Appendix A. Radiated Spurious Emission

Test Engineer :	Jesse Wang and Ken Wu	Temperature :	21~24°C
		Relative Humidity :	50~54%

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		2387.07	47.15	-26.85	74	41.62	32.19	7.31	33.97	200	38	P	H
		2387.07	16.4	-37.6	54	-	-	-	-	-	-	A	H
	*	2402	91.43	-	-	85.92	32.19	7.31	33.99	200	38	P	H
	*	2402	60.68	-	-	-	-	-	-	-	-	A	H
													H
													H
		2350.74	47.1	-26.9	74	41.77	32.03	7.24	33.94	380	304	P	V
		2350.74	16.35	-37.65	54	-	-	-	-	-	-	A	V
	*	2402	89.22	-	-	83.71	32.19	7.31	33.99	380	304	P	V
	*	2402	58.47	-	-	-	-	-	-	-	-	A	V
													V
													V
BT CH 39 2441MHz		2362.08	47.03	-26.97	74	41.64	32.09	7.24	33.94	305	53	P	H
		2362.08	16.28	-37.72	54	-	-	-	-	-	-	A	H
	*	2441	95.6	-	-	89.95	32.34	7.36	34.05	305	53	P	H
	*	2441	64.85	-	-	-	-	-	-	-	-	A	H
		2491.32	46.85	-27.15	74	41.02	32.5	7.4	34.07	305	53	P	H
		2491.32	16.1	-37.9	54	-	-	-	-	-	-	A	H
		2358.58	46.86	-27.14	74	41.47	32.09	7.24	33.94	296	303	P	V
		2358.58	16.11	-37.89	54	-	-	-	-	-	-	A	V
	*	2441	93.81	-	-	88.16	32.34	7.36	34.05	296	303	P	V
	*	2441	63.06	-	-	-	-	-	-	-	-	A	V
		2494.89	47.09	-26.91	74	41.29	32.5	7.4	34.1	296	303	P	V
		2494.89	16.34	-37.66	54	-	-	-	-	-	-	A	V

BT CH 78 2480MHz	*	2480	97.1	-	-	91.32	32.45	7.4	34.07	296	232	P	H
	*	2480	66.35	-	-	-	-	-	-	-	-	A	H
		2483.52	48.89	-25.11	74	43.11	32.45	7.4	34.07	296	232	P	H
		2483.52	18.14	-35.86	54	-	-	-	-	-	-	A	H
													H
													H
	*	2480	93.83	-	-	88.05	32.45	7.4	34.07	376	149	P	V
	*	2480	63.08	-	-	-	-	-	-	-	-	A	V
		2483.52	48.13	-25.87	74	42.35	32.45	7.4	34.07	376	149	P	V
		2483.52	17.38	-36.62	54	-	-	-	-	-	-	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz

BT (Harmonic @ 3m)

BT	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)
BT CH 00 2402MHz		4804	47.02	-26.98	74	60.59	33.68	11.83	59.08	100	0	P	H
		4804	16.27	-37.73	54	-	-	-	-	-	-	A	H
													H
													H
		4804	46.42	-27.58	74	59.99	33.68	11.83	59.08	100	0	P	V
		4804	15.67	-38.33	54	-	-	-	-	-	-	A	V
													V
													V
BT CH 39 2441MHz		4882	38.35	-35.65	74	52.22	33.54	11.53	58.94	100	0	P	H
		4882	7.6	-46.4	54	-	-	-	-	-	-	A	H
		7323	38.61	-35.39	74	48.11	34.65	13.81	57.96	100	0	P	H
		7323	7.86	-46.14	54	-	-	-	-	-	-	A	H
		4882	38.55	-35.45	74	52.42	33.54	11.53	58.94	100	0	P	V
		4882	7.8	-46.2	54	-	-	-	-	-	-	A	V
		7323	38.68	-35.32	74	48.18	34.65	13.81	57.96	100	0	P	V
		7323	7.93	-46.07	54	-	-	-	-	-	-	A	V
BT CH 78 2480MHz		4960	38.98	-35.02	74	53.16	33.37	11.22	58.77	100	0	P	H
		4960	8.23	-45.77	54	-	-	-	-	-	-	A	H
		7440	40.25	-33.75	74	50	34.33	14.05	58.13	100	0	P	H
		7440	9.5	-44.5	54	-	-	-	-	-	-	A	H
		4960	39.57	-34.43	74	53.75	33.37	11.22	58.77	100	0	P	V
		4960	8.82	-45.18	54	-	-	-	-	-	-	A	V
		7440	41.33	-32.67	74	51.08	34.33	14.05	58.13	100	0	P	V
		7440	10.58	-43.42	54	-	-	-	-	-	-	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

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		30.27	27.25	-12.75	40	31.53	26	1.07	31.35	100	0	P	H
		129.9	19.42	-24.08	43.5	31.08	18.3	1.55	31.51	-	-	P	H
		213.87	19.95	-23.55	43.5	33.19	16.34	1.87	31.45	-	-	P	H
		528.2	26.63	-19.37	46	30.02	24.43	3.14	30.96	-	-	P	H
		759.2	29.94	-16.06	46	29.46	27.3	3.82	30.64	-	-	P	H
		960.8	33.91	-20.09	54	30.15	30.22	4.07	30.53	-	-	P	H
													H
													H
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													H
													H
													H
		30.54	27.58	-12.42	40	32.41	25.46	1.07	31.36	100	0	P	V
		83.73	16.51	-23.49	40	32.52	14.26	1.28	31.55	-	-	P	V
		259.23	21.33	-24.67	46	30.72	19.9	2.07	31.36	-	-	P	V
		526.1	26.86	-19.14	46	30.29	24.4	3.14	30.97	-	-	P	V
		735.4	30.52	-15.48	46	30.49	26.96	3.74	30.67	-	-	P	V
		936.3	33.06	-12.94	46	29.6	29.87	4.12	30.53	-	-	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".