



Appendix B. Radiated Spurious Emission

Test Engineer :	Bill Chang	Temperature :	22~24°C
		Relative Humidity :	55~58%

15E 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		5713.16	65.26	-8.74	74	57.22	32.29	9.39	33.64	100	179	P	H	
		5725	76.8	-1.5	78.3	68.69	32.31	9.44	33.64	100	179	P	H	
		5715	50.7	-3.3	54	42.66	32.29	9.39	33.64	100	179	A	H	
	*	5744	106.09	-	-	97.96	32.34	9.44	33.65	100	179	P	H	
	*	5744	101.25	-	-	93.12	32.34	9.44	33.65	100	179	A	H	
														H
														H
														H
			5712.36	66.14	-7.86	74	58.1	32.29	9.39	33.64	103	246	P	V
			5723.48	76.81	-1.49	78.3	68.7	32.31	9.44	33.64	103	246	P	V
			5715	51.48	-2.52	54	43.44	32.29	9.39	33.64	103	246	A	V
	*		5743	107.48	-	-	99.35	32.34	9.44	33.65	103	246	P	V
	*		5743	102.6	-	-	94.47	32.34	9.44	33.65	103	246	A	V
														V
													V	
													V	



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		5701.64	53.66	-20.34	74	45.61	32.29	9.39	33.63	100	177	P	H
		5721	53.7	-24.6	78.3	45.64	32.31	9.39	33.64	100	177	P	H
		5706.44	42.61	-11.39	54	34.57	32.29	9.39	33.64	100	177	A	H
	*	5784	105.68	-	-	97.46	32.39	9.49	33.66	100	177	P	H
	*	5784	101.28	-	-	93.06	32.39	9.49	33.66	100	177	A	H
		5857.84	52.43	-25.87	78.3	44.07	32.51	9.54	33.69	100	177	P	H
		5860.8	52.74	-21.26	74	44.38	32.51	9.54	33.69	100	177	P	H
		5860	42	-12	54	33.64	32.51	9.54	33.69	100	177	A	H
		5702.2	55.7	-18.3	74	47.65	32.29	9.39	33.63	103	245	P	V
		5715.88	53.76	-24.54	78.3	45.72	32.29	9.39	33.64	103	245	P	V
		5706.36	43.94	-10.06	54	35.9	32.29	9.39	33.64	103	245	A	V
	*	5787	108.44	-	-	100.2	32.41	9.49	33.66	103	245	P	V
	*	5787	103.36	-	-	95.12	32.41	9.49	33.66	103	245	A	V
		5858.56	53.65	-24.65	78.3	45.29	32.51	9.54	33.69	103	245	P	V
		5864.64	54.11	-19.89	74	45.75	32.51	9.54	33.69	103	245	P	V
		5868.96	42.95	-11.05	54	34.59	32.51	9.54	33.69	103	245	A	V



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 165 5825MHz	*	5823	107.71	-	-	99.4	32.46	9.52	33.67	100	176	P	H	
	*	5823	102.48	-	-	94.17	32.46	9.52	33.67	100	176	A	H	
		5850.32	66.72	-11.58	78.3	58.38	32.48	9.54	33.68	100	176	P	H	
		5860	62.56	-11.44	74	54.2	32.51	9.54	33.69	100	176	P	H	
		5860	47.32	-6.68	54	38.96	32.51	9.54	33.69	100	176	A	H	
														H
														H
														H
	*	5823	108.12	-	-	99.81	32.46	9.52	33.67	100	244	P	V	
	*	5823	103.62	-	-	95.31	32.46	9.52	33.67	100	244	A	V	
		5850.16	69.36	-8.94	78.3	61.02	32.48	9.54	33.68	100	244	P	V	
		5861.36	63	-11	74	54.64	32.51	9.54	33.69	100	244	P	V	
		5860	48.15	-5.85	54	39.79	32.51	9.54	33.69	100	244	A	V	
														V
														V
														V
													V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.													



15E Band 4 5725~5850MHz
WIFI 802.11a (Harmonic @ 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		11490	49.32	-24.68	74	30.07	40.01	13.95	34.71	100	0	P	H
		17235	50.4	-23.6	74	28.02	41.41	16.95	35.98	100	0	P	H
													H
													H
		11490	49.06	-24.94	74	29.81	40.01	13.95	34.71	100	0	P	V
		17235	50.15	-23.85	74	27.77	41.41	16.95	35.98	100	0	P	V
													V
													V
802.11a CH 157 5785MHz		11570	49.88	-24.12	74	30.76	39.89	14	34.77	100	0	P	H
		17355	50.02	-23.98	74	27.3	41.67	17.03	35.98	100	0	P	H
													H
													H
		11570	49.72	-24.28	74	30.6	39.89	14	34.77	100	0	P	V
		17355	50.62	-23.38	74	27.9	41.67	17.03	35.98	100	0	P	V
													V
													V
802.11a CH 165 5825MHz		11650	49.43	-24.57	74	30.41	39.78	14.05	34.81	100	0	P	H
		17475	50.69	-23.31	74	27.65	41.93	17.1	35.99	100	0	P	H
													H
													H
		11650	50.07	-23.93	74	31.05	39.78	14.05	34.81	100	0	P	V
		17475	50.95	-23.05	74	27.91	41.93	17.1	35.99	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



**15E 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)	
5GHz 802.11a LF		74.28	30.65	-9.35	40	54.11	7.29	1.04	31.79	100	0	P	H	
		103.98	33.62	-9.88	43.5	53.32	10.8	1.28	31.78	-	-	P	H	
		146.64	29.96	-13.54	43.5	48.57	11.71	1.46	31.78	-	-	P	H	
		300.7	20.26	-25.74	46	36.08	13.83	2.11	31.76	-	-	P	H	
		848.1	25.42	-20.58	46	31.18	22.48	3.44	31.68	-	-	P	H	
		921.6	26.39	-19.61	46	30.43	23.67	3.55	31.26	-	-	P	H	
														H
														H
														H
														H
														H
														H
			40.53	28.28	-11.72	40	45.49	13.94	0.67	31.82	-	-	P	V
			73.2	36.79	-3.21	40	60.37	7.17	1.04	31.79	125	150	P	V
			103.44	28.94	-14.56	43.5	48.64	10.8	1.28	31.78	-	-	P	V
			425.3	20.29	-25.71	46	32.78	16.92	2.41	31.82	-	-	P	V
			853	24.4	-21.6	46	30.08	22.54	3.44	31.66	-	-	P	V
			948.2	27.02	-18.98	46	30.11	24.28	3.68	31.05	-	-	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	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

- 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 @ 2390MHz:

- 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)
- Over Limit(dB)
= Level(dBμV/m) – Limit Line(dBμV/m)
= 55.45(dBμV/m) – 74(dBμV/m)
= -18.55(dB)

For Average Limit @ 2390MHz:

- 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)
- 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”.