



Appendix A. Radiated Spurious Emission

Test Engineer :	Kyle Jhuang, Wilson Wu, and Alex Jeng	Temperature :	24.5~25.0°C
		Relative Humidity :	50~58%

2.4GHz 2400~2483.5MHz

BT (Band Edge @ 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 CH00 2402MHz		2322.285	42.37	-31.63	74	39.79	26.99	6.89	31.3	176	153	P	H	
		2322.285	17.61	-36.39	54	-	-	-	-	-	-	A	H	
	*	2402	99.97	-	-	97.11	27.15	6.98	31.27	176	153	P	H	
	*	2402	75.21	-	-	-	-	-	-	-	-	A	H	
													H	
														H
			2339.61	42.92	-31.08	74	40.27	27.03	6.91	31.29	100	77	P	V
			2339.61	18.16	-35.84	54	-	-	-	-	-	-	A	V
	*		2402	92.8	-	-	89.94	27.15	6.98	31.27	100	77	P	V
	*		2402	68.04	-	-	-	-	-	-	-	-	A	V
														V
														V
BT CH 39 2441MHz		2333.94	42.96	-31.04	74	40.38	26.99	6.89	31.3	122	152	P	H	
		2333.94	18.2	-35.8	54	-	-	-	-	-	-	A	H	
	*	2441	99.61	-	-	96.56	27.28	7.03	31.26	122	152	P	H	
	*	2441	74.85	-	-	-	-	-	-	-	-	A	H	
			2499.65	43.34	-30.66	74	40.09	27.4	7.09	31.24	122	152	P	H
			2499.65	18.58	-35.42	54	-	-	-	-	-	-	A	H
			2328.48	42.78	-31.22	74	40.2	26.99	6.89	31.3	105	120	P	V
			2328.48	18.02	-35.98	54	-	-	-	-	-	-	A	V
	*		2441	93.83	-	-	90.78	27.28	7.03	31.26	105	120	P	V
	*		2441	69.07	-	-	-	-	-	-	-	-	A	V
			2494.19	42.82	-31.18	74	39.57	27.4	7.09	31.24	105	120	P	V
			2494.19	18.06	-35.94	54	-	-	-	-	-	-	A	V



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 78 2480MHz	*	2480	97.83	-	-	94.65	27.36	7.07	31.25	100	131	P	H	
	*	2480	73.07	-	-	-	-	-	-	-	-	A	H	
		2487.56	43.65	-30.35	74	40.41	27.4	7.09	31.25	100	131	P	H	
		2487.56	18.89	-35.11	54	-	-	-	-	-	-	A	H	
													H	
														H
	*	2480	93.98	-	-	90.8	27.36	7.07	31.25	100	131	P	V	
	*	2480	69.22	-	-	-	-	-	-	-	-	-	A	V
		2485.04	43.19	-30.81	74	40.01	27.36	7.07	31.25	100	131	P	V	
		2485.04	18.43	-35.57	54	-	-	-	-	-	-	A	V	
														V
														V
	Remark	<ol style="list-style-type: none"> No other spurious found. 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		4804	34.74	-39.26	74	50.05	31.2	10.06	56.57	100	0	P	H
													H
													H
													H
		4804	35.2	-38.8	74	50.51	31.2	10.06	56.57	100	0	P	V
													V
													V
BT CH 39 2441MHz		4882	35.4	-38.6	74	50.45	31.31	10.11	56.47	100	0	P	H
		7323	42.02	-31.98	74	50.35	36.32	12.57	57.22	100	0	P	H
													H
													H
		4882	35.19	-38.81	74	50.24	31.31	10.11	56.47	100	0	P	V
		7323	41.96	-32.04	74	50.29	36.32	12.57	57.22	100	0	P	V
													V
BT CH 78 2480MHz		4960	35.91	-38.09	74	50.65	31.44	10.17	56.35	100	0	P	H
		7440	41.88	-32.12	74	49.84	36.66	12.8	57.42	100	0	P	H
													H
													H
		4960	35.71	-38.29	74	50.45	31.44	10.17	56.35	100	0	P	V
		7440	42.44	-31.56	74	50.4	36.66	12.8	57.42	100	0	P	V
													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 (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)	
2.4GHz BT LF		41.34	32.54	-7.46	40	44.75	19.08	0.64	31.93	100	58	P	H	
		106.14	29.51	-13.99	43.5	43.64	16.7	1.06	31.89	-	-	P	H	
		227.91	23.98	-22.02	46	37.43	16.72	1.62	31.79	-	-	P	H	
		507.2	25.17	-20.83	46	30.49	24.04	2.51	31.87	-	-	P	H	
		728.4	28.55	-17.45	46	30.65	26.84	3.06	32	-	-	P	H	
		959.4	32.46	-13.54	46	29.89	30.14	3.47	31.04	-	-	P	H	
														H
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														H
														H
														H
														H
			42.69	35.84	-4.16	40	48.6	18.52	0.65	31.93	100	33	P	V
			96.15	33.87	-9.63	43.5	49.16	15.58	1.02	31.89	-	-	P	V
			243.84	21.45	-24.55	46	33.49	18.06	1.68	31.78	-	-	P	V
			482.7	24.99	-21.01	46	30.77	23.62	2.44	31.84	-	-	P	V
			953.8	31.63	-14.37	46	29.15	30.12	3.45	31.09	-	-	P	V
		972	33.07	-20.93	54	30.32	30.19	3.5	30.94	-	-	P	V	
													V	
													V	
													V	
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													V	
													V	
Remark	1. No other spurious found. 2. All results are PASS against limit line.													



Note symbol

*	Fundamental Frequency which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is over limit line.
P/A	Peak or Average
H/V	Horizontal or Vertical



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		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H
2412MHz													

- 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”.