



Appendix A. Radiated Spurious Emission

Test Engineer :	Lewis He	Temperature :	23~24°C
		Relative Humidity :	51~52%

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		2386.14	53.3	-20.7	74	53.29	27.23	33.24	6.02	115	61	P	H
		2321.97	41.81	-12.19	54	42.09	27.05	33.26	5.93	115	61	A	H
	*	2402	97.03	-	-	97	27.23	33.22	6.02	115	61	P	H
	*	2402	93.93	-	-	93.9	27.23	33.22	6.02	115	61	A	H
													H
													H
		2388.57	53.21	-20.79	74	53.2	27.23	33.24	6.02	166	280	P	V
		2321.97	42.2	-11.8	54	42.48	27.05	33.26	5.93	166	280	A	V
	*	2402	96.1	-	-	96.07	27.23	33.22	6.02	166	280	P	V
	*	2402	93.01	-	-	92.98	27.23	33.22	6.02	166	280	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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 19 2440MHz		2360.13	51.43	-22.57	74	51.56	27.14	33.25	5.98	151	64	P	H
		2360.04	41.92	-12.08	54	42.05	27.14	33.25	5.98	151	64	A	H
	*	2440	96.93	-	-	96.69	27.37	33.21	6.08	151	64	P	H
	*	2440	93.8	-	-	93.56	27.37	33.21	6.08	151	64	A	H
		2490	51.61	-22.39	74	51.07	27.5	33.18	6.22	151	64	P	H
		2484.48	41.24	-12.76	54	40.74	27.46	33.18	6.22	151	64	A	H
		2360.04	52.46	-21.54	74	52.59	27.14	33.25	5.98	145	245	P	V
		2359.95	42.2	-11.8	54	42.33	27.14	33.25	5.98	145	245	A	V
	*	2440	96.73	-	-	96.49	27.37	33.21	6.08	145	245	P	V
	*	2440	93.58	-	-	93.34	27.37	33.21	6.08	145	245	A	V
		2492.92	52.52	-21.48	74	51.97	27.5	33.17	6.22	145	245	P	V
		2486.52	41.39	-12.61	54	40.89	27.46	33.18	6.22	145	245	A	V
BLE CH 39 2480MHz	*	2480	96.52	-	-	96.09	27.46	33.18	6.15	116	308	P	H
	*	2480	93.27	-	-	92.84	27.46	33.18	6.15	116	308	A	H
		2485.32	54.77	-19.23	74	54.27	27.46	33.18	6.22	116	308	P	H
		2483.52	41.6	-12.4	54	41.1	27.46	33.18	6.22	116	308	A	H
													H
													H
	*	2480	95.48	-	-	95.05	27.46	33.18	6.15	122	299	P	V
	*	2480	92.25	-	-	91.82	27.46	33.18	6.15	122	299	A	V
		2485.52	54.89	-19.11	74	54.39	27.46	33.18	6.22	122	299	P	V
		2483.72	41.54	-12.46	54	41.04	27.46	33.18	6.22	122	299	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		4806	38.09	-35.91	74	59.8	31.42	60.64	7.51	100	0	P	H
													H
													H
													H
		4806	38.02	-35.98	74	59.73	31.42	60.64	7.51	100	0	P	V
													V
													V
													V
BLE CH 19 2440MHz		4878	37.99	-36.01	74	59.41	31.56	60.52	7.54	100	0	P	H
		7320	43.28	-30.72	74	56.78	36.22	60.98	11.26	100	0	P	H
													H
													H
		4878	36.47	-37.53	74	57.89	31.56	60.52	7.54	100	0	P	V
		7320	42.92	-31.08	74	56.42	36.22	60.98	11.26	100	0	P	V
													V
													V
BLE CH 39 2480MHz		4962	38.59	-35.41	74	59.59	31.73	60.36	7.63	100	0	P	H
		7440	43.43	-30.57	74	56.51	36.49	61.34	11.77	100	0	P	H
													H
													H
		4962	38.94	-35.06	74	59.94	31.73	60.36	7.63	100	0	P	V
		7440	43.25	-30.75	74	56.33	36.49	61.34	11.77	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 CH 01 2412MHz		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. 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”.