



Appendix B. Radiated Spurious Emission

Test Engineer :	Kyle Jhuang, Citta Ke and Karl Hou	Temperature :	23~24°C
		Relative Humidity :	50~51%

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		5714.84	67.84	-6.16	74	57.04	35.77	7.15	32.12	338	142	P	H
		5724.68	74.63	-3.67	78.3	63.81	35.78	7.16	32.12	338	142	P	H
		5714.36	48.46	-5.54	54	37.66	35.77	7.15	32.12	338	142	A	H
	*	5745	106.87	-	-	96.01	35.79	7.18	32.11	338	142	P	H
	*	5745	96.76	-	-	85.9	35.79	7.18	32.11	338	142	A	H
													H
													H
													H
		5715	62.56	-11.44	74	51.76	35.77	7.15	32.12	260	161	P	V
		5722.12	70.63	-7.67	78.3	59.81	35.78	7.16	32.12	260	161	P	V
		5714.68	46.73	-7.27	54	35.93	35.77	7.15	32.12	260	161	A	V
	*	5744	102.79	-	-	91.93	35.79	7.18	32.11	260	161	P	V
	*	5744	92.65	-	-	81.79	35.79	7.18	32.11	260	161	A	V
													V
													V
													V
Remark	1. No other spurious found.												
	2. All results are PASS against Peak and Average limit line.												



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		5714.04	58.2	-15.8	74	47.4	35.77	7.15	32.12	106	179	P	H
		5722.68	62.44	-15.86	78.3	51.62	35.78	7.16	32.12	106	179	P	H
		5714.68	45.14	-8.86	54	34.34	35.77	7.15	32.12	106	179	A	H
	*	5787	109.33	-	-	98.4	35.83	7.2	32.1	106	179	P	H
	*	5787	98.79	-	-	87.86	35.83	7.2	32.1	106	179	A	H
		5850.88	57.88	-20.42	78.3	46.82	35.88	7.26	32.08	106	179	P	H
		5860.96	55.32	-18.68	74	44.22	35.89	7.28	32.07	106	179	P	H
		5860.4	44.21	-9.79	54	33.11	35.89	7.28	32.07	106	179	A	H
		5712.04	53.41	-20.59	74	42.61	35.77	7.15	32.12	305	159	P	V
		5718.44	55.13	-23.17	78.3	44.31	35.78	7.16	32.12	305	159	P	V
		5711.64	43.48	-10.52	54	32.68	35.77	7.15	32.12	305	159	A	V
	*	5784	102.96	-	-	92.04	35.82	7.2	32.1	305	159	P	V
	*	5784	92.71	-	-	81.79	35.82	7.2	32.1	305	159	A	V
		5855.12	53.27	-25.03	78.3	42.19	35.89	7.26	32.07	305	159	P	V
		5867.36	53.55	-20.45	74	42.45	35.89	7.28	32.07	305	159	P	V
		5875.6	43.6	-10.4	54	32.49	35.9	7.28	32.07	305	159	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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	108.43	-	-	97.42	35.86	7.24	32.09	302	160	P	H
	*	5825	97.74	-	-	86.73	35.86	7.24	32.09	302	160	A	H
		5850.88	70	-8.3	78.3	58.94	35.88	7.26	32.08	302	160	P	H
		5862.48	64.15	-9.85	74	53.05	35.89	7.28	32.07	302	160	P	H
		5861.76	47.69	-6.31	54	36.59	35.89	7.28	32.07	302	160	A	H
													H
													H
													H
	*	5826	103.28	-	-	92.27	35.86	7.24	32.09	276	153	P	V
	*	5826	93.57	-	-	82.56	35.86	7.24	32.09	276	153	A	V
		5850.88	66.36	-11.94	78.3	55.3	35.88	7.26	32.08	276	153	P	V
		5860.16	62.1	-11.9	74	51	35.89	7.28	32.07	276	153	P	V
		5860.48	45.45	-8.55	54	34.35	35.89	7.28	32.07	276	153	A	V
													V
													V
													V
													V
													V
Remark - No other spurious found. - 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	54.67	-19.33	74	62.26	38.99	10.33	56.91	100	228	P	H
		11490	43.56	-10.44	54	51.15	38.99	10.33	56.91	100	228	A	H
		17235	48.32	-25.68	74	51.37	42.01	12.65	57.71	100	0	P	H
													H
		11490	54.43	-19.57	74	62.02	38.99	10.33	56.91	100	157	P	V
		11490	43.35	-10.65	54	50.94	38.99	10.33	56.91	100	157	A	V
		17235	48.7	-25.3	74	51.75	42.01	12.65	57.71	100	0	P	V
													V
802.11a CH 157 5785MHz		11570	55.25	-18.75	74	62.77	39.03	10.36	56.91	100	134	P	H
		11570	44.19	-9.81	54	51.71	39.03	10.36	56.91	100	134	A	H
		17355	46.93	-27.07	74	50.13	41.96	12.85	58.01	100	0	P	H
													H
		11570	52.56	-21.44	74	60.08	39.03	10.36	56.91	100	237	P	V
		11570	42.45	-11.55	54	49.97	39.03	10.36	56.91	100	237	A	V
		17355	47.02	-26.98	74	50.22	41.96	12.85	58.01	100	0	P	V
													V
802.11a CH 165 5825MHz		11650	52.16	-21.84	74	59.62	39.06	10.41	56.93	100	203	P	H
		11650	41.06	-12.94	54	48.52	39.06	10.41	56.93	100	203	A	H
		17475	47.4	-26.6	74	50.76	41.91	13.04	58.31	100	0	P	H
													H
		11650	51.5	-22.5	74	58.96	39.06	10.41	56.93	100	27	P	V
		11650	40.47	-13.53	54	47.93	39.06	10.41	56.93	100	27	A	V
		17475	48.3	-25.7	74	51.66	41.91	13.04	58.31	100	0	P	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 802.11n HT20 (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)
802.11n HT20 CH 149 5745MHz		5712.76	69.96	-4.04	74	59.16	35.77	7.15	32.12	100	224	P	H
		5724.28	75.15	-3.15	78.3	64.33	35.78	7.16	32.12	100	224	P	H
		5714.6	49.75	-4.25	54	38.95	35.77	7.15	32.12	100	224	A	H
	*	5744	107.78	-	-	96.92	35.79	7.18	32.11	100	224	P	H
	*	5744	97.77	-	-	86.91	35.79	7.18	32.11	100	224	A	H
													H
													H
													H
		5715	64.6	-9.4	74	53.8	35.77	7.15	32.12	312	52	P	V
		5724.2	68.04	-10.26	78.3	57.22	35.78	7.16	32.12	312	52	P	V
		5714.44	44.52	-9.48	54	33.72	35.77	7.15	32.12	312	52	A	V
	*	5744	99.97	-	-	89.11	35.79	7.18	32.11	312	52	P	V
	*	5744	90.15	-	-	79.29	35.79	7.18	32.11	312	52	A	V
													V
													V
													V
Remark	1. No other spurious found.												
	2. All results are PASS against Peak and Average limit line.												



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)
802.11n HT20 CH 157 5785MHz		5714.44	60.64	-13.36	74	49.84	35.77	7.15	32.12	100	222	P	H
		5719.16	61.35	-16.95	78.3	50.53	35.78	7.16	32.12	100	222	P	H
		5714.92	45.15	-8.85	54	34.35	35.77	7.15	32.12	100	222	A	H
	*	5786	108.14	-	-	97.21	35.83	7.2	32.1	100	222	P	H
	*	5786	97.96	-	-	87.03	35.83	7.2	32.1	100	222	A	H
		5850.56	58.69	-19.61	78.3	47.63	35.88	7.26	32.08	100	222	P	H
		5863.2	55.66	-18.34	74	44.56	35.89	7.28	32.07	100	222	P	H
		5860	44.42	-9.58	54	33.34	35.89	7.26	32.07	100	222	A	H
		5711.8	53.38	-20.62	74	42.58	35.77	7.15	32.12	278	158	P	V
		5723.48	55.24	-23.06	78.3	44.42	35.78	7.16	32.12	278	158	P	V
		5714.6	43.44	-10.56	54	32.64	35.77	7.15	32.12	278	158	A	V
	*	5787	102.43	-	-	91.5	35.83	7.2	32.1	278	158	P	V
	*	5787	92.56	-	-	81.63	35.83	7.2	32.1	278	158	A	V
		5854.16	53.62	-24.68	78.3	42.54	35.89	7.26	32.07	278	158	P	V
		5863.2	53.73	-20.27	74	42.63	35.89	7.28	32.07	278	158	P	V
		5862.32	43.68	-10.32	54	32.58	35.89	7.28	32.07	278	158	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

[illegible]



15E Band 4 5725~5850MHz

WIFI 802.11n HT20 (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)
802.11n HT20 CH 149 5745MHz		11490	53.54	-20.46	74	61.13	38.99	10.33	56.91	100	303	P	H
		11490	42.48	-11.52	54	50.07	38.99	10.33	56.91	100	303	A	H
		17235	48.04	-25.96	74	51.09	42.01	12.65	57.71	100	0	P	H
													H
		11490	54.77	-19.23	74	62.36	38.99	10.33	56.91	100	184	P	V
		11490	43.57	-10.43	54	51.16	38.99	10.33	56.91	100	184	A	V
		17235	46.93	-27.07	74	49.98	42.01	12.65	57.71	100	0	P	V
													V
802.11n HT20 CH 157 5785MHz		11570	52.32	-21.68	74	59.84	39.03	10.36	56.91	100	22	P	H
		11570	41.2	-12.8	54	48.72	39.03	10.36	56.91	100	22	A	H
		17355	46.19	-27.81	74	49.39	41.96	12.85	58.01	100	0	P	H
													H
		11570	52.63	-21.37	74	60.15	39.03	10.36	56.91	100	49	P	V
		11570	42.55	-11.45	54	50.07	39.03	10.36	56.91	100	49	A	V
		17355	47.72	-26.28	74	50.92	41.96	12.85	58.01	100	0	P	V
													V
802.11n HT20 CH 165 5825MHz		11650	52.11	-21.89	74	59.57	39.06	10.41	56.93	100	66	P	H
		11650	41.86	-12.14	54	49.32	39.06	10.41	56.93	100	66	A	H
		17475	47.7	-26.3	74	51.06	41.91	13.04	58.31	100	0	P	H
													H
		11650	53.71	-20.29	74	61.17	39.06	10.41	56.93	100	158	P	V
		11650	42.66	-11.34	54	50.12	39.06	10.41	56.93	100	158	A	V
		17475	47.91	-26.09	74	51.27	41.91	13.04	58.31	100	0	P	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 802.11n HT40 (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)
802.11n HT40 CH 151 5755MHz		5712.04	68.67	-5.33	74	57.87	35.77	7.15	32.12	100	222	P	H
		5723.24	74.51	-3.79	78.3	63.69	35.78	7.16	32.12	100	222	P	H
		5715	50.32	-3.68	54	39.52	35.77	7.15	32.12	100	222	A	H
	*	5753	103.69	-	-	92.81	35.81	7.18	32.11	100	222	P	H
	*	5753	93.66	-	-	82.78	35.81	7.18	32.11	100	222	A	H
		5854.8	55.21	-23.09	78.3	44.13	35.89	7.26	32.07	100	222	P	H
		5861.12	55.87	-18.13	74	44.77	35.89	7.28	32.07	100	222	P	H
		5861.44	44.33	-9.67	54	33.23	35.89	7.28	32.07	100	222	A	H
		5714.04	59.74	-14.26	74	48.94	35.77	7.15	32.12	338	59	P	V
		5724.52	62.43	-15.87	78.3	51.61	35.78	7.16	32.12	338	59	P	V
		5714.84	44.49	-9.51	54	33.69	35.77	7.15	32.12	338	59	A	V
	*	5757	94.85	-	-	83.97	35.81	7.18	32.11	338	59	P	V
	*	5757	84.88	-	-	74	35.81	7.18	32.11	338	59	A	V
		5857.76	52.76	-25.54	78.3	41.68	35.89	7.26	32.07	338	59	P	V
		5868.24	53.56	-20.44	74	42.46	35.89	7.28	32.07	338	59	P	V
		5863.68	43.64	-10.36	54	32.54	35.89	7.28	32.07	338	59	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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)
802.11n HT40 CH 159 5795MHz		5712.76	58.81	-15.19	74	48.01	35.77	7.15	32.12	100	224	P	H
		5724.44	62.27	-16.03	78.3	51.45	35.78	7.16	32.12	100	224	P	H
		5712.76	46.6	-7.4	54	35.8	35.77	7.15	32.12	100	224	A	H
	*	5797	105.04	-	-	94.09	35.83	7.22	32.1	100	224	P	H
	*	5797	95.25	-	-	84.3	35.83	7.22	32.1	100	224	A	H
		5852.64	63.75	-14.55	78.3	52.69	35.88	7.26	32.08	100	224	P	H
		5868.56	61.23	-12.77	74	50.13	35.89	7.28	32.07	100	224	P	H
		5861.84	45.44	-8.56	54	34.34	35.89	7.28	32.07	100	224	A	H
		5713.4	55.01	-18.99	74	44.21	35.77	7.15	32.12	317	135	P	V
		5722.44	53.43	-24.87	78.3	42.61	35.78	7.16	32.12	317	135	P	V
		5714.04	43.42	-10.58	54	32.62	35.77	7.15	32.12	317	135	A	V
	*	5794	98.93	-	-	87.98	35.83	7.22	32.1	317	135	P	V
	*	5794	89.5	-	-	78.55	35.83	7.22	32.1	317	135	A	V
		5850.88	56.95	-21.35	78.3	45.89	35.88	7.26	32.08	317	135	P	V
		5875.36	54.63	-19.37	74	43.52	35.9	7.28	32.07	317	135	P	V
		5868.64	43.98	-10.02	54	32.88	35.89	7.28	32.07	317	135	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



15E Band 4 5725~5850MHz

WIFI 802.11n HT40 (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)
802.11n HT40 CH 151 5755MHz		11510	49.58	-24.42	74	57.14	39	10.34	56.9	100	0	P	H
		17265	45.94	-28.06	74	49.01	41.99	12.73	57.79	100	0	P	H
													H
													H
		11510	48.9	-25.1	74	56.46	39	10.34	56.9	100	0	P	V
		17265	46.83	-27.17	74	49.9	41.99	12.73	57.79	100	0	P	V
													V
													V
802.11n HT40 CH 159 5795MHz		11590	50.96	-23.04	74	58.47	39.03	10.38	56.92	100	0	P	H
		17385	46.19	-27.81	74	49.41	41.95	12.93	58.1	100	0	P	H
													H
													H
		11590	50.45	-23.55	74	57.96	39.03	10.38	56.92	100	0	P	V
		17385	48.39	-25.61	74	51.61	41.95	12.93	58.1	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 802.11n HT20 (LF @ 3m)

[illegible]

**Note symbol**

*	Fundamental Frequency 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 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”.