



## Appendix A. Radiated Spurious Emission

|                 |                                     |                     |         |
|-----------------|-------------------------------------|---------------------|---------|
| Test Engineer : | Kyle Jhuang, Citta Ke, and Karl Hou | Temperature :       | 25~26°C |
|                 |                                     | Relative Humidity : | 50~51%  |

15C 2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

| BT                    | Note                                                                                        | Frequency | Level    | Over     | Limit    | Read   | Antenna | Cable | Preamp | Ant  | Table | Peak  | Pol.  |
|-----------------------|---------------------------------------------------------------------------------------------|-----------|----------|----------|----------|--------|---------|-------|--------|------|-------|-------|-------|
| Ant.                  |                                                                                             |           |          | Limit    | Line     | Level  | Factor  | Loss  | Factor | Pos  | Pos   | Avg.  |       |
| 1                     |                                                                                             | (MHz)     | (dBμV/m) | (dB)     | (dBμV/m) | (dBμV) | (dB/m)  | (dB)  | (dB)   | (cm) | (deg) | (P/A) | (H/V) |
| BT<br>CH00<br>2402MHz |                                                                                             | 2357.71   | 45.79    | -28.21   | 74       | 42.17  | 32.7    | 4.6   | 33.68  | 129  | 165   | P     | H     |
|                       |                                                                                             | 2357.71   | 20.99845 | -33.0016 | 54       | -      | -       | -     | -      | -    | -     | A     | H     |
|                       | *                                                                                           | 2402.04   | 93.55    | -        | -        | 89.81  | 32.77   | 4.62  | 33.65  | 129  | 165   | P     | H     |
|                       | *                                                                                           | 2402.04   | 68.75845 | -        | -        | -      | -       | -     | -      | -    | -     | A     | H     |
|                       |                                                                                             |           |          |          |          |        |         |       |        |      |       |       | H     |
|                       |                                                                                             |           |          |          |          |        |         |       |        |      |       |       | H     |
|                       |                                                                                             | 2323.39   | 46.27    | -27.73   | 74       | 42.8   | 32.62   | 4.55  | 33.7   | 128  | 88    | P     | V     |
|                       |                                                                                             | 2323.39   | 21.47845 | -32.5216 | 54       | -      | -       | -     | -      | -    | -     | A     | V     |
|                       | *                                                                                           | 2401.91   | 87.76    | -        | -        | 84.02  | 32.77   | 4.62  | 33.65  | 128  | 88    | P     | V     |
|                       | *                                                                                           | 2401.91   | 62.96845 | -        | -        | -      | -       | -     | -      | -    | -     | A     | V     |
|                       |                                                                                             |           |          |          |          |        |         |       |        |      |       |       | V     |
|                       |                                                                                             |           |          |          |          |        |         |       |        |      |       |       | V     |
| Remark                | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. |           |          |          |          |        |         |       |        |      |       |       |       |



| BT                     | Note                                                         | Frequency | Level    | Over     | Limit    | Read   | Antenna | Cable | Preamp | Ant  | Table | Peak  | Pol.  |
|------------------------|--------------------------------------------------------------|-----------|----------|----------|----------|--------|---------|-------|--------|------|-------|-------|-------|
| Ant.                   |                                                              |           |          | Limit    | Line     | Level  | Factor  | Loss  | Factor | Pos  | Pos   | Avg.  |       |
| 1                      |                                                              | (MHz)     | (dBμV/m) | (dB)     | (dBμV/m) | (dBμV) | (dB/m)  | (dB)  | (dB)   | (cm) | (deg) | (P/A) | (H/V) |
| BT<br>CH 39<br>2441MHz |                                                              | 2345.34   | 45.41    | -28.59   | 74       | 41.87  | 32.66   | 4.57  | 33.69  | 100  | 166   | P     | H     |
|                        | *                                                            | 2440.91   | 95.99    | -        | -        | 92.02  | 32.89   | 4.68  | 33.6   | 100  | 166   | P     | H     |
|                        |                                                              | 2484.23   | 45.93    | -28.07   | 74       | 41.81  | 32.96   | 4.73  | 33.57  | 100  | 166   | P     | H     |
|                        |                                                              |           |          |          |          |        |         |       |        |      |       |       | H     |
|                        |                                                              |           |          |          |          |        |         |       |        |      |       |       | H     |
|                        |                                                              |           |          |          |          |        |         |       |        |      |       |       | H     |
|                        |                                                              | 2373.46   | 46.45    | -27.55   | 74       | 42.78  | 32.73   | 4.6   | 33.66  | 103  | 89    | P     | V     |
|                        | *                                                            | 2441.1    | 90.26    | -        | -        | 86.29  | 32.89   | 4.68  | 33.6   | 103  | 89    | P     | V     |
|                        |                                                              | 2494.3    | 46.11    | -27.89   | 74       | 41.94  | 33      | 4.73  | 33.56  | 103  | 89    | P     | V     |
|                        |                                                              |           |          |          |          |        |         |       |        |      |       |       | V     |
|                        |                                                              |           |          |          |          |        |         |       |        |      |       |       | V     |
|                        |                                                              |           |          |          |          |        |         |       |        |      |       |       | V     |
| BT<br>CH 78<br>2480MHz | *                                                            | 2479.98   | 92.2     | -        | -        | 88.08  | 32.96   | 4.73  | 33.57  | 100  | 161   | P     | H     |
|                        | *                                                            | 2479.98   | 67.40845 | -        | -        | -      | -       | -     | -      | -    | -     | A     | H     |
|                        |                                                              | 2483.5    | 49.8     | -24.2    | 74       | 45.68  | 32.96   | 4.73  | 33.57  | 100  | 161   | P     | H     |
|                        |                                                              | 2483.5    | 25.00845 | -28.9916 | 54       | -      | -       | -     | -      | -    | -     | A     | H     |
|                        |                                                              |           |          |          |          |        |         |       |        |      |       |       | H     |
|                        |                                                              |           |          |          |          |        |         |       |        |      |       |       | H     |
|                        | *                                                            | 2480.05   | 85.57    | -        | -        | 81.45  | 32.96   | 4.73  | 33.57  | 100  | 105   | P     | V     |
|                        | *                                                            | 2480.05   | 60.77845 | -        | -        | -      | -       | -     | -      | -    | -     | A     | V     |
|                        |                                                              | 2490.69   | 45.89    | -28.11   | 74       | 41.72  | 33      | 4.73  | 33.56  | 100  | 105   | P     | V     |
|                        |                                                              | 2490.69   | 21.09845 | -32.9016 | 54       | -      | -       | -     | -      | -    | -     | A     | V     |
|                        |                                                              |           |          |          |          |        |         |       |        |      |       |       | V     |
|                        |                                                              |           |          |          |          |        |         |       |        |      |       |       | V     |
| Remark                 | 1. No other spurious found.                                  |           |          |          |          |        |         |       |        |      |       |       |       |
|                        | 2. All results are PASS against Peak and Average limit line. |           |          |          |          |        |         |       |        |      |       |       |       |



## 15C 2.4GHz 2400~2483.5MHz

## BT (Harmonic @ 3m)

| BT                     | Note                                                                                        | Frequency | Level    | Over   | Limit    | Read   | Antenna | Cable | Preamp | Ant  | Table | Peak  | Pol.  |
|------------------------|---------------------------------------------------------------------------------------------|-----------|----------|--------|----------|--------|---------|-------|--------|------|-------|-------|-------|
| Ant.                   |                                                                                             |           |          | Limit  | Line     | Level  | Factor  | Loss  | Factor | Pos  | Pos   | Avg.  |       |
| 1                      |                                                                                             | (MHz)     | (dBμV/m) | (dB)   | (dBμV/m) | (dBμV) | (dB/m)  | (dB)  | (dB)   | (cm) | (deg) | (P/A) | (H/V) |
| BT<br>CH 00<br>2402MHz |                                                                                             | 4803      | 39.9     | -34.1  | 74       | 56.98  | 35.04   | 6.52  | 58.64  | 100  | 0     | P     | H     |
|                        |                                                                                             |           |          |        |          |        |         |       |        |      |       |       | H     |
|                        |                                                                                             |           |          |        |          |        |         |       |        |      |       |       | H     |
|                        |                                                                                             |           |          |        |          |        |         |       |        |      |       |       | H     |
|                        |                                                                                             | 4803      | 41.06    | -32.94 | 74       | 58.14  | 35.04   | 6.52  | 58.64  | 100  | 0     | P     | V     |
|                        |                                                                                             |           |          |        |          |        |         |       |        |      |       |       | V     |
|                        |                                                                                             |           |          |        |          |        |         |       |        |      |       |       | V     |
|                        |                                                                                             |           |          |        |          |        |         |       |        |      |       |       | V     |
| BT<br>CH 39<br>2441MHz |                                                                                             | 4882      | 39.63    | -34.37 | 74       | 56.55  | 35.02   | 6.58  | 58.52  | 100  | 0     | P     | H     |
|                        |                                                                                             | 4882      | 14.84    | -39.16 | 54       | -      | -       | -     | -      | -    | -     | A     | H     |
|                        |                                                                                             | 7323      | 42.46    | -31.54 | 74       | 56.01  | 36.4    | 8.24  | 58.19  | 100  | 0     | P     | H     |
|                        |                                                                                             | 7323      | 17.67    | -36.33 | 54       | -      | -       | -     | -      | -    | -     | A     | H     |
|                        |                                                                                             | 4881      | 39.63    | -34.37 | 74       | 56.55  | 35.02   | 6.58  | 58.52  | 100  | 0     | P     | V     |
|                        |                                                                                             | 4881      | 14.84    | -39.16 | 54       | -      | -       | -     | -      | -    | -     | A     | V     |
|                        |                                                                                             | 7323      | 41.41    | -32.59 | 74       | 54.96  | 36.4    | 8.24  | 58.19  | 100  | 0     | P     | V     |
|                        |                                                                                             | 7323      | 16.62    | -37.38 | 54       | -      | -       | -     | -      | -    | -     | A     | V     |
| BT<br>CH 78<br>2480MHz |                                                                                             | 4960      | 39.14    | -34.86 | 74       | 55.88  | 35.01   | 6.61  | 58.36  | 100  | 0     | P     | H     |
|                        |                                                                                             | 4960      | 14.35    | -39.65 | 54       | -      | -       | -     | -      | -    | -     | A     | H     |
|                        |                                                                                             | 7440      | 42.38    | -31.62 | 74       | 55.96  | 36.47   | 8.36  | 58.41  | 100  | 0     | P     | H     |
|                        |                                                                                             | 7440      | 17.59    | -36.41 | 54       | -      | -       | -     | -      | -    | -     | A     | H     |
|                        |                                                                                             | 4960      | 39.2     | -34.8  | 74       | 55.94  | 35.01   | 6.61  | 58.36  | 100  | 0     | P     | V     |
|                        |                                                                                             | 4960      | 14.41    | -39.59 | 54       | -      | -       | -     | -      | -    | -     | A     | V     |
|                        |                                                                                             | 7440      | 40.62    | -33.38 | 74       | 54.2   | 36.47   | 8.36  | 58.41  | 100  | 0     | P     | V     |
|                        |                                                                                             | 7440      | 15.83    | -38.17 | 54       | -      | -       | -     | -      | -    | -     | A     | V     |
| Remark                 | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. |           |          |        |          |        |         |       |        |      |       |       |       |

## 15C Emission below 1GHz

## 2.4GHz BT (LF)

[illegible]

**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 per 15.209(c). |
| !   | Test result is <b>over limit</b> line.                                                                                                                                 |
| P/A | <b>Peak</b> or <b>Average</b>                                                                                                                                          |
| H/V | <b>H</b> orizontal or <b>V</b> ertical                                                                                                                                 |



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

| WIFI    | Note | Frequency | Level      | Over   | Limit      | Read     | Antenna  | Cable  | Preamp | Ant    | Table   | Peak    | Pol.    |
|---------|------|-----------|------------|--------|------------|----------|----------|--------|--------|--------|---------|---------|---------|
| Ant.    |      |           |            | Limit  | Line       | Level    | Factor   | Loss   | Factor | Pos    | Pos     | Avg.    |         |
| 1+2     |      | ( MHz )   | ( dBμV/m ) | ( dB ) | ( dBμV/m ) | ( dBμV ) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | ( P/A ) | ( H/V ) |
| 802.11b |      | 2390      | 55.45      | -18.55 | 74         | 54.51    | 32.22    | 4.58   | 35.86  | 103    | 308     | P       | H       |
| CH 01   |      |           |            |        |            |          |          |        |        |        |         |         |         |
| 2412MHz |      | 2390      | 43.54      | -10.46 | 54         | 42.6     | 32.22    | 4.58   | 35.86  | 103    | 308     | A       | H       |

1. Level(dBμV/m) =

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

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

**For Peak Limit @ 2390MHz:**

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable 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) + Cable 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”.**