



Appendix A. Radiated Spurious Emission

Test Engineer :	Stan Hsieh, Ken Wu, Nick Yu, and James Chiu	Temperature :	21~23°C
		Relative Humidity :	47~49%

15C 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		2338.08	48.44	-25.56	74	42.95	32.11	7.6	34.22	125	204	P	H
		2338.08	23.68	-30.32	54	-	-	-	-	-	-	A	H
	*	2401.91	98.26	-	-	92.63	32.18	7.75	34.3	125	204	P	H
	*	2401.91	73.5	-	-	-	-	-	-	-	-	A	H
													H
													H
		2318.58	48.53	-25.47	74	43.06	32.09	7.6	34.22	100	167	P	V
		2318.58	23.77	-30.23	54	-	-	-	-	-	-	A	V
	*	2401.91	101.26	-	-	95.63	32.18	7.75	34.3	100	167	P	V
	*	2401.91	76.5	-	-	-	-	-	-	-	-	A	V
													V
													V
BT CH 39 2441MHz		2354.84	48.42	-25.58	74	42.86	32.13	7.68	34.25	237	137	P	H
		2354.84	23.66	-30.34	54	-	-	-	-	-	-	A	H
	*	2440.91	101.43	-	-	95.75	32.24	7.83	34.39	237	137	P	H
	*	2440.91	76.67	-	-	-	-	-	-	-	-	A	H
		2497.72	48.01	-25.99	74	42.28	32.3	7.91	34.48	237	137	P	H
		2497.72	23.25	-30.75	54	-	-	-	-	-	-	A	H
		2377.83	47.75	-26.25	74	42.18	32.16	7.68	34.27	100	162	P	V
		2377.83	22.99	-31.01	54	-	-	-	-	-	-	A	V
	*	2441.29	102	-	-	96.32	32.24	7.83	34.39	100	162	P	V
	*	2441.29	77.24	-	-	-	-	-	-	-	-	A	V
		2484.61	48.31	-25.69	74	42.55	32.28	7.91	34.43	100	162	P	V
		2484.61	23.55	-30.45	54	-	-	-	-	-	-	A	V



BT CH 78 2480MHz	*	2479.91	100.86	-	-	95.1	32.28	7.91	34.43	221	175	P	H
	*	2479.91	76.1	-	-	-	-	-	-	-	-	A	H
		2483.62	48.84	-25.16	74	43.08	32.28	7.91	34.43	221	175	P	H
		2483.62	24.08	-29.92	54	-	-	-	-	-	-	A	H
													H
													H
	*	2479.91	101.87	-	-	96.11	32.28	7.91	34.43	107	204	P	V
	*	2479.91	77.11	-	-	-	-	-	-	-	-	A	V
		2489.92	49.35	-24.65	74	43.57	32.3	7.91	34.43	107	204	P	V
		2489.92	24.59	-29.41	54	-	-	-	-	-	-	A	V
													V
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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	55.63	-18.37	74	69.23	34.25	11.11	58.96	100	0	P	H
		4806	30.87	-23.13	54	-	-	-	-	-	-	A	H
													H
													H
		4806	53.21	-20.79	74	66.81	34.25	11.11	58.96	400	0	P	V
		4806	28.45	-25.55	54	-	-	-	-	-	-	A	V
													V
													V
BT CH 39 2441MHz		4881	55.69	-18.31	74	69.01	34.3	11.21	58.83	100	0	P	H
		4881	30.93	-23.07	54	-	-	-	-	-	-	A	H
		7323	58.34	-15.66	74	65.4	35.6	15.08	57.74	100	0	P	H
		7323	33.58	-20.42	54	-	-	-	-	-	-	A	H
		4881	51.58	-22.42	74	64.9	34.3	11.21	58.83	100	0	P	V
		4881	26.82	-27.18	54	-	-	-	-	-	-	A	V
		7323	58.45	-15.55	74	65.51	35.6	15.08	57.74	100	0	P	V
		7323	33.69	-20.31	54	-	-	-	-	-	-	A	V
BT CH 78 2480MHz		4962	57.58	-16.42	74	70.55	34.37	11.32	58.66	100	0	P	H
		4962	32.82	-21.18	54	-	-	-	-	-	-	A	H
		7440	58.87	-15.13	74	65.99	35.6	15.13	57.85	100	0	P	H
		7440	34.11	-19.89	54	-	-	-	-	-	-	A	H
		4962	52.93	-21.07	74	65.9	34.37	11.32	58.66	100	0	P	V
		4962	28.17	-25.83	54	-	-	-	-	-	-	A	V
		7440	57.74	-16.26	74	64.86	35.6	15.13	57.85	100	0	P	V
		7440	32.98	-21.02	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.
				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		43.23	22.18	-17.82	40	40.41	11.2	1.77	31.2	114	120	P	H
		166.89	22.27	-21.23	43.5	41.03	9.76	2.61	31.13			P	H
		282.99	16.74	-29.26	46	31.65	12.89	3.16	30.96			P	H
		374.9	23.09	-22.91	46	35.72	15	3.39	31.02			P	H
		687.8	14.9	-31.1	46	20.47	20.5	4.35	30.42			P	H
		933.5	18.21	-27.79	46	19.48	24.3	4.8	30.37			P	H
													H
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													H
													H
													H
		114.51	25.25	-18.25	43.5	42.95	11.07	2.38	31.15	103	218	P	V
		167.7	22.14	-21.36	43.5	40.92	9.74	2.61	31.13			P	V
		250.05	19.63	-26.37	46	35.27	12.4	2.96	31			P	V
		353.9	14.76	-31.24	46	27.92	14.52	3.39	31.07			P	V
		624.8	21.13	-24.87	46	27.17	20.29	4.22	30.55			P	V
		911.8	23.72	-22.28	46	25.65	23.59	4.8	30.32			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 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 CH 01 2412MHz		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
		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”.