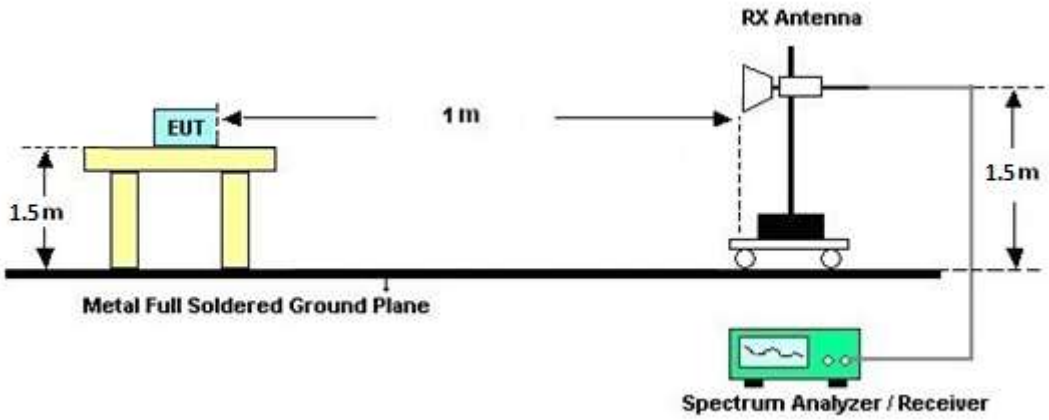



**<TXBF Modes>**

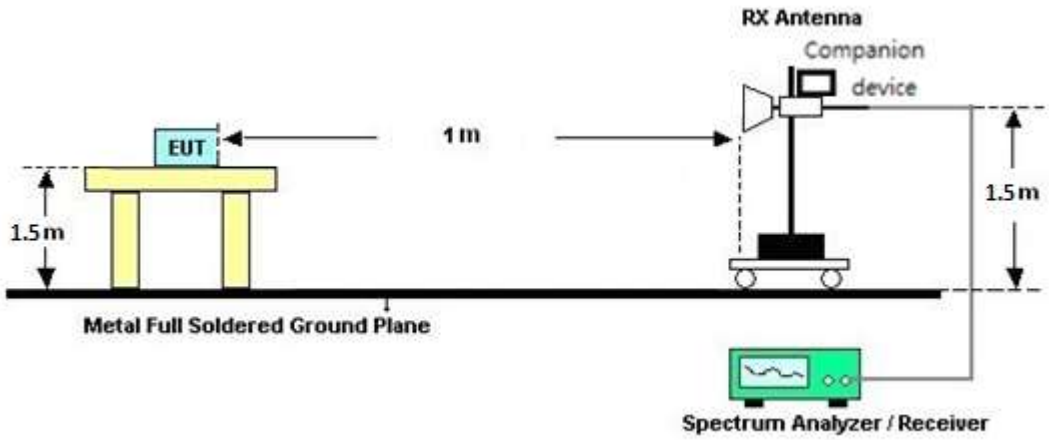


**For radiated test above 18GHz**

**<CDD Mode>**




**<TXBF Modes>**



### 3.5.5 Test Results of Radiated Spurious Emissions (9kHz ~ 30MHz)

The low frequency, which starts from 9 kHz to 30 MHz, is pre-scanned and the result which is 20 dB lower than the limit line is not reported.

There is adequate comparison measurement of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result comes out very similar.

### 3.5.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix B and C.

### 3.5.7 Duty Cycle

Please refer to Appendix D.

### 3.5.8 Test Result of Radiated Spurious Emission (30MHz ~ 10$^{th}$ Harmonic)

Please refer to Appendix B and C.

## 3.6 AC Conducted Emission Measurement

### 3.6.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

| Frequency of Emission (MHz) | Conducted Limit (dBμV) | |
|---|---|---|
| | Quasi-Peak | Average |
| 0.15-0.5 | 66 to 56* | 56 to 46* |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |

*Decreases with the logarithm of the frequency.

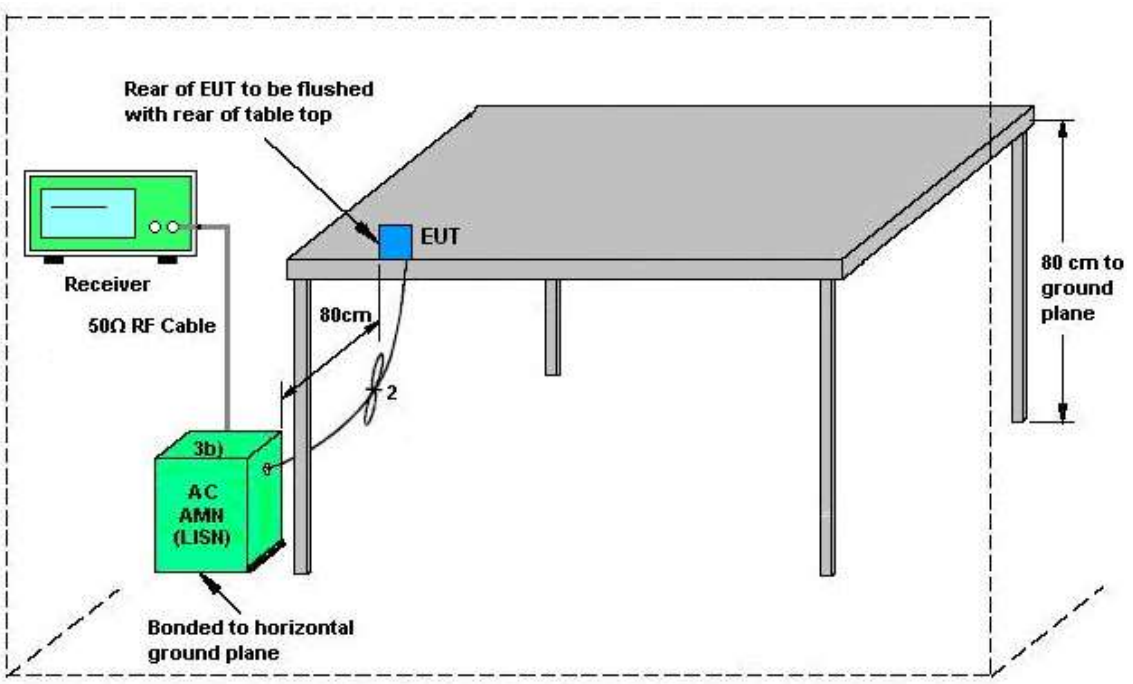
### 3.6.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

### 3.6.3 Test Procedures

1. The EUT is placed 0.4 meter away from the conducting wall of the shielding room, and is kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN shall be used.
6. Both Line and Neutral shall be tested in order to find out the maximum conducted emission.
7. The frequency range from 150 kHz to 30 MHz is scanned.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF bandwidth = 9kHz) with Maximum Hold Mode.

### 3.6.4 Test Setup




AMN = Artificial mains network (LISN)
AE = Associated equipment
EUT = Equipment under test
ISN = Impedance stabilization network

### 3.6.5 Test Result of AC Conducted Emission

Please refer to Appendix A.

## 3.7 Antenna Requirements

### 3.7.1 Standard Applicable

If directional gain of transmitting Antennas is greater than 6 dBi, the power shall be reduced by the same level in dB comparing to gain minus 6 dBi. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the rule.

### 3.7.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

### 3.7.3 Antenna Gain

<CDD Modes >

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For power measurements on IEEE 802.11 devices,

Directional gain = $G_{ANT}$ + Array Gain, where Array Gain is as follows:

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$.

$G_{ANT}$ is set equal to the gain of the antenna having the highest gain.

For PSD measurements, the directional gain calculation follows F)2)f)ii) of KDB 662911 D01 v02r01.

$$DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$$

*where*

Each antenna is driven by no more than one spatial stream;

$N_{SS}$ = the number of independent spatial streams of data;

$N_{ANT}$ = the total number of antennas

$g_{j,k} = 10^{G_k/20}$ if the $k$th antenna is being fed by spatial stream $j$, or zero if it is not;

$G_k$ is the gain in dBi of the kth antenna.

As minimum $N_{SS}$=1 is supported by EUT, the formula can be simplified as:

Directional gain = $10*\log[(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}]$ dBi

Where G1, G2….GN denote single antenna gain.

For example: If a device has two antenna, $G_{ANT1}$= 3.6dBi; $G_{ANT2}$=4.2dBi

Directional gain of power measurement = max(3.6, 4.2) + 0 = 4.2 dBi

Directional gain of PSD measurement = 10 * log[ $(10^{3.6/20} + 10^{4.2/20})^2$ / 2 ] = 6.92 dBi

The directional gain of EUT is listed in the following table.

| <CDD Modes> | | | | | | |
|---|---|---|---|---|---|---|
| | | | DG for Power | DG for PSD | Power Limit Reduction | PSD Limit Reduction |
| | Ant. 6 (dBi) | Ant. 7 (dBi) | (dBi) | (dBi) | (dB) | (dB) |
| **2.4 GHz** | 1.20 | 1.50 | 1.50 | 4.36 | 0.00 | 0.00 |

*Power Limit Reduction = DG(Power) – 6dBi, ( min = 0 )*

*PSD Limit Reduction = DG(PSD) – 6dBi, ( min = 0 )*

Calculation example:

For the DG for PSD is derived from formula is

10 x log { { [ 10^ (1.20 dBi / 20) + 10^ (1.50 dBi / 20) ] ^ 2 } / 2 }

= 4.36 dBi

**TXBF modes**

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

$$DirectionalGain = 10 \cdot \log \left[ \frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

*where*

Each antenna is driven by no more than one spatial stream;

$N_{SS}$ = the number of independent spatial streams of data;

$N_{ANT}$ = the total number of antennas

$g_{j,k} = 10^{G_k/20}$ if the $k$th antenna is being fed by spatial stream $j$, or zero if it is not;

$G_k$ is the gain in dBi of the kth antenna.

The EUT supports beamforming modes.

The directional gain calculation is following F)2)e)ii) of KDB 662911 D01 v02r01.

The power and PSD limit should be modified if the directional gain of EUT is over 6 dBi,

The directional gain "DG" is calculated as following table.

| | Ant. 6 (dBi) | Ant. 7 (dBi) | DG for Power (dBi) | DG for PSD (dBi) | Power Limit Reduction (dB) | PSD Limit Reduction (dB) |
|---|---|---|---|---|---|---|
| **2.4 GHz** | 1.20 | 1.50 | 4.36 | 4.36 | 0.00 | 0.00 |

Power Limit Reduction = DG(Power) – 6dBi, ( min = 0 )

*PSD Limit Reduction = DG(PSD) – 6dBi, ( min = 0 )*

Calculation example:

For the DG for PSD is derived from formula is

10 x log { { [ 10^ (1.20 dBi / 20) + 10^ (1.50 dBi / 20) ] ^ 2 } / 2 }

= 4.36 dBi

# 4 List of Measuring Equipment

| Instrument | Brand Name | Model No. | Serial No. | Characteristics | Calibration Date | Test Date | Due Date | Remark |
|---|---|---|---|---|---|---|---|---|
| Loop Antenna | Rohde & Schwarz | HFH2-Z2 | 100488 | 9kHz~30MHz | Sep. 07, 2021 | Jun. 17, 2022~ Jun. 30, 2022 | Sep. 06, 2022 | Radiation (03CH13-HY) |
| Bilog Antenna | TESEQ | CBL 6111D & 00800N1D01N -06 | 40103 & 07 | 30MHz~1GHz | Apr. 24, 2022 | Jun. 17, 2022~ Jun. 30, 2022 | Apr. 23, 2023 | Radiation (03CH13-HY) |
| Horn Antenna | SCHWARZBECK | BBHA 9120 D | 9120D-1241 | 1GHz~18GHz | Jul. 13, 2021 | Jun. 17, 2022~ Jun. 30, 2022 | Jul. 12, 2022 | Radiation (03CH13-HY) |
| SHF-EHF Horn Antenna | SCHWARZBECK | BBHA 9170 | 00994 | 18GHz~40GHz | Nov. 04, 2021 | Jun. 17, 2022~ Jun. 30, 2022 | Nov. 03, 2022 | Radiation (03CH13-HY) |
| Amplifier | Sonoma-Instrument | 310 N | 187282 | 9kHz~1GHz | Dec. 15, 2021 | Jun. 17, 2022~ Jun. 30, 2022 | Dec. 14, 2022 | Radiation (03CH13-HY) |
| Preamplifier | MITEQ | AMF-7D-0010 1800-30-10P | 1590074 | 1GHz~18GHz | May 17, 2022 | Jun. 17, 2022~ Jun. 30, 2022 | May 16, 2023 | Radiation (03CH13-HY) |
| Preamplifier | Keysight | 83017A | MY53270147 | 1GHz~26.5GHz | Oct. 26, 2021 | Jun. 17, 2022~ Jun. 30, 2022 | Oct. 25, 2022 | Radiation (03CH13-HY) |
| Preamplifier | EMEC | EM18G40G | 060715 | 18GHz~40GHz | Dec. 24, 2021 | Jun. 17, 2022~ Jun. 30, 2022 | Dec. 23, 2022 | Radiation (03CH13-HY) |
| Spectrum Analyzer | Keysight | N9010A | MY55370526 | 10Hz~44GHz | Mar. 18, 2022 | Jun. 17, 2022~ Jun. 30, 2022 | Mar. 17, 2023 | Radiation (03CH13-HY) |
| Hygrometer | TECPEL | DTM-303B | TP200889 | N/A | Sep. 30, 2021 | Jun. 17, 2022~ Jun. 30, 2022 | Sep. 29, 2022 | Radiation (03CH13-HY) |
| Antenna Mast | EMEC | AM-BS-4500-B | N/A | 1m~4m | N/A | Jun. 17, 2022~ Jun. 30, 2022 | N/A | Radiation (03CH13-HY) |
| Turn Table | EMEC | TT2000 | N/A | 0~360 Degree | N/A | Jun. 17, 2022~ Jun. 30, 2022 | N/A | Radiation (03CH13-HY) |
| Software | Audix | E3 6.2009-8-24 | RK-000992 | N/A | N/A | Jun. 17, 2022~ Jun. 30, 2022 | N/A | Radiation (03CH13-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 126E | 0030/126E | 30MHz~18GHz | Feb. 09, 2022 | Jun. 17, 2022~ Jun. 30, 2022 | Feb. 08, 2023 | Radiation (03CH13-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 104 | 804793/4 | 30MHz~18GHz | Feb. 09, 2022 | Jun. 17, 2022~ Jun. 30, 2022 | Feb. 08, 2023 | Radiation (03CH13-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 104 | MY24961/4 | 30MHz~18GHz | Feb. 09, 2022 | Jun. 17, 2022~ Jun. 30, 2022 | Feb. 08, 2023 | Radiation (03CH13-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 102 | 804011/2, 804012/2 | 18GHz~40GHz | Jan. 04, 2022 | Jun. 17, 2022~ Jun. 30, 2022 | Jan. 03, 2023 | Radiation (03CH13-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 104 | MY9837/4PE | 9kHz~30MHz | Mar. 10, 2022 | Jun. 17, 2022~ Jun. 30, 2022 | Mar. 09, 2023 | Radiation (03CH13-HY) |
| Filter | Wainwright | WLK4-1000-1530-8000-40SS | SN12 | 1.53GHz Low Pass Filter | Sep. 14, 2021 | Jun. 17, 2022~ Jun. 30, 2022 | Sep. 13, 2022 | Radiation (03CH13-HY) |
| Filter | Wainwright | WHKX8-5872.5-6750-18000-40ST | SN5 | 6.75GHz High Pass Filter | Mar. 10, 2022 | Jun. 17, 2022~ Jun. 30, 2022 | Mar. 09, 2023 | Radiation (03CH13-HY) |
| Filter | Wainwright | WHKX12-2700-3000-18000-60SS | SN2 | 3GHz High Pass Filter | Jul. 12, 2021 | Jun. 17, 2022~ Jun. 30, 2022 | Jul. 11, 2022 | Radiation (03CH13-HY) |

| Instrument | Brand Name | Model No. | Serial No. | Characteristics | Calibration Date | Test Date | Due Date | Remark |
|---|---|---|---|---|---|---|---|---|
| Hygrometer | TECPEL | DTM-303A | TP201996 | N/A | Nov. 16, 2021 | Jun. 09, 2022~ Jul. 21, 2022 | Nov. 15, 2022 | Conducted (TH05-HY) |
| Power Sensor | DARE | RPR3006W | 16I00054SNO 12 (NO:113) | 10MHz~6GHz | Dec. 16, 2021 | Jun. 09, 2022~ Jul. 21, 2022 | Dec. 15, 2022 | Conducted (TH05-HY) |
| Signal Analyzer | Rohde & Schwarz | FSV40 | 101566 | 10Hz~40GHz | Aug. 30, 2021 | Jun. 09, 2022~ Jul. 21, 2022 | Aug. 29, 2022 | Conducted (TH05-HY) |
| Switch Control Mainframe | E-IUSTRUME NT | ETF-1405-0 | EC1900067 (BOX7) | N/A | Aug. 12, 2021 | Jun. 09, 2022~ Jul. 21, 2022 | Aug. 11, 2022 | Conducted (TH05-HY) |
| AC Power Source | ACPOWER | AFC-11003G | F317040033 | N/A | N/A | Jul. 05, 2022 | N/A | Conduction (CO07-HY) |
| Software | Rohde & Schwarz | EMC32 V10.30 | N/A | N/A | N/A | Jul. 05, 2022 | N/A | Conduction (CO07-HY) |
| Pulse Limiter | SCHWARZBE CK | VTSD 9561-F N | 9561-F N00373 | 9kHz-200MHz | Oct. 29, 2021 | Jul. 05, 2022 | Oct. 28, 2022 | Conduction (CO07-HY) |
| RF Cable | HUBER + SUHNER | RG 214/U | 1358175 | 9kHz~30MHz | Mar. 16, 2022 | Jul. 05, 2022 | Mar. 15, 2023 | Conduction (CO07-HY) |
| Two-Line V-Network | TESEQ | NNB 51 | 45051 | N/A | Feb. 16, 2022 | Jul. 05, 2022 | Feb. 15, 2023 | Conduction (CO07-HY) |
| EMI Test Receiver | Rohde & Schwarz | ESCI7 | 100724 | 9kHz~7GHz | Fed. 24, 2022 | Jul. 05, 2022 | Feb. 23, 2023 | Conduction (CO07-HY) |

# 5 Uncertainty of Evaluation

**Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)**

| | |
|---|---|
| Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y)) | 2.3 dB |

**Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)**

| | |
|---|---|
| Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y)) | 6.0 dB |

**Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)**

| | |
|---|---|
| Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y)) | 5.2 dB |

**Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)**

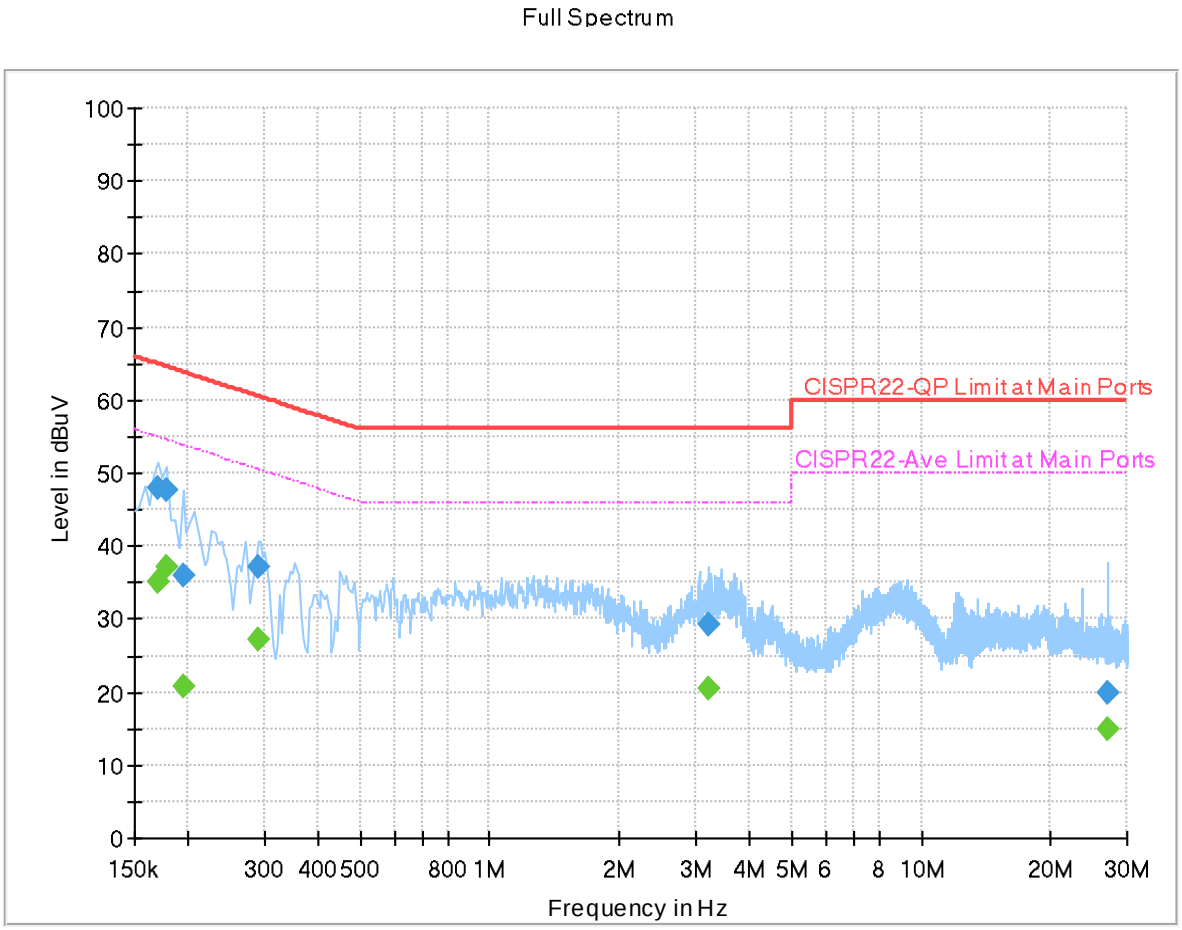
| | |
|---|---|
| Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y)) | 5.9 dB |

# Appendix A. AC Conducted Emission Test Results

| | | | |
|---|---|---|---|
| **Test Engineer :** | Louis Chung | **Temperature :** | 23.7~26.1℃ |
| | | **Relative Humidity :** | 50.2~55.6% |

## EUT Information

| | |
|---|---|
| Report NO : | 1N2539 |
| Test Mode : | Mode 1 |
| Test Voltage : | 120Vac/60Hz |
| Phase : | Line |

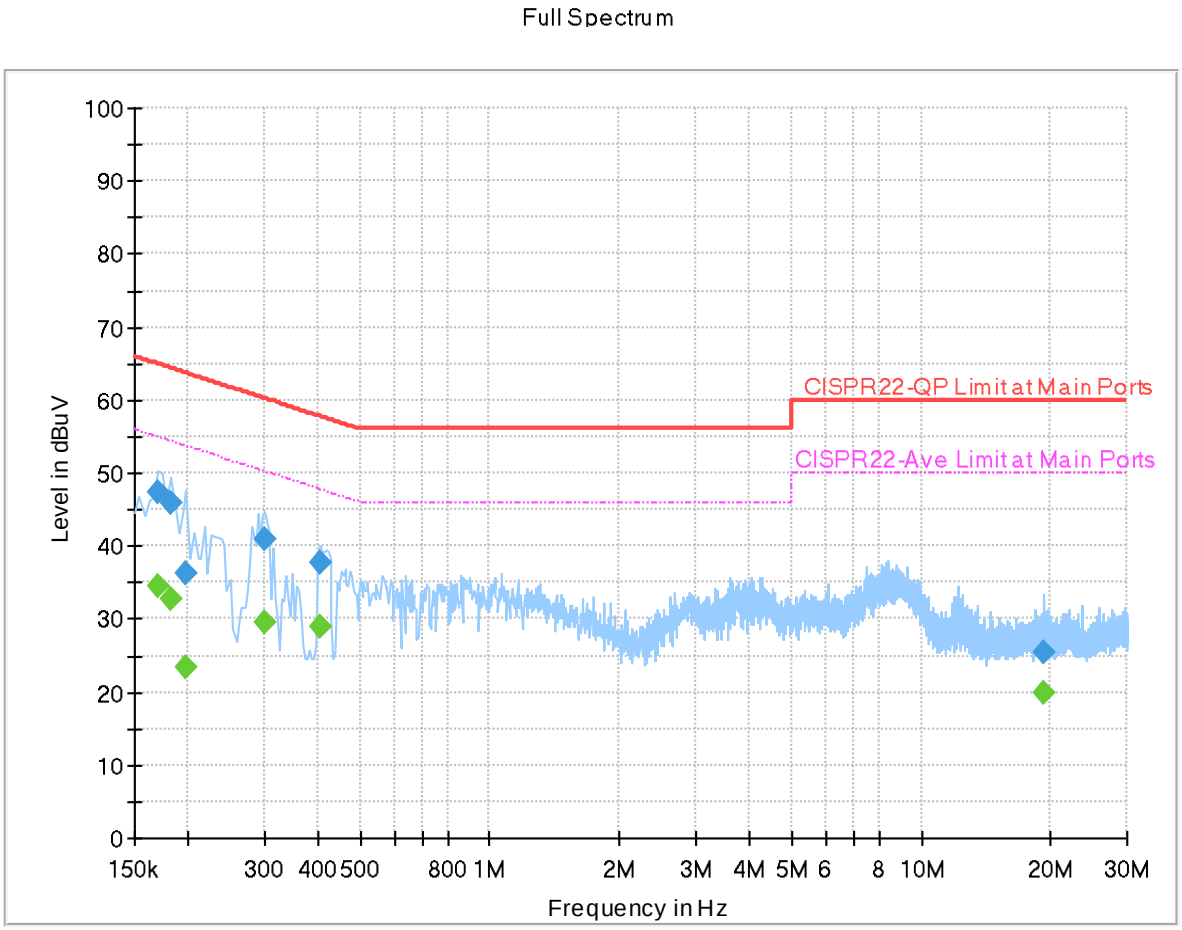



## Final_Result

| Frequency (MHz) | QuasiPeak (dBuV) | CAverage (dBuV) | Limit (dBuV) | Margin (dB) | Line | Filter | Corr. (dB) |
|---|---|---|---|---|---|---|---|
| 0.170000 | --- | 34.99 | 54.96 | 19.97 | L1 | OFF | 20.0 |
| 0.170000 | 47.86 | --- | 64.96 | 17.10 | L1 | OFF | 20.0 |
| 0.178000 | --- | 37.07 | 54.58 | 17.51 | L1 | OFF | 20.0 |
| 0.178000 | 47.73 | --- | 64.58 | 16.85 | L1 | OFF | 20.0 |
| 0.194000 | --- | 20.69 | 53.86 | 33.17 | L1 | OFF | 20.0 |
| 0.194000 | 35.94 | --- | 63.86 | 27.92 | L1 | OFF | 20.0 |
| 0.290000 | --- | 27.15 | 50.52 | 23.37 | L1 | OFF | 20.0 |
| 0.290000 | 37.14 | --- | 60.52 | 23.38 | L1 | OFF | 20.0 |
| 3.222000 | --- | 20.51 | 46.00 | 25.49 | L1 | OFF | 20.0 |
| 3.222000 | 29.22 | --- | 56.00 | 26.78 | L1 | OFF | 20.0 |
| 27.066000 | --- | 14.78 | 50.00 | 35.22 | L1 | OFF | 20.3 |
| 27.066000 | 19.83 | --- | 60.00 | 40.17 | L1 | OFF | 20.3 |

## EUT Information

| | |
|---|---|
| Report NO : | 1N2539 |
| Test Mode : | Mode 1 |
| Test Voltage : | 120Vac/60Hz |
| Phase : | Neutral |




## Final_Result

| Frequency (MHz) | QuasiPeak (dBuV) | CAverage (dBuV) | Limit (dBuV) | Margin (dB) | Line | Filter | Corr. (dB) |
|---|---|---|---|---|---|---|---|
| 0.170000 | --- | 34.53 | 54.96 | 20.43 | N | OFF | 20.0 |
| 0.170000 | 47.38 | --- | 64.96 | 17.58 | N | OFF | 20.0 |
| 0.182000 | --- | 32.61 | 54.39 | 21.78 | N | OFF | 20.0 |
| 0.182000 | 45.95 | --- | 64.39 | 18.44 | N | OFF | 20.0 |
| 0.198000 | --- | 23.26 | 53.69 | 30.43 | N | OFF | 20.0 |
| 0.198000 | 36.29 | --- | 63.69 | 27.40 | N | OFF | 20.0 |
| 0.302000 | --- | 29.44 | 50.19 | 20.75 | N | OFF | 20.0 |
| 0.302000 | 40.82 | --- | 60.19 | 19.37 | N | OFF | 20.0 |
| 0.406000 | --- | 28.82 | 47.73 | 18.91 | N | OFF | 20.0 |
| 0.406000 | 37.71 | --- | 57.73 | 20.02 | N | OFF | 20.0 |
| 19.330000 | --- | 19.87 | 50.00 | 30.13 | N | OFF | 20.3 |
| 19.330000 | 25.50 | --- | 60.00 | 34.50 | N | OFF | 20.3 |

# Appendix B. Radiated Spurious Emission

| Test Engineer : | Mancy Chou, Jacky Hong and Rain Lee | Temperature : | 20~25°C |
|---|---|---|---|
| | | Relative Humidity : | 50~60% |

**<CDD Mode>**

**2.4GHz 2400~2483.5MHz**

**WIFI 802.11b (Band Edge @ 3m)**

| WIFI Ant. 6+7 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Margin ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11b CH 01 2412MHz | | 2389.8 | 58.9 | -15.1 | 74 | 44.19 | 27.72 | 14.06 | 27.07 | 100 | 166 | P | H |
| | | 2390 | 52.62 | -1.38 | 54 | 37.91 | 27.72 | 14.06 | 27.07 | 100 | 166 | A | H |
| | * | 2412 | 112.52 | - | - | 97.82 | 27.68 | 14.08 | 27.06 | 100 | 166 | P | H |
| | * | 2412 | 109.46 | - | - | 94.76 | 27.68 | 14.08 | 27.06 | 100 | 166 | A | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 2389.485 | 58.36 | -15.64 | 74 | 43.65 | 27.72 | 14.06 | 27.07 | 400 | 180 | P | V |
| | | 2389.59 | 51.05 | -2.95 | 54 | 36.34 | 27.72 | 14.06 | 27.07 | 400 | 180 | A | V |
| | * | 2412 | 111.05 | - | - | 96.35 | 27.68 | 14.08 | 27.06 | 400 | 180 | P | V |
| | * | 2412 | 107.93 | - | - | 93.23 | 27.68 | 14.08 | 27.06 | 400 | 180 | A | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| 802.11b CH 06 2437MHz | | 2332.26 | 55.83 | -18.17 | 74 | 40.96 | 27.94 | 14.01 | 27.08 | 100 | 154 | P | H |
| | | 2389.94 | 44.88 | -9.12 | 54 | 30.17 | 27.72 | 14.06 | 27.07 | 100 | 154 | A | H |
| | * | 2437 | 112.8 | - | - | 98.12 | 27.63 | 14.1 | 27.05 | 100 | 154 | P | H |
| | * | 2437 | 109.62 | - | - | 94.94 | 27.63 | 14.1 | 27.05 | 100 | 154 | A | H |
| | | 2483.98 | 56.55 | -17.45 | 74 | 41.77 | 27.67 | 14.15 | 27.04 | 100 | 154 | P | H |
| | | 2485.69 | 46.33 | -7.67 | 54 | 31.54 | 27.67 | 14.15 | 27.03 | 100 | 154 | A | H |
| | | 2332.68 | 55.73 | -18.27 | 74 | 40.86 | 27.94 | 14.01 | 27.08 | 391 | 198 | P | V |
| | | 2389.52 | 44.42 | -9.58 | 54 | 29.71 | 27.72 | 14.06 | 27.07 | 391 | 198 | A | V |
| | * | 2437 | 111.93 | - | - | 97.25 | 27.63 | 14.1 | 27.05 | 391 | 198 | P | V |
| | * | 2437 | 108.58 | - | - | 93.9 | 27.63 | 14.1 | 27.05 | 391 | 198 | A | V |
| | | 2486.23 | 55.76 | -18.24 | 74 | 40.97 | 27.67 | 14.15 | 27.03 | 391 | 198 | P | V |
| | | 2483.53 | 45.46 | -8.54 | 54 | 30.68 | 27.67 | 14.15 | 27.04 | 391 | 198 | A | V |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11b CH 11 2462MHz | * | 2462 | 109.3 | - | - | 94.59 | 27.62 | 14.13 | 27.04 | 120 | 161 | P | H |
| | * | 2462 | 106.31 | - | - | 91.6 | 27.62 | 14.13 | 27.04 | 120 | 161 | A | H |
| | | 2483.64 | 60.28 | -13.72 | 74 | 45.5 | 27.67 | 14.15 | 27.04 | 120 | 161 | P | H |
| | | 2483.52 | 52.19 | -1.81 | 54 | 37.41 | 27.67 | 14.15 | 27.04 | 120 | 161 | A | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | * | 2462 | 103.86 | - | - | 89.15 | 27.62 | 14.13 | 27.04 | 379 | 183 | P | V |
| | * | 2462 | 100.93 | - | - | 86.22 | 27.62 | 14.13 | 27.04 | 379 | 183 | A | V |
| | | 2483.64 | 59.25 | -14.75 | 74 | 44.47 | 27.67 | 14.15 | 27.04 | 379 | 183 | P | V |
| | | 2483.52 | 51.96 | -2.04 | 54 | 37.18 | 27.67 | 14.15 | 27.04 | 379 | 183 | A | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| **Remark** | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |

## 2.4GHz 2400~2483.5MHz

## WIFI 802.11b (Harmonic @ 3m)

| WIFI Ant. 6+7 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Margin ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11b CH 01 2412MHz | | 4824 | 41.21 | -32.79 | 74 | 60.27 | 31.45 | 6.8 | 57.31 | - | - | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
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| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 4824 | 39.98 | -34.02 | 74 | 59.04 | 31.45 | 6.8 | 57.31 | - | - | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
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| | | | | | | | | | | | | | V |

| WIFI Ant. 6+7 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Margin ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 4874 | 39.78 | -34.22 | 74 | 58.74 | 31.45 | 6.82 | 57.23 | - | - | P | H |
| | | 7311 | 45.68 | -28.32 | 74 | 57.49 | 37.08 | 8.44 | 57.33 | - | - | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
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| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| 802.11b CH 06 2437MHz | | | | | | | | | | | | | H |
| | | 4874 | 39.55 | -34.45 | 74 | 58.51 | 31.45 | 6.82 | 57.23 | - | - | P | V |
| | | 7311 | 47.02 | -26.98 | 74 | 58.83 | 37.08 | 8.44 | 57.33 | - | - | P | V |
| | | | | | | | | | | | | | V |
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| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |

| WIFI Ant. 6+7 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Margin ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11b CH 11 2462MHz | | 4924 | 39.29 | -34.71 | 74 | 58.06 | 31.54 | 6.85 | 57.16 | - | - | P | H |
| | | 7386 | 52.04 | -21.96 | 74 | 63.86 | 37.07 | 8.55 | 57.44 | 398 | 12 | P | H |
| | | 7386 | 46.54 | -7.46 | 54 | 58.36 | 37.07 | 8.55 | 57.44 | 398 | 12 | A | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
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| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 4924 | 40.16 | -33.84 | 74 | 58.93 | 31.54 | 6.85 | 57.16 | - | - | P | V |
| | | 7386 | 53.21 | -20.79 | 74 | 65.03 | 37.07 | 8.55 | 57.44 | 122 | 83 | P | V |
| | | 7386 | 48.62 | -5.38 | 54 | 60.44 | 37.07 | 8.55 | 57.44 | 122 | 83 | A | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
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| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |

**Remark**

1. No other spurious found.
2. All results are PASS against Peak and Average limit line.
3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.

## 2.4GHz 2400~2483.5MHz

## WIFI 802.11g (Band Edge @ 3m)

| WIFI Ant. 6+7 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Margin ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11g CH 01 2412MHz | | 2390 | 64.67 | -9.33 | 74 | 49.96 | 27.72 | 14.06 | 27.07 | 124 | 345 | P | H |
| | | 2389.695 | 52.17 | -1.83 | 54 | 37.46 | 27.72 | 14.06 | 27.07 | 124 | 345 | A | H |
| | * | 2412 | 110.18 | - | - | 95.48 | 27.68 | 14.08 | 27.06 | 124 | 345 | P | H |
| | * | 2412 | 102.76 | - | - | 88.06 | 27.68 | 14.08 | 27.06 | 124 | 345 | A | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 2389.485 | 63.16 | -10.84 | 74 | 48.45 | 27.72 | 14.06 | 27.07 | 398 | 198 | P | V |
| | | 2390 | 50.47 | -3.53 | 54 | 35.76 | 27.72 | 14.06 | 27.07 | 398 | 198 | A | V |
| | * | 2412 | 108.64 | - | - | 93.94 | 27.68 | 14.08 | 27.06 | 398 | 198 | P | V |
| | * | 2412 | 101.57 | - | - | 86.87 | 27.68 | 14.08 | 27.06 | 398 | 198 | A | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| 802.11g CH 02 2417MHz | | 2389.8 | 66.71 | -7.29 | 74 | 52 | 27.72 | 14.06 | 27.07 | 150 | 319 | P | H |
| | | 2390 | 52.05 | -1.95 | 54 | 37.34 | 27.72 | 14.06 | 27.07 | 150 | 319 | A | H |
| | * | 2417 | 111.41 | - | - | 96.71 | 27.67 | 14.09 | 27.06 | 150 | 319 | P | H |
| | * | 2417 | 103.78 | - | - | 89.08 | 27.67 | 14.09 | 27.06 | 150 | 319 | A | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 2390 | 63.75 | -10.25 | 74 | 49.04 | 27.72 | 14.06 | 27.07 | 400 | 177 | P | V |
| | | 2390 | 50.49 | -3.51 | 54 | 35.78 | 27.72 | 14.06 | 27.07 | 400 | 177 | A | V |
| | * | 2417 | 109.87 | - | - | 95.17 | 27.67 | 14.09 | 27.06 | 400 | 177 | P | V |
| | * | 2417 | 102.35 | - | - | 87.65 | 27.67 | 14.09 | 27.06 | 400 | 177 | A | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11g CH 06 2437MHz | | 2389.94 | 57.67 | -16.33 | 74 | 42.96 | 27.72 | 14.06 | 27.07 | 100 | 167 | P | H |
| | | 2389.94 | 47.42 | -6.58 | 54 | 32.71 | 27.72 | 14.06 | 27.07 | 100 | 167 | A | H |
| | * | 2437 | 113.36 | - | - | 98.68 | 27.63 | 14.1 | 27.05 | 100 | 167 | P | H |
| | * | 2437 | 106.03 | - | - | 91.35 | 27.63 | 14.1 | 27.05 | 100 | 167 | A | H |
| | | 2484.04 | 62.71 | -11.29 | 74 | 47.93 | 27.67 | 14.15 | 27.04 | 100 | 167 | P | H |
| | | 2483.62 | 51.98 | -2.02 | 54 | 37.2 | 27.67 | 14.15 | 27.04 | 100 | 167 | A | H |
| | | 2389.94 | 56.22 | -17.78 | 74 | 41.51 | 27.72 | 14.06 | 27.07 | 368 | 178 | P | V |
| | | 2389.8 | 45.97 | -8.03 | 54 | 31.26 | 27.72 | 14.06 | 27.07 | 368 | 178 | A | V |
| | * | 2437 | 111.09 | - | - | 96.41 | 27.63 | 14.1 | 27.05 | 368 | 178 | P | V |
| | * | 2437 | 103.37 | - | - | 88.69 | 27.63 | 14.1 | 27.05 | 368 | 178 | A | V |
| | | 2483.97 | 62.78 | -11.22 | 74 | 48 | 27.67 | 14.15 | 27.04 | 368 | 178 | P | V |
| | | 2483.62 | 50.16 | -3.84 | 54 | 35.38 | 27.67 | 14.15 | 27.04 | 368 | 178 | A | V |
| 802.11g CH 09 2452MHz | * | 2452 | 111.5 | - | - | 96.83 | 27.6 | 14.12 | 27.05 | 100 | 162 | P | H |
| | * | 2452 | 104.12 | - | - | 89.45 | 27.6 | 14.12 | 27.05 | 100 | 162 | A | H |
| | | 2486.62 | 63.87 | -10.13 | 74 | 49.08 | 27.67 | 14.15 | 27.03 | 100 | 162 | P | H |
| | | 2483.62 | 52 | -2 | 54 | 37.22 | 27.67 | 14.15 | 27.04 | 100 | 162 | A | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | * | 2452 | 108.9 | - | - | 94.23 | 27.6 | 14.12 | 27.05 | 371 | 178 | P | V |
| | * | 2452 | 101.27 | - | - | 86.6 | 27.6 | 14.12 | 27.05 | 371 | 178 | A | V |
| | | 2484.58 | 63.29 | -10.71 | 74 | 48.5 | 27.67 | 14.15 | 27.03 | 371 | 178 | P | V |
| | | 2483.56 | 51.21 | -2.79 | 54 | 36.43 | 27.67 | 14.15 | 27.04 | 371 | 178 | A | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11g CH 10 2457MHz | * | 2457 | 109.4 | - | - | 94.71 | 27.61 | 14.12 | 27.04 | 104 | 166 | P | H |
| | * | 2457 | 101.8 | - | - | 87.11 | 27.61 | 14.12 | 27.04 | 104 | 166 | A | H |
| | | 2483.56 | 65.32 | -8.68 | 74 | 50.54 | 27.67 | 14.15 | 27.04 | 104 | 166 | P | H |
| | | 2483.5 | 50.71 | -3.29 | 54 | 35.93 | 27.67 | 14.15 | 27.04 | 104 | 166 | A | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | * | 2457 | 107.68 | - | - | 92.99 | 27.61 | 14.12 | 27.04 | 376 | 193 | P | V |
| | * | 2457 | 100.1 | - | - | 85.41 | 27.61 | 14.12 | 27.04 | 376 | 193 | A | V |
| | | 2483.62 | 66.42 | -7.58 | 74 | 51.64 | 27.67 | 14.15 | 27.04 | 376 | 193 | P | V |
| | | 2483.68 | 48.88 | -5.12 | 54 | 34.1 | 27.67 | 14.15 | 27.04 | 376 | 193 | A | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| 802.11g CH 11 2462MHz | * | 2462 | 108.38 | - | - | 93.67 | 27.62 | 14.13 | 27.04 | 112 | 166 | P | H |
| | * | 2462 | 100.67 | - | - | 85.96 | 27.62 | 14.13 | 27.04 | 112 | 166 | A | H |
| | | 2484.36 | 66.26 | -7.74 | 74 | 51.48 | 27.67 | 14.15 | 27.04 | 112 | 166 | P | H |
| | | 2483.64 | 50.91 | -3.09 | 54 | 36.13 | 27.67 | 14.15 | 27.04 | 112 | 166 | A | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | * | 2462 | 105.96 | - | - | 91.25 | 27.62 | 14.13 | 27.04 | 373 | 185 | P | V |
| | * | 2462 | 98.23 | - | - | 83.52 | 27.62 | 14.13 | 27.04 | 373 | 185 | A | V |
| | | 2483.64 | 63.8 | -10.2 | 74 | 49.02 | 27.67 | 14.15 | 27.04 | 373 | 185 | P | V |
| | | 2483.52 | 49.93 | -4.07 | 54 | 35.15 | 27.67 | 14.15 | 27.04 | 373 | 185 | A | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| **Remark** | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |

## 2.4GHz 2400~2483.5MHz

## WIFI 802.11g (Harmonic @ 3m)

| WIFI Ant. 6+7 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Margin ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11g CH 01 2412MHz | | 4824 | 39.64 | -34.36 | 74 | 58.7 | 31.45 | 6.8 | 57.31 | - | - | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
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| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 4824 | 40.27 | -33.73 | 74 | 59.33 | 31.45 | 6.8 | 57.31 | - | - | P | V |
| | | | | | | | | | | | | | V |
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| | | | | | | | | | | | | | V |

| WIFI Ant. 6+7 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Margin ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 4874 | 39.34 | -34.66 | 74 | 58.3 | 31.45 | 6.82 | 57.23 | - | - | P | H |
| | | 7311 | 45 | -29 | 74 | 56.81 | 37.08 | 8.44 | 57.33 | - | - | P | H |
| | | | | | | | | | | | | | H |
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| | | | | | | | | | | | | | H |
| 802.11g CH 06 2437MHz | | 4874 | 39.28 | -34.72 | 74 | 58.24 | 31.45 | 6.82 | 57.23 | - | - | P | V |
| | | 7311 | 53.15 | -20.85 | 74 | 64.96 | 37.08 | 8.44 | 57.33 | 101 | 82 | P | V |
| | | 7311 | 42.37 | -11.63 | 54 | 54.18 | 37.08 | 8.44 | 57.33 | 101 | 82 | A | V |
| | | | | | | | | | | | | | V |
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| | | | | | | | | | | | | | V |

| WIFI Ant. 6+7 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Margin ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11g CH 11 2462MHz | | 4924 | 39.4 | -34.6 | 74 | 58.17 | 31.54 | 6.85 | 57.16 | - | - | P | H |
| | | 7386 | 44.5 | -29.5 | 74 | 56.32 | 37.07 | 8.55 | 57.44 | - | - | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
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| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 4924 | 39.8 | -34.2 | 74 | 58.57 | 31.54 | 6.85 | 57.16 | - | - | P | V |
| | | 7386 | 45.24 | -28.76 | 74 | 57.06 | 37.07 | 8.55 | 57.44 | - | - | P | V |
| | | | | | | | | | | | | | V |
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| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| **Remark** | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line.<br>3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only. | | | | | | | | | | | | |

## 2.4GHz 2400~2483.5MHz

## WIFI 802.11ax HE20 Full (Band Edge @ 3m)

| WIFI Ant. 6+7 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Margin ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11ax HE20 Full CH 01 2412MHz | | 2390 | 63.98 | -10.02 | 74 | 49.27 | 27.72 | 14.06 | 27.07 | 150 | 161 | P | H |
| | | 2390 | 52.02 | -1.98 | 54 | 37.31 | 27.72 | 14.06 | 27.07 | 150 | 161 | A | H |
| | * | 2412 | 109.26 | - | - | 94.56 | 27.68 | 14.08 | 27.06 | 150 | 161 | P | H |
| | * | 2412 | 100.01 | - | - | 85.31 | 27.68 | 14.08 | 27.06 | 150 | 161 | A | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 2389.8 | 62.12 | -11.88 | 74 | 47.41 | 27.72 | 14.06 | 27.07 | 353 | 197 | P | V |
| | | 2390 | 49.73 | -4.27 | 54 | 35.02 | 27.72 | 14.06 | 27.07 | 353 | 197 | A | V |
| | * | 2412 | 108.36 | - | - | 93.66 | 27.68 | 14.08 | 27.06 | 353 | 197 | P | V |
| | * | 2412 | 99.15 | - | - | 84.45 | 27.68 | 14.08 | 27.06 | 353 | 197 | A | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| 802.11ax HE20 Full CH 06 2437MHz | | 2388.26 | 55.79 | -18.21 | 74 | 41.08 | 27.72 | 14.06 | 27.07 | 100 | 167 | P | H |
| | | 2389.1 | 45.1 | -8.9 | 54 | 30.39 | 27.72 | 14.06 | 27.07 | 100 | 167 | A | H |
| | * | 2437 | 114.14 | - | - | 99.46 | 27.63 | 14.1 | 27.05 | 100 | 167 | P | H |
| | * | 2437 | 103.72 | - | - | 89.04 | 27.63 | 14.1 | 27.05 | 100 | 167 | A | H |
| | | 2483.62 | 61.64 | -12.36 | 74 | 46.86 | 27.67 | 14.15 | 27.04 | 100 | 167 | P | H |
| | | 2483.5 | 48.74 | -5.26 | 54 | 33.96 | 27.67 | 14.15 | 27.04 | 100 | 167 | A | H |
| | | 2340.38 | 55.79 | -18.21 | 74 | 40.97 | 27.88 | 14.02 | 27.08 | 377 | 188 | P | V |
| | | 2387.56 | 44.77 | -9.23 | 54 | 30.06 | 27.72 | 14.06 | 27.07 | 377 | 188 | A | V |
| | * | 2437 | 113.01 | - | - | 98.33 | 27.63 | 14.1 | 27.05 | 377 | 188 | P | V |
| | * | 2437 | 102.34 | - | - | 87.66 | 27.63 | 14.1 | 27.05 | 377 | 188 | A | V |
| | | 2483.55 | 59.34 | -14.66 | 74 | 44.56 | 27.67 | 14.15 | 27.04 | 377 | 188 | P | V |
| | | 2483.5 | 47.6 | -6.4 | 54 | 32.82 | 27.67 | 14.15 | 27.04 | 377 | 188 | A | V |

| WIFI Ant. 6+7 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Margin ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | * | 2457 | 112.27 | - | - | 97.58 | 27.61 | 14.12 | 27.04 | 100 | 167 | P | H |
| | * | 2457 | 101.73 | - | - | 87.04 | 27.61 | 14.12 | 27.04 | 100 | 167 | A | H |
| | | 2483.5 | 68.72 | -5.28 | 74 | 53.94 | 27.67 | 14.15 | 27.04 | 100 | 167 | P | H |
| | | 2483.52 | 52.75 | -1.25 | 54 | 37.97 | 27.67 | 14.15 | 27.04 | 100 | 167 | A | H |
| 802.11ax | | | | | | | | | | | | | H |
| HE20 Full | | | | | | | | | | | | | H |
| CH 10 | * | 2457 | 107.26 | - | - | 92.57 | 27.61 | 14.12 | 27.04 | 331 | 206 | P | V |
| 2457MHz | * | 2457 | 98.24 | - | - | 83.55 | 27.61 | 14.12 | 27.04 | 331 | 206 | A | V |
| | | 2484.36 | 68.99 | -5.01 | 74 | 54.21 | 27.67 | 14.15 | 27.04 | 331 | 206 | P | V |
| | | 2483.6 | 51.17 | -2.83 | 54 | 36.39 | 27.67 | 14.15 | 27.04 | 331 | 206 | A | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | * | 2462 | 108.48 | - | - | 93.77 | 27.62 | 14.13 | 27.04 | 103 | 154 | P | H |
| | * | 2462 | 98.63 | - | - | 83.92 | 27.62 | 14.13 | 27.04 | 103 | 154 | A | H |
| | | 2484.12 | 68.14 | -5.86 | 74 | 53.36 | 27.67 | 14.15 | 27.04 | 103 | 154 | P | H |
| | | 2483.6 | 52.5 | -1.5 | 54 | 37.72 | 27.67 | 14.15 | 27.04 | 103 | 154 | A | H |
| 802.11ax | | | | | | | | | | | | | H |
| HE20 Full | | | | | | | | | | | | | H |
| CH 11 | * | 2462 | 107.81 | - | - | 93.1 | 27.62 | 14.13 | 27.04 | 367 | 201 | P | V |
| 2462MHz | * | 2462 | 96.71 | - | - | 82 | 27.62 | 14.13 | 27.04 | 367 | 201 | A | V |
| | | 2484.36 | 68.58 | -5.42 | 74 | 53.8 | 27.67 | 14.15 | 27.04 | 367 | 201 | P | V |
| | | 2483.6 | 51.41 | -2.59 | 54 | 36.63 | 27.67 | 14.15 | 27.04 | 367 | 201 | A | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| Remark | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |

## 2.4GHz 2400~2483.5MHz

## WIFI 802.11 ax HE20 Full (Harmonic @ 3m)

| WIFI Ant. 6+7 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Margin ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 4824 | 40.56 | -33.44 | 74 | 59.62 | 31.45 | 6.8 | 57.31 | - | - | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
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| 802.11ax | | | | | | | | | | | | | H |
| HE20 Full | | | | | | | | | | | | | H |
| CH 01 | | 4824 | 40.03 | -33.97 | 74 | 59.09 | 31.45 | 6.8 | 57.31 | - | - | P | V |
| 2412MHz | | | | | | | | | | | | | V |
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| | | | | | | | | | | | | | V |

| WIFI Ant. 6+7 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Margin ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 4874 | 38.87 | -35.13 | 74 | 57.83 | 31.45 | 6.82 | 57.23 | - | - | P | H |
| | | 7311 | 48.34 | -25.66 | 74 | 60.15 | 37.08 | 8.44 | 57.33 | 100 | 288 | P | H |
| | | 7311 | 37.8 | -16.2 | 54 | 49.61 | 37.08 | 8.44 | 57.33 | 100 | 288 | A | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
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| 802.11ax | | | | | | | | | | | | | H |
| HE20 Full | | | | | | | | | | | | | H |
| CH 06 | | 4874 | 38.45 | -35.55 | 74 | 57.41 | 31.45 | 6.82 | 57.23 | - | - | P | V |
| 2437MHz | | 7311 | 50.85 | -23.15 | 74 | 62.66 | 37.08 | 8.44 | 57.33 | 100 | 84 | P | V |
| | | 7311 | 41.94 | -12.06 | 54 | 53.75 | 37.08 | 8.44 | 57.33 | 100 | 84 | A | V |
| | | | | | | | | | | | | | V |
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| | | | | | | | | | | | | | V |

| WIFI Ant. 6+7 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Margin ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 4924 | 38.98 | -35.02 | 74 | 57.75 | 31.54 | 6.85 | 57.16 | - | - | P | H |
| | | 7386 | 44.96 | -29.04 | 74 | 56.78 | 37.07 | 8.55 | 57.44 | - | - | P | H |
| | | | | | | | | | | | | | H |
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| | | | | | | | | | | | | | H |
| 802.11ax | | | | | | | | | | | | | H |
| HE20 Full | | | | | | | | | | | | | H |
| CH 11 | | 4924 | 39.94 | -34.06 | 74 | 58.71 | 31.54 | 6.85 | 57.16 | - | - | P | V |
| 2462MHz | | 7386 | 45.06 | -28.94 | 74 | 56.88 | 37.07 | 8.55 | 57.44 | - | - | P | V |
| | | | | | | | | | | | | | V |
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| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| Remark | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line.<br>3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only. | | | | | | | | | | | | |

## 2.4GHz 2400~2483.5MHz

## WIFI 802.11ax HE20 Partial 106 (Band Edge @ 3m)

| WIFI Ant. 6+7 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Margin ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 802.11ax HE20 Partial 106/53 CH 01 2412MHz | | 2390 | 67.36 | -6.64 | 74 | 52.65 | 27.72 | 14.06 | 27.07 | 124 | 339 | P | H |
| | | 2390 | 52.8 | -1.2 | 54 | 38.09 | 27.72 | 14.06 | 27.07 | 124 | 339 | A | H |
| | * | 2412 | 113.13 | - | - | 98.43 | 27.68 | 14.08 | 27.06 | 124 | 339 | P | H |
| | * | 2412 | 104.2 | - | - | 89.5 | 27.68 | 14.08 | 27.06 | 124 | 339 | A | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 2389.695 | 67.03 | -6.97 | 74 | 52.32 | 27.72 | 14.06 | 27.07 | 400 | 11 | P | V |
| | | 2390 | 51.29 | -2.71 | 54 | 36.58 | 27.72 | 14.06 | 27.07 | 400 | 11 | A | V |
| | * | 2412 | 111.17 | - | - | 96.47 | 27.68 | 14.08 | 27.06 | 400 | 11 | P | V |
| | * | 2412 | 102.44 | - | - | 87.74 | 27.68 | 14.08 | 27.06 | 400 | 11 | A | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| 802.11ax HE20 Partial 106/54 CH 11 2462MHz | * | 2462 | 110.95 | - | - | 96.24 | 27.62 | 14.13 | 27.04 | 100 | 167 | P | H |
| | * | 2462 | 102.49 | - | - | 87.78 | 27.62 | 14.13 | 27.04 | 100 | 167 | A | H |
| | | 2483.8 | 72.28 | -1.72 | 74 | 57.5 | 27.67 | 14.15 | 27.04 | 100 | 167 | P | H |
| | | 2483.52 | 50.75 | -3.25 | 54 | 35.97 | 27.67 | 14.15 | 27.04 | 100 | 167 | A | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | * | 2462 | 108.63 | - | - | 93.92 | 27.62 | 14.13 | 27.04 | 369 | 183 | P | V |
| | * | 2462 | 100.71 | - | - | 86 | 27.62 | 14.13 | 27.04 | 369 | 183 | A | V |
| | | 2484.12 | 68.96 | -5.04 | 74 | 54.18 | 27.67 | 14.15 | 27.04 | 369 | 183 | P | V |
| | | 2483.52 | 49.65 | -4.35 | 54 | 34.87 | 27.67 | 14.15 | 27.04 | 369 | 183 | A | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| Remark | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |

## Emission below 1GHz

## 2.4GHz WIFI 802.11ax HE20 (LF)

| WIFI Ant. 6+7 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Margin ( dB ) | Limit Line ( dBμV/m ) | Read Level (dBμV) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.4GHz 802.11ax HE20 LF | | 30.97 | 22.1 | -17.9 | 40 | 29.49 | 24.24 | 0.72 | 32.35 | - | - | P | H |
| | | 127.97 | 19.51 | -23.99 | 43.5 | 33.25 | 17.42 | 1.14 | 32.3 | - | - | P | H |
| | | 259.89 | 19.2 | -26.8 | 46 | 29.9 | 20.03 | 1.5 | 32.23 | - | - | P | H |
| | | 436.43 | 23.35 | -22.65 | 46 | 30.54 | 23.07 | 1.92 | 32.18 | - | - | P | H |
| | | 553.8 | 27.24 | -18.76 | 46 | 31.58 | 25.78 | 2.12 | 32.24 | - | - | P | H |
| | | 764.29 | 31.66 | -14.34 | 46 | 33.37 | 28.06 | 2.35 | 32.12 | - | - | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 30 | 22.15 | -17.85 | 40 | 29.24 | 24.53 | 0.72 | 32.34 | - | - | P | V |
| | | 113.42 | 21.75 | -21.75 | 43.5 | 35.85 | 17.1 | 1.11 | 32.31 | - | - | P | V |
| | | 258.92 | 19.18 | -26.82 | 46 | 30.04 | 19.87 | 1.5 | 32.23 | - | - | P | V |
| | | 439.34 | 23.69 | -22.31 | 46 | 30.84 | 23.1 | 1.92 | 32.17 | - | - | P | V |
| | | 682.81 | 28.04 | -17.96 | 46 | 31.45 | 26.45 | 2.32 | 32.18 | - | - | P | V |
| | | 765.26 | 30.58 | -15.42 | 46 | 32.27 | 28.07 | 2.35 | 32.11 | - | - | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| Remark | 1. No other spurious found.<br>2. All results are PASS against limit line.<br>3. The emission position marked as "-" means no suspected emission found and emission level has at least 6dB margin against limit or emission is noise floor only. | | | | | | | | | | | | |

<TXBF Mode>

## 2.4GHz 2400~2483.5MHz

## WIFI 802.11ax HE20 Full (Band Edge @ 3m)

| WIFI Ant. | Note | Frequency | Level | Margin | Limit Line | Read Level | Antenna Factor | Path Loss | Preamp Factor | Ant Pos | Table Pos | Peak Avg. | Pol. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6+7 | | ( MHz ) | ( dBμV/m ) | ( dB ) | ( dBμV/m ) | ( dBμV ) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | (P/A) | (H/V) |
| 802.11ax HE20 Full CH 01 2412MHz | | 2389.905 | 67.91 | -6.09 | 74 | 53.2 | 27.72 | 14.06 | 27.07 | 150 | 154 | P | H |
| | | 2390 | 52.78 | -1.22 | 54 | 38.07 | 27.72 | 14.06 | 27.07 | 150 | 154 | A | H |
| | * | 2412 | 110.08 | - | - | 95.38 | 27.68 | 14.08 | 27.06 | 150 | 154 | P | H |
| | * | 2412 | 100.94 | - | - | 86.24 | 27.68 | 14.08 | 27.06 | 150 | 154 | A | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 2389.905 | 68.05 | -5.95 | 74 | 53.34 | 27.72 | 14.06 | 27.07 | 400 | 195 | P | V |
| | | 2389.905 | 52.66 | -1.34 | 54 | 37.95 | 27.72 | 14.06 | 27.07 | 400 | 195 | A | V |
| | * | 2412 | 108.87 | - | - | 94.17 | 27.68 | 14.08 | 27.06 | 400 | 195 | P | V |
| | * | 2412 | 100.36 | - | - | 85.66 | 27.68 | 14.08 | 27.06 | 400 | 195 | A | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| 802.11ax HE20 Full CH 06 2437MHz | | 2389.94 | 57.1 | -16.9 | 74 | 42.39 | 27.72 | 14.06 | 27.07 | 113 | 168 | P | H |
| | | 2389.8 | 45.75 | -8.25 | 54 | 31.04 | 27.72 | 14.06 | 27.07 | 113 | 168 | A | H |
| | * | 2437 | 113.45 | - | - | 98.77 | 27.63 | 14.1 | 27.05 | 113 | 168 | P | H |
| | * | 2437 | 104.98 | - | - | 90.3 | 27.63 | 14.1 | 27.05 | 113 | 168 | A | H |
| | | 2485.09 | 60.46 | -13.54 | 74 | 45.67 | 27.67 | 14.15 | 27.03 | 113 | 168 | P | H |
| | | 2483.5 | 48.38 | -5.62 | 54 | 33.6 | 27.67 | 14.15 | 27.04 | 113 | 168 | A | H |
| | | 2340.52 | 56.28 | -17.72 | 74 | 41.46 | 27.88 | 14.02 | 27.08 | 124 | 12 | P | V |
| | | 2310.98 | 45.62 | -8.38 | 54 | 30.61 | 28.11 | 13.99 | 27.09 | 124 | 12 | A | V |
| | * | 2437 | 107.19 | - | - | 92.51 | 27.63 | 14.1 | 27.05 | 124 | 12 | P | V |
| | * | 2437 | 104.15 | - | - | 89.47 | 27.63 | 14.1 | 27.05 | 124 | 12 | A | V |
| | | 2486.56 | 55.21 | -18.79 | 74 | 40.42 | 27.67 | 14.15 | 27.03 | 124 | 12 | P | V |
| | | 2496.43 | 45.53 | -8.47 | 54 | 30.71 | 27.69 | 14.16 | 27.03 | 124 | 12 | A | V |

| WIFI Ant. 6+7 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Margin ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | * | 2452 | 113.24 | - | - | 98.57 | 27.6 | 14.12 | 27.05 | 100 | 166 | P | H |
| | * | 2452 | 104.23 | - | - | 89.56 | 27.6 | 14.12 | 27.05 | 100 | 166 | A | H |
| | | 2483.92 | 64.95 | -9.05 | 74 | 50.17 | 27.67 | 14.15 | 27.04 | 100 | 166 | P | H |
| | | 2483.86 | 52.64 | -1.36 | 54 | 37.86 | 27.67 | 14.15 | 27.04 | 100 | 166 | A | H |
| 802.11ax | | | | | | | | | | | | | H |
| HE20 Full | | | | | | | | | | | | | H |
| CH 09 | * | 2452 | 109.41 | - | - | 94.74 | 27.6 | 14.12 | 27.05 | 370 | 205 | P | V |
| 2452MHz | * | 2452 | 100.47 | - | - | 85.8 | 27.6 | 14.12 | 27.05 | 370 | 205 | A | V |
| | | 2486.74 | 65.81 | -8.19 | 74 | 51.02 | 27.67 | 14.15 | 27.03 | 370 | 205 | P | V |
| | | 2483.98 | 51.25 | -2.75 | 54 | 36.47 | 27.67 | 14.15 | 27.04 | 370 | 205 | A | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | * | 2457 | 111.39 | - | - | 96.7 | 27.61 | 14.12 | 27.04 | 100 | 164 | P | H |
| | * | 2457 | 101.76 | - | - | 87.07 | 27.61 | 14.12 | 27.04 | 100 | 164 | A | H |
| | | 2485.56 | 69.04 | -4.96 | 74 | 54.25 | 27.67 | 14.15 | 27.03 | 100 | 164 | P | H |
| | | 2483.56 | 52.25 | -1.75 | 54 | 37.47 | 27.67 | 14.15 | 27.04 | 100 | 164 | A | H |
| 802.11ax | | | | | | | | | | | | | H |
| HE20 Full | | | | | | | | | | | | | H |
| CH 10 | * | 2457 | 109.01 | - | - | 94.32 | 27.61 | 14.12 | 27.04 | 375 | 202 | P | V |
| 2457MHz | * | 2457 | 99.68 | - | - | 84.99 | 27.61 | 14.12 | 27.04 | 375 | 202 | A | V |
| | | 2484.32 | 68.36 | -5.64 | 74 | 53.58 | 27.67 | 14.15 | 27.04 | 375 | 202 | P | V |
| | | 2483.72 | 51.4 | -2.6 | 54 | 36.62 | 27.67 | 14.15 | 27.04 | 375 | 202 | A | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | * | 2462 | 108.87 | - | - | 94.16 | 27.62 | 14.13 | 27.04 | 100 | 169 | P | H |
| | * | 2462 | 99.27 | - | - | 84.56 | 27.62 | 14.13 | 27.04 | 100 | 169 | A | H |
| | | 2483.76 | 66.6 | -7.4 | 74 | 51.82 | 27.67 | 14.15 | 27.04 | 100 | 169 | P | H |
| | | 2483.56 | 51.82 | -2.18 | 54 | 37.04 | 27.67 | 14.15 | 27.04 | 100 | 169 | A | H |
| **802.11ax** | | | | | | | | | | | | | H |
| **HE20 Full** | | | | | | | | | | | | | H |
| **CH 11** | * | 2462 | 105.83 | - | - | 91.12 | 27.62 | 14.13 | 27.04 | 376 | 184 | P | V |
| **2462MHz** | * | 2462 | 97.26 | - | - | 82.55 | 27.62 | 14.13 | 27.04 | 376 | 184 | A | V |
| | | 2483.56 | 66.53 | -7.47 | 74 | 51.75 | 27.67 | 14.15 | 27.04 | 376 | 184 | P | V |
| | | 2483.72 | 51.3 | -2.7 | 54 | 36.52 | 27.67 | 14.15 | 27.04 | 376 | 184 | A | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| **Remark** | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |

## 2.4GHz 2400~2483.5MHz

## WIFI 802.11 ax HE20 Full (Harmonic @ 3m)

| WIFI Ant. 6+7 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Margin ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 4824 | 41.19 | -32.81 | 74 | 60.25 | 31.45 | 6.8 | 57.31 | - | - | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| 802.11ax | | | | | | | | | | | | | H |
| HE20 Full | | | | | | | | | | | | | H |
| CH 01 | | 4824 | 40.17 | -33.83 | 74 | 59.23 | 31.45 | 6.8 | 57.31 | - | - | P | V |
| 2412MHz | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |

| WIFI Ant. 6+7 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Margin ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 4874 | 39.17 | -34.83 | 74 | 58.13 | 31.45 | 6.82 | 57.23 | - | - | P | H |
| | | 7311 | 44.64 | -29.36 | 74 | 56.45 | 37.08 | 8.44 | 57.33 | - | - | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| 802.11ax | | | | | | | | | | | | | H |
| HE20 Full | | | | | | | | | | | | | H |
| CH 06 | | 4874 | 39.14 | -34.86 | 74 | 58.1 | 31.45 | 6.82 | 57.23 | - | - | P | V |
| 2437MHz | | 7311 | 44.79 | -29.21 | 74 | 56.6 | 37.08 | 8.44 | 57.33 | - | - | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |

| WIFI Ant. 6+7 | Note | Frequency ( MHz ) | Level ( dBμV/m ) | Margin ( dB ) | Limit Line ( dBμV/m ) | Read Level ( dBμV ) | Antenna Factor ( dB/m ) | Path Loss ( dB ) | Preamp Factor ( dB ) | Ant Pos ( cm ) | Table Pos ( deg ) | Peak Avg. (P/A) | Pol. (H/V) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 4924 | 39.12 | -34.88 | 74 | 57.89 | 31.54 | 6.85 | 57.16 | - | - | P | H |
| | | 7386 | 44.27 | -29.73 | 74 | 56.09 | 37.07 | 8.55 | 57.44 | - | - | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| 802.11ax | | | | | | | | | | | | | H |
| HE20 Full | | | | | | | | | | | | | H |
| CH 11 | | 4924 | 38.65 | -35.35 | 74 | 57.42 | 31.54 | 6.85 | 57.16 | - | - | P | V |
| 2462MHz | | 7386 | 44.57 | -29.43 | 74 | 56.39 | 37.07 | 8.55 | 57.44 | - | - | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |

**Remark**

1. No other spurious found.
2. All results are PASS against Peak and Average limit line.
3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.

## Note symbol

| | |
|---|---|
| * | **Fundamental Frequency** which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency. |
| ! | Test result is **over limit** line. |
| P/A | **P**eak or **A**verage |
| H/V | **H**orizontal or **V**ertical |

## A calculation example for radiated spurious emission is shown as below:

| WIFI | Note | Frequency | Level | Margin | Limit | Read | Antenna | Path | Preamp | Ant | Table | Peak | Pol. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ant. | | | | | Line | Level | Factor | Loss | Factor | Pos | Pos | Avg. | |
| 6+7 | | ( MHz ) | ( dBμV/m ) | ( dB ) | ( dBμV/m ) | ( dBμV ) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | (P/A) | (H/V) |
| 802.11b CH 01 2412MHz | | 2390 | 55.45 | -18.55 | 74 | 54.51 | 32.22 | 4.58 | 35.86 | 103 | 308 | P | H |
| | | 2390 | 43.54 | -10.46 | 54 | 42.6 | 32.22 | 4.58 | 35.86 | 103 | 308 | A | H |

1. Path Loss(dB) = Cable loss(dB) + Filter loss(dB) + Attenuator loss(dB)
2. Level(dBμV/m) =

Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

3. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

**For Peak Limit @ 2390MHz:**

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

**For Average Limit @ 2390MHz:**

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

**Both peak and average measured complies with the limit line, so test result is “PASS”.**

# Appendix C. Radiated Spurious Emission Plots

| | | | |
|---|---|---|---|
| **Test Engineer :** | Mancy Chou, Jacky Hong and Rain Lee | **Temperature :** | 20~25°C |
| | | **Relative Humidity :** | 50~60% |

**Note symbol**

| | |
|---|---|
| -L | **Low channel location** |
| -R | **High channel location** |