



## Appendix A. Radiated Spurious Emission

Test Engineer :	Tsung Lee and Stan Hsieh	Temperature :	20~23°C
		Relative Humidity :	58~63%

### 2.4GHz 2400~2483.5MHz

#### BT (Band Edge @ 3m)

BT	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.	
		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )	
BT CH00 2402MHz		2315.67	41.16	-32.84	74	42.14	27.01	5.27	33.26	309	244	P	H	
		2315.67	16.37	-37.63	54							A	H	
	*	2402	103.24	-	-	103.84	27.23	5.39	33.22	309	244	P	H	
	*	2402	78.45	-	-							A	H	
													H	
														H
			2375.835	41.13	-32.87	74	41.79	27.19	5.39	33.24	309	268	P	V
			2375.835	16.34	-37.66	54							A	V
	*		2402	100.9	-	-	101.5	27.23	5.39	33.22	309	268	P	V
	*		2402	76.11	-	-							A	V
													V	
													V	
BT CH 39 2441MHz		2370.34	41.22	-32.78	74	41.88	27.19	5.39	33.24	307	237	P	H	
		2370.34	16.43	-37.57	54							A	H	
	*	2442	103.21	-	-	103.62	27.37	5.42	33.2	307	237	P	H	
	*	2442	78.42	-	-							A	H	
			2500	41.46	-32.54	74	41.67	27.5	5.46	33.17	307	237	P	H
			2500	16.67	-37.33	54							A	H
			2366	40.77	-33.23	74	41.48	27.14	5.39	33.24	295	270	P	V
			2366	15.98	-38.02	54							A	V
	*		2442	100.98	-	-	101.39	27.37	5.42	33.2	295	270	P	V
	*		2442	76.19	-	-							A	V
			2497.34	40.62	-33.38	74	40.83	27.5	5.46	33.17	295	270	P	V
			2497.34	15.83	-38.17	54							A	V



<b>BT CH 78 2480MHz</b>	*	2480	102.92	-	-	103.2	27.46	5.44	33.18	297	235	P	H
	*	2480	78.13	-	-							A	H
		2483.68	48.83	-25.17	74	49.09	27.46	5.46	33.18	297	235	P	H
		2483.68	24.04	-29.96	54							A	H
													H
													H
	*	2480	100.2	-	-	100.48	27.46	5.44	33.18	289	270	P	V
	*	2480	75.41	-	-							A	V
		2484.16	45.24	-28.76	74	45.5	27.46	5.46	33.18	289	270	P	V
		2484.16	20.45	-33.55	54							A	V
													V
													V
<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		4806	36.62	-37.38	74	48.8	31.42	7.58	51.18	100	0	P	H	
		4806	11.83	-42.17	54							A	H	
													H	
													H	
		4806	36.51	-37.49	74	48.69	31.42	7.58	51.18	100	0	P	V	
		4806	11.72	-42.28	54								A	V
														V
														V
BT CH 39 2441MHz		4884	39.94	-34.06	74	51.71	31.56	7.82	51.15	100	0	P	H	
		4884	15.15	-38.85	54								A	H
		7320	43.74	-30.26	74	48.83	36.22	9.49	50.8	100	0	P	H	
		7320	18.95	-35.05	54								A	H
		4884	37.35	-36.65	74	49.12	31.56	7.82	51.15	100	0	P	V	
		4884	12.56	-41.44	54								A	V
		7320	43.57	-30.43	74	48.66	36.22	9.49	50.8	100	0	P	V	
		7320	18.78	-35.22	54								A	V
BT CH 78 2480MHz		4962	37.01	-36.99	74	48.35	31.73	8.05	51.12	100	0	P	H	
		4962	12.22	-41.78	54								A	H
		7440	43.84	-30.16	74	48.54	36.49	9.61	50.8	100	0	P	H	
		7440	19.05	-34.95	54								A	H
		4962	36.93	-37.07	74	48.27	31.73	8.05	51.12	100	0	P	V	
		4962	12.14	-41.86	54								A	V
		7440	43.63	-30.37	74	48.33	36.49	9.61	50.8	100	0	P	V	
		7440	18.84	-35.16	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.	
		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )	
2.4GHz BT LF		31.89	23.2	-16.8	40	30.39	24.98	0.65	32.82			P	H	
		182.01	22.08	-21.42	43.5	37.79	15.52	1.48	32.71			P	H	
		253.02	30.32	-15.68	46	42.19	19.1	1.76	32.73			P	H	
		625.5	26.57	-19.43	46	31.22	25.75	2.62	33.02			P	H	
		831.3	29.45	-16.55	46	30.68	28.4	3.07	32.7			P	H	
		948.9	32.72	-13.28	46	31.23	29.97	3.29	31.77	100	0	P	H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
			30	23.76	-16.24	40	29.83	26.1	0.65	32.82			P	V
			40.53	26.78	-13.22	40	38.99	19.94	0.65	32.8	100	0	P	V
			244.92	25.83	-20.17	46	38.41	18.39	1.76	32.73			P	V
			543.6	24.46	-21.54	46	30.5	24.46	2.47	32.97			P	V
			745.2	29.17	-16.83	46	31.82	27.38	2.91	32.94			P	V
			954.5	31.25	-14.75	46	29.68	30	3.29	31.72			P	V
													V	
												V		
												V		
												V		
												V		
												V		
<b>Remark</b>	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

- Level(dBμV/m) =  
Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
- Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

**For Peak Limit @ 2390MHz:**

- 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)
- Over Limit(dB)  
= Level(dBμV/m) – Limit Line(dBμV/m)  
= 55.45(dBμV/m) – 74(dBμV/m)  
= -18.55(dB)

**For Average Limit @ 2390MHz:**

- 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)
- 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”.