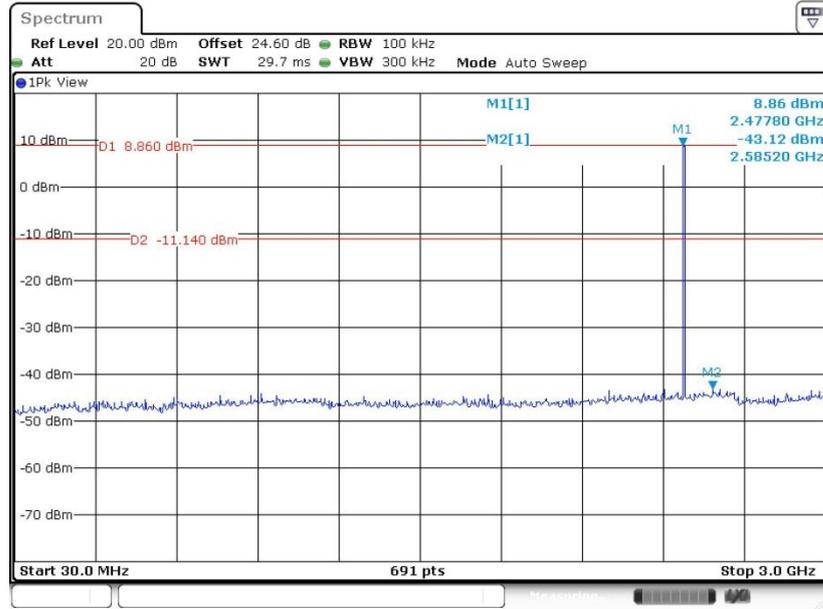


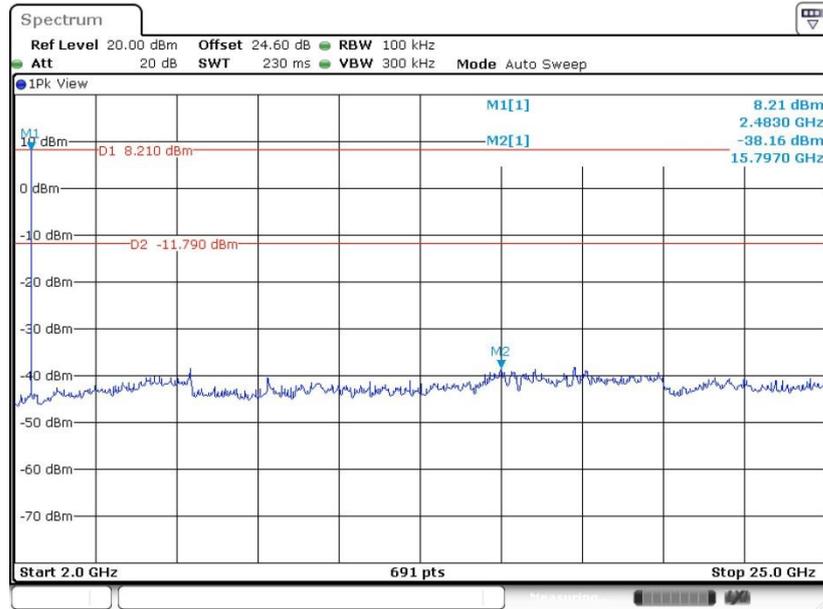


CSE Plot on Ch 78 between 30MHz ~ 3 GHz



Date: 12.DEC.2019 13:36:18

CSE Plot on Ch 78 between 2 GHz ~ 25 GHz



Date: 12.DEC.2019 13:36:47



### 3.8 Radiated Band Edges and Spurious Emission Measurement

#### 3.8.1 Limit of Radiated Band Edges and Spurious Emission

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. In addition, radiated emissions which fall in the restricted bands must also comply with the limits as below.

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

#### 3.8.2 Measuring Instruments

See list of measuring equipment of this test report.



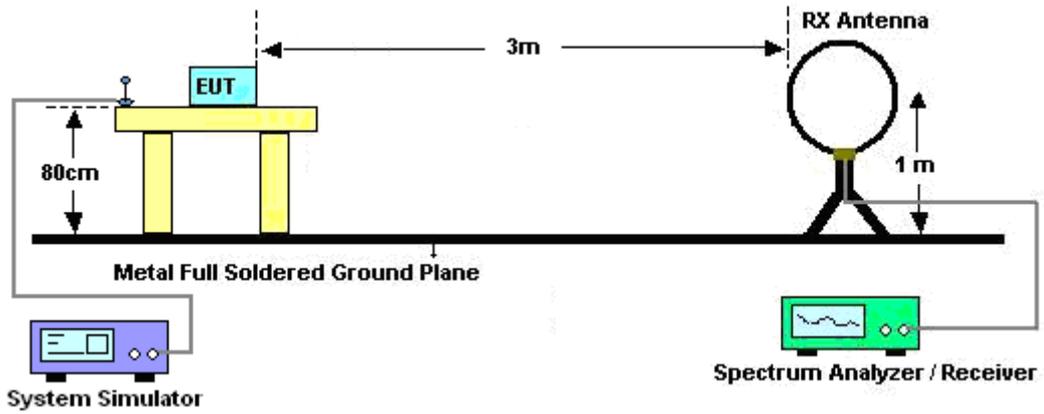
### 3.8.3 Test Procedures

1. 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.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
4. Set to the maximum power setting and enable the EUT transmit continuously.
5. Use the following spectrum analyzer settings:
  - (1) Span shall wide enough to fully capture the emission being measured;
  - (2) Set RBW=100 kHz for  $f < 1 \text{ GHz}$ , RBW=1MHz for  $f > 1 \text{ GHz}$ ; VBW  $\geq$  RBW; Sweep = auto; Detector function = peak; Trace = max hold for peak
  - (3) For average measurement: use duty cycle correction factor method per 15.35(c).  
Duty cycle = On time/100 milliseconds  
On time =  $N_1 * L_1 + N_2 * L_2 + \dots + N_{n-1} * L_{n-1} + N_n * L_n$   
Where  $N_1$  is number of type 1 pulses,  $L_1$  is length of type 1 pulses, etc.  
Average Emission Level = Peak Emission Level +  $20 * \log(\text{Duty cycle})$
6. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
7. 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.
8. 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.

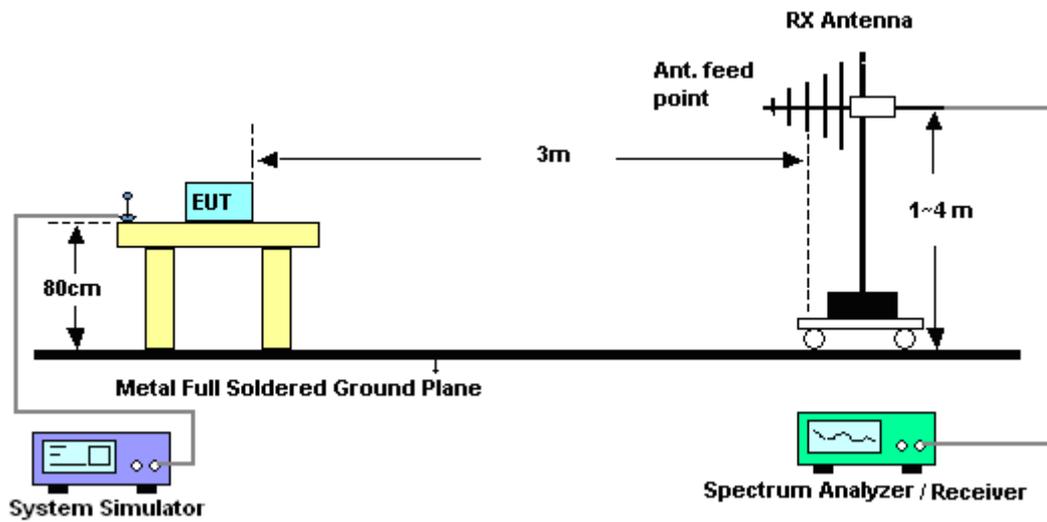
Note: The average levels were calculated from the peak level corrected with duty cycle correction factor (-24.76dB) derived from  $20 \log(\text{dwell time}/100\text{ms})$ . This correction is only for signals that hop with the fundamental signal, such as band-edge and harmonic. Other spurious signals that are independent of the hopping signal would not use this correction.

### 3.8.4 Test Setup

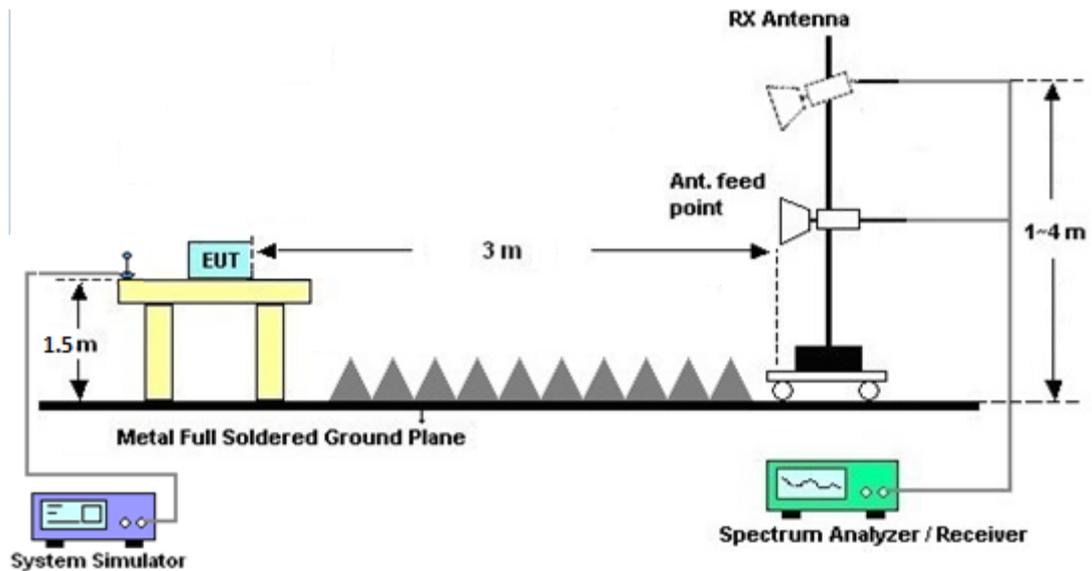
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

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.

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

Please refer to Appendix C and D.

### 3.8.7 Duty Cycle

Please refer to Appendix E.

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

Please refer to Appendix C and D.



### 3.9 AC Conducted Emission Measurement

#### 3.9.1 Limit of AC Conducted Emission

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

| Frequency of emission (MHz) | Conducted limit (dBµV) |           |
|-----------------------------|------------------------|-----------|
|                             | Quasi-peak             | Average   |
| 0.15-0.5                    | 66 to 56*              | 56 to 46* |
| 0.5-5                       | 56                     | 46        |
| 5-30                        | 60                     | 50        |

\*Decreases with the logarithm of the frequency.

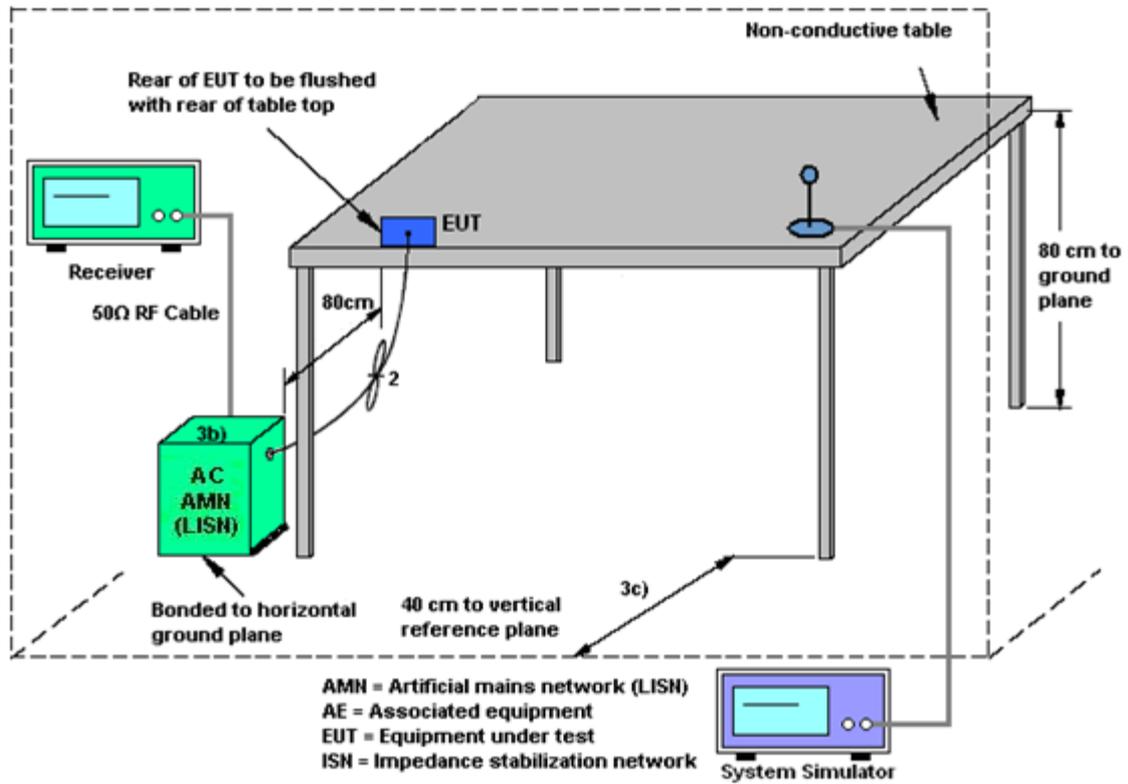
#### 3.9.2 Measuring Instruments

See list of measuring equipment of this test report.

#### 3.9.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

### 3.9.4 Test Setup



### 3.9.5 Test Result of AC Conducted Emission

Please refer to Appendix B.



## **3.10 Antenna Requirements**

### **3.10.1 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.

### **3.10.2 Antenna Anti-Replacement Construction**

An embedded-in antenna design is used.

### **3.10.3 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                   |
|----------------------|--------------------|-------------------------------------|---------------------|----------------------------------|------------------|---------------------------------|---------------|--------------------------|
| Preamplifier         | EMCE               | EMC184045<br>B                      | 980192              | 18GHz ~ 40GHz                    | Aug. 01, 2019    | Jan. 04, 2020~<br>Jan. 07, 2020 | Jul. 31, 2020 | Radiation<br>(03CH11-HY) |
| Amplifier            | SONOMA             | 310N                                | 187312              | 9kHz~1GHz                        | Dec. 03, 2019    | Jan. 04, 2020~<br>Jan. 07, 2020 | Dec. 02, 2020 | Radiation<br>(03CH11-HY) |
| Bilog Antenna        | TESEQ              | CBL 6111D<br>& N-6-06               | 35414 &<br>AT-N0602 | 30MHz~1GHz                       | Oct. 12, 2019    | Jan. 04, 2020~<br>Jan. 07, 2020 | Oct. 11, 2020 | Radiation<br>(03CH11-HY) |
| Horn Antenna         | SCHWARZBE<br>CK    | BBHA 9120<br>D                      | 9120D-1326          | 1GHz ~ 18GHz                     | Nov. 04, 2019    | Jan. 04, 2020~<br>Jan. 07, 2020 | Nov. 03, 2020 | Radiation<br>(03CH11-HY) |
| Loop Antenna         | Rohde &<br>Schwarz | HFH2-Z2                             | 100315              | 9 kHz~30 MHz                     | Jan. 11,<br>2019 | Jan. 04, 2020~<br>Jan. 07, 2020 | Jan. 10, 2020 | Radiation<br>(03CH11-HY) |
| Preamplifier         | Keysight           | 83017A                              | MY5327008<br>0      | 1GHz~26.5GHz                     | Nov. 13, 2019    | Jan. 04, 2020~<br>Jan. 07, 2020 | Nov. 12, 2020 | Radiation<br>(03CH11-HY) |
| Spectrum Analyzer    | Keysight           | N9010A                              | MY5420048<br>6      | 10Hz ~ 44GHz                     | Oct. 28, 2019    | Jan. 04, 2020~<br>Jan. 07, 2020 | Oct. 27, 2020 | Radiation<br>(03CH11-HY) |
| Controller           | EMEC               | EM 1000                             | N/A                 | Control Turn<br>table & Ant Mast | N/A              | Jan. 04, 2020~<br>Jan. 07, 2020 | N/A           | Radiation<br>(03CH11-HY) |
| Antenna Mast         | EMEC               | AM-BS-4500<br>-B                    | N/A                 | 1~4m                             | N/A              | Jan. 04, 2020~<br>Jan. 07, 2020 | N/A           | Radiation<br>(03CH11-HY) |
| Turn Table           | EMEC               | TT 2000                             | N/A                 | 0~360 Degree                     | N/A              | Jan. 04, 2020~<br>Jan. 07, 2020 | N/A           | Radiation<br>(03CH11-HY) |
| Preamplifier         | Jet-Power          | JAP0010180<br>0-30-10P              | 1601185500<br>04    | 1GHz~18GHz                       | Apr. 16, 2019    | Jan. 04, 2020~<br>Jan. 07, 2020 | Apr. 15, 2020 | Radiation<br>(03CH11-HY) |
| SHF-EHF Horn Antenna | SCHWARZBE<br>CK    | BBHA 9170                           | BBHA91705<br>76     | 18GHz- 40GHz                     | May 14, 2019     | Jan. 04, 2020~<br>Jan. 07, 2020 | May 13, 2020  | Radiation<br>(03CH11-HY) |
| EMI Test Receiver    | Keysight           | N9038A(MX<br>E)                     | MY5542017<br>0      | 20MHz~8.4GHz                     | Mar. 08, 2019    | Jan. 04, 2020~<br>Jan. 07, 2020 | Mar. 07, 2020 | Radiation<br>(03CH11-HY) |
| Software             | Audix              | E3<br>6.2009-8-24                   | RK-001053           | N/A                              | N/A              | Jan. 04, 2020~<br>Jan. 07, 2020 | N/A           | Radiation<br>(03CH11-HY) |
| RF Cable             | HUBER +<br>SUHNER  | SUCOFLEX<br>104                     | MY9837/4P<br>E      | 9kHz-30MHz                       | Mar. 13, 2019    | Jan. 04, 2020~<br>Jan. 07, 2020 | Mar. 12, 2020 | Radiation<br>(03CH11-HY) |
| RF Cable             | HUBER +<br>SUHNER  | SUCOFLEX<br>102                     | MY2859/2            | 30MHz-40GHz                      | Mar. 13, 2019    | Jan. 04, 2020~<br>Jan. 07, 2020 | Mar. 12, 2020 | Radiation<br>(03CH11-HY) |
| RF Cable             | HUBER +<br>SUHNER  | SUCOFLEX<br>104                     | MY9837/4P<br>E      | 30M-18G                          | Mar. 13, 2019    | Jan. 04, 2020~<br>Jan. 07, 2020 | Mar. 12, 2020 | Radiation<br>(03CH11-HY) |
| RF Cable             | HUBER +<br>SUHNER  | SUCOFLEX<br>102                     | MY4274/2            | 30MHz-40GHz                      | Mar. 13, 2019    | Jan. 04, 2020~<br>Jan. 07, 2020 | Mar. 12, 2020 | Radiation<br>(03CH11-HY) |
| Filter               | Wainwright         | WLK4-1000-<br>1530-8000-4<br>0SS    | SN11                | 1.53G Low Pass                   | Sep. 15, 2019    | Jan. 04, 2020~<br>Jan. 07, 2020 | Sep. 14, 2020 | Radiation<br>(03CH11-HY) |
| Filter               | Wainwright         | WHKX12-27<br>00-3000-180<br>00-60SS | SN3                 | 3GHz High Pass<br>Filter         | Sep. 15, 2019    | Jan. 04, 2020~<br>Jan. 07, 2020 | Sep. 14, 2020 | Radiation<br>(03CH11-HY) |
| Hygrometer           | TECPEL             | DTN-303B                            | TP140325            | N/A                              | Nov. 07, 2019    | Jan. 04, 2020~<br>Jan. 07, 2020 | Nov. 06, 2020 | Radiation<br>(03CH11-HY) |



| Instrument               | Manufacturer      | Model No.       | Serial No.     | Characteristics | Calibration Date | Test Date                       | Due Date      | Remark                  |
|--------------------------|-------------------|-----------------|----------------|-----------------|------------------|---------------------------------|---------------|-------------------------|
| Hygrometer               | Testo             | 608-H2          | 41410069       | N/A             | Jun. 17, 2019    | Dec. 06, 2019~<br>Dec. 13, 2019 | Jun. 16, 2020 | Conducted<br>(TH05-HY)  |
| Power Meter              | Agilent           | E4416A          | GB4129234<br>4 | N/A             | Dec. 27, 2018    | Dec. 06, 2019~<br>Dec. 13, 2019 | Dec. 26, 2019 | Conducted<br>(TH05-HY)  |
| Power Sensor             | Agilent           | E9327A          | US4044154<br>8 | 50MHz~18GHz     | Dec. 27, 2018    | Dec. 06, 2019~<br>Dec. 13, 2019 | Dec. 26, 2019 | Conducted<br>(TH05-HY)  |
| Signal Analyzer          | Rohde & Schwarz   | FSV40           | 101566         | 10Hz~40GHz      | Jul. 15, 2019    | Dec. 06, 2019~<br>Dec. 13, 2019 | Jul. 14, 2020 | Conducted<br>(TH05-HY)  |
| Switch Box &<br>RF Cable | Burgeon           | ETF-058         | EC1208382      | N/A             | Mar. 27, 2019    | Dec. 06, 2019~<br>Dec. 13, 2019 | Mar. 26, 2020 | Conducted<br>(TH05-HY)  |
| AC Power<br>Source       | ChainTek          | APC-1000W       | N/A            | N/A             | N/A              | Dec. 31, 2019                   | N/A           | Conduction<br>(CO05-HY) |
| EMI Test<br>Receiver     | Rohde & Schwarz   | ESR3            | 102388         | 9kHz~3.6GHz     | Nov. 15, 2019    | Dec. 31, 2019                   | Nov. 14, 2020 | Conduction<br>(CO05-HY) |
| Hygrometer               | Testo             | 608-H1          | 34913912       | N/A             | Mar. 19, 2019    | Dec. 31, 2019                   | Mar. 18, 2020 | Conduction<br>(CO05-HY) |
| LISN                     | Rohde & Schwarz   | ENV216          | 100080         | 9kHz~30MHz      | Nov. 20, 2019    | Dec. 31, 2019                   | Nov. 19, 2020 | Conduction<br>(CO05-HY) |
| Software                 | Rohde & Schwarz   | EMC32<br>V10.30 | N/A            | N/A             | N/A              | Dec. 31, 2019                   | N/A           | Conduction<br>(CO05-HY) |
| LF Cable                 | HUBER +<br>SUHNER | RG-214/U        | LF01           | N/A             | Jan. 03, 2019    | Dec. 31, 2019                   | Jan. 02, 2020 | Conduction<br>(CO05-HY) |
| Pulse Limiter            | Rohde & Schwarz   | ESH3-Z2         | 100851         | N/A             | Jan. 03, 2019    | Dec. 31, 2019                   | Jan. 02, 2020 | Conduction<br>(CO05-HY) |



## 5 Uncertainty of Evaluation

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

|   |      |
|---|------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 2.00 |
|---|------|

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

|   |      |
|---|------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 5.20 |
|---|------|

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

|   |      |
|---|------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 5.20 |
|---|------|

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

|   |      |
|---|------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 3.12 |
|---|------|

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

|                |                      |                    |       |    |
|----------------|----------------------|--------------------|-------|----|
| Test Engineer: | Derek Hsu            | Temperature:       | 21~25 | °C |
| Test Date:     | 2019/12/6-2019/12/13 | Relative Humidity: | 51~54 | %  |

| <b>TEST RESULTS DATA</b>  |           |     |     |             |               |                     |  |  |           |
|---|-----------|-----|-----|-------------|---------------|---------------------|--|--|-----------|
| <b>20dB and 99% Occupied Bandwidth and Hopping Channel Separation</b> |           |     |     |             |               |                     |  |  |           |
| Mod.  | Data Rate | NTX | CH. | Freq. (MHz) | 20db BW (MHz) | 99% Bandwidth (MHz) | Hopping Channel Separation Measurement (MHz) | Hopping Channel Separation Measurement Limit (MHz) | Pass/Fail |
| DH  | 1Mbps     | 1   | 0   | 2402        | 0.918         | 0.845               | 0.999  | 0.6117   | Pass      |
| DH  | 1Mbps     | 1   | 39  | 2441        | 0.918         | 0.842               | 0.999  | 0.6117   | Pass      |
| DH  | 1Mbps     | 1   | 78  | 2480        | 0.918         | 0.845               | 1.003  | 0.6117   | Pass      |
| 2DH   | 2Mbps     | 1   | 0   | 2402        | 1.272         | 1.166               | 1.142  | 0.8481   | Pass      |
| 2DH   | 2Mbps     | 1   | 39  | 2441        | 1.272         | 1.164               | 0.968  | 0.8481   | Pass      |
| 2DH   | 2Mbps     | 1   | 78  | 2480        | 1.276         | 1.166               | 0.942  | 0.8509   | Pass      |
| 3DH   | 3Mbps     | 1   | 0   | 2402        | 1.233         | 1.155               | 1.142  | 0.8220   | Pass      |
| 3DH   | 3Mbps     | 1   | 39  | 2441        | 1.233         | 1.146               | 1.025  | 0.8220   | Pass      |
| 3DH   | 3Mbps     | 1   | 78  | 2480        | 1.229         | 1.155               | 1.107  | 0.8191   | Pass      |

| <b>TEST RESULTS DATA</b> |                             |                                |                              |                  |              |           |
|--------------------------|-----------------------------|--------------------------------|------------------------------|------------------|--------------|-----------|
| <b>Dwell Time</b>        |                             |                                |                              |                  |              |           |
| Mod.                     | Hopping Channel Number Rate | Hops Over Occupancy Time(hops) | Package Transfer Time (msec) | Dwell Time (sec) | Limits (sec) | Pass/Fail |
| Nomal                    | 79                          | 106.67                         | 2.90                         | 0.31             | 0.4          | Pass      |
| AFH                      | 20                          | 53.33                          | 2.90                         | 0.15             | 0.4          | Pass      |

| <b>TEST RESULTS DATA</b> |     |     |                  |                   |             |
|--------------------------|-----|-----|------------------|-------------------|-------------|
| <b>Peak Power Table</b>  |     |     |                  |                   |             |
| DH                       | CH. | NTX | Peak Power (dBm) | Power Limit (dBm) | Test Result |
| DH1                      | 0   | 1   | 12.50            | 30.00             | Pass        |
|                          | 39  | 1   | 13.02            | 30.00             | Pass        |
|                          | 78  | 1   | 12.00            | 30.00             | Pass        |
| 2DH1                     | 0   | 1   | 11.99            | 20.97             | Pass        |
|                          | 39  | 1   | 12.41            | 20.97             | Pass        |
|                          | 78  | 1   | 11.41            | 20.97             | Pass        |
| 3DH1                     | 0   | 1   | 12.15            | 20.97             | Pass        |
|                          | 39  | 1   | 12.76            | 20.97             | Pass        |
|                          | 78  | 1   | 11.70            | 20.97             | Pass        |

| <b>TEST RESULTS DATA</b>                    |     |     |                     |                  |
|---|-----|-----|---------------------|------------------|
| <b>Average Power Table (Reporting Only)</b> |     |     |                     |                  |
| DH  | CH. | NTX | Average Power (dBm) | Duty Factor (dB) |
| DH1   | 0   | 1   | 12.33               | 5.18             |
|   | 39  | 1   | 12.90               | 5.18             |
|   | 78  | 1   | 11.82               | 5.18             |
| 2DH1  | 0   | 1   | 10.26               | 5.12             |
|   | 39  | 1   | 10.63               | 5.12             |
|   | 78  | 1   | 9.51                | 5.12             |
| 3DH1  | 0   | 1   | 10.27               | 5.08             |
|   | 39  | 1   | 10.64               | 5.08             |
|   | 78  | 1   | 9.53                | 5.08             |

| <b>TEST RESULTS DATA</b>           |                                      |                  |           |
|------------------------------------|--------------------------------------|------------------|-----------|
| <b>Number of Hopping Frequency</b> |                                      |                  |           |
| Number of Hopping (Channel)        | Adaptive Frequency Hopping (Channel) | Limits (Channel) | Pass/Fail |
| 79                                 | 20                                   | > 15             | Pass      |



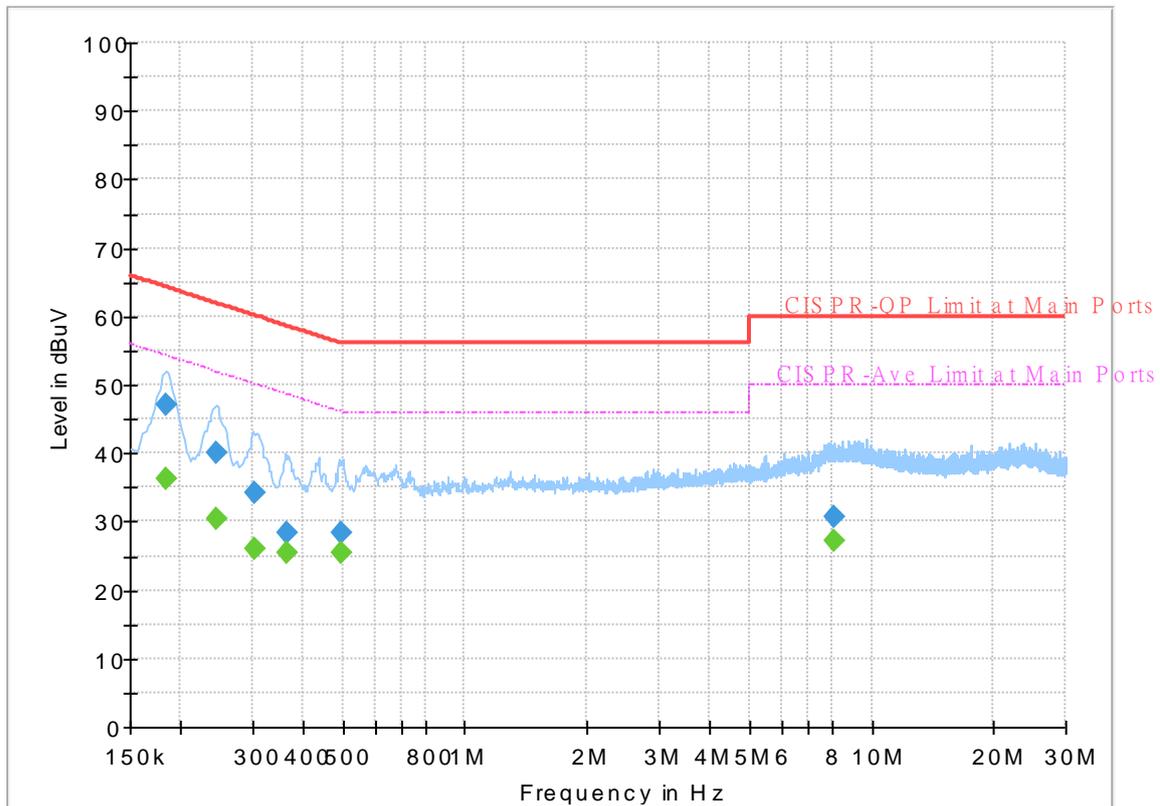
## Appendix B. AC Conducted Emission Test Results

|                 |              |                     |         |
|-----------------|--------------|---------------------|---------|
| Test Engineer : | Howard Huang | Temperature :       | 22~25°C |
|                 |              | Relative Humidity : | 45~52%  |

## EUT Information

Report NO : 901524-02  
 Test Mode : Mode 1  
 Test Voltage : 120Vac/60Hz  
 Phase : Line

Full Spectrum



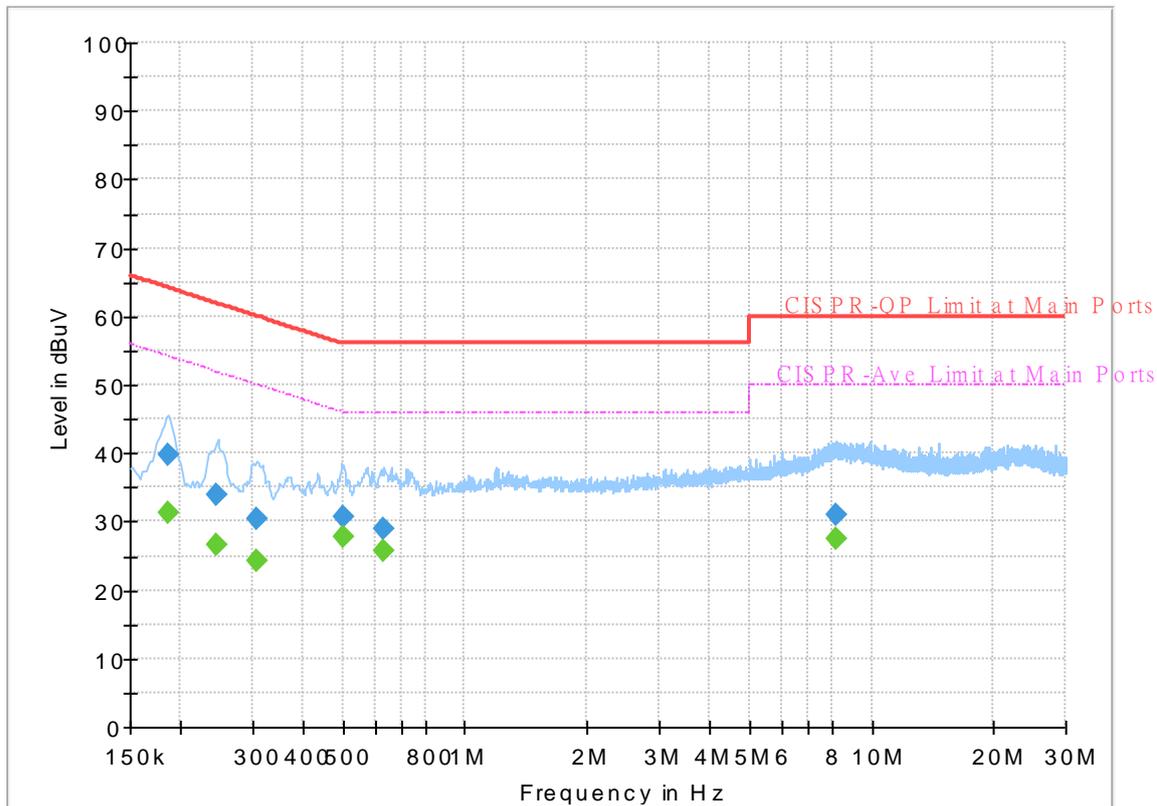
## Final Result

| Frequency (MHz) | QuasiPeak (dBuV) | CAverage (dBuV) | Limit (dBuV) | Margin (dB) | Line | Filter | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|------|--------|------------|
| 0.184560        | ---              | 36.39           | 54.28        | 17.89       | L1   | OFF    | 19.5       |
| 0.184560        | 47.21            | ---             | 64.28        | 17.07       | L1   | OFF    | 19.5       |
| 0.243960        | ---              | 30.42           | 51.96        | 21.54       | L1   | OFF    | 19.5       |
| 0.243960        | 40.03            | ---             | 61.96        | 21.93       | L1   | OFF    | 19.5       |
| 0.305250        | ---              | 25.89           | 50.10        | 24.21       | L1   | OFF    | 19.5       |
| 0.305250        | 34.07            | ---             | 60.10        | 26.03       | L1   | OFF    | 19.5       |
| 0.363930        | ---              | 25.33           | 48.64        | 23.31       | L1   | OFF    | 19.5       |
| 0.363930        | 28.46            | ---             | 58.64        | 30.18       | L1   | OFF    | 19.5       |
| 0.494250        | ---              | 25.55           | 46.10        | 20.55       | L1   | OFF    | 19.5       |
| 0.494250        | 28.50            | ---             | 56.10        | 27.60       | L1   | OFF    | 19.5       |
| 8.066580        | ---              | 27.28           | 50.00        | 22.72       | L1   | OFF    | 19.8       |
| 8.066580        | 30.78            | ---             | 60.00        | 29.22       | L1   | OFF    | 19.8       |

# EUT Information

Report NO : 901524-02  
 Test Mode : Mode 1  
 Test Voltage : 120Vac/60Hz  
 Phase : Neutral

Full Spectrum



## Final\_Result

| Frequency (MHz) | QuasiPeak (dBuV) | CAverage (dBuV) | Limit (dBuV) | Margin (dB) | Line | Filter | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|------|--------|------------|
| 0.185640        | ---              | 31.24           | 54.23        | 22.99       | N    | OFF    | 19.5       |
| 0.185640        | 39.86            | ---             | 64.23        | 24.37       | N    | OFF    | 19.5       |
| 0.244770        | ---              | 26.73           | 51.93        | 25.20       | N    | OFF    | 19.5       |
| 0.244770        | 33.94            | ---             | 61.93        | 27.99       | N    | OFF    | 19.5       |
| 0.307590        | ---              | 24.33           | 50.04        | 25.71       | N    | OFF    | 19.5       |
| 0.307590        | 30.32            | ---             | 60.04        | 29.72       | N    | OFF    | 19.5       |
| 0.501180        | ---              | 27.66           | 46.00        | 18.34       | N    | OFF    | 19.6       |
| 0.501180        | 30.68            | ---             | 56.00        | 25.32       | N    | OFF    | 19.6       |
| 0.627630        | ---              | 25.82           | 46.00        | 20.18       | N    | OFF    | 19.6       |
| 0.627630        | 28.99            | ---             | 56.00        | 27.01       | N    | OFF    | 19.6       |
| 8.209500        | ---              | 27.51           | 50.00        | 22.49       | N    | OFF    | 19.9       |
| 8.209500        | 31.08            | ---             | 60.00        | 28.92       | N    | OFF    | 19.9       |



### Appendix C. Radiated Spurious Emission

|                 |                                     |                     |             |
|-----------------|-------------------------------------|---------------------|-------------|
| Test Engineer : | Cookie Ku, Fu Chen, and Troye Hsieh | Temperature :       | 20.1~26.3°C |
|                 |                                     | Relative Humidity : | 46.3~68.9%  |

<1Mbps>

2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

| BT                     | Note | Frequency | Level      | Over   | Limit | Read     | Antenna  | Path   | Preamp | Ant    | Table   | Peak    | Pol.    |
|------------------------|------|-----------|------------|--------|-------|----------|----------|--------|--------|--------|---------|---------|---------|
|                        |      | ( MHz )   | ( dBμV/m ) | ( dB ) | Limit | Level    | Factor   | Loss   | Factor | Pos    | Pos     | Avg.    |         |
|                        |      |           |            |        | Line  | ( dBμV ) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | ( P/A ) | ( H/V ) |
| BT<br>CH00<br>2402MHz  |      | 2340.45   | 43.94      | -30.06 | 74    | 42.92    | 27.62    | 6.65   | 33.25  | 360    | 24      | P       | H       |
|                        |      | 2340.45   | 19.18      | -34.82 | 54    | -        | -        | -      | -      | -      | -       | A       | H       |
|                        | *    | 2402      | 107.76     | -      | -     | 106.77   | 27.5     | 6.72   | 33.23  | 360    | 24      | P       | H       |
|                        | *    | 2402      | 83         | -      | -     | -        | -        | -      | -      | -      | -       | A       | H       |
|                        |      | 2376.045  | 43.55      | -30.45 | 74    | 42.55    | 27.55    | 6.69   | 33.24  | 290    | 259     | P       | V       |
|                        |      | 2376.045  | 18.79      | -35.21 | 54    | -        | -        | -      | -      | -      | -       | A       | V       |
|                        | *    | 2402      | 108.59     | -      | -     | 107.6    | 27.5     | 6.72   | 33.23  | 290    | 259     | P       | V       |
|                        | *    | 2402      | 83.83      | -      | -     | -        | -        | -      | -      | -      | -       | A       | V       |
| BT<br>CH 39<br>2441MHz |      | 2336.74   | 43.15      | -30.85 | 74    | 42.12    | 27.63    | 6.65   | 33.25  | 355    | 22      | P       | H       |
|                        |      | 2336.74   | 18.39      | -35.61 | 54    | -        | -        | -      | -      | -      | -       | A       | H       |
|                        | *    | 2441      | 107.68     | -      | -     | 106.72   | 27.42    | 6.76   | 33.22  | 355    | 22      | P       | H       |
|                        | *    | 2441      | 82.92      | -      | -     | -        | -        | -      | -      | -      | -       | A       | H       |
|                        |      | 2490.2    | 43.61      | -30.39 | 74    | 42.77    | 27.24    | 6.81   | 33.21  | 355    | 22      | P       | H       |
|                        |      | 2490.2    | 18.85      | -35.15 | 54    | -        | -        | -      | -      | -      | -       | A       | H       |
|                        |      | 2329.74   | 44.69      | -29.31 | 74    | 43.66    | 27.64    | 6.64   | 33.25  | 106    | 60      | P       | V       |
|                        |      | 2329.74   | 19.93      | -34.07 | 54    | -        | -        | -      | -      | -      | -       | A       | V       |
|                        | *    | 2441      | 108.36     | -      | -     | 107.4    | 27.42    | 6.76   | 33.22  | 106    | 60      | P       | V       |
|                        | *    | 2441      | 83.6       | -      | -     | -        | -        | -      | -      | -      | -       | A       | V       |
|                        |      | 2496.92   | 43.22      | -30.78 | 74    | 42.4     | 27.21    | 6.82   | 33.21  | 106    | 60      | P       | V       |
|                        |      | 2496.92   | 18.46      | -35.54 | 54    | -        | -        | -      | -      | -      | -       | A       | V       |



|                                 |   |         |        |        |    |        |       |      |       |     |    |   |   |
|---------------------------------|---|---------|--------|--------|----|--------|-------|------|-------|-----|----|---|---|
| <b>BT<br/>CH 78<br/>2480MHz</b> | *   | 2480    | 105.87 | -      | -  | 105    | 27.28 | 6.8  | 33.21 | 308 | 22 | P | H |
|                                 | *   | 2480    | 81.11  | -      | -  | -      | -     | -    | -     | -   | -  | A | H |
|                                 |   | 2483.52 | 52.75  | -21.25 | 74 | 51.88  | 27.27 | 6.81 | 33.21 | 308 | 22 | P | H |
|                                 |   | 2483.52 | 27.99  | -26.01 | 54 | -      | -     | -    | -     | -   | -  | A | H |
|                                 |   |         |        |        |    |        |       |      |       |     |    |   | H |
|                                 |   |         |        |        |    |        |       |      |       |     |    |   | H |
|                                 | *   | 2480    | 106.28 | -      | -  | 105.41 | 27.28 | 6.8  | 33.21 | 100 | 59 | P | V |
|                                 | *   | 2480    | 81.52  | -      | -  | -      | -     | -    | -     | -   | -  | A | V |
|                                 |   | 2483.52 | 54.33  | -19.67 | 74 | 53.46  | 27.27 | 6.81 | 33.21 | 100 | 59 | P | V |
|                                 |   | 2483.52 | 29.57  | -24.43 | 54 | -      | -     | -    | -     | -   | -  | A | 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

BT (Harmonic @ 3m)

| BT                     | 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 ) |
|------------------------|---|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-------------------------------|------------------------|----------------------------|----------------------|-------------------------|-------------------------|-----------------|
| BT<br>CH 00<br>2402MHz |   | 4804                 | 42.33               | -31.67                  | 74                          | 61.18                     | 31                            | 11.07                  | 60.92                      | 100                  | 0                       | P                       | H               |
|                        |   | 4804                 | 17.57               | -36.43                  | 54                          | -                         | -                             | -                      | -                          | -                    | -                       | A                       | H               |
|                        |   |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                        |   |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                        |   | 4804                 | 42.36               | -31.64                  | 74                          | 61.21                     | 31                            | 11.07                  | 60.92                      | 100                  | 0                       | P                       | V               |
|                        |   | 4804                 | 17.6                | -36.4                   | 54                          | -                         | -                             | -                      | -                          | -                    | -                       | A                       | V               |
|                        |   |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
|                        |   |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
| BT<br>CH 39<br>2441MHz |   | 4882                 | 40.91               | -33.09                  | 74                          | 59.63                     | 31                            | 11.13                  | 60.85                      | 100                  | 0                       | P                       | H               |
|                        |   | 4882                 | 16.15               | -37.85                  | 54                          | -                         | -                             | -                      | -                          | -                    | -                       | A                       | H               |
|                        |   | 7323                 | 42.3                | -31.7                   | 74                          | 53.06                     | 36.5                          | 13.66                  | 60.92                      | 100                  | 0                       | P                       | H               |
|                        |   | 7323                 | 17.54               | -36.46                  | 54                          | -                         | -                             | -                      | -                          | -                    | -                       | A                       | H               |
|                        |   | 4882                 | 40.01               | -33.99                  | 74                          | 58.73                     | 31                            | 11.13                  | 60.85                      | 100                  | 0                       | P                       | V               |
|                        |   | 4882                 | 15.25               | -38.75                  | 54                          | -                         | -                             | -                      | -                          | -                    | -                       | A                       | V               |
|                        |   | 7323                 | 42.04               | -31.96                  | 74                          | 52.8                      | 36.5                          | 13.66                  | 60.92                      | 100                  | 0                       | P                       | V               |
|                        |   | 7323                 | 17.28               | -36.72                  | 54                          | -                         | -                             | -                      | -                          | -                    | -                       | A                       | V               |
| BT<br>CH 78<br>2480MHz |   | 4960                 | 40.34               | -33.66                  | 74                          | 58.77                     | 31.14                         | 11.19                  | 60.76                      | 100                  | 0                       | P                       | H               |
|                        |   | 4960                 | 15.58               | -38.42                  | 54                          | -                         | -                             | -                      | -                          | -                    | -                       | A                       | H               |
|                        |   | 7440                 | 43.44               | -30.56                  | 74                          | 54.36                     | 36.38                         | 13.61                  | 60.91                      | 100                  | 0                       | P                       | H               |
|                        |   | 7440                 | 18.68               | -35.32                  | 54                          | -                         | -                             | -                      | -                          | -                    | -                       | A                       | H               |
|                        |   | 4960                 | 41.05               | -32.95                  | 74                          | 59.48                     | 31.14                         | 11.19                  | 60.76                      | 100                  | 0                       | P                       | V               |
|                        |   | 4960                 | 16.29               | -37.71                  | 54                          | -                         | -                             | -                      | -                          | -                    | -                       | A                       | V               |
|                        |   | 7440                 | 42.97               | -31.03                  | 74                          | 53.89                     | 36.38                         | 13.61                  | 60.91                      | 100                  | 0                       | P                       | V               |
|                        |   | 7440                 | 18.21               | -35.79                  | 54                          | -                         | -                             | -                      | -                          | -                    | -                       | A                       | V               |
| Remark                 | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         |                 |



Emission below 1GHz

2.4GHz BT (LF)

| BT                 | Note   | Frequency | Level      | Over   | Limit      | Read     | Antenna  | Path   | Preamp | Ant    | Table   | Peak    | Pol.    |   |
|--------------------|--|-----------|------------|--------|------------|----------|----------|--------|--------|--------|---------|---------|---------|---|
|                    |  | ( MHz )   | ( dBμV/m ) | ( dB ) | ( dBμV/m ) | ( dBμV ) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | ( P/A ) | ( H/V ) |   |
| 2.4GHz<br>BT<br>LF |  | 30        | 21.21      | -18.79 | 40         | 28.71    | 24.15    | 0.77   | 32.42  | -      | -       | P       | H       |   |
|                    |  | 115.36    | 21.61      | -21.89 | 43.5       | 35.6     | 16.98    | 1.44   | 32.41  | -      | -       | P       | H       |   |
|                    |  | 179.38    | 23.94      | -19.56 | 43.5       | 39.82    | 14.76    | 1.91   | 32.55  | -      | -       | P       | H       |   |
|                    |  | 922.4     | 32.18      | -13.82 | 46         | 30.34    | 29.01    | 4.26   | 31.43  | -      | -       | P       | H       |   |
|                    |  | 945.68    | 32.8       | -13.2  | 46         | 29.75    | 29.85    | 4.33   | 31.13  | -      | -       | P       | H       |   |
|                    |  | 959.26    | 32.93      | -13.07 | 46         | 28.87    | 30.64    | 4.37   | 30.95  | 100    | 0       | P       | H       |   |
|                    |  |           |            |        |            |          |          |        |        |        |         |         | H       |   |
|                    |  |           |            |        |            |          |          |        |        |        |         |         | H       |   |
|                    |  |           |            |        |            |          |          |        |        |        |         |         | H       |   |
|                    |  |           |            |        |            |          |          |        |        |        |         |         | H       |   |
|                    |  |           |            |        |            |          |          |        |        |        |         |         | H       |   |
|                    |  |           |            |        |            |          |          |        |        |        |         |         | H       |   |
|                    |  |           | 30.97      | 28.56  | -11.44     | 40       | 36.34    | 23.86  | 0.78   | 32.42  | 100     | 0       | P       | V |
|                    |  |           | 38.73      | 26.05  | -13.95     | 40       | 37.68    | 20     | 0.84   | 32.47  | -       | -       | P       | V |
|                    |  |           | 48.43      | 24.6   | -15.4      | 40       | 41.52    | 14.67  | 0.94   | 32.53  | -       | -       | P       | V |
|                    |  |           | 881.66     | 32.61  | -13.39     | 46       | 31.22    | 29.03  | 4.17   | 31.81  | -       | -       | P       | V |
|                    |  |           | 942.77     | 32.74  | -13.26     | 46       | 29.89    | 29.69  | 4.33   | 31.17  | -       | -       | P       | V |
|                    |  |           | 958.29     | 33.21  | -12.79     | 46       | 29.24    | 30.57  | 4.36   | 30.96  | -       | -       | P       | V |
|                    |  |           |            |        |            |          |          |        |        |        |         |         |         | V |
|                    |  |           |            |        |            |          |          |        |        |        |         |         |         | V |
|                    |  |           |            |        |            |          |          |        |        |        |         |         | V       |   |
|                    |  |           |            |        |            |          |          |        |        |        |         |         | V       |   |
|                    |  |           |            |        |            |          |          |        |        |        |         |         | V       |   |
|                    |  |           |            |        |            |          |          |        |        |        |         |         | V       |   |
| Remark             | 1. No other spurious found.<br>2. All results are PASS against limit line. |           |            |        |            |          |          |        |        |        |         |         |         |   |



<2Mbps>

2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

| BT                     | Note | Frequency | Level      | Over   | Limit      | Read     | Antenna  | Path   | Preamp | Ant    | Table   | Peak    | Pol.    |   |
|------------------------|------|-----------|------------|--------|------------|----------|----------|--------|--------|--------|---------|---------|---------|---|
|                        |      | ( MHz )   | ( dBμV/m ) | ( dB ) | ( dBμV/m ) | ( dBμV ) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | ( P/A ) | ( H/V ) |   |
| BT<br>CH00<br>2402MHz  |      | 2389.905  | 44.06      | -29.94 | 74         | 43.06    | 27.52    | 6.71   | 33.23  | 358    | 23      | P       | H       |   |
|                        |      | 2389.905  | 19.3       | -34.7  | 54         | -        | -        | -      | -      | -      | -       | A       | H       |   |
|                        | *    | 2402      | 106.99     | -      | -          | 106      | 27.5     | 6.72   | 33.23  | 358    | 23      | P       | H       |   |
|                        | *    | 2402      | 82.23      | -      | -          | -        | -        | -      | -      | -      | -       | A       | H       |   |
|                        |      |           |            |        |            |          |          |        |        |        |         |         | H       |   |
|                        |      |           |            |        |            |          |          |        |        |        |         |         |         | H |
|                        |      |           | 2336.145   | 43.55  | -30.45     | 74       | 42.52    | 27.63  | 6.65   | 33.25  | 110     | 63      | P       | V |
|                        |      |           | 2336.145   | 18.79  | -35.21     | 54       | -        | -      | -      | -      | -       | -       | A       | V |
|                        | *    |           | 2402       | 107.25 | -          | -        | 106.26   | 27.5   | 6.72   | 33.23  | 110     | 63      | P       | V |
|                        | *    |           | 2402       | 82.49  | -          | -        | -        | -      | -      | -      | -       | -       | A       | V |
|                        |      |           |            |        |            |          |          |        |        |        |         |         | V       |   |
|                        |      |           |            |        |            |          |          |        |        |        |         |         | V       |   |
| BT<br>CH 39<br>2441MHz |      | 2314.06   | 44.72      | -29.28 | 74         | 43.68    | 27.67    | 6.62   | 33.25  | 354    | 24      | P       | H       |   |
|                        |      | 2314.06   | 19.96      | -34.04 | 54         | -        | -        | -      | -      | -      | -       | A       | H       |   |
|                        | *    | 2441      | 106.66     | -      | -          | 105.7    | 27.42    | 6.76   | 33.22  | 354    | 24      | P       | H       |   |
|                        | *    | 2441      | 81.9       | -      | -          | -        | -        | -      | -      | -      | -       | A       | H       |   |
|                        |      |           | 2492.23    | 43.5   | -30.5      | 74       | 42.66    | 27.23  | 6.82   | 33.21  | 354     | 24      | P       | H |
|                        |      |           | 2492.23    | 18.74  | -35.26     | 54       | -        | -      | -      | -      | -       | -       | A       | H |
|                        |      |           | 2366.7     | 44.34  | -29.66     | 74       | 43.33    | 27.57  | 6.68   | 33.24  | 104     | 60      | P       | V |
|                        |      |           | 2366.7     | 19.58  | -34.42     | 54       | -        | -      | -      | -      | -       | -       | A       | V |
|                        | *    |           | 2441       | 107.76 | -          | -        | 106.8    | 27.42  | 6.76   | 33.22  | 104     | 60      | P       | V |
|                        | *    |           | 2441       | 83     | -          | -        | -        | -      | -      | -      | -       | -       | A       | V |
|                        |      |           | 2493.49    | 42.79  | -31.21     | 74       | 41.95    | 27.23  | 6.82   | 33.21  | 104     | 60      | P       | V |
|                        |      | 2493.49   | 18.03      | -35.97 | 54         | -        | -        | -      | -      | -      | -       | A       | V       |   |



|                        |   |         |        |        |    |        |       |      |       |     |    |   |   |   |
|------------------------|---|---------|--------|--------|----|--------|-------|------|-------|-----|----|---|---|---|
| BT<br>CH 78<br>2480MHz | *   | 2480    | 105.25 | -      | -  | 104.38 | 27.28 | 6.8  | 33.21 | 350 | 28 | P | H |   |
|                        | *   | 2480    | 80.49  | -      | -  | -      | -     | -    | -     | -   | -  | A | H |   |
|                        |   | 2483.64 | 50.65  | -23.35 | 74 | 49.78  | 27.27 | 6.81 | 33.21 | 350 | 28 | P | H |   |
|                        |   | 2483.64 | 25.89  | -28.11 | 54 | -      | -     | -    | -     | -   | -  | A | H |   |
|                        |   |         |        |        |    |        |       |      |       |     |    |   | H |   |
|                        |   |         |        |        |    |        |       |      |       |     |    |   | H |   |
|                        | *   | 2480    | 105.96 | -      | -  | 105.09 | 27.28 | 6.8  | 33.21 | 100 | 60 | P | V |   |
|                        | *   | 2480    | 81.2   | -      | -  | -      | -     | -    | -     | -   | -  | - | A | V |
|                        |   | 2483.52 | 51.36  | -22.64 | 74 | 50.49  | 27.27 | 6.81 | 33.21 | 100 | 60 | P | V |   |
|                        |   | 2483.52 | 26.6   | -27.4  | 54 | -      | -     | -    | -     | -   | -  | A | 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

BT (Harmonic @ 3m)

| BT                     | 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 ) |
|------------------------|---|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-------------------------------|------------------------|----------------------------|----------------------|-------------------------|-------------------------|-----------------|
| BT<br>CH 00<br>2402MHz |   | 4804                 | 42.78               | -31.22                  | 74                          | 61.63                     | 31                            | 11.07                  | 60.92                      | 100                  | 0                       | P                       | H               |
|                        |   | 4804                 | 18.02               | -35.98                  | 54                          | -                         | -                             | -                      | -                          | -                    | -                       | A                       | H               |
|                        |   |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                        |   |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                        |   | 4804                 | 40.78               | -33.22                  | 74                          | 59.63                     | 31                            | 11.07                  | 60.92                      | 100                  | 0                       | P                       | V               |
|                        |   | 4804                 | 16.02               | -37.98                  | 54                          | -                         | -                             | -                      | -                          | -                    | -                       | A                       | V               |
|                        |   |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
|                        |   |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
| BT<br>CH 39<br>2441MHz |   | 4882                 | 40.9                | -33.1                   | 74                          | 59.62                     | 31                            | 11.13                  | 60.85                      | 100                  | 0                       | P                       | H               |
|                        |   | 4882                 | 16.14               | -37.86                  | 54                          | -                         | -                             | -                      | -                          | -                    | -                       | A                       | H               |
|                        |   | 7323                 | 43.41               | -30.59                  | 74                          | 54.17                     | 36.5                          | 13.66                  | 60.92                      | 100                  | 0                       | P                       | H               |
|                        |   | 7323                 | 18.65               | -35.35                  | 54                          | -                         | -                             | -                      | -                          | -                    | -                       | A                       | H               |
|                        |   | 4882                 | 40.84               | -33.16                  | 74                          | 59.56                     | 31                            | 11.13                  | 60.85                      | 100                  | 0                       | R                       | P               |
|                        |   | 4882                 | 16.08               | -37.92                  | 54                          | -                         | -                             | -                      | -                          | -                    | -                       | P                       | V               |
|                        |   | 7323                 | 43.37               | -30.63                  | 74                          | 54.13                     | 36.5                          | 13.66                  | 60.92                      | 100                  | 0                       | A                       | V               |
|                        |   | 7323                 | 18.61               | -35.39                  | 54                          | -                         | -                             | -                      | -                          | -                    | -                       | P                       | V               |
| BT<br>CH 78<br>2480MHz |   | 4960                 | 40.84               | -33.16                  | 74                          | 59.27                     | 31.14                         | 11.19                  | 60.76                      | 100                  | 0                       | P                       | H               |
|                        |   | 4960                 | 16.08               | -37.92                  | 54                          | -                         | -                             | -                      | -                          | -                    | -                       | A                       | H               |
|                        |   | 7440                 | 42.78               | -31.22                  | 74                          | 53.7                      | 36.38                         | 13.61                  | 60.91                      | 100                  | 0                       | P                       | H               |
|                        |   | 7440                 | 18.02               | -35.98                  | 54                          | -                         | -                             | -                      | -                          | -                    | -                       | A                       | H               |
|                        |   | 4960                 | 40.77               | -33.23                  | 74                          | 59.2                      | 31.14                         | 11.19                  | 60.76                      | 100                  | 0                       | P                       | V               |
|                        |   | 4960                 | 16.01               | -37.99                  | 54                          | -                         | -                             | -                      | -                          | -                    | -                       | A                       | V               |
|                        |   | 7440                 | 42.65               | -31.35                  | 74                          | 53.57                     | 36.38                         | 13.61                  | 60.91                      | 100                  | 0                       | P                       | V               |
|                        |   | 7440                 | 17.89               | -36.11                  | 54                          | -                         | -                             | -                      | -                          | -                    | -                       | A                       | V               |
| Remark                 | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         |                 |



<3Mbps>

2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

| BT                     | Note | Frequency | Level      | Over   | Limit      | Read     | Antenna  | Path   | Preamp | Ant    | Table   | Peak    | Pol.    |   |
|------------------------|------|-----------|------------|--------|------------|----------|----------|--------|--------|--------|---------|---------|---------|---|
|                        |      | ( MHz )   | ( dBμV/m ) | ( dB ) | ( dBμV/m ) | ( dBμV ) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | ( P/A ) | ( H/V ) |   |
| BT<br>CH00<br>2402MHz  |      | 2377.41   | 43.75      | -30.25 | 74         | 42.75    | 27.55    | 6.69   | 33.24  | 327    | 19      | P       | H       |   |
|                        |      | 2377.41   | 18.99      | -35.01 | 54         | -        | -        | -      | -      | -      | -       | A       | H       |   |
|                        | *    | 2402      | 107.47     | -      | -          | 106.48   | 27.5     | 6.72   | 33.23  | 327    | 19      | P       | H       |   |
|                        | *    | 2402      | 82.71      | -      | -          | -        | -        | -      | -      | -      | -       | A       | H       |   |
|                        |      |           |            |        |            |          |          |        |        |        |         |         | H       |   |
|                        |      |           |            |        |            |          |          |        |        |        |         |         |         | H |
|                        |      |           | 2363.235   | 44.68  | -29.32     | 74       | 43.67    | 27.57  | 6.68   | 33.24  | 275     | 242     | P       | V |
|                        |      |           | 2363.235   | 19.92  | -34.08     | 54       | -        | -      | -      | -      | -       | -       | A       | V |
|                        | *    |           | 2402       | 106.93 | -          | -        | 105.94   | 27.5   | 6.72   | 33.23  | 275     | 242     | P       | V |
|                        | *    |           | 2402       | 82.17  | -          | -        | -        | -      | -      | -      | -       | -       | A       | V |
|                        |      |           |            |        |            |          |          |        |        |        |         |         | V       |   |
|                        |      |           |            |        |            |          |          |        |        |        |         |         | V       |   |
| BT<br>CH 39<br>2441MHz |      | 2348.08   | 43.36      | -30.64 | 74         | 42.34    | 27.6     | 6.66   | 33.24  | 353    | 18      | P       | H       |   |
|                        |      | 2348.08   | 18.6       | -35.4  | 54         | -        | -        | -      | -      | -      | -       | A       | H       |   |
|                        | *    | 2441      | 106.1      | -      | -          | 105.14   | 27.42    | 6.76   | 33.22  | 353    | 18      | P       | H       |   |
|                        | *    | 2441      | 81.34      | -      | -          | -        | -        | -      | -      | -      | -       | A       | H       |   |
|                        |      |           | 2491.11    | 43.02  | -30.98     | 74       | 42.17    | 27.24  | 6.82   | 33.21  | 353     | 18      | P       | H |
|                        |      |           | 2491.11    | 18.26  | -35.74     | 54       | -        | -      | -      | -      | -       | -       | A       | H |
|                        |      |           | 2349.2     | 44.2   | -29.8      | 74       | 43.18    | 27.6   | 6.66   | 33.24  | 258     | 240     | P       | V |
|                        |      |           | 2349.2     | 19.44  | -34.56     | 54       | -        | -      | -      | -      | -       | -       | A       | V |
|                        | *    |           | 2441       | 105.94 | -          | -        | 104.98   | 27.42  | 6.76   | 33.22  | 258     | 240     | P       | V |
|                        | *    |           | 2441       | 81.18  | -          | -        | -        | -      | -      | -      | -       | -       | A       | V |
|                        |      |           | 2489.64    | 43.14  | -30.86     | 74       | 42.3     | 27.24  | 6.81   | 33.21  | 258     | 240     | P       | V |
|                        |      |           | 2489.64    | 18.38  | -35.62     | 54       | -        | -      | -      | -      | -       | -       | A       | V |



|                        |   |         |        |        |    |        |       |      |       |     |     |   |   |   |
|------------------------|---|---------|--------|--------|----|--------|-------|------|-------|-----|-----|---|---|---|
| BT<br>CH 78<br>2480MHz | *   | 2480    | 105.81 | -      | -  | 104.94 | 27.28 | 6.8  | 33.21 | 274 | 339 | P | H |   |
|                        | *   | 2480    | 81.05  | -      | -  | -      | -     | -    | -     | -   | -   | A | H |   |
|                        |   | 2483.56 | 51.56  | -22.44 | 74 | 50.69  | 27.27 | 6.81 | 33.21 | 274 | 339 | P | H |   |
|                        |   | 2483.56 | 26.8   | -27.2  | 54 | -      | -     | -    | -     | -   | -   | A | H |   |
|                        |   |         |        |        |    |        |       |      |       |     |     |   | H |   |
|                        |   |         |        |        |    |        |       |      |       |     |     |   | H |   |
|                        | *   | 2480    | 105.18 | -      | -  | 104.31 | 27.28 | 6.8  | 33.21 | 141 | 234 | P | V |   |
|                        | *   | 2480    | 80.42  | -      | -  | -      | -     | -    | -     | -   | -   | - | A | V |
|                        |   | 2483.56 | 50.27  | -23.73 | 74 | 49.4   | 27.27 | 6.81 | 33.21 | 141 | 234 | P | V |   |
|                        |   | 2483.56 | 25.51  | -28.49 | 54 | -      | -     | -    | -     | -   | -   | A | 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

BT (Harmonic @ 3m)

| BT                     | 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 ) |   |
|------------------------|---|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-------------------------------|------------------------|----------------------------|----------------------|-------------------------|-------------------------|-----------------|---|
| BT<br>CH 00<br>2402MHz |   | 4804                 | 41.97               | -32.03                  | 74                          | 60.82                     | 31                            | 11.07                  | 60.92                      | 100                  | 0                       | P                       | H               |   |
|                        |   | 4804                 | 17.21               | -36.79                  | 54                          | -                         | -                             | -                      | -                          | -                    | -                       | A                       | H               |   |
|                        |   |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |   |
|                        |   |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |   |
|                        |   | 4804                 | 41.18               | -32.82                  | 74                          | 60.03                     | 31                            | 11.07                  | 60.92                      | 100                  | 0                       | P                       | V               |   |
|                        |   | 4804                 | 16.42               | -37.58                  | 54                          | -                         | -                             | -                      | -                          | -                    | -                       | -                       | A               | V |
|                        |   |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         |                 | V |
|                        |   |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         |                 | V |
| BT<br>CH 39<br>2441MHz |   | 4882                 | 40.48               | -33.52                  | 74                          | 59.2                      | 31                            | 11.13                  | 60.85                      | 100                  | 0                       | P                       | H               |   |
|                        |   | 4882                 | 15.72               | -38.28                  | 54                          | -                         | -                             | -                      | -                          | -                    | -                       | A                       | H               |   |
|                        |   | 7323                 | 42.58               | -31.42                  | 74                          | 53.34                     | 36.5                          | 13.66                  | 60.92                      | 100                  | 0                       | P                       | H               |   |
|                        |   | 7323                 | 17.82               | -36.18                  | 54                          | -                         | -                             | -                      | -                          | -                    | -                       | A                       | H               |   |
|                        |   | 4882                 | 40.28               | -33.72                  | 74                          | 59                        | 31                            | 11.13                  | 60.85                      | 100                  | 0                       | P                       | V               |   |
|                        |   | 4882                 | 15.52               | -38.48                  | 54                          | -                         | -                             | -                      | -                          | -                    | -                       | -                       | A               | V |
|                        |   | 7323                 | 42.01               | -31.99                  | 74                          | 52.77                     | 36.5                          | 13.66                  | 60.92                      | 100                  | 0                       | P                       | V               |   |
|                        |   | 7323                 | 17.25               | -36.75                  | 54                          | -                         | -                             | -                      | -                          | -                    | -                       | -                       | A               | V |
| BT<br>CH 78<br>2480MHz |   | 4960                 | 40.08               | -33.92                  | 74                          | 58.51                     | 31.14                         | 11.19                  | 60.76                      | 100                  | 0                       | P                       | H               |   |
|                        |   | 4960                 | 15.32               | -38.68                  | 54                          | -                         | -                             | -                      | -                          | -                    | -                       | A                       | H               |   |
|                        |   | 7440                 | 43.13               | -30.87                  | 74                          | 54.05                     | 36.38                         | 13.61                  | 60.91                      | 100                  | 0                       | P                       | H               |   |
|                        |   | 7440                 | 18.37               | -35.63                  | 54                          | -                         | -                             | -                      | -                          | -                    | -                       | A                       | H               |   |
|                        |   | 4960                 | 40.08               | -33.92                  | 74                          | 58.51                     | 31.14                         | 11.19                  | 60.76                      | 100                  | 0                       | P                       | V               |   |
|                        |   | 4960                 | 15.32               | -38.68                  | 54                          | -                         | -                             | -                      | -                          | -                    | -                       | A                       | V               |   |
|                        |   | 7440                 | 42.46               | -31.54                  | 74                          | 53.38                     | 36.38                         | 13.61                  | 60.91                      | 100                  | 0                       | P                       | V               |   |
|                        |   | 7440                 | 17.7                | -36.3                   | 54                          | -                         | -                             | -                      | -                          | -                    | -                       | -                       | A               | V |
| Remark                 | 1. No other spurious found.<br>2. All results are PASS against Peak and Average 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>Peak</b> or <b>Average</b>  |
| H/V | <b>Horizontal</b> or <b>Vertical</b>   |



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

| BT                     | Note | Frequency | Level      | Over   | Limit      | Read     | Antenna  | Path   | Preamp | Ant    | Table   | Peak    | Pol.    |
|------------------------|------|-----------|------------|--------|------------|----------|----------|--------|--------|--------|---------|---------|---------|
|                        |      | ( MHz )   | ( dBμV/m ) | ( dB ) | ( dBμV/m ) | ( dBμV ) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | ( P/A ) | ( H/V ) |
| BT<br>CH 00<br>2402MHz |      | 2390      | 55.45      | -18.55 | 74         | 54.51    | 32.22    | 4.58   | 35.86  | 103    | 308     | P       | H       |
|                        |      | 2390      | 43.54      | -10.46 | 54         | 42.6     | 32.22    | 4.58   | 35.86  | 103    | 308     | A       | H       |

1. Path Loss(dB) = Cable loss(dB) + Filter loss(dB) + Attenuator loss(dB)
2. Level(dBμV/m) =  
Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
3. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

**For Peak Limit @ 2390MHz:**

1. Level(dBμV/m)  
= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)  
= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)  
= 55.45 (dBμV/m)
2. Over Limit(dB)  
= Level(dBμV/m) – Limit Line(dBμV/m)  
= 55.45(dBμV/m) – 74(dBμV/m)  
= -18.55(dB)

**For Average Limit @ 2390MHz:**

1. Level(dBμV/m)  
= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)  
= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)  
= 43.54 (dBμV/m)
2. Over Limit(dB)  
= Level(dBμV/m) – Limit Line(dBμV/m)  
= 43.54(dBμV/m) – 54(dBμV/m)  
= -10.46(dB)

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



## Appendix D. Radiated Spurious Emission Plots

|                 |                                     |                     |             |
|-----------------|-------------------------------------|---------------------|-------------|
| Test Engineer : | Cookie Ku, Fu Chen, and Troye Hsieh | Temperature :       | 20.1~26.3°C |
|                 |                                     | Relative Humidity : | 46.3~68.9%  |

**Note symbol**

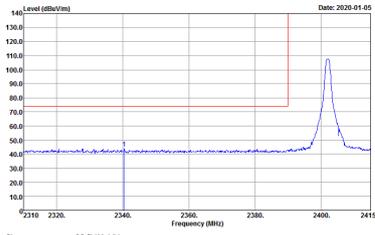
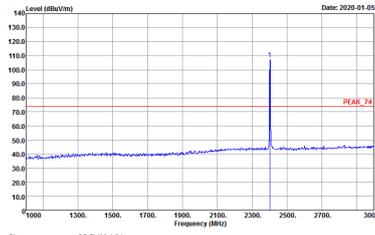
|    |                       |
|----|-----------------------|
| -L | Low channel location  |
| -R | High channel location |



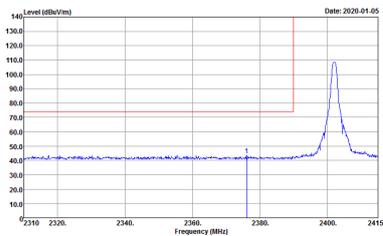
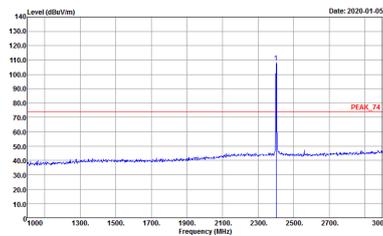
<1Mbps>

2.4GHz 2400~2483.5MHz

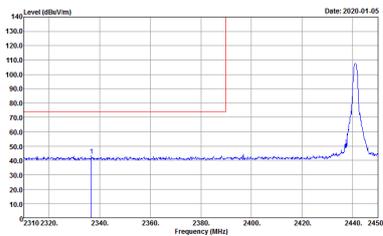
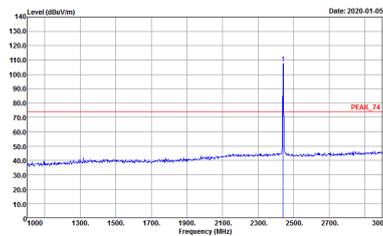
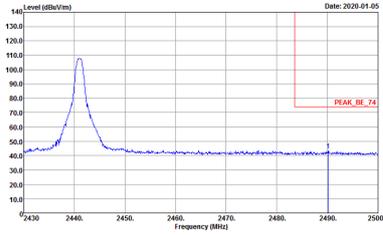
BT (Band Edge @ 3m)

| BT   | 2.4GHz 2400~2483.5MHz Band Edge @ 3m<br>BT CH00 2402MHz   |   |
|------|---|---|
|      | Horizontal  | Fundamental   |
| Peak |  <p>Date: 2020-01-05</p> <p>Site : 03CH11-4Y<br/>Condition : PEAK_BE_74 3m HORN 9120D-HF HORIZONTAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 901524-02</p> |  <p>Date: 2020-01-05</p> <p>Site : 03CH11-4Y<br/>Condition : PEAK_74 3m HORN 9120D-HF HORIZONTAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 901524-02</p> |

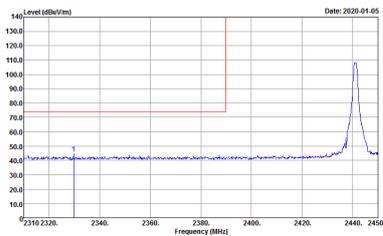
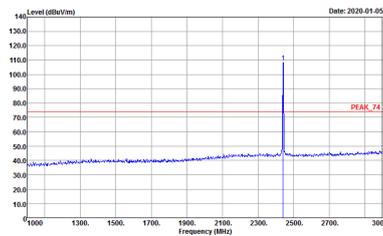
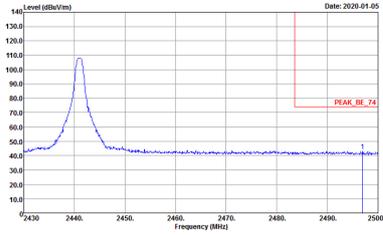


| BT              | 2.4GHz 2400~2483.5MHz Band Edge @ 3m   |   |
|-----------------|--|---|
| BT CH00 2402MHz |  |   |
| Vertical        |  | Fundamental   |
| Peak            |  <p data-bbox="430 728 702 795">Site : 03CH11-14Y<br/>Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 901524-02</p> |  <p data-bbox="901 728 1173 795">Site : 03CH11-14Y<br/>Condition : PEAK_74 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 901524-02</p> |

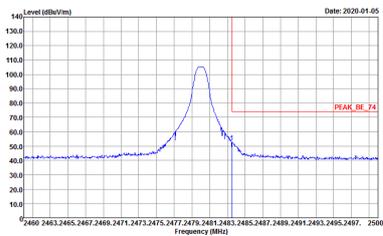
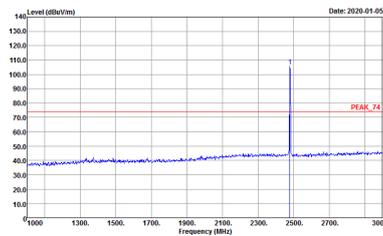


| BT              | 2.4GHz 2400~2483.5MHz Band Edge @ 3m  |   |
|-----------------|---|---|
| BT CH39 2441MHz |   |   |
| Horizontal      |   | Fundamental   |
| Peak            |  <p>Date: 2020-01-05</p> <p>Site : 03CH11-HY<br/> Condition : PEAK_BE_74 3m HORN 91200-HF HORIZONTAL<br/> : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/> Detector : Peak<br/> Project : 901524-02</p>   |  <p>Date: 2020-01-05</p> <p>Site : 03CH11-HY<br/> Condition : PEAK_74 3m HORN 91200-HF HORIZONTAL<br/> : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/> Detector : Peak<br/> Project : 901524-02</p> |
| Peak            |  <p>Date: 2020-01-05</p> <p>Site : 03CH11-HY<br/> Condition : PEAK_BE_74 3m HORN 91200-HF HORIZONTAL<br/> : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/> Detector : Peak<br/> Project : 901524-02</p> | Left blank  |

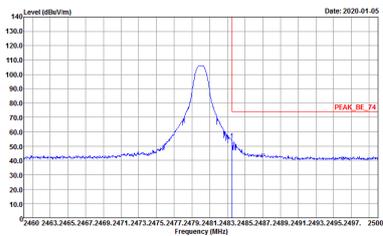
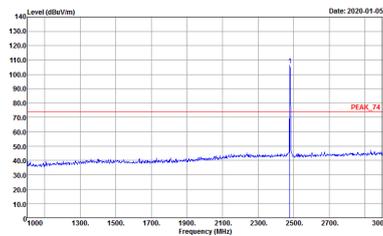


| BT              | 2.4GHz 2400~2483.5MHz Band Edge @ 3m  |   |
|-----------------|---|---|
| BT CH39 2441MHz |   |   |
| Vertical        |   | Fundamental   |
| Peak            |  <p>Site : 03CH11-HY<br/>           Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL<br/>           : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>           Detector : Peak<br/>           Project : 901524-02</p>   |  <p>Site : 03CH11-HY<br/>           Condition : PEAK_74 3m HORN 91200-HF VERTICAL<br/>           : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>           Detector : Peak<br/>           Project : 901524-02</p> |
| Peak            |  <p>Site : 03CH11-HY<br/>           Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL<br/>           : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>           Detector : Peak<br/>           Project : 901524-02</p> | Left blank  |



|                 |  |  |
|-----------------|--|--|
| BT              | 2.4GHz 2400~2483.5MHz Band Edge @ 3m   |  |
| BT CH78 2480MHz |  |  |
| Horizontal      |  | Fundamental  |
| Peak            |  <p>Date: 2020-01-05</p> <p>Site : 03CH11-14Y<br/>         Condition : PEAK_BE_74 3m HORN 91200-HF HORIZONTAL<br/>         : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>         Detector : Peak<br/>         Project : 901524-02</p> |  <p>Date: 2020-01-05</p> <p>Site : 03CH11-14Y<br/>         Condition : PEAK_74 3m HORN 91200-HF HORIZONTAL<br/>         : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>         Detector : Peak<br/>         Project : 901524-02</p> |

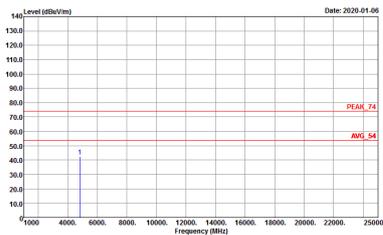
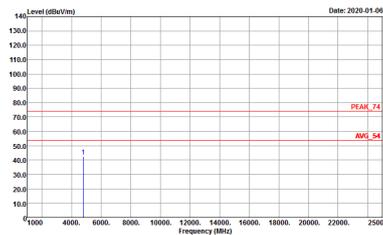


| BT              | 2.4GHz 2400~2483.5MHz Band Edge @ 3m   |   |
|-----------------|--|---|
| BT CH78 2480MHz |  |   |
| Vertical        |  | Fundamental   |
| Peak            |  <p data-bbox="430 728 813 795">Site : 03CH11-14Y<br/>Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL<br/>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 901524-02</p> |  <p data-bbox="901 728 1284 795">Site : 03CH11-14Y<br/>Condition : PEAK_74 3m HORN 91200-HF VERTICAL<br/>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 901524-02</p> |



2.4GHz 2400~2483.5MHz

BT (Harmonic @ 3m)

| BT                   | 2.4GHz 2400~2483.5MHz Harmonic @ 3m   |  |
|----------------------|---|--|
|                      | BT CH00 2402MHz   |  |
|                      | Horizontal  | Vertical   |
| <p>Peak<br/>Avg.</p> |  <p>Site : 03CH11-HY<br/>Condition : PEAK_74 3m HORN 91200-HF HORIZONTAL<br/>Detector : Peak<br/>Project : 901524-02</p> |  <p>Site : 03CH11-HY<br/>Condition : PEAK_74 3m HORN 91200-HF VERTICAL<br/>Detector : Peak<br/>Project : 901524-02</p> |



| BT                      | 2.4GHz 2400~2483.5MHz Harmonic @ 3m  |  |
|-------------------------|--|--|
| BT CH39 2441MHz         |  |  |
|                         | Horizontal   | Vertical   |
| <p>Peak</p> <p>Avg.</p> | <p>Horizontal Spectrum Plot (Date: 2020-01-06)</p> <p>Y-axis: Level (dBuV/m) from 0 to 140. X-axis: Frequency (MHz) from 0 to 25000.</p> <p>Peaks labeled 1 and 2 are visible at approximately 4.41 MHz and 6.41 MHz respectively.</p> <p>Reference lines: PEAK_74 at ~75 dBuV/m, AVG_54 at ~55 dBuV/m.</p> <p>Site : 03CH11-11Y<br/>Condition : PEAK_74 3m HORN 91200-HF HORIZONTAL<br/>Detector : Peak<br/>Project : 901524-02</p> | <p>Vertical Spectrum Plot (Date: 2020-01-06)</p> <p>Y-axis: Level (dBuV/m) from 0 to 140. X-axis: Frequency (MHz) from 0 to 25000.</p> <p>Peaks labeled 1 and 2 are visible at approximately 4.41 MHz and 6.41 MHz respectively.</p> <p>Reference lines: PEAK_74 at ~75 dBuV/m, AVG_54 at ~55 dBuV/m.</p> <p>Site : 03CH11-11Y<br/>Condition : PEAK_74 3m HORN 91200-HF VERTICAL<br/>Detector : Peak<br/>Project : 901524-02</p> |

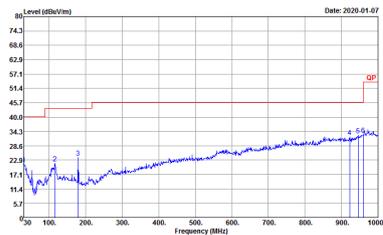
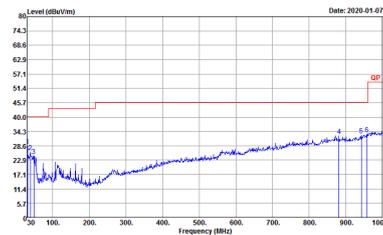


| BT                      | 2.4GHz 2400~2483.5MHz Harmonic @ 3m  |  |
|-------------------------|--|--|
|                         | BT CH78 2480MHz  |  |
|                         | Horizontal   | Vertical   |
| <p>Peak</p> <p>Avg.</p> | <p>Horizontal spectrum plot showing Level (dBuV/m) vs Frequency (MHz). The plot displays two distinct peaks labeled '1' and '2' at approximately 5.5 MHz and 6.5 MHz respectively. The y-axis ranges from 0 to 140 dBuV/m, and the x-axis ranges from 0 to 25000 MHz. Two horizontal red lines indicate levels: 'PEAK_74' at approximately 80 dBuV/m and 'AVG_54' at approximately 55 dBuV/m. The plot is dated 2020-01-06.</p> <p>Site : 03CH11-11Y<br/>Condition : PEAK_74 3m HORN 91200-HF HORIZONTAL<br/>Detector : Peak<br/>Project : 901524-02</p> | <p>Vertical spectrum plot showing Level (dBuV/m) vs Frequency (MHz). The plot displays two distinct peaks labeled '1' and '2' at approximately 5.5 MHz and 6.5 MHz respectively. The y-axis ranges from 0 to 140 dBuV/m, and the x-axis ranges from 0 to 25000 MHz. Two horizontal red lines indicate levels: 'PEAK_74' at approximately 80 dBuV/m and 'AVG_54' at approximately 55 dBuV/m. The plot is dated 2020-01-06.</p> <p>Site : 03CH11-11Y<br/>Condition : PEAK_74 3m HORN 91200-HF VERTICAL<br/>Detector : Peak<br/>Project : 901524-02</p> |



Emission below 1GHz

2.4GHz BT (LF)

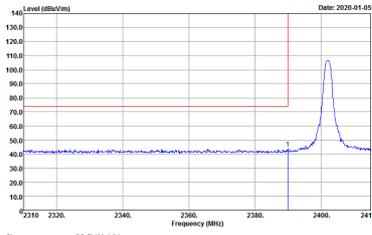
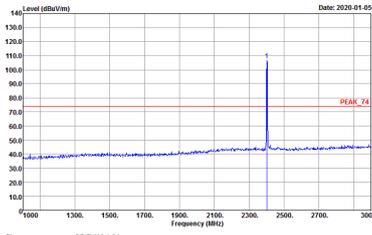
|              |  |   |
|--------------|--|---|
| BT           | 2.4GHz 2400~2483.5MHz  |   |
|              | BT LF  |   |
|              | Horizontal   | Vertical  |
| QP /<br>Peak |  <p>Site : 03CH11-HY<br/>Condition : QP 3m BT-LOG-6111D-LF_ETC HORIZONTAL<br/>Detector : Peak<br/>Project : 901524-02</p> |  <p>Site : 03CH11-HY<br/>Condition : QP 3m BT-LOG-6111D-LF_ETC VERTICAL<br/>Detector : Peak<br/>Project : 901524-02</p> |



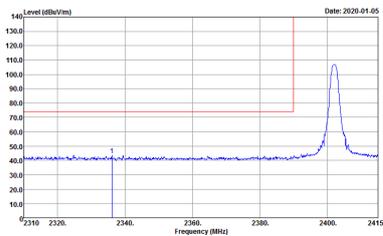
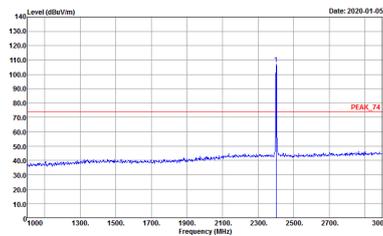
<2Mbps>

2.4GHz 2400~2483.5MHz

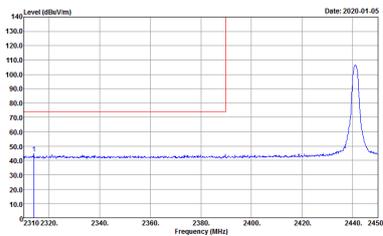
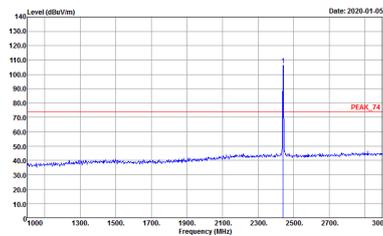
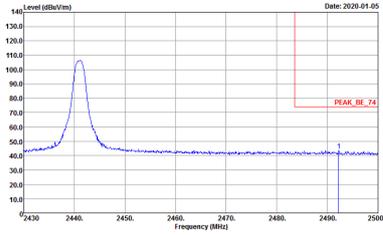
BT (Band Edge @ 3m)

| BT   | 2.4GHz 2400~2483.5MHz Band Edge @ 3m<br>BT CH00 2402MHz   |   |
|------|---|---|
|      | Horizontal  | Fundamental   |
| Peak |  <p>Date: 2020-01-05</p> <p>Site : 03CH11-4Y<br/> Condition : PEAK_BE_74 3m HORN 9120D-HF HORIZONTAL<br/> RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/> Detector : Peak<br/> Project : 901524-02</p> |  <p>Date: 2020-01-05</p> <p>Site : 03CH11-4Y<br/> Condition : PEAK_74 3m HORN 9120D-HF HORIZONTAL<br/> RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/> Detector : Peak<br/> Project : 901524-02</p> |

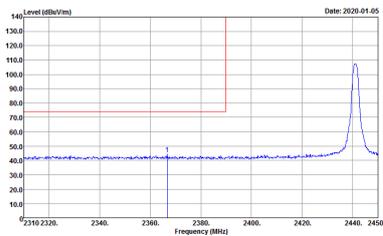
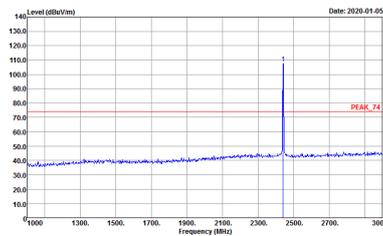
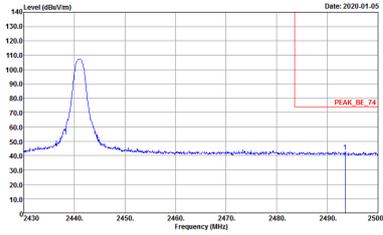


| BT              | 2.4GHz 2400~2483.5MHz Band Edge @ 3m   |   |
|-----------------|--|---|
| BT CH00 2402MHz |  |   |
| Vertical        |  | Fundamental   |
| Peak            |  <p data-bbox="430 728 813 795">Site : 03CH11-14Y<br/>Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 901524-02</p> |  <p data-bbox="901 728 1284 795">Site : 03CH11-14Y<br/>Condition : PEAK_74 3m HORN 91200-HF VERTICAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 901524-02</p> |

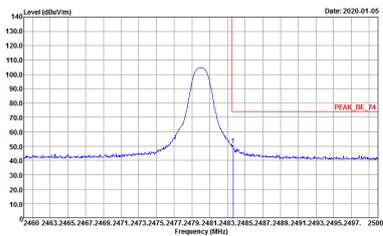
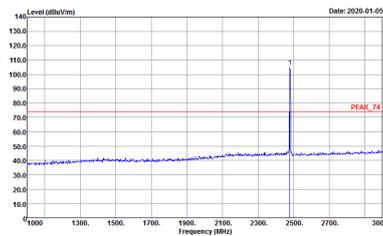


| BT              | 2.4GHz 2400~2483.5MHz Band Edge @ 3m  |   |
|-----------------|---|---|
| BT CH39 2441MHz |   |   |
| Horizontal      |   | Fundamental   |
| Peak            |  <p>Date: 2020-01-05</p> <p>Site : 03CH11-HY<br/>           Condition : PEAK_BE_74 3m HORN 91200-HF HORIZONTAL<br/>           : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>           Detector : Peak<br/>           Project : 901524-02</p>   |  <p>Date: 2020-01-05</p> <p>Site : 03CH11-HY<br/>           Condition : PEAK_74 3m HORN 91200-HF HORIZONTAL<br/>           : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>           Detector : Peak<br/>           Project : 901524-02</p> |
| Peak            |  <p>Date: 2020-01-05</p> <p>Site : 03CH11-HY<br/>           Condition : PEAK_BE_74 3m HORN 91200-HF HORIZONTAL<br/>           : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>           Detector : Peak<br/>           Project : 901524-02</p> | Left blank  |

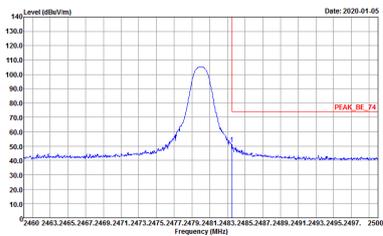
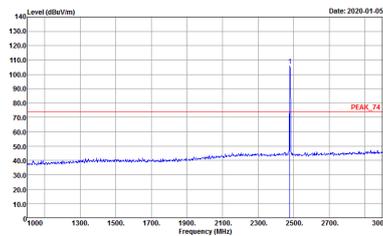


| BT              | 2.4GHz 2400~2483.5MHz Band Edge @ 3m  |   |
|-----------------|---|---|
| BT CH39 2441MHz |   |   |
| Vertical        |   | Fundamental   |
| Peak            |  <p>Date: 2020-01-05</p> <p>Site : 03CH11-HY<br/>           Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL<br/>           : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>           Detector : Peak<br/>           Project : 901524-02</p>   |  <p>Date: 2020-01-05</p> <p>Site : 03CH11-HY<br/>           Condition : PEAK_74 3m HORN 91200-HF VERTICAL<br/>           : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>           Detector : Peak<br/>           Project : 901524-02</p> |
| Peak            |  <p>Date: 2020-01-05</p> <p>Site : 03CH11-HY<br/>           Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL<br/>           : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>           Detector : Peak<br/>           Project : 901524-02</p> | Left blank  |



| BT              | 2.4GHz 2400~2483.5MHz Band Edge @ 3m   |   |
|-----------------|--|---|
| BT CH78 2480MHz |  |   |
| Horizontal      |  | Fundamental   |
| Peak            |  <p data-bbox="430 728 813 795">Site : 03CH11-14Y<br/>Condition : PEAK_BE_74 3m HORN 91200-HF HORIZONTAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 901524-02</p> |  <p data-bbox="901 728 1284 795">Site : 03CH11-14Y<br/>Condition : PEAK_74 3m HORN 91200-HF HORIZONTAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 901524-02</p> |



| BT              | 2.4GHz 2400~2483.5MHz Band Edge @ 3m   |  |
|-----------------|--|--|
| BT CH78 2480MHz |  |  |
| Vertical        |  | Fundamental  |
| Peak            |  <p>Date: 2020-01-05</p> <p>Site : 03CH11-14Y<br/>           Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL<br/>           : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>           Detector : Peak<br/>           Project : 901524-02</p> |  <p>Date: 2020-01-05</p> <p>Site : 03CH11-14Y<br/>           Condition : PEAK_74 3m HORN 91200-HF VERTICAL<br/>           : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>           Detector : Peak<br/>           Project : 901524-02</p> |

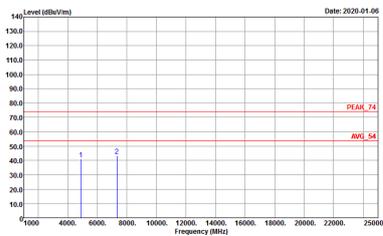
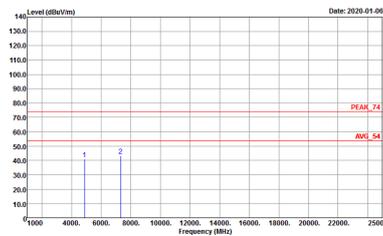


2.4GHz 2400~2483.5MHz

BT (Harmonic @ 3m)

| BT                         | 2.4GHz 2400~2483.5MHz Harmonic @ 3m   |   |
|----------------------------|---|---|
|                            | BT CH00 2402MHz   |   |
|                            | Horizontal  | Vertical  |
| <b>Peak</b><br><b>Avg.</b> | <p>Site : 03CH11-HY<br/>Condition : PEAK_74 3m HORN 91200-HF HORIZONTAL<br/>Detector : Peak<br/>Project : 901524-02</p> | <p>Site : 03CH11-HY<br/>Condition : PEAK_74 3m HORN 91200-HF VERTICAL<br/>Detector : Peak<br/>Project : 901524-02</p> |



| BT                      | 2.4GHz 2400~2483.5MHz Harmonic @ 3m  |   |
|-------------------------|--|---|
|                         | BT CH39 2441MHz  |   |
|                         | Horizontal   | Vertical  |
| <p>Peak</p> <p>Avg.</p> |  <p>Site : 03CH11-11Y<br/>Condition : PEAK_74 3m HORN 91200-HF HORIZONTAL<br/>Detector : Peak<br/>Project : 901524-02</p> |  <p>Site : 03CH11-11Y<br/>Condition : PEAK_74 3m HORN 91200-HF VERTICAL<br/>Detector : Peak<br/>Project : 901524-02</p> |



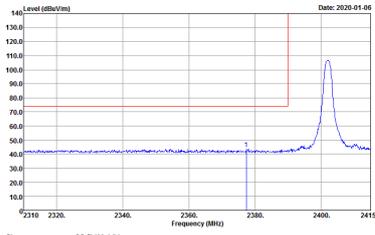
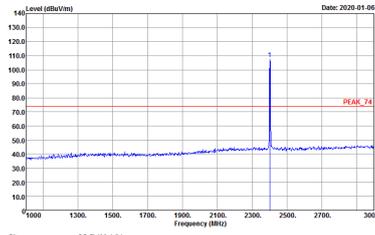
|                         |  |  |
|-------------------------|--|--|
| BT                      | 2.4GHz 2400~2483.5MHz Harmonic @ 3m  |  |
|                         | BT CH78 2480MHz  |  |
|                         | Horizontal   | Vertical   |
| <p>Peak</p> <p>Avg.</p> | <p>Site : 03CH11-1F<br/>         Condition : PEAK_74 3m HORN 91200-HF HORIZONTAL<br/>         Detector : Peak<br/>         Project : 901524-02</p> | <p>Site : 03CH11-1F<br/>         Condition : PEAK_74 3m HORN 91200-HF VERTICAL<br/>         Detector : Peak<br/>         Project : 901524-02</p> |



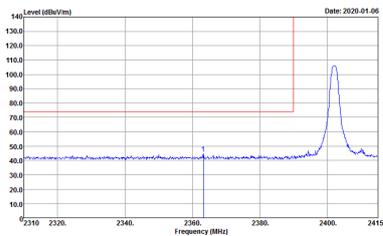
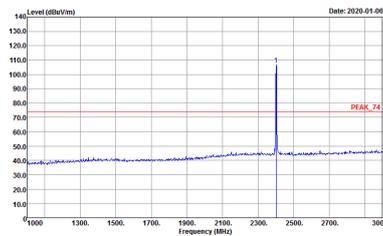
<3Mbps>

2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

| BT   | 2.4GHz 2400~2483.5MHz Band Edge @ 3m<br>BT CH00 2402MHz   |   |
|------|---|---|
|      | Horizontal  | Fundamental   |
| Peak |  <p>Site : 03CH11-HY<br/>Condition : PEAK_BE_74 3m HORN 9120D-HF HORIZONTAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 901524-02</p> |  <p>Site : 03CH11-HY<br/>Condition : PEAK_74 3m HORN 9120D-HF HORIZONTAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 901524-02</p> |

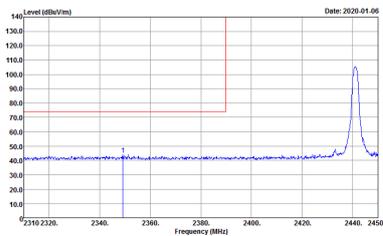
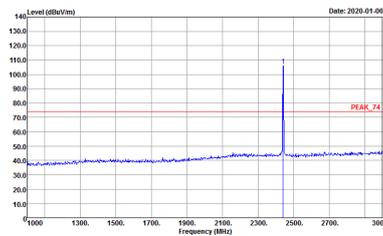
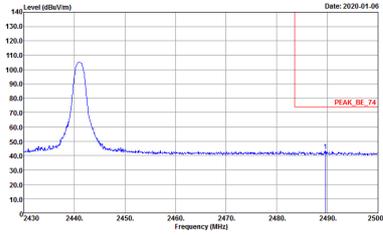


|                 |  |  |
|-----------------|--|--|
| BT              | 2.4GHz 2400~2483.5MHz Band Edge @ 3m   |  |
| BT CH00 2402MHz |  |  |
| Vertical        |  | Fundamental  |
| Peak            |  <p>Date: 2020-01-06</p> <p>Site : 03CH11-14Y<br/>         Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL<br/>         : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>         Detector : Peak<br/>         Project : 901524-02</p> |  <p>Date: 2020-01-06</p> <p>Site : 03CH11-14Y<br/>         Condition : PEAK_74 3m HORN 91200-HF VERTICAL<br/>         : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>         Detector : Peak<br/>         Project : 901524-02</p> |

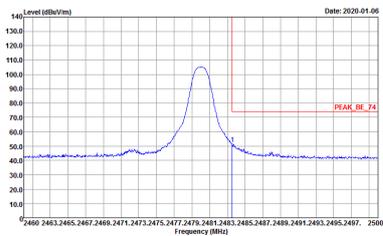
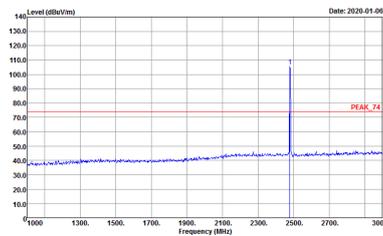


| BT                 | 2.4GHz 2400~2483.5MHz Band Edge @ 3m  |  |
|--------------------|---|--|
|                    | BT CH39 2441MHz   |  |
|                    | Horizontal  | Fundamental  |
| <p><b>Peak</b></p> | <p>Date: 2020-01-06</p> <p>Site : 03CH11-HY<br/>           Condition : PEAK_BE_74 3m HORN 91200-HF HORIZONTAL<br/>           : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>           Detector : Peak<br/>           Project : 901524-02</p> | <p>Date: 2020-01-06</p> <p>Site : 03CH11-HY<br/>           Condition : PEAK_74 3m HORN 91200-HF HORIZONTAL<br/>           : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>           Detector : Peak<br/>           Project : 901524-02</p> |
| <p><b>Peak</b></p> | <p>Date: 2020-01-06</p> <p>Site : 03CH11-HY<br/>           Condition : PEAK_BE_74 3m HORN 91200-HF HORIZONTAL<br/>           : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>           Detector : Peak<br/>           Project : 901524-02</p> | <p><b>Left blank</b></p>   |

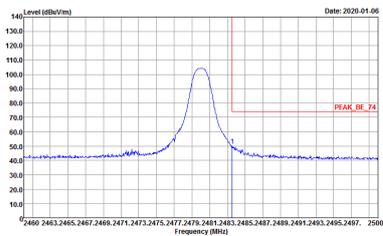
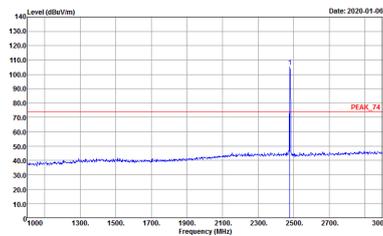


| BT              | 2.4GHz 2400~2483.5MHz Band Edge @ 3m  |   |
|-----------------|---|---|
| BT CH39 2441MHz |   |   |
| Vertical        |   | Fundamental   |
| Peak            |  <p>Date: 2020-01-06</p> <p>Site : 03CH11-HY<br/>           Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL<br/>           : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>           Detector : Peak<br/>           Project : 901524-02</p>   |  <p>Date: 2020-01-06</p> <p>Site : 03CH11-HY<br/>           Condition : PEAK_74 3m HORN 91200-HF VERTICAL<br/>           : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>           Detector : Peak<br/>           Project : 901524-02</p> |
| Peak            |  <p>Date: 2020-01-06</p> <p>Site : 03CH11-HY<br/>           Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL<br/>           : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>           Detector : Peak<br/>           Project : 901524-02</p> | Left blank  |



|                 |  |  |
|-----------------|--|--|
| BT              | 2.4GHz 2400~2483.5MHz Band Edge @ 3m   |  |
| BT CH78 2480MHz |  |  |
| Horizontal      |  | Fundamental  |
| Peak            |  <p>Date: 2020-01-06</p> <p>Site : 03CH11-14Y<br/>         Condition : PEAK_BE_74 3m HORN 91200-HF HORIZONTAL<br/>         : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>         Detector : Peak<br/>         Project : 901524-02</p> |  <p>Date: 2020-01-06</p> <p>Site : 03CH11-14Y<br/>         Condition : PEAK_74 3m HORN 91200-HF HORIZONTAL<br/>         : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>         Detector : Peak<br/>         Project : 901524-02</p> |



| BT              | 2.4GHz 2400~2483.5MHz Band Edge @ 3m   |   |
|-----------------|--|---|
| BT CH78 2480MHz |  |   |
| Vertical        |  | Fundamental   |
| Peak            |  <p data-bbox="430 728 813 795">Site : 03CH11-14Y<br/>Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL<br/>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 901524-02</p> |  <p data-bbox="901 728 1284 795">Site : 03CH11-14Y<br/>Condition : PEAK_74 3m HORN 91200-HF VERTICAL<br/>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 901524-02</p> |



2.4GHz 2400~2483.5MHz

BT (Harmonic @ 3m)

| BT                         | 2.4GHz 2400~2483.5MHz Harmonic @ 3m   |   |
|----------------------------|---|---|
|                            | BT CH00 2402MHz   |   |
|                            | Horizontal  | Vertical  |
| <b>Peak</b><br><b>Avg.</b> | <p>Site : 03CH11-HY<br/>Condition : PEAK_74 3m HORN 91200-HF HORIZONTAL<br/>Detector : Peak<br/>Project : 901524-02</p> | <p>Site : 03CH11-HY<br/>Condition : PEAK_74 3m HORN 91200-HF VERTICAL<br/>Detector : Peak<br/>Project : 901524-02</p> |



| BT                      | 2.4GHz 2400~2483.5MHz Harmonic @ 3m   |   |
|-------------------------|---|---|
|                         | BT CH39 2441MHz   |   |
|                         | Horizontal  | Vertical  |
| <p>Peak</p> <p>Avg.</p> | <p>Horizontal spectrum plot showing Level (dBuV/m) vs Frequency (MHz). The plot displays two distinct peaks labeled '1' and '2' at approximately 4.41 MHz and 6.82 MHz respectively. The y-axis ranges from 0 to 140 dBuV/m, and the x-axis ranges from 0 to 25000 MHz. A red horizontal line indicates the 'PEAK_74' level at approximately 75 dBuV/m, and another red line indicates the 'AVG_54' level at approximately 55 dBuV/m. The plot is dated 2020-01-06.</p> <p>Site : 03CH11-1F<br/>Condition : PEAK_74 3m HORN 91200-HF HORIZONTAL<br/>Detector : Peak<br/>Project : 901524-02</p> | <p>Vertical spectrum plot showing Level (dBuV/m) vs Frequency (MHz). The plot displays two distinct peaks labeled '1' and '2' at approximately 4.41 MHz and 6.82 MHz respectively. The y-axis ranges from 0 to 140 dBuV/m, and the x-axis ranges from 0 to 25000 MHz. A red horizontal line indicates the 'PEAK_74' level at approximately 75 dBuV/m, and another red line indicates the 'AVG_54' level at approximately 55 dBuV/m. The plot is dated 2020-01-06.</p> <p>Site : 03CH11-1F<br/>Condition : PEAK_74 3m HORN 91200-HF VERTICAL<br/>Detector : Peak<br/>Project : 901524-02</p> |

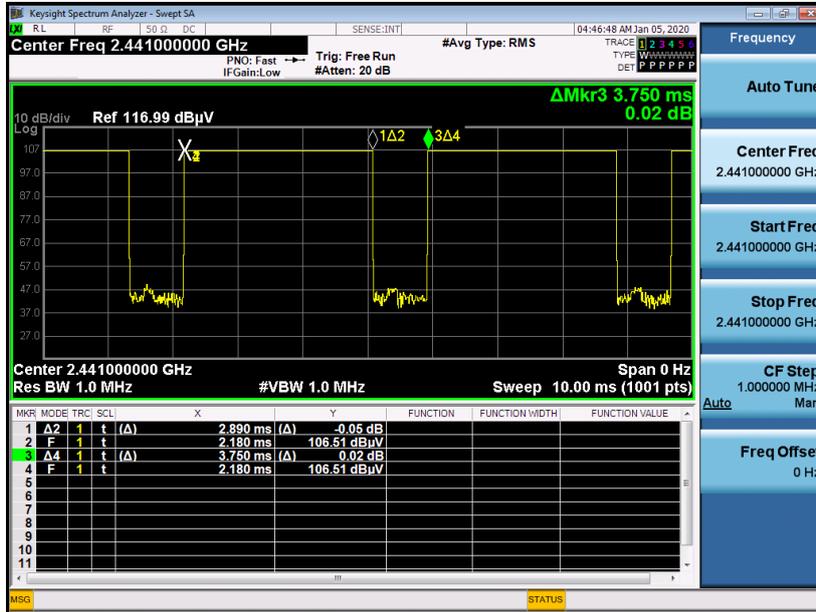


|                                       |   |   |
|---------------------------------------|---|---|
| <b>BT</b>                             | <b>2.4GHz 2400~2483.5MHz Harmonic @ 3m</b>  |   |
|                                       | <b>BT CH78 2480MHz</b>  |   |
|                                       | <b>Horizontal</b>   | <b>Vertical</b>   |
| <p><b>Peak</b></p> <p><b>Avg.</b></p> | <p>Site : 03CH11-11Y<br/>         Condition : PEAK_74 3m HORN 91200-HF HORIZONTAL<br/>         Detector : Peak<br/>         Project : 901524-02</p> | <p>Site : 03CH11-11Y<br/>         Condition : PEAK_74 3m HORN 91200-HF VERTICAL<br/>         Detector : Peak<br/>         Project : 901524-02</p> |

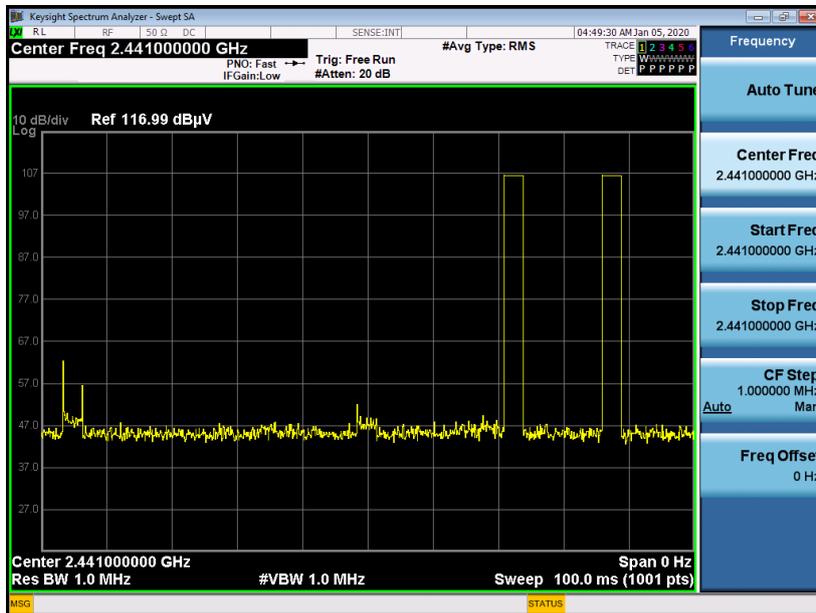
## Appendix E. Duty Cycle Plots

<1Mbps>

DH5 on time (One Pulse) Plot on Channel 39



on time (Count Pulses) Plot on Channel 39



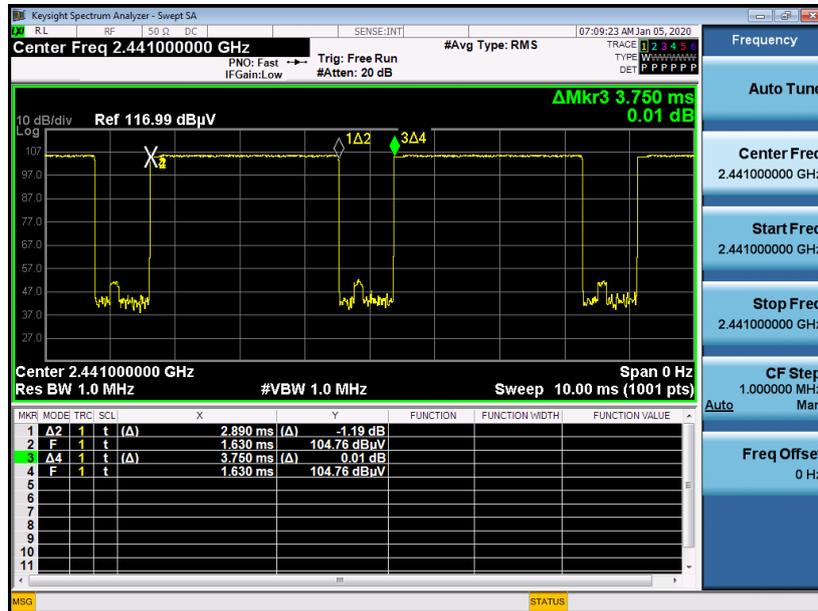
**Note:**

1. Worst case Duty cycle = on time/100 milliseconds =  $2 * 2.89 / 100 = 5.78 \%$
2. Worst case Duty cycle correction factor =  $20 * \log(\text{Duty cycle}) = -24.76 \text{ dB}$
3. DH5 has the highest duty cycle worst case and is reported.

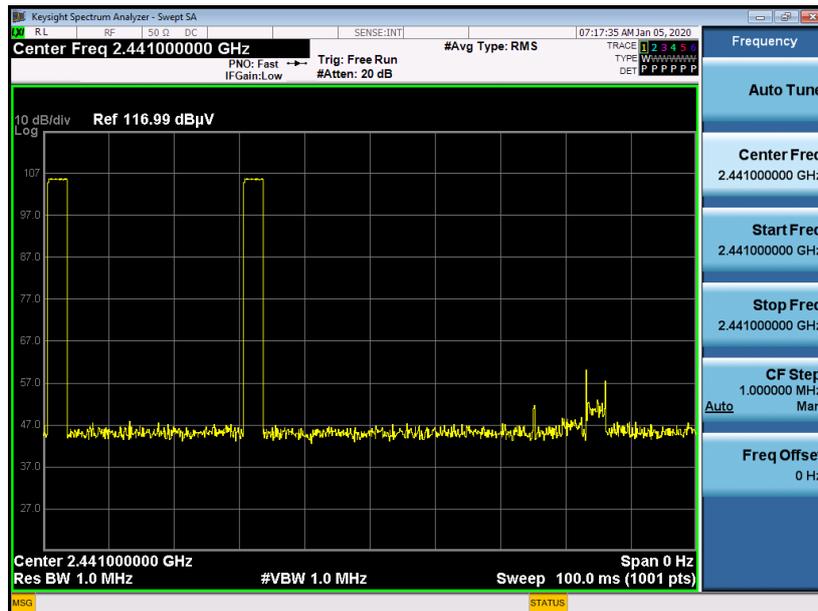


<2Mbps>

2DH5 on time (One Pulse) Plot on Channel 39



on time (Count Pulses) Plot on Channel 39

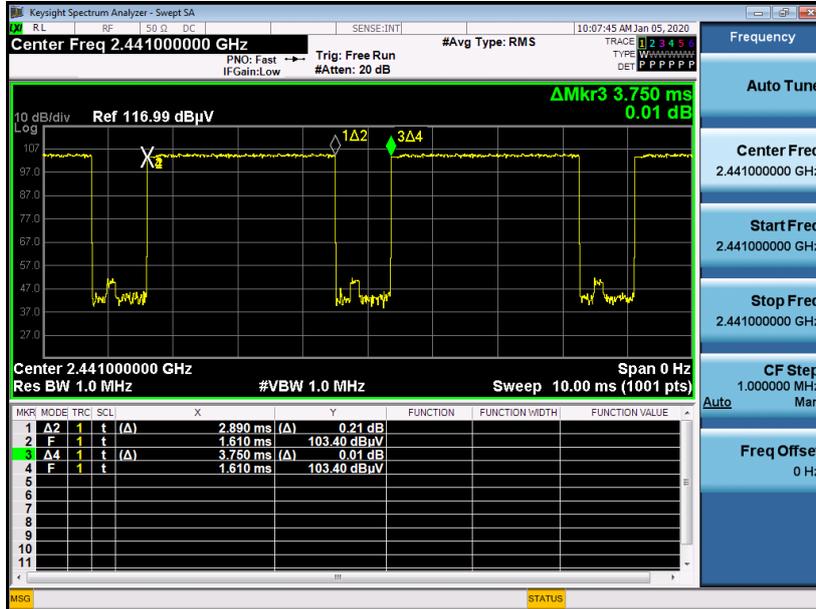


Note:

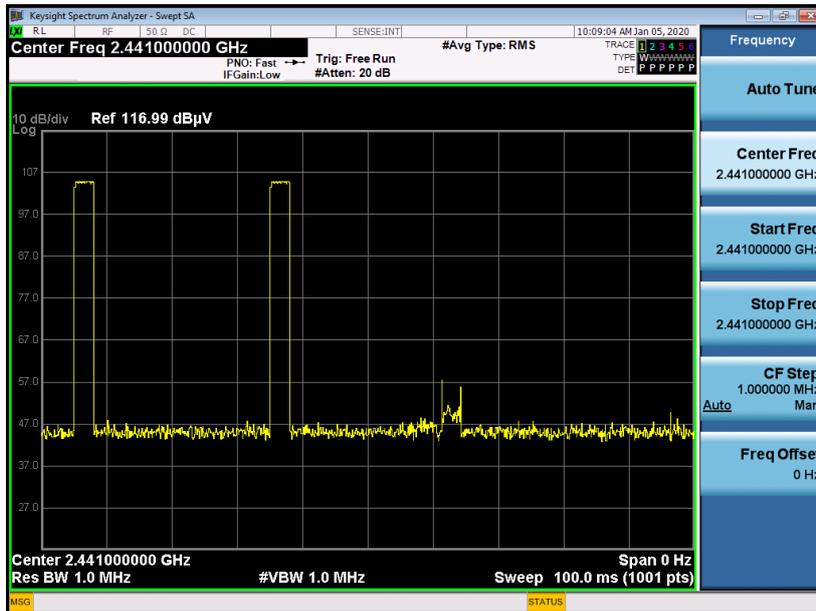
1. Worst case Duty cycle = on time/100 milliseconds = 2 \* 2.89 / 100 = 5.78%
2. Worst case Duty cycle correction factor = 20\*log(Duty cycle) = -24.76 dB
3. 2DH5 has the highest duty cycle worst case and is reported.

<3Mbps>

3DH5 on time (One Pulse) Plot on Channel 39



on time (Count Pulses) Plot on Channel 39



Note:

1. Worst case Duty cycle = on time/100 milliseconds =  $2 * 2.89 / 100 = 5.78\%$
2. Worst case Duty cycle correction factor =  $20 * \log(\text{Duty cycle}) = -24.76 \text{ dB}$
3. 3DH5 has the highest duty cycle worst case and is reported.



**Duty Cycle Correction Factor Consideration for AFH mode:**

Bluetooth normal hopping rate is 1600Hz and reduced to 800Hz in AFH mode; due to the reduced number of hopping frequencies, with the same packet configuration the dwell time in each channel frequency within 100msec period is longer in AFH mode than normal mode.

In AFH mode, the minimum hopping frequencies are 20, to get the longest dwell time DH5 packet is observed; the period to have DH5 packet completing one hopping sequence is

$$2.89 \text{ ms} \times 20 \text{ channels} = 57.8 \text{ ms}$$

There cannot be 2 complete hopping sequences within 100ms period, considering the random hopping behavior, maximum 2 hops can be possibly observed within the period.  $[100\text{ms} / 57.6\text{ms}] = 2$  hops

Thus, the maximum possible ON time:

$$2.89 \text{ ms} \times 2 = 5.78 \text{ ms}$$

Worst case Duty Cycle Correction factor, which is derived from the maximum possible ON time,

$$20 \times \log(5.78 \text{ ms}/100\text{ms}) = -24.76 \text{ dB}$$

—————THE END—————