



Appendix B. 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		2369.31	52.26	-21.74	74	53.33	26.96	6.01	34.04	100	117	P	H
		2382.18	43.88	-10.12	54	44.95	26.96	6.01	34.04	100	117	A	H
	*	2401.753	98.78	-	-	99.8	27.01	6.01	34.04	100	117	P	H
	*	2402.087	98.77	-	-	99.79	27.01	6.01	34.04	100	117	A	H
													H
													H
		2382	52.32	-21.68	74	53.39	26.96	6.01	34.04	393	339	P	V
		2376.42	43.83	-10.17	54	44.9	26.96	6.01	34.04	393	339	A	V
	*	2401.753	96.45	-	-	97.47	27.01	6.01	34.04	393	339	P	V
	*	2402.087	96.39	-	-	97.41	27.01	6.01	34.04	393	339	A	V
													V
													V
BLE CH 19 2440MHz		2321.07	52.21	-21.79	74	53.56	26.82	5.89	34.06	281	113	P	H
		2388.57	44.21	-9.79	54	45.23	27.01	6.01	34.04	281	113	A	H
	*	2440	97.29	-	-	98.12	27.16	6.04	34.03	281	113	P	H
	*	2440	97.23	-	-	98.06	27.16	6.04	34.03	281	113	A	H
		2490.44	52.86	-21.14	74	53.48	27.3	6.09	34.01	281	113	P	H
		2490.8	44.24	-9.76	54	44.86	27.3	6.09	34.01	281	113	A	H
		2331.15	52.43	-21.57	74	53.72	26.82	5.95	34.06	386	351	P	V
		2388.93	43.94	-10.06	54	44.96	27.01	6.01	34.04	386	351	A	V
	*	2440	95.82	-	-	96.65	27.16	6.04	34.03	386	351	P	V
	*	2440	95.75	-	-	96.58	27.16	6.04	34.03	386	351	A	V
		2484.76	52.82	-21.18	74	53.49	27.25	6.09	34.01	386	351	P	V
		2484.88	44.68	-9.32	54	45.35	27.25	6.09	34.01	386	351	A	V



BLE CH 39 2480MHz	*	2480	96.78	-	-	97.47	27.25	6.07	34.01	132	113	P	H
	*	2480	95.7	-	-	96.39	27.25	6.07	34.01	132	113	A	H
		2491.6	52.53	-21.47	74	53.15	27.3	6.09	34.01	132	113	P	H
		2492.12	44.67	-9.33	54	45.28	27.3	6.09	34	132	113	A	H
													H
													H
	*	2480	94.31	-	-	95	27.25	6.07	34.01	369	348	P	V
	*	2480	94.28	-	-	94.97	27.25	6.07	34.01	369	348	A	V
		2491.72	52.48	-21.52	74	53.1	27.3	6.09	34.01	369	348	P	V
		2499.96	44.39	-9.61	54	45	27.3	6.09	34	369	348	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	35.18	-38.82	74	60.52	31.1	8.65	65.09	100	0	P	H
													H
													H
													H
		4804	37.22	-36.78	74	62.56	31.1	8.65	65.09	100	0	P	V
													V
													V
													V
BLE CH 19 2440MHz		4880	34.51	-39.49	74	59.63	31.21	8.69	65.02	100	0	P	H
		7320	39.06	-34.94	74	57.62	36.12	10.39	65.07	100	0	P	H
													H
													H
		4880	35.14	-38.86	74	60.26	31.21	8.69	65.02	100	0	P	V
		7320	39.71	-34.29	74	58.27	36.12	10.39	65.07	100	0	P	V
													V
													V
BLE CH 39 2480MHz		4960	36.57	-37.43	74	61.37	31.34	8.79	64.93	100	0	P	H
		7440	39.9	-34.1	74	58.08	36.39	10.52	65.09	100	0	P	H
													H
													H
		4960	34.98	-39.02	74	59.78	31.34	8.79	64.93	100	0	P	V
		7440	39.15	-34.85	74	57.33	36.39	10.52	65.09	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)

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		30.54	16.69	-23.31	40	30.12	17.73	0.67	31.83			P	H
		160.14	12.05	-31.45	43.5	32.78	9.59	1.46	31.78			P	H
		291.09	23.16	-22.84	46	40.07	12.74	2.11	31.76			P	H
		405.7	26.6	-19.4	46	39.96	16.04	2.41	31.81			P	H
		663.3	28.53	-17.47	46	38.58	18.97	3.02	32.04			P	H
		820.1	32.08	-13.92	46	40.4	20.1	3.4	31.82	200	190	P	H
													H
													H
													H
													H
													H
													H
		41.34	22.04	-17.96	40	41.29	11.9	0.67	31.82	155	80	P	V
		160.14	12.96	-30.54	43.5	33.69	9.59	1.46	31.78			P	V
		295.14	15.66	-30.34	46	32.41	12.9	2.11	31.76			P	V
		461	18.98	-27.02	46	31.63	16.63	2.57	31.85			P	V
		666.8	24.11	-21.89	46	34.2	18.93	3.02	32.04			P	V
		935.6	23.69	-22.31	46	30.79	20.37	3.68	31.15			P	V
													V
													V
													V
													V
													V
													V
													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

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”.