



## Appendix A. Radiated Spurious Emission

Test Engineer :	Jet Lui, Kyle Jhuang, and Karl Hou	Temperature :	23~24°C
		Relative Humidity :	45~46%

15C 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		2311.04	47.51	-26.49	74	44.2	31.89	6.07	34.65	103	174	P	H	
		2311.04	22.74	-31.26	54	-	-	-	-	-	-	A	H	
	*	2402.17	93.66	-	-	90.15	31.94	6.21	34.64	103	174	P	H	
		2402.17	68.89	-	-	-	-	-	-	-	-	A	H	
													H	
														H
			2354.33	46.98	-27.02	74	43.57	31.92	6.14	34.65	104	215	P	V
			2354.33	22.21	-31.79	54	-	-	-	-	-	-	A	V
	*		2402.17	96.09	-	-	92.58	31.94	6.21	34.64	104	215	P	V
			2402.17	71.32	-	-	-	-	-	-	-	-	A	V
BT CH 39 2441MHz		2345.72	47.81	-26.19	74	44.41	31.91	6.14	34.65	100	187	P	H	
		2345.72	23.04	-30.96	54	-	-	-	-	-	-	A	H	
	*	2440.91	94.87	-	-	91.27	31.97	6.27	34.64	100	187	P	H	
		2440.91	70.1	-	-	-	-	-	-	-	-	A	H	
			2489.36	47.04	-26.96	74	43.37	32	6.3	34.63	100	187	P	H
			2489.36	22.27	-31.73	54	-	-	-	-	-	-	A	H
			2359.97	47.5	-26.5	74	44.09	31.92	6.14	34.65	101	214	P	V
			2359.97	22.73	-31.27	54	-	-	-	-	-	-	A	V
	*		2441.29	95.58	-	-	91.98	31.97	6.27	34.64	101	214	P	V
			2441.29	70.81	-	-	-	-	-	-	-	-	A	V
		2500	47.1	-26.9	74	43.39	32	6.34	34.63	101	214	P	V	
		2500	22.33	-31.67	54	-	-	-	-	-	-	A	V	



<b>BT CH 78 2480MHz</b>	*	2480.05	93.66	-	-	90	31.99	6.3	34.63	100	192	P	H	
		2480.05	68.89	-	-	-	-	-	-	-	-	A	H	
		2485.02	52.19	-21.81	74	48.53	31.99	6.3	34.63	100	192	P	H	
		2485.02	27.42	-26.58	54	-	-	-	-	-	-	A	H	
													H	
													H	
	*	2479.91	97.64	-	-	93.98	31.99	6.3	34.63	100	202	P	V	
		2479.91	72.87	-	-	-	-	-	-	-	-	-	A	V
		2483.48	55.15	-18.85	74	51.49	31.99	6.3	34.63	100	202	P	V	
		2483.48	30.38	-23.62	54	-	-	-	-	-	-	-	A	V
													V	
													V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.													



15C 2.4GHz 2400~2483.5MHz

BT (Harmonic @ 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.	
		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
BT CH 00 2402MHz		4803	41.48	-32.52	74	59.47	34.35	8.52	60.86	100	0	P	H
		7206	41.24	-32.76	74	54.08	35.76	11.88	60.48	100	0	P	H
													H
													H
		4803	40.59	-33.41	74	58.58	34.35	8.52	60.86	100	0	P	V
		7206	41.01	-32.99	74	53.85	35.76	11.88	60.48	100	0	P	V
													V
													V
BT CH 39 2441MHz		4884	42.9	-31.1	74	60.42	34.4	8.77	60.69	100	0	P	H
		7323	40.96	-33.04	74	53.81	35.73	11.95	60.53	100	0	P	H
													H
													H
		4881	45.17	-28.83	74	62.69	34.4	8.77	60.69	100	0	P	V
		7323	41.13	-32.87	74	53.98	35.73	11.95	60.53	100	0	P	V
													V
													V
BT CH 78 2480MHz		4962	45.21	-28.79	74	62.2	34.47	9.02	60.48	100	0	P	H
		7440	40.69	-33.31	74	53.55	35.71	12.01	60.58			P	H
													H
													H
		4962	41.56	-32.44	74	58.55	34.47	9.02	60.48	100	0	P	V
		7440	40.03	-33.97	74	52.89	35.71	12.01	60.58	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



15C 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		34.32	23.16	-16.84	40	38.17	16.1	0.68	31.79			P	H
		141.24	34.84	-8.66	43.5	54.34	10.93	1.32	31.75			P	H
		285.15	39.72	-6.28	46	56.69	12.9	1.85	31.72			P	H
		303.5	37.96	-8.04	46	54.49	13.27	1.92	31.72			P	H
		424.6	37.24	-8.76	46	50.04	16.8	2.25	31.85			P	H
		770.4	40.24	-5.76	46	49.06	20.1	3.05	31.97	126	58	P	H
		42.96	27.8	-12.2	40	47.92	10.92	0.75	31.79			P	V
		142.05	35.98	-7.52	43.5	55.56	10.85	1.32	31.75	100	136	P	V
		282.45	35.1	-10.9	46	52.15	12.84	1.84	31.73			P	V
		308.4	33.39	-12.61	46	49.83	13.36	1.93	31.73			P	V
		441.4	33.21	-12.79	46	45.98	16.81	2.29	31.87			P	V
	774.6	35.66	-10.34	46	44.43	20.15	3.05	31.97			P	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 per 15.209(c).
!	Test result is <b>over limit</b> line.
P/A	<b>Peak or Average</b>
H/V	<b>Horizontal or 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”.**