



Appendix C. Radiated Unwanted Emission

15C 2.4GHz 2400~2483.5MHz

WIFI 802.11b (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(P/A)	(H/V)
802.11b CH 01 2412MHz		4824	45.43	-8.57	54	40.99	33.33	5.70	34.59	A	V
		4824	50.87	-23.13	74	46.43	33.33	5.70	34.59	P	V
		7236	51.36	-22.64	74	42.92	36.24	7.09	34.89	P	V
	*	9648	53.50	-42.77	96.27	43.00	37.57	8.21	35.28	P	V
		4824	45.85	-8.15	54	41.41	33.33	5.70	34.59	A	H
		4824	51.03	-22.97	74	46.59	33.33	5.70	34.59	P	H
		7236	51.03	-22.97	74	42.59	36.24	7.09	34.89	P	H
	*	9648	52.67	-43.60	96.27	42.17	37.57	8.21	35.28	P	H
802.11b CH 06 2437MHz		4874	51.96	-2.04	54	47.44	33.38	5.72	34.58	A	V
		4874	55.52	-18.48	74	51.00	33.38	5.72	34.58	P	V
		7311	38.68	-15.32	54	30.11	36.33	7.14	34.90	A	V
		7311	50.58	-23.42	74	42.01	36.33	7.14	34.90	P	V
	*	9748	53.02	-44.63	97.65	42.50	37.55	8.26	35.29	P	V
		4874	52.75	-1.25	54	48.23	33.38	5.72	34.58	A	H
		4874	55.68	-18.32	74	51.16	33.38	5.72	34.58	P	H
		7311	38.78	-15.22	54	30.21	36.33	7.14	34.90	A	H
		7311	50.07	-23.93	74	41.50	36.33	7.14	34.90	P	H
	*	9748	53.50	-44.15	97.65	42.98	37.55	8.26	35.29	P	H



802.11b CH 11 2462MHz		4924	49.73	-4.27	54	45.11	33.43	5.76	34.57	A	V
		4924	53.60	-20.40	74	48.98	33.43	5.76	34.57	P	V
		7386	38.57	-15.43	54	29.84	36.46	7.19	34.92	A	V
		7386	50.75	-23.25	74	42.02	36.46	7.19	34.92	P	V
	*	9848	52.71	-41.23	93.94	42.16	37.53	8.33	35.31	P	V
		4924	52.26	-1.74	54	47.64	33.43	5.76	34.57	A	H
		4924	55.24	-18.76	74	50.62	33.43	5.76	34.57	P	H
		7386	38.86	-15.14	54	30.13	36.46	7.19	34.92	A	H
		7386	50.92	-23.08	74	42.19	36.46	7.19	34.92	P	H
	*	9848	53.28	-40.66	93.94	42.73	37.53	8.33	35.31	P	H
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.										



15C 2.4GHz 2400~2483.5MHz

WIFI 802.11g (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(P/A)	(H/V)
802.11g CH 01 2412MHz		4824	34.52	-19.48	54	30.08	33.33	5.70	34.59	A	V
		4824	45.44	-28.56	74	41.00	33.33	5.70	34.59	P	V
		7236	50.36	-23.64	74	41.92	36.24	7.09	34.89	P	V
	*	9648	52.60	-37.67	90.27	42.10	37.57	8.21	35.28	P	V
		4824	33.82	-20.18	54	29.38	33.33	5.70	34.59	A	H
		4824	45.77	-28.23	74	41.33	33.33	5.70	34.59	P	H
		7236	49.94	-24.06	74	41.50	36.24	7.09	34.89	P	H
	*	9648	53.12	-37.15	90.27	42.62	37.57	8.21	35.28	P	H
802.11g CH 06 2437MHz		4874	46.07	-7.93	54	41.55	33.38	5.72	34.58	A	H
		4874	57.11	-16.89	74	52.59	33.38	5.72	34.58	P	H
		7311	38.72	-15.28	54	30.15	36.33	7.14	34.90	A	H
		7311	49.55	-24.45	74	40.98	36.33	7.14	34.90	P	H
	*	9748	54.37	-42.78	97.15	43.85	37.55	8.26	35.29	P	H
		4874	44.79	-9.21	54	40.27	33.38	5.72	34.58	A	V
		4874	56.29	-17.71	74	51.77	33.38	5.72	34.58	P	V
		7311	38.52	-15.48	54	29.95	36.33	7.14	34.90	A	V
		7311	51.19	-22.81	74	42.62	36.33	7.14	34.90	P	V
	*	9748	54.34	-42.81	97.15	43.82	37.55	8.26	35.29	P	V



802.11g CH 11 2462MHz		4924	34.86	-19.14	54	30.24	33.43	5.76	34.57	A	V
		4924	46.15	-27.85	74	41.53	33.43	5.76	34.57	P	V
		7386	39.23	-14.77	54	30.50	36.46	7.19	34.92	A	V
		7386	51.21	-22.79	74	42.48	36.46	7.19	34.92	P	V
	*	9848	54.65	-33.75	88.4	44.10	37.53	8.33	35.31	P	VV
		4924	36.57	-17.43	54	31.95	33.43	5.76	34.57	A	H
		4924	46.60	-27.40	74	41.98	33.43	5.76	34.57	P	H
		7386	39.25	-14.75	54	30.52	36.46	7.19	34.92	A	H
		7386	51.31	-22.69	74	42.58	36.46	7.19	34.92	P	H
	*	9848	54.87	-33.53	88.4	44.32	37.53	8.33	35.31	P	H
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.										



**15C 2.4GHz 2400~2483.5MHz
WIFI 802.11n HT20 (Harmonic @ 3m)**

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(P/A)	(H/V)
802.11n HT20 CH 01 2412MHz		4824	36.97	-17.03	54	33.52	32.99	6.11	35.65	A	H
		4824	48.81	-25.19	74	45.36	32.99	6.11	35.65	P	H
		7236	52.08	-21.92	74	44.02	36.48	7.57	35.99	P	H
	*	9648	53.74	-37.01	90.75	44.02	37.27	8.80	36.35	P	H
		4824	34.47	-19.53	54	31.02	32.99	6.11	35.65	A	V
		4824	48.20	-25.80	74	44.75	32.99	6.11	35.65	P	V
	*	7236	51.71	-22.29	74	43.65	36.48	7.57	35.99	P	V
802.11n HT20 CH 06 2437MHz		4874	48.54	-5.46	54	45.01	33.06	6.13	35.66	A	H
		4874	61.41	-12.59	74	57.88	33.06	6.13	35.66	P	H
		7311	39.50	-14.50	54	31.23	36.67	7.60	36.00	A	H
		7311	51.12	-22.88	74	42.85	36.67	7.60	36.00	P	H
	*	9748	53.75	-40.67	94.42	43.99	37.25	8.89	36.38	P	H
		4874	48.04	-5.96	54	44.51	33.06	6.13	35.66	A	V
		4874	59.88	-14.12	74	56.35	33.06	6.13	35.66	P	V
		7311	38.72	-15.28	54	30.45	36.67	7.60	36.00	A	V
		7311	50.92	-23.08	74	42.65	36.67	7.60	36.00	P	V
	*	9748	53.01	-41.41	94.42	43.25	37.25	8.89	36.38	P	V



802.11n HT20 CH 11 2462MHz		4924	36.87	-17.13	54	33.24	33.12	6.17	35.66	A	H
		4924	49.30	-24.70	74	45.67	33.12	6.17	35.66	P	H
		7386	39.52	-14.48	54	30.99	36.91	7.63	36.01	A	H
		7386	51.20	-22.80	74	42.67	36.91	7.63	36.01	P	H
	*	9848	52.88	-36.56	89.44	43.02	37.23	9.03	36.40	P	H
		4924	34.50	-19.50	54	30.87	33.12	6.17	35.66	A	V
		4924	47.07	-26.93	74	43.44	33.12	6.17	35.66	P	V
		7386	38.52	-15.48	54	29.99	36.91	7.63	36.01	A	V
		7386	50.58	-23.42	74	42.05	36.91	7.63	36.01	P	V
	*	9848	52.88	-36.56	89.44	43.02	37.23	9.03	36.40	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.										



**15C 2.4GHz 2400~2483.5MHz
WIFI 802.11n HT40 (Harmonic @ 3m)**

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(P/A)	(H/V)
802.11n HT40 CH 03 2422MHz		4844	34.48	-19.52	54	30.99	33.01	6.13	35.65	A	H
		4844	46.34	-27.66	74	42.85	33.01	6.13	35.65	P	H
		7266	39.01	-14.99	54	30.85	36.57	7.59	36.00	A	H
		7266	49.68	-24.32	74	41.52	36.57	7.59	36.00	P	H
	*	9688	52.73	35.04	87.77	42.99	37.26	8.84	36.36	P	H
		4844	33.50	-20.50	54	30.01	33.01	6.13	35.65	A	V
		4844	45.38	-28.62	74	41.89	33.01	6.13	35.65	P	V
		7266	38.05	-15.95	54	29.89	36.57	7.59	36.00	A	V
		7266	50.14	-23.86	74	41.98	36.57	7.59	36.00	P	V
	*	9688	52.61	35.16	87.77	42.87	37.26	8.84	36.36	P	V
802.11n HT40 CH 06 2437MHz		4874	35.04	-18.96	54	31.51	33.06	6.13	35.66	A	H
		4874	46.26	-27.74	74	42.73	33.06	6.13	35.66	P	H
		7311	39.12	-14.88	54	30.85	36.67	7.60	36.00	A	H
		7311	51.26	-22.74	74	42.99	36.67	7.60	36.00	P	H
	*	9748	52.61	-35.23	87.84	42.85	37.25	8.89	36.38	P	H
		4874	34.51	-19.49	54	30.98	33.06	6.13	35.66	A	V
		4874	46.50	-27.50	74	42.97	33.06	6.13	35.66	P	V
		7311	39.16	-14.84	54	30.89	36.67	7.60	36.00	A	V
		7311	52.12	-21.88	74	43.85	36.67	7.60	36.00	P	V
	*	9748	52.75	-35.09	87.84	42.99	37.25	8.89	36.38	P	V



802.11n HT40 CH 09 2452MHz		4904	35.00	-19.00	54	31.41	33.10	6.15	35.66	A	H
		4904	46.43	-27.57	74	42.84	33.10	6.15	35.66	P	H
		7356	39.41	-14.59	54	31.00	36.81	7.61	36.01	A	H
		7356	51.40	-22.60	74	42.99	36.81	7.61	36.01	P	H
	*	9808	52.81	-33.87	86.68	42.97	37.24	8.99	36.39	P	H
		4904	34.60	-19.40	54	31.01	33.10	6.15	35.66	A	V
		4904	46.23	-27.77	74	42.64	33.10	6.15	35.66	P	V
		7356	39.31	-14.69	54	30.90	36.81	7.61	36.01	A	V
		7356	51.67	-22.33	74	43.26	36.81	7.61	36.01	P	V
	*	9808	53.28	-33.40	86.68	43.44	37.24	8.99	36.39	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average 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 per 15.209(c). Limit is unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level .
!	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	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.			Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2	(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 01 2412MHz	2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
	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”.