Appendix A. Radiated Spurious Emission

Test Engineer :	Bill Chang, Ken Wu, and JC Liang	Temperature :	20~23°C
		Relative Humidity :	54~56%

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		2333.4	42.31	-31.69	74	43.54	26.82	5.95	34	356	318	P	H
		2333.4	17.52	-36.48	54	-	-	-	-	-	-	A	H
	*	2402.17	92.65	-	-	93.61	27.01	6.01	33.98	356	318	P	H
	*	2402.17	67.86	-	-	-	-	-	-	-	-	A	H
													H
													H
		2361.87	41.94	-32.06	74	43.07	26.91	5.95	33.99	100	3	P	V
		2361.87	17.15	-36.85	54	-	-	-	-	-	-	A	V
	*	2402.17	87.34	-	-	88.3	27.01	6.01	33.98	100	3	P	V
	*	2402.17	62.55	-	-	-	-	-	-	-	-	A	V
													V
													V
BT CH 39 2441MHz		2388.66	42.91	-31.09	74	43.88	27.01	6.01	33.99	378	312	P	H
		2388.66	18.12	-35.88	54	-	-	-	-	-	-	A	H
	*	2441	95.52	-	-	96.28	27.16	6.04	33.96	378	312	P	H
	*	2441	70.73	-	-	-	-	-	-	-	-	A	H
		2484.61	42.62	-31.38	74	43.23	27.25	6.09	33.95	378	312	P	H
		2484.61	17.83	-36.17	54	-	-	-	-	-	-	A	H
		2341.54	42.6	-31.4	74	43.77	26.87	5.95	33.99	100	5	P	V
		2341.54	17.81	-36.19	54	-	-	-	-	-	-	A	V
	*	2441	91.4	-	-	92.16	27.16	6.04	33.96	100	5	P	V
	*	2441	66.61	-	-	-	-	-	-	-	-	A	V
		2499.62	41.83	-32.17	74	42.38	27.3	6.09	33.94	100	5	P	V
		2499.62	17.04	-36.96	54	-	-	-	-	-	-	A	V

BT CH 78 2480MHz	*	2479.84	92.36	-	-	92.99	27.25	6.07	33.95	120	316	P	H
	*	2479.84	67.57	-	-	-	-	-	-	-	-	A	H
		2489.01	42.95	-31.05	74	43.51	27.3	6.09	33.95	120	316	P	H
		2489.01	18.16	-35.84	54	-	-	-	-	-	-	A	H
													H
													H
	*	2479.84	91.49	-	-	92.12	27.25	6.07	33.95	100	7	P	V
	*	2479.84	66.7	-	-	-	-	-	-	-	-	A	V
		2483.69	43.33	-30.67	74	43.94	27.25	6.09	33.95	100	7	P	V
		2483.69	18.54	-35.46	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	39.64	-34.36	74	64.98	31.1	8.65	65.09	100	0	P	H
		4804	14.85	-39.15	54	-	-	-	-	-	-	A	H
													H
													H
		4804	42.81	-31.19	74	68.15	31.1	8.65	65.09	100	0	P	V
		4804	18.02	-35.98	54	-	-	-	-	-	-	A	V
													V
													V
BT CH 39 2441MHz		4882	35.75	-38.25	74	60.82	31.21	8.74	65.02	100	0	P	H
		4882	10.96	-43.04	54	-	-	-	-	-	-	A	H
		7323	39.21	-34.79	74	57.72	36.12	10.44	65.07	100	0	P	H
		7323	14.42	-39.58	54	-	-	-	-	-	-	A	H
		4882	35.16	-38.84	74	60.23	31.21	8.74	65.02	100	0	P	V
		4882	10.37	-43.63	54	-	-	-	-	-	-	A	V
		7323	39.67	-34.33	74	58.18	36.12	10.44	65.07	100	0	P	V
		7323	14.88	-39.12	54	-	-	-	-	-	-	A	V
BT CH 78 2480MHz		4962	38.32	-35.68	74	63.08	31.34	8.83	64.93	100	0	P	H
		4962	13.53	-40.47	54	-	-	-	-	-	-	A	H
		7440	38.46	-35.54	74	56.64	36.39	10.52	65.09	100	0	P	H
		7440	13.67	-40.33	54	-	-	-	-	-	-	A	H
		4962	46.85	-27.15	74	71.61	31.34	8.83	64.93	100	0	P	V
		4962	22.06	-31.94	54	-	-	-	-	-	-	A	V
		7440	39.24	-34.76	74	57.42	36.39	10.52	65.09	100	0	P	V
		7440	14.45	-39.55	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		66.72	32.83	-7.17	40	58.64	4.94	1.04	31.79			P	H
		99.93	34.93	-8.57	43.5	55.34	10.09	1.28	31.78			P	H
		218.73	43.05	-2.95	46	64.87	8.17	1.79	31.78	100	25	P	H
		313.3	33.34	-12.66	46	49.57	13.43	2.11	31.77			P	H
		375.6	32.63	-13.37	46	47.24	14.86	2.32	31.79			P	H
		547.8	24.53	-21.47	46	35.06	18.66	2.77	31.96			P	H
													H
													H
													H
													H
													H
													H
		45.12	34.86	-5.14	40	55.79	9.84	1.04	31.81	100	0	P	V
		94.26	33.32	-10.18	43.5	54.58	9.24	1.28	31.78			P	V
		194.16	31.86	-11.64	43.5	53.55	8.45	1.64	31.78			P	V
		310.5	31.68	-14.32	46	47.93	13.4	2.11	31.76			P	V
		379.8	25.79	-20.21	46	40.36	14.9	2.32	31.79			P	V
		543.6	24.43	-21.57	46	35.05	18.57	2.77	31.96			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”.