



Appendix A. Radiated Spurious Emission

15C 2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 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		2378.13	52.65	-21.35	74	48.36	31.28	9.17	36.16	159	195	P	H
		2364.63	40.14	-13.86	54	35.96	31.26	9.17	36.25	159	195	A	H
	*	2402.09	64.75	-	-	60.31	31.3	9.22	36.08	159	195	P	H
	*	2402	62.65	-	-	58.21	31.3	9.22	36.08	159	195	A	H
		2354.64	52.07	-21.93	74	47.94	31.26	9.12	36.25	189	180	P	V
		2386.23	40.08	-13.92	54	35.69	31.3	9.17	36.08	189	180	A	V
	*	2401.75	59.46	-	-	55.02	31.3	9.22	36.08	189	180	P	V
	*	2401.92	55.81	-	-	51.37	31.3	9.22	36.08	189	180	A	V
BLE CH 19 2440MHz	*	2439.75	68.78	-	-	64.07	31.34	9.28	35.91	163	264	P	H
	*	2440	67.55	-	-	62.84	31.34	9.28	35.91	163	264	A	H
	*	2440.16	59.38	-	-	54.67	31.34	9.28	35.91	150	45	P	V
	*	2440	55.62	-	-	50.91	31.34	9.28	35.91	150	45	A	V
BLE CH 39 2480MHz	*	2479.83	68.44	-	-	63.53	31.37	9.33	35.79	150	220	P	H
	*	2480.08	66.96	-	-	62.05	31.37	9.33	35.79	150	220	A	H
		2497.6	52.17	-21.83	74	47.19	31.39	9.33	35.74	150	220	P	H
		2497.16	40.05	-13.95	54	35.07	31.39	9.33	35.74	150	220	A	H
	*	2480.16	60.69	-	-	55.78	31.37	9.33	35.79	215	30	P	H
	*	2480.08	57.46	-	-	52.55	31.37	9.33	35.79	215	30	A	H
		2498.64	51.75	-22.25	74	46.77	31.39	9.33	35.74	215	30	P	V
		2488.64	40.1	-13.9	54	35.12	31.39	9.33	35.74	215	30	A	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		4803	45.97	-28.03	74	35.97	34.88	11.71	36.59	150	180	P	H
		4803	44.42	-29.58	74	34.42	34.88	11.71	36.59	154	249	P	V
BLE CH 19 2440MHz		4881	46.72	-27.28	74	36.88	34.92	11.76	36.84	150	145	P	H
		7320	45.76	-28.24	74	35.27	35.57	13.84	38.92	158	123	P	H
		4881	46.97	-27.03	74	37.13	34.92	11.76	36.84	100	51	P	V
		7320	45.35	-28.65	74	34.86	35.57	13.84	38.92	150	250	P	V
BLE CH 39 2480MHz		4959	45.57	-28.43	74	35.94	34.97	11.81	37.15	150	147	P	H
		7440	48.29	-25.71	74	37.69	35.59	13.92	38.91	150	235	P	H
		4959	44.33	-29.67	74	34.7	34.97	11.81	37.15	150	249	P	V
		7440	47.04	-26.96	74	36.44	35.59	13.92	38.91	154	215	P	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)

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)
2.4GHz BLE LF		30	22.46	-17.54	40	32.13	19.2	3.79	32.66	-	-	P	H
		55.22	19.7	-20.3	40	41.11	7.4	3.79	32.6	-	-	P	H
		97.9	24.25	-19.25	43.5	41.75	11.08	4.04	32.62	-	-	P	H
		121.18	26.71	-16.79	43.5	43.65	11.47	4.23	32.64	-	-	P	H
		199.75	22.58	-20.92	43.5	40.64	9.8	4.61	32.47	-	-	P	H
		669.23	33.48	-12.52	46	39.75	19.63	6.05	31.95	100	270	P	H
		30	28.62	-11.38	40	38.29	19.2	3.79	32.66	100	125	P	V
		37.76	26.99	-13.01	40	40.53	15.28	3.79	32.61	-	-	P	V
		52.31	20.56	-19.44	40	41.2	8.18	3.79	32.61	-	-	P	V
		101.78	16.94	-26.56	43.5	34.21	11.32	4.04	32.63	-	-	P	V
		121.18	16.18	-27.32	43.5	33.12	11.47	4.23	32.64	-	-	P	V
		669.23	25.65	-20.35	46	31.92	19.63	6.05	31.95	-	-	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	P eak or A verage
H/V	H orizontal or V 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”.