



Appendix B. Radiated Spurious Emission

Band 4 - 5725~5850MHz

WIFI 802.11a (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)
802.11a CH 149 5745MHz		5713.88	65.44	-8.56	74	52.11	35.22	12.26	34.15	102	182	P	H
		5725	75.79	-2.51	78.3	62.45	35.23	12.26	34.15	102	182	P	H
		5715	46	-8	54	32.67	35.22	12.26	34.15	102	182	A	H
	*	5743	108.69	-	-	95.29	35.24	12.33	34.17	102	182	P	
		5743	98.27	-	-	84.87	35.24	12.33	34.17	102	182	A	H
													H
													H
													H
		5714.04	66.51	-7.49	74	53.18	35.22	12.26	34.15	100	304	P	V
		5714.92	45.89	-8.11	54	32.56	35.22	12.26	34.15	100	304	A	V
		5724.76	75.37	-2.93	78.3	62.03	35.23	12.26	34.15	100	304	P	V
	*	5743	108.91	-	-	95.51	35.24	12.33	34.17	100	304	P	V
	*	5743	98.41	-	-	85.01	35.24	12.33	34.17	100	304	A	V
													V
													V
													V



WIFI Ant. 1	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)
802.11a CH 157 5785MHz		5714.84	65.3	-8.7	74	51.97	35.22	12.26	34.15	104	186	P	H
		5715	46.43	-7.57	54	33.1	35.22	12.26	34.15	104	186	A	H
		5722.68	67.47	-10.83	78.3	54.13	35.23	12.26	34.15	104	186	P	H
	*	5785	114.12	-	-	100.68	35.27	12.4	34.23	104	186	P	H
	*	5785	103.06	-	-	89.62	35.27	12.4	34.23	104	186	A	H
		5850.16	65.64	-12.66	78.3	52.19	35.31	12.45	34.31	104	186	P	H
		5867.2	61.18	-12.82	74	47.72	35.32	12.49	34.35	104	186	P	H
		5860	44.89	-9.11	54	31.47	35.32	12.45	34.35	104	186	A	H
		5709.32	66.36	-7.64	74	53.03	35.22	12.26	34.15	106	305	P	V
		5715	46.07	-7.93	54	32.74	35.22	12.26	34.15	106	305	A	V
		5724.92	67.99	-10.31	78.3	54.65	35.23	12.26	34.15	106	305	P	V
	*	5783	113.85	-	-	100.41	35.27	12.4	34.23	106	305	P	V
	*	5783	102.91	-	-	89.47	35.27	12.4	34.23	106	305	A	V
		5850.24	63.82	-14.48	78.3	50.37	35.31	12.45	34.31	106	305	P	V
		5860.32	59.76	-14.24	74	46.3	35.32	12.49	34.35	106	305	P	V
		5860	44.66	-9.34	54	31.24	35.32	12.45	34.35	106	305	A	V



WIFI Ant. 1	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)
802.11a CH 165 5825MHz	*	5827	100.07	-	-	86.59	35.3	12.45	34.27	106	286	A	H
	*	5827	110.98	-	-	97.5	35.3	12.45	34.27	106	286	P	H
		5850.88	76	-2.3	78.3	62.55	35.31	12.45	34.31	106	286	P	H
		5861.84	68.15	-5.85	74	54.69	35.32	12.49	34.35	106	286	P	H
		5860	48.76	-5.24	54	35.34	35.32	12.45	34.35	106	286	A	H
													H
													H
													H
	*	5822	110.96	-	-	97.48	35.3	12.45	34.27	115	305	P	V
	*	5823	100.35	-	-	86.87	35.3	12.45	34.27	115	305	A	V
		5850.08	75.22	-3.08	78.3	61.77	35.31	12.45	34.31	115	305	P	V
		5860.96	67.22	-6.78	74	53.76	35.32	12.49	34.35	115	305	P	V
		5860	49.39	-4.61	54	35.97	35.32	12.45	34.35	115	305	A	V
													V
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													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz

WIFI 802.11a (Harmonic @ 3m)

WIFI Ant. 1	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)
802.11a CH 149 5745MHz		11490	43.86	-30.14	74	46.13	38.19	17.38	57.84	100	0	P	H
		17232	49.36	-24.64	74	42.31	42.21	21.38	56.54	100	0	P	H
													H
													H
		11490	43.93	-30.07	74	46.2	38.19	17.38	57.84	100	0	P	V
		17232	49.38	-24.62	74	42.33	42.21	21.38	56.54	100	0	P	V
													V
													V
802.11a CH 157 5785MHz		11570	43.5	-30.5	74	45.43	38.3	17.46	57.69	100	0	P	H
		17358	56.42	-17.58	74	49.46	42.12	21.45	56.61	248	0	P	H
		17358	43.52	-10.48	54	36.56	42.12	21.45	56.61	248	0	A	H
													H
		11570	43.39	-30.61	74	45.32	38.3	17.46	57.69	100	0	P	V
		17352	49.92	-24.08	74	42.96	42.12	21.45	56.61	100	0	P	V
													V
													V
802.11a CH 165 5825MHz		11650	42.41	-31.59	74	44.07	38.39	17.53	57.58	100	0	P	H
		17472	53.64	-20.36	74	46.76	42.03	21.53	56.68	100	0	P	H
		17472	40.24	-13.76	54	33.36	42.03	21.53	56.68	100	0	A	H
													H
		11650	42.54	-31.46	74	44.2	38.39	17.53	57.58	100	0	P	V
		17472	51.32	-22.68	74	44.44	42.03	21.53	56.68	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI Ant. 1	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 149 5745MHz		5713.72	66.64	-7.36	74	53.31	35.22	12.26	34.15	116	188	P	H
		5715	46.13	-7.87	54	32.8	35.22	12.26	34.15	116	188	A	H
		5725	76.77	-1.53	78.3	63.43	35.23	12.26	34.15	116	188	P	H
	*	5744	107.87	-	-	94.47	35.24	12.33	34.17	116	188	P	H
	*	5744	97.47	-	-	84.07	35.24	12.33	34.17	116	188	A	H
													H
													H
													H
		5714.2	66.2	-7.8	74	52.87	35.22	12.26	34.15	100	303	P	V
		5715	45.84	-8.16	54	32.51	35.22	12.26	34.15	100	303	A	V
		5724.52	75.57	-2.73	78.3	62.23	35.23	12.26	34.15	100	303	P	V
	*	5743	108.12	-	-	94.72	35.24	12.33	34.17	100	303	P	V
	*	5743	97.56	-	-	84.16	35.24	12.33	34.17	100	303	A	V
													V
													V
													V



WIFI Ant. 1	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 157 5785MHz		5702.52	67.36	-6.64	74	54	35.22	12.26	34.12	112	186	P	H
		5715	47.42	-6.58	54	34.09	35.22	12.26	34.15	112	186	A	H
		5724.2	68.81	-9.49	78.3	55.47	35.23	12.26	34.15	112	186	P	H
	*	5787	113.7	-	-	100.25	35.28	12.4	34.23	112	186	P	H
	*	5787	101.4	-	-	89.02	35.28	12.4	35.3	112	186	A	H
		5852.32	67.81	-10.49	78.3	54.36	35.31	12.45	34.31	112	186	P	H
		5860.8	62.94	-11.06	74	49.48	35.32	12.49	34.35	112	186	P	H
		5860	45.73	-8.27	54	32.31	35.32	12.45	34.35	112	186	A	H
		5708.84	66.05	-7.95	74	52.72	35.22	12.26	34.15	101	300	P	V
		5715	47.26	-6.74	54	33.93	35.22	12.26	34.15	101	300	A	V
		5723.88	70.5	-7.8	78.3	57.16	35.23	12.26	34.15	101	300	P	V
	*	5787	113.7	-	-	100.25	35.28	12.4	34.23	101	300	P	V
	*	5787	102.6	-	-	89.15	35.28	12.4	34.23	101	300	A	V
		5852.08	64.97	-13.33	78.3	51.52	35.31	12.45	34.31	101	300	P	V
		5862.96	63.38	-10.62	74	49.92	35.32	12.49	34.35	101	300	P	V
		5860.16	45.21	-8.79	54	31.75	35.32	12.49	34.35	101	300	A	V



WIFI Ant. 1	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 165 5825MHz	*	5824	110.3	-	-	96.82	35.3	12.45	34.27	113	184	P	H
	*	5824	99.84	-	-	86.36	35.3	12.45	34.27	113	184	A	H
		5852	76.17	-2.13	78.3	62.72	35.31	12.45	34.31	113	184	P	H
		5860.72	71.59	-2.41	74	58.13	35.32	12.49	34.35	113	184	P	H
		5860	49.89	-4.11	54	36.47	35.32	12.45	34.35	113	184	A	H
													H
													H
													H
	*	5827	110.19	-	-	96.71	35.3	12.45	34.27	116	306	P	V
	*	5827	99.35	-	-	85.87	35.3	12.45	34.27	116	306	A	V
		5850.08	75.75	-2.55	78.3	62.3	35.31	12.45	34.31	116	306	P	V
		5860	69.44	-4.56	74	56.02	35.32	12.45	34.35	116	306	P	V
		5860	49.85	-4.15	54	36.43	35.32	12.45	34.35	116	306	A	V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz

WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI Ant. 1	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 149 5745MHz		11490	43.36	-30.64	74	45.63	38.19	17.38	57.84	100	0	P	H
		17232	49.28	-24.72	74	42.23	42.21	21.38	56.54	100	0	P	H
													H
													H
		11490	43.44	-30.56	74	45.71	38.19	17.38	57.84	100	0	P	V
		17232	49.36	-24.64	74	42.31	42.21	21.38	56.54	100	0	P	V
													V
													V
802.11n HT20 CH 157 5785MHz		11570	44.01	-29.99	74	45.94	38.3	17.46	57.69	100	0	P	H
		17352	54.26	-19.74	74	47.3	42.12	21.45	56.61	360	209	P	H
		17352	42.93	-11.07	54	35.97	42.12	21.45	56.61	360	209	A	H
													H
		11570	43.6	-30.4	74	45.53	38.3	17.46	57.69	100	0	P	V
		17352	49.92	-24.08	74	42.96	42.12	21.45	56.61	100	0	P	V
													V
													V
802.11n HT20 CH 165 5825MHz		11650	44.44	-29.56	74	46.1	38.39	17.53	57.58	100	0	P	H
		17472	53.14	-20.86	74	46.26	42.03	21.53	56.68	360	208	P	H
		17472	41.25	-12.75	54	34.37	42.03	21.53	56.68	360	208	A	H
													H
		11650	44.19	-29.81	74	45.85	38.39	17.53	57.58	100	0	P	V
		17472	49.79	-24.21	74	42.91	42.03	21.53	56.68	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz

Emission below 1GHz

5GHz WIFI 802.11n HT20 (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)
5GHz 802.11n HT40 LF		30	33.27	-6.73	40	43.1	19.9	1.77	31.5	100	0	P	H
		143.4	25.57	-17.93	43.5	42.35	11.71	2.61	31.1			P	H
		237.9	23.85	-22.15	46	39.79	12.1	2.96	31			P	H
		307	25.08	-20.92	46	38.68	14.12	3.28	31			P	H
		512.1	28.3	-17.7	46	36.87	18.19	3.89	30.65			P	H
		819.4	28.01	-17.99	46	32.53	21.2	4.62	30.34			P	H
													H
													H
													H
													H
													H
													H
		30	28.79	-11.21	40	38.62	19.9	1.77	31.5	100	0	P	V
		153.66	21.38	-22.12	43.5	38.83	11.08	2.61	31.14			P	V
		238.44	20.45	-25.55	46	36.29	12.2	2.96	31			P	V
		307	24.81	-21.19	46	38.41	14.12	3.28	31			P	V
		512.1	27.67	-18.33	46	36.24	18.19	3.89	30.65			P	V
		819.4	29.93	-16.07	46	34.45	21.2	4.62	30.34			P	V
													V
													V
													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.
!	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. 1	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		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
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”.