



Appendix A. Radiated Spurious Emission

Test Engineer :	Derreck Chen	Temperature :	22~23°C
		Relative Humidity :	45~47%

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)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
BT CH00 2402MHz		2361.74	49.25	-24.75	74	50.21	27.14	5.95	34.05	382	128	P	H
		2361.74	24.49	-29.51	54	-	-	-	-	-	-	A	H
	*	2402.04	103.58	-	-	104.38	27.23	6.01	34.04	382	128	P	H
	*	2402.04	78.82	-	-	-	-	-	-	-	-	A	H
													H
													H
		2362.26	46.26	-27.74	74	47.22	27.14	5.95	34.05	191	329	P	V
		2362.26	21.5	-32.5	54	-	-	-	-	-	-	A	V
	*	2402.17	104.68	-	-	105.48	27.23	6.01	34.04	191	329	P	V
	*	2402.17	79.92	-	-	-	-	-	-	-	-	A	V
													V
													V
BT CH 39 2441MHz		2374.6	43.3	-30.7	74	44.14	27.19	6.01	34.04	226	130	P	H
		2374.6	18.54	-35.46	54	-	-	-	-	-	-	A	H
	*	2441.1	103.64	-	-	104.25	27.37	6.04	34.02	226	130	P	H
	*	2441.1	78.88	-	-	-	-	-	-	-	-	A	H
		2487.08	46.8	-27.2	74	47.26	27.46	6.09	34.01	226	130	P	H
		2487.08	22.04	-31.96	54	-	-	-	-	-	-	A	H
		2389.8	43.96	-30.04	74	44.76	27.23	6.01	34.04	155	341	P	V
		2389.8	19.2	-34.8	54	-	-	-	-	-	-	A	V
	*	2441.1	105.19	-	-	105.8	27.37	6.04	34.02	155	341	P	V
	*	2441.1	80.43	-	-	-	-	-	-	-	-	A	V
		2498.29	46.44	-27.56	74	46.85	27.5	6.09	34	155	341	P	V
		2498.29	21.68	-32.32	54	-	-	-	-	-	-	A	V



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 78 2480MHz	*	2480.05	103.68	-	-	104.16	27.46	6.07	34.01	221	129	P	H
	*	2480.05	78.92	-	-	-	-	-	-	-	-	A	H
		2483.5	47.79	-26.21	74	48.25	27.46	6.09	34.01	221	129	P	H
		2483.5	23.03	-30.97	54	-	-	-	-	-	-	A	H
													H
													H
	*	2479.98	105.32	-	-	105.8	27.46	6.07	34.01	137	342	P	V
	*	2479.98	80.56	-	-	-	-	-	-	-	-	A	V
		2483.5	49.44	-24.56	74	49.9	27.46	6.09	34.01	137	342	P	V
		2483.5	24.68	-29.32	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	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		4806	44.81	-29.19	74	38.41	31.3	8.65	33.55	150	0	P	H
		4806	20.05	-33.95	54	-	-	-	-	-	-	A	H
													H
													H
		4806	49.47	-24.53	74	43.07	31.3	8.65	33.55	150	0	P	V
		4806	24.71	-29.29	54	-	-	-	-	-	-	A	V
													V
													V
BT CH 39 2441MHz		4884	44.92	-29.08	74	38.31	31.41	8.74	33.54	150	0	P	H
		4884	20.16	-33.84	54	-	-	-	-	-	-	A	H
		7323	50.89	-23.11	74	38.59	36.32	10.44	34.46	150	0	P	H
		7323	26.13	-27.87	54	-	-	-	-	-	-	A	H
		4882	47.87	-26.13	74	41.26	31.41	8.74	33.54	150	0	P	V
		4882	23.11	-30.89	54	-	-	-	-	-	-	A	V
		7323	49.83	-24.17	74	37.53	36.32	10.44	34.46	150	0	P	V
		7323	25.07	-28.93	54	-	-	-	-	-	-	A	V
BT CH 78 2480MHz		4962	45.46	-28.54	74	38.63	31.54	8.83	33.54	150	0	P	H
		4962	20.7	-33.3	54	-	-	-	-	-	-	A	H
		7440	50.66	-23.34	74	38.07	36.59	10.52	34.52	150	0	P	H
		7440	25.9	-28.1	54	-	-	-	-	-	-	A	H
		4962	46.26	-27.74	74	39.43	31.54	8.83	33.54	150	0	P	V
		4962	21.5	-32.5	54	-	-	-	-	-	-	A	V
		7440	50.69	-23.31	74	38.1	36.59	10.52	34.52	150	0	P	V
		7440	25.93	-28.07	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		49.71	13.07	-26.93	40	36.03	7.8	1.04	31.8			P	H
		122.34	17.8	-25.7	43.5	36.85	11.45	1.28	31.78			P	H
		245.73	19.42	-26.58	46	37.76	11.49	1.94	31.77			P	H
		451.2	24.5	-21.5	46	37.27	16.51	2.57	31.85	137	122	P	H
		743.1	21.69	-24.31	46	30.63	19.8	3.25	31.99			P	H
		824.3	23.29	-22.71	46	31.59	20.1	3.4	31.8			P	H
													H
													H
													H
													H
													H
													H
		69.69	18.55	-21.45	40	44.13	5.17	1.04	31.79	193	218	P	V
		132.06	18.45	-25.05	43.5	37.33	11.44	1.46	31.78			P	V
		231.96	13.26	-32.74	46	33.5	9.74	1.79	31.77			P	V
		332.9	19.47	-26.53	46	35.41	13.66	2.17	31.77			P	V
		559	22.12	-23.88	46	32.81	18.52	2.77	31.98			P	V
		835.5	22.06	-23.94	46	30.25	20.16	3.4	31.75			P	V
													V
													V
													V
													V
													V
													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 per 15.209(c).
!	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”.