



Appendix B. Radiated Spurious Emission

2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

BLE	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
BLE CH 00 2402MHz		2364.81	50.96	-23.04	74	51.67	27.14	5.39	33.24	122	225	P	H
		2354.28	42.5	-11.5	54	43.28	27.14	5.33	33.25	122	225	A	H
	*	2402.254	91.58	-	-	92.18	27.23	5.39	33.22	122	225	P	H
	*	2402.004	91.08	-	-	91.68	27.23	5.39	33.22	122	225	A	H
													H
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		2317.83	51.2	-22.8	74	52.14	27.05	5.27	33.26	345	10	P	V
		2350.32	42.38	-11.62	54	43.2	27.1	5.33	33.25	345	10	A	V
	*	2402.254	89	-	-	89.6	27.23	5.39	33.22	345	10	P	V
	*	2402.004	88.51	-	-	89.11	27.23	5.39	33.22	345	10	A	V
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													V
BLE CH 19 2440MHz		2371.38	50.7	-23.3	74	51.36	27.19	5.39	33.24	110	214	P	H
		2353.29	42.82	-11.18	54	43.6	27.14	5.33	33.25	110	214	A	H
	*	2439.746	88.74	-	-	89.16	27.37	5.42	33.21	110	214	P	H
	*	2439.997	88.24	-	-	88.66	27.37	5.42	33.21	110	214	A	H
		2487.88	51.55	-22.45	74	51.77	27.5	5.46	33.18	110	214	P	H
		2494.72	43.04	-10.96	54	43.25	27.5	5.46	33.17	110	214	A	H
		2363.64	50.91	-23.09	74	51.63	27.14	5.39	33.25	338	330	P	V
		2327.55	42.68	-11.32	54	43.56	27.05	5.33	33.26	338	330	A	V
	*	2439.746	87.02	-	-	87.44	27.37	5.42	33.21	338	330	P	V
	*	2439.997	86.5	-	-	86.92	27.37	5.42	33.21	338	330	A	V
		2491	51.04	-22.96	74	51.26	27.5	5.46	33.18	338	330	P	V
		2487.2	42.88	-11.12	54	43.14	27.46	5.46	33.18	338	330	A	V



BLE CH 39 2480MHz	*	2479.742	87.07	-	-	87.35	27.46	5.44	33.18	108	216	P	H
	*	2479.993	86.5	-	-	86.78	27.46	5.44	33.18	108	216	A	H
		2498.16	52.3	-21.7	74	52.51	27.5	5.46	33.17	108	216	P	H
		2486.68	43.05	-10.95	54	43.31	27.46	5.46	33.18	108	216	A	H
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	*	2479.993	84.49	-	-	84.77	27.46	5.44	33.18	370	328	P	V
	*	2479.993	83.95	-	-	84.23	27.46	5.44	33.18	370	328	A	V
		2492	52.01	-21.99	74	52.22	27.5	5.46	33.17	370	328	P	V
		2485.24	43.46	-10.54	54	43.72	27.46	5.46	33.18	370	328	A	V
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Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

BLE (Harmonic @ 3m)

BLE	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
BLE CH 00 2402MHz		4806	55.52	-18.48	74	77.16	31.42	7.58	60.64	300	145	P	H
		4806	53.39	-0.61	54	75.03	31.42	7.58	60.64	300	145	A	H
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		4806	53.19	-20.81	74	74.83	31.42	7.58	60.64	301	0	P	V
		4806	50.58	-3.42	54	72.22	31.42	7.58	60.64	301	0	A	V
													V
													V
BLE CH 19 2440MHz		4878	54.38	-19.62	74	75.64	31.56	7.7	60.52	100	144	P	H
		4878	52.23	-1.77	54	73.49	31.56	7.7	60.52	100	144	A	H
		7320	44.75	-29.25	74	60.02	36.22	9.49	60.98	100	0	P	H
													H
		4878	53.94	-20.06	74	75.2	31.56	7.7	60.52	144	298	P	V
		4878	51.7	-2.3	54	72.96	31.56	7.7	60.52	144	298	A	V
		7320	46.93	-27.07	74	62.2	36.22	9.49	60.98	100	0	P	V
													V
BLE CH 39 2480MHz		4962	42.35	-31.65	74	62.93	31.73	8.05	60.36	100	0	P	H
		7440	43.67	-30.33	74	58.91	36.49	9.61	61.34	100	0	P	H
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													H
		4962	43.84	-30.16	74	64.42	31.73	8.05	60.36	100	0	P	V
		7440	44.25	-29.75	74	59.49	36.49	9.61	61.34	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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		63.48	30.66	-9.34	40	56.13	6.34	0.93	32.74	100	99	P	H
		144.75	30.19	-13.31	43.5	49.77	11.76	1.33	32.67			P	H
		216.84	35.17	-10.83	46	56.02	10.26	1.62	32.73			P	H
		361.6	32.83	-13.17	46	48.18	15.51	1.94	32.8			P	H
		602.4	34.7	-11.3	46	45.54	19.62	2.57	33.03			P	H
		771.1	30.22	-15.78	46	38.35	21.81	2.97	32.91			P	H
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													H
													H
													H
		51.33	35.07	-4.93	40	58.03	8.89	0.93	32.78	158	41	P	V
		68.88	27.81	-12.19	40	52.96	6.64	0.93	32.72			P	V
		293.52	27	-19	46	44.17	13.68	1.88	32.73			P	V
		361.6	25.21	-20.79	46	40.56	15.51	1.94	32.8			P	V
		399.4	27.32	-18.68	46	41.53	16.5	2.13	32.84			P	V
		602.4	31.68	-14.32	46	42.52	19.62	2.57	33.03			P	V
													V
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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.
!	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”.