



## Appendix B. Radiated Spurious Emission

Test Engineer :	Lewis He	Temperature :	22~23 °C
		Relative Humidity :	49~51%

Band 4 - 5725~5850MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Pream p	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		5709.56	66.3	-2	68.3	58.14	32.52	8.3	32.66	100	300	P	H	
		5723.96	76.93	-1.37	78.3	68.73	32.53	8.33	32.66	100	300	P	H	
	*	5748	111.97	-	-	103.77	32.54	8.33	32.67	100	300	P	H	
		5748	106.99	-	-	98.79	32.54	8.33	32.67	100	300	A	H	
													H	
													H	
													H	
													H	
			5713.4	65.61	-2.69	68.3	57.45	32.52	8.3	32.66	100	354	P	V
			5723.24	72.88	-5.42	78.3	64.68	32.53	8.33	32.66	100	354	P	V
	*		5742	108.8	-	-	100.6	32.54	8.33	32.67	100	354	P	V
			5742	104.33	-	-	96.13	32.54	8.33	32.67	100	354	A	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		5709.8	60.63	-7.67	68.3	52.47	32.52	8.3	32.66	100	300	P	H	
		5723.64	65.26	-13.04	78.3	57.06	32.53	8.33	32.66	100	300	P	H	
	*	5787	114.82	-	-	106.57	32.58	8.35	32.68	100	300	P	H	
		5787	109.52	-	-	101.27	32.58	8.35	32.68	100	300	A	H	
		5850.08	64.06	-14.24	78.3	55.72	32.61	8.43	32.7	100	300	P	H	
		5861.04	56.96	-11.34	68.3	48.62	32.62	8.43	32.71	100	300	P	H	
														H
														H
			5714.36	60.09	-8.21	68.3	51.93	32.52	8.3	32.66	100	356	P	V
			5723.8	63.65	-14.65	78.3	55.45	32.53	8.33	32.66	100	356	P	V
	*		5783	111.77	-	-	103.53	32.57	8.35	32.68	100	356	P	V
			5783	107.28	-	-	99.04	32.57	8.35	32.68	100	356	A	V
			5854.48	58.7	-19.6	78.3	50.35	32.62	8.43	32.7	100	356	P	V
			5860.16	56.71	-11.59	68.3	48.37	32.62	8.43	32.71	100	356	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	*	5828	109.98	-	-	101.68	32.6	8.39	32.69	100	299	P	H
		5828	105.02	-	-	96.72	32.6	8.39	32.69	100	299	A	H
		5850.32	73.19	-5.11	78.3	64.85	32.61	8.43	32.7	100	299	P	H
		5860.48	64.98	-3.32	68.3	56.64	32.62	8.43	32.71	100	299	P	H
													H
													H
													H
													H
	*	5824	108.15	-	-	99.85	32.6	8.39	32.69	100	357	P	V
		5824	102.96	-	-	94.66	32.6	8.39	32.69	100	357	A	V
		5851.36	69.28	-9.02	78.3	60.94	32.61	8.43	32.7	100	357	P	V
		5860.88	63.53	-4.77	68.3	55.19	32.62	8.43	32.71	100	357	P	V
													V
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													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	42.34	-31.66	74	52.55	40.01	12.58	62.8	100	0	P	H
		17235	41.49	-26.81	68.3	44.92	41.05	15.66	60.14	100	0	P	H
													H
													H
		11490	42.56	-31.44	74	52.77	40.01	12.58	62.8	100	0	P	V
		17235	41.67	-26.63	68.3	45.1	41.05	15.66	60.14	100	0	P	V
													V
													V
802.11a CH 157 5785MHz		11570	50.03	-23.97	74	60.23	39.88	12.66	62.74	100	0	P	H
		17355	40.42	-27.88	68.3	43.46	41.38	15.79	60.21	100	0	P	H
													H
													H
		11570	44.49	-29.51	74	54.69	39.88	12.66	62.74	100	0	P	V
		17355	40.49	-27.81	68.3	43.53	41.38	15.79	60.21	100	0	P	V
													V
													V
802.11a CH 165 5825MHz		11650	51.08	-22.92	74	61.29	39.75	12.73	62.69	100	0	P	H
		11650	49.02	-4.98	54	59.23	39.75	12.73	62.69	100	0	A	H
		17475	40.66	-27.64	68.3	43.3	41.71	15.93	60.28	100	0	P	H
													H
		11650	48.11	-25.89	74	58.32	39.75	12.73	62.69	100	0	P	V
		17475	38.48	-29.82	68.3	41.12	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.												





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		5713.88	60.45	-7.85	68.3	52.29	32.52	8.3	32.66	100	295	P	H	
		5722.36	64.63	-13.67	78.3	56.43	32.53	8.33	32.66	100	295	P	H	
	*	5788	114.53	-	-	106.28	32.58	8.35	32.68	100	295	P	H	
		5788	108.36	-	-	100.11	32.58	8.35	32.68	100	295	A	H	
		5850.48	62.65	-15.65	78.3	54.31	32.61	8.43	32.7	100	295	P	H	
		5863.36	59.38	-8.92	68.3	51.04	32.62	8.43	32.71	100	295	P	H	
														H
														H
			5713.72	63.18	-5.12	68.3	55.02	32.52	8.3	32.66	100	355	P	V
			5715.96	65.85	-12.45	78.3	57.69	32.52	8.3	32.66	100	355	P	V
	*		5787	112.64	-	-	104.39	32.58	8.35	32.68	100	355	P	V
			5787	106.55	-	-	98.3	32.58	8.35	32.68	100	355	A	V
			5853.52	61.18	-17.12	78.3	52.83	32.62	8.43	32.7	100	355	P	V
			5866.72	58.13	-10.17	68.3	49.79	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 )
802.11n HT20 CH 165 5825MHz	*	5826	109.79	-	-	101.49	32.6	8.39	32.69	100	298	P	H
		5826	105.73	-	-	97.43	32.6	8.39	32.69	100	298	A	H
		5850.08	73.09	-5.21	78.3	64.75	32.61	8.43	32.7	100	298	P	H
		5862.48	66.86	-1.44	68.3	58.52	32.62	8.43	32.71	100	298	P	H
													H
													H
													H
													H
	*	5827	107.97	-	-	99.67	32.6	8.39	32.69	100	355	P	V
		5827	103.52	-	-	95.22	32.6	8.39	32.69	100	355	A	V
		5850	70.88	-7.42	78.3	62.54	32.61	8.43	32.7	100	355	P	V
		5860.88	64.66	-3.64	68.3	56.32	32.62	8.43	32.71	100	355	P	V
													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	42.34	-31.66	74	52.55	40.01	12.58	62.8	100	0	P	H
		17235	41.41	-26.89	68.3	44.84	41.05	15.66	60.14	100	0	P	H
													H
													H
		11490	41.88	-32.12	74	52.09	40.01	12.58	62.8	100	0	P	V
		17235	41.25	-27.05	68.3	44.68	41.05	15.66	60.14	100	0	P	V
													V
802.11n HT20 CH 157 5785MHz		11570	47.71	-26.29	74	57.91	39.88	12.66	62.74	100	0	P	H
		17355	40.77	-27.53	68.3	43.81	41.38	15.79	60.21	100	0	P	H
													H
													H
		11570	45.38	-28.62	74	55.58	39.88	12.66	62.74	100	0	P	V
		17355	40.71	-27.59	68.3	43.75	41.38	15.79	60.21	100	0	P	V
													V
802.11n HT20 CH 165 5825MHz		11650	52.02	-21.98	74	62.23	39.75	12.73	62.69	100	0	P	H
		11650	49.01	-4.99	54	59.22	39.75	12.73	62.69	100	0	A	H
		17475	40.4	-27.9	68.3	43.04	41.71	15.93	60.28	100	0	P	H
													H
		11650	48.25	-25.75	74	58.46	39.75	12.73	62.69	100	0	P	V
		17475	39.74	-28.56	68.3	42.38	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	51.08	-22.92	74	61.29	39.75	12.73	62.69	100	0	P	H
CH 165		11650	49.02	-4.98	54	59.23	39.75	12.73	62.69	100	0	A	H
5825MHz													

- 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 @ 11650MHz:**

- Level(dBμV/m)  
= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)  
= 39.75 (dB/m) + 12.73 (dB) + 61.29 (dBμV) –62.69 (dB)  
= 51.08 (dBμV/m)
- Over Limit(dB)  
= Level(dBμV/m) – Limit Line(dBμV/m)  
= 51.08 (dBμV/m) – 74(dBμV/m)  
= -22.92(dB)

**For Average Limit @ 11650MHz:**

- Level(dBμV/m)  
= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)  
= 39.75 (dB/m) + 12.73 (dB) + 59.23 (dBμV) –62.69 (dB)  
= 49.02 (dBμV/m)
- Over Limit(dB)  
= Level(dBμV/m) – Limit Line(dBμV/m)  
=49.02(dBμV/m) – 54(dBμV/m)  
= -4.98(dB)

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