



## Appendix A. Radiated Spurious Emission

Test Engineer :	James Chiu and Jesse Wang	Temperature :	24~26°C
		Relative Humidity :	54~59%

### 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 )	Limit	Level	Factor	Loss	Factor	Pos	Pos	Avg.	(H/V)	
					Line	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )	
BT CH00 2402MHz		2388.435	56.73	-17.27	74	51.68	32.08	7.31	34.34	109	21	P	H	
		2388.435	31.97	-22.03	54	-	-	-	-	-	-	A	H	
	*	2402	101.54	-	-	96.46	32.08	7.31	34.31	109	21	P	H	
	*	2402	76.78	-	-	-	-	-	-	-	-	A	H	
													H	
														H
			2342.76	52.58	-21.42	74	47.74	32.01	7.24	34.41	280	329	P	V
			2342.76	27.82	-26.18	54	-	-	-	-	-	-	A	V
	*		2402	100.61	-	-	95.53	32.08	7.31	34.31	280	329	P	V
	*		2402	75.85	-	-	-	-	-	-	-	-	A	V
														V
														V
BT CH 39 2441MHz		2388.4	53.77	-20.23	74	48.72	32.08	7.31	34.34	106	95	P	H	
		2388.4	29.01	-24.99	54	-	-	-	-	-	-	A	H	
	*	2442	99.81	-	-	94.56	32.14	7.36	34.25	106	95	P	H	
	*	2442	75.05	-	-	-	-	-	-	-	-	A	H	
			2496.71	45.1	-28.9	74	39.66	32.2	7.4	34.16	106	95	P	H
			2496.71	20.34	-33.66	54	-	-	-	-	-	-	A	H
			2388.26	53.11	-20.89	74	48.06	32.08	7.31	34.34	306	335	P	V
			2388.26	28.35	-25.65	54	-	-	-	-	-	-	A	V
	*		2442	101.01	-	-	95.76	32.14	7.36	34.25	306	335	P	V
	*		2442	76.25	-	-	-	-	-	-	-	-	A	V
			2485.51	45.23	-28.77	74	39.82	32.18	7.4	34.17	306	335	P	V
			2485.51	20.47	-33.53	54	-	-	-	-	-	-	A	V



<b>BT CH 78 2480MHz</b>	*	2480	101.16	-	-	95.76	32.18	7.4	34.18	147	24	P	H
	*	2480	76.4	-	-	-	-	-	-	-	-	A	H
		2484.36	52.29	-21.71	74	46.89	32.18	7.4	34.18	147	24	P	H
		2484.36	27.53	-26.47	54	-	-	-	-	-	-	A	H
													H
													H
	*	2480	101.78	-	-	96.38	32.18	7.4	34.18	332	334	P	V
	*	2480	77.02	-	-	-	-	-	-	-	-	A	V
		2484.04	51.73	-22.27	74	46.33	32.18	7.4	34.18	332	334	P	V
		2484.04	26.97	-27.03	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	42.4	-31.6	74	55.55	34.1	11.83	59.08	100	0	P	H
		4806	17.64	-36.36	54	-	-	-	-	-	-	A	H
													H
													H
		4806	41.31	-32.69	74	54.46	34.1	11.83	59.08	100	0	P	V
		4806	16.55	-37.45	54	-	-	-	-	-	-	A	V
													V
													V
BT CH 39 2441MHz		4884	44.13	-29.87	74	57.44	34.1	11.53	58.94	100	0	P	H
		4884	19.37	-34.63	54	-	-	-	-	-	-	A	H
		7320	47.92	-26.08	74	55.97	36.1	13.81	57.96	100	0	P	H
		7320	23.16	-30.84	54	-	-	-	-	-	-	A	H
		4884	43.57	-30.43	74	56.88	34.1	11.53	58.94	100	0	P	V
		4884	18.81	-35.19	54	-	-	-	-	-	-	A	V
		7320	48.31	-25.69	74	56.36	36.1	13.81	57.96	100	0	P	V
		7320	23.55	-30.45	54	-	-	-	-	-	-	A	V
BT CH 78 2480MHz		4962	44.89	-29.11	74	58.34	34.1	11.22	58.77	100	0	P	H
		4962	20.13	-33.87	54	-	-	-	-	-	-	A	H
		7440	47.68	-26.32	74	55.59	36.17	14.05	58.13	100	0	P	H
		7440	22.92	-31.08	54	-	-	-	-	-	-	A	H
		4962	44.84	-29.16	74	58.29	34.1	11.22	58.77	100	0	P	V
		4962	20.08	-33.92	54	-	-	-	-	-	-	A	V
		7440	48.02	-25.98	74	55.93	36.17	14.05	58.13	100	0	P	V
		7440	23.26	-30.74	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		30	27.99	-12.01	40	32.27	26	1.07	31.35	-	-	P	H		
		166.89	22.17	-21.33	43.5	35.58	16.3	1.78	31.49	-	-	P	H		
		252.21	28.26	-17.74	46	38.36	19.2	2.07	31.37	-	-	P	H		
		336.4	29.03	-16.97	46	37.03	20.82	2.41	31.23	-	-	P	H		
		420.4	37.99	-8.01	46	43.56	22.68	2.89	31.14	100	0	P	H		
		897.1	33.55	-12.45	46	30.94	28.98	4.17	30.54	-	-	P	H		
														H	
															H
															H
															H
															H
															H
			30.27	28.28	-11.72	40	32.56	26	1.07	31.35	100	0	P	V	
			147.18	19.47	-24.03	43.5	31.41	17.78	1.78	31.5	-	-	P	V	
			252.21	28.87	-17.13	46	38.97	19.2	2.07	31.37	-	-	P	V	
			336.4	24.4	-21.6	46	32.4	20.82	2.41	31.23	-	-	P	V	
			420.4	33.53	-12.47	46	39.1	22.68	2.89	31.14	-	-	P	V	
			857.9	33.41	-12.59	46	31.12	28.75	4.1	30.56	-	-	P	V	
															V
															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

- 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”.