



## Appendix A. Radiated Spurious Emission

Test Engineer :	Luke Chang, Ricky Su, and Nick Yu	Temperature :	20~24°C
		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		2326.51	47.27	-26.73	74	47.01	26.95	7.24	33.93	259	42	P	H
		2326.51	22.48	-31.52	54	-	-	-	-	-	-	A	H
	*	2402.17	99.06	-	-	98.55	27.13	7.38	34	259	42	P	H
	*	2402.17	74.27	-	-	-	-	-	-	-	-	A	H
													H
													H
		2389.17	47.15	-26.85	74	46.64	27.13	7.38	34	100	88	P	V
		2389.17	22.36	-31.64	54	-	-	-	-	-	-	A	V
	*	2402.17	95.5	-	-	94.99	27.13	7.38	34	100	88	P	V
	*	2402.17	70.71	-	-	-	-	-	-	-	-	A	V
													V
													V
BT CH 39 2441MHz		2331.28	46.51	-27.49	74	46.18	26.95	7.31	33.93	229	45	P	H
		2331.28	21.72	-32.28	54	-	-	-	-	-	-	A	H
	*	2440.91	103.22	-	-	102.56	27.27	7.44	34.05	229	45	P	H
	*	2440.91	78.43	-	-	-	-	-	-	-	-	A	H
		2496.58	46.77	-27.23	74	45.91	27.4	7.56	34.1	229	45	P	H
		2496.58	21.98	-32.02	54	-	-	-	-	-	-	A	H
		2360.16	46.91	-27.09	74	46.52	27.04	7.31	33.96	114	88	P	V
		2360.16	22.12	-31.88	54	-	-	-	-	-	-	A	V
	*	2440.91	99.62	-	-	98.96	27.27	7.44	34.05	114	88	P	V
	*	2440.91	74.83	-	-	-	-	-	-	-	-	A	V
		2496.96	46.9	-27.1	74	46.04	27.4	7.56	34.1	114	88	P	V
		2496.96	22.11	-31.89	54	-	-	-	-	-	-	A	V



BT CH 78 2480MHz	*	2479.91	100.8	-	-	100.02	27.36	7.5	34.08	194	42	P	H
	*	2479.91	76.01	-	-	-	-	-	-	-	-	A	H
		2483.51	57.5	-16.5	74	56.72	27.36	7.5	34.08	194	42	P	H
		2483.51	32.71	-21.29	54	-	-	-	-	-	-	A	H
													H
													H
	*	2479.91	98.8	-	-	98.02	27.36	7.5	34.08	100	89	P	V
	*	2479.91	74.01	-	-	-	-	-	-	-	-	A	V
		2483.51	55.48	-18.52	74	54.7	27.36	7.5	34.08	100	89	P	V
		2483.51	30.69	-23.31	54	-	-	-	-	-	-	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	45.65	-28.35	74	59.27	31.23	10.63	55.48	100	0	P	H
		4806	20.86	-33.14	54	-	-	-	-	-	-	A	H
													H
													H
		4806	46.04	-27.96	74	59.66	31.23	10.63	55.48	100	0	P	V
		4806	21.25	-32.75	54	-	-	-	-	-	-	A	V
													V
													V
BT CH 39 2441MHz		4884	46.32	-27.68	74	59.85	31.33	10.68	55.54	100	0	P	H
		4884	21.53	-32.47	54	-	-	-	-	-	-	A	H
		7320	50.55	-23.45	74	57.19	36.12	13.28	56.04	100	0	P	H
		7320	25.76	-28.24	54	-	-	-	-	-	-	A	H
		4884	45.76	-28.24	74	59.29	31.33	10.68	55.54	100	0	P	V
		4884	20.97	-33.03	54	-	-	-	-	-	-	A	V
		7320	50.58	-23.42	74	57.22	36.12	13.28	56.04	100	0	P	V
		7320	25.79	-28.21	54	-	-	-	-	-	-	A	V
BT CH 78 2480MHz		4962	45.74	-28.26	74	59.14	31.45	10.73	55.58	100	0	P	H
		4962	20.95	-33.05	54	-	-	-	-	-	-	A	H
		7440	50.89	-23.11	74	56.98	36.46	13.39	55.94	100	0	P	H
		7440	26.1	-27.9	54	-	-	-	-	-	-	A	H
		4962	46.34	-27.66	74	59.74	31.45	10.73	55.58	100	0	P	V
		4962	21.55	-32.45	54	-	-	-	-	-	-	A	V
		7440	50.96	-23.04	74	57.05	36.46	13.39	55.94	100	0	P	V
		7440	26.17	-27.83	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		111.27	29.78	-13.72	43.5	47.42	11.12	1.64	30.4			P	H
		156.09	31.92	-11.58	43.5	49.5	10.88	1.89	30.35			P	H
		195.51	32.76	-10.74	43.5	51.97	9.01	2.09	30.31	110	236	P	H
		321.7	27.77	-18.23	46	41.85	13.48	2.56	30.12			P	H
		505.8	29.73	-16.27	46	38.3	17.92	3.31	29.8			P	H
		734	29.28	-16.72	46	33.02	21.68	4.05	29.47			P	H
													H
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													H
													H
													H
		91.02	35.74	-7.76	43.5	55.5	9.02	1.64	30.42			P	V
		117.48	37.59	-5.91	43.5	54.97	11.37	1.64	30.39	100	149	P	V
		180.39	34.67	-8.83	43.5	53.75	9.15	2.09	30.32			P	V
		307	29.7	-16.3	46	44.02	13.26	2.56	30.14			P	V
		319.6	24.25	-21.75	46	38.4	13.42	2.56	30.13			P	V
		596.8	30.02	-15.98	46	36.38	19.64	3.66	29.66			P	V
													V
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												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”.**