Appendix A. Radiated Spurious Emission

Test Engineer :	Jesse Wang, James Chiu, and Derreck Chen	**Temperature :**	21~24℃
		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		2377.83	45.04	-28.96	74	40.26	31.89	7.24	34.35	301	256	P	H
		2377.83	20.25	-33.75	54	-	-	-	-	-	-	A	H
	*	2402	90.63	-	-	85.7	31.93	7.31	34.31	301	256	P	H
	*	2402	65.84	-	-	-	-	-	-	-	-	A	H
													H
													H
		2356.935	44.79	-29.21	74	40.1	31.84	7.24	34.39	112	0	P	V
		2356.935	20	-34	54	-	-	-	-	-	-	A	V
	*	2402	90.15	-	-	85.22	31.93	7.31	34.31	112	0	P	V
	*	2402	65.36	-	-	-	-	-	-	-	-	A	V
													V
													V
BT CH 39 2441MHz		2389.66	44.86	-29.14	74	39.95	31.93	7.31	34.33	303	61	P	H
		2389.66	20.07	-33.93	54	-	-	-	-	-	-	A	H
	*	2441	91.13	-	-	85.95	32.07	7.36	34.25	303	61	P	H
	*	2441	66.34	-	-	-	-	-	-	-	-	A	H
		2494.68	45.43	-28.57	74	39.99	32.2	7.4	34.16	303	61	P	H
		2494.68	20.64	-33.36	54	-	-	-	-	-	-	A	H
		2353.26	45.83	-28.17	74	41.14	31.84	7.24	34.39	119	124	P	V
		2353.26	21.04	-32.96	54	-	-	-	-	-	-	A	V
	*	2441	89.68	-	-	84.5	32.07	7.36	34.25	119	124	P	V
	*	2441	64.89	-	-	-	-	-	-	-	-	A	V
		2484.39	45.67	-28.33	74	40.29	32.16	7.4	34.18	119	124	P	V
		2484.39	20.88	-33.12	54	-	-	-	-	-	-	A	V

BT CH 78 2480MHz	*	2480	90.35	-	-	84.97	32.16	7.4	34.18	298	69	P	H
	*	2480	65.56	-	-	-	-	-	-	-	-	A	H
		2490.72	45.37	-28.63	74	39.94	32.2	7.4	34.17	298	69	P	H
		2490.72	20.58	-33.42	54	-	-	-	-	-	-	A	H
													H
													H
	*	2480	88.33	-	-	82.95	32.16	7.4	34.18	100	125	P	V
	*	2480	63.54	-	-	-	-	-	-	-	-	A	V
		2489.8	45.44	-28.56	74	40.01	32.2	7.4	34.17	100	125	P	V
		2489.8	20.65	-33.35	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	40.35	-33.65	74	53.41	34.19	11.83	59.08	100	0	P	H
		4804	15.56	-38.44	54	-	-	-	-	-	-	A	H
													H
													H
		4804	41.46	-32.54	74	54.52	34.19	11.83	59.08	100	0	P	V
		4804	16.67	-37.33	54	-	-	-	-	-	-	A	V
													V
													V
BT CH 39 2441MHz		4882	40.54	-33.46	74	53.72	34.23	11.53	58.94	100	0	P	H
		4882	15.75	-38.25	54	-	-	-	-	-	-	A	H
		7323	40.32	-33.68	74	48.87	35.6	13.81	57.96	100	0	P	H
		7323	15.53	-38.47	54	-	-	-	-	-	-	A	H
		4882	40.07	-33.93	74	53.25	34.23	11.53	58.94	100	0	P	V
		4882	15.28	-38.72	54	-	-	-	-	-	-	A	V
		7323	41.01	-32.99	74	49.56	35.6	13.81	57.96	100	0	P	V
		7323	16.22	-37.78	54	-	-	-	-	-	-	A	V
BT CH 78 2480MHz		4960	40.72	-33.28	74	53.99	34.28	11.22	58.77	100	0	P	H
		4960	15.93	-38.07	54	-	-	-	-	-	-	A	H
		7440	41.16	-32.84	74	49.64	35.6	14.05	58.13	100	0	P	H
		7440	16.37	-37.63	54	-	-	-	-	-	-	A	H
		4960	39.7	-34.3	74	52.97	34.28	11.22	58.77	100	0	P	V
		4960	14.91	-39.09	54	-	-	-	-	-	-	A	V
		7440	41.27	-32.73	74	49.75	35.6	14.05	58.13	100	0	P	V
		7440	16.48	-37.52	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		71.04	26.19	-13.81	40	43.67	12.81	1.28	31.57	-	-	P	H
		137.46	26.96	-16.54	43.5	38.85	18.06	1.55	31.5	-	-	P	H
		281.91	23.37	-22.63	46	32.98	19.38	2.32	31.31	-	-	P	H
		500.2	26.95	-19.05	46	30.63	24.2	3.14	31.02	-	-	P	H
		794.9	31.15	-14.85	46	30.2	27.65	3.9	30.6	-	-	P	H
		909.7	33.26	-12.74	46	30.44	29.24	4.12	30.54	100	0	P	H
													H
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													H
													H
													H
		72.12	34.45	-5.55	40	51.81	12.92	1.28	31.56	100	0	P	V
		98.58	29.47	-14.03	43.5	43.44	16.27	1.28	31.52	-	-	P	V
		261.93	21.91	-24.09	46	31.06	19.88	2.32	31.35	-	-	P	V
		775.3	31.24	-14.76	46	30.59	27.45	3.82	30.62	-	-	P	V
		871.2	32.21	-13.79	46	29.76	28.83	4.17	30.55	-	-	P	V
		944	33.53	-12.47	46	29.93	30.06	4.07	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".