Appendix A. Radiated Spurious Emission

Test Engineer :	Kyle Jhuang, Citta Ke and Karl Hou	Temperature :	25~26°C
		Relative Humidity :	50~51%

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		2384.1	45.61	-28.39	74	41.92	32.73	4.62	33.66	190	208	P	H
		2384.1	20.85	-33.15	54	-	-	-	-	-	-	A	H
	*	2402.04	95.22	-	-	91.48	32.77	4.62	33.65	190	208	P	H
		2402.04	70.46	-	-	-	-	-	-	-	-	A	H
													H
													H
		2321.7	45.9	-28.1	74	42.43	32.62	4.55	33.7	100	71	P	V
		2321.7	21.14	-32.86	54	-	-	-	-	-	-	A	V
	*	2402.17	96.1	-	-	92.36	32.77	4.62	33.65	100	71	P	V
		2402.17	71.34	-	-	-	-	-	-	-	-	A	V
													V
													V
BT CH 39 2441MHz		2382.01	46.03	-27.97	74	42.34	32.73	4.62	33.66	160	28	P	H
		2382.01	21.27	-32.73	54	-	-	-	-	-	-	A	H
	*	2441.29	96	-	-	92.03	32.89	4.68	33.6	160	28	P	H
		2441.29	71.24	-	-	-	-	-	-	-	-	A	H
		2496.96	46.13	-27.87	74	41.96	33	4.73	33.56	160	28	P	H
		2496.96	21.37	-32.63	54	-	-	-	-	-	-	A	H
		2388.47	46.08	-27.92	74	42.34	32.77	4.62	33.65	190	74	P	V
		2388.47	21.32	-32.68	54	-	-	-	-	-	-	A	V
	*	2440.91	97.9	-	-	93.93	32.89	4.68	33.6	190	74	P	V
		2440.91	73.14	-	-	-	-	-	-	-	-	A	V
		2485.56	46.14	-27.86	74	42.02	32.96	4.73	33.57	190	74	P	V
		2485.56	21.38	-32.62	54	-	-	-	-	-	-	A	V

BT CH 78 2480MHz	*	2480.05	97.87	-	-	93.75	32.96	4.73	33.57	124	239	P	H
		2480.05	73.11	-	-	-	-	-	-	-	-	A	H
		2483.48	54.95	-19.05	74	50.83	32.96	4.73	33.57	124	239	P	H
		2483.48	30.19	-23.81	54	-	-	-	-	-	-	A	H
													H
													H
	*	2479.98	95.76	-	-	91.64	32.96	4.73	33.57	118	31	P	V
		2479.98	71	-	-	-	-	-	-	-	-	A	V
		2483.48	52.79	-21.21	74	48.67	32.96	4.73	33.57	118	31	P	V
		2483.48	28.03	-25.97	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	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	40.32	-33.68	74	57.4	35.04	6.52	58.64	100	0	P	H
		4804	15.56	-38.44	54	-	-	-	-	-	-	A	H
													H
													H
		4804	40.02	-33.98	74	57.1	35.04	6.52	58.64	100	0	P	V
		4804	15.26	-38.74	54	-	-	-	-	-	-	A	V
													V
													V
BT CH 39 2441MHz		4883	40.68	-33.32	74	57.6	35.02	6.58	58.52	100	0	P	H
		4883	15.92	-38.08	54	-	-	-	-	-	-	A	H
		7323	41.96	-32.04	74	55.51	36.4	8.24	58.19	100	0	P	H
		7323	17.2	-36.8	54	-	-	-	-	-	-	A	H
		4883	39.38	-34.62	74	56.3	35.02	6.58	58.52	100	0	P	V
		4883	14.62	-39.38	54	-	-	-	-	-	-	A	V
		7322	41.34	-32.66	74	54.89	36.4	8.24	58.19	100	0	P	V
		7322	16.58	-37.42	54	-	-	-	-	-	-	A	V
BT CH 78 2480MHz		4961	39.99	-34.01	74	56.73	35.01	6.61	58.36	100	0	P	H
		4961	15.23	-38.77	54	-	-	-	-	-	-	A	H
		7440	41.65	-32.35	74	55.23	36.47	8.36	58.41	100	0	P	H
		7440	16.89	-37.11	54	-	-	-	-	-	-	A	H
		4961	39.71	-34.29	74	56.45	35.01	6.61	58.36	100	0	P	V
		4961	14.95	-39.05	54	-	-	-	-	-	-	A	V
		7440	41.06	-32.94	74	54.64	36.47	8.36	58.41	100	0	P	V
		7440	16.3	-37.7	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		170.13	25.91	-17.59	43.5	46.62	9.7	1.37	31.78			P	H
		247.89	21.42	-24.58	46	39.35	12.2	1.64	31.77			P	H
		260.31	25.8	-20.2	46	41.99	13.9	1.68	31.77			P	H
		398	35.08	-10.92	46	49.05	15.82	2.01	31.8	125	301	P	H
		601	34.22	-11.78	46	44.1	19.72	2.44	32.04			P	H
		827.8	28.95	-17.05	46	35.04	22.82	2.88	31.79			P	H
													H
													H
													H
													H
													H
													H
		82.92	25.29	-14.71	40	48.38	7.7	1	31.79			P	V
		121.53	28.85	-14.65	43.5	47.92	11.52	1.19	31.78			P	V
		153.66	25.4	-18.1	43.5	45.1	10.8	1.28	31.78			P	V
		601	38.27	-7.73	46	48.15	19.72	2.44	32.04	101	99	P	V
		797	29.03	-16.97	46	36.12	22	2.83	31.92			P	V
		935.6	26.45	-19.55	46	30.13	24.42	3.05	31.15			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".