



Appendix B. Radiated Spurious Emission

Test Engineer :	Stan Hsieh, Luke Chang, and Lewis He	Temperature :	22~23°C
		Relative Humidity :	45~47%

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		2389.92	55.6	-18.4	74	56.4	27.23	6.01	34.04	150	229	P	H
		2390	47.13	-6.87	54	47.93	27.23	6.01	34.04	150	229	A	H
	*	2410.688	101.58	-	-	102.3	27.28	6.04	34.04	150	229	P	H
	*	2410.855	99.17	-	-	99.89	27.28	6.04	34.04	150	229	A	H
													H
													H
		2389.92	55.9	-18.1	74	56.7	27.23	6.01	34.04	156	293	P	V
		2390	48.7	-5.3	54	49.5	27.23	6.01	34.04	156	293	A	V
	*	2410.938	101.69	-	-	102.41	27.28	6.04	34.04	156	293	P	V
	*	2410.855	99.26	-	-	99.98	27.28	6.04	34.04	156	293	A	V
													V
													V
802.11b CH 06 2437MHz		2372.55	52.63	-21.37	74	53.47	27.19	6.01	34.04	141	229	P	H
		2387.13	42.27	-11.73	54	43.07	27.23	6.01	34.04	141	229	A	H
	*	2435.822	103	-	-	103.67	27.32	6.04	34.03	141	229	P	H
	*	2435.905	100.31	-	-	100.98	27.32	6.04	34.03	141	229	A	H
		2495.24	53.1	-20.9	74	53.51	27.5	6.09	34	141	229	P	H
		2492.8	42.56	-11.44	54	42.97	27.5	6.09	34	141	229	A	H
		2383.71	53.17	-20.83	74	54.01	27.19	6.01	34.04	155	292	P	V
		2385.87	42.52	-11.48	54	43.32	27.23	6.01	34.04	155	292	A	V
	*	2438.243	102.8	-	-	103.42	27.37	6.04	34.03	155	292	P	V
	*	2438.243	100.44	-	-	101.06	27.37	6.04	34.03	155	292	A	V
		2493.08	53.38	-20.62	74	53.79	27.5	6.09	34	155	292	P	V
		2489.48	42.48	-11.52	54	42.9	27.5	6.09	34.01	155	292	A	V



802.11b CH 11 2462MHz	*	2463.209	102.98	-	-	103.52	27.41	6.07	34.02	139	222	P	H
	*	2463.209	100.54	-	-	101.08	27.41	6.07	34.02	139	222	A	H
		2483.52	57.76	-16.24	74	58.22	27.46	6.09	34.01	139	222	P	H
		2483.52	51.4	-2.6	54	51.86	27.46	6.09	34.01	139	222	A	H
													H
													H
	*	2463.209	103.92	-	-	104.46	27.41	6.07	34.02	171	286	P	V
	*	2463.293	101.49	-	-	102.03	27.41	6.07	34.02	171	286	A	V
		2483.84	56.86	-17.14	74	57.32	27.46	6.09	34.01	171	286	P	V
		2483.52	51.45	-2.55	54	51.91	27.46	6.09	34.01	171	286	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	40.36	-33.64	74	59	31.32	8.65	58.61	100	0	P	H
													H
													H
													H
		4824	32.91	-41.09	74	51.55	31.32	8.65	58.61	100	0	P	V
													V
													V
													V
802.11b CH 06 2437MHz		4872	43.88	-30.12	74	62.3	31.41	8.69	58.52	100	0	P	H
		7308	37.58	-36.42	74	49.07	36.28	10.39	58.16	100	0	P	H
													H
													H
		4872	42.82	-31.18	74	61.24	31.41	8.69	58.52	100	0	P	V
		7308	37.37	-36.63	74	48.86	36.28	10.39	58.16	100	0	P	V
													V
													V
802.11b CH 11 2462MHz		4926	45.46	-28.54	74	63.6	31.49	8.79	58.42	100	0	P	H
		7386	37.51	-36.49	74	48.87	36.47	10.48	58.31	100	0	P	H
													H
													H
		4926	44.31	-29.69	74	62.45	31.49	8.79	58.42	100	0	P	V
		7386	37.64	-36.36	74	49	36.47	10.48	58.31	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		2389.92	70.71	-3.29	74	71.51	27.23	6.01	34.04	169	223	P	H
		2390	52.74	-1.26	54	53.54	27.23	6.01	34.04	169	223	A	H
	*	2410	103.01	-	-	103.73	27.28	6.04	34.04	169	223	P	H
	*	2410	95.67	-	-	96.39	27.28	6.04	34.04	169	223	A	H
													H
													H
		2387.76	72.03	-1.97	74	72.83	27.23	6.01	34.04	136	290	P	V
		2389.83	53.96	-0.04	54	54.76	27.23	6.01	34.04	136	290	A	V
	*	2410	104.39	-	-	105.11	27.28	6.04	34.04	136	290	P	V
	*	2410	96.54	-	-	97.26	27.28	6.04	34.04	136	290	A	V
													V
													V
802.11g CH 06 2437MHz		2389.56	61.72	-12.28	74	62.52	27.23	6.01	34.04	229	223	P	H
		2389.92	45.86	-8.14	54	46.66	27.23	6.01	34.04	229	223	A	H
	*	2435	104.19	-	-	104.86	27.32	6.04	34.03	229	223	P	H
	*	2435	96.52	-	-	97.19	27.32	6.04	34.03	229	223	A	H
		2485.28	63.9	-10.1	74	64.36	27.46	6.09	34.01	229	223	P	H
		2485.52	45.28	-8.72	54	45.74	27.46	6.09	34.01	229	223	A	H
		2385.33	64.43	-9.57	74	65.27	27.19	6.01	34.04	152	289	P	V
		2389.56	47.18	-6.82	54	47.98	27.23	6.01	34.04	152	289	A	V
	*	2435	105.96	-	-	106.63	27.32	6.04	34.03	152	289	P	V
	*	2435	97.41	-	-	98.08	27.32	6.04	34.03	152	289	A	V
		2484	65.35	-8.65	74	65.81	27.46	6.09	34.01	152	289	P	V
		2484.6	45.98	-8.02	54	46.44	27.46	6.09	34.01	152	289	A	V



802.11g CH 11 2462MHz	*	2464	106.11	-	-	106.65	27.41	6.07	34.02	141	220	P	H
	*	2464	97.12	-	-	97.66	27.41	6.07	34.02	141	220	A	H
		2486.76	73.39	-0.61	74	73.85	27.46	6.09	34.01	141	220	P	H
		2483.64	53.93	-0.07	54	54.39	27.46	6.09	34.01	141	220	A	H
													H
													H
	*	2464	104.45	-	-	104.99	27.41	6.07	34.02	108	38	P	V
	*	2460	96.54	-	-	97.08	27.41	6.07	34.02	108	38	A	V
		2485.6	72.8	-1.2	74	73.26	27.46	6.09	34.01	108	38	P	V
		2484.08	53.84	-0.16	54	54.3	27.46	6.09	34.01	108	38	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	36.49	-37.51	74	55.13	31.32	8.65	58.61	100	0	P	H
													H
													H
													H
		4824	34.53	-39.47	74	53.17	31.32	8.65	58.61	100	0	P	V
													V
													V
													V
802.11g CH 06 2437MHz		4872	39.09	-34.91	74	57.51	31.41	8.69	58.52	100	0	P	H
		7308	37.08	-36.92	74	48.57	36.28	10.39	58.16	100	0	P	H
													H
													H
		4872	37.74	-36.26	74	56.16	31.41	8.69	58.52	100	0	P	V
		7308	37.59	-36.41	74	49.08	36.28	10.39	58.16	100	0	P	V
													V
													V
802.11g CH 11 2462MHz		4926	40.36	-33.64	74	58.5	31.49	8.79	58.42	100	0	P	H
		7386	37.9	-36.1	74	49.26	36.47	10.48	58.31	100	0	P	H
													H
													H
		4924	37.4	-36.6	74	55.54	31.49	8.79	58.42	100	0	P	V
		7386	38.35	-35.65	74	49.71	36.47	10.48	58.31	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		2387.13	69.38	-4.62	74	70.18	27.23	6.01	34.04	240	226	P	H
		2390	51.63	-2.37	54	52.43	27.23	6.01	34.04	240	226	A	H
	*	2414	103.31	-	-	104.03	27.28	6.04	34.04	240	226	P	H
	*	2414	95	-	-	95.72	27.28	6.04	34.04	240	226	A	H
													H
													H
		2389.92	73.84	-0.16	74	74.64	27.23	6.01	34.04	159	258	P	V
		2389.56	53.08	-0.92	54	53.88	27.23	6.01	34.04	159	258	A	V
	*	2411	103.68	-	-	104.4	27.28	6.04	34.04	159	258	P	V
	*	2411	95.44	-	-	96.16	27.28	6.04	34.04	159	258	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	35	-39	74	53.64	31.32	8.65	58.61	100	0	P	H
													H
													H
													H
		4824	32.59	-41.41	74	51.23	31.32	8.65	58.61	100	0	P	V
													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 802.11b (LF)

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)
2.4GHz 802.11b LF		39.99	33.01	-6.99	40	51.45	12.71	0.67	31.82	111	185	P	H
		45.12	26.27	-13.73	40	47.2	9.84	1.04	31.81			P	H
		130.98	26.46	-17.04	43.5	45.26	11.52	1.46	31.78			P	H
		371.4	28.53	-17.47	46	43.19	14.81	2.32	31.79			P	H
		432.3	27.57	-18.43	46	40.54	16.45	2.41	31.83			P	H
		541.5	29.92	-16.08	46	40.57	18.53	2.77	31.95			P	H
													H
													H
													H
													H
													H
													H
		58.08	19.85	-20.15	40	45.12	5.49	1.04	31.8			P	V
		130.71	28.18	-15.32	43.5	46.96	11.54	1.46	31.78			P	V
		194.97	31.25	-12.25	43.5	52.89	8.5	1.64	31.78	199	21	P	V
		370.7	26.97	-19.03	46	41.63	14.81	2.32	31.79			P	V
		429.5	28.96	-17.04	46	41.87	16.51	2.41	31.83			P	V
		545	29.63	-16.37	46	40.22	18.6	2.77	31.96			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	H orizontal or V ertical



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”.



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.	
2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 01 2412MHz		2389.92	54.83	-19.17	74	55.63	27.23	6.01	34.04	147	132	P	H
		2390	46.37	-7.63	54	47.17	27.23	6.01	34.04	147	132	A	H
	*	2410.855	103.91	-	-	104.63	27.28	6.04	34.04	147	132	P	H
	*	2410.938	101.42	-	-	102.14	27.28	6.04	34.04	147	132	A	H
													H
													H
		2389.83	54.07	-19.93	74	54.87	27.23	6.01	34.04	139	97	P	V
		2390	46.18	-7.82	54	46.98	27.23	6.01	34.04	139	97	A	V
	*	2410.855	103.65	-	-	104.37	27.28	6.04	34.04	139	97	P	V
	*	2410.938	101.19	-	-	101.91	27.28	6.04	34.04	139	97	A	V
													V
													V
802.11b CH 06 2437MHz		2380.65	53.08	-20.92	74	53.92	27.19	6.01	34.04	127	133	P	H
		2387.13	42.51	-11.49	54	43.31	27.23	6.01	34.04	127	133	A	H
	*	2435.905	104.64	-	-	105.31	27.32	6.04	34.03	127	133	P	H
	*	2435.905	102.23	-	-	102.9	27.32	6.04	34.03	127	133	A	H
		2493.96	53.16	-20.84	74	53.57	27.5	6.09	34	127	133	P	H
		2493.08	42.65	-11.35	54	43.06	27.5	6.09	34	127	133	A	H
		2354.46	53.26	-20.74	74	54.22	27.14	5.95	34.05	137	101	P	V
		2389.47	42.71	-11.29	54	43.51	27.23	6.01	34.04	137	101	A	V
	*	2435.822	104.35	-	-	105.02	27.32	6.04	34.03	137	101	P	V
	*	2435.905	101.9	-	-	102.57	27.32	6.04	34.03	137	101	A	V
		2484.88	54.74	-19.26	74	55.2	27.46	6.09	34.01	137	101	P	V
		2487.56	42.59	-11.41	54	43.01	27.5	6.09	34.01	137	101	A	V



802.11b CH 11 2462MHz	*	2460.872	104.47	-	-	105.01	27.41	6.07	34.02	125	134	P	H
	*	2460.872	102.01	-	-	102.55	27.41	6.07	34.02	125	134	A	H
		2483.6	56.73	-17.27	74	57.19	27.46	6.09	34.01	125	134	P	H
		2483.52	50.27	-3.73	54	50.73	27.46	6.09	34.01	125	134	A	H
													H
													H
	*	2460.788	104.12	-	-	104.66	27.41	6.07	34.02	157	101	P	V
	*	2460.872	101.65	-	-	102.19	27.41	6.07	34.02	157	101	A	V
		2483.6	55.36	-18.64	74	55.82	27.46	6.09	34.01	157	101	P	V
		2483.52	49.38	-4.62	54	49.84	27.46	6.09	34.01	157	101	A	V
													V
													V
Remark	3. No other spurious found. 4. 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.	
2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 01 2412MHz		4824	38.24	-35.76	74	56.88	31.32	8.65	58.61	100	0	P	H
													H
													H
													H
		4824	37.98	-36.02	74	56.62	31.32	8.65	58.61	100	0	P	V
													V
													V
													V
802.11b CH 06 2437MHz		4872	38.53	-35.47	74	56.95	31.41	8.69	58.52	100	0	P	H
		7308	37.1	-36.9	74	48.59	36.28	10.39	58.16	100	0	P	H
													H
													H
		4872	39.35	-34.65	74	57.77	31.41	8.69	58.52	100	0	P	V
		7308	37.73	-36.27	74	49.22	36.28	10.39	58.16	100	0	P	V
													V
													V
802.11b CH 11 2462MHz		4926	40.29	-33.71	74	58.43	31.49	8.79	58.42	100	0	P	H
		7386	37.61	-36.39	74	48.97	36.47	10.48	58.31	100	0	P	H
													H
													H
		4926	42.03	-31.97	74	60.17	31.49	8.79	58.42	100	0	P	V
		7386	38.3	-35.7	74	49.66	36.47	10.48	58.31	100	0	P	V
													V
													V
Remark	3. No other spurious found. 4. 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.	
2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11g CH 01 2412MHz		2389.38	70.14	-3.86	74	70.94	27.23	6.01	34.04	172	133	P	H
		2389.38	52.02	-1.98	54	52.82	27.23	6.01	34.04	172	133	A	H
	*	2410	105.32	-	-	106.04	27.28	6.04	34.04	172	133	P	H
	*	2410	96.99	-	-	97.71	27.28	6.04	34.04	172	133	A	H
													H
													H
		2388.12	70.32	-3.68	74	71.12	27.23	6.01	34.04	180	90	P	V
		2389.83	51.95	-2.05	54	52.75	27.23	6.01	34.04	180	90	A	V
	*	2410	105.02	-	-	105.74	27.28	6.04	34.04	180	90	P	V
	*	2410	96.97	-	-	97.69	27.28	6.04	34.04	180	90	A	V
													V
													V
802.11g CH 06 2437MHz		2389.11	62.52	-11.48	74	63.32	27.23	6.01	34.04	169	126	P	H
		2390	46.77	-7.23	54	47.57	27.23	6.01	34.04	169	126	A	H
	*	2433.817	107.19	-	-	107.86	27.32	6.04	34.03	169	126	P	H
	*	2434.152	99.37	-	-	100.04	27.32	6.04	34.03	169	126	A	H
		2484.04	65.77	-8.23	74	66.23	27.46	6.09	34.01	169	126	P	H
		2484.04	46.59	-7.41	54	47.05	27.46	6.09	34.01	169	126	A	H
		2389.2	63.16	-10.84	74	63.96	27.23	6.01	34.04	135	79	P	V
		2389.29	46.21	-7.79	54	47.01	27.23	6.01	34.04	135	79	A	V
	*	2439.663	106.36	-	-	106.98	27.37	6.04	34.03	135	79	P	V
	*	2433.985	98.7	-	-	99.37	27.32	6.04	34.03	135	79	A	V
		2483.6	65.32	-8.68	74	65.78	27.46	6.09	34.01	135	79	P	V
		2484.16	45.87	-8.13	54	46.33	27.46	6.09	34.01	135	79	A	V



802.11g CH 11 2462MHz	*	2458.283	105.29	-	-	105.83	27.41	6.07	34.02	146	121	P	H
	*	2458.617	97.87	-	-	98.41	27.41	6.07	34.02	146	121	A	H
		2483.6	70.81	-3.19	74	71.27	27.46	6.09	34.01	146	121	P	H
		2483.84	51.54	-2.46	54	52	27.46	6.09	34.01	146	121	A	H
													H
													H
	*	2459.619	105.65	-	-	106.19	27.41	6.07	34.02	152	66	P	V
	*	2458.867	97.04	-	-	97.58	27.41	6.07	34.02	152	66	A	V
		2483.68	69.97	-4.03	74	70.43	27.46	6.09	34.01	152	66	P	V
		2483.52	50.11	-3.89	54	50.57	27.46	6.09	34.01	152	66	A	V
													V
													V
Remark	3. No other spurious found. 4. 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.	
2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11g CH 01 2412MHz		4824	33.77	-40.23	74	52.41	31.32	8.65	58.61	100	0	P	H
													H
													H
													H
		4824	32.62	-41.38	74	51.26	31.32	8.65	58.61	100	0	P	V
													V
													V
													V
802.11g CH 06 2437MHz		4872	36.51	-37.49	74	54.93	31.41	8.69	58.52	100	0	P	H
		7308	38.69	-35.31	74	50.18	36.28	10.39	58.16	100	0	P	H
													H
													H
		4872	36.03	-37.97	74	54.45	31.41	8.69	58.52	100	0	P	V
		7308	38.88	-35.12	74	50.37	36.28	10.39	58.16	100	0	P	V
													V
													V
802.11g CH 11 2462MHz		4926	35.31	-38.69	74	53.45	31.49	8.79	58.42	100	0	P	H
		7386	37.32	-36.68	74	48.68	36.47	10.48	58.31	100	0	P	H
													H
													H
		4920	37.44	-36.56	74	55.63	31.49	8.74	58.42	100	0	P	V
		7386	38.13	-35.87	74	49.49	36.47	10.48	58.31	100	0	P	V
													V
													V
Remark	3. No other spurious found. 4. 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.	
2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT20 CH 01 2412MHz		2389.65	71.14	-2.86	74	71.94	27.23	6.01	34.04	171	135	P	H
		2390	53.71	-0.29	54	54.51	27.23	6.01	34.04	171	135	A	H
	*	2411.356	105.43	-	-	106.15	27.28	6.04	34.04	171	135	P	H
	*	2411	97.46	-	-	98.18	27.28	6.04	34.04	171	135	A	H
													H
													H
		2389.92	70.87	-3.13	74	71.67	27.23	6.01	34.04	161	85	P	V
		2388.93	53.76	-0.24	54	54.56	27.23	6.01	34.04	161	85	A	V
	*	2411	104.34	-	-	105.06	27.28	6.04	34.04	161	85	P	V
	*	2411	96.53	-	-	97.25	27.28	6.04	34.04	161	85	A	V
													V
													V
Remark	3. No other spurious found. 4. 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.	
2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT20 CH 01 2412MHz		4824	32.44	-41.56	74	51.08	31.32	8.65	58.61	100	0	P	H
													H
													H
													H
		4824	33.4	-40.6	74	52.04	31.32	8.65	58.61	100	0	P	V
													V
													V
													V
Remark	3. No other spurious found. 4. All results are PASS against Peak and Average limit line.												



15C Emission below 1GHz

2.4GHz WIFI 802.11b (LF)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4GHz 802.11b LF		39.45	33.57	-6.43	40	51.72	13	0.67	31.82	125	31	P	H
		57.81	21.96	-18.04	40	47.18	5.54	1.04	31.8			P	H
		87.51	24.16	-15.84	40	46.57	8.1	1.28	31.79			P	H
		432.3	28.21	-17.79	46	41.18	16.45	2.41	31.83			P	H
		542.2	29.25	-16.75	46	39.89	18.54	2.77	31.95			P	H
		780.2	24.17	-21.83	46	33.06	19.7	3.35	31.94			P	H
													H
													H
													H
													H
													H
													H
		88.59	22.45	-21.05	43.5	44.66	8.29	1.28	31.78			P	V
		131.79	30.19	-13.31	43.5	49.05	11.46	1.46	31.78			P	V
		197.67	30.54	-12.96	43.5	52.13	8.55	1.64	31.78	100	77	P	V
		432.3	28.98	-17.02	46	41.95	16.45	2.41	31.83			P	V
		541.5	29.55	-16.45	46	40.2	18.53	2.77	31.95			P	V
		780.2	27.84	-18.16	46	36.73	19.7	3.35	31.94			P	V
													V
													V
													V
													V
													V
													V
													V
Remark	3. No other spurious found. 4. 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	P eak or A verage
H/V	H orizontal or V ertical



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

3. Level(dBμV/m) =

Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

4. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

3. 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)

4. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

For Average Limit @ 2390MHz:

3. 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)

4. 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”.



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+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT20 CH 01 2412MHz		2389.56	70.76	-3.24	74	71.56	27.23	6.01	34.04	146	127	P	H
		2390	53.76	-0.24	54	54.56	27.23	6.01	34.04	146	127	A	H
	*	2410	105.86	-	-	106.58	27.28	6.04	34.04	146	127	P	H
	*	2410	97.51	-	-	98.23	27.28	6.04	34.04	146	127	A	H
													H
													H
		2389.74	70.97	-3.03	74	71.77	27.23	6.01	34.04	137	79	P	V
		2388.84	52.36	-1.64	54	53.16	27.23	6.01	34.04	137	79	A	V
	*	2410	104.52	-	-	105.24	27.28	6.04	34.04	137	79	P	V
	*	2410	96.83	-	-	97.55	27.28	6.04	34.04	137	79	A	V
													V
													V
802.11n HT20 CH 06 2437MHz		2387.22	60.1	-13.9	74	60.9	27.23	6.01	34.04	167	129	P	H
		2389.38	45.05	-8.95	54	45.85	27.23	6.01	34.04	167	129	A	H
	*	2435	106.49	-	-	107.16	27.32	6.04	34.03	167	129	P	H
	*	2435	98.11	-	-	98.78	27.32	6.04	34.03	167	129	A	H
		2488	58.42	-15.58	74	58.84	27.5	6.09	34.01	167	129	P	H
		2484.4	44.48	-9.52	54	44.94	27.46	6.09	34.01	167	129	A	H
		2390	57.84	-16.16	74	58.64	27.23	6.01	34.04	179	84	P	V
		2389.47	44.71	-9.29	54	45.51	27.23	6.01	34.04	179	84	A	V
	*	2439	105.65	-	-	106.27	27.37	6.04	34.03	179	84	P	V
	*	2439	97.08	-	-	97.7	27.37	6.04	34.03	179	84	A	V
		2483.88	60.5	-13.5	74	60.96	27.46	6.09	34.01	179	84	P	V
		2483.88	44.16	-9.84	54	44.62	27.46	6.09	34.01	179	84	A	V



802.11n HT20 CH 11 2462MHz	*	2460	106.68	-	-	107.22	27.41	6.07	34.02	138	122	P	H
	*	2460	96.09	-	-	96.63	27.41	6.07	34.02	138	122	A	H
		2484.44	70.62	-3.38	74	71.08	27.46	6.09	34.01	138	122	P	H
		2484.72	51.16	-2.84	54	51.62	27.46	6.09	34.01	138	122	A	H
													H
													H
	*	2460	105.45	-	-	105.99	27.41	6.07	34.02	157	105	P	V
	*	2460	97.5	-	-	98.04	27.41	6.07	34.02	157	105	A	V
		2483.52	71.78	-2.22	74	72.24	27.46	6.09	34.01	157	105	P	V
		2483.76	51.95	-2.05	54	52.41	27.46	6.09	34.01	157	105	A	V
													V
													V
Remark	5. No other spurious found. 6. 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+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT20 CH 01 2412MHz		4824	33.23	-40.77	74	51.87	31.32	8.65	58.61	100	0	P	H
													H
													H
													H
		4824	33.07	-40.93	74	51.71	31.32	8.65	58.61	100	0	P	V
													V
													V
													V
802.11n HT20 CH 06 2437MHz		4872	34.23	-39.77	74	52.65	31.41	8.69	58.52	100	0	P	H
		7308	37.5	-36.5	74	48.99	36.28	10.39	58.16	100	0	P	H
													H
													H
		4872	34.43	-39.57	74	52.85	31.41	8.69	58.52	100	0	P	V
		7308	37.43	-36.57	74	48.92	36.28	10.39	58.16	100	0	P	V
													V
													V
802.11n HT20 CH 11 2462MHz		4926	32.86	-41.14	74	51	31.49	8.79	58.42	100	0	P	H
		7386	37.78	-36.22	74	49.14	36.47	10.48	58.31	100	0	P	H
													H
													H
		4926	33.35	-40.65	74	51.49	31.49	8.79	58.42	100	0	P	V
		7386	37.12	-36.88	74	48.48	36.47	10.48	58.31	100	0	P	V
													V
													V
Remark	5. No other spurious found. 6. All results are PASS against Peak and Average limit line.												



15C Emission below 1GHz

2.4GHz WIFI 802.11n HT20 (LF)

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)
2.4GHz 802.11n HT20 LF		59.43	22.77	-17.23	40	48.24	5.29	1.04	31.8			P	H
		80.76	24.49	-15.51	40	48.49	6.75	1.04	31.79			P	H
		133.41	22.85	-20.65	43.5	41.84	11.33	1.46	31.78			P	H
		373.5	28.79	-17.21	46	43.42	14.84	2.32	31.79			P	H
		432.3	27.94	-18.06	46	40.91	16.45	2.41	31.83			P	H
		542.2	30.56	-15.44	46	41.2	18.54	2.77	31.95	103	348	P	H
													H
													H
													H
													H
													H
													H
		131.79	29.05	-14.45	43.5	47.91	11.46	1.46	31.78	155	96	P	V
		188.76	25.14	-18.36	43.5	47.1	8.18	1.64	31.78			P	V
		210.09	22.26	-21.24	43.5	43.86	8.39	1.79	31.78			P	V
		370.7	28.61	-17.39	46	43.27	14.81	2.32	31.79			P	V
		431.6	28.06	-17.94	46	41.01	16.47	2.41	31.83			P	V
		545.7	30.11	-15.89	46	40.69	18.61	2.77	31.96			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	H orizontal or V ertical



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

5. Level(dBμV/m) =

Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

6. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

5. 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)

6. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

For Average Limit @ 2390MHz:

5. 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)

6. 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”.