

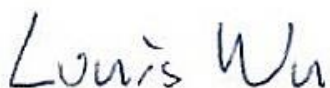
# FCC RADIO TEST REPORT

FCC ID : PY7-87607S  
Equipment : GSM/WCDMA/LTE Phone with BT, DTS/UNII  
a/b/g/n/ac/ax, GPS, WPC and NFC  
Brand Name : Sony  
Applicant : Sony Mobile Communications Inc.  
4-12-3 Higashi-Shinagawa, Shinagawa-ku,  
Tokyo, 140-0002, Japan  
Manufacturer : Sony Mobile Communications Inc.  
4-12-3 Higashi-Shinagawa, Shinagawa-ku,  
Tokyo, 140-0002, Japan  
Standard : FCC Part 15 Subpart C §15.247

The product was received on Dec. 04, 2019 and testing was started from Jan. 22, 2020 and completed on Feb. 10, 2020. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

The test results in this spot check data report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.



Approved by: Louis Wu

**SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory**  
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)



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## History of this test report

| Report No.   | Version | Description             | Issued Date   |
|--------------|---------|-------------------------|---------------|
| FR9O1543-01C | 01      | Initial issue of report | Feb. 20, 2020 |
| FR9O1543-01C | 02      | Update power            | Feb. 28, 2020 |
|              |         |                         |               |
|              |         |                         |               |
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|              |         |                         |               |
|              |         |                         |               |

## Summary of Test Result

| Report Clause | Ref Std. Clause    | Test Items                                         | Result (PASS/FAIL) | Remark                                    |
|---------------|--------------------|----------------------------------------------------|--------------------|-------------------------------------------|
| -             | 15.247(a)(2)       | 6dB Bandwidth                                      | Not Required       | -                                         |
| -             | 2.1049             | 99% Occupied Bandwidth                             | Not Required       | -                                         |
| 3.1           | 15.247(b)          | Power Output Measurement                           | Pass               | -                                         |
| -             | 15.247(e)          | Power Spectral Density                             | Not Required       | -                                         |
| -             | 15.247(d)          | Conducted Band Edges                               | Not Required       | -                                         |
|               |                    | Conducted Spurious Emission                        | Not Required       | -                                         |
| 3.2           | 15.247(d)          | Radiated Band Edges and Radiated Spurious Emission | Pass               | Under limit<br>6.25 dB at<br>2483.520 MHz |
| -             | 15.207             | AC Conducted Emission                              | Not Required       | -                                         |
| 3.3           | 15.203 & 15.247(b) | Antenna Requirement                                | Pass               | -                                         |

**Remark:** This is a spot check data report and data performed in appendix of this report are chosen from the worst case of the original FCC ID report. All the test cases were performed on original report which can be referred to Sporton Report Number FR901542-02C.

### Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

### Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

**Reviewed by: Wii Chang**

**Report Producer: Yvonne Cheng**

# 1 General Description

## 1.1 Product Feature of Equipment Under Test

GSM/WCDMA/LTE, Bluetooth, DTS/UNII a/b/g/n/ac/ax, NFC, GNSS and WPC.

| Standards-related Product Specification |                                                                                                                           |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| Antenna Type / Gain                     | <b>&lt;Ant. 1&gt;</b> : Loop Antenna with gain -2.40 dBi<br><b>&lt;Ant. 2&gt;</b> : Monopole Antenna with gain -11.40 dBi |

| EUT Information List |            |            |                            |
|----------------------|------------|------------|----------------------------|
| HW Version           | SW Version | S/N        | Performed Test Item        |
| A                    | 0.320      | QV7100872C | RF conducted measurement   |
|                      | 0.360      | QV7100B12C | Radiated Spurious Emission |
|                      |            | QV7100AM2C |                            |

| Accessory List     |                     |
|--------------------|---------------------|
| AC Adapter         | Model Name : UCH32  |
|                    | S/N: 6218W30200197  |
| Earphone           | Model Name : STH40D |
|                    | S/N : N/A           |
| Bluetooth Earphone | Model Name : SBH82D |
|                    | S/N : N/A           |
| USB Cable          | Model Name : UCB24  |
|                    | S/N : N/A           |
| Audio Cable        | Model Name : EC234  |
|                    | S/N : N/A           |

**Note:**

1. Above EUT list used are electrically identical per declared by manufacturer.
2. Above the accessories list are used to exercise the EUT during test, and the serial number of each type of accessories is listed in each section of this report. .
3. For other wireless features of this EUT, test report will be issued separately.

## 1.2 Modification of EUT

No modifications are made to the EUT during all test items.



### 1.3 Testing Location

|                           |                                                                                                                       |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------|
| <b>Test Site</b>          | SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory                                                   |
| <b>Test Site Location</b> | No.52, Huaya 1st Rd., Guishan Dist.,<br>Taoyuan City, Taiwan (R.O.C.)<br>TEL: +886-3-327-3456<br>FAX: +886-3-328-4978 |
| <b>Test Site No.</b>      | <b>Sporton Site No.</b>                                                                                               |
|                           | TH05-HY                                                                                                               |

**Note:** The test site complies with ANSI C63.4 2014 requirement.

|                           |                                                                                                                                           |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Test Site</b>          | SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory                                                                       |
| <b>Test Site Location</b> | No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist.,<br>Taoyuan City, Taiwan (R.O.C.)<br>TEL: +886-3-327-0868<br>FAX: +886-3-327-0855 |
| <b>Test Site No.</b>      | <b>Sporton Site No.</b>                                                                                                                   |
|                           | 03CH16-HY                                                                                                                                 |

**Note:** The test site complies with ANSI C63.4 2014 requirement.

FCC Designation No.: TW1190 and TW0007

### 1.4 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ FCC Part 15 Subpart C §15.247
- ♦ FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v05r02
- ♦ FCC KDB 414788 D01 Radiated Test Site v01r01.
- ♦ FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- ♦ ANSI C63.10-2013

**Remark:**

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

## 2 Test Configuration of Equipment Under Test

- a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z and Accessory. The worst cases (X plane) were recorded in this report.

### 2.1 Carrier Frequency and Channel

| Frequency Band  | Channel | Freq. (MHz) | Channel | Freq. (MHz) |
|-----------------|---------|-------------|---------|-------------|
| 2400-2483.5 MHz | 1       | 2412        | 8       | 2447        |
|                 | 2       | 2417        | 9       | 2452        |
|                 | 3       | 2422        | 10      | 2457        |
|                 | 4       | 2427        | 11      | 2462        |
|                 | 5       | 2432        | -       | -           |
|                 | 6       | 2437        | -       | -           |
|                 | 7       | 2442        | -       | -           |

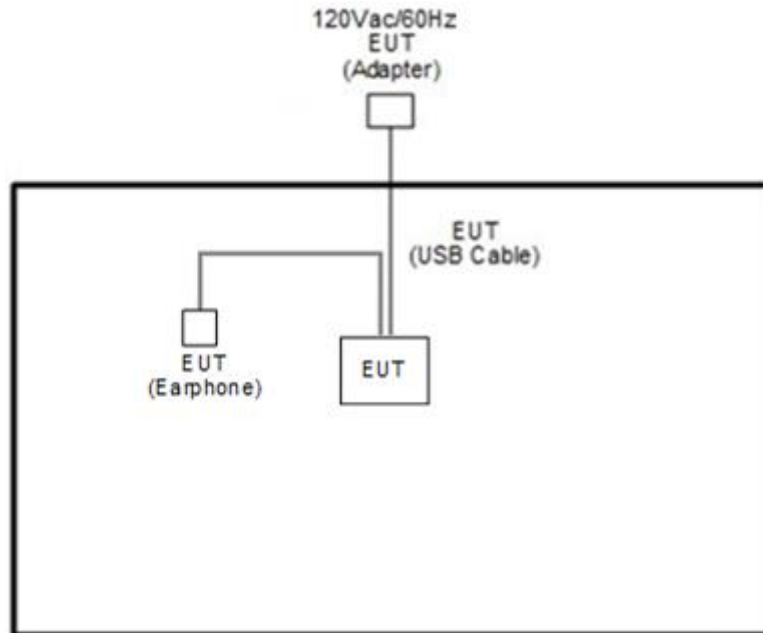
### 2.2 Test Mode

Final test modes are considering the modulation and worse data rates as below table.

| Modulation    | Data Rate |
|---------------|-----------|
| 802.11b       | 1 Mbps    |
| 802.11n HT20  | MCS0      |
| 802.11ax HE20 | MCS0      |

## 2.3 Connection Diagram of Test System

< For Radiated Emissions Measurement >



## 2.4 EUT Operation Test Setup

The RF test items, utility "FTMC\_bridge\_forURC\_v0.39" was installed in Notebook which was programmed in order to make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting signals.

### 3 Test Result

#### 3.1 Output Power Measurement

##### 3.1.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. If transmitting antenna with directional gain greater than 6dBi is used, the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

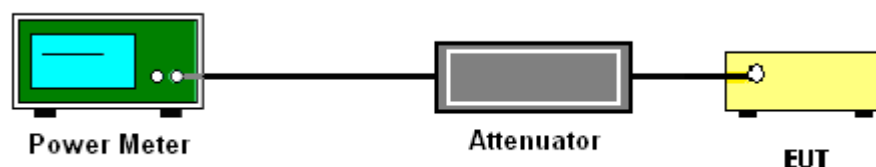
##### 3.1.2 Measuring Instruments

See list of measuring equipment of this test report.

##### 3.1.3 Test Procedures

1. For Peak Power, the testing follows ANSI C63.10 Section 11.9.1.3 PKPM1
2. For Average Power, the testing follows ANSI C63.10 Section 11.9.2.3.2 Method AVGPM-G
3. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
4. Set to the maximum power setting and enable the EUT transmit continuously.
5. Measure the conducted output power and record the results in the test report.
6. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

##### 3.1.4 Test Setup



##### 3.1.5 Test Result of Peak output Power

Please refer to Appendix A.

##### 3.1.6 Test Result of Average Output Power (Reporting Only)

Please refer to Appendix A.

## 3.2 Radiated Band Edges and Spurious Emission Measurement

### 3.2.1 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 was 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<br>(MHz) | Field Strength<br>(microvolts/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                                |

### 3.2.2 Measuring Instruments

See list of measuring equipment of this test report.

### 3.2.3 Test Procedures

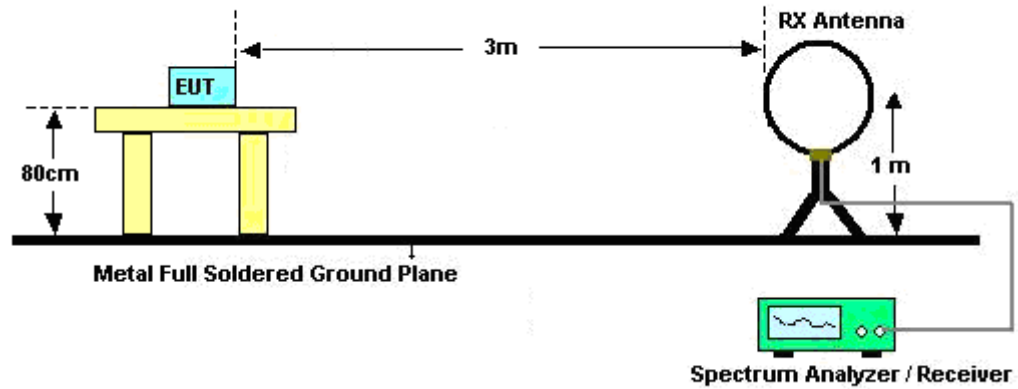
1. The testing follows the ANSI C63.10 Section 11.12.1 Radiated emission measurements.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
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  $\geq$  RBW; Sweep = auto; Detector function = peak; Trace = max hold;
  - (3) Set RBW = 1 MHz, VBW= 3MHz for  $f \geq 1$  GHz for peak measurement.

For average measurement:

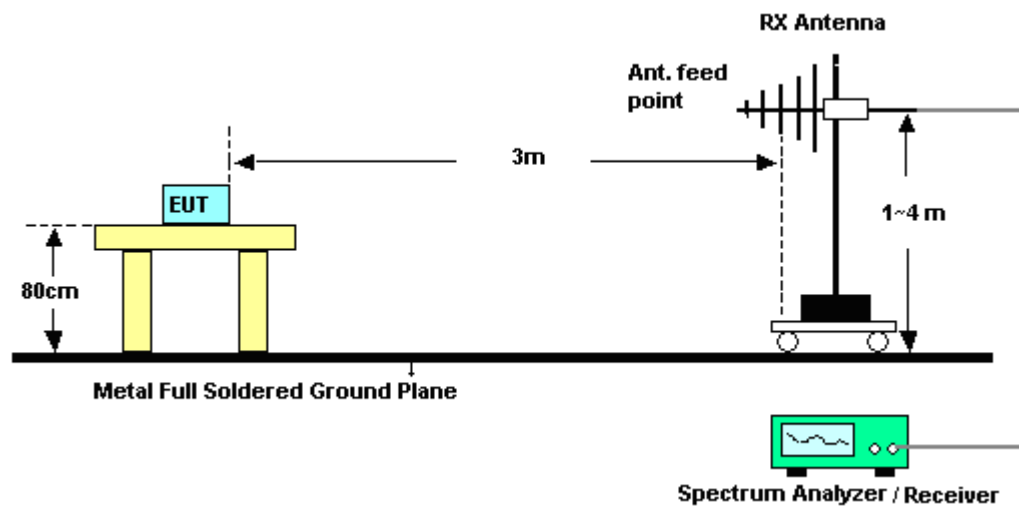
    - VBW = 10 Hz, when duty cycle is no less than 98 percent.
    - VBW  $\geq 1/T$ , when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

### 3.2.4 Test Setup

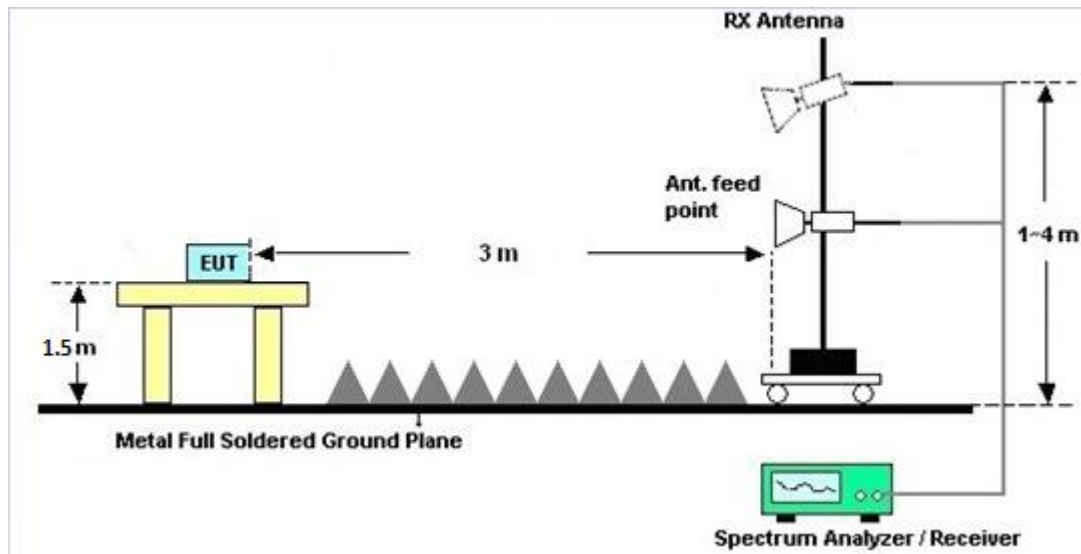
For radiated emissions below 30MHz



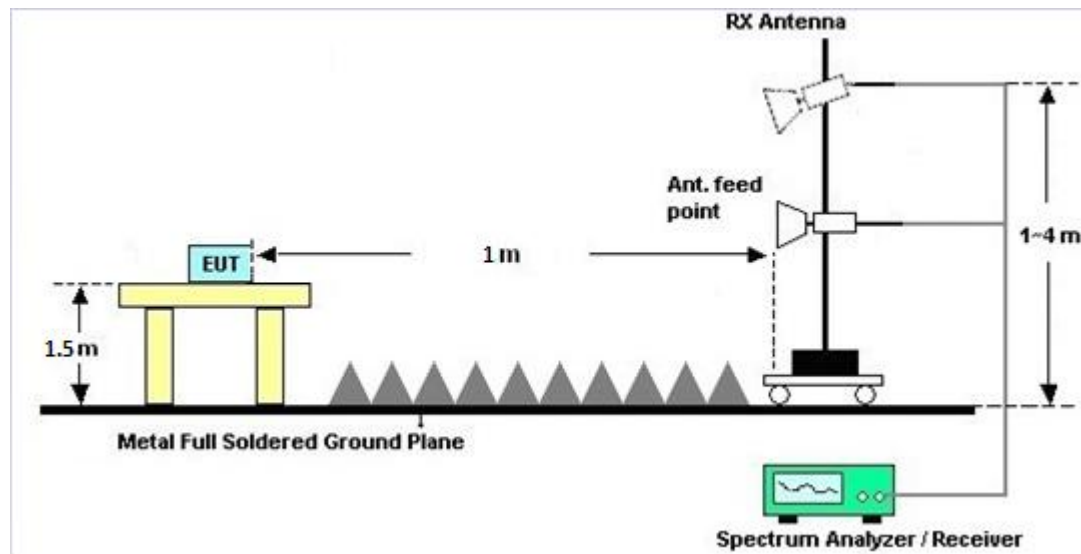
For radiated emissions from 30MHz to 1GHz



For radiated emissions from 1GHz to 18GHz



For radiated emissions from 18GHz to 26GHz





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

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

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

### **3.2.6 Test Result of Radiated Spurious at Band Edges**

Please refer to Appendix B and C.

### **3.2.7 Duty Cycle**

Please refer to Appendix D.

### **3.2.8 Test Result of Radiated Spurious Emission (30MHz ~ 10<sup>th</sup> Harmonic)**

Please refer to Appendix B and C.



### **3.3 Antenna Requirements**

#### **3.3.1 Standard Applicable**

If directional gain of transmitting Antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. 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.

#### **3.3.2 Antenna Anti-Replacement Construction**

An embedded-in antenna design is used.

#### **3.3.3 Antenna Gain**

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.



## 4 List of Measuring Equipment

| Instrument              | Manufacturer      | Model No.                           | Serial No.           | Characteristics          | Calibration Date | Test Date                       | Due Date      | Remark                   |
|-------------------------|-------------------|-------------------------------------|----------------------|--------------------------|------------------|---------------------------------|---------------|--------------------------|
| Loop Antenna            | Rohde & Schwarz   | HFH2-Z2                             | 100488               | 9 kHz~30 MHz             | Dec. 26, 2019    | Feb. 06, 2020~<br>Feb. 10, 2020 | Dec. 25, 2020 | Radiation<br>(03CH16-HY) |
| Bilog Antenna           | TESEQ             | CBL6111D&<br>00802N1D0<br>1N-06     | 47020&06             | 30MHz to 1GHz            | Oct. 13, 2019    | Feb. 06, 2020~<br>Feb. 10, 2020 | Oct. 12, 2020 | Radiation<br>(03CH16-HY) |
| Horn Antenna            | SCHWARZBE<br>CK   | BBHA 9120<br>D                      | 9120D-1522           | 1G~18GHz                 | Sep. 19, 2019    | Feb. 06, 2020~<br>Feb. 10, 2020 | Sep. 18, 2020 | Radiation<br>(03CH16-HY) |
| Amplifier               | SONOMA            | 310N                                | 371607               | 9kHz~1000MHz             | Oct. 01, 2019    | Feb. 06, 2020~<br>Feb. 10, 2020 | Sep. 30, 2020 | Radiation<br>(03CH16-HY) |
| Preamplifier            | Jet-Power         | JPA0118-55-<br>303                  | 1710001800<br>054001 | 1GHz~18GHz               | May 19, 2019     | Feb. 06, 2020~<br>Feb. 10, 2020 | May 18, 2020  | Radiation<br>(03CH16-HY) |
| Preamplifier            | EMEC              | EMC184045<br>B                      | 980192               | 18GHz ~40GHz             | Jul. 10, 2019    | Feb. 06, 2020~<br>Feb. 10, 2020 | Jul. 09, 2020 | Radiation<br>(03CH16-HY) |
| Preamplifier            | Keysight          | 83017A                              | MY5327026<br>4       | 1GHz~26.5GHz             | Dec. 11, 2019    | Feb. 06, 2020~<br>Feb. 10, 2020 | Dec.10, 2020  | Radiation<br>(03CH16-HY) |
| EMI Test Receiver       | Keysight          | N9038A<br>(MXE)                     | MY5542017<br>0       | 20MHz~8.4GHz             | Mar. 08, 2019    | Feb. 06, 2020~<br>Feb. 10, 2020 | Mar. 07, 2020 | Radiation<br>(03CH16-HY) |
| Spectrum Analyzer       | Agilent           | E4446A                              | MY5018013<br>6       | 3Hz~44GHz                | Apr. 29, 2019    | Feb. 06, 2020~<br>Feb. 10, 2020 | Apr. 28, 2020 | Radiation<br>(03CH16-HY) |
| RF Cable                | HUBER +<br>SUHNER | SUCOFLEX<br>104                     | MY11680/4P<br>E      | NA                       | Aug. 30, 2019    | Feb. 06, 2020~<br>Feb. 10, 2020 | Aug. 29, 2020 | Radiation<br>(03CH16-HY) |
| RF Cable                | HUBER +<br>SUHNER | SUCOFLEX<br>104                     | MY11688/4P<br>E      | NA                       | Aug. 30, 2019    | Feb. 06, 2020~<br>Feb. 10, 2020 | Aug. 29, 2020 | Radiation<br>(03CH16-HY) |
| RF Cable                | HUBER +<br>SUHNER | SUCOFLEX<br>102                     | EC-A5-300-5<br>757   | NA                       | Aug. 30, 2019    | Feb. 06, 2020~<br>Feb. 10, 2020 | Aug. 29, 2020 | Radiation<br>(03CH16-HY) |
| RF Cable                | HUBER +<br>SUHNER | SUCOFLEX<br>102                     | 505134/2             | 30MHz~40GHz              | Feb. 26, 2019    | Feb. 06, 2020~<br>Feb. 10, 2020 | Feb. 25, 2020 | Radiation<br>(03CH16-HY) |
| RF Cable                | HUBER +<br>SUHNER | SUCOFLEX<br>102                     | 800740/2             | 30MHz~40GHz              | Feb. 26, 2019    | Feb. 06, 2020~<br>Feb. 10, 2020 | Feb. 25, 2020 | Radiation<br>(03CH16-HY) |
| SHF-EHF Horn Antenna    | SCHWARZBE<br>CK   | BBHA 9170                           | BBHA91705<br>76      | 18GHz~40GHz              | May 14, 2019     | Feb. 06, 2020~<br>Feb. 10, 2020 | May 13, 2020  | Radiation<br>(03CH16-HY) |
| Preamplifier            | EMEC              | EM18G40G                            | 060715               | 18GHz~40GHz              | Dec. 13, 2019    | Feb. 06, 2020~<br>Feb. 10, 2020 | Dec. 12, 2020 | Radiation<br>(03CH16-HY) |
| Hygrometer              | TECPEL            | DTM-303B                            | TP161243             | N/A                      | Jun. 17, 2019    | Feb. 06, 2020~<br>Feb. 10, 2020 | Jun. 16, 2020 | Radiation<br>(03CH16-HY) |
| Software                | Audix             | E3<br>6.2009-8-24                   | RK-001136            | N/A                      | N/A              | Feb. 06, 2020~<br>Feb. 10, 2020 | N/A           | Radiation<br>(03CH16-HY) |
| Filter                  | Wainwright        | WLK4-1000-<br>1530-8000-4<br>0SS    | SN11                 | 1.53G Low Pass           | Sep. 15, 2019    | Feb. 06, 2020~<br>Feb. 10, 2020 | Sep. 14, 2020 | Radiation<br>(03CH16-HY) |
| Filter                  | Wainwright        | WHKX12-27<br>00-3000-180<br>00-60SS | SN3                  | 3GHz High Pass<br>Filter | Sep. 15, 2019    | Feb. 06, 2020~<br>Feb. 10, 2020 | Sep. 14, 2020 | Radiation<br>(03CH16-HY) |
| Hygrometer              | Testo             | 608-H2                              | 41410069             | N/A                      | Jun. 17, 2019    | Jan. 22, 2020~<br>Jan. 31, 2020 | Jun. 16, 2020 | Conducted<br>(TH05-HY)   |
| Power Sensor            | DARE              | RPR3006W                            | 13100030SN<br>O32    | 9kHz~6GHz                | Dec. 17, 2019    | Jan. 22, 2020~<br>Jan. 31, 2020 | Dec. 16, 2020 | Conducted<br>(TH05-HY)   |
| Spectrum Analyzer       | Rohde & Schwarz   | FSP40                               | 100055               | 9kHz-40GHz               | Aug. 14, 2019    | Jan. 22, 2020~<br>Jan. 31, 2020 | Aug. 13, 2020 | Conducted<br>(TH05-HY)   |
| Switch Control Manframe | E-IUSTRUME<br>NT  | ETF-1405-0                          | EC1900067            | N/A                      | Aug. 15, 2019    | Jan. 22, 2020~<br>Jan. 31, 2020 | Aug. 14, 2020 | Conducted<br>(TH05-HY)   |



## 5 Uncertainty of Evaluation

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

|                                                                            |     |
|----------------------------------------------------------------------------|-----|
| Measuring Uncertainty for a Level of Confidence<br>of 95% ( $U = 2Uc(y)$ ) | 4.9 |
|----------------------------------------------------------------------------|-----|

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

|                                                                            |     |
|----------------------------------------------------------------------------|-----|
| Measuring Uncertainty for a Level of Confidence<br>of 95% ( $U = 2Uc(y)$ ) | 6.7 |
|----------------------------------------------------------------------------|-----|

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

|                                                                            |     |
|----------------------------------------------------------------------------|-----|
| Measuring Uncertainty for a Level of Confidence<br>of 95% ( $U = 2Uc(y)$ ) | 3.9 |
|----------------------------------------------------------------------------|-----|

**Appendix A. Test Result of Conducted Test Items**

|                |                     |                    |       |    |
|----------------|---------------------|--------------------|-------|----|
| Test Engineer: | Hank Hsu            | Temperature:       | 21~25 | °C |
| Test Date:     | 2020/1/22~2020/1/31 | Relative Humidity: | 51~54 | %  |

**TEST RESULTS DATA**  
**Average Output Power**

| 2.4GHz Band Single Antenna |           |     |     |             |                               |       |     |                             |       |          |        |                  |       |                        |       |            |
|----------------------------|-----------|-----|-----|-------------|-------------------------------|-------|-----|-----------------------------|-------|----------|--------|------------------|-------|------------------------|-------|------------|
| Mod.                       | Data Rate | NTX | CH. | Freq. (MHz) | Average Conducted Power (dBm) |       |     | Conducted Power Limit (dBm) |       | DG (dBi) |        | EIRP Power (dBm) |       | EIRP Power Limit (dBm) |       | Pass /Fail |
|                            |           |     |     |             | Ant1                          | Ant2  | SUM | Ant1                        | Ant2  | Ant1     | Ant2   | Ant1             | Ant2  | Ant1                   | Ant2  |            |
| 11b                        | 1Mbps     | 1   | 1   | 2412        | 14.30                         | 10.50 |     | 30.00                       | 30.00 | -2.40    | -11.40 | 11.90            | -0.90 | 36.00                  | 36.00 | Pass       |
| 11b                        | 1Mbps     | 1   | 6   | 2437        | 14.60                         | 10.80 |     | 30.00                       | 30.00 | -2.40    | -11.40 | 12.20            | -0.60 | 36.00                  | 36.00 | Pass       |
| 11b                        | 1Mbps     | 1   | 11  | 2462        | 14.50                         | 10.50 |     | 30.00                       | 30.00 | -2.40    | -11.40 | 12.10            | -0.90 | 36.00                  | 36.00 | Pass       |
| 11g                        | 6Mbps     | 1   | 1   | 2412        | 12.60                         | 12.40 |     | 30.00                       | 30.00 | -2.40    | -11.40 | 10.20            | 1.00  | 36.00                  | 36.00 | Pass       |
| 11g                        | 6Mbps     | 1   | 6   | 2437        | 14.30                         | 13.80 |     | 30.00                       | 30.00 | -2.40    | -11.40 | 11.90            | 2.40  | 36.00                  | 36.00 | Pass       |
| 11g                        | 6Mbps     | 1   | 11  | 2462        | 13.60                         | 13.70 |     | 30.00                       | 30.00 | -2.40    | -11.40 | 11.20            | 2.30  | 36.00                  | 36.00 | Pass       |
| HT20                       | MCS0      | 1   | 1   | 2412        | 12.80                         | 12.80 |     | 30.00                       | 30.00 | -2.40    | -11.40 | 10.40            | 1.40  | 36.00                  | 36.00 | Pass       |
| HT20                       | MCS0      | 1   | 6   | 2437        | 14.70                         | 13.70 |     | 30.00                       | 30.00 | -2.40    | -11.40 | 12.30            | 2.30  | 36.00                  | 36.00 | Pass       |
| HT20                       | MCS0      | 1   | 11  | 2462        | 13.50                         | 13.60 |     | 30.00                       | 30.00 | -2.40    | -11.40 | 11.10            | 2.20  | 36.00                  | 36.00 | Pass       |

| 2.4GHz Band MIMO |           |     |     |             |                               |       |       |                             |      |          |      |                  |      |                        |      |            |
|------------------|-----------|-----|-----|-------------|-------------------------------|-------|-------|-----------------------------|------|----------|------|------------------|------|------------------------|------|------------|
| Mod.             | Data Rate | NTX | CH. | Freq. (MHz) | Average Conducted Power (dBm) |       |       | Conducted Power Limit (dBm) |      | DG (dBi) |      | EIRP Power (dBm) |      | EIRP Power Limit (dBm) |      | Pass /Fail |
|                  |           |     |     |             | Ant1                          | Ant2  | SUM   | Ant1                        | Ant2 | Ant1     | Ant2 | Ant1             | Ant2 | Ant1                   | Ant2 |            |
| 11b              | 1Mbps     | 2   | 1   | 2412        | 14.30                         | 10.50 | 15.81 | 30.00                       |      | -2.40    |      | 13.41            |      | 36.00                  |      | Pass       |
| 11b              | 1Mbps     | 2   | 6   | 2437        | 14.60                         | 10.80 | 16.11 | 30.00                       |      | -2.40    |      | 13.71            |      | 36.00                  |      | Pass       |
| 11b              | 1Mbps     | 2   | 11  | 2462        | 14.50                         | 10.50 | 15.96 | 30.00                       |      | -2.40    |      | 13.56            |      | 36.00                  |      | Pass       |
| 11g              | 6Mbps     | 2   | 1   | 2412        | 12.60                         | 12.40 | 15.51 | 30.00                       |      | -2.40    |      | 13.11            |      | 36.00                  |      | Pass       |
| 11g              | 6Mbps     | 2   | 6   | 2437        | 14.30                         | 13.80 | 17.07 | 30.00                       |      | -2.40    |      | 14.67            |      | 36.00                  |      | Pass       |
| 11g              | 6Mbps     | 2   | 11  | 2462        | 13.60                         | 13.70 | 16.66 | 30.00                       |      | -2.40    |      | 14.26            |      | 36.00                  |      | Pass       |
| HT20             | MCS0      | 2   | 1   | 2412        | 12.80                         | 12.80 | 15.81 | 30.00                       |      | -2.40    |      | 13.41            |      | 36.00                  |      | Pass       |
| HT20             | MCS0      | 2   | 6   | 2437        | 14.70                         | 13.70 | 17.24 | 30.00                       |      | -2.40    |      | 14.84            |      | 36.00                  |      | Pass       |
| HT20             | MCS0      | 2   | 11  | 2462        | 13.50                         | 13.60 | 16.56 | 30.00                       |      | -2.40    |      | 14.16            |      | 36.00                  |      | Pass       |

Note: Measured power (dBm) has offset with cable loss.

**TEST RESULTS DATA**  
**Average Output Power**

| 2.4GHz Band Single Antenna |           |     |     |             |           |                               |       |     |                             |       |          |        |                  |       |                        |       |            |
|----------------------------|-----------|-----|-----|-------------|-----------|-------------------------------|-------|-----|-----------------------------|-------|----------|--------|------------------|-------|------------------------|-------|------------|
| Mod.                       | Data Rate | NTx | CH. | Freq. (MHz) | RU Config | Average Conducted Power (dBm) |       |     | Conducted Power Limit (dBm) |       | DG (dBi) |        | EIRP Power (dBm) |       | EIRP Power Limit (dBm) |       | Pass /Fail |
|                            |           |     |     |             |           | Ant1                          | Ant2  | SUM | Ant1                        | Ant2  | Ant1     | Ant2   | Ant1             | Ant2  | Ant1                   | Ant2  |            |
| HE20                       | MCS0      | 1   | 1   | 2412        | Full      | 12.80                         | 12.50 |     | 30.00                       | 30.00 | -2.40    | -11.40 | 10.40            | 1.10  | 36.00                  | 36.00 | Pass       |
| HE20                       | MCS0      | 1   | 1   | 2412        | 26/0      | 9.10                          | 9.40  |     | 30.00                       | 30.00 | -2.40    | -11.40 | 6.70             | -2.00 | 36.00                  | 36.00 | Pass       |
| HE20                       | MCS0      | 1   | 1   | 2412        | 52/37     | 12.00                         | 12.20 |     | 30.00                       | 30.00 | -2.40    | -11.40 | 9.60             | 0.80  | 36.00                  | 36.00 | Pass       |
| HE20                       | MCS0      | 1   | 1   | 2412        | 106/53    | 14.10                         | 13.70 |     | 30.00                       | 30.00 | -2.40    | -11.40 | 11.70            | 2.30  | 36.00                  | 36.00 | Pass       |
| HE20                       | MCS0      | 1   | 6   | 2437        | Full      | 14.50                         | 13.80 |     | 30.00                       | 30.00 | -2.40    | -11.40 | 12.10            | 2.40  | 36.00                  | 36.00 | Pass       |
| HE20                       | MCS0      | 1   | 6   | 2437        | 26/4      | 9.00                          | 8.90  |     | 30.00                       | 30.00 | -2.40    | -11.40 | 6.60             | -2.50 | 36.00                  | 36.00 | Pass       |
| HE20                       | MCS0      | 1   | 6   | 2437        | 52/39     | 12.30                         | 12.10 |     | 30.00                       | 30.00 | -2.40    | -11.40 | 9.90             | 0.70  | 36.00                  | 36.00 | Pass       |
| HE20                       | MCS0      | 1   | 6   | 2437        | 106/53    | 14.00                         | 13.70 |     | 30.00                       | 30.00 | -2.40    | -11.40 | 11.60            | 2.30  | 36.00                  | 36.00 | Pass       |
| HE20                       | MCS0      | 1   | 11  | 2462        | Full      | 13.70                         | 13.90 |     | 30.00                       | 30.00 | -2.40    | -11.40 | 11.30            | 2.50  | 36.00                  | 36.00 | Pass       |
| HE20                       | MCS0      | 1   | 11  | 2462        | 26/8      | 9.00                          | 8.90  |     | 30.00                       | 30.00 | -2.40    | -11.40 | 6.60             | -2.50 | 36.00                  | 36.00 | Pass       |
| HE20                       | MCS0      | 1   | 11  | 2462        | 52/40     | 12.20                         | 12.20 |     | 30.00                       | 30.00 | -2.40    | -11.40 | 9.80             | 0.80  | 36.00                  | 36.00 | Pass       |
| HE20                       | MCS0      | 1   | 11  | 2462        | 106/54    | 14.00                         | 13.60 |     | 30.00                       | 30.00 | -2.40    | -11.40 | 11.60            | 2.20  | 36.00                  | 36.00 | Pass       |

| 2.4GHz Band MIMO |           |     |     |             |           |                               |       |       |                             |      |          |      |                  |      |                        |      |            |
|------------------|-----------|-----|-----|-------------|-----------|-------------------------------|-------|-------|-----------------------------|------|----------|------|------------------|------|------------------------|------|------------|
| Mod.             | Data Rate | NTx | CH. | Freq. (MHz) | RU Config | Average Conducted Power (dBm) |       |       | Conducted Power Limit (dBm) |      | DG (dBi) |      | EIRP Power (dBm) |      | EIRP Power Limit (dBm) |      | Pass /Fail |
|                  |           |     |     |             |           | Ant1                          | Ant2  | SUM   | Ant1                        | Ant2 | Ant1     | Ant2 | Ant1             | Ant2 | Ant1                   | Ant2 |            |
| HE20             | MCS0      | 2   | 1   | 2412        | Full      | 12.80                         | 12.50 | 15.66 | 30.00                       |      | -2.40    |      | 13.26            |      | 36.00                  |      | Pass       |
| HE20             | MCS0      | 2   | 1   | 2412        | 26/0      | 9.10                          | 9.40  | 12.26 | 30.00                       |      | -2.40    |      | 9.86             |      | 36.00                  |      | Pass       |
| HE20             | MCS0      | 2   | 1   | 2412        | 52/37     | 12.00                         | 12.20 | 15.11 | 30.00                       |      | -2.40    |      | 12.71            |      | 36.00                  |      | Pass       |
| HE20             | MCS0      | 2   | 1   | 2412        | 106/53    | 14.10                         | 13.70 | 16.91 | 30.00                       |      | -2.40    |      | 14.51            |      | 36.00                  |      | Pass       |
| HE20             | MCS0      | 2   | 6   | 2437        | Full      | 14.50                         | 13.80 | 17.17 | 30.00                       |      | -2.40    |      | 14.77            |      | 36.00                  |      | Pass       |
| HE20             | MCS0      | 2   | 6   | 2437        | 26/4      | 9.00                          | 8.90  | 11.96 | 30.00                       |      | -2.40    |      | 9.56             |      | 36.00                  |      | Pass       |
| HE20             | MCS0      | 2   | 6   | 2437        | 52/39     | 12.30                         | 12.10 | 15.21 | 30.00                       |      | -2.40    |      | 12.81            |      | 36.00                  |      | Pass       |
| HE20             | MCS0      | 2   | 6   | 2437        | 106/53    | 14.00                         | 13.70 | 16.86 | 30.00                       |      | -2.40    |      | 14.46            |      | 36.00                  |      | Pass       |
| HE20             | MCS0      | 2   | 11  | 2462        | Full      | 13.70                         | 13.90 | 16.81 | 30.00                       |      | -2.40    |      | 14.41            |      | 36.00                  |      | Pass       |
| HE20             | MCS0      | 2   | 11  | 2462        | 26/8      | 9.00                          | 8.90  | 11.96 | 30.00                       |      | -2.40    |      | 9.56             |      | 36.00                  |      | Pass       |
| HE20             | MCS0      | 2   | 11  | 2462        | 52/40     | 12.20                         | 12.20 | 15.21 | 30.00                       |      | -2.40    |      | 12.81            |      | 36.00                  |      | Pass       |
| HE20             | MCS0      | 2   | 11  | 2462        | 106/54    | 14.00                         | 13.60 | 16.81 | 30.00                       |      | -2.40    |      | 14.41            |      | 36.00                  |      | Pass       |

Note: Measured power (dBm) has offset with cable loss.

**TEST RESULTS DATA**  
**Peak Output Power**

| 2.4GHz Band Single Antenna |           |     |     |             |                            |       |     |                             |       |          |        |                  |      |                        |       |            |
|----------------------------|-----------|-----|-----|-------------|----------------------------|-------|-----|-----------------------------|-------|----------|--------|------------------|------|------------------------|-------|------------|
| Mod.                       | Data Rate | NTX | CH. | Freq. (MHz) | Peak Conducted Power (dBm) |       |     | Conducted Power Limit (dBm) |       | DG (dBi) |        | EIRP Power (dBm) |      | EIRP Power Limit (dBm) |       | Pass /Fail |
|                            |           |     |     |             | Ant1                       | Ant2  | SUM | Ant1                        | Ant2  | Ant1     | Ant2   | Ant1             | Ant2 | Ant1                   | Ant2  |            |
| 11b                        | 1Mbps     | 1   | 1   | 2412        | 16.58                      | 12.74 |     | 30.00                       | 30.00 | -2.40    | -11.40 | 14.18            | 1.34 | 36.00                  | 36.00 | Pass       |
| 11b                        | 1Mbps     | 1   | 6   | 2437        | 16.90                      | 13.10 |     | 30.00                       | 30.00 | -2.40    | -11.40 | 14.50            | 1.70 | 36.00                  | 36.00 | Pass       |
| 11b                        | 1Mbps     | 1   | 11  | 2462        | 16.70                      | 12.76 |     | 30.00                       | 30.00 | -2.40    | -11.40 | 14.30            | 1.36 | 36.00                  | 36.00 | Pass       |
| 11g                        | 6Mbps     | 1   | 1   | 2412        | 19.48                      | 19.35 |     | 30.00                       | 30.00 | -2.40    | -11.40 | 17.08            | 7.95 | 36.00                  | 36.00 | Pass       |
| 11g                        | 6Mbps     | 1   | 6   | 2437        | 21.01                      | 20.92 |     | 30.00                       | 30.00 | -2.40    | -11.40 | 18.61            | 9.52 | 36.00                  | 36.00 | Pass       |
| 11g                        | 6Mbps     | 1   | 11  | 2462        | 20.32                      | 20.76 |     | 30.00                       | 30.00 | -2.40    | -11.40 | 17.92            | 9.36 | 36.00                  | 36.00 | Pass       |
| HT20                       | MCS0      | 1   | 1   | 2412        | 19.92                      | 19.92 |     | 30.00                       | 30.00 | -2.40    | -11.40 | 17.52            | 8.52 | 36.00                  | 36.00 | Pass       |
| HT20                       | MCS0      | 1   | 6   | 2437        | 21.40                      | 20.55 |     | 30.00                       | 30.00 | -2.40    | -11.40 | 19.00            | 9.15 | 36.00                  | 36.00 | Pass       |
| HT20                       | MCS0      | 1   | 11  | 2462        | 20.25                      | 20.89 |     | 30.00                       | 30.00 | -2.40    | -11.40 | 17.85            | 9.49 | 36.00                  | 36.00 | Pass       |

| 2.4GHz Band MIMO |           |     |     |             |                            |       |       |                             |      |          |      |                  |      |                        |      |            |
|------------------|-----------|-----|-----|-------------|----------------------------|-------|-------|-----------------------------|------|----------|------|------------------|------|------------------------|------|------------|
| Mod.             | Data Rate | NTX | CH. | Freq. (MHz) | Peak Conducted Power (dBm) |       |       | Conducted Power Limit (dBm) |      | DG (dBi) |      | EIRP Power (dBm) |      | EIRP Power Limit (dBm) |      | Pass /Fail |
|                  |           |     |     |             | Ant1                       | Ant2  | SUM   | Ant1                        | Ant2 | Ant1     | Ant2 | Ant1             | Ant2 | Ant1                   | Ant2 |            |
| 11b              | 1Mbps     | 2   | 1   | 2412        | 16.60                      | 12.76 | 18.10 | 30.00                       |      | -2.40    |      | 15.70            |      | 36.00                  |      | Pass       |
| 11b              | 1Mbps     | 2   | 6   | 2437        | 16.91                      | 13.11 | 18.42 | 30.00                       |      | -2.40    |      | 16.02            |      | 36.00                  |      | Pass       |
| 11b              | 1Mbps     | 2   | 11  | 2462        | 16.71                      | 12.77 | 18.18 | 30.00                       |      | -2.40    |      | 15.78            |      | 36.00                  |      | Pass       |
| 11g              | 6Mbps     | 2   | 1   | 2412        | 19.50                      | 19.36 | 22.44 | 30.00                       |      | -2.40    |      | 20.04            |      | 36.00                  |      | Pass       |
| 11g              | 6Mbps     | 2   | 6   | 2437        | 21.02                      | 20.95 | 24.00 | 30.00                       |      | -2.40    |      | 21.60            |      | 36.00                  |      | Pass       |
| 11g              | 6Mbps     | 2   | 11  | 2462        | 20.35                      | 20.79 | 23.59 | 30.00                       |      | -2.40    |      | 21.19            |      | 36.00                  |      | Pass       |
| HT20             | MCS0      | 2   | 1   | 2412        | 19.95                      | 19.93 | 22.95 | 30.00                       |      | -2.40    |      | 20.55            |      | 36.00                  |      | Pass       |
| HT20             | MCS0      | 2   | 6   | 2437        | 21.31                      | 20.58 | 23.97 | 30.00                       |      | -2.40    |      | 21.57            |      | 36.00                  |      | Pass       |
| HT20             | MCS0      | 2   | 11  | 2462        | 20.30                      | 20.91 | 23.63 | 30.00                       |      | -2.40    |      | 21.23            |      | 36.00                  |      | Pass       |

Note: Measured power (dBm) has offset with cable loss.

**TEST RESULTS DATA****Peak Output Power**

| 2.4GHz Band Single Antenna |           |     |     |             |           |                            |       |     |                             |       |          |        |                  |       |                        |       |            |
|----------------------------|-----------|-----|-----|-------------|-----------|----------------------------|-------|-----|-----------------------------|-------|----------|--------|------------------|-------|------------------------|-------|------------|
| Mod.                       | Data Rate | NTx | CH. | Freq. (MHz) | RU Config | Peak Conducted Power (dBm) |       |     | Conducted Power Limit (dBm) |       | DG (dBi) |        | EIRP Power (dBm) |       | EIRP Power Limit (dBm) |       | Pass /Fail |
|                            |           |     |     |             |           | Ant1                       | Ant2  | SUM | Ant1                        | Ant2  | Ant1     | Ant2   | Ant1             | Ant2  | Ant1                   | Ant2  |            |
| HE20                       | MCS0      | 1   | 1   | 2412        | Full      | 22.63                      | 22.35 |     | 30.00                       | 30.00 | -2.40    | -11.40 | 20.23            | 10.95 | 36.00                  | 36.00 | Pass       |
| HE20                       | MCS0      | 1   | 1   | 2412        | 26/0      | 22.23                      | 22.62 |     | 30.00                       | 30.00 | -2.40    | -11.40 | 19.83            | 11.22 | 36.00                  | 36.00 | Pass       |
| HE20                       | MCS0      | 1   | 1   | 2412        | 52/37     | 23.85                      | 24.39 |     | 30.00                       | 30.00 | -2.40    | -11.40 | 21.45            | 12.99 | 36.00                  | 36.00 | Pass       |
| HE20                       | MCS0      | 1   | 1   | 2412        | 106/53    | 23.70                      | 23.55 |     | 30.00                       | 30.00 | -2.40    | -11.40 | 21.30            | 12.15 | 36.00                  | 36.00 | Pass       |
| HE20                       | MCS0      | 1   | 6   | 2437        | Full      | 23.07                      | 23.52 |     | 30.00                       | 30.00 | -2.40    | -11.40 | 20.67            | 12.12 | 36.00                  | 36.00 | Pass       |
| HE20                       | MCS0      | 1   | 6   | 2437        | 26/4      | 21.34                      | 20.86 |     | 30.00                       | 30.00 | -2.40    | -11.40 | 18.94            | 9.46  | 36.00                  | 36.00 | Pass       |
| HE20                       | MCS0      | 1   | 6   | 2437        | 52/39     | 23.61                      | 23.75 |     | 30.00                       | 30.00 | -2.40    | -11.40 | 21.21            | 12.35 | 36.00                  | 36.00 | Pass       |
| HE20                       | MCS0      | 1   | 6   | 2437        | 106/53    | 23.43                      | 23.54 |     | 30.00                       | 30.00 | -2.40    | -11.40 | 21.03            | 12.14 | 36.00                  | 36.00 | Pass       |
| HE20                       | MCS0      | 1   | 11  | 2462        | Full      | 22.66                      | 23.33 |     | 30.00                       | 30.00 | -2.40    | -11.40 | 20.26            | 11.93 | 36.00                  | 36.00 | Pass       |
| HE20                       | MCS0      | 1   | 11  | 2462        | 26/8      | 21.74                      | 21.35 |     | 30.00                       | 30.00 | -2.40    | -11.40 | 19.34            | 9.95  | 36.00                  | 36.00 | Pass       |
| HE20                       | MCS0      | 1   | 11  | 2462        | 52/40     | 23.52                      | 24.15 |     | 30.00                       | 30.00 | -2.40    | -11.40 | 21.12            | 12.75 | 36.00                  | 36.00 | Pass       |
| HE20                       | MCS0      | 1   | 11  | 2462        | 106/54    | 23.13                      | 23.74 |     | 30.00                       | 30.00 | -2.40    | -11.40 | 20.73            | 12.34 | 36.00                  | 36.00 | Pass       |

| 2.4GHz Band MIMO |           |     |     |             |           |                            |       |       |                             |      |          |      |                  |      |                        |      |            |
|------------------|-----------|-----|-----|-------------|-----------|----------------------------|-------|-------|-----------------------------|------|----------|------|------------------|------|------------------------|------|------------|
| Mod.             | Data Rate | NTx | CH. | Freq. (MHz) | RU Config | Peak Conducted Power (dBm) |       |       | Conducted Power Limit (dBm) |      | DG (dBi) |      | EIRP Power (dBm) |      | EIRP Power Limit (dBm) |      | Pass /Fail |
|                  |           |     |     |             |           | Ant1                       | Ant2  | SUM   | Ant1                        | Ant2 | Ant1     | Ant2 | Ant1             | Ant2 | Ant1                   | Ant2 |            |
| HE20             | MCS0      | 2   | 1   | 2412        | Full      | 22.66                      | 22.36 | 25.52 | 30.00                       |      | -2.40    |      | 23.12            |      | 36.00                  |      | Pass       |
| HE20             | MCS0      | 2   | 1   | 2412        | 26/0      | 22.25                      | 22.65 | 25.46 | 30.00                       |      | -2.40    |      | 23.06            |      | 36.00                  |      | Pass       |
| HE20             | MCS0      | 2   | 1   | 2412        | 52/37     | 23.89                      | 24.40 | 27.16 | 30.00                       |      | -2.40    |      | 24.76            |      | 36.00                  |      | Pass       |
| HE20             | MCS0      | 2   | 1   | 2412        | 106/53    | 23.71                      | 23.57 | 26.65 | 30.00                       |      | -2.40    |      | 24.25            |      | 36.00                  |      | Pass       |
| HE20             | MCS0      | 2   | 6   | 2437        | Full      | 23.09                      | 23.55 | 26.34 | 30.00                       |      | -2.40    |      | 23.94            |      | 36.00                  |      | Pass       |
| HE20             | MCS0      | 2   | 6   | 2437        | 26/4      | 21.36                      | 20.88 | 24.14 | 30.00                       |      | -2.40    |      | 21.74            |      | 36.00                  |      | Pass       |
| HE20             | MCS0      | 2   | 6   | 2437        | 52/39     | 23.62                      | 23.76 | 26.70 | 30.00                       |      | -2.40    |      | 24.30            |      | 36.00                  |      | Pass       |
| HE20             | MCS0      | 2   | 6   | 2437        | 106/53    | 23.45                      | 23.56 | 26.52 | 30.00                       |      | -2.40    |      | 24.12            |      | 36.00                  |      | Pass       |
| HE20             | MCS0      | 2   | 11  | 2462        | Full      | 22.69                      | 23.35 | 26.04 | 30.00                       |      | -2.40    |      | 23.64            |      | 36.00                  |      | Pass       |
| HE20             | MCS0      | 2   | 11  | 2462        | 26/8      | 21.78                      | 21.36 | 24.59 | 30.00                       |      | -2.40    |      | 22.19            |      | 36.00                  |      | Pass       |
| HE20             | MCS0      | 2   | 11  | 2462        | 52/40     | 23.56                      | 24.17 | 26.89 | 30.00                       |      | -2.40    |      | 24.49            |      | 36.00                  |      | Pass       |
| HE20             | MCS0      | 2   | 11  | 2462        | 106/54    | 23.16                      | 23.78 | 26.49 | 30.00                       |      | -2.40    |      | 24.09            |      | 36.00                  |      | Pass       |

Note: Measured power (dBm) has offset with cable loss.



## Appendix B. Radiated Spurious Emission

|                 |                       |                     |         |
|-----------------|-----------------------|---------------------|---------|
| Test Engineer : | Andy Yang and CR Liro | Temperature :       | 20~25°C |
|                 |                       | Relative Humidity : | 50~60%  |

### 2.4GHz 2400~2483.5MHz

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

| WIFI                        | Note                                                                                        | Frequency | Level      | Over   | Limit      | Read     | Antenna  | Path   | Preamp | Ant    | Table   | Peak    | Pol.    |
|-----------------------------|---------------------------------------------------------------------------------------------|-----------|------------|--------|------------|----------|----------|--------|--------|--------|---------|---------|---------|
| Ant.                        |                                                                                             |           |            | Limit  | Line       | Level    | Factor   | Loss   | Factor | Pos    | Pos     | Avg.    |         |
| 1+2                         |                                                                                             | ( MHz )   | ( dBμV/m ) | ( dB ) | ( dBμV/m ) | ( dBμV ) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | ( P/A ) | ( H/V ) |
| 802.11b<br>CH 11<br>2462MHz | *                                                                                           | 2462      | 106.51     | -      | -          | 90.53    | 27.58    | 18.21  | 29.81  | 112    | 26      | P       | H       |
|                             | *                                                                                           | 2462      | 104.1      | -      | -          | 88.12    | 27.58    | 18.21  | 29.81  | 112    | 26      | A       | H       |
|                             |                                                                                             | 2486.68   | 56.69      | -17.31 | 74         | 40.73    | 27.53    | 18.25  | 29.82  | 112    | 26      | P       | H       |
|                             |                                                                                             | 2484.04   | 44.75      | -9.25  | 54         | 28.8     | 27.53    | 18.24  | 29.82  | 112    | 26      | A       | H       |
|                             |                                                                                             |           |            |        |            |          |          |        |        |        |         |         | H       |
|                             |                                                                                             |           |            |        |            |          |          |        |        |        |         |         | H       |
|                             | *                                                                                           | 2462      | 102.19     | -      | -          | 86.21    | 27.58    | 18.21  | 29.81  | 341    | 103     | P       | V       |
|                             | *                                                                                           | 2462      | 99.63      | -      | -          | 83.65    | 27.58    | 18.21  | 29.81  | 341    | 103     | A       | V       |
|                             |                                                                                             | 2495.24   | 56.72      | -17.28 | 74         | 40.78    | 27.51    | 18.26  | 29.83  | 341    | 103     | P       | V       |
|                             |                                                                                             | 2491.24   | 44.63      | -9.37  | 54         | 28.68    | 27.52    | 18.26  | 29.83  | 341    | 103     | 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<br>Ant.<br>1+2                  | Note                                                                                        | Frequency<br>( MHz ) | Level<br>( dBμV/m ) | Over<br>Limit<br>( dB ) | Limit<br>Line<br>( dBμV/m ) | Read<br>Level<br>( dBμV ) | Antenna<br>Factor<br>( dB/m ) | Path<br>Loss<br>( dB ) | Preamp<br>Factor<br>( dB ) | Ant<br>Pos<br>( cm ) | Table<br>Pos<br>( deg ) | Peak<br>Avg.<br>( P/A ) | Pol.<br>( H/V ) |
|--------------------------------------|---------------------------------------------------------------------------------------------|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-------------------------------|------------------------|----------------------------|----------------------|-------------------------|-------------------------|-----------------|
| <b>802.11b<br/>CH 11<br/>2462MHz</b> |                                                                                             | 4924                 | 35.72               | -38.28                  | 74                          | 50.23                     | 31.1                          | 12.52                  | 58.13                      | 100                  | 0                       | P                       | H               |
|                                      |                                                                                             | 7386                 | 41.18               | -32.82                  | 74                          | 46.39                     | 36.53                         | 15.66                  | 57.4                       | 100                  | 0                       | P                       | H               |
|                                      |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                                      |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                                      |                                                                                             | 4924                 | 35.55               | -38.45                  | 74                          | 50.06                     | 31.1                          | 12.52                  | 58.13                      | 100                  | 0                       | P                       | V               |
|                                      |                                                                                             | 7386                 | 40.81               | -33.19                  | 74                          | 46.02                     | 36.53                         | 15.66                  | 57.4                       | 100                  | 0                       | P                       | V               |
|                                      |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
|                                      |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
| <b>Remark</b>                        | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         |                 |



2.4GHz 2400~2483.5MHz  
WIFI 802.11n HT20 (Band Edge @ 3m)

| WIFI Ant.                           | Note                                                                                        | Frequency | Level      | Over Limit | Limit Line | Read Level | Antenna Factor | Path Loss | Preamp Factor | Ant Pos | Table Pos | Peak Avg. | Pol.    |
|-------------------------------------|---------------------------------------------------------------------------------------------|-----------|------------|------------|------------|------------|----------------|-----------|---------------|---------|-----------|-----------|---------|
| 1+2                                 |                                                                                             | ( MHz )   | ( dBμV/m ) | ( dB )     | ( dBμV/m ) | ( dBμV )   | ( dB/m )       | ( dB )    | ( dB )        | ( cm )  | ( deg )   | ( P/A )   | ( H/V ) |
| 802.11n<br>HT20<br>CH 11<br>2462MHz | *                                                                                           | 2462      | 104.95     | -          | -          | 88.97      | 27.58          | 18.21     | 29.81         | 135     | 26        | P         | H       |
|                                     | *                                                                                           | 2462      | 95.76      | -          | -          | 79.78      | 27.58          | 18.21     | 29.81         | 135     | 26        | A         | H       |
|                                     |                                                                                             | 2489.08   | 56.82      | -17.18     | 74         | 40.88      | 27.52          | 18.25     | 29.83         | 135     | 26        | P         | H       |
|                                     |                                                                                             | 2483.52   | 45.69      | -8.31      | 54         | 29.74      | 27.53          | 18.24     | 29.82         | 135     | 26        | A         | H       |
|                                     |                                                                                             |           |            |            |            |            |                |           |               |         |           |           | H       |
|                                     |                                                                                             |           |            |            |            |            |                |           |               |         |           |           | H       |
|                                     | *                                                                                           | 2462      | 101.04     | -          | -          | 85.06      | 27.58          | 18.21     | 29.81         | 341     | 101       | P         | V       |
|                                     | *                                                                                           | 2462      | 93.48      | -          | -          | 77.5       | 27.58          | 18.21     | 29.81         | 341     | 101       | A         | V       |
|                                     |                                                                                             | 2493.92   | 56.53      | -17.47     | 74         | 40.59      | 27.51          | 18.26     | 29.83         | 341     | 101       | P         | V       |
|                                     |                                                                                             | 2483.52   | 44.79      | -9.21      | 54         | 28.84      | 27.53          | 18.24     | 29.82         | 341     | 101       | 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 802.11n HT20 (Harmonic @ 3m)**

| WIFI<br>Ant.<br>1+2                           | Note                                                                                        | Frequency<br>( MHz ) | Level<br>( dBμV/m ) | Over<br>Limit<br>( dB ) | Limit<br>Line<br>( dBμV/m ) | Read<br>Level<br>( dBμV ) | Antenna<br>Factor<br>( dB/m ) | Path<br>Loss<br>( dB ) | Preamp<br>Factor<br>( dB ) | Ant<br>Pos<br>( cm ) | Table<br>Pos<br>( deg ) | Peak<br>Avg.<br>( P/A ) | Pol.<br>( H/V ) |
|-----------------------------------------------|---------------------------------------------------------------------------------------------|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-------------------------------|------------------------|----------------------------|----------------------|-------------------------|-------------------------|-----------------|
| <b>802.11n<br/>HT20<br/>CH 11<br/>2462MHz</b> |                                                                                             | 4924                 | 35.4                | -38.6                   | 74                          | 49.91                     | 31.1                          | 12.52                  | 58.13                      | 100                  | 0                       | P                       | H               |
|                                               |                                                                                             | 7386                 | 41.55               | -32.45                  | 74                          | 46.76                     | 36.53                         | 15.66                  | 57.4                       | 100                  | 0                       | P                       | H               |
|                                               |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                                               |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                                               |                                                                                             | 4924                 | 34.84               | -39.16                  | 74                          | 49.35                     | 31.1                          | 12.52                  | 58.13                      | 100                  | 0                       | P                       | V               |
|                                               |                                                                                             | 7386                 | 41.61               | -32.39                  | 74                          | 46.82                     | 36.53                         | 15.66                  | 57.4                       | 100                  | 0                       | P                       | V               |
|                                               |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
|                                               |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
| <b>Remark</b>                                 | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         |                 |



## 2.4GHz 2400~2483.5MHz

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

| WIFI                                            | Note                                                                                        | Frequency | Level      | Over   | Limit      | Read     | Antenna  | Path   | Preamp | Ant    | Table   | Peak    | Pol.    |
|-------------------------------------------------|---------------------------------------------------------------------------------------------|-----------|------------|--------|------------|----------|----------|--------|--------|--------|---------|---------|---------|
| Ant.                                            |                                                                                             |           |            | Limit  | Line       | Level    | Factor   | Loss   | Factor | Pos    | Pos     | Avg.    |         |
| 1+2                                             |                                                                                             | ( MHz )   | ( dBμV/m ) | ( dB ) | ( dBμV/m ) | ( dBμV ) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | ( P/A ) | ( H/V ) |
| 802.11ax<br>HE20<br>Full RU<br>CH 11<br>2462MHz | *                                                                                           | 2462      | 107.5      | -      | -          | 91.52    | 27.58    | 18.21  | 29.81  | 132    | 28      | P       | H       |
|                                                 | *                                                                                           | 2462      | 96.76      | -      | -          | 80.78    | 27.58    | 18.21  | 29.81  | 132    | 28      | A       | H       |
|                                                 |                                                                                             | 2485.64   | 58.92      | -15.08 | 74         | 42.96    | 27.53    | 18.25  | 29.82  | 132    | 28      | P       | H       |
|                                                 |                                                                                             | 2483.52   | 47.75      | -6.25  | 54         | 31.8     | 27.53    | 18.24  | 29.82  | 132    | 28      | A       | H       |
|                                                 |                                                                                             |           |            |        |            |          |          |        |        |        |         |         | H       |
|                                                 |                                                                                             |           |            |        |            |          |          |        |        |        |         |         | H       |
|                                                 | *                                                                                           | 2462      | 104.36     | -      | -          | 88.38    | 27.58    | 18.21  | 29.81  | 345    | 105     | P       | V       |
|                                                 | *                                                                                           | 2462      | 93.94      | -      | -          | 77.96    | 27.58    | 18.21  | 29.81  | 345    | 105     | A       | V       |
|                                                 |                                                                                             | 2497.92   | 57.14      | -16.86 | 74         | 41.2     | 27.5     | 18.27  | 29.83  | 345    | 105     | P       | V       |
|                                                 |                                                                                             | 2483.52   | 45.8       | -8.2   | 54         | 29.85    | 27.53    | 18.24  | 29.82  | 345    | 105     | 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 802.11ax HE20 Full RU (Harmonic @ 3m)**

| WIFI<br>Ant.<br>1+2                 | Note                                                                                        | Frequency<br>( MHz ) | Level<br>( dBμV/m ) | Over<br>Limit<br>( dB ) | Limit<br>Line<br>( dBμV/m ) | Read<br>Level<br>( dBμV ) | Antenna<br>Factor<br>( dB/m ) | Path<br>Loss<br>( dB ) | Preamp<br>Factor<br>( dB ) | Ant<br>Pos<br>( cm ) | Table<br>Pos<br>( deg ) | Peak<br>Avg.<br>( P/A ) | Pol.<br>( H/V ) |
|-------------------------------------|---------------------------------------------------------------------------------------------|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-------------------------------|------------------------|----------------------------|----------------------|-------------------------|-------------------------|-----------------|
| 802.11ax<br>HE20<br>Full<br>2462MHz |                                                                                             | 4924                 | 35.66               | -38.34                  | 74                          | 50.17                     | 31.1                          | 12.52                  | 58.13                      | 100                  | 0                       | P                       | H               |
|                                     |                                                                                             | 7386                 | 41.92               | -32.08                  | 74                          | 47.13                     | 36.53                         | 15.66                  | 57.4                       | 100                  | 0                       | P                       | H               |
|                                     |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                                     |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                                     |                                                                                             | 4924                 | 34.77               | -39.23                  | 74                          | 49.28                     | 31.1                          | 12.52                  | 58.13                      | 100                  | 0                       | P                       | V               |
|                                     |                                                                                             | 7386                 | 41.23               | -32.77                  | 74                          | 46.44                     | 36.53                         | 15.66                  | 57.4                       | 100                  | 0                       | P                       | V               |
|                                     |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
|                                     |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
| Remark                              | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         |                 |



## Emission above 1GHz

## 2.4GHz WIFI 802.11ax HE20 Full RU (SHF)

| WIFI<br>Ant.<br>1+2                   | Note                                                                       | Frequency<br>( MHz ) | Level<br>( dBμV/m ) | Over<br>Limit<br>( dB ) | Limit<br>Line<br>( dBμV/m ) | Read<br>Level<br>( dBμV ) | Antenna<br>Factor<br>( dB/m ) | Path<br>Loss<br>( dB ) | Preamp<br>Factor<br>( dB ) | Ant<br>Pos<br>( cm ) | Table<br>Pos<br>( deg ) | Peak<br>Avg.<br>( P/A ) | Pol.<br>( H/V ) |
|---------------------------------------|----------------------------------------------------------------------------|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-------------------------------|------------------------|----------------------------|----------------------|-------------------------|-------------------------|-----------------|
| 2.4GHz<br>802.11ax<br>HE20<br>Full RU |                                                                            | 23691                | 42.07               | -31.93                  | 74                          | 42.39                     | 39.97                         | 22.55                  | 53.3                       | 150                  | 0                       | P                       | H               |
|                                       |                                                                            |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                                       |                                                                            |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                                       |                                                                            |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                                       |                                                                            |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                                       |                                                                            |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                                       |                                                                            |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                                       |                                                                            | 24237                | 41.33               | -32.67                  | 74                          | 41.31                     | 40.26                         | 22.69                  | 53.39                      | 150                  | 0                       | P                       | V               |
|                                       |                                                                            |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
|                                       |                                                                            |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
|                                       |                                                                            |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
|                                       |                                                                            |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
|                                       |                                                                            |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
|                                       |                                                                            |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
| Remark                                | 1. No other spurious found.<br>2. All results are PASS against limit line. |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         |                 |

## Emission below 1GHz

## 2.4GHz WIFI 802.11ax HE20 Full RU (LF)

| WIFI                                      | Note                                                                       | Frequency | Level      | Over   | Limit      | Read   | Antenna  | Path   | Preamp | Ant    | Table   | Peak  | Pol.  |
|-------------------------------------------|----------------------------------------------------------------------------|-----------|------------|--------|------------|--------|----------|--------|--------|--------|---------|-------|-------|
| Ant.                                      |                                                                            |           |            | Limit  | Line       | Level  | Factor   | Loss   | Factor | Pos    | Pos     | Avg.  |       |
| 1+2                                       |                                                                            | ( MHz )   | ( dBμV/m ) | ( dB ) | ( dBμV/m ) | (dBμV) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | (P/A) | (H/V) |
| 2.4GHz<br>802.11ax<br><br>HE20<br>Full RU |                                                                            | 100.81    | 25.22      | -18.28 | 43.5       | 39.85  | 15.92    | 1.7    | 32.25  | 100    | 0       | P     | H     |
|                                           |                                                                            | 152.22    | 31.75      | -11.75 | 43.5       | 44.94  | 16.92    | 2.18   | 32.29  | -      | -       | P     | H     |
|                                           |                                                                            | 212.36    | 28.48      | -15.02 | 43.5       | 43.09  | 15.19    | 2.52   | 32.32  | -      | -       | P     | H     |
|                                           |                                                                            | 264.74    | 23.91      | -22.09 | 46         | 33.37  | 20.04    | 2.85   | 32.35  | -      | -       | P     | H     |
|                                           |                                                                            | 749.74    | 32.1       | -13.9  | 46         | 31.56  | 28.09    | 4.71   | 32.26  | -      | -       | P     | H     |
|                                           |                                                                            | 950.53    | 33.6       | -12.4  | 46         | 28.87  | 30.74    | 5.31   | 31.32  | -      | -       | P     | H     |
|                                           |                                                                            |           |            |        |            |        |          |        |        |        |         |       | H     |
|                                           |                                                                            |           |            |        |            |        |          |        |        |        |         |       | H     |
|                                           |                                                                            |           |            |        |            |        |          |        |        |        |         |       | H     |
|                                           |                                                                            |           |            |        |            |        |          |        |        |        |         |       | H     |
|                                           |                                                                            |           |            |        |            |        |          |        |        |        |         |       | H     |
|                                           |                                                                            |           |            |        |            |        |          |        |        |        |         |       | H     |
|                                           |                                                                            |           |            |        |            |        |          |        |        |        |         |       | H     |
|                                           |                                                                            | 42.61     | 31.7       | -8.3   | 40         | 45.01  | 17.95    | 1.08   | 32.34  | 100    | 0       | P     | V     |
|                                           |                                                                            | 183.26    | 28.42      | -15.08 | 43.5       | 43.59  | 14.78    | 2.36   | 32.31  | -      | -       | P     | V     |
|                                           |                                                                            | 568.35    | 28.16      | -17.84 | 46         | 29.99  | 26.05    | 4.09   | 31.97  | -      | -       | P     | V     |
|                                           |                                                                            | 721.61    | 33.67      | -12.33 | 46         | 34.21  | 27.05    | 4.61   | 32.2   | -      | -       | P     | V     |
|                                           |                                                                            | 827.34    | 31.35      | -14.65 | 46         | 30.3   | 28.35    | 4.95   | 32.25  | -      | -       | P     | V     |
|                                           |                                                                            | 952.47    | 34.05      | -11.95 | 46         | 29.23  | 30.8     | 5.32   | 31.3   | -      | -       | P     | V     |
|                                           |                                                                            |           |            |        |            |        |          |        |        |        |         |       | V     |
|                                           |                                                                            |           |            |        |            |        |          |        |        |        |         | V     |       |
|                                           |                                                                            |           |            |        |            |        |          |        |        |        |         | V     |       |
|                                           |                                                                            |           |            |        |            |        |          |        |        |        |         | V     |       |
|                                           |                                                                            |           |            |        |            |        |          |        |        |        |         | V     |       |
|                                           |                                                                            |           |            |        |            |        |          |        |        |        |         | V     |       |
|                                           |                                                                            |           |            |        |            |        |          |        |        |        |         | V     |       |
| Remark                                    | 1. No other spurious found.<br>2. All results are PASS against limit line. |           |            |        |            |        |          |        |        |        |         |       |       |



**Note symbol**

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

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

| WIFI    | Note | Frequency | Level      | Over   | Limit      | Read     | Antenna  | Path   | Preamp | Ant    | Table   | Peak    | Pol.    |
|---------|------|-----------|------------|--------|------------|----------|----------|--------|--------|--------|---------|---------|---------|
| Ant.    |      |           |            | Limit  | Line       | Level    | Factor   | Loss   | Factor | Pos    | Pos     | Avg.    |         |
| 1+2     |      | ( MHz )   | ( dBμV/m ) | ( dB ) | ( dBμV/m ) | ( dBμV ) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | ( P/A ) | ( H/V ) |
| 802.11b |      | 2390      | 55.45      | -18.55 | 74         | 54.51    | 32.22    | 4.58   | 35.86  | 103    | 308     | P       | H       |
| CH 01   |      |           |            |        |            |          |          |        |        |        |         |         |         |
| 2412MHz |      | 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”.**



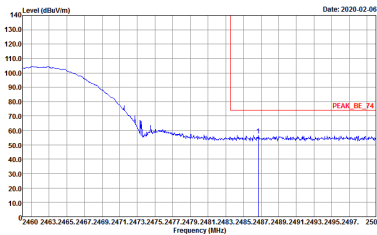
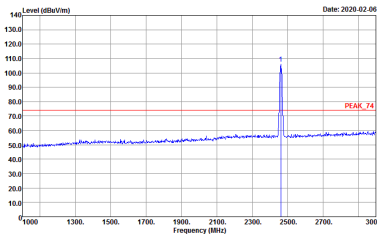
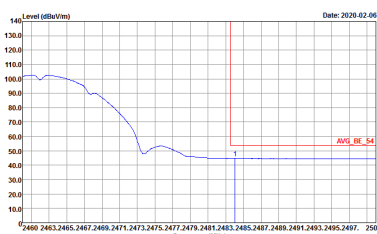
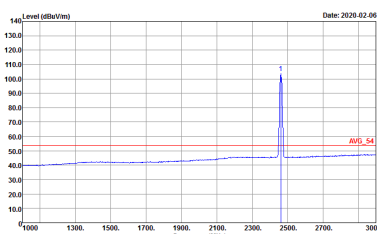
## Appendix C. Radiated Spurious Emission Plots

|                        |                       |                            |         |
|------------------------|-----------------------|----------------------------|---------|
| <b>Test Engineer :</b> | Andy Yang and CR Liro | <b>Temperature :</b>       | 20~25°C |
|                        |                       | <b>Relative Humidity :</b> | 50~60%  |

### Note symbol

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

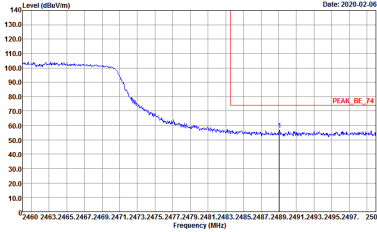
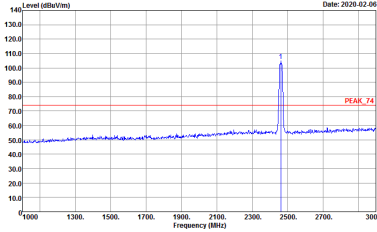
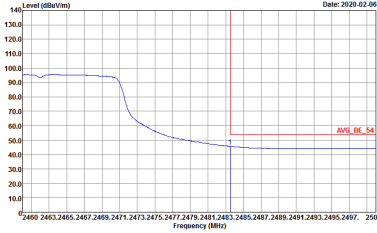
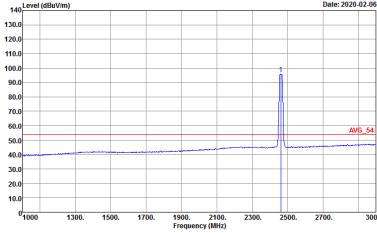
**2.4GHz 2400~2483.5MHz**
**WIFI 802.11b (Band Edge @ 3m)**

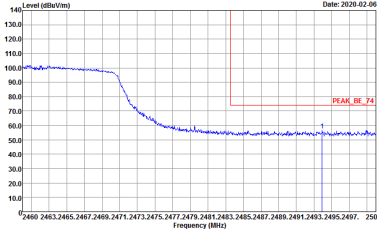
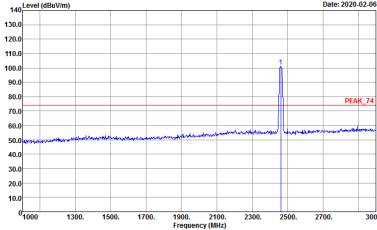
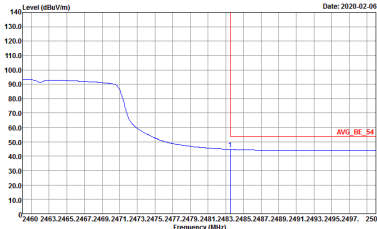
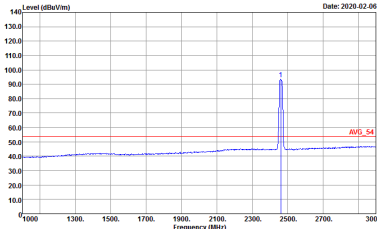
| WIFI        | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                                          |                                                                                                                                                                                                                             |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT         | 802.11b CH11 2462MHz                                                                                                                                                                                                          |                                                                                                                                                                                                                             |
| 1+2         | Horizontal                                                                                                                                                                                                                    | Fundamental                                                                                                                                                                                                                 |
| <b>Peak</b> |  <p>Site : 03CH16-HY<br/>Condition : PEAK_BE_74 3m 91200_1522 HORIZONTAL<br/>Detector : Peak<br/>Project : 901543-01<br/>Setting : 15.5</p>  |  <p>Site : 03CH16-HY<br/>Condition : PEAK_74 3m 91200_1522 HORIZONTAL<br/>Detector : Peak<br/>Project : 901543-01<br/>Setting : 15.5</p>  |
| <b>Avg.</b> |  <p>Site : 03CH16-HY<br/>Condition : AVG_BE_54 3m 91200_1522 HORIZONTAL<br/>Detector : Peak<br/>Project : 901543-01<br/>Setting : 15.5</p> |  <p>Site : 03CH16-HY<br/>Condition : AVG_54 3m 91200_1522 HORIZONTAL<br/>Detector : Peak<br/>Project : 901543-01<br/>Setting : 15.5</p> |



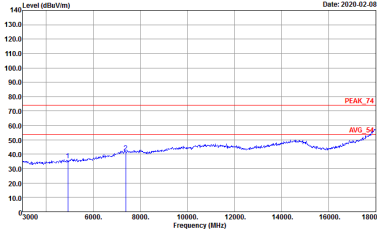
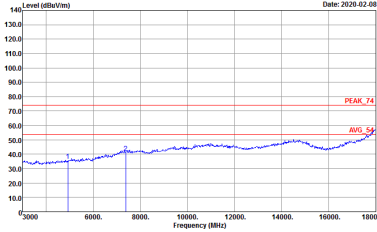
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                  |                                                                                                                                                                                    |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11b CH11 2462MHz                                                                                                                                                                  |                                                                                                                                                                                    |
| 1+2  | Vertical                                                                                                                                                                              | Fundamental                                                                                                                                                                        |
| Peak | <p>Site : 03CH16-HY<br/>Condition : PEAK_BE_74 3m 91200_1522 VERTICAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 901543-01<br/>Setting : 15.5</p> | <p>Site : 03CH16-HY<br/>Condition : PEAK_74 3m 91200_1522 VERTICAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 901543-01<br/>Setting : 15.5</p> |
| Avg. | <p>Site : 03CH16-HY<br/>Condition : AVG_BE_54 3m 91200_1522 VERTICAL<br/>RBW:1000.000KHz VBW:0.010KHz SWT:Auto<br/>Detector : Peak<br/>Project : 901543-01<br/>Setting : 15.5</p>     | <p>Site : 03CH16-HY<br/>Condition : AVG_54 3m 91200_1522 VERTICAL<br/>RBW:1000.000KHz VBW:0.010KHz SWT:Auto<br/>Detector : Peak<br/>Project : 901543-01<br/>Setting : 15.5</p>     |

**2.4GHz 2400~2483.5MHz**
**WIFI 802.11n HT20 (Band Edge @ 3m)**

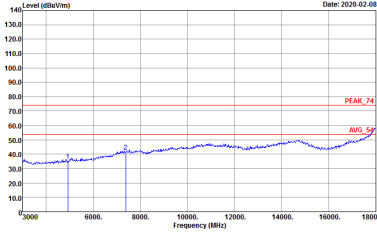
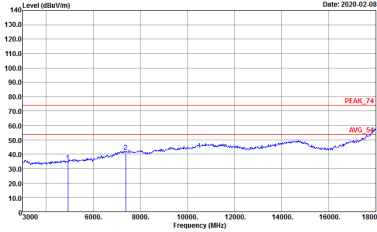
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                         |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11n HT20 CH11 2462MHz                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                         |
| 1+2  | Horizontal                                                                                                                                                                                                                                                                | Fundamental                                                                                                                                                                                                                                                             |
| Peak |  <p>Site : 03CH16-HY<br/>Condition : PEAK_BE_74 3m 91200_1522 HORIZONTAL<br/>RBW:1000.000kHz VBW:3000.000kHz SWT:Auto<br/>Detector : Peak<br/>Project : 901543-01<br/>Setting : 13.5</p> |  <p>Site : 03CH16-HY<br/>Condition : PEAK_74 3m 91200_1522 HORIZONTAL<br/>RBW:1000.000kHz VBW:3000.000kHz SWT:Auto<br/>Detector : Peak<br/>Project : 901543-01<br/>Setting : 13.5</p> |
| Avg. |  <p>Site : 03CH16-HY<br/>Condition : AVG_BE_54 3m 91200_1522 HORIZONTAL<br/>RBW:1000.000kHz VBW:0.010kHz SWT:Auto<br/>Detector : Peak<br/>Project : 901543-01<br/>Setting : 13.5</p>   |  <p>Site : 03CH16-HY<br/>Condition : AVG_54 3m 91200_1522 HORIZONTAL<br/>RBW:1000.000kHz VBW:0.010kHz SWT:Auto<br/>Detector : Peak<br/>Project : 901543-01<br/>Setting : 13.5</p>   |

| WIFI        | 2.4GHz 2400~2483.5MHz Fundamental @ 3m                                                                                                                                                                                      |                                                                                                                                                                                                                           |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT         | 802.11n HT20 CH11 2462MHz                                                                                                                                                                                                   |                                                                                                                                                                                                                           |
| 1+2         | Vertical                                                                                                                                                                                                                    | Fundamental                                                                                                                                                                                                               |
| <b>Peak</b> |  <p>Site : 03CH16-HY<br/>Condition : PEAK_BE_74 3m 91200_1522 VERTICAL<br/>Detector : Peak<br/>Project : 901543-01<br/>Setting : 13.5</p>  |  <p>Site : 03CH16-HY<br/>Condition : PEAK_74 3m 91200_1522 VERTICAL<br/>Detector : Peak<br/>Project : 901543-01<br/>Setting : 13.5</p>  |
|             |  <p>Site : 03CH16-HY<br/>Condition : AVG_BE_54 3m 91200_1522 VERTICAL<br/>Detector : Peak<br/>Project : 901543-01<br/>Setting : 13.5</p> |  <p>Site : 03CH16-HY<br/>Condition : AVG_54 3m 91200_1522 VERTICAL<br/>Detector : Peak<br/>Project : 901543-01<br/>Setting : 13.5</p> |

**2.4GHz 2400~2483.5MHz****WIFI 802.11b (Harmonic @ 3m)**

| WIFI                       | 2.4GHz 2400~2483.5MHz Harmonic @ 3m                                                                                                                                                                                       |                                                                                                                                                                                                                          |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT                        | 802.11b CH11 2462MHz                                                                                                                                                                                                      |                                                                                                                                                                                                                          |
| 1+2                        | Horizontal                                                                                                                                                                                                                | Vertical                                                                                                                                                                                                                 |
| <b>Peak</b><br><b>Avg.</b> |  <p>Site : 03CH16-HY<br/>Condition : PEAK_74 3m 91200_1522 HORIZONTAL<br/>Detector : Peak<br/>Project : 901543-01<br/>Setting : 15.5</p> |  <p>Site : 03CH16-HY<br/>Condition : PEAK_74 3m 91200_1522 VERTICAL<br/>Detector : Peak<br/>Project : 901543-01<br/>Setting : 15.5</p> |
|                            |                                                                                                                                                                                                                           |                                                                                                                                                                                                                          |

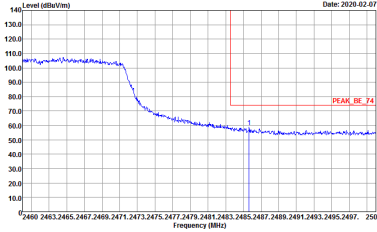
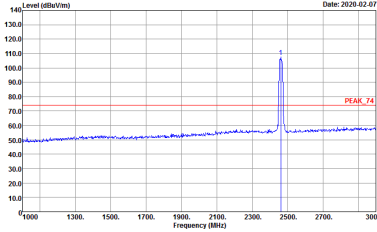
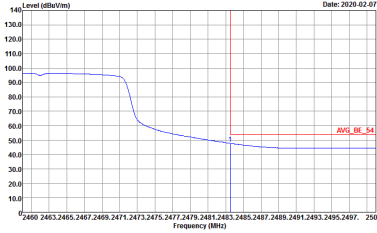
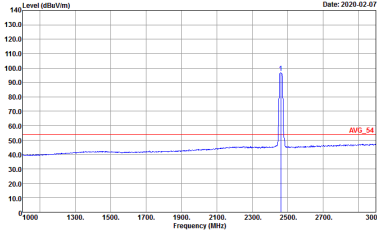
**2.4GHz 2400~2483.5MHz****WIFI 802.11n HT20 (Harmonic @ 3m)**

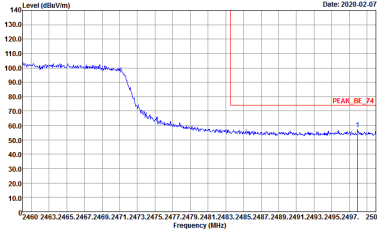
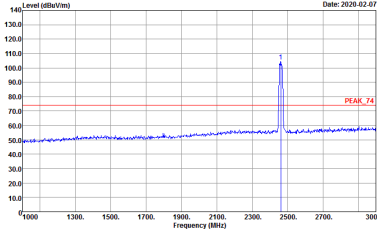
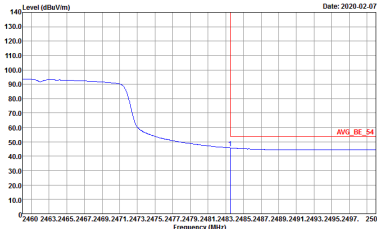
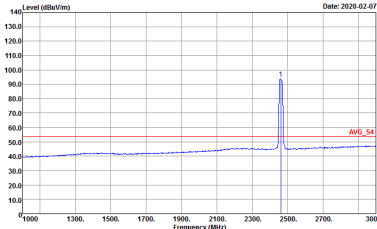
| WIFI                 | 2.4GHz 2400~2483.5MHz Harmonic @ 3m                                                                                                                                                                                       |                                                                                                                                                                                                                          |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT                  | 802.11n HT20 CH11 2462MHz                                                                                                                                                                                                 |                                                                                                                                                                                                                          |
| 1+2                  | Horizontal                                                                                                                                                                                                                | Vertical                                                                                                                                                                                                                 |
| <b>Peak<br/>Avg.</b> |  <p>Site : 03CH16-HY<br/>Condition : PEAK_74 3m 91200_1522 HORIZONTAL<br/>Detector : Peak<br/>Project : 901543-01<br/>Setting : 13.5</p> |  <p>Site : 03CH16-HY<br/>Condition : PEAK_74 3m 91200_1522 VERTICAL<br/>Detector : Peak<br/>Project : 901543-01<br/>Setting : 13.5</p> |
|                      |                                                                                                                                                                                                                           |                                                                                                                                                                                                                          |



## 2.4GHz 2400~2483.5MHz

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

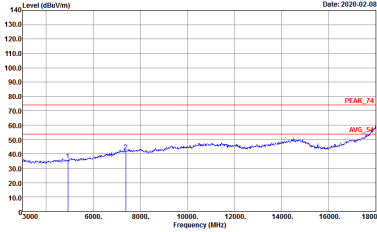
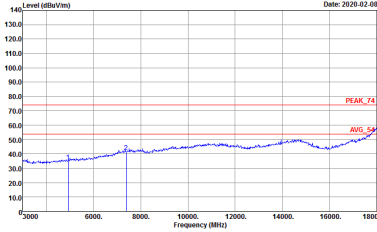
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                       |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11ax HE20 Full RU CH11 2462MHz                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                       |
| 1+2  | Horizontal                                                                                                                                                                                                                                                              | Fundamental                                                                                                                                                                                                                                                           |
| Peak |  <p>Site : 03CH16-HY<br/>Condition : PEAK_BE_74 3m 91200_1522 HORIZONTAL<br/>RBW:1000.000kHz VBW:3000.000kHz SWT:Auto<br/>Detector : Peak<br/>Project : 901543-01<br/>Setting : 14</p> |  <p>Site : 03CH16-HY<br/>Condition : PEAK_74 3m 91200_1522 HORIZONTAL<br/>RBW:1000.000kHz VBW:3000.000kHz SWT:Auto<br/>Detector : Peak<br/>Project : 901543-01<br/>Setting : 14</p> |
| Avg. |  <p>Site : 03CH16-HY<br/>Condition : AVG_BE_54 3m 91200_1522 HORIZONTAL<br/>RBW:1000.000kHz VBW:0.010kHz SWT:Auto<br/>Detector : Peak<br/>Project : 901543-01<br/>Setting : 14</p>   |  <p>Site : 03CH16-HY<br/>Condition : AVG_54 3m 91200_1522 HORIZONTAL<br/>RBW:1000.000kHz VBW:0.010kHz SWT:Auto<br/>Detector : Peak<br/>Project : 901543-01<br/>Setting : 14</p>   |

| WIFI        | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                                      |                                                                                                                                                                                                                         |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT         | 802.11ax HE20 Full RU CH11 2462MHz                                                                                                                                                                                        |                                                                                                                                                                                                                         |
| 1+2         | Vertical                                                                                                                                                                                                                  | Fundamental                                                                                                                                                                                                             |
| <b>Peak</b> |  <p>Site : 03CH16-HY<br/>Condition : PEAK_BE_74 3m 91200_1522 VERTICAL<br/>Detector : Peak<br/>Project : 901543-01<br/>Setting : 14</p>  |  <p>Site : 03CH16-HY<br/>Condition : PEAK_74 3m 91200_1522 VERTICAL<br/>Detector : Peak<br/>Project : 901543-01<br/>Setting : 14</p>  |
|             |  <p>Site : 03CH16-HY<br/>Condition : AVG_BE_54 3m 91200_1522 VERTICAL<br/>Detector : Peak<br/>Project : 901543-01<br/>Setting : 14</p> |  <p>Site : 03CH16-HY<br/>Condition : AVG_54 3m 91200_1522 VERTICAL<br/>Detector : Peak<br/>Project : 901543-01<br/>Setting : 14</p> |

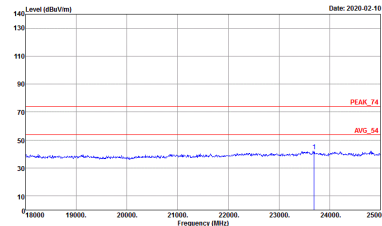
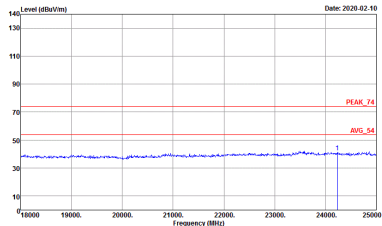


2.4GHz 2400~2483.5MHz

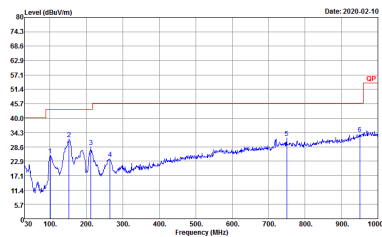
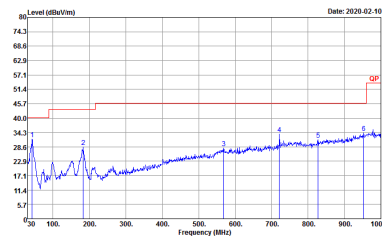
WIFI 802.11ax HE20 Full RU (Harmonic @ 3m)

| WIFI         | 2.4GHz 2400~2483.5MHz Harmonic @ 3m                                                                                                                                                                                               |                                                                                                                                                                                                                                  |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT          | 802.11ax HE20 Full RU CH11 2462MHz                                                                                                                                                                                                |                                                                                                                                                                                                                                  |
| 1+2          | Horizontal                                                                                                                                                                                                                        | Vertical                                                                                                                                                                                                                         |
| Peak<br>Avg. | <div><p>Site : 03CH16-HY<br/>Condition : PEAK_74 3m 91200_1522 HORIZONTAL<br/>Detector : Peak<br/>Project : 901543-01<br/>Setting : 14</p></div> | <div><p>Site : 03CH16-HY<br/>Condition : PEAK_74 3m 91200_1522 VERTICAL<br/>Detector : Peak<br/>Project : 901543-01<br/>Setting : 14</p></div> |

**Emission above 1GHz**  
**2.4GHz WIFI 802.11ax HE20 Full RU (SHF)**

| WIFI          | 2.4GHz 2400~2483.5MHz                                                                                                                                                                                                       |                                                                                                                                                                                                                            |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT           | 802.11ax HE20 Full RU SHF                                                                                                                                                                                                   |                                                                                                                                                                                                                            |
| 1+2           | Horizontal                                                                                                                                                                                                                  | Vertical                                                                                                                                                                                                                   |
| Peak /<br>AVG |  <p>Site : 03CH16-HY<br/> Condition : PEAK_74 3m 91200_1522 HORIZONTAL<br/> Detector : Peak<br/> Project : 901543-01<br/> Setting : 14</p> |  <p>Site : 03CH16-HY<br/> Condition : PEAK_74 3m 91200_1522 VERTICAL<br/> Detector : Peak<br/> Project : 901543-01<br/> Setting : 14</p> |

**Emission below 1GHz**  
**2.4GHz WIFI 802.11ax HE20 Full RU (LF)**

| WIFI         | 2.4GHz 2400~2483.5MHz                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                       |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT          | 802.11ax HE20 Full RU LF                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                       |
| 1+2          | Horizontal                                                                                                                                                                                                                                                                             | Vertical                                                                                                                                                                                                                                                                              |
| QP /<br>Peak |  <p>           Site : 03CH16-HY<br/>           Condition : QP 3m BIL06_47020606 HORIZONTAL<br/>           Detector : Peak<br/>           Project : 901543-01<br/>           Setting : 14         </p> |  <p>           Site : 03CH16-HY<br/>           Condition : QP 3m BIL06_47020606 VERTICAL<br/>           Detector : Peak<br/>           Project : 901543-01<br/>           Setting : 14         </p> |



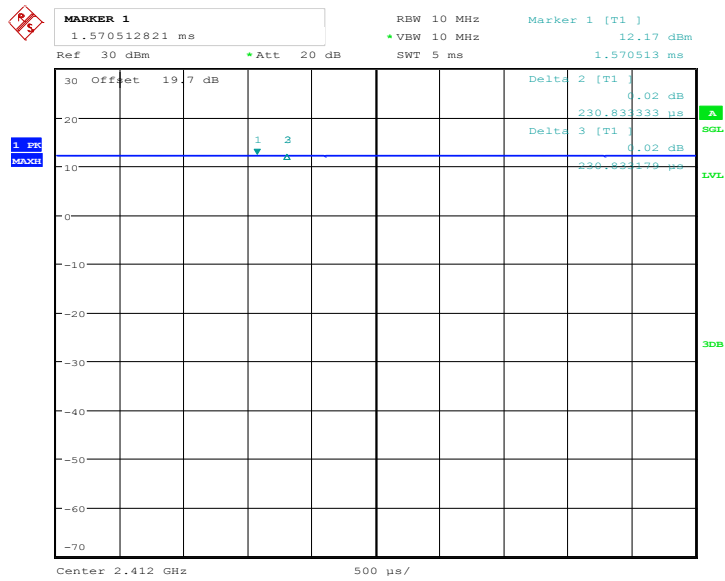
## Appendix D. Duty Cycle Plots

| Antenna | Band                     | Duty Cycle(%) | T(us) | 1/T(kHz) | VBW Setting | Duty Factor(dB) |
|---------|--------------------------|---------------|-------|----------|-------------|-----------------|
| 1+2     | 802.11b for Ant1         | 100.00        | -     | -        | 10Hz        | 0.00            |
| 1+2     | 802.11b for Ant2         | 100.00        | -     | -        | 10Hz        | 0.00            |
| 1+2     | 802.11n HT20 for Ant. 1  | 99.09         | -     | -        | 10Hz        | 0.04            |
| 1+2     | 802.11n HT20 for Ant. 2  | 99.09         | -     | -        | 10Hz        | 0.04            |
| 1+2     | 802.11ax HE20 for Ant. 1 | 99.25         | -     | -        | 10Hz        | 0.03            |
| 1+2     | 802.11ax HE20 for Ant. 2 | 98.91         | -     | -        | 10Hz        | 0.05            |



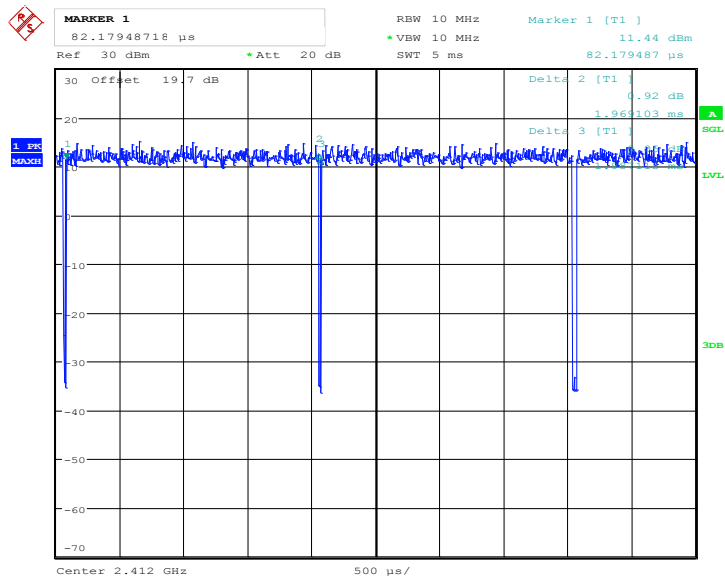
MIMO &lt;Ant. 1&gt;

802.11b



Date: 1.JAN.2003 05:13:19

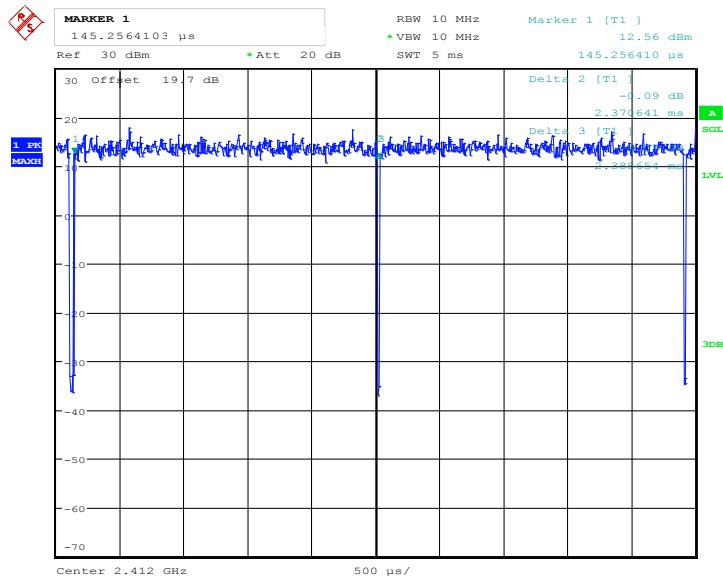
802.11n HT20



Date: 1.JAN.2003 05:23:45



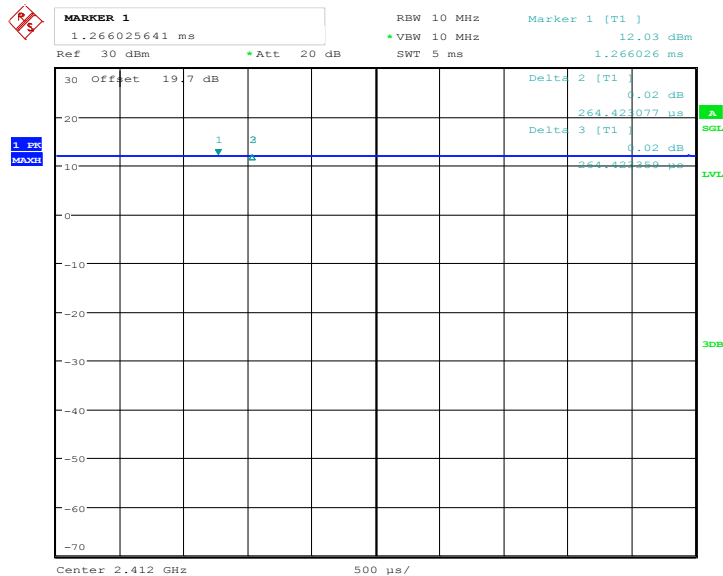
## 802.11ax HE20



Date: 1.JAN.2003 02:37:39

## MIMO &lt;Ant. 2&gt;

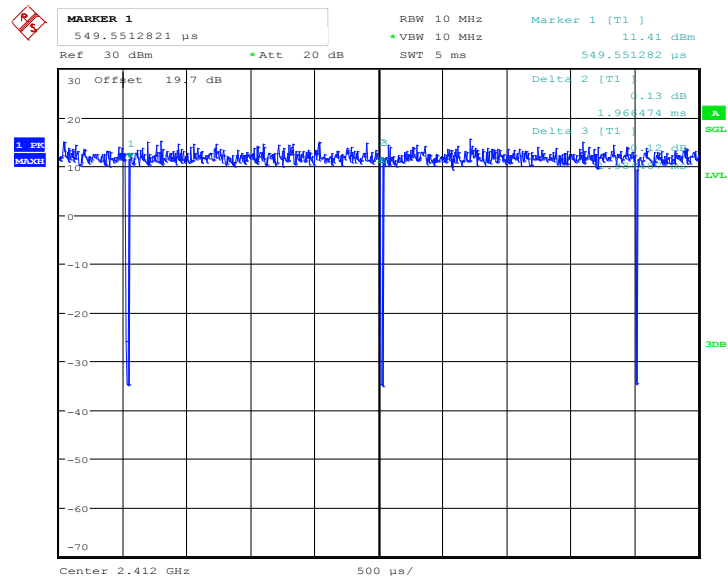
## 802.11b



Date: 1.JAN.2003 05:14:21

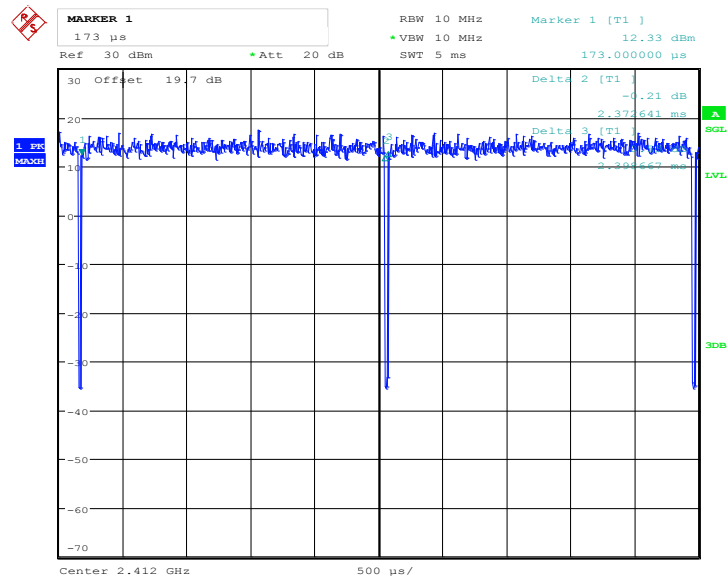


802.11n HT20



Date: 1.JAN.2003 05:24:27

802.11ax HE20



Date: 1.JAN.2003 02:39:19

—THE END—