



## Appendix B. Radiated Spurious Emission

Test Engineer :	Lewis He and Stan Hsieh	Temperature :	23~25°C
		Relative Humidity :	44~46%

### Band 4 - 5725~5850MHz

#### WIFI 802.11a (Band Edge @ 3m)

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 149 5745MHz		5710.68	54.86	-19.14	74	46.76	32.52	8.24	32.66	100	3	P	H	
		5724.52	66.91	-11.39	78.3	58.71	32.53	8.33	32.66	100	3	P	H	
		5715	40.92	-13.08	54	32.82	32.52	8.24	32.66	100	3	A	H	
	*	5743	97.78	-	-	89.58	32.54	8.33	32.67	100	3	P	H	
	*	5743	85.65	-	-	77.45	32.54	8.33	32.67	100	3	A	H	
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			5712.36	68.12	-5.88	74	60.02	32.52	8.24	32.66	276	330	P	V
			5725	76.31	-1.99	78.3	68.11	32.53	8.33	32.66	276	330	P	V
			5715	51.07	-2.93	54	42.97	32.52	8.24	32.66	276	330	A	V
	*		5743	108.82	-	-	100.62	32.54	8.33	32.67	276	330	P	V
	*		5743	97.86	-	-	89.66	32.54	8.33	32.67	276	330	A	V
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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 )
<b>802.11a CH 157 5785MHz</b>		5698.68	50.09	-23.91	74	41.99	32.51	8.24	32.65	103	347	P	H
		5718.28	49.77	-28.53	78.3	41.66	32.53	8.24	32.66	103	347	P	H
		5714.6	38.07	-15.93	54	29.97	32.52	8.24	32.66	103	347	A	H
	*	5787	98.38	-	-	90.06	32.58	8.42	32.68	103	347	P	H
	*	5787	86.82	-	-	78.5	32.58	8.42	32.68	103	347	A	H
		5854.08	51.36	-26.94	78.3	42.39	32.62	9.05	32.7	103	347	P	H
		5864.64	50.42	-23.58	74	41.46	32.62	9.05	32.71	103	347	P	H
		5860.96	38.84	-15.16	54	29.88	32.62	9.05	32.71	103	347	A	H
		5704.2	54.86	-19.14	74	46.75	32.52	8.24	32.65	256	328	P	V
		5719.72	54.34	-23.96	78.3	46.23	32.53	8.24	32.66	256	328	P	V
		5700.2	43.28	-10.72	54	35.18	32.51	8.24	32.65	256	328	A	V
	*	5783	109.63	-	-	101.32	32.57	8.42	32.68	256	328	P	V
	*	5783	98.39	-	-	90.08	32.57	8.42	32.68	256	328	A	V
		5851.2	53.33	-24.97	78.3	44.37	32.61	9.05	32.7	256	328	P	V
		5875.6	54.49	-19.51	74	45.52	32.63	9.05	32.71	256	328	P	V
		5860	41.66	-12.34	54	32.7	32.62	9.05	32.71	256	328	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	98.24	-	-	89.59	32.6	8.74	32.69	100	344	P	H	
	*	5827	87.37	-	-	78.72	32.6	8.74	32.69	100	344	A	H	
		5850.32	59.8	-18.5	78.3	50.84	32.61	9.05	32.7	100	344	P	H	
		5866.8	57.08	-16.92	74	48.12	32.62	9.05	32.71	100	344	P	H	
		5860.08	42.11	-11.89	54	33.15	32.62	9.05	32.71	100	344	A	H	
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														H
	*	5823	108.98	-	-	100.33	32.6	8.74	32.69	248	329	P	V	
	*	5823	98.18	-	-	89.53	32.6	8.74	32.69	248	329	A	V	
		5850.64	70.5	-7.8	78.3	61.54	32.61	9.05	32.7	248	329	P	V	
		5861.92	65.02	-8.98	74	56.06	32.62	9.05	32.71	248	329	P	V	
		5860	49.76	-4.24	54	40.8	32.62	9.05	32.71	248	329	A	V	
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<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	47.9	-26.1	74	54.38	40.01	16.31	62.8	100	0	P	H
		17232	50.11	-23.89	74	40.41	41.05	28.79	60.14	100	0	P	H
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		11493	59.11	-14.89	74	65.59	40.01	16.31	62.8	246	313	P	V
		11493	50.8	-3.2	54	57.28	40.01	16.31	62.8	246	313	A	V
		17229	50.57	-23.43	74	40.87	41.05	28.79	60.14	100	0	P	V
802.11a CH 157 5785MHz		11568	48.18	-25.82	74	54.68	39.88	16.36	62.74	100	0	P	H
		17355	50.07	-23.93	74	40.18	41.38	28.72	60.21	100	0	P	H
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		11574	61.5	-12.5	74	68	39.88	16.36	62.74	240	318	P	V
		11574	50.86	-3.14	54	57.36	39.88	16.36	62.74	240	318	A	V
		17352	50.47	-23.53	74	40.56	41.38	28.74	60.21	100	0	P	V
802.11a CH 165 5825MHz		11646	50.71	-23.29	74	57.25	39.75	16.4	62.69	100	0	P	H
		17475	50.88	-23.12	74	40.79	41.71	28.66	60.28	100	0	P	H
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		11655	61.22	-12.78	74	67.78	39.72	16.4	62.68	204	324	P	V
		11655	50.58	-3.42	54	57.14	39.72	16.4	62.68	204	324	A	V
		17472	50.7	-23.3	74	40.59	41.71	28.68	60.28	100	0	P	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)

Table with columns: WIFI, Note, Frequency, Level, Over, Limit, Read, Antenna, Cable, Preamp, Ant, Table, Peak, Pol. It contains multiple rows of test data for 802.11a and 5745MHz LF channels, including a Remark section at the bottom.



**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)	
802.11a CH 157 5785MHz LF		36.75	20.77	-19.23	40	36.75	16.18	0.65	32.81	100	332	P	H	
		134.49	24.15	-19.35	43.5	43.53	11.95	1.33	32.66			P	H	
		143.4	23.3	-20.2	43.5	42.85	11.79	1.33	32.67			P	H	
		424.6	20.5	-25.5	46	34.3	16.9	2.16	32.86			P	H	
		445.6	21.09	-24.91	46	34.45	17.22	2.3	32.88			P	H	
		783.7	23.07	-22.93	46	31.06	21.94	2.97	32.9			P	H	
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			37.56	33.4	-6.6	40	49.94	15.62	0.65	32.81	114	212	P	V
			80.22	22.39	-17.61	40	46.15	8	0.93	32.69			P	V
			211.17	19.6	-23.9	43.5	40.33	10.38	1.62	32.73			P	V
			433.7	21.65	-24.35	46	35.32	17.04	2.16	32.87			P	V
			666.8	20.49	-25.51	46	30.49	20.33	2.67	33			P	V
		842.5	25.17	-20.83	46	32.29	22.45	3.07	32.64			P	V	
													V	
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													V	
<b>Remark</b>	1. No other spurious found. 2. All results are PASS against 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)	
<b>802.11a CH 165 5825MHz LF</b>		81.3	19.29	-20.71	40	42.93	8.12	0.93	32.69			P	H	
		143.13	23.55	-19.95	43.5	43.1	11.79	1.33	32.67	195	32	P	H	
		210.36	15.23	-28.27	43.5	35.94	10.4	1.62	32.73			P	H	
		424.6	19.33	-26.67	46	33.13	16.9	2.16	32.86			P	H	
		445.6	19.41	-26.59	46	32.77	17.22	2.3	32.88			P	H	
		927.9	25.69	-20.31	46	30.57	23.83	3.29	32			P	H	
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			42.15	29.74	-10.26	40	49.07	12.82	0.65	32.8	133	289	P	V
			73.74	19.92	-20.08	40	44.53	7.17	0.93	32.71			P	V
			104.79	20.89	-22.61	43.5	41.49	10.9	1.14	32.64			P	V
			388.9	15.93	-30.07	46	30.41	16.22	2.13	32.83			P	V
			636.7	19.98	-26.02	46	30.34	20.04	2.62	33.02			P	V
			831.3	24.73	-21.27	46	32.01	22.35	3.07	32.7			P	V
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<b>Remark</b>	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		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
802.11a		11493	59.11	-14.89	74	65.59	40.01	16.31	62.8	246	313	P	H
CH 149		11493	50.8	-3.2	54	57.28	40.01	16.31	62.8	246	313	A	H
5745MHz													

- 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 @ 11493MHz:**

- Level(dBμV/m)  
= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)  
= 40.01(dB/m) + 16.31(dB) + 65.59(dBμV) – 62.8 (dB)  
= 59.11 (dBμV/m)
- Over Limit(dB)  
= Level(dBμV/m) – Limit Line(dBμV/m)  
= 59.11(dBμV/m) – 74(dBμV/m)  
= -14.89(dB)

**For Average Limit @ 11493MHz:**

- Level(dBμV/m)  
= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)  
= 40.01(dB/m) + 16.31(dB) + 57.28(dBμV) – 62.8 (dB)  
= 50.8 (dBμV/m)
- Over Limit(dB)  
= Level(dBμV/m) – Limit Line(dBμV/m)  
= 50.8(dBμV/m) – 54(dBμV/m)  
= -3.2(dB)

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