



## Appendix A. 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		5714.12	64.95	-9.05	74	54.15	35.77	7.15	32.12	100	2	P	H	
		5724.76	78.02	-0.28	78.3	67.2	35.78	7.16	32.12	100	2	P	H	
		5707.16	50.8	-3.2	54	40	35.77	7.15	32.12	100	2	A	H	
	*	5744	112.01	-	-	101.15	35.79	7.18	32.11	100	2	P	H	
	*	5744	101.9	-	-	91.04	35.79	7.18	32.11	100	2	A	H	
														H
														H
														H
			5711.96	57.03	-16.97	74	46.23	35.77	7.15	32.12	100	341	P	V
			5724.76	64.94	-13.36	78.3	54.12	35.78	7.16	32.12	100	341	P	V
			5711.24	44.97	-9.03	54	34.17	35.77	7.15	32.12	100	341	A	V
	*		5744	102.68	-	-	91.82	35.79	7.18	32.11	100	341	P	V
	*		5744	92.56	-	-	81.7	35.79	7.18	32.11	100	341	A	V
														V
													V	
													V	



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 )
802.11a CH 157 5785MHz		5709.64	55.66	-18.34	74	44.86	35.77	7.15	32.12	105	308	P	H
		5717	55.82	-22.48	78.3	45.01	35.77	7.16	32.12	105	308	P	H
		5715	44.87	-9.13	54	34.07	35.77	7.15	32.12	105	308	A	H
	*	5786	101.12	-	-	90.19	35.83	7.2	32.1	105	308	A	H
	*	5786	110.13	-	-	99.2	35.83	7.2	32.1	105	308	P	H
		5852	55.57	-22.73	78.3	44.51	35.88	7.26	32.08	105	308	P	H
		5866.32	56.05	-17.95	74	44.95	35.89	7.28	32.07	105	308	P	H
		5861.28	44.81	-9.19	54	33.71	35.89	7.28	32.07	105	308	A	H
		5709.64	63.19	-10.81	74	52.39	35.77	7.15	32.12	100	350	P	V
		5721.56	64.71	-13.59	78.3	53.89	35.78	7.16	32.12	100	350	P	V
		5710.44	50.92	-3.08	54	40.12	35.77	7.15	32.12	100	350	A	V
	*	5783	109.31	-	-	98.39	35.82	7.2	32.1	100	350	A	V
	*	5783	118.42	-	-	107.5	35.82	7.2	32.1	100	350	P	V
		5850.16	62.03	-16.27	78.3	50.97	35.88	7.26	32.08	100	350	P	V
		5867.28	60.99	-13.01	74	49.89	35.89	7.28	32.07	100	350	P	V
	5866.32	48.47	-5.53	54	37.37	35.89	7.28	32.07	100	350	A	V	



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 165 5825MHz	*	5825	113.97	-	-	102.96	35.86	7.24	32.09	170	353	P	H	
	*	5825	104.22	-	-	93.21	35.86	7.24	32.09	170	353	A	H	
		5851.04	73.51	-4.79	78.3	62.45	35.88	7.26	32.08	170	353	P	H	
		5861.68	66.31	-7.69	74	55.21	35.89	7.28	32.07	170	353	P	H	
		5864.24	51.81	-2.19	54	40.71	35.89	7.28	32.07	170	353	A	H	
														H
														H
														H
	*	5827	108.14	-	-	97.13	35.86	7.24	32.09	101	14	P	V	
	*	5827	97.88	-	-	86.87	35.86	7.24	32.09	101	14	A	V	
		5851.76	66.75	-11.55	78.3	55.69	35.88	7.26	32.08	101	14	P	V	
		5864.4	61.76	-12.24	74	50.66	35.89	7.28	32.07	101	14	P	V	
		5866.8	47.31	-6.69	54	36.21	35.89	7.28	32.07	101	14	A	V	
														V
														V
														V
													V	
<b>Remark</b>	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	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		11490	43.26	-30.74	74	50.85	38.99	10.33	56.91	100	0	P	H
		17235	47.18	-26.82	74	50.23	42.01	12.65	57.71	100	0	P	H
													H
													H
		11490	44.27	-29.73	74	51.86	38.99	10.33	56.91	100	0	P	V
		17235	46.92	-27.08	74	49.97	42.01	12.65	57.71	100	0	P	V
													V
													V
802.11a CH 157 5785MHz		11570	43.88	-30.12	74	51.4	39.03	10.36	56.91	100	0	P	H
		17355	47.4	-26.6	74	50.6	41.96	12.85	58.01	100	0	P	H
													H
													H
		11570	43.77	-30.23	74	51.29	39.03	10.36	56.91	100	0	P	V
		17355	47.12	-26.88	74	50.32	41.96	12.85	58.01	100	0	P	V
													V
													V
802.11a CH 165 5825MHz		11650	43.94	-30.06	74	51.4	39.06	10.41	56.93	100	0	P	H
		17475	47.77	-26.23	74	51.13	41.91	13.04	58.31	100	0	P	H
													H
													H
		11650	43.37	-30.63	74	50.83	39.06	10.41	56.93	100	0	P	V
		17475	48.44	-25.56	74	51.8	41.91	13.04	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.												



Band 4 5725~5850MHz

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 149 5745MHz		5713.16	65.26	-8.74	74	54.46	35.77	7.15	32.12	100	3	P	H	
		5724.76	76.47	-1.83	78.3	65.65	35.78	7.16	32.12	100	3	P	H	
		5713.4	50.76	-3.24	54	39.96	35.77	7.15	32.12	100	3	A	H	
	*	5745	111.66	-	-	100.8	35.79	7.18	32.11	100	3	P	H	
	*	5745	101.77	-	-	90.91	35.79	7.18	32.11	100	3	A	H	
														H
														H
														H
			5713.48	59.31	-14.69	74	48.51	35.77	7.15	32.12	116	254	P	V
			5724.44	72.31	-5.99	78.3	61.49	35.78	7.16	32.12	116	254	P	V
			5714.36	46.51	-7.49	54	35.71	35.77	7.15	32.12	116	254	A	V
	*		5745	105.51	-	-	94.65	35.79	7.18	32.11	116	254	P	V
	*		5745	96.22	-	-	85.36	35.79	7.18	32.11	116	254	A	V
														V
														V
													V	



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)
802.11n HT20 CH 157 5785MHz		5709.32	53.66	-20.34	74	42.86	35.77	7.15	32.12	104	309	P	H
		5724.92	53.74	-24.56	78.3	42.92	35.78	7.16	32.12	104	309	P	H
		5714.36	43.69	-10.31	54	32.89	35.77	7.15	32.12	104	309	A	H
	*	5784	94.8	-	-	83.88	35.82	7.2	32.1	104	309	A	H
	*	5784	104.33	-	-	93.41	35.82	7.2	32.1	104	309	P	H
		5859.04	54.03	-24.27	78.3	42.95	35.89	7.26	32.07	104	309	P	H
		5861.44	53.95	-20.05	74	42.85	35.89	7.28	32.07	104	309	P	H
		5862.08	43.74	-10.26	54	32.64	35.89	7.28	32.07	104	309	A	H
		5690.28	58.45	-15.55	74	47.7	35.75	7.13	32.13	100	350	P	V
		5722.28	60.45	-17.85	78.3	49.63	35.78	7.16	32.12	100	350	P	V
		5707.96	46.76	-7.24	54	35.96	35.77	7.15	32.12	100	350	A	V
	*	5787	91.66	-	-	80.73	35.83	7.2	32.1	100	350	A	V
	*	5787	111.34	-	-	100.41	35.83	7.2	32.1	100	350	P	V
		5853.44	58.42	-19.88	78.3	47.36	35.88	7.26	32.08	100	350	P	V
		5869.92	57.36	-16.64	74	46.26	35.89	7.28	32.07	100	350	P	V
	5866.8	45.8	-8.2	54	34.7	35.89	7.28	32.07	100	350	A	V	



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 165 5825MHz	*	5825	111.49	-	-	100.48	35.86	7.24	32.09	100	319	P	H	
	*	5825	101.96	-	-	90.95	35.86	7.24	32.09	100	319	A	H	
		5852.8	72.02	-6.28	78.3	60.96	35.88	7.26	32.08	100	319	P	H	
		5860.48	63.42	-10.58	74	52.32	35.89	7.28	32.07	100	319	P	H	
		5865.76	49.26	-4.74	54	38.16	35.89	7.28	32.07	100	319	A	H	
														H
														H
														H
	*	5825	109.08	-	-	98.07	35.86	7.24	32.09	101	257	P	V	
	*	5825	100.13	-	-	89.12	35.86	7.24	32.09	101	257	A	V	
		5852.72	71.35	-6.95	78.3	60.29	35.88	7.26	32.08	101	257	P	V	
		5861.12	61.92	-12.08	74	50.82	35.89	7.28	32.07	101	257	P	V	
		5868.24	48.36	-5.64	54	37.26	35.89	7.28	32.07	101	257	A	V	
														V
													V	
													V	
<b>Remark</b>	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	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 149 5745MHz		11490	43.18	-30.82	74	50.77	38.99	10.33	56.91	100	0	P	H
		17235	47.06	-26.94	74	50.11	42.01	12.65	57.71	100	0	P	H
													H
													H
		11490	43.74	-30.26	74	51.33	38.99	10.33	56.91	100	0	P	V
		17235	46.98	-27.02	74	50.03	42.01	12.65	57.71	100	0	P	V
802.11n HT20 CH 157 5785MHz		11570	44.4	-29.6	74	51.92	39.03	10.36	56.91	100	0	P	H
		17355	47.01	-26.99	74	50.21	41.96	12.85	58.01	100	0	P	H
													H
													H
		11570	44.03	-29.97	74	51.55	39.03	10.36	56.91	100	0	P	V
		17355	46.62	-27.38	74	49.82	41.96	12.85	58.01	100	0	P	V
802.11n HT20 CH 165 5825MHz		11650	44.62	-29.38	74	52.08	39.06	10.41	56.93	100	0	P	H
		17475	47.52	-26.48	74	50.88	41.91	13.04	58.31	100	0	P	H
													H
													H
		11650	43.82	-30.18	74	51.28	39.06	10.41	56.93	100	0	P	V
		17475	48.24	-25.76	74	51.6	41.91	13.04	58.31	100	0	P	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 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		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
802.11n HT40 CH 151 5755MHz		5713.4	70.06	-3.94	74	59.26	35.77	7.15	32.12	100	357	P	H
		5724.76	74.83	-3.47	78.3	64.01	35.78	7.16	32.12	100	357	P	H
		5714.6	52.72	-1.28	54	41.92	35.77	7.15	32.12	100	357	A	H
	*	5755	106.99	-	-	96.11	35.81	7.18	32.11	100	357	P	H
	*	5755	96.82	-	-	85.94	35.81	7.18	32.11	100	357	A	H
		5852.56	54.47	-23.83	78.3	43.41	35.88	7.26	32.08	100	357	P	H
		5863.92	54.53	-19.47	74	43.43	35.89	7.28	32.07	100	357	P	H
		5860.64	44.05	-9.95	54	32.95	35.89	7.28	32.07	100	357	A	H
		5713.64	60.17	-13.83	74	49.37	35.77	7.15	32.12	100	121	P	V
		5723.96	63.95	-14.35	78.3	53.13	35.78	7.16	32.12	100	121	P	V
		5714.6	45.94	-8.06	54	35.14	35.77	7.15	32.12	100	121	A	V
	*	5755	98.84	-	-	87.96	35.81	7.18	32.11	100	121	P	V
	*	5755	88.92	-	-	78.04	35.81	7.18	32.11	100	121	A	V
		5854.72	53.65	-24.65	78.3	42.57	35.89	7.26	32.07	100	121	P	V
		5882.88	54	-20	74	42.89	35.9	7.28	32.07	100	121	P	V
		5878.32	43.65	-10.35	54	32.54	35.9	7.28	32.07	100	121	A	V



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)
802.11n HT40 CH 159 5795MHz		5711.56	59.93	-14.07	74	49.13	35.77	7.15	32.12	175	354	P	H
		5724.12	62.47	-15.83	78.3	51.65	35.78	7.16	32.12	175	354	P	H
		5712.2	47.48	-6.52	54	36.68	35.77	7.15	32.12	175	354	A	H
	*	5795	109.54	-	-	98.59	35.83	7.22	32.1	175	354	P	H
	*	5795	99.34	-	-	88.39	35.83	7.22	32.1	175	354	A	H
		5855.84	61.2	-17.1	78.3	50.12	35.89	7.26	32.07	175	354	P	H
		5866.16	61.23	-12.77	74	50.13	35.89	7.28	32.07	175	354	P	H
		5861.92	47.59	-6.41	54	36.49	35.89	7.28	32.07	175	354	A	H
		5714.84	55.21	-18.79	74	44.41	35.77	7.15	32.12	102	251	P	V
		5724.92	57.69	-20.61	78.3	46.87	35.78	7.16	32.12	102	251	P	V
		5712.52	44.38	-9.62	54	33.58	35.77	7.15	32.12	102	251	A	V
	*	5795	104.35	-	-	93.4	35.83	7.22	32.1	102	251	P	V
	*	5795	94.36	-	-	83.41	35.83	7.22	32.1	102	251	A	V
		5850	59.9	-18.4	78.3	48.84	35.88	7.26	32.08	102	251	P	V
		5862.4	57.05	-16.95	74	45.95	35.89	7.28	32.07	102	251	P	V
	5860.64	44.72	-9.28	54	33.62	35.89	7.28	32.07	102	251	A	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 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		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
802.11n HT40 CH 151 5755MHz		11510	43.76	-30.24	74	51.32	39	10.34	56.9	100	0	P	H
		17265	47.85	-26.15	74	50.92	41.99	12.73	57.79	100	0	P	H
													H
													H
		11510	43.22	-30.78	74	50.78	39	10.34	56.9	100	0	P	V
		17268	47.42	-26.58	74	50.49	41.99	12.73	57.79	100	0	P	V
													V
802.11n HT40 CH 159 5795MHz		11590	43.45	-30.55	74	50.96	39.03	10.38	56.92	100	0	P	H
		17385	47.27	-26.73	74	50.49	41.95	12.93	58.1	100	0	P	H
													H
													H
		11590	43.29	-30.71	74	50.8	39.03	10.38	56.92	100	0	P	V
		17385	48.3	-25.7	74	51.52	41.95	12.93	58.1	100	0	P	V
													V
Remark	1. No other spurious found.												
	2. All results are PASS against Peak and Average limit line.												



Emission below 1GHz

5GHz WIFI 802.11a (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 802.11a LF		91.02	30.12	-13.38	43.5	51.97	8.88	1.05	31.78			P	H	
	!	243.3	41.35	-4.65	46	59.8	11.7	1.62	31.77	135	208	P	H	
	!	253.02	40.13	-5.87	46	57.4	12.85	1.65	31.77			P	H	
		325.9	34.13	-11.87	46	50.42	13.64	1.84	31.77			P	H	
		342	33.16	-12.84	46	48.9	14.16	1.88	31.78			P	H	
		731.9	31.26	-14.74	46	38.59	21.96	2.71	32			P	H	
														H
														H
														H
														H
														H
														H
		!	30.54	36.12	-3.88	40	48.85	18.38	0.71	31.82	147	258	P	V
			240.06	37.12	-8.88	46	55.88	11.4	1.61	31.77			P	V
			249.78	38.94	-7.06	46	56.67	12.4	1.64	31.77			P	V
			323.1	31.64	-14.36	46	48.05	13.52	1.84	31.77			P	V
			675.9	33.2	-12.8	46	42.27	20.36	2.61	32.04			P	V
			731.9	36.59	-9.41	46	43.92	21.96	2.71	32			P	V
														V
														V
													V	
													V	
													V	
Remark	1. No other spurious found. 2. All results are PASS against limit line.													



**Note symbol**

*	<b>Fundamental Frequency</b> which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is <b>over limit</b> line.
P/A	<b>Peak</b> or <b>Average</b>
H/V	<b>Horizontal</b> or <b>Vertical</b>



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”.