



## Appendix A. Radiated Spurious Emission

Test Engineer :	Nick Yu, Stan Hsieh, Ken Wu, and James Chiu	Temperature :	21~23 °C
		Relative Humidity :	47~49%

15C 2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

BLE	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 )	Avg.	
BLE CH 00 2402MHz		2381.82	50.7	-23.3	74	45.06	32.16	7.75	34.27	104	204	P	H
		2381.91	42.29	-11.71	54	36.65	32.16	7.75	34.27	104	204	A	H
	*	2401.753	101.46	-	-	95.83	32.18	7.75	34.3	104	204	P	H
	*	2401.92	100.66	-	-	95.03	32.18	7.75	34.3	104	204	A	H
													H
													H
		2362.2	50.77	-23.23	74	45.21	32.13	7.68	34.25	305	271	P	V
		2381.91	38.47	-15.53	54	32.83	32.16	7.75	34.27	305	271	A	V
	*	2402.254	104.32	-	-	98.69	32.18	7.75	34.3	305	271	P	V
	*	2401.92	103.47	-	-	97.84	32.18	7.75	34.3	305	271	A	V
													V
													V
BLE CH 19 2440MHz		2382.09	49.67	-24.33	74	44.03	32.16	7.75	34.27	112	203	P	H
		2322.06	37.27	-16.73	54	31.8	32.09	7.6	34.22	112	203	A	H
	*	2440.331	102.53	-	-	96.81	32.24	7.83	34.35	112	203	P	H
	*	2439.997	101.71	-	-	95.99	32.24	7.83	34.35	112	203	A	H
		2494.72	49.31	-24.69	74	43.58	32.3	7.91	34.48	112	203	P	H
		2489	37.12	-16.88	54	31.34	32.3	7.91	34.43	112	203	A	H
		2370.12	49.51	-24.49	74	43.94	32.16	7.68	34.27	301	289	P	V
		2378.04	37.14	-16.86	54	31.57	32.16	7.68	34.27	301	289	A	V
	*	2440.247	103.88	-	-	98.16	32.24	7.83	34.35	301	289	P	V
	*	2439.997	103.08	-	-	97.36	32.24	7.83	34.35	301	289	A	V
		2498.68	49.49	-24.51	74	43.76	32.3	7.91	34.48	301	289	P	V
		2493.84	37.24	-16.76	54	31.51	32.3	7.91	34.48	301	289	A	V



<b>BLE CH 39 2480MHz</b>	*	2479.826	102.69	-	-	96.93	32.28	7.91	34.43	131	138	P	H
	*	2480.076	101.86	-	-	96.1	32.28	7.91	34.43	131	138	A	H
		2499.68	51.3	-22.7	74	45.57	32.3	7.91	34.48	131	138	P	H
		2499.96	42.35	-11.65	54	36.62	32.3	7.91	34.48	131	138	A	H
													H
													H
	*	2479.826	105.24	-	-	99.48	32.28	7.91	34.43	300	272	P	V
	*	2479.993	104.43	-	-	98.67	32.28	7.91	34.43	300	272	A	V
		2499.56	51.8	-22.2	74	46.07	32.3	7.91	34.48	300	272	P	V
		2500	42.29	-11.71	54	36.56	32.3	7.91	34.48	300	272	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

## BLE (Harmonic @ 3m)

BLE	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)
BLE CH 00 2402MHz		4806	46.97	-27.03	74	60.57	34.25	11.11	58.96	100	0	P	H
													H
													H
													H
		4806	48.61	-25.39	74	62.21	34.25	11.11	58.96	100	0	P	V
													V
													V
													V
BLE CH 19 2440MHz		4878	47.88	-26.12	74	61.2	34.3	11.21	58.83	100	0	P	H
		7320	45.41	-28.59	74	52.47	35.6	15.08	57.74	100	0	P	H
													H
													H
		4878	49.82	-24.18	74	63.14	34.3	11.21	58.83	100	0	P	V
		7320	45.52	-28.48	74	52.58	35.6	15.08	57.74	100	0	P	V
													V
													V
BLE CH 39 2480MHz		4962	49.29	-24.71	74	62.26	34.37	11.32	58.66	100	0	P	H
		7440	47.49	-26.51	74	54.61	35.6	15.13	57.85	100	0	P	H
													H
													H
		4962	53.76	-20.24	74	66.73	34.37	11.32	58.66	205	0	P	V
		4962	47.6	-6.4	54	60.57	34.37	11.32	58.66	205	0	A	V
		7440	49.33	-24.67	74	56.45	35.6	15.13	57.85	100	0	P	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 BLE (LF)

[illegible]



**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

1. Level(dBμV/m) =

Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

2. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

**For Peak Limit @ 2390MHz:**

1. 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)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

**For Average Limit @ 2390MHz:**

1. 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)

2. 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”.