



Appendix A. Radiated Spurious Emission

Test Engineer :	Elvis Chen, Stan Hsieh, and Karl Hou	Temperature :	23~25°C
		Relative Humidity :	43~46%

2.4GHz 2400~2483.5MHz

BT (Band Edge @ 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 CH00 2402MHz		2387.71	58.24	-15.76	74	58.86	27.23	5.39	33.24	290	69	P	H
		2387.71	24.85	-29.15	54							A	H
	*	2402.15	103.12	-	-	103.72	27.23	5.39	33.22	290	69	P	H
	*	2402.15	69.73	-	-							A	H
		2489.55	42.52	-31.48	74	42.74	27.5	5.46	33.18	290	69	P	H
		2489.55	9.13	-44.87	54							A	H
		2387.71	55.76	-18.24	74	56.38	27.23	5.39	33.24	287	29	P	V
		2387.71	22.37	-31.63	54							A	V
	*	2402.15	100.81	-	-	101.41	27.23	5.39	33.22	287	29	P	V
	*	2402.15	67.42	-	-							A	V
		2488.22	42.51	-31.49	74	42.73	27.5	5.46	33.18	287	29	P	V
		2488.22	9.12	-44.88	54							A	V
BT CH 39 2441MHz		2388.47	48.15	-25.85	74	48.77	27.23	5.39	33.24	279	70	P	H
		2388.47	14.76	-39.24	54							A	H
	*	2441.1	102.33	-	-	102.74	27.37	5.42	33.2	279	70	P	H
	*	2441.1	68.94	-	-							A	H
		2492.78	42.32	-31.68	74	42.53	27.5	5.46	33.17	279	70	P	H
		2492.78	8.93	-45.07	54							A	H
		2387.71	54.47	-19.53	74	55.09	27.23	5.39	33.24	284	30	P	V
		2387.71	21.08	-32.92	54							A	V
	*	2441.1	101.17	-	-	101.58	27.37	5.42	33.2	284	30	P	V
	*	2441.1	67.78	-	-							A	V
		2497.91	43.91	-30.09	74	44.12	27.5	5.46	33.17	284	30	P	V
		2497.91	10.52	-43.48	54							A	V



BT CH 78 2480MHz		2361.11	55.23	-18.77	74	56.01	27.14	5.33	33.25	313	62	P	H
		2361.11	21.84	-32.16	54							A	H
	*	2480.05	100.03	-	-	100.31	27.46	5.44	33.18	313	62	P	H
	*	2480.05	66.64	-	-							A	H
		2484.04	55.22	-18.78	74	55.48	27.46	5.46	33.18	313	62	P	H
		2484.04	21.83	-32.17	54							A	H
		2360.54	49.85	-24.15	74	50.63	27.14	5.33	33.25	242	31	P	V
		2360.54	16.46	-37.54	54							A	V
	*	2480.05	98.72	-	-	99	27.46	5.44	33.18	242	31	P	V
	*	2480.05	65.33	-	-							A	V
		2483.47	54.9	-19.1	74	55.16	27.46	5.46	33.18	242	31	P	V
		2483.47	21.51	-32.49	54							A	V
Remark	1. No other spurious found. 2. 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		4803	40.42	-33.58	74	62.06	31.42	7.58	60.64	100	0	P	H
		4803	7.03	-46.97	54							A	H
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		4803	43.52	-30.48	74	65.16	31.42	7.58	60.64	100	0	P	V
		4803	10.13	-43.87	54							A	V
													V
													V
BT CH 39 2441MHz		4884	40.76	-33.24	74	61.9	31.56	7.82	60.52	100	0	P	H
		4884	7.37	-46.63	54							A	H
		7320	43.37	-30.63	74	58.64	36.22	9.49	60.98	100	0	P	H
		7320	9.98	-44.02	54							A	H
		4884	42.11	-31.89	74	63.25	31.56	7.82	60.52	100	0	P	V
		4884	8.72	-45.28	54							A	V
		7320	43.15	-30.85	74	58.42	36.22	9.49	60.98	100	0	P	V
		7320	9.76	-44.24	54							A	V
BT CH 78 2480MHz		4962	42.12	-31.88	74	62.7	31.73	8.05	60.36	100	0	P	H
		4962	8.73	-45.27	54							A	H
		7440	42.91	-31.09	74	58.15	36.49	9.61	61.34	100	0	P	H
		7440	9.52	-44.48	54							A	H
		4962	41.62	-32.38	74	62.2	31.73	8.05	60.36	100	0	P	V
		4962	8.23	-45.77	54							A	V
		7440	43.24	-30.76	74	58.48	36.49	9.61	61.34	100	0	P	V
		7440	9.85	-44.15	54							A	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	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)
2.4GHz BT LF		32.16	16.97	-23.03	40	30.22	18.92	0.65	32.82			P	H
		175.8	15.94	-27.56	43.5	37.45	9.72	1.48	32.71			P	H
		269.49	19.74	-26.26	46	37.21	13.5	1.76	32.73			P	H
		361.6	21.31	-24.69	46	36.66	15.51	1.94	32.8			P	H
		420.4	19.36	-26.64	46	33.24	16.82	2.16	32.86			P	H
		958	26.56	-19.44	46	30.67	24.27	3.29	31.67	100	44	P	H
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		32.16	25.32	-14.68	40	38.57	18.92	0.65	32.82	144	325	P	V
		41.88	21.22	-18.78	40	39.99	13.38	0.65	32.8			P	V
		122.88	11.61	-31.89	43.5	31.19	11.93	1.14	32.65			P	V
		392.4	16.52	-29.48	46	30.9	16.32	2.13	32.83			P	V
		655.6	21.07	-24.93	46	31.16	20.25	2.67	33.01			P	V
		941.2	26.7	-19.3	46	31.16	24.11	3.29	31.86			P	V
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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													
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”.