



Appendix A. Radiated Spurious Emission

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		2389.47	64.34	-9.66	74	60.6	32.77	4.62	33.65	108	270	P	H	
		2389.92	47.44	-6.56	54	43.7	32.77	4.62	33.65	108	270	A	H	
	*	2410	108.52	-	-	104.69	32.81	4.65	33.63	108	270	P	H	
	*	2410	98.19	-	-	94.36	32.81	4.65	33.63	108	270	A	H	
													H	
														H
			2389.74	69.53	-4.47	74	65.79	32.77	4.62	33.65	107	54	P	V
			2390	50.77	-3.23	54	47.03	32.77	4.62	33.65	107	54	A	V
		*	2410	112.58	-	-	108.75	32.81	4.65	33.63	107	54	P	V
		*	2410	102.49	-	-	98.66	32.81	4.65	33.63	107	54	A	V
													V	
													V	
802.11n HT20 CH 06 2437MHz		2386.05	60.16	-13.84	74	56.42	32.77	4.62	33.65	100	271	P	H	
		2385.24	48.35	-5.65	54	44.66	32.73	4.62	33.66	100	271	A	H	
		* 2435	109.14	-	-	105.23	32.85	4.68	33.62	100	271	P	H	
		* 2435	98.81	-	-	94.9	32.85	4.68	33.62	100	271	A	H	
			2484	60.04	-13.96	74	55.92	32.96	4.73	33.57	100	271	P	H
			2488.64	46.82	-7.18	54	42.65	33	4.73	33.56	100	271	A	H
			2388.03	61.05	-12.95	74	57.31	32.77	4.62	33.65	104	52	P	V
			2385.06	50.22	-3.78	54	46.53	32.73	4.62	33.66	104	52	A	V
		*	2439	112.82	-	-	108.85	32.89	4.68	33.6	104	52	P	V
		*	2439	102.58	-	-	98.61	32.89	4.68	33.6	104	52	A	V
		2483.6	64.12	-9.88	74	60	32.96	4.73	33.57	104	52	P	V	
		2488.72	49.89	-4.11	54	45.72	33	4.73	33.56	104	52	A	V	



802.11n HT20 CH 11 2462MHz	*	2460	101.78	-	-	97.75	32.92	4.7	33.59	100	267	P	H
	*	2460	91.27	-	-	87.24	32.92	4.7	33.59	100	267	A	H
		2483.96	60.62	-13.38	74	56.5	32.96	4.73	33.57	100	267	P	H
		2483.52	44.43	-9.57	54	40.31	32.96	4.73	33.57	100	267	A	H
													H
													H
	*	2460	112.97	-	-	108.94	32.92	4.7	33.59	119	198	P	V
	*	2460	102.75	-	-	98.72	32.92	4.7	33.59	119	198	A	V
		2484.2	70.32	-3.68	74	66.2	32.96	4.73	33.57	119	198	P	V
		2483.6	50.75	-3.25	54	46.63	32.96	4.73	33.57	119	198	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+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	40.24	-33.76	74	57.28	35.03	6.54	58.61	100	0	P	H
													H
													H
													H
		4824	41.11	-32.89	74	58.15	35.03	6.54	58.61	100	0	P	V
													V
													V
802.11n HT20 CH 06 2437MHz		4875	40.94	-33.06	74	57.88	35.02	6.56	58.52	100	0	P	H
		7311	43.38	-30.62	74	56.91	36.39	8.24	58.16	100	0	P	H
													H
													H
		4875	39.9	-34.1	74	56.84	35.02	6.56	58.52	100	0	P	V
		7311	43.02	-30.98	74	56.55	36.39	8.24	58.16	100	0	P	V
													V
802.11n HT20 CH 11 2462MHz		4923	41.67	-32.33	74	58.49	35.01	6.59	58.42	100	0	P	H
		7386	43.15	-30.85	74	56.71	36.44	8.31	58.31	100	0	P	H
													H
													H
		4922	44.21	-29.79	74	61.03	35.01	6.59	58.42	100	0	P	V
		7386	42.23	-31.77	74	55.79	36.44	8.31	58.31	100	0	P	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 HT40 (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 HT40 CH 03 2422MHz		2389.74	61.3	-12.7	74	57.56	32.77	4.62	33.65	179	248	P	H
		2389.92	45.32	-8.68	54	41.58	32.77	4.62	33.65	179	248	A	H
	*	2420	96.39	-	-	92.51	32.85	4.65	33.62	179	248	P	H
	*	2420	86.7	-	-	82.82	32.85	4.65	33.62	179	248	A	H
		2494.04	55.25	-18.75	74	51.08	33	4.73	33.56	179	248	P	H
		2487.92	42.94	-11.06	54	38.77	33	4.73	33.56	179	248	A	H
		2389.29	69.16	-4.84	74	65.42	32.77	4.62	33.65	116	44	P	V
		2389.56	50.84	-3.16	54	47.1	32.77	4.62	33.65	116	44	A	V
	*	2424	105.81	-	-	101.93	32.85	4.65	33.62	116	44	P	V
	*	2424	96.15	-	-	92.27	32.85	4.65	33.62	116	44	A	V
		2485.84	55.66	-18.34	74	51.54	32.96	4.73	33.57	116	44	P	V
		2487.36	43.6	-10.4	54	39.48	32.96	4.73	33.57	116	44	A	V
802.11n HT40 CH 06 2437MHz		2390	59.1	-14.9	74	55.36	32.77	4.62	33.65	170	103	P	H
		2390	44.93	-9.07	54	41.19	32.77	4.62	33.65	170	103	A	H
	*	2439	102.19	-	-	98.22	32.89	4.68	33.6	170	103	P	H
	*	2438.744	92.19	-	-	88.22	32.89	4.68	33.6	170	103	A	H
		2484.04	61.23	-12.77	74	57.11	32.96	4.73	33.57	170	103	P	H
		2483.56	45.43	-8.57	54	41.31	32.96	4.73	33.57	170	103	A	H
		2389.92	66.56	-7.44	74	62.82	32.77	4.62	33.65	120	210	P	V
		2389.65	49.56	-4.44	54	45.82	32.77	4.62	33.65	120	210	A	V
	*	2439	109.98	-	-	106.01	32.89	4.68	33.6	120	210	P	V
	*	2439	100.44	-	-	96.47	32.89	4.68	33.6	120	210	A	V
		2484.28	69.46	-4.54	74	65.34	32.96	4.73	33.57	120	210	P	V
		2483.52	50.88	-3.12	54	46.76	32.96	4.73	33.57	120	210	A	V



802.11n HT40 CH 09 2452MHz		2360.13	54.52	-19.48	74	50.9	32.7	4.6	33.68	107	272	P	H
		2388.3	42.56	-11.44	54	38.82	32.77	4.62	33.65	107	272	A	H
	*	2450	95.82	-	-	91.85	32.89	4.68	33.6	107	272	P	H
	*	2450	86.07	-	-	82.1	32.89	4.68	33.6	107	272	A	H
		2483.72	56.52	-17.48	74	52.4	32.96	4.73	33.57	107	272	P	H
		2484.2	43.56	-10.44	54	39.44	32.96	4.73	33.57	107	272	A	H
		2388.84	56.1	-17.9	74	52.36	32.77	4.62	33.65	146	343	P	V
		2388.39	43.77	-10.23	54	40.03	32.77	4.62	33.65	146	343	A	V
	*	2450	105.85	-	-	101.88	32.89	4.68	33.6	146	343	P	V
	*	2450.351	95.79	-	-	91.82	32.89	4.68	33.6	146	343	A	V
		2484.48	67.17	-6.83	74	63.05	32.96	4.73	33.57	146	343	P	V
		2483.8	50.28	-3.72	54	46.16	32.96	4.73	33.57	146	343	A	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 HT40 (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 HT40 CH 03 2422MHz		4845	40.69	-33.31	74	57.69	35.03	6.55	58.58	100	0	P	H
		7266	41.38	-32.62	74	54.91	36.37	8.2	58.1	100	0	P	H
													H
													H
		4845	40.39	-33.61	74	57.39	35.03	6.55	58.58	100	0	P	V
		7266	41.23	-32.77	74	54.76	36.37	8.2	58.1	100	0	P	V
802.11n HT40 CH 06 2437MHz		4875	40.06	-33.94	74	57	35.02	6.56	58.52	100	0	P	H
		7311	42.34	-31.66	74	55.87	36.39	8.24	58.16	100	0	P	H
													H
													H
		4875	39.77	-34.23	74	56.71	35.02	6.56	58.52	100	0	P	V
		7311	42.39	-31.61	74	55.92	36.39	8.24	58.16	100	0	P	V
802.11n HT40 CH 09 2452MHz		4905	40.83	-33.17	74	57.68	35.02	6.59	58.46	100	0	P	H
		7356	42.96	-31.04	74	56.5	36.42	8.29	58.25	100	0	P	H
													H
													H
		4905	41.78	-32.22	74	58.63	35.02	6.59	58.46	100	0	P	V
		7356	42.48	-31.52	74	56.02	36.42	8.29	58.25	100	0	P	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 HT40 (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 HT40 LF		90.21	28.21	-15.29	43.5	50.15	8.8	1.04	31.78			P	H	
		112.08	29.92	-13.58	43.5	49.2	11.35	1.15	31.78			P	H	
		233.31	40.16	-5.84	46	59.76	10.58	1.59	31.77	159	65	P	H	
		583.5	28.4	-17.6	46	38.43	19.6	2.39	32.02			P	H	
		700.4	38.19	-7.81	46	46.88	20.7	2.65	32.04			P	H	
		817.3	34.71	-11.29	46	41.14	22.54	2.86	31.83			P	H	
														H
														H
														H
														H
														H
														H
														H
			216.84	20.84	-25.16	46	41.81	9.27	1.54	31.78			P	V
			243.3	24.81	-21.19	46	43.26	11.7	1.62	31.77			P	V
			282.99	16.41	-29.59	46	33.54	12.89	1.74	31.76			P	V
			400.1	20.55	-25.45	46	34.39	15.94	2.02	31.8			P	V
			608	23.82	-22.18	46	33.54	19.86	2.46	32.04			P	V
			750.1	31.12	-14.88	46	38.16	22.2	2.74	31.98	100	189	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	Horizontal or Vertical



A calculation example for radiated spurious emission is shown as below:

WIFI Ant.	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		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".