



Appendix A. Radiated Spurious Emission

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

15C 2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

BLE	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)
BLE CH 00 2402MHz		2377.95	51.27	-22.73	74	47.6	32.73	4.6	33.66	129	203	P	H
		2332.5	40.15	-13.85	54	36.66	32.62	4.57	33.7	129	203	A	H
	*	2402	94.8	-	-	91.06	32.77	4.62	33.65	129	203	P	H
	*	2402	94.41	-	-	90.67	32.77	4.62	33.65	129	203	A	H
													H
													H
		2377.32	51.64	-22.36	74	47.97	32.73	4.6	33.66	166	228	P	V
		2385.96	40.22	-13.78	54	36.48	32.77	4.62	33.65	166	228	A	V
	*	2402	92.83	-	-	89.09	32.77	4.62	33.65	166	228	P	V
	*	2402	91.47	-	-	87.73	32.77	4.62	33.65	166	228	A	V
													V
													V
BLE CH 19 2440MHz		2344.29	51.47	-22.53	74	47.93	32.66	4.57	33.69	100	204	P	H
		2389.29	40.12	-13.88	54	36.38	32.77	4.62	33.65	100	204	A	H
	*	2440	95.48	-	-	91.51	32.89	4.68	33.6	100	204	P	H
	*	2440	94.54	-	-	90.57	32.89	4.68	33.6	100	204	A	H
		2494.72	51.22	-22.78	74	47.05	33	4.73	33.56	100	204	P	H
		2490.52	40.71	-13.29	54	36.54	33	4.73	33.56	100	204	A	H
		2379.3	51.02	-22.98	74	47.35	32.73	4.6	33.66	107	176	P	V
		2374.35	40.16	-13.84	54	36.49	32.73	4.6	33.66	107	176	A	V
	*	2440	94.97	-	-	91	32.89	4.68	33.6	107	176	P	V
	*	2440	93.86	-	-	89.89	32.89	4.68	33.6	107	176	A	V
		2484.16	51.31	-22.69	74	47.19	32.96	4.73	33.57	107	176	P	V
		2495.04	40.63	-13.37	54	36.46	33	4.73	33.56	107	176	A	V



BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
BLE CH 39 2480MHz	*	2480	93.43	-	-	89.31	32.96	4.73	33.57	100	181	P	H
	*	2480	92.34	-	-	88.22	32.96	4.73	33.57	100	181	A	H
		2487.96	50.96	-23.04	74	46.79	33	4.73	33.56	100	181	P	H
		2486.36	40.69	-13.31	54	36.57	32.96	4.73	33.57	100	181	A	H
													H
													H
	*	2480	95.18	-	-	91.06	32.96	4.73	33.57	105	176	P	V
	*	2480	94.28	-	-	90.16	32.96	4.73	33.57	105	176	A	V
		2483.88	51.34	-22.66	74	47.22	32.96	4.73	33.57	105	176	P	V
		2496.24	40.67	-13.33	54	36.5	33	4.73	33.56	105	176	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

BLE (Harmonic @ 3m)

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
BLE CH 00 2402MHz		4804	41.7	-32.3	74	58.78	35.04	6.52	58.64	100	0	P	H
													H
													H
													H
		4804	41.1	-32.9	74	58.18	35.04	6.52	58.64	100	0	P	V
													V
													V
													V
BLE CH 19 2440MHz		4880	39.04	-34.96	74	55.96	35.02	6.58	58.52	100	0	P	H
		7320	42.19	-31.81	74	55.74	36.4	8.24	58.19	100	0	P	H
													H
													H
		4880	39.64	-34.36	74	56.56	35.02	6.58	58.52	100	0	P	V
		7320	41.68	-32.32	74	55.23	36.4	8.24	58.19	100	0	P	V
													V
													V
BLE CH 39 2480MHz		4960	40.36	-33.64	74	57.1	35.01	6.61	58.36	100	0	P	H
		7440	41.88	-32.12	74	55.46	36.47	8.36	58.41	100	0	P	H
													H
													H
		4960	41.24	-32.76	74	57.98	35.01	6.61	58.36	100	0	P	V
		7440	42.4	-31.6	74	55.98	36.47	8.36	58.41	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 BLE (LF)

[illegible]



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

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”.