



## Appendix B. Radiated Spurious Emission

Test Engineer :	Lewis He	Temperature :	23~24°C
		Relative Humidity :	55~56%

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		5714.92	66.13	-2.17	68.3	57.97	32.52	8.3	32.66	100	300	P	H	
		5724.84	72.08	-6.22	78.3	63.88	32.53	8.33	32.66	100	300	P	H	
	*	5742	110.33	-	-	102.13	32.54	8.33	32.67	100	300	P	H	
		5742	105.19	-	-	96.99	32.54	8.33	32.67	100	300	A	H	
													H	
													H	
													H	
													H	
			5713.72	64.49	-3.81	68.3	56.33	32.52	8.3	32.66	100	354	P	V
			5724.44	74.23	-4.07	78.3	66.03	32.53	8.33	32.66	100	354	P	V
	*		5748	109.34	-	-	101.14	32.54	8.33	32.67	100	354	P	V
			5748	104.19	-	-	95.99	32.54	8.33	32.67	100	354	A	V
														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		5714.92	56.33	-11.97	68.3	48.17	32.52	8.3	32.66	100	297	P	H	
		5721.56	59.51	-18.79	78.3	51.31	32.53	8.33	32.66	100	297	P	H	
	*	5782	113.28	-	-	105.04	32.57	8.35	32.68	100	297	P	H	
		5782	106.2	-	-	97.96	32.57	8.35	32.68	100	297	A	H	
		5856	58.06	-20.24	78.3	49.71	32.62	8.43	32.7	100	297	P	H	
		5861.52	54.94	-13.36	68.3	46.6	32.62	8.43	32.71	100	297	P	H	
														H
														H
			5701.8	56.39	-11.91	68.3	48.22	32.52	8.3	32.65	100	355	P	V
			5725	60.8	-17.5	78.3	52.6	32.53	8.33	32.66	100	355	P	V
	*		5783	112.73	-	-	104.49	32.57	8.35	32.68	100	355	P	V
			5783	107.1	-	-	98.86	32.57	8.35	32.68	100	355	A	V
			5858.4	55.55	-22.75	78.3	47.21	32.62	8.43	32.71	100	355	P	V
			5863.12	53.8	-14.5	68.3	45.46	32.62	8.43	32.71	100	355	P	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 165 5825MHz	*	5829	109.38	-	-	101.08	32.6	8.39	32.69	100	299	P	H
		5829	101.48	-	-	93.18	32.6	8.39	32.69	100	299	A	H
		5850.4	71.76	-6.54	78.3	63.42	32.61	8.43	32.7	100	299	P	H
		5862.48	64.54	-3.76	68.3	56.2	32.62	8.43	32.71	100	299	P	H
													H
													H
													H
													H
	*	5825	106.84	-	-	98.54	32.6	8.39	32.69	100	360	P	V
		5825	100.61	-	-	92.31	32.6	8.39	32.69	100	360	A	V
		5850.88	70.34	-7.96	78.3	62	32.61	8.43	32.7	100	360	P	V
		5863.04	63.88	-4.42	68.3	55.54	32.62	8.43	32.71	100	360	P	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 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	43.29	-30.71	74	53.5	40.01	12.58	62.8	100	0	P	H
		17235	40.03	-28.27	68.3	43.46	41.05	15.66	60.14	100	0	P	H
													H
													H
		11490	43.56	-30.44	74	53.77	40.01	12.58	62.8	100	0	P	V
		17235	39.76	-28.54	68.3	43.19	41.05	15.66	60.14	100	0	P	V
													V
													V
802.11a CH 157 5785MHz		11570	46.89	-27.11	74	57.09	39.88	12.66	62.74	100	0	P	H
		17355	39.14	-29.16	68.3	42.18	41.38	15.79	60.21	100	0	P	H
													H
													H
		11570	43.98	-30.02	74	54.18	39.88	12.66	62.74	100	0	P	V
		17355	38.37	-29.93	68.3	41.41	41.38	15.79	60.21	100	0	P	V
													V
													V
802.11a CH 165 5825MHz		11650	52.5	-21.5	74	62.71	39.75	12.73	62.69	100	0	P	H
		11650	48.08	-5.92	54	58.29	39.75	12.73	62.69	100	0	A	H
		17475	39.05	-29.25	68.3	41.69	41.71	15.93	60.28	100	0	P	H
													H
		11650	49.45	-24.55	74	59.66	39.75	12.73	62.69	100	0	P	V
		17475	38.09	-30.21	68.3	40.73	41.71	15.93	60.28	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	65.85	-2.45	68.3	57.69	32.52	8.3	32.66	100	297	P	H	
		5724.84	77.1	-1.2	78.3	68.9	32.53	8.33	32.66	100	297	P	H	
	*	5744	109.42	-	-	101.22	32.54	8.33	32.67	100	297	P	H	
		5744	102.69	-	-	94.49	32.54	8.33	32.67	100	297	A	H	
													H	
													H	
													H	
													H	
			5714.84	65.14	-3.16	68.3	56.98	32.52	8.3	32.66	100	354	P	V
			5724.44	74.88	-3.42	78.3	66.68	32.53	8.33	32.66	100	354	P	V
		*	5748	109.02	-	-	100.82	32.54	8.33	32.67	100	354	P	V
			5748	101.08	-	-	92.88	32.54	8.33	32.67	100	354	A	V
													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		5713.4	56.12	-12.18	68.3	47.96	32.52	8.3	32.66	100	298	P	H	
		5721.88	59.51	-18.79	78.3	51.31	32.53	8.33	32.66	100	298	P	H	
	*	5788	111.82	-	-	103.57	32.58	8.35	32.68	100	298	P	H	
		5788	107.79	-	-	99.54	32.58	8.35	32.68	100	298	A	H	
		5850.32	59.62	-18.68	78.3	51.28	32.61	8.43	32.7	100	298	P	H	
		5861.68	55.91	-12.39	68.3	47.57	32.62	8.43	32.71	100	298	P	H	
														H
														H
			5714.44	55.07	-13.23	68.3	46.91	32.52	8.3	32.66	100	360	P	V
			5723.24	59.84	-18.46	78.3	51.64	32.53	8.33	32.66	100	360	P	V
	*		5787	110.96	-	-	102.71	32.58	8.35	32.68	100	360	P	V
			5787	105.94	-	-	97.69	32.58	8.35	32.68	100	360	A	V
			5858.32	56.09	-22.21	78.3	47.75	32.62	8.43	32.71	100	360	P	V
			5860.48	53.31	-14.99	68.3	44.97	32.62	8.43	32.71	100	360	P	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 165 5825MHz	*	5822	108.72	-	-	100.42	32.6	8.39	32.69	100	299	P	H
		5822	103.88	-	-	95.58	32.6	8.39	32.69	100	299	A	H
		5850.88	73.03	-5.27	78.3	64.69	32.61	8.43	32.7	100	299	P	H
		5861.04	64.63	-3.67	68.3	56.29	32.62	8.43	32.71	100	299	P	H
													H
													H
													H
													H
	*	5829	105.9	-	-	97.6	32.6	8.39	32.69	100	360	P	V
		5829	102.03	-	-	93.73	32.6	8.39	32.69	100	360	A	V
		5850.4	70.42	-7.88	78.3	62.08	32.61	8.43	32.7	100	360	P	V
		5860.08	64.08	-4.22	68.3	55.74	32.62	8.43	32.71	100	360	P	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 802.11n 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	41.95	-32.05	74	52.16	40.01	12.58	62.8	100	0	P	H	
		17235	40	-28.3	68.3	43.43	41.05	15.66	60.14	100	0	P	H	
													H	
													H	
			11490	40.95	-33.05	74	51.16	40.01	12.58	62.8	100	0	P	V
			17235	40.27	-28.03	68.3	43.7	41.05	15.66	60.14	100	0	P	V
														V
802.11n HT20 CH 157 5785MHz		11570	46.72	-27.28	74	56.92	39.88	12.66	62.74	100	0	P	H	
		17355	39.35	-28.95	68.3	42.39	41.38	15.79	60.21	100	0	P	H	
													H	
													H	
			11570	47.65	-26.35	74	57.85	39.88	12.66	62.74	100	0	P	V
			17355	38.49	-29.81	68.3	41.53	41.38	15.79	60.21	100	0	P	V
														V
802.11n HT20 CH 165 5825MHz		11650	54.29	-19.71	74	64.5	39.75	12.73	62.69	100	0	P	H	
		11650	48.13	-5.87	54	58.34	39.75	12.73	62.69	100	0	A	H	
		17475	38.91	-29.39	68.3	41.55	41.71	15.93	60.28	100	0	P	H	
													H	
			11650	49.94	-24.06	74	60.15	39.75	12.73	62.69	100	0	P	V
			17475	37.93	-30.37	68.3	40.57	41.71	15.93	60.28	100	0	P	V
														V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average 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		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
802.11a		11650	52.50	-21.5	74	62.71	39.75	12.73	62.69	100	0	P	H
CH 165		11650	48.08	-5.92	54	58.29	39.75	12.73	62.69	100	0	A	H
5825MHz													

- 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 @ 11650MHz:**

- 1. Level(dBμV/m)  
= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)  
= 39.75(dB/m) + 12.73(dB) + 62.71(dBμV) – 62.69 (dB)  
=52.50 (dBμV/m)
- 2. Over Limit(dB)  
= Level(dBμV/m) – Limit Line(dBμV/m)  
= 52.50(dBμV/m) – 74(dBμV/m)  
= -21.50(dB)

**For Average Limit @11650MHz:**

- 1. Level(dBμV/m)  
= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)  
= 39.75(dB/m) + 12.73(dB) + 58.29(dBμV) – 62.69 (dB)  
= 48.08 (dBμV/m)
- 2. Over Limit(dB)  
= Level(dBμV/m) – Limit Line(dBμV/m)  
= 48.08(dBμV/m) – 54(dBμV/m)  
= -5.92(dB)

Both peak and average measured complies with the limit line, so test result is “PASS”.