



## Appendix A. Radiated Spurious Emission

Test Engineer :	Jesse Wang and James Chiu	Temperature :	22~23°C
		Relative Humidity :	45~52%

### 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		2388.855	53.78	-20.22	74	48.87	31.93	7.31	34.33	147	292	P	H
		2388.855	29.02	-24.98	54	-	-	-	-	-	-	A	H
	*	2402	99.29	-	-	94.36	31.93	7.31	34.31	147	292	P	H
	*	2402	74.53	-	-	-	-	-	-	-	-	A	H
													H
													H
		2388.96	53.74	-20.26	74	48.83	31.93	7.31	34.33	304	113	P	V
		2388.96	28.98	-25.02	54	-	-	-	-	-	-	A	V
	*	2402	99.87	-	-	94.94	31.93	7.31	34.31	304	113	P	V
	*	2402	75.11	-	-	-	-	-	-	-	-	A	V
													V
													V
BT CH 39 2441MHz		2389.1	54.19	-19.81	74	49.28	31.93	7.31	34.33	100	275	P	H
		2389.1	29.43	-24.57	54	-	-	-	-	-	-	A	H
	*	2442	100.39	-	-	95.21	32.07	7.36	34.25	100	275	P	H
	*	2442	75.63	-	-	-	-	-	-	-	-	A	H
		2491.67	46.63	-27.37	74	41.19	32.2	7.4	34.16	100	275	P	H
		2491.67	21.87	-32.13	54	-	-	-	-	-	-	A	H
		2388.96	55.44	-18.56	74	50.53	31.93	7.31	34.33	349	116	P	V
		2388.96	30.68	-23.32	54	-	-	-	-	-	-	A	V
	*	2442	100.98	-	-	95.8	32.07	7.36	34.25	349	116	P	V
	*	2442	76.22	-	-	-	-	-	-	-	-	A	V
		2484.6	45.26	-28.74	74	39.88	32.16	7.4	34.18	349	116	P	V
		2484.6	20.5	-33.5	54	-	-	-	-	-	-	A	V



<b>BT CH 78 2480MHz</b>	*	2480	101.07	-	-	95.69	32.16	7.4	34.18	111	294	P	H
	*	2480	76.31	-	-	-	-	-	-	-	-	A	H
		2483.76	50.81	-23.19	74	45.43	32.16	7.4	34.18	111	294	P	H
		2483.76	26.05	-27.95	54	-	-	-	-	-	-	A	H
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													H
	*	2480	101.51	-	-	96.13	32.16	7.4	34.18	300	127	P	V
	*	2480	76.75	-	-	-	-	-	-	-	-	A	V
		2494.64	54.44	-19.56	74	49	32.2	7.4	34.16	300	127	P	V
		2494.64	29.68	-24.32	54	-	-	-	-	-	-	A	V
													V
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<b>Remark</b>	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	50.95	-23.05	74	64.01	34.19	11.83	59.08	100	0	P	H
		4804	26.19	-27.81	54	-	-	-	-	-	-	A	H
													H
													H
		4804	50.51	-23.49	74	63.57	34.19	11.83	59.08	100	0	P	V
		4804	25.75	-28.25	54	-	-	-	-	-	-	A	V
													V
													V
BT CH 39 2441MHz		4882	45.05	-28.95	74	58.23	34.23	11.53	58.94	100	0	P	H
		4882	20.29	-33.71	54	-	-	-	-	-	-	A	H
		7323	46.47	-27.53	74	55.02	35.6	13.81	57.96	100	0	P	H
		7323	21.71	-32.29	54	-	-	-	-	-	-	A	H
		4882	40.53	-33.47	74	53.71	34.23	11.53	58.94	100	0	P	V
		4882	15.77	-38.23	54	-	-	-	-	-	-	A	V
		7323	48.57	-25.43	74	57.12	35.6	13.81	57.96	100	0	P	V
		7323	23.81	-30.19	54	-	-	-	-	-	-	A	V
BT CH 78 2480MHz		4960	49.99	-24.01	74	63.26	34.28	11.22	58.77	100	0	P	H
		4960	25.23	-28.77	54	-	-	-	-	-	-	A	H
		7440	47.29	-26.71	74	55.77	35.6	14.05	58.13	100	0	P	H
		7440	22.53	-31.47	54	-	-	-	-	-	-	A	H
		4960	44.15	-29.85	74	57.42	34.28	11.22	58.77	100	0	P	V
		4960	19.39	-34.61	54	-	-	-	-	-	-	A	V
		7440	49.56	-24.44	74	58.04	35.6	14.05	58.13	100	0	P	V
		7440	24.8	-29.2	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	27.69	-12.31	40	31.97	26	1.07	31.35	-	-	P	H
		84	23.57	-16.43	40	39.46	14.38	1.28	31.55	-	-	P	H
		252.21	37.38	-8.62	46	47.48	19.2	2.07	31.37	100	0	P	H
		336.4	26.18	-19.82	46	34.18	20.82	2.41	31.23	-	-	P	H
		420.4	36.46	-9.54	46	42.03	22.68	2.89	31.14	-	-	P	H
		971.3	33.88	-20.12	54	30.1	30.24	4.07	30.53	-	-	P	H
													H
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		30	29.91	-10.09	40	34.19	26	1.07	31.35	-	-	P	V
		72.66	29.99	-10.01	40	47.24	13.03	1.28	31.56	-	-	P	V
		252.21	36.02	-9.98	46	46.12	19.2	2.07	31.37	100	0	P	V
		420.4	30.84	-15.16	46	36.41	22.68	2.89	31.14	-	-	P	V
		588.4	33.24	-12.76	46	35.5	25.22	3.36	30.84	-	-	P	V
		970.6	34.36	-19.64	54	30.58	30.24	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**

*	<b>Fundamental Frequency</b> which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is <b>over limit</b> line.
P/A	<b>Peak</b> or <b>Average</b>
H/V	<b>Horizontal</b> or <b>Vertical</b>

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”.**