



Appendix A. Radiated Spurious Emission

Test Engineer :	Derreck Chen, Ken Wu and Nick Yu	Temperature :	23~25°C
		Relative Humidity :	48~51%

15C 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)	Limit	Level	Factor	Loss	Factor	Pos	Pos	Avg.		
					Line	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)	
BT CH00 2402MHz		2316.63	46.93	-27.07	74	41.48	32.07	7.6	34.22	101	360	P	H	
		2316.63	22.17	-31.83	54	-	-	-	-	-	-	A	H	
	*	2402.04	98.53	-	-	92.9	32.18	7.75	34.3	101	360	P	H	
	*	2402.04	73.77	-	-	-	-	-	-	-	-	A	H	
													H	
														H
			2356.67	46.69	-27.31	74	41.13	32.13	7.68	34.25	117	8	P	V
			2356.67	21.93	-32.07	54	-	-	-	-	-	-	A	V
	*		2402.04	96.97	-	-	91.34	32.18	7.75	34.3	117	8	P	V
	*		2402.04	72.21	-	-	-	-	-	-	-	-	A	V
													V	
													V	
BT CH 39 2441MHz		2316.84	47.35	-26.65	74	41.9	32.07	7.6	34.22	100	359	P	H	
		2316.84	22.59	-31.41	54	-	-	-	-	-	-	A	H	
	*	2440.91	98.64	-	-	92.96	32.24	7.83	34.39	100	359	P	H	
	*	2440.91	73.88	-	-	-	-	-	-	-	-	A	H	
			2490.12	46.05	-27.95	74	40.27	32.3	7.91	34.43	100	359	P	H
			2490.12	21.29	-32.71	54	-	-	-	-	-	-	A	H
			2372.7	46.78	-27.22	74	41.21	32.16	7.68	34.27	252	109	P	V
			2372.7	22.02	-31.98	54	-	-	-	-	-	-	A	V
	*		2441.1	97.67	-	-	91.99	32.24	7.83	34.39	252	109	P	V
	*		2441.1	72.91	-	-	-	-	-	-	-	-	A	V
			2488.41	46.58	-27.42	74	40.8	32.3	7.91	34.43	252	109	P	V
			2488.41	21.82	-32.18	54	-	-	-	-	-	-	A	V



BT CH 78 2480MHz	*	2480.05	97.55	-	-	91.79	32.28	7.91	34.43	122	359	P	H
	*	2480.05	72.79	-	-	-	-	-	-	-	-	A	H
		2485.09	47.63	-26.37	74	41.87	32.28	7.91	34.43	122	359	P	H
		2485.09	22.87	-31.13	54	-	-	-	-	-	-	A	H
													H
													H
	*	2479.98	96.8	-	-	91.04	32.28	7.91	34.43	127	109	P	V
	*	2479.98	72.04	-	-	-	-	-	-	-	-	A	V
		2497.48	47.84	-26.16	74	42.11	32.3	7.91	34.48	127	109	P	V
		2497.48	23.08	-30.92	54	-	-	-	-	-	-	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



15C 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	47.21	-26.79	74	60.81	34.25	11.11	58.96	100	0	P	H	
		4806	22.45	-31.55	54	-	-	-	-	-	-	A	H	
													H	
													H	
		4806	44.79	-29.21	74	58.39	34.25	11.11	58.96	100	0	P	V	
		4806	20.03	-33.97	54	-	-	-	-	-	-	-	A	V
														V
														V
BT CH 39 2441MHz		4884	43.24	-30.76	74	56.56	34.3	11.21	58.83	100	0	P	H	
		4884	18.48	-35.52	54	-	-	-	-	-	-	A	H	
		7320	44.61	-29.39	74	51.67	35.6	15.08	57.74	100	0	P	H	
		7320	19.85	-34.15	54	-	-	-	-	-	-	A	H	
		4884	42.26	-31.74	74	55.58	34.3	11.21	58.83	100	0	P	V	
		4884	17.5	-36.5	54	-	-	-	-	-	-	A	V	
		7320	46.82	-27.18	74	53.88	35.6	15.08	57.74	100	0	P	V	
		7320	22.06	-31.94	54	-	-	-	-	-	-	-	A	V
BT CH 78 2480MHz		4962	44.08	-29.92	74	57.05	34.37	11.32	58.66	100	0	P	H	
		4962	19.32	-34.68	54	-	-	-	-	-	-	A	H	
		7440	47.44	-26.56	74	54.56	35.6	15.13	57.85	100	0	P	H	
		7440	22.68	-31.32	54	-	-	-	-	-	-	A	H	
		4962	42.92	-31.08	74	55.89	34.37	11.32	58.66	100	0	P	V	
		4962	18.16	-35.84	54	-	-	-	-	-	-	A	V	
		7440	48.73	-25.27	74	55.85	35.6	15.13	57.85	100	0	P	V	
		7440	23.97	-30.03	54	-	-	-	-	-	-	-	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.													



15C 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		56.46	35.57	-4.43	40	58.7	6.32	1.77	31.22	196	328	P	H	
		120.72	33.64	-9.86	43.5	50.92	11.44	2.38	31.1			P	H	
		240.06	36.68	-9.32	46	53.32	11.4	2.96	31			P	H	
		407.8	35.59	-10.41	46	46.81	16.12	3.52	30.86			P	H	
		664	39.95	-6.05	46	45.72	20.35	4.35	30.47			P	H	
		960.1	30.34	-23.66	54	31.06	24.7	4.94	30.36			P	H	
														H
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														H
														H
														H
														H
			60.78	36.95	-3.05	40	60.17	6	2.06	31.28	132	23	P	V
			124.23	33.91	-9.59	43.5	51.07	11.56	2.38	31.1			P	V
			225.75	34.51	-11.49	46	52.77	9.78	2.96	31			P	V
			384	33.24	-12.76	46	45.44	15.26	3.52	30.98			P	V
			563.9	40.61	-5.39	46	47.45	19.89	4.01	30.74			P	V
			818.7	26.98	-19.02	46	30.23	22.47	4.62	30.34			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 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

- 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”.