



Appendix A. Radiated Spurious Emission

Test Engineer :	JC Liang and Nick Yu	Temperature :	20~23°C
		Relative Humidity :	58~63%

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		2379.825	43.54	-30.46	74	41.57	27.14	8.82	33.99	220	343	P	H	
		2379.825	18.78	-35.22	54	-	-	-	-	-	-	A	H	
	*	2402	98.96	-	-	96.86	27.19	8.89	33.98	220	343	P	H	
	*	2402	74.2	-	-	-	-	-	-	-	-	A	H	
													H	
														H
			2319.03	43.82	-30.18	74	42.09	26.98	8.75	34	291	68	P	V
			2319.03	19.06	-34.94	54	-	-	-	-	-	-	A	V
	*	2402	99.64	-	-	97.54	27.19	8.89	33.98	291	68	P	V	
	*	2402	74.88	-	-	-	-	-	-	-	-	-	A	V
														V
														V
BT CH 39 2441MHz		2376.22	43.22	-30.78	74	41.25	27.14	8.82	33.99	224	345	P	H	
		2376.22	18.46	-35.54	54	-	-	-	-	-	-	A	H	
	*	2441	100.58	-	-	98.26	27.34	8.94	33.96	224	345	P	H	
	*	2441	75.82	-	-	-	-	-	-	-	-	A	H	
			2497.69	43.65	-30.35	74	41.11	27.5	8.98	33.94	224	345	P	H
			2497.69	18.89	-35.11	54	-	-	-	-	-	-	A	H
			2368.8	43.08	-30.92	74	41.11	27.14	8.82	33.99	322	64	P	V
			2368.8	18.32	-35.68	54	-	-	-	-	-	-	A	V
	*	2441	101.11	-	-	98.79	27.34	8.94	33.96	322	64	P	V	
	*	2441	76.35	-	-	-	-	-	-	-	-	-	A	V
			2485.72	43.44	-30.56	74	40.96	27.45	8.98	33.95	322	64	P	V
			2485.72	18.68	-35.32	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	99.24	-	-	96.76	27.45	8.98	33.95	238	347	P	H	
	*	2480	74.48	-	-	-	-	-	-	-	-	A	H	
		2483.5	47.2	-26.8	74	44.72	27.45	8.98	33.95	238	347	P	H	
		2483.5	22.44	-31.56	54	-	-	-	-	-	-	A	H	
													H	
													H	
	*	2480	98.09	-	-	95.61	27.45	8.98	33.95	310	65	P	V	
	*	2480	73.33	-	-	-	-	-	-	-	-	-	A	V
		2483.52	46.5	-27.5	74	44.02	27.45	8.98	33.95	310	65	P	V	
		2483.52	21.74	-32.26	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		4804	34.56	-39.44	74	43.34	31.66	10.65	51.09	100	0	P	H
		4804	9.8	-44.2	54	-	-	-	-	-	-	A	H
													H
													H
		4804	32.92	-41.08	74	41.7	31.66	10.65	51.09	100	0	P	V
		4804	8.16	-45.84	54	-	-	-	-	-	-	A	V
													V
													V
BT CH 39 2441MHz		4882	32.68	-41.32	74	41.08	31.78	10.88	51.06	100	0	P	H
		4882	7.92	-46.17	54	-	-	-	-	-	-	A	H
		7323	37.79	-36.21	74	38.22	37.29	12.79	50.51	100	0	P	H
		7323	13.03	-41.06	54	-	-	-	-	-	-	A	H
		4882	32.61	-41.39	74	41.01	31.78	10.88	51.06	100	0	P	V
		4882	7.85	-46.24	54	-	-	-	-	-	-	A	V
		7323	38.41	-35.59	74	38.84	37.29	12.79	50.51	100	0	P	V
		7323	13.65	-40.44	54	-	-	-	-	-	-	A	V
BT CH 78 2480MHz		4960	33.63	-40.37	74	41.6	31.94	11.12	51.03	100	0	P	H
		4960	8.87	-45.13	54	-	-	-	-	-	-	A	H
		7440	38.25	-35.75	74	38.44	37.44	12.88	50.51	100	0	P	H
		7440	13.49	-40.51	54	-	-	-	-	-	-	A	H
		4960	33.77	-40.23	74	41.74	31.94	11.12	51.03	100	0	P	V
		4960	9.01	-44.99	54	-	-	-	-	-	-	A	V
		7440	37.93	-36.07	74	38.12	37.44	12.88	50.51	100	0	P	V
		7440	13.17	-40.83	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.	
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)	
2.4GHz BT LF		76.17	27.7	-12.3	40	44.75	13.23	1.51	31.79	-	-	P	H	
		100.2	30.61	-12.89	43.5	44.51	16.1	1.78	31.78	-	-	P	H	
		184.98	30.25	-13.25	43.5	44.68	15.25	2.1	31.78	-	-	P	H	
		358.1	26.59	-19.41	46	34.29	21.3	2.78	31.78	-	-	P	H	
		752.2	30.45	-15.55	46	30.61	27.73	4.09	31.98	-	-	P	H	
		944	33.79	-12.21	46	29.74	30.44	4.69	31.08	218	312	P	H	
													H	
													H	
													H	
													H	
													H	
													H	
			32.97	36.03	-3.97	40	42.43	24.14	1.29	31.83	193	241	P	V
			78.33	33.06	-6.94	40	49.88	13.46	1.51	31.79	-	-	P	V
			183.09	26.09	-17.41	43.5	40.54	15.23	2.1	31.78	-	-	P	V
			414.8	28.25	-17.75	46	34.47	22.68	2.91	31.81	-	-	P	V
			746.6	31.75	-14.25	46	32	27.64	4.09	31.98	-	-	P	V
			955.9	34.82	-11.18	46	30.53	30.59	4.69	30.99	-	-	P	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.
!	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

- 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”.