



Appendix A. Radiated Spurious Emission

| | | | |
|-----------------|------------------------------------|---------------------|---------|
| Test Engineer : | Jet Lui, Kyle Jhuang, and Karl Hou | Temperature : | 23~24°C |
| | | Relative Humidity : | 45~46% |

15C 2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

| BT | Note | Frequency | Level | Over | Limit | Read | Antenna | Cable | 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 CH00 2402MHz | | 2311.04 | 47.51 | -26.49 | 74 | 44.2 | 31.89 | 6.07 | 34.65 | 103 | 174 | P | H | |
| | | 2311.04 | 22.74 | -31.26 | 54 | - | - | - | - | - | - | A | H | |
| | * | 2402.17 | 93.66 | - | - | 90.15 | 31.94 | 6.21 | 34.64 | 103 | 174 | P | H | |
| | | 2402.17 | 68.89 | - | - | - | - | - | - | - | - | A | H | |
| | | | | | | | | | | | | | H | |
| | | | | | | | | | | | | | | H |
| | | | 2354.33 | 46.98 | -27.02 | 74 | 43.57 | 31.92 | 6.14 | 34.65 | 104 | 215 | P | V |
| | | | 2354.33 | 22.21 | -31.79 | 54 | - | - | - | - | - | - | A | V |
| | * | | 2402.17 | 96.09 | - | - | 92.58 | 31.94 | 6.21 | 34.64 | 104 | 215 | P | V |
| | | | 2402.17 | 71.32 | - | - | - | - | - | - | - | - | A | V |
| | | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V | |
| BT CH 39 2441MHz | | 2345.72 | 47.81 | -26.19 | 74 | 44.41 | 31.91 | 6.14 | 34.65 | 100 | 187 | P | H | |
| | | 2345.72 | 23.04 | -30.96 | 54 | - | - | - | - | - | - | A | H | |
| | * | 2440.91 | 94.87 | - | - | 91.27 | 31.97 | 6.27 | 34.64 | 100 | 187 | P | H | |
| | | 2440.91 | 70.1 | - | - | - | - | - | - | - | - | A | H | |
| | | | 2489.36 | 47.04 | -26.96 | 74 | 43.37 | 32 | 6.3 | 34.63 | 100 | 187 | P | H |
| | | | 2489.36 | 22.27 | -31.73 | 54 | - | - | - | - | - | - | A | H |
| | | | 2359.97 | 47.5 | -26.5 | 74 | 44.09 | 31.92 | 6.14 | 34.65 | 101 | 214 | P | V |
| | | | 2359.97 | 22.73 | -31.27 | 54 | - | - | - | - | - | - | A | V |
| | * | | 2441.29 | 95.58 | - | - | 91.98 | 31.97 | 6.27 | 34.64 | 101 | 214 | P | V |
| | | | 2441.29 | 70.81 | - | - | - | - | - | - | - | - | A | V |
| | | | 2500 | 47.1 | -26.9 | 74 | 43.39 | 32 | 6.34 | 34.63 | 101 | 214 | P | V |
| | | 2500 | 22.33 | -31.67 | 54 | - | - | - | - | - | - | A | V | |



| | | | | | | | | | | | | | | |
|---------------------------------|---|---------|-------|--------|----|-------|-------|-----|-------|-----|-----|---|---|---|
| BT CH 78 2480MHz | * | 2480.05 | 93.66 | - | - | 90 | 31.99 | 6.3 | 34.63 | 100 | 192 | P | H | |
| | | 2480.05 | 68.89 | - | - | - | - | - | - | - | - | A | H | |
| | | 2485.02 | 52.19 | -21.81 | 74 | 48.53 | 31.99 | 6.3 | 34.63 | 100 | 192 | P | H | |
| | | 2485.02 | 27.42 | -26.58 | 54 | - | - | - | - | - | - | A | H | |
| | | | | | | | | | | | | | H | |
| | | | | | | | | | | | | | H | |
| | * | 2479.91 | 97.64 | - | - | 93.98 | 31.99 | 6.3 | 34.63 | 100 | 202 | P | V | |
| | | 2479.91 | 72.87 | - | - | - | - | - | - | - | - | - | A | V |
| | | 2483.48 | 55.15 | -18.85 | 74 | 51.49 | 31.99 | 6.3 | 34.63 | 100 | 202 | P | V | |
| | | 2483.48 | 30.38 | -23.62 | 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. |
|------------------------|---|-----------|------------|--------|------------|----------|----------|--------|--------|--------|---------|---------|---------|
| | | (MHz) | (dBμV/m) | (dB) | Limit | Level | Factor | Loss | Factor | Pos | Pos | Avg. | |
| | | (MHz) | (dBμV/m) | (dB) | (dBμV/m) | (dBμV) | (dB/m) | (dB) | (dB) | (cm) | (deg) | (P/A) | (H/V) |
| BT CH 00 2402MHz | | 4803 | 41.48 | -32.52 | 74 | 59.47 | 34.35 | 8.52 | 60.86 | 100 | 0 | P | H |
| | | 7206 | 41.24 | -32.76 | 74 | 54.08 | 35.76 | 11.88 | 60.48 | 100 | 0 | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 4803 | 40.59 | -33.41 | 74 | 58.58 | 34.35 | 8.52 | 60.86 | 100 | 0 | P | V |
| | | 7206 | 41.01 | -32.99 | 74 | 53.85 | 35.76 | 11.88 | 60.48 | 100 | 0 | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| BT CH 39 2441MHz | | 4884 | 42.9 | -31.1 | 74 | 60.42 | 34.4 | 8.77 | 60.69 | 100 | 0 | P | H |
| | | 7323 | 40.96 | -33.04 | 74 | 53.81 | 35.73 | 11.95 | 60.53 | 100 | 0 | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 4881 | 45.17 | -28.83 | 74 | 62.69 | 34.4 | 8.77 | 60.69 | 100 | 0 | P | V |
| | | 7323 | 41.13 | -32.87 | 74 | 53.98 | 35.73 | 11.95 | 60.53 | 100 | 0 | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| BT CH 78 2480MHz | | 4962 | 45.21 | -28.79 | 74 | 62.2 | 34.47 | 9.02 | 60.48 | 100 | 0 | P | H |
| | | 7440 | 40.69 | -33.31 | 74 | 53.55 | 35.71 | 12.01 | 60.58 | | | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 4962 | 41.56 | -32.44 | 74 | 58.55 | 34.47 | 9.02 | 60.48 | 100 | 0 | P | V |
| | | 7440 | 40.03 | -33.97 | 74 | 52.89 | 35.71 | 12.01 | 60.58 | 100 | 0 | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| Remark | 1. No other spurious found. 2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |



15C Emission below 1GHz

2.4GHz BT (LF)

| BT | Note | Frequency | Level | Over | Limit | Read | Antenna | Cable | Preamp | Ant | Table | Peak | Pol. |
|--------------------|--|-----------|------------|--------|------------|----------|----------|--------|--------|--------|---------|---------|---------|
| | | (MHz) | (dBμV/m) | (dB) | (dBμV/m) | (dBμV) | (dB/m) | (dB) | (dB) | (cm) | (deg) | (P/A) | (H/V) |
| 2.4GHz BT LF | | 34.32 | 23.16 | -16.84 | 40 | 38.17 | 16.1 | 0.68 | 31.79 | | | P | H |
| | | 141.24 | 34.84 | -8.66 | 43.5 | 54.34 | 10.93 | 1.32 | 31.75 | | | P | H |
| | | 285.15 | 39.72 | -6.28 | 46 | 56.69 | 12.9 | 1.85 | 31.72 | | | P | H |
| | | 303.5 | 37.96 | -8.04 | 46 | 54.49 | 13.27 | 1.92 | 31.72 | | | P | H |
| | | 424.6 | 37.24 | -8.76 | 46 | 50.04 | 16.8 | 2.25 | 31.85 | | | P | H |
| | | 770.4 | 40.24 | -5.76 | 46 | 49.06 | 20.1 | 3.05 | 31.97 | 126 | 58 | P | H |
| | | 42.96 | 27.8 | -12.2 | 40 | 47.92 | 10.92 | 0.75 | 31.79 | | | P | V |
| | | 142.05 | 35.98 | -7.52 | 43.5 | 55.56 | 10.85 | 1.32 | 31.75 | 100 | 136 | P | V |
| | | 282.45 | 35.1 | -10.9 | 46 | 52.15 | 12.84 | 1.84 | 31.73 | | | P | V |
| | | 308.4 | 33.39 | -12.61 | 46 | 49.83 | 13.36 | 1.93 | 31.73 | | | P | V |
| | | 441.4 | 33.21 | -12.79 | 46 | 45.98 | 16.81 | 2.29 | 31.87 | | | P | V |
| | 774.6 | 35.66 | -10.34 | 46 | 44.43 | 20.15 | 3.05 | 31.97 | | | P | V | |
| Remark | 1. No other spurious found. 2. All results are PASS against limit line. | | | | | | | | | | | | |



Note symbol

| | |
|-----|--|
| * | Fundamental Frequency 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 over limit line. |
| P/A | Peak or Average |
| H/V | Horizontal or Vertical |



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 |

- Level(dBμV/m) =
Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
- Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

- 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)
- Over Limit(dB)
= Level(dBμV/m) – Limit Line(dBμV/m)
= 55.45(dBμV/m) – 74(dBμV/m)
= -18.55(dB)

For Average Limit @ 2390MHz:

- 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)
- 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”.