



Appendix A. Radiated Spurious Emission

Test Engineer :	James Chiu, Ken Wu, Nike Yu, and Luke Chang	Temperature :	20~22°C
		Relative Humidity :	50~55%

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		2385.92	47.85	-26.15	74	48.65	27.23	34.04	6.01	100	301	P	H
		2385.92	23.09	-30.91	54	-	-	-	-	-	-	A	H
	*	2402.04	97.24	-	-	98.04	27.23	34.04	6.01	100	301	P	H
	*	2402.04	72.48	-	-	-	-	-	-	-	-	A	H
													H
													H
		2389.43	44.64	-29.36	74	45.44	27.23	34.04	6.01	387	128	P	V
		2389.43	19.88	-34.12	54	-	-	-	-	-	-	A	V
	*	2402.04	93.5	-	-	94.3	27.23	34.04	6.01	387	128	P	V
	*	2402.04	68.74	-	-	-	-	-	-	-	-	A	V
													V
													V
BT CH 39 2441MHz		2361.11	44.46	-29.54	74	45.42	27.14	34.05	5.95	107	300	P	H
		2361.11	19.7	-34.3	54	-	-	-	-	-	-	A	H
	*	2441.1	99.28	-	-	99.89	27.37	34.02	6.04	107	300	P	H
	*	2441.1	74.52	-	-	-	-	-	-	-	-	A	H
		2500	42.84	-31.16	74	43.25	27.5	34	6.09	107	300	P	H
		2500	18.08	-35.92	54	-	-	-	-	-	-	A	H
		2360.73	43.13	-30.87	74	44.09	27.14	34.05	5.95	368	223	P	V
		2360.73	18.37	-35.63	54	-	-	-	-	-	-	A	V
	*	2441.1	94.85	-	-	95.46	27.37	34.02	6.04	368	223	P	V
	*	2441.1	70.09	-	-	-	-	-	-	-	-	A	V
		2489.36	42.07	-31.93	74	42.49	27.5	34.01	6.09	368	223	P	V
		2489.36	17.31	-36.69	54	-	-	-	-	-	-	A	V



BT CH 78 2480MHz	*	2480.05	101.08	-	-	101.56	27.46	34.01	6.07	100	301	P	H
	*	2480.05	76.32	-	-	-	-	-	-	-	-	A	H
		2485.02	54.8	-19.2	74	55.26	27.46	34.01	6.09	100	301	P	H
		2485.02	30.04	-23.96	54	-	-	-	-	-	-	A	H
													H
													H
	*	2480.05	97.55	-	-	98.03	27.46	34.01	6.07	400	233	P	V
	*	2480.05	72.79	-	-	-	-	-	-	-	-	A	V
		2484.74	51.64	-22.36	74	52.1	27.46	34.01	6.09	400	233	P	V
		2484.74	26.88	-27.12	54	-	-	-	-	-	-	A	V
													V
													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		4806	44.19	-29.81	74	37.79	31.3	33.55	8.65	100	0	P	H
		4806	19.43	-34.57	54							A	H
													H
													H
		4806	44.03	-29.97	74	37.63	31.3	33.55	8.65	100	0	P	V
		4806	19.27	-34.73	54							A	V
													V
													V
BT CH 39 2441MHz		4884	45.04	-28.96	74	38.43	31.41	33.54	8.74	100	0	P	H
		4884	20.28	-33.72	54							A	H
		7320	49.68	-24.32	74	37.43	36.32	34.46	10.39	100	0	P	H
		7320	24.92	-29.08	54							A	H
		4884	45.21	-28.79	74	38.6	31.41	33.54	8.74	100	0	P	V
		4884	20.45	-33.55	54							A	V
		7320	49.51	-24.49	74	37.26	36.32	34.46	10.39	100	0	P	V
		7320	24.75	-29.25	54							A	V
BT CH 78 2480MHz		4962	45.36	-28.64	74	38.53	31.54	33.54	8.83	100	0	P	H
		4962	20.6	-33.4	54							A	H
		7440	49.92	-24.08	74	37.33	36.59	34.52	10.52	100	0	P	H
		7440	25.16	-28.84	54							A	H
		4962	44.64	-29.36	74	37.81	31.54	33.54	8.83	100	0	P	V
		4962	19.88	-34.12	54							A	V
		7440	50.8	-23.2	74	38.21	36.59	34.52	10.52	100	0	P	V
		7440	26.04	-27.96	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		62.67	12.18	-27.82	40	37.96	4.97	31.79	1.04			P	H
		165	14.21	-29.29	43.5	35.25	9.1	31.78	1.64			P	H
		286.23	16.14	-29.86	46	33.17	12.62	31.76	2.11			P	H
		386.1	19.67	-26.33	46	34.06	15.08	31.79	2.32			P	H
		670.3	20.89	-25.11	46	31.01	18.9	32.04	3.02			P	H
		903.4	22.35	-23.65	46	30.11	20.1	31.41	3.55	100	24	P	H
													H
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		56.19	18.94	-21.06	40	43.84	5.86	31.8	1.04	215	109	P	V
		174.99	22.12	-21.38	43.5	43.76	8.5	31.78	1.64			P	V
		273.81	14.26	-31.74	46	31.69	12.4	31.77	1.94			P	V
		377.7	16.06	-29.94	46	30.65	14.88	31.79	2.32			P	V
		577.2	18.99	-27.01	46	29.61	18.5	32.01	2.89			P	V
		903.4	22.02	-23.98	46	29.78	20.1	31.41	3.55			P	V
													V
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													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													
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”.