Appendix B. Radiated Spurious Emission

Test Engineer :	Ken Wu	Temperature :	21~23°C
		Relative Humidity :	51~54%

<Sample 1>

Band 4 - 5725~5850MHz

WIFI 802.11a (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)
802.11a CH 149 5745MHz		5713.72	60.51	-13.49	74	50.83	32.23	11.61	34.16	100	95	P	H
		5724.52	75.2	-3.1	78.3	65.49	32.26	11.61	34.16	100	95	P	H
		5714.76	45.05	-8.95	54	35.37	32.23	11.61	34.16	100	95	A	H
	*	5745	104.75	-	-	94.98	32.29	11.64	34.16	100	95	P	H
	*	5745	94.71	-	-	84.94	32.29	11.64	34.16	100	95	A	H
													H
													H
													H
		5714.2	64.44	-9.56	74	54.76	32.23	11.61	34.16	100	11	P	V
		5725	75.94	-2.36	78.3	66.23	32.26	11.61	34.16	100	11	P	V
		5714.92	46.21	-7.79	54	36.53	32.23	11.61	34.16	100	11	A	V
	*	5744	107.37	-	-	97.6	32.29	11.64	34.16	100	11	P	V
	*	5744	97.75	-	-	87.98	32.29	11.64	34.16	100	11	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 802.11a (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	47.26	-26.74	74	47.5	40.21	17.73	58.18	100	0	P	H
		17235	48.79	-25.21	74	44.12	41.56	20.8	57.69	100	0	P	H
													H
													H
		11490	47.4	-26.6	74	47.64	40.21	17.73	58.18	100	0	P	V
		17235	48.09	-25.91	74	43.42	41.56	20.8	57.69	100	0	P	V
													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 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)
5GHz 802.11a LF		60.24	33.68	-6.32	40	56.8	5.95	1.39	30.46	175	88	P	H
		151.23	32.09	-11.41	43.5	49.44	11.11	1.89	30.35	-	-	P	H
		242.76	24.09	-21.91	46	40.53	11.59	2.21	30.24	-	-	P	H
		363.7	29.23	-16.77	46	41.77	14.77	2.76	30.07	-	-	P	H
		780.2	31.25	-14.75	46	34.23	22.27	4.17	29.42	-	-	P	H
		959.4	33.93	-12.07	46	33.36	25.05	4.58	29.06	-	-	P	H
													H
													H
													H
													H
													H
													H
		79.95	35.56	-4.44	40	57.34	7.26	1.39	30.43	240	221	P	V
		143.67	38.29	-5.21	43.5	55.32	11.44	1.89	30.36	-	-	P	V
		297.84	30.47	-15.53	46	44.89	13.17	2.56	30.15	-	-	P	V
		363.7	30.12	-15.88	46	42.66	14.77	2.76	30.07	-	-	P	V
		741	30.12	-15.88	46	33.51	22.03	4.05	29.47	-	-	P	V
		981.1	33.63	-20.37	54	33.23	24.72	4.67	28.99	-	-	P	V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

<Sample 2>

Band 4 - 5725~5850MHz

WIFI 802.11a (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)
802.11a CH 149 5745MHz		5713.24	63.73	-10.27	74	54.05	32.23	11.61	34.16	100	124	P	H
		5724.92	75.28	-3.02	78.3	65.57	32.26	11.61	34.16	100	124	P	H
		5714.76	45.89	-8.11	54	36.21	32.23	11.61	34.16	100	124	A	H
	*	5745	104.96	-	-	95.19	32.29	11.64	34.16	100	124	P	H
	*	5745	94.74	-	-	84.97	32.29	11.64	34.16	100	124	A	H
													H
													H
													H
		5712.44	63.86	-10.14	74	54.18	32.23	11.61	34.16	100	30	P	V
		5723.96	75.62	-2.68	78.3	65.91	32.26	11.61	34.16	100	30	P	V
		5715	46.89	-7.11	54	37.21	32.23	11.61	34.16	100	30	A	V
	*	5745	108.68	-	-	98.91	32.29	11.64	34.16	100	30	P	V
	*	5745	98.6	-	-	88.83	32.29	11.64	34.16	100	30	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 802.11a (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	47.06	-26.94	74	47.3	40.21	17.73	58.18	100	0	P	H
		17235	48.25	-25.75	74	43.58	41.56	20.8	57.69	100	0	P	H
													H
													H
		11490	46.78	-27.22	74	47.02	40.21	17.73	58.18	100	0	P	V
		17235	48.59	-25.41	74	43.92	41.56	20.8	57.69	100	0	P	V
													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 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)
5GHz 802.11a LF		77.79	35.75	-4.25	40	57.66	7.14	1.39	30.44	155	87	P	H
		147.99	34.34	-9.16	43.5	51.55	11.26	1.89	30.36	-	-	P	H
		296.22	35.39	-10.61	46	49.86	13.13	2.56	30.16	-	-	P	H
		569.5	27.38	-18.62	46	33.77	19.86	3.46	29.71	-	-	P	H
		778.8	30.82	-15.18	46	33.81	22.26	4.17	29.42	-	-	P	H
		971.3	34.11	-19.89	54	33.56	24.9	4.67	29.02	-	-	P	H
													H
													H
													H
													H
													H
													H
		82.38	34.95	-5.05	40	56.34	7.65	1.39	30.43	200	158	P	V
		114.78	38.26	-5.24	43.5	55.63	11.38	1.64	30.39	-	-	P	V
		221.7	36.7	-9.3	46	55.38	9.38	2.21	30.27	-	-	P	V
		434.4	22.72	-23.28	46	33.08	16.56	3.03	29.95	-	-	P	V
		703.9	28.65	-17.35	46	33.72	20.56	3.88	29.51	-	-	P	V
		983.2	33.66	-20.34	54	33.3	24.67	4.67	28.98	-	-	P	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	**P**eak or **A**verage
H/V	**H**orizontal or **V**ertical

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 2412MHz		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
		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".