



## Appendix B. Radiated Spurious Emission

Test Engineer :	Nick Yu, Derreck Chen and Ken Wu	Temperature :	23~25°C
		Relative Humidity :	48~51%

### 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		5698.44	56.23	-17.77	74	42.96	35.21	12.18	34.12	100	0	P	H	
		5697	42.24	-11.76	54	28.97	35.21	12.18	34.12	100	0	A	H	
	*	5747	60.54	-	-	47.14	35.24	12.33	34.17	100	0	P	H	
													H	
													H	
			5693.16	56.31	-17.69	74	43.04	35.21	12.18	34.12	100	0	P	V
			5693.64	42.29	-11.71	54	29.02	35.21	12.18	34.12	100	0	A	V
	*		5746	60.92	-	-	47.52	35.24	12.33	34.17	100	0	P	V
														V
														V
802.11a CH 157 5785MHz		5698.36	56.02	-17.98	74	42.75	35.21	12.18	34.12	100	0	P	H	
		5721.32	42.29	-11.71	54	28.95	35.23	12.26	34.15	100	0	A	H	
	*	5784	65.89	-	-	52.45	35.27	12.4	34.23	100	0	P	H	
		5861.92	56.73	-17.27	74	43.27	35.32	12.49	34.35	100	0	P	H	
		5861.52	42.55	-11.45	54	29.09	35.32	12.49	34.35	100	0	A	H	
														H
			5719.56	55.96	-18.04	74	42.62	35.23	12.26	34.15	100	0	P	V
			5703.72	42.32	-11.68	54	28.96	35.22	12.26	34.12	100	0	A	V
	*		5788	62.89	-	-	49.44	35.28	12.4	34.23	100	0	P	V
			5885.52	56.67	-17.33	74	43.24	35.33	12.49	34.39	100	0	P	V
		5866.64	42.57	-11.43	54	29.11	35.32	12.49	34.35	100	0	A	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 165 5825MHz	*	5825	63.05	-	-	49.57	35.3	12.45	34.27	100	0	P	H
		5889.76	56.32	-17.68	74	42.88	35.34	12.49	34.39	100	0	P	H
		5870.16	42.58	-11.42	54	29.12	35.32	12.49	34.35	100	0	A	H
													H
													H
													H
													H
													H
	*	5824	60.59	-	-	47.11	35.3	12.45	34.27	100	0	P	V
		5862.08	56.6	-17.4	74	43.14	35.32	12.49	34.35	100	0	P	V
		5857.44	42.55	-11.45	54	29.09	35.32	12.45	34.31	100	0	A	V
													V
													V
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												V	
												V	
<b>Remark</b>	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	43.06	-30.94	74	44.46	38.19	17.38	56.97	100	0	P	H
		17235	49.98	-24.02	74	42.58	42.21	21.38	56.19	100	0	P	H
													H
													H
		11490	42.87	-31.13	74	44.27	38.19	17.38	56.97	100	0	P	V
		17235	48.56	-25.44	74	41.16	42.21	21.38	56.19	100	0	P	V
													V
													V
802.11a CH 157 5785MHz		11571	42.37	-31.63	74	43.39	38.3	17.46	56.78	100	0	P	H
		17355	48.09	-25.91	74	40.74	42.12	21.45	56.22	100	0	P	H
													H
													H
		11571	42.62	-31.38	74	43.64	38.3	17.46	56.78	100	0	P	V
		17355	47.92	-26.08	74	40.57	42.12	21.45	56.22	100	0	P	V
													V
													V
802.11a CH 165 5825MHz		11649	44.26	-29.74	74	44.95	38.39	17.53	56.61	100	0	P	H
		17475	48.87	-25.13	74	41.56	42.03	21.53	56.25	100	0	P	H
													H
													H
		11649	43.63	-30.37	74	44.32	38.39	17.53	56.61	100	0	P	V
		17475	49.03	-24.97	74	41.72	42.03	21.53	56.25	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		50.25	24.41	-15.59	40	45.44	8.4	1.77	31.2	174	55	P	H	
		141.24	22.67	-20.83	43.5	39.66	11.5	2.61	31.1			P	H	
		294.6	28.92	-17.08	46	43.66	13.15	3.16	31.05			P	H	
		304.2	26.42	-19.58	46	40.89	13.25	3.28	31			P	H	
		468.7	28.67	-17.33	46	38.22	17.48	3.77	30.8			P	H	
		661.2	27.96	-18.04	46	33.77	20.32	4.35	30.48			P	H	
														H
														H
														H
														H
														H
														H
														H
			42.42	26.44	-13.56	40	43.97	11.9	1.77	31.2			P	V
			201.72	29.27	-14.23	43.5	48.56	9.12	2.69	31.1			P	V
			277.05	27.18	-18.82	46	42.12	12.83	3.16	30.93			P	V
			324.5	26.09	-19.91	46	40.21	13.6	3.28	31			P	V
			664.7	32.8	-13.2	46	38.57	20.35	4.35	30.47	116	49	P	V
			900.6	32.2	-13.8	46	34.47	23.23	4.8	30.3			P	V
														V
													V	
													V	
													V	
													V	
													V	
<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 per 15.209(c).
!	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 )
802.11b		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”.