



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	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		5714.36	58.33	-15.67	74	48.65	32.23	11.61	34.16	100	100	P	H
		5724.68	72.33	-5.97	78.3	62.62	32.26	11.61	34.16	100	100	P	H
		5714.12	44.68	-9.32	54	35	32.23	11.61	34.16	100	100	A	H
	*	5745	105.1	-	-	95.33	32.29	11.64	34.16	100	100	P	H
	*	5745	95.58	-	-	85.81	32.29	11.64	34.16	100	100	A	H
													H
													H
													H
		5712.52	59.5	-14.5	74	49.82	32.23	11.61	34.16	100	198	P	V
		5725	75.32	-2.98	78.3	65.61	32.26	11.61	34.16	100	198	P	V
		5715	46.12	-7.88	54	36.44	32.23	11.61	34.16	100	198	A	V
	*	5745	108.46	-	-	98.69	32.29	11.64	34.16	100	198	P	V
	*	5745	98.89	-	-	89.12	32.29	11.64	34.16	100	198	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	47.12	-26.88	74	47.36	40.21	17.73	58.18	100	0	P	H
		17235	48.22	-25.78	74	43.55	41.56	20.8	57.69	100	0	P	H
													H
													H
		11490	46.89	-27.11	74	47.13	40.21	17.73	58.18	100	0	P	V
		17235	47.86	-26.14	74	43.19	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	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.	
Ant.		(MHz)	(dBμV/m)	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.		
1				(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)	
5GHz 802.11a LF		76.98	35.85	-4.15	40	57.81	7.09	1.39	30.44	199	66	P	H	
		102.36	33.22	-10.28	43.5	51.58	10.41	1.64	30.41	-	-	P	H	
		221.16	26.73	-19.27	46	45.51	9.28	2.21	30.27	-	-	P	H	
		365.1	25.92	-20.08	46	38.44	14.79	2.76	30.07	-	-	P	H	
		742.4	30.24	-15.76	46	33.62	22.03	4.05	29.46	-	-	P	H	
		963.6	33.19	-20.81	54	32.63	25.03	4.58	29.05	-	-	P	H	
													H	
													H	
													H	
													H	
													H	
													H	
													H	
		79.14	34.93	-5.07	40	56.71	7.26	1.39	30.43	241	75	P	V	
		201.45	29.15	-14.35	43.5	48.3	9.06	2.09	30.3	-	-	P	V	
		263.55	28.34	-17.66	46	42.52	13.68	2.34	30.2	-	-	P	V	
		415.5	25.51	-20.49	46	36.86	15.62	3.03	30	-	-	P	V	
		741	29.33	-16.67	46	32.72	22.03	4.05	29.47	-	-	P	V	
		992.3	33.08	-20.92	54	32.89	24.47	4.67	28.95	-	-	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		5714.6	60.27	-13.73	74	50.59	32.23	11.61	34.16	100	309	P	H
		5723.88	74.82	-3.48	78.3	65.11	32.26	11.61	34.16	100	309	P	H
		5714.92	45.27	-8.73	54	35.59	32.23	11.61	34.16	100	309	A	H
	*	5745	104.9	-	-	95.13	32.29	11.64	34.16	100	309	P	H
	*	5745	95.25	-	-	85.48	32.29	11.64	34.16	100	309	A	H
													H
													H
													H
		5714.2	63.24	-10.76	74	53.56	32.23	11.61	34.16	100	197	P	V
		5724.68	75.93	-2.37	78.3	66.22	32.26	11.61	34.16	100	197	P	V
		5714.92	47.26	-6.74	54	37.58	32.23	11.61	34.16	100	197	A	V
	*	5745	108.93	-	-	99.16	32.29	11.64	34.16	100	197	P	V
	*	5745	99.53	-	-	89.76	32.29	11.64	34.16	100	197	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	46.95	-27.05	74	47.19	40.21	17.73	58.18	100	0	P	H
		17235	48.48	-25.52	74	43.81	41.56	20.8	57.69	100	0	P	H
													H
													H
		11490	46.94	-27.06	74	47.18	40.21	17.73	58.18	100	0	P	V
		17235	47.99	-26.01	74	43.32	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		80.49	33.07	-6.93	40	54.79	7.32	1.39	30.43	133	189	P	H
		155.28	26.92	-16.58	43.5	44.41	10.97	1.89	30.35	-	-	P	H
		193.62	25.39	-18.11	43.5	44.66	8.95	2.09	30.31	-	-	P	H
		461	24.45	-21.55	46	33.87	17.35	3.12	29.89	-	-	P	H
		749.4	29.19	-16.81	46	32.51	22.09	4.05	29.46	-	-	P	H
		955.9	33.69	-12.31	46	33.23	24.96	4.58	29.08	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
		100.74	32.09	-11.41	43.5	50.54	10.32	1.64	30.41	176	311	P	V
		209.01	20.94	-22.56	43.5	40.03	9.11	2.09	30.29	-	-	P	V
		260.04	19	-27	46	32.97	13.9	2.34	30.21	-	-	P	V
		573.7	27.04	-18.96	46	33.32	19.76	3.66	29.7	-	-	P	V
		752.9	29.73	-16.27	46	33.02	22.11	4.05	29.45	-	-	P	V
		981.1	33.97	-20.03	54	33.57	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.												



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	Peak or Average
H/V	Horizontal or Vertical



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