Appendix A. Radiated Spurious Emission

Test Engineer :	James Chiu and Jesse Wang	Temperature :	21~23°C
		Relative Humidity :	46~49%

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		2367.85	47.56	-26.44	74	42.02	32.13	7.68	34.27	101	61	P	H
		2367.85	22.77	-31.23	54	-	-	-	-	-	-	A	H
	*	2402	97.51	-	-	91.88	32.18	7.75	34.3	101	61	P	H
	*	2402	72.72	-	-	-	-	-	-	-	-	A	H
													H
													H
		2369.54	47.86	-26.14	74	42.29	32.16	7.68	34.27	100	91	P	V
		2369.54	23.07	-30.93	54	-	-	-	-	-	-	A	V
	*	2402	98.98	-	-	93.35	32.18	7.75	34.3	100	91	P	V
	*	2402	74.19	-	-	-	-	-	-	-	-	A	V
													V
													V
BT CH 39 2441MHz		2372.32	47.45	-26.55	74	41.88	32.16	7.68	34.27	100	64	P	H
		2372.32	22.66	-31.34	54	-	-	-	-	-	-	A	H
	*	2441	96.42	-	-	90.74	32.24	7.83	34.39	100	64	P	H
	*	2441	71.63	-	-	-	-	-	-	-	-	A	H
		2483.52	46.96	-27.04	74	41.2	32.28	7.91	34.43	100	64	P	H
		2483.52	22.17	-31.83	54	-	-	-	-	-	-	A	H
		2321.02	47.14	-26.86	74	41.67	32.09	7.6	34.22	100	91	P	V
		2321.02	22.35	-31.65	54	-	-	-	-	-	-	A	V
	*	2441	100.21	-	-	94.53	32.24	7.83	34.39	100	91	P	V
	*	2441	75.42	-	-	-	-	-	-	-	-	A	V
		2483.52	48.01	-25.99	74	42.25	32.28	7.91	34.43	100	91	P	V
		2483.52	23.22	-30.78	54	-	-	-	-	-	-	A	V

BT CH 78 2480MHz	*	2479.98	96.08	-	-	90.32	32.28	7.91	34.43	100	64	P	H
	*	2479.98	71.29	-	-	-	-	-	-	-	-	A	H
		2487.33	47.51	-26.49	74	41.75	32.28	7.91	34.43	100	64	P	H
		2487.33	22.72	-31.28	54	-	-	-	-	-	-	A	H
													H
													H
	*	2480.19	97.75	-	-	91.99	32.28	7.91	34.43	104	91	P	V
	*	2480.19	72.96	-	-	-	-	-	-	-	-	A	V
		2490.13	47.95	-26.05	74	42.17	32.3	7.91	34.43	104	91	P	V
		2490.13	23.16	-30.84	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	41.35	-32.65	74	55.66	34.25	11.11	59.67	100	0	P	H
		4804	16.56	-37.44	54	-	-	-	-	-	-	A	H
													H
													H
		4804	39.62	-34.38	74	53.93	34.25	11.11	59.67	100	0	P	V
		4804	14.83	-39.17	54	-	-	-	-	-	-	A	V
													V
													V
BT CH 39 2441MHz		4882	39.67	-34.33	74	53.73	34.3	11.21	59.57	100	0	P	H
		4882	14.88	-39.12	54	-	-	-	-	-	-	A	H
		7323	41.73	-32.27	74	49.54	35.6	15.08	58.49	100	0	P	H
		7323	16.94	-37.06	54	-	-	-	-	-	-	A	H
		4882	40.12	-33.88	74	54.18	34.3	11.21	59.57	100	0	P	V
		4882	15.33	-38.67	54	-	-	-	-	-	-	A	V
		7323	41.26	-32.74	74	49.07	35.6	15.08	58.49	100	0	P	V
		7323	16.47	-37.53	54	-	-	-	-	-	-	A	V
BT CH 78 2480MHz		4960	40.69	-33.31	74	54.45	34.37	11.32	59.45	100	0	P	H
		4960	15.9	-38.1	54	-	-	-	-	-	-	A	H
		7440	41.97	-32.03	74	49.88	35.6	15.13	58.64	100	0	P	H
		7440	17.18	-36.82	54	-	-	-	-	-	-	A	H
		4960	40.84	-33.16	74	54.6	34.37	11.32	59.45	100	0	P	V
		4960	16.05	-37.95	54	-	-	-	-	-	-	A	V
		7440	42.3	-31.7	74	50.21	35.6	15.13	58.64	100	0	P	V
		7440	17.51	-36.49	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		43.5	21.76	-18.24	40	39.99	11.2	1.77	31.2	-	-	P	H
		140.43	18.93	-24.57	43.5	35.92	11.5	2.61	31.1	-	-	P	H
		271.38	18.26	-27.74	46	33.2	12.88	3.16	30.98	-	-	P	H
		309.1	19.92	-26.08	46	34.35	13.29	3.28	31	-	-	P	H
		568.8	21.78	-24.22	46	28.74	19.75	4.01	30.72	-	-	P	H
		932.1	27.97	-18.03	46	29.23	24.3	4.8	30.36	100	0	P	H
													H
													H
													H
													H
													H
													H
		43.77	30.72	-9.28	40	48.95	11.2	1.77	31.2	100	0	P	V
		150.69	16.26	-27.24	43.5	33.96	10.8	2.61	31.11	-	-	P	V
		250.86	19.57	-26.43	46	35.05	12.56	2.96	31	-	-	P	V
		325.9	17.24	-28.76	46	31.32	13.64	3.28	31	-	-	P	V
		628.3	24.52	-21.48	46	30.48	20.36	4.22	30.54	-	-	P	V
		988.1	29.53	-24.47	54	29.91	24.84	5.03	30.25	-	-	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.
!	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”.