



Appendix A. Radiated Spurious Emission

Test Engineer :	Karl Hou and Nick Yu and Peter Chiu	Temperature :	22~24°C
		Relative Humidity :	53~58%

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		2382.66	50.35	-23.65	74	47.38	27.01	7.45	31.49	302	63	P	H
		2382.66	25.62	-28.38	54	-	-	-	-	-	-	A	H
	*	2402	96.33	-	-	93.32	27.05	7.45	31.49	302	63	P	H
	*	2402	71.6	-	-	-	-	-	-	-	-	A	H
													H
													H
		2367.82	50.57	-23.43	74	47.72	26.97	7.37	31.49	100	101	P	V
		2367.82	25.84	-28.16	54	-	-	-	-	-	-	A	V
	*	2402	91.83	-	-	88.82	27.05	7.45	31.49	100	101	P	V
	*	2402	67.1	-	-	-	-	-	-	-	-	A	V
													V
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BT CH 39 2441MHz		2368.94	50.4	-23.6	74	47.51	27.01	7.37	31.49	293	62	P	H
		2368.94	25.67	-28.33	54	-	-	-	-	-	-	A	H
	*	2442	98.17	-	-	94.97	27.18	7.49	31.47	293	62	P	H
	*	2442	73.44	-	-	-	-	-	-	-	-	A	H
		2497.69	50.27	-23.73	74	46.9	27.3	7.53	31.46	293	62	P	H
		2497.69	25.54	-28.46	54	-	-	-	-	-	-	A	H
		2367.12	51.18	-22.82	74	48.33	26.97	7.37	31.49	101	103	P	V
		2367.12	26.45	-27.55	54	-	-	-	-	-	-	A	V
	*	2442	94.65	-	-	91.45	27.18	7.49	31.47	101	103	P	V
	*	2442	69.92	-	-	-	-	-	-	-	-	A	V
		2491.88	50.45	-23.55	74	47.08	27.3	7.53	31.46	101	103	P	V
		2491.88	25.72	-28.28	54	-	-	-	-	-	-	A	V



BT CH 78 2480MHz		2487.4	51.77	-22.23	74	48.45	27.26	7.53	31.47	297	63	P	H
		2487.4	27.04	-26.96	54	-	-	-	-	-	-	A	H
	*	2482	94.87	-	-	91.55	27.26	7.53	31.47	297	63	P	H
	*	2482	70.14	-	-	-	-	-	-	-	-	A	H
													H
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		2486.28	51.47	-22.53	74	48.15	27.26	7.53	31.47	100	102	P	V
		2486.28	26.74	-27.26	54	-	-	-	-	-	-	A	V
	*	2482	92.3	-	-	88.98	27.26	7.53	31.47	100	102	P	V
	*	2482	67.57	-	-	-	-	-	-	-	-	A	V
													V
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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		4806	37.4	-36.6	74	53.73	31.23	10.59	58.15	100	0	P	H
		4806	12.67	-41.33	54	-	-	-	-	-	-	A	H
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		4806	37.31	-36.69	74	53.64	31.23	10.59	58.15	100	0	P	V
		4806	12.58	-41.42	54	-	-	-	-	-	-	A	V
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													V
BT CH 39 2441MHz		4884	37.77	-36.23	74	53.65	31.33	10.89	58.1	100	0	P	H
		4884	13.04	-40.96	54	-	-	-	-	-	-	A	H
		7323	42.62	-31.38	74	51.42	36.12	14.18	59.1	100	0	P	H
		7323	17.89	-36.11	54	-	-	-	-	-	-	A	H
		4884	37.37	-36.63	74	53.25	31.33	10.89	58.1	100	0	P	V
		4884	12.64	-41.36	54	-	-	-	-	-	-	A	V
		7323	42.17	-31.83	74	50.97	36.12	14.18	59.1	100	0	P	V
		7323	17.44	-36.56	54	-	-	-	-	-	-	A	V
BT CH 78 2480MHz		4962	38.11	-35.89	74	53.5	31.45	11.19	58.03	100	0	P	H
		4962	13.38	-40.62	54	-	-	-	-	-	-	A	H
		7440	42.88	-31.12	74	51.27	36.46	14.32	59.17	100	0	P	H
		7440	18.15	-35.85	54	-	-	-	-	-	-	A	H
		4960	37.94	-36.06	74	53.33	31.45	11.19	58.03	100	0	P	V
		4960	13.21	-40.79	54	-	-	-	-	-	-	A	V
		7440	42.75	-31.25	74	51.14	36.46	14.32	59.17	100	0	P	V
		7440	18.02	-35.98	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		38.37	22.64	-17.36	40	33.46	20.86	0.78	32.46	-	-	P	H
		139.08	25.79	-17.71	43.5	38.96	17.82	1.43	32.42	-	-	P	H
		224.94	23.81	-22.19	46	37.99	16.35	1.83	32.36	-	-	P	H
		514.2	26.45	-19.55	46	31.52	24.14	3.19	32.4	-	-	P	H
		717.9	28.57	-17.43	46	30.23	26.82	3.89	32.37	-	-	P	H
		871.2	31.59	-14.41	46	30.16	28.73	4.45	31.75	100	0	P	H
													H
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													H
		38.37	29.17	-10.83	40	39.99	20.86	0.78	32.46	100	0	P	V
		111.27	21.09	-22.41	43.5	34.9	17.19	1.43	32.43	-	-	P	V
		133.14	22.36	-21.14	43.5	35.41	17.94	1.43	32.42	-	-	P	V
		547.1	25.24	-20.76	46	29.87	24.47	3.3	32.4	-	-	P	V
		715.8	28.27	-17.73	46	29.98	26.78	3.89	32.38	-	-	P	V
		948.2	32.82	-13.18	46	28.95	30.27	4.75	31.15	-	-	P	V
													V
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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	Peak or Average
H/V	Horizontal or Vertical



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		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
CH 01													
2412MHz		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”.