



Appendix C. Radiated Spurious Emission

2.4GHz 2400~2483.5MHz

WIFI 802.11b (Band Edge @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 01 2412MHz		2387.87	56.54	-17.46	74	48.4	32.2	7.59	31.65	118	133	P	H
		2387.22	45.68	-8.32	54	37.54	32.2	7.59	31.65	118	133	A	H
	*	2412	109.59	-	-	101.44	32.18	7.62	31.65	118	133	P	H
	*	2410	106.27	-	-	98.12	32.18	7.62	31.65	118	133	A	H
		2345.75	56.68	-17.32	74	48.79	32.06	7.5	31.67	366	74	P	V
		2387.22	45.24	-8.76	54	37.1	32.2	7.59	31.65	366	74	A	V
	*	2412	107.58	-	-	99.43	32.18	7.62	31.65	366	74	P	V
	*	2410	104.17	-	-	96.02	32.18	7.62	31.65	366	74	A	V
802.11b CH 11 2462MHz		2498.5	57.34	-16.66	74	49.04	32.1	7.76	31.56	111	133	P	H
		2487.58	46.54	-7.46	54	38.26	32.1	7.76	31.58	111	133	A	H
	*	2462	110.05	-	-	101.82	32.13	7.7	31.6	111	133	P	H
	*	2460	106.32	-	-	98.09	32.13	7.7	31.6	111	133	A	H
		2484.94	56.89	-17.11	74	48.62	32.12	7.73	31.58	396	66	P	V
		2487.64	46.03	-7.97	54	37.75	32.1	7.76	31.58	396	66	A	V
	*	2462	107.33	-	-	99.1	32.13	7.7	31.6	396	66	P	V
	*	2460	103.98	-	-	95.75	32.13	7.7	31.6	396	66	A	V
Remark	<ol style="list-style-type: none"> No other spurious found. All results are PASS against Peak and Average limit line. 												



2.4GHz 2400~2483.5MHz
WIFI 802.11b (Harmonic @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11b CH 01 2412MHz		4824	41.2	-32.8	74	55.87	34.31	11.06	60.04	300	0	P	H
		4824	40.63	-33.37	74	55.3	34.31	11.06	60.04	300	360	P	V
802.11b CH 06 2437MHz		4872	41.64	-32.36	74	56.29	34.34	11.04	60.03	300	0	P	H
		7308	43.5	-30.5	74	54.59	35.94	13.48	60.51	300	0	P	H
		4872	41.2	-32.8	74	55.85	34.34	11.04	60.03	300	360	P	V
		7308	42.94	-31.06	74	54.03	35.94	13.48	60.51	300	360	P	V
802.11b CH 11 2462MHz		4926	40.93	-33.07	74	55.56	34.36	11.03	60.02	300	0	P	H
		7386	43.1	-30.9	74	54.16	35.92	13.55	60.53	300	0	P	H
		4926	40.73	-33.27	74	55.36	34.36	11.03	60.02	300	360	P	V
		7386	43.53	-30.47	74	54.59	35.92	13.55	60.53	300	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz
WIFI 802.11g (Band Edge @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11g CH 01 2412MHz		2389.82	62.1	-11.9	74	53.96	32.2	7.59	31.65	117	135	P	H
		2389.95	50.89	-3.11	54	42.75	32.2	7.59	31.65	117	135	A	H
	*	2412	113.92	-	-	105.77	32.18	7.62	31.65	117	135	P	H
	*	2410	105.76	-	-	97.61	32.18	7.62	31.65	117	135	A	H
		2389.95	58.58	-15.42	74	50.44	32.2	7.59	31.65	363	76	P	V
		2389.95	48.1	-5.9	54	39.96	32.2	7.59	31.65	363	76	A	V
	*	2412	111.44	-	-	103.29	32.18	7.62	31.65	363	76	P	V
	*	2412	103.2	-	-	95.05	32.18	7.62	31.65	363	76	A	V
802.11g CH 10 2457MHz		2483.68	62.32	-11.68	74	54.05	32.12	7.73	31.58	114	131	P	H
		2483.5	50.25	-3.75	54	41.98	32.12	7.73	31.58	114	131	A	H
	*	2456	111.41	-	-	103.18	32.13	7.7	31.6	114	131	P	H
	*	2456	103.23	-	-	95	32.13	7.7	31.6	114	131	A	H
		2483.92	59.31	-14.69	74	51.04	32.12	7.73	31.58	316	64	P	V
		2483.5	48.12	-5.88	54	39.85	32.12	7.73	31.58	316	64	A	V
	*	2456	109.34	-	-	101.11	32.13	7.7	31.6	316	64	P	V
	*	2456	101.32	-	-	93.09	32.13	7.7	31.6	316	64	A	V
802.11g CH 11 2462MHz		2484.34	63.5	-10.5	74	55.23	32.12	7.73	31.58	110	132	P	H
		2483.5	50.7	-3.3	54	42.43	32.12	7.73	31.58	110	132	A	H
	*	2464	110.59	-	-	102.36	32.13	7.7	31.6	110	132	P	H
	*	2464	102.48	-	-	94.25	32.13	7.7	31.6	110	132	A	H
		2484.34	62.07	-11.93	74	53.8	32.12	7.73	31.58	348	74	P	V
		2483.5	49.46	-4.54	54	41.19	32.12	7.73	31.58	348	74	A	V
	*	2464	108.54	-	-	100.31	32.13	7.7	31.6	348	74	P	V
	*	2464	100.64	-	-	92.41	32.13	7.7	31.6	348	74	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



**2.4GHz 2400~2483.5MHz
WIFI 802.11g (Harmonic @ 3m)**

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11g CH 01 2412MHz		4824	40.04	-33.96	74	54.71	34.31	11.06	60.04	300	0	P	H
		4824	39.99	-34.01	74	54.66	34.31	11.06	60.04	300	360	P	V
802.11g CH 06 2437MHz		4872	41.85	-32.15	74	56.5	34.34	11.04	60.03	300	0	P	H
		7308	42.47	-31.53	74	53.56	35.94	13.48	60.51	300	0	P	H
		4872	41.63	-32.37	74	56.28	34.34	11.04	60.03	300	360	P	V
		7308	42.45	-31.55	74	53.54	35.94	13.48	60.51	300	360	P	V
802.11g CH 10 2457MHz		4914	42.14	-31.86	74	56.78	34.35	11.03	60.02	300	0	P	H
		7371	45.35	-28.65	74	56.42	35.92	13.54	60.53	300	0	P	H
		4914	43.53	-30.47	74	58.17	34.35	11.03	60.02	300	360	P	V
		7368	43.46	-30.54	74	54.53	35.92	13.54	60.53	300	360	P	V
802.11g CH 11 2462MHz		4926	40.92	-33.08	74	55.55	34.36	11.03	60.02	300	0	P	H
		7386	43.27	-30.73	74	54.33	35.92	13.55	60.53	300	0	P	H
		4926	40.16	-33.84	74	54.79	34.36	11.03	60.02	300	360	P	V
		7386	43.92	-30.08	74	54.98	35.92	13.55	60.53	300	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



**2.4GHz 2400~2483.5MHz
WIFI 802.11n HT20 (Band Edge @ 3m)**

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 01 2412MHz		2389.69	62.38	-11.62	74	54.24	32.2	7.59	31.65	100	135	P	H
		2389.95	50.68	-3.32	54	42.54	32.2	7.59	31.65	100	135	A	H
	*	2408	112.05	-	-	103.9	32.18	7.62	31.65	100	135	P	H
	*	2410	103.41	-	-	95.26	32.18	7.62	31.65	100	135	A	H
		2389.95	60.02	-13.98	74	51.88	32.2	7.59	31.65	363	69	P	V
		2389.95	48.45	-5.55	54	40.31	32.2	7.59	31.65	363	69	A	V
	*	2410	110.32	-	-	102.17	32.18	7.62	31.65	363	69	P	V
	*	2410	102.24	-	-	94.09	32.18	7.62	31.65	363	69	A	V
802.11n HT20 CH 02 2417MHz		2389.82	61.46	-12.54	74	53.32	32.2	7.59	31.65	100	133	P	H
		2389.95	50.94	-3.06	54	42.8	32.2	7.59	31.65	100	133	A	H
	*	2414	114.23	-	-	106.08	32.18	7.62	31.65	100	133	P	H
	*	2414	106.23	-	-	98.08	32.18	7.62	31.65	100	133	A	H
		2388.78	59.18	-14.82	74	51.04	32.2	7.59	31.65	367	66	P	V
		2389.95	48.8	-5.2	54	40.66	32.2	7.59	31.65	367	66	A	V
	*	2416	113.25	-	-	105.08	32.18	7.62	31.63	367	66	P	V
	*	2416	105.28	-	-	97.11	32.18	7.62	31.63	367	66	A	V



802.11n HT20 CH 10 2457MHz		2484.1	63.03	-10.97	74	54.76	32.12	7.73	31.58	135	133	P	H
		2483.5	50.69	-3.31	54	42.42	32.12	7.73	31.58	135	133	A	H
	*	2460	110.04	-	-	101.81	32.13	7.7	31.6	135	133	P	H
	*	2462	101.59	-	-	93.36	32.13	7.7	31.6	135	133	A	H
		2483.98	62.63	-11.37	74	54.36	32.12	7.73	31.58	399	69	P	V
		2483.5	49.84	-4.16	54	41.57	32.12	7.73	31.58	399	69	A	V
	*	2460	108.88	-	-	100.65	32.13	7.7	31.6	399	69	P	V
	*	2462	99.32	-	-	91.09	32.13	7.7	31.6	399	69	A	V
802.11n HT20 CH 11 2462MHz		2483.68	62.37	-11.63	74	54.1	32.12	7.73	31.58	134	135	P	H
		2483.5	50.35	-3.65	54	42.08	32.12	7.73	31.58	134	135	A	H
	*	2462	109.02	-	-	100.79	32.13	7.7	31.6	134	135	P	H
	*	2460	100.83	-	-	92.6	32.13	7.7	31.6	134	135	A	H
		2484.22	61.98	-12.02	74	53.71	32.12	7.73	31.58	396	65	P	V
		2483.5	49.65	-4.35	54	41.38	32.12	7.73	31.58	396	65	A	V
	*	2462	107.43	-	-	99.2	32.13	7.7	31.6	396	65	P	V
	*	2462	99.2	-	-	90.97	32.13	7.7	31.6	396	65	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz
WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 01 2412MHz		4824	40.63	-33.37	74	55.3	34.31	11.06	60.04	300	0	P	H
		4824	40.96	-33.04	74	55.63	34.31	11.06	60.04	300	360	P	V
802.11n HT20 CH 02 2417MHz		4836	43.48	-30.52	74	58.14	34.32	11.05	60.03	300	0	P	H
		7251	42.59	-31.41	74	53.71	35.95	13.43	60.5	300	0	P	H
		4834	41.96	-32.04	74	56.62	34.32	11.05	60.03	300	360	P	V
		7248	42.62	-31.38	74	53.74	35.95	13.43	60.5	300	360	P	V
802.11n HT20 CH 06 2437MHz		4872	40.9	-33.1	74	55.55	34.34	11.04	60.03	300	0	P	H
		7308	43.1	-30.9	74	54.19	35.94	13.48	60.51	300	0	P	H
		4872	41.69	-32.31	74	56.34	34.34	11.04	60.03	300	360	P	V
		7308	42.39	-31.61	74	53.48	35.94	13.48	60.51	300	360	P	V
802.11n HT20 CH 10 2457MHz		4914	39.76	-34.24	74	54.4	34.35	11.03	60.02	300	0	P	H
		7371	42.74	-31.26	74	53.81	35.92	13.54	60.53	300	0	P	H
		4914	40.02	-33.98	74	54.66	34.35	11.03	60.02	300	360	P	V
		7368	42.86	-31.14	74	53.93	35.92	13.54	60.53	300	360	P	V
802.11n HT20 CH 11 2462MHz		4926	41.24	-32.76	74	55.87	34.36	11.03	60.02	300	0	P	H
		7386	43.34	-30.66	74	54.4	35.92	13.55	60.53	300	0	P	H
		4926	40.58	-33.42	74	55.21	34.36	11.03	60.02	300	360	P	V
		7386	42.35	-31.65	74	53.41	35.92	13.55	60.53	300	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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		30	19.14	-20.86	40	25.39	25.14	0.81	32.2	-	-	P	H
		84.32	18.03	-21.97	40	34.36	14.19	1.6	32.12	-	-	P	H
		147.37	19.8	-23.7	43.5	32.44	17.35	2.12	32.11	-	-	P	H
		168.71	20.15	-23.35	43.5	33.42	16.57	2.26	32.1	-	-	P	H
		360.77	22.94	-23.06	46	30.93	20.92	3.31	32.22	-	-	P	H
		455.83	28.14	-17.86	46	33.31	23.32	3.73	32.22	100	0	P	H
		38.73	27.96	-12.04	40	38.62	20.44	1.04	32.14	-	-	P	V
		45.52	28.96	-11.04	40	43.19	16.8	1.17	32.2	100	0	P	V
		83.35	24.58	-15.42	40	41.08	14.05	1.59	32.14	-	-	P	V
		167.74	25.99	-17.51	43.5	39.26	16.57	2.26	32.1	-	-	P	V
		450.98	25.17	-20.83	46	30.42	23.24	3.71	32.2	-	-	P	V
	808.91	26.9	-19.1	46	25.98	28.29	4.95	32.32	-	-	P	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.
!	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”.



Appendix D. Duty Cycle Plots

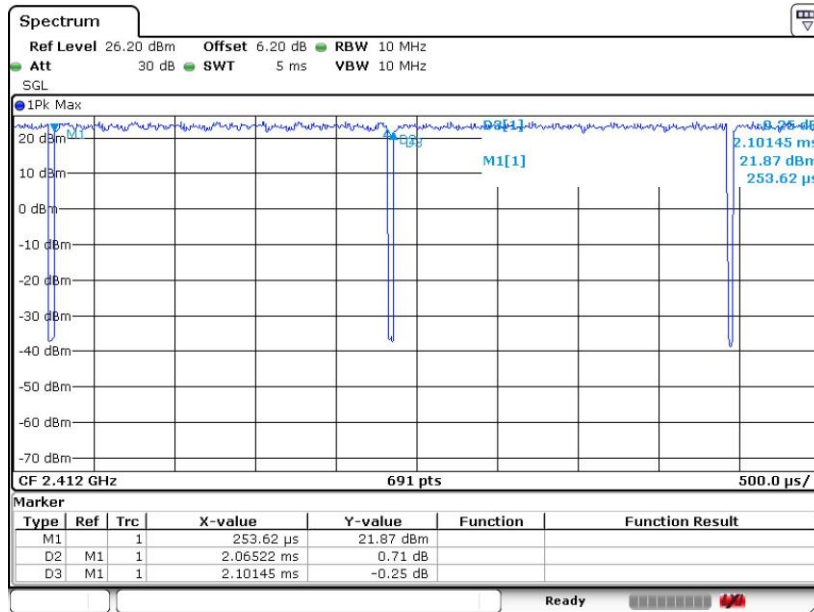
Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11b	100.00	-	-	10Hz
802.11g	98.28	-	-	10Hz
802.11n HT20	98.16	-	-	10Hz

802.11b





802.11g



802.11n HT20

