



Appendix B. Radiated Spurious Emission

Test Engineer :	Peter Chiu, Nick Yu, Ricky Su, Citta Ke and Karl Hou	Temperature :	21~23°C
		Relative Humidity :	55~57%

<CDD Modes>

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		5633	55.53	-12.77	68.3	42.55	32.19	11.79	31	265	14	P	H
		5698	63.6	-40.23	103.83	50.52	32.27	11.82	31.01	265	14	P	H
		5718.8	73.44	-37.12	110.56	60.31	32.31	11.84	31.02	265	14	P	H
		5724.6	85.66	-35.73	121.39	72.53	32.31	11.84	31.02	265	14	P	H
	*	5745	111.02	-	-	97.85	32.34	11.86	31.03	265	14	P	H
	*	5745	101.27	-	-	88.1	32.34	11.86	31.03	265	14	A	H
													H
													H
		5639.8	59.71	-8.59	68.3	46.73	32.19	11.79	31	100	99	P	V
		5698.2	62.76	-41.21	103.97	49.68	32.27	11.82	31.01	100	99	P	V
		5720	71.21	-39.69	110.9	58.08	32.31	11.84	31.02	100	99	P	V
		5724.4	81.91	-39.02	120.93	68.78	32.31	11.84	31.02	100	99	P	V
	*	5745	107.38	-	-	94.21	32.34	11.86	31.03	100	99	P	V
	*	5745	97.6	-	-	84.43	32.34	11.86	31.03	100	99	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		5609.6	59.44	-8.86	68.3	46.52	32.14	11.77	30.99	251	18	P	H
		5685.6	59.88	-34.8	94.68	46.8	32.27	11.82	31.01	251	18	P	H
		5718.4	60.57	-49.88	110.45	47.44	32.31	11.84	31.02	251	18	P	H
		5723.8	60.64	-58.92	119.56	47.51	32.31	11.84	31.02	251	18	P	H
	*	5783	109.99	-	-	96.77	32.39	11.88	31.05	251	18	P	H
	*	5783	100.57	-	-	87.35	32.39	11.88	31.05	251	18	A	H
		5850	60.06	-62.24	122.3	46.61	32.48	12.03	31.06	251	18	P	H
		5859.2	60.66	-49.06	109.72	47.19	32.51	12.03	31.07	251	18	P	H
		5922	60.69	-9.82	70.51	46.87	32.6	12.31	31.09	251	18	P	H
		5925.4	61.18	-7.12	68.3	47.36	32.6	12.31	31.09	251	18	P	H
													H
													H
		5604.6	59.67	-8.63	68.3	46.75	32.14	11.77	30.99	100	105	P	V
		5696.2	60.32	-42.18	102.5	47.24	32.27	11.82	31.01	100	105	P	V
		5705	59.91	-46.79	106.7	46.8	32.29	11.84	31.02	100	105	P	V
		5723.6	59.74	-59.37	119.11	46.61	32.31	11.84	31.02	100	105	P	V
	*	5783	106.51	-	-	93.29	32.39	11.88	31.05	100	105	P	V
	*	5783	96.99	-	-	83.77	32.39	11.88	31.05	100	105	A	V
		5853.8	61.4	-52.24	113.64	47.92	32.51	12.03	31.06	100	105	P	V
		5858	60.24	-49.82	110.06	46.77	32.51	12.03	31.07	100	105	P	V
		5888	60.51	-35.14	95.65	46.86	32.56	12.17	31.08	100	105	P	V
		5942.2	60.05	-8.25	68.3	46.06	32.63	12.45	31.09	100	105	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	*	5825	112.35	-	-	98.91	32.46	12.03	31.05	267	15	P	H
	*	5825	102.15	-	-	88.71	32.46	12.03	31.05	267	15	A	H
		5851.4	76.17	-42.94	119.11	62.72	32.48	12.03	31.06	267	15	P	H
		5856.2	73.25	-37.31	110.56	59.77	32.51	12.03	31.06	267	15	P	H
		5879.4	65.79	-36.24	102.03	52.16	32.53	12.17	31.07	267	15	P	H
		5947.2	61.33	-6.97	68.3	47.34	32.63	12.45	31.09	267	15	P	H
													H
													H
	*	5830	107.98	-	-	94.54	32.46	12.03	31.05	100	98	P	V
	*	5830	97.84	-	-	84.4	32.46	12.03	31.05	100	98	A	V
		5850	73.6	-48.7	122.3	60.15	32.48	12.03	31.06	100	98	P	V
		5856.4	69.35	-41.16	110.51	55.87	32.51	12.03	31.06	100	98	P	V
		5880	63.19	-38.4	101.59	49.56	32.53	12.17	31.07	100	98	P	V
		5936.4	61.04	-7.26	68.3	47.22	32.6	12.31	31.09	100	98	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 802.11a (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	47.25	-26.75	74	46.52	40.11	18.4	57.78	100	0	P	H
		17235	48.84	-19.46	68.3	41.19	41.65	23.14	57.14	100	0	P	H
													H
													H
		11490	46.9	-27.1	74	46.17	40.11	18.4	57.78	100	0	P	V
		17235	49.41	-18.89	68.3	41.76	41.65	23.14	57.14	100	0	P	V
													V
													V
802.11a CH 157 5785MHz		11570	47.51	-26.49	74	46.87	39.95	18.49	57.8	100	0	P	H
		17355	49.52	-18.78	68.3	41.81	42.02	23.25	57.56	100	0	P	H
													H
													H
		11570	48.61	-25.39	74	47.97	39.95	18.49	57.8	100	0	P	V
		17355	50.01	-18.29	68.3	42.3	42.02	23.25	57.56	100	0	P	V
													V
													V
802.11a CH 165 5825MHz		11650	47	-27	74	46.42	39.8	18.58	57.8	100	0	P	H
		17475	58.01	-10.29	68.3	50.24	42.39	23.36	57.98	100	0	P	H
													H
													H
		11650	47.85	-26.15	74	47.27	39.8	18.58	57.8	100	0	P	V
		17475	50.41	-17.89	68.3	42.64	42.39	23.36	57.98	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

Emission below 1GHz

5GHz WIFI 802.11a (LF @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
5GHz 802.11a LF		201.45	24.84	-18.66	43.5	39.7	15.85	1.7	32.41	-	-	P	H
		231.69	25.97	-20.03	46	39.61	16.88	1.83	32.35	-	-	P	H
		291.9	27.22	-18.78	46	37.87	19.34	2.25	32.24	-	-	P	H
		360.9	31.06	-14.94	46	39.68	21.26	2.44	32.32	-	-	P	H
		906.9	31.68	-14.32	46	29.5	29.09	4.6	31.51	-	-	P	H
		949.6	32.99	-13.01	46	29.07	30.3	4.75	31.13	100	81	P	H
													H
													H
													H
													H
													H
													H
		31.89	36.25	-3.75	40	43.21	24.72	0.78	32.46	100	119	P	V
		64.83	25.97	-14.03	40	45.31	12.05	1.06	32.45	-	-	P	V
		199.29	26.99	-16.51	43.5	41.9	15.8	1.7	32.41	-	-	P	V
		353.9	33.12	-12.88	46	41.9	21.09	2.44	32.31	-	-	P	V
		484.8	28.01	-17.99	46	33.61	23.72	3.08	32.4	-	-	P	V
		946.8	33.73	-12.27	46	29.92	30.22	4.75	31.16	-	-	P	V
													V
													V
													V
													V
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													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	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)
802.11b		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
CH 01													
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”.