Appendix A. Radiated Spurious Emission

Test Engineer :	Luke Chang	**Temperature :**	18~20°C
		Relative Humidity :	41~42%

15C 2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

BT	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)
BT CH00 2402MHz		2361.87	51.59	-22.41	74	48.18	31.92	6.14	34.65	233	22	P	H
		2361.87	26.81	-27.19	54	-	-	-	-	-	-	A	H
	*	2402.17	100.23	-	-	96.72	31.94	6.21	34.64	233	22	P	H
		2402.17	75.45	-	-	-	-	-	-	-	-	A	H
													H
													H
		2360.57	48.19	-25.81	74	44.78	31.92	6.14	34.65	176	118	P	V
		2360.57	23.41	-30.59	54	-	-	-	-	-	-	A	V
	*	2401.91	90.94	-	-	87.43	31.94	6.21	34.64	176	118	P	V
		2401.91	66.16	-	-	-	-	-	-	-	-	A	V
													V
													V
BT CH 39 2441MHz		2380.87	51.9	-22.1	74	48.45	31.93	6.17	34.65	267	6	P	H
		2380.87	27.12	-26.88	54	-	-	-	-	-	-	A	H
	*	2440.91	99.42	-	-	95.82	31.97	6.27	34.64	267	6	P	H
		2440.91	74.64	-	-	-	-	-	-	-	-	A	H
		2500	50.05	-23.95	74	46.34	32	6.34	34.63	267	6	P	H
		2500	25.27	-28.73	54	-	-	-	-	-	-	A	H
		2384.86	48.58	-25.42	74	45.13	31.93	6.17	34.65	128	101	P	V
		2384.86	23.8	-30.2	54	-	-	-	-	-	-	A	V
	*	2441.1	91.16	-	-	87.56	31.97	6.27	34.64	128	101	P	V
		2441.1	66.38	-	-	-	-	-	-	-	-	A	V
		2485.75	48.03	-25.97	74	44.37	31.99	6.3	34.63	128	101	P	V
		2485.75	23.25	-30.75	54	-	-	-	-	-	-	A	V

BT CH 78 2480MHz	*	2479.98	99.79	-	-	96.13	31.99	6.3	34.63	200	5	P	H
		2479.98	75.01	-	-	-	-	-	-	-	-	A	H
		2483.5	57.04	-16.96	74	53.38	31.99	6.3	34.63	200	5	P	H
		2483.5	32.26	-21.74	54	-	-	-	-	-	-	A	H
													H
													H
	*	2479.91	93.22	-	-	89.56	31.99	6.3	34.63	124	177	P	V
		2479.91	68.44	-	-	-	-	-	-	-	-	A	V
		2483.5	51.53	-22.47	74	47.87	31.99	6.3	34.63	124	177	P	V
		2483.5	26.75	-27.25	54	-	-	-	-	-	-	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

BT (Harmonic @ 3m)

BT	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)
BT CH 00 2402MHz		4804	37.55	-36.45	74	55.54	34.35	8.52	60.86	100	0	P	H
		4804	12.77	-41.23	54	-	-	-	-	-	-	A	H
													H
													H
		4804	37.26	-36.74	74	55.25	34.35	8.52	60.86	100	0	P	V
		4804	12.48	-41.52	54	-	-	-	-	-	-	A	V
													V
													V
BT CH 39 2441MHz		4882	37.74	-36.26	74	55.26	34.4	8.77	60.69	100	0	P	H
		4882	12.96	-41.04	54	-	-	-	-	-	-	A	H
		7323	40.82	-33.18	74	53.67	35.73	11.95	60.53	100	0	P	H
		7323	16.04	-37.96	54	-	-	-	-	-	-	A	H
		4882	37.9	-36.1	74	55.42	34.4	8.77	60.69	100	0	P	V
		4882	13.12	-40.88	54	-	-	-	-	-	-	A	V
		7323	41.29	-32.71	74	54.14	35.73	11.95	60.53	100	0	P	V
		7323	16.51	-37.49	54	-	-	-	-	-	-	A	V
BT CH 78 2480MHz		4960	38.98	-35.02	74	55.97	34.47	9.02	60.48	100	0	P	H
		4960	14.2	-39.8	54	-	-	-	-	-	-	A	H
		7440	41.2	-32.8	74	54.06	35.71	12.01	60.58	100	0	P	H
		7440	16.42	-37.58	54	-	-	-	-	-	-	A	H
		4960	38.91	-35.09	74	55.9	34.47	9.02	60.48	100	0	P	V
		4960	14.13	-39.87	54	-	-	-	-	-	-	A	V
		7440	40.84	-33.16	74	53.7	35.71	12.01	60.58	100	0	P	V
		7440	16.06	-37.94	54	-	-	-	-	-	-	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

15C Emission below 1GHz

2.4GHz BT (LF)

BT	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 BT LF		168.24	31.03	-12.47	43.5	51.43	9.74	1.61	31.75			P	H
		194.16	33.1	-10.4	43.5	54.35	9	1.5	31.75			P	H
		260.04	41.41	-4.59	46	57.65	13.7	1.79	31.73	203	137	P	H
		312.6	37.95	-8.05	46	54.38	13.36	1.94	31.73			P	H
		409.9	40.22	-5.78	46	53.63	16.2	2.22	31.83			P	H
		749.4	33.08	-12.92	46	42.22	19.8	3.05	31.99			P	H
													H
													H
													H
													H
													H
													H
		30	36.43	-3.57	40	49.19	18.4	0.64	31.8	122	73	P	V
		59.7	30.89	-9.11	40	55.29	6.5	0.87	31.77			P	V
		119.64	31.48	-12.02	43.5	49.9	12.12	1.21	31.75			P	V
		455.4	39.22	-6.78	46	51.86	16.92	2.32	31.88			P	V
		520.5	33	-13	46	45.03	17.42	2.51	31.96			P	V
		749.4	32.28	-13.72	46	41.42	19.8	3.05	31.99			P	V
													V
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													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 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".