



## Appendix A. Radiated Spurious Emission

Test Engineer :	Eric Shih, Stan Hsieh and Derreck Chen	Temperature :	20~22°C
		Relative Humidity :	46~48%

### 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 Line	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )	
BT CH00 2402MHz		2349.39	41.85	-32.15	74	42.85	27.1	5.95	34.05	168	207	P	H	
		2349.39	17.06	-36.94	54	-	-	-	-	-	-	A	H	
	*	2402.17	95.11	-	-	95.91	27.23	6.01	34.04	168	207	P	H	
	*	2402.17	70.32	-	-	-	-	-	-	-	-	A	H	
													H	
														H
			2344.71	42.28	-31.72	74	43.28	27.1	5.95	34.05	113	182	P	V
			2344.71	17.49	-36.51	54	-	-	-	-	-	-	A	V
	*		2401.91	95.9	-	-	96.7	27.23	6.01	34.04	113	182	P	V
	*		2401.91	71.11	-	-	-	-	-	-	-	-	A	V
													V	
													V	
BT CH 39 2441MHz		2336.22	41.54	-32.46	74	42.55	27.1	5.95	34.06	123	178	P	H	
		2336.22	16.75	-37.25	54	-	-	-	-	-	-	A	H	
	*	2441.29	96.93	-	-	97.54	27.37	6.04	34.02	123	178	P	H	
	*	2441.29	72.14	-	-	-	-	-	-	-	-	A	H	
			2492.02	42.14	-31.86	74	42.55	27.5	6.09	34	123	178	P	H
			2492.02	17.35	-36.65	54	-	-	-	-	-	-	A	H
			2341.16	41.96	-32.04	74	42.96	27.1	5.95	34.05	108	181	P	V
			2341.16	17.17	-36.83	54	-	-	-	-	-	-	A	V
	*		2441.1	98.16	-	-	98.77	27.37	6.04	34.02	108	181	P	V
	*		2441.1	73.37	-	-	-	-	-	-	-	-	A	V
			2488.98	41.61	-32.39	74	42.03	27.5	6.09	34.01	108	181	P	V
*		2488.98	16.82	-	-	-	-	-	-	-	-	A	V	



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 CH 78 2480MHz	*	2480.19	97.66	-	-	98.14	27.46	6.07	34.01	137	183	P	H	
	*	2480.19	72.87	-	-	-	-	-	-	-	-	A	H	
		2484.6	44.13	-29.87	74	44.59	27.46	6.09	34.01	137	183	P	H	
		2484.6	19.34	-34.66	54	-	-	-	-	-	-	A	H	
													H	
														H
	*	2480.12	97.22	-	-	97.7	27.46	6.07	34.01	125	171	P	V	
	*	2480.12	72.43	-	-	-	-	-	-	-	-	-	A	V
		2484.88	44.89	-29.11	74	45.35	27.46	6.09	34.01	125	171	P	V	
		2484.88	20.1	-33.9	54	-	-	-	-	-	-	A	V	
														V
														V
<b>Remark</b>	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.	
				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		4804	32.89	-41.11	74	51.58	31.3	8.65	58.64	100	0	P	H	
		4804	8.1	-45.9	54	-	-	-	-	-	-	A	H	
													H	
													H	
		4804	35.41	-38.59	74	54.1	31.3	8.65	58.64	100	0	P	V	
		4804	10.62	-43.38	54	-	-	-	-	-	-	-	A	V
														V
														V
BT CH 39 2441MHz		4882	32.98	-41.02	74	51.35	31.41	8.74	58.52	100	0	P	H	
		4882	8.19	-45.81	54	-	-	-	-	-	-	A	H	
		7323	37.1	-36.9	74	48.53	36.32	10.44	58.19	100	0	P	H	
		7323	12.31	-41.69	54	-	-	-	-	-	-	A	H	
		4882	35.19	-38.81	74	53.56	31.41	8.74	58.52	100	0	P	V	
		4882	10.4	-43.6	54	-	-	-	-	-	-	A	V	
		7323	37.3	-36.7	74	48.73	36.32	10.44	58.19	100	0	P	V	
		7323	12.51	-41.49	54	-	-	-	-	-	-	A	V	
BT CH 78 2480MHz		4960	33.9	-40.1	74	51.89	31.54	8.83	58.36	100	0	P	H	
		4960	9.11	-44.89	54	-	-	-	-	-	-	A	H	
		7440	36.87	-37.13	74	48.17	36.59	10.52	58.41	100	0	P	H	
		7440	12.08	-41.92	54	-	-	-	-	-	-	A	H	
		4960	35.01	-38.99	74	53	31.54	8.83	58.36	100	0	P	V	
		4960	10.22	-43.78	54	-	-	-	-	-	-	A	V	
		7440	37.17	-36.83	74	48.47	36.59	10.52	58.41	100	0	P	V	
		7440	12.38	-41.62	54	-	-	-	-	-	-	A	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		49.17	20.08	-19.92	40	42.85	7.99	1.04	31.8			P	H	
		93.99	27.19	-16.31	43.5	48.49	9.2	1.28	31.78			P	H	
		159.06	27.32	-16.18	43.5	48	9.64	1.46	31.78	123	99	P	H	
		367.9	21.65	-24.35	46	36.34	14.78	2.32	31.79			P	H	
		590.5	27.48	-18.52	46	38.12	18.5	2.89	32.03			P	H	
		820.1	26.16	-19.84	46	34.48	20.1	3.4	31.82			P	H	
														H
														H
														H
														H
														H
														H
														H
			48.9	31.5	-8.5	40	54.17	8.09	1.04	31.8	147	66	P	V
			95.34	22.25	-21.25	43.5	43.35	9.4	1.28	31.78			P	V
			210.9	13.86	-29.64	43.5	35.56	8.29	1.79	31.78			P	V
			477.1	19.05	-26.95	46	31.24	17.11	2.57	31.87			P	V
			571.6	27.53	-18.47	46	38.14	18.5	2.89	32			P	V
			820.1	28.38	-17.62	46	36.7	20.1	3.4	31.82			P	V
														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”.