



Appendix B. Radiated Spurious Emission

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

15C 2.4GHz 2400~2483.5MHz

WIFI 802.11b (Band Edge @ 3m)

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		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 01 2412MHz		2351.67	58.01	-15.99	74	52.45	32.13	7.68	34.25	302	342	P	H
		2389.83	44.93	-9.07	54	39.3	32.18	7.75	34.3	302	342	A	H
	*	2410.855	101.49	-	-	95.84	32.2	7.75	34.3	302	342	P	H
	*	2411.272	97.62	-	-	91.97	32.2	7.75	34.3	302	342	A	H
													H
													H
		2387.49	58.67	-15.33	74	53.01	32.18	7.75	34.27	341	13	P	V
		2389.47	45.66	-8.34	54	40	32.18	7.75	34.27	341	13	A	V
	*	2413.277	108.57	-	-	102.92	32.2	7.75	34.3	341	13	P	V
	*	2412.692	104.89	-	-	99.24	32.2	7.75	34.3	341	13	A	V
													V
													V
802.11b CH 06 2437MHz		2335.2	58.71	-15.29	74	53.22	32.11	7.6	34.22	300	328	P	H
		2333.13	44.65	-9.35	54	39.18	32.09	7.6	34.22	300	328	A	H
	*	2438.243	98.83	-	-	93.11	32.24	7.83	34.35	300	328	P	H
	*	2437.742	95.03	-	-	89.31	32.24	7.83	34.35	300	328	A	H
		2484.08	58.78	-15.22	74	53.02	32.28	7.91	34.43	300	328	P	H
		2488.12	44.77	-9.23	54	38.99	32.3	7.91	34.43	300	328	A	H
		2360.04	58.84	-15.16	74	53.28	32.13	7.68	34.25	102	7	P	V
		2389.29	44.73	-9.27	54	39.07	32.18	7.75	34.27	102	7	A	V
	*	2435.822	106.59	-	-	100.89	32.22	7.83	34.35	102	7	P	V
	*	2436.239	102.69	-	-	96.99	32.22	7.83	34.35	102	7	A	V
		2484.24	58.79	-15.21	74	53.03	32.28	7.91	34.43	102	7	P	V
		2483.72	44.89	-9.11	54	39.13	32.28	7.91	34.43	102	7	A	V



802.11b CH 11 2462MHz	*	2460.788	102.77	-	-	96.99	32.26	7.91	34.39	332	316	P	H
	*	2461.289	99.07	-	-	93.29	32.26	7.91	34.39	332	316	A	H
		2484.08	58.96	-15.04	74	53.2	32.28	7.91	34.43	332	316	P	H
		2484.28	44.85	-9.15	54	39.09	32.28	7.91	34.43	332	316	A	H
													H
													H
	*	2460.955	108.41	-	-	102.63	32.26	7.91	34.39	114	15	P	V
	*	2461.289	104.7	-	-	98.92	32.26	7.91	34.39	114	15	A	V
		2495.52	58.94	-15.06	74	53.21	32.3	7.91	34.48	114	15	P	V
		2486.52	45.2	-8.8	54	39.44	32.28	7.91	34.43	114	15	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

WIFI 802.11b (Harmonic @ 3m)

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		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 01 2412MHz		4824	43.74	-30.26	74	57.25	34.26	11.16	58.93	100	0	P	H
													H
													H
													H
		4824	43.1	-30.9	74	56.61	34.26	11.16	58.93	100	0	P	V
													V
													V
													V
802.11b CH 06 2437MHz		4872	42.58	-31.42	74	55.9	34.3	11.21	58.83	100	0	P	H
		7308	44.4	-29.6	74	51.45	35.6	15.08	57.73	100	0	P	H
													H
													H
		4872	42.46	-31.54	74	55.78	34.3	11.21	58.83	100	0	P	V
		7308	44.85	-29.15	74	51.9	35.6	15.08	57.73	100	0	P	V
													V
													V
802.11b CH 11 2462MHz		4926	43.01	-30.99	74	56.13	34.34	11.27	58.73	100	0	P	H
		7386	43.36	-30.64	74	50.42	35.6	15.14	57.8	100	0	P	H
													H
													H
		4926	42.73	-31.27	74	55.85	34.34	11.27	58.73	100	0	P	V
		7386	44.05	-29.95	74	51.11	35.6	15.14	57.8	100	0	P	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

WIFI 802.11g (Band Edge @ 3m)

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		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11g CH 01 2412MHz		2389.74	64.4	-9.6	74	58.74	32.18	7.75	34.27	302	336	P	H
		2389.56	48.11	-5.89	54	42.45	32.18	7.75	34.27	302	336	A	H
	*	2410	102.99	-	-	97.34	32.2	7.75	34.3	302	336	P	H
	*	2410	91.74	-	-	86.09	32.2	7.75	34.3	302	336	A	H
													H
													H
		2389.29	67.39	-6.61	74	61.73	32.18	7.75	34.27	215	19	P	V
		2389.74	50.35	-3.65	54	44.69	32.18	7.75	34.27	215	19	A	V
	*	2414.947	110.35	-	-	104.7	32.2	7.75	34.3	215	19	P	V
	*	2414	99.12	-	-	93.47	32.2	7.75	34.3	215	19	A	V
													V
													V
802.11g CH 06 2437MHz		2376.96	59.33	-14.67	74	53.76	32.16	7.68	34.27	300	340	P	H
		2384.7	45.11	-8.89	54	39.47	32.16	7.75	34.27	300	340	A	H
	*	2440	100.94	-	-	95.22	32.24	7.83	34.35	300	340	P	H
	*	2440	90.57	-	-	84.85	32.24	7.83	34.35	300	340	A	H
		2494.12	58.33	-15.67	74	52.6	32.3	7.91	34.48	300	340	P	H
		2490.48	45.29	-8.71	54	39.51	32.3	7.91	34.43	300	340	A	H
		2373.09	58.96	-15.04	74	53.39	32.16	7.68	34.27	341	0	P	V
		2384.61	45.6	-8.4	54	39.96	32.16	7.75	34.27	341	0	A	V
	*	2440	107.75	-	-	102.03	32.24	7.83	34.35	341	0	P	V
	*	2440	96.7	-	-	90.98	32.24	7.83	34.35	341	0	A	V
		2487.12	58.56	-15.44	74	52.8	32.28	7.91	34.43	341	0	P	V
		2489.44	45.69	-8.31	54	39.91	32.3	7.91	34.43	341	0	A	V



802.11g CH 11 2462MHz	*	2460	102.42	-	-	96.72	32.26	7.83	34.39	300	323	P	H
	*	2460	91.63	-	-	85.93	32.26	7.83	34.39	300	323	A	H
		2484.6	60.62	-13.38	74	54.86	32.28	7.91	34.43	300	323	P	H
		2483.92	45.84	-8.16	54	40.08	32.28	7.91	34.43	300	323	A	H
													H
													H
	*	2460.287	109.12	-	-	103.34	32.26	7.91	34.39	312	12	P	V
	*	2460	98.75	-	-	93.05	32.26	7.83	34.39	312	12	A	V
		2483.8	67.05	-6.95	74	61.29	32.28	7.91	34.43	312	12	P	V
		2483.52	46.91	-7.09	54	41.15	32.28	7.91	34.43	312	12	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

WIFI 802.11g (Harmonic @ 3m)

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		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11g CH 01 2412MHz		4824	41.99	-32.01	74	55.5	34.26	11.16	58.93	100	0	P	H
													H
													H
													H
		4824	41.96	-32.04	74	55.47	34.26	11.16	58.93	100	0	P	V
													V
													V
													V
802.11g CH 06 2437MHz		4872	42.01	-31.99	74	55.33	34.3	11.21	58.83	100	0	P	H
		7308	44.01	-29.99	74	51.06	35.6	15.08	57.73	100	0	P	H
													H
													H
		4872	42.22	-31.78	74	55.54	34.3	11.21	58.83	100	0	P	V
		7308	45.09	-28.91	74	52.14	35.6	15.08	57.73	100	0	P	V
													V
													V
802.11g CH 11 2462MHz		4926	42.46	-31.54	74	55.58	34.34	11.27	58.73	100	0	P	H
		7386	43.46	-30.54	74	50.52	35.6	15.14	57.8	100	0	P	H
													H
													H
		4926	42.26	-31.74	74	55.38	34.34	11.27	58.73	100	0	P	V
		7386	43.81	-30.19	74	50.87	35.6	15.14	57.8	100	0	P	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

WIFI 802.11n HT20 (Band Edge @ 3m)

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		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT20 CH 01 2412MHz		2388.84	62.47	-11.53	74	56.81	32.18	7.75	34.27	276	100	P	H
		2389.74	47.25	-6.75	54	41.59	32.18	7.75	34.27	276	100	A	H
	*	2406.429	102.69			97.04	32.2	7.75	34.3	276	100	P	H
	*	2408.35	91.9			86.25	32.2	7.75	34.3	276	100	A	H
													H
													H
		2389.02	70.68	-3.32	74	65.02	32.18	7.75	34.27	377	71	P	V
		2390	50.84	-3.16	54	45.21	32.18	7.75	34.3	377	71	A	V
	*	2416.616	108.48			102.88	32.2	7.75	34.35	377	71	P	V
	*	2416.783	97.37			91.77	32.2	7.75	34.35	377	71	A	V
													V
													V
802.11n HT20 CH 06 2437MHz		2331.06	58.74	-15.26	74	53.27	32.09	7.6	34.22	240	101	P	H
		2324.67	45.15	-8.85	54	39.68	32.09	7.6	34.22	240	101	A	H
	*	2439.913	102.67	-	-	96.95	32.24	7.83	34.35	240	101	P	H
	*	2439	91.52	-	-	85.8	32.24	7.83	34.35	240	101	A	H
		2494.36	59.4	-14.6	74	53.67	32.3	7.91	34.48	240	101	P	H
		2489.88	45.37	-8.63	54	39.59	32.3	7.91	34.43	240	101	A	H
		2384.34	58.62	-15.38	74	52.98	32.16	7.75	34.27	295	39	P	V
		2384.88	46.02	-7.98	54	40.38	32.16	7.75	34.27	295	39	A	V
	*	2439	108.56	-	-	102.84	32.24	7.83	34.35	295	39	P	V
	*	2439	96.92	-	-	91.2	32.24	7.83	34.35	295	39	A	V
		2489.64	58.93	-15.07	74	53.15	32.3	7.91	34.43	295	39	P	V
		2488.88	45.95	-8.05	54	40.17	32.3	7.91	34.43	295	39	A	V



802.11n HT20 CH 11 2462MHz	*	2461	101.22	-	-	95.44	32.26	7.91	34.39	330	326	P	H
	*	2460	90.49	-	-	84.79	32.26	7.83	34.39	330	326	A	H
		2483.52	61.82	-12.18	74	56.06	32.28	7.91	34.43	330	326	P	H
		2483.8	45.73	-8.27	54	39.97	32.28	7.91	34.43	330	326	A	H
													H
													H
	*	2464	107.95	-	-	102.17	32.26	7.91	34.39	362	15	P	V
	*	2462	97.24	-	-	91.46	32.26	7.91	34.39	362	15	A	V
		2484.68	70.03	-3.97	74	64.27	32.28	7.91	34.43	362	15	P	V
		2483.8	48.5	-5.5	54	42.74	32.28	7.91	34.43	362	15	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

WIFI 802.11n HT20 (Harmonic @ 3m)

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		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT20 CH 01 2412MHz		4824	42.49	-31.51	74	56	34.26	11.16	58.93	100	0	P	H
													H
													H
													H
		4824	42.2	-31.8	74	55.71	34.26	11.16	58.93	100	0	P	V
													V
													V
													V
802.11n HT20 CH 06 2437MHz		4872	41.55	-32.45	74	54.87	34.3	11.21	58.83	100	0	P	H
		7308	43.66	-30.34	74	50.71	35.6	15.08	57.73	100	0	P	H
													H
													H
		4872	41.91	-32.09	74	55.23	34.3	11.21	58.83	100	0	P	V
		7308	43.79	-30.21	74	50.84	35.6	15.08	57.73	100	0	P	V
													V
													V
802.11n HT20 CH 11 2462MHz		4926	42.48	-31.52	74	55.6	34.34	11.27	58.73	100	0	P	H
		7386	43.7	-30.3	74	50.76	35.6	15.14	57.8	100	0	P	H
													H
													H
		4926	41.95	-32.05	74	55.07	34.34	11.27	58.73	100	0	P	V
		7386	43.96	-30.04	74	51.02	35.6	15.14	57.8	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

15C Emission below 1GHz

2.4GHz WIFI 802.11n HT20 (LF)

[illegible]



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”.