



## Appendix A. Radiated Spurious Emission

<b>Test Engineer :</b>	Ken Wu, Derreck Chen, and Nick Yu	<b>Temperature :</b>	21~23°C
		<b>Relative Humidity :</b>	47~49%

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 )	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		2369.8	46.22	-27.78	74	41.46	32.16	6.87	34.27	106	42	P	H	
		2369.8	21.46	-32.54	54	-	-	-	-	-	-	A	H	
	*	2402.3	92.05	-	-	87.26	32.18	6.91	34.3	106	42	P	H	
	*	2402.3	67.29	-	-	-	-	-	-	-	-	A	H	
													H	
														H
			2383.84	46.96	-27.04	74	42.16	32.16	6.91	34.27	100	343	P	V
			2383.84	22.2	-31.8	54	-	-	-	-	-	-	A	V
	*		2402.17	81.94	-	-	77.15	32.18	6.91	34.3	100	343	P	V
	*		2402.17	57.18	-	-	-	-	-	-	-	-	A	V
														V
													V	
BT CH 39 2441MHz		2353.13	45.85	-28.15	74	41.13	32.13	6.84	34.25	112	59	P	H	
		2353.13	21.09	-32.91	54	-	-	-	-	-	-	A	H	
	*	2441.1	96.11	-	-	91.31	32.24	6.95	34.39	112	59	P	H	
	*	2441.1	71.35	-	-	-	-	-	-	-	-	A	H	
			2485.56	45.72	-28.28	74	40.87	32.28	7	34.43	112	59	P	H
			2485.56	20.96	-33.04	54	-	-	-	-	-	-	A	H
			2367.38	45.63	-28.37	74	40.9	32.13	6.87	34.27	139	327	P	V
			2367.38	20.87	-33.13	54	-	-	-	-	-	-	A	V
	*		2441.1	85.01	-	-	80.21	32.24	6.95	34.39	139	327	P	V
	*		2441.1	60.25	-	-	-	-	-	-	-	-	A	V
			2494.49	46.35	-27.65	74	41.53	32.3	7	34.48	139	327	P	V
			2494.49	21.59	-32.41	54	-	-	-	-	-	-	A	V



<b>BT CH 78 2480MHz</b>	*	2480.12	97.03	-	-	92.18	32.28	7	34.43	106	65	P	H
	*	2480.12	72.27	-	-	-	-	-	-	-	-	A	H
		2492.3	46.66	-27.34	74	41.84	32.3	7	34.48	106	65	P	H
		2492.3	21.9	-32.1	54	-	-	-	-	-	-	A	H
													H
													H
	*	2479.98	85.47	-	-	80.62	32.28	7	34.43	100	304	P	V
	*	2479.98	60.71	-	-	-	-	-	-	-	-	A	V
		2495.8	46.4	-27.6	74	41.58	32.3	7	34.48	100	304	P	V
		2495.8	21.64	-32.36	54	-	-	-	-	-	-	A	V
													V
													V
Remark	<ol style="list-style-type: none"> <li>1. No other spurious found.</li> <li>2. All results are PASS against Peak and Average limit line.</li> </ol>												



15C 2.4GHz 2400~2483.5MHz

BT (Harmonic @ 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 CH 00 2402MHz		4803	40.64	-33.36	74	56.62	34.25	8.73	58.96	100	0	P	H	
		4803	15.88	-38.12	54	-	-	-	-	-	-	A	H	
													H	
													H	
		4803	40.01	-33.99	74	55.99	34.25	8.73	58.96	100	0	P	V	
		4803	15.25	-38.75	54	-	-	-	-	-	-	-	A	V
														V
														V
BT CH 39 2441MHz		4881	41.13	-32.87	74	56.73	34.3	8.93	58.83	100	0	P	H	
		4881	16.37	-37.63	54	-	-	-	-	-	-	A	H	
		7323	41.82	-32.18	74	52.97	35.6	10.99	57.74	100	0	P	H	
		7323	17.06	-36.94	54	-	-	-	-	-	-	A	H	
		4881	40.34	-33.66	74	55.94	34.3	8.93	58.83	100	0	P	V	
		4881	15.58	-38.42	54	-	-	-	-	-	-	A	V	
		7323	41.25	-32.75	74	52.4	35.6	10.99	57.74	100	0	P	V	
		7323	16.49	-37.51	54	-	-	-	-	-	-	A	V	
BT CH 78 2480MHz		4959	41.61	-32.39	74	56.81	34.37	9.09	58.66	100	0	P	H	
		4959	16.85	-37.15	54	-	-	-	-	-	-	A	H	
		7440	40.59	-33.41	74	51.72	35.6	11.12	57.85	100	0	P	H	
		7440	15.83	-38.17	54	-	-	-	-	-	-	A	H	
		4959	42.27	-31.73	74	57.47	34.37	9.09	58.66	100	0	P	V	
		4959	17.51	-36.49	54	-	-	-	-	-	-	A	V	
		7440	40	-34	74	51.13	35.6	11.12	57.85	100	0	P	V	
		7440	15.24	-38.76	54	-	-	-	-	-	-	A	V	
Remark	<ol style="list-style-type: none"> <li>No other spurious found.</li> <li>All results are PASS against Peak and Average limit line.</li> </ol>													



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		41.88	13.61	-26.39	40	31.58	12.6	0.63	31.2			P	H	
		138.27	28.25	-15.25	43.5	46.65	11.5	1.2	31.1			P	H	
		261.93	30.85	-15.15	46	46.47	13.78	1.6	31	114	59	P	H	
		426	27.54	-18.46	46	39.26	16.82	2.23	30.77			P	H	
		694.8	26.49	-19.51	46	33.42	20.55	2.93	30.41			P	H	
		924.4	32.08	-13.92	46	34.91	24.12	3.4	30.35			P	H	
														H
														H
														H
														H
														H
														H
			32.7	29.18	-10.82	40	42.76	17.24	0.56	31.38	189	278	P	V
			173.64	30.2	-13.3	43.5	50.62	9.38	1.24	31.04			P	V
			287.31	26.79	-19.21	46	43.14	13.01	1.68	31.04			P	V
			348.3	32.07	-13.93	46	46.81	14.34	1.96	31.04			P	V
			568.8	32.39	-13.61	46	40.76	19.75	2.6	30.72			P	V
			853	27.17	-18.83	46	31.02	23.27	3.27	30.39			P	V
														V
														V
													V	
													V	
													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</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”.**