



Appendix A. Radiated Spurious Emission



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		2388.12	55.39	-18.61	74	51.65	32.77	4.62	33.65	100	82	P	H
		2387.49	45.66	-8.34	54	41.92	32.77	4.62	33.65	100	82	A	H
	*	2413.444	105.39	-	-	101.56	32.81	4.65	33.63	100	82	P	H
	*	2412.775	101.23	-	-	97.4	32.81	4.65	33.63	100	82	A	H
													H
													H
		2386.95	55.96	-18.04	74	52.22	32.77	4.62	33.65	100	97	P	V
		2387.13	45.38	-8.62	54	41.64	32.77	4.62	33.65	100	97	A	V
	*	2410.938	104.84	-	-	101.01	32.81	4.65	33.63	100	97	P	V
	*	2411.189	100.72	-	-	96.89	32.81	4.65	33.63	100	97	A	V
													V
													V
802.11b CH 06 2437MHz		2362.56	53.27	-20.73	74	49.65	32.7	4.6	33.68	127	323	P	H
		2390	41.27	-12.73	54	37.53	32.77	4.62	33.65	127	323	A	H
	*	2435.488	106.39	-	-	102.48	32.85	4.68	33.62	127	323	P	H
	*	2436.239	101.84	-	-	97.93	32.85	4.68	33.62	127	323	A	H
		2498.88	53.34	-20.66	74	49.17	33	4.73	33.56	127	323	P	H
		2483.64	41.09	-12.91	54	36.97	32.96	4.73	33.57	127	323	A	H
		2384.88	53.19	-20.81	74	49.5	32.73	4.62	33.66	100	91	P	V
		2389.56	40.97	-13.03	54	37.23	32.77	4.62	33.65	100	91	A	V
	*	2437.992	105.79	-	-	101.82	32.89	4.68	33.6	100	91	P	V
	*	2437.742	101.14	-	-	97.17	32.89	4.68	33.6	100	91	A	V
		2486.32	53.98	-20.02	74	49.86	32.96	4.73	33.57	100	91	P	V
		2485.44	41.23	-12.77	54	37.11	32.96	4.73	33.57	100	91	A	V



802.11b CH 11 2462MHz	*	2460.621	108.25	-	-	104.22	32.92	4.7	33.59	141	63	P	H
	*	2461.289	103.73	-	-	99.7	32.92	4.7	33.59	141	63	A	H
		2487.28	56.39	-17.61	74	52.27	32.96	4.73	33.57	141	63	P	H
		2487.64	46.12	-7.88	54	41.95	33	4.73	33.56	141	63	A	H
													H
													H
	*	2463.46	104.17	-	-	100.14	32.92	4.7	33.59	100	92	P	V
	*	2462.792	99.87	-	-	95.84	32.92	4.7	33.59	100	92	A	V
		2487.2	54.6	-19.4	74	50.48	32.96	4.73	33.57	100	92	P	V
		2487.64	43.26	-10.74	54	39.09	33	4.73	33.56	100	92	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	38.26	-35.74	74	55.3	35.03	6.54	58.61	100	0	P	H
													H
													H
													H
		4824	38.12	-35.88	74	55.16	35.03	6.54	58.61	100	0	P	V
													V
													V
													V
802.11b CH 06 2437MHz		4875	40.78	-33.22	74	57.72	35.02	6.56	58.52	100	0	P	H
		7313	48.78	-25.22	74	62.31	36.39	8.24	58.16	100	0	P	H
													H
													H
		4875	44.71	-29.29	74	61.65	35.02	6.56	58.52	100	0	P	V
		7311	45.78	-28.22	74	59.31	36.39	8.24	58.16	100	0	P	V
													V
													V
802.11b CH 11 2462MHz		4922	45.54	-28.46	74	62.36	35.01	6.59	58.42	100	0	P	H
		7386	45.73	-28.27	74	59.29	36.44	8.31	58.31	100	0	P	H
													H
													H
		4922	44.49	-29.51	74	61.31	35.01	6.59	58.42	100	0	P	V
		7386	45.14	-28.86	74	58.7	36.44	8.31	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		2390	70.8	-3.2	74	67.06	32.77	4.62	33.65	124	358	P	H
		2390	49.65	-4.35	54	45.91	32.77	4.62	33.65	124	358	A	H
	*	2414	107.69	-	-	103.86	32.81	4.65	33.63	124	358	P	H
	*	2414	97.5	-	-	93.67	32.81	4.65	33.63	124	358	A	H
													H
													H
		2389.74	60.59	-13.41	74	56.85	32.77	4.62	33.65	100	99	P	V
		2389.92	44.66	-9.34	54	40.92	32.77	4.62	33.65	100	99	A	V
	*	2410	100.57	-	-	96.74	32.81	4.65	33.63	100	99	P	V
	*	2410	90.46	-	-	86.63	32.81	4.65	33.63	100	99	A	V
													V
													V
802.11g CH 06 2437MHz		2384.25	53.76	-20.24	74	50.07	32.73	4.62	33.66	122	360	P	H
		2384.7	41.72	-12.28	54	38.03	32.73	4.62	33.66	122	360	A	H
	*	2435	107.41	-	-	103.5	32.85	4.68	33.62	122	360	P	H
	*	2435	96.9	-	-	92.99	32.85	4.68	33.62	122	360	A	H
		2489.44	54.45	-19.55	74	50.28	33	4.73	33.56	122	360	P	H
		2489.2	42.32	-11.68	54	38.15	33	4.73	33.56	122	360	A	H
		2326.38	53.13	-20.87	74	49.66	32.62	4.55	33.7	100	25	P	V
		2385.42	41.29	-12.71	54	37.6	32.73	4.62	33.66	100	25	A	V
	*	2437.241	100.42	-	-	96.45	32.89	4.68	33.6	100	25	P	V
	*	2437	89.92	-	-	85.95	32.89	4.68	33.6	100	25	A	V
		2487.52	54.09	-19.91	74	49.92	33	4.73	33.56	100	25	P	V
		2489.76	41.62	-12.38	54	37.45	33	4.73	33.56	100	25	A	V



802.11g CH 11 2462MHz	*	2460	108.67	-	-	104.64	32.92	4.7	33.59	119	338	P	H
	*	2460	98.51	-	-	94.48	32.92	4.7	33.59	119	338	A	H
		2483.56	69.46	-4.54	74	65.34	32.96	4.73	33.57	119	338	P	H
		2483.84	47.71	-6.29	54	43.59	32.96	4.73	33.57	119	338	A	H
													H
													H
	*	2460	100.03	-	-	96	32.92	4.7	33.59	126	26	P	V
	*	2460	90.09	-	-	86.06	32.92	4.7	33.59	126	26	A	V
		2484.44	58.28	-15.72	74	54.16	32.96	4.73	33.57	126	26	P	V
		2483.52	42.72	-11.28	54	38.6	32.96	4.73	33.57	126	26	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	38.88	-35.12	74	55.92	35.03	6.54	58.61	100	0	P	H
													H
													H
													H
		4824	38.71	-35.29	74	55.75	35.03	6.54	58.61	100	0	P	V
													V
													V
													V
802.11g CH 06 2437MHz		4875	41.61	-32.39	74	58.55	35.02	6.56	58.52	100	0	P	H
		7311	40.15	-33.85	74	53.68	36.39	8.24	58.16	100	0	P	H
													H
													H
		4875	40.82	-33.18	74	57.76	35.02	6.56	58.52	100	0	P	V
		7311	40.82	-33.18	74	54.35	36.39	8.24	58.16	100	0	P	V
													V
													V
802.11g CH 11 2462MHz		4923	39.18	-34.82	74	56	35.01	6.59	58.42	100	0	P	H
		7386	39.19	-34.81	74	52.75	36.44	8.31	58.31	100	0	P	H
													H
													H
		4923	39.56	-34.44	74	56.38	35.01	6.59	58.42	100	0	P	V
		7386	39.41	-34.59	74	52.97	36.44	8.31	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		2389.65	68.61	-5.39	74	64.87	32.77	4.62	33.65	120	358	P	H
		2389.92	50.81	-3.19	54	47.07	32.77	4.62	33.65	120	358	A	H
	*	2414	106.91	-	-	103.08	32.81	4.65	33.63	120	358	P	H
	*	2414	97.14	-	-	93.31	32.81	4.65	33.63	120	358	A	H
													H
													H
		2390	64.32	-9.68	74	60.58	32.77	4.62	33.65	100	97	P	V
		2390	44.85	-9.15	54	41.11	32.77	4.62	33.65	100	97	A	V
	*	2410.02	100.34	-	-	96.51	32.81	4.65	33.63	100	97	P	V
	*	2410	89.89	-	-	86.06	32.81	4.65	33.63	100	97	A	V
													V
													V
802.11n HT20 CH 06 2437MHz		2385.15	53.62	-20.38	74	49.93	32.73	4.62	33.66	117	358	P	H
		2385.6	42.71	-11.29	54	38.97	32.77	4.62	33.65	117	358	A	H
	*	2435	108.85	-	-	104.94	32.85	4.68	33.62	117	358	P	H
	*	2435	97.75	-	-	93.84	32.85	4.68	33.62	117	358	A	H
		2488.44	55.8	-18.2	74	51.63	33	4.73	33.56	117	358	P	H
		2488.52	44.45	-9.55	54	40.28	33	4.73	33.56	117	358	A	H
		2384.16	53.55	-20.45	74	49.86	32.73	4.62	33.66	106	94	P	V
		2385.42	41.21	-12.79	54	37.52	32.73	4.62	33.66	106	94	A	V
	*	2435	102	-	-	98.09	32.85	4.68	33.62	106	94	P	V
	*	2435	92.24	-	-	88.33	32.85	4.68	33.62	106	94	A	V
		2486.36	53.91	-20.09	74	49.79	32.96	4.73	33.57	106	94	P	V
		2488.76	41.64	-12.36	54	37.47	33	4.73	33.56	106	94	A	V



802.11n HT20 CH 11 2462MHz	*	2460	108.7	-	-	104.67	32.92	4.7	33.59	114	359	P	H
	*	2460	98.8	-	-	94.77	32.92	4.7	33.59	114	359	A	H
		2484.6	70.8	-3.2	74	66.68	32.96	4.73	33.57	114	359	P	H
		2483.52	49.55	-4.45	54	45.43	32.96	4.73	33.57	114	359	A	H
													H
													H
	*	2460	101.56	-	-	97.53	32.92	4.7	33.59	104	116	P	V
	*	2460	91.47	-	-	87.44	32.92	4.7	33.59	104	116	A	V
		2484.28	63.87	-10.13	74	59.75	32.96	4.73	33.57	104	116	P	V
		2483.88	44.58	-9.42	54	40.46	32.96	4.73	33.57	104	116	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	39.26	-34.74	74	56.3	35.03	6.54	58.61	100	0	P	H
													H
													H
													H
		4824	39.95	-34.05	74	56.99	35.03	6.54	58.61	100	0	P	V
													V
													V
													V
802.11n HT20 CH 06 2437MHz		4875	39.02	-34.98	74	55.96	35.02	6.56	58.52	100	0	P	H
		7311	40.82	-33.18	74	54.35	36.39	8.24	58.16	100	0	P	H
													H
													H
		4875	38.99	-35.01	74	55.93	35.02	6.56	58.52	100	0	P	V
		7311	39.93	-34.07	74	53.46	36.39	8.24	58.16	100	0	P	V
													V
													V
802.11n HT20 CH 11 2462MHz		4923	43.42	-30.58	74	60.24	35.01	6.59	58.42	100	0	P	H
		7386	45.34	-28.66	74	58.9	36.44	8.31	58.31	100	0	P	H
													H
													H
		4923	38.42	-35.58	74	55.24	35.01	6.59	58.42	100	0	P	V
		7386	45.84	-28.16	74	59.4	36.44	8.31	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 Emission below 1GHz

2.4GHz WIFI 802.11b (LF @ 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)
2.4GHz 802.11b LF		33.24	24.9	-15.1	40	38.65	17.34	0.72	31.81	100	83	P	H
		103.71	18.83	-24.67	43.5	38.94	10.56	1.11	31.78			P	H
		258.42	12.99	-33.01	46	29.49	13.6	1.67	31.77			P	H
		379.1	14.82	-31.18	46	29.56	15.08	1.97	31.79			P	H
		795.6	22.65	-23.35	46	29.76	22	2.82	31.93			P	H
		990.9	25.4	-28.6	54	28.1	24.79	3.22	30.71			P	H
													H
													H
													H
													H
													H
													H
		42.96	22.71	-17.29	40	41.99	11.76	0.77	31.81	148	276	P	V
		173.1	12.71	-30.79	43.5	33.73	9.38	1.38	31.78			P	V
		264.36	14.15	-31.85	46	30.83	13.4	1.69	31.77			P	V
		631.1	19.5	-26.5	46	28.52	20.49	2.53	32.04			P	V
		794.9	22.03	-23.97	46	29.14	22	2.82	31.93			P	V
		986.7	24.89	-29.11	54	27.6	24.84	3.2	30.75			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”.