Appendix A. Radiated Spurious Emission

Test Engineer :	Stan Hsieh, Luke Chang, and Lewis He	Temperature :	22~23°C
		Relative Humidity :	45~47%

15C 2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

BT	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
BT CH00 2402MHz		2389.56	45.53	-28.47	74	46.33	27.23	6.01	34.04	247	228	P	H
		2389.56	20.74	-33.26	54	-	-	-	-	-	-	A	H
	*	2401.91	103.96	-	-	104.76	27.23	6.01	34.04	247	228	P	H
	*	2401.91	79.17	-	-	-	-	-	-	-	-	A	H
													H
													H
		2372.27	45.12	-28.88	74	45.96	27.19	6.01	34.04	173	268	P	V
		2372.27	20.33	-33.67	54	-	-	-	-	-	-	A	V
	*	2402.17	103.26	-	-	104.06	27.23	6.01	34.04	173	268	P	V
	*	2402.17	78.47	-	-	-	-	-	-	-	-	A	V
													V
													V
BT CH 39 2441MHz		2386	43.95	-30.05	74	44.75	27.23	6.01	34.04	292	237	P	H
		2386	19.16	-34.84	54	-	-	-	-	-	-	A	H
	*	2441.1	104.86	-	-	105.47	27.37	6.04	34.02	292	237	P	H
	*	2441.1	80.07	-	-	-	-	-	-	-	-	A	H
		2490.88	45.1	-28.9	74	45.52	27.5	6.09	34.01	292	237	P	H
		2490.88	20.31	-33.69	54	-	-	-	-	-	-	A	H
		2388.85	43.16	-30.84	74	43.96	27.23	6.01	34.04	101	43	P	V
		2388.85	18.37	-35.63	54	-	-	-	-	-	-	A	V
	*	2440.91	102.29	-	-	102.9	27.37	6.04	34.02	101	43	P	V
	*	2440.91	77.5	-	-	-	-	-	-	-	-	A	V
		2484.99	43.62	-30.38	74	44.08	27.46	6.09	34.01	101	43	P	V
		2484.99	18.83	-35.17	54	-	-	-	-	-	-	A	V

BT	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
BT CH 78 2480MHz	*	2479.91	104.02	-	-	104.5	27.46	6.07	34.01	289	230	P	H
	*	2479.91	79.23	-	-	-	-	-	-	-	-	A	H
		2484.6	46.97	-27.03	74	47.43	27.46	6.09	34.01	289	230	P	H
		2484.6	22.18	-31.82	54	-	-	-	-	-	-	A	H
													H
													H
	*	2479.84	102.36	-	-	102.84	27.46	6.07	34.01	114	267	P	V
	*	2479.84	77.57	-	-	-	-	-	-	-	-	A	V
		2484.39	47.21	-26.79	74	47.67	27.46	6.09	34.01	114	267	P	V
		2484.39	22.42	-31.58	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		4806	33.88	-40.12	74	52.57	31.3	8.65	58.64	100	0	P	H
		4806	9.09	-44.91	54	-	-	-	-	-	-	A	H
													H
													H
		4806	35.49	-38.51	74	54.18	31.3	8.65	58.64	100	0	P	V
		4806	10.7	-43.3	54	-	-	-	-	-	-	A	V
													V
													V
BT CH 39 2441MHz		4884	33.91	-40.09	74	52.28	31.41	8.74	58.52	100	0	P	H
		4884	9.12	-44.88	54	-	-	-	-	-	-	A	H
		7320	37.21	-36.79	74	48.69	36.32	10.39	58.19	100	0	P	H
		7320	12.42	-41.58	54	-	-	-	-	-	-	A	H
		4884	33.8	-40.2	74	52.17	31.41	8.74	58.52	100	0	P	V
		4884	9.01	-44.99	54	-	-	-	-	-	-	A	V
		7320	37.49	-36.51	74	48.97	36.32	10.39	58.19	100	0	P	V
		7320	12.7	-41.3	54	-	-	-	-	-	-	A	V
BT CH 78 2480MHz		4962	32.7	-41.3	74	50.69	31.54	8.83	58.36	100	0	P	H
		4962	7.91	-46.09	54	-	-	-	-	-	-	A	H
		7440	37.02	-36.98	74	48.32	36.59	10.52	58.41	100	0	P	H
		7440	12.23	-41.77	54	-	-	-	-	-	-	A	H
		4962	32.25	-41.75	74	50.24	31.54	8.83	58.36	100	0	P	V
		4962	7.46	-46.54	54	-	-	-	-	-	-	A	V
		7440	37.08	-36.92	74	48.38	36.59	10.52	58.41	100	0	P	V
		7440	12.29	-41.71	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		87.24	24.94	-15.06	40	47.4	8.05	1.28	31.79	100	48	P	H
		114.51	25.72	-17.78	43.5	44.92	11.3	1.28	31.78			P	H
		216.03	23.05	-22.95	46	45.14	7.9	1.79	31.78			P	H
		432.3	24.7	-21.3	46	37.67	16.45	2.41	31.83			P	H
		540.1	27.19	-18.81	46	37.87	18.5	2.77	31.95			P	H
		647.9	24.96	-21.04	46	34.88	19.1	3.02	32.04			P	H
													H
													H
													H
													H
													H
													H
		41.07	30.41	-9.59	40	49.5	12.06	0.67	31.82	100	59	P	V
		87.24	28.16	-11.84	40	50.62	8.05	1.28	31.79			P	V
		114.51	22.51	-20.99	43.5	41.71	11.3	1.28	31.78			P	V
		432.3	22.79	-23.21	46	35.76	16.45	2.41	31.83			P	V
		540.1	24.83	-21.17	46	35.51	18.5	2.77	31.95			P	V
		647.9	25.26	-20.74	46	35.18	19.1	3.02	32.04			P	V
													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 per 15.209(c).
!	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”.