

7. RF Exposure Requirements

7.1 Test Equipment

Please refer to Section 10 this report.

7.2 Limit

According to FCC 15.247(i), Systems operating under provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commissions guidelines.

FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in 1.1307(b)(1) of this chapter.

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*(900/f ²)	6
30–300	61.4	0.163	1.0	6
300–1500 .....	.....	.....	f/300	6
1500–100,000 .....	.....	.....	5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f ²)	30
30–300	27.5	0.073	0.2	30
300–1500 .....	.....	.....	f/1500	30
1500–100,000 .....	.....	.....	1.0	30

f = frequency in MHz

* = Plane-wave equivalent power density

NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

7.3 Test Result

Product	: Wireless Router	Test Mode	: IEEE 802.11b/g
Test Item	: RF Exposure	Temperature	: 25 °C
Test Voltage	: DC 12V (Power by DC Power Supply)	Humidity	: 56%RH
Test Result	: PASS		

Evaluation of RF Exposure Compliance Requirements	
MPE Prediction of MPE according to equation from page 19 of OET Bulletin 65, Edition 97-01	
RF Exposure Requirements	Compliance with FCC Rules
S=PG/4πR ² Where: S=Power density P=Power input to antenna G=Power gain of the antenna relative to an isotropic radiator R=Distance to the center of radiation of the antenna	Maximum output power at antenna input terminal: 13.09 dBm = 20.37 mW (802.11b/g, 2462MHz) 15.24 dBm = 33.43 mW (Draft n, 2462MHz,20MHz) 12.59 dBm = 18.17 mW (Draft n, 2452MHz,40MHz) Prediction distance: 20 cm Antenna gain : 2.0 dBi MPE limit for uncontrolled exposure at prediction frequency: 10 W/m ² Power density at 20 cm: 802.11b/g: 0.0064 mW/cm ² Draft n(20MHz) : 0.0106 mW/cm ² Draft n(40MHz) : 0.0057 mW/cm ²

MPE Evaluation

Mode	Frequency (MHz)	OutputPower (dBm)	RF Power (mW)	Antenna Gain (dBi)	Distance (cm)	MPE (mW/cm ²)	Limit MPE (mW/cm ²)
802.11b	2412	9.71	9.35	2.00	20.0	0.00294937	1.0
	2437	8.62	7.28	2.00	20.0	0.00229472	1.0
	2462	8.85	7.67	2.00	20.0	0.00241952	1.0
Mode	Frequency (MHz)	OutputPower (dBm)	RF Power (mW)	Antenna Gain (dBi)	Distance (cm)	MPE (mW/cm ²)	Limit MPE (mW/cm ²)
802.11g	2412	12.41	17.42	2.00	20.0	0.00549198	1.0
	2437	11.38	13.74	2.00	20.0	0.00433241	1.0
	2462	13.09	20.37	2.00	20.0	0.00642287	1.0
Mode	Frequency (MHz)	OutputPower (dBm)	RF Power (mW)	Antenna Gain (dBi)	Distance (cm)	MPE (mW/cm ²)	Limit MPE (mW/cm ²)
Draft n 20MHz Ant.0	2412	12.34	17.14	2.00	20.0	0.00540417	1.0
	2437	11.41	13.84	2.00	20.0	0.00436244	1.0
	2462	11.63	14.55	2.00	20.0	0.00458912	1.0
Mode	Frequency (MHz)	OutputPower (dBm)	RF Power (mW)	Antenna Gain (dBi)	Distance (cm)	MPE (mW/cm ²)	Limit MPE (mW/cm ²)
Draft n 20MHz Ant.1	2412	11.88	15.42	2.00	20.0	0.00486104	1.0
	2437	12.83	19.19	2.00	20.0	0.00604963	1.0
	2462	12.76	18.88	2.00	20.0	0.00595291	1.0
Mode	Frequency (MHz)	OutputPower (dBm)	RF Power (mW)	Antenna Gain (dBi)	Distance (cm)	MPE (mW/cm ²)	Limit MPE (mW/cm ²)
Draft n 20MHz Ant.0+Ant.1	2412	15.13	32.56	2.00	20.0	0.01026521	1.0
	2437	15.19	33.02	2.00	20.0	0.01041207	1.0
	2462	15.24	33.43	2.00	20.0	0.01054202	1.0
Mode	Frequency (MHz)	OutputPower (dBm)	RF Power (mW)	Antenna Gain (dBi)	Distance (cm)	MPE (mW/cm ²)	Limit MPE (mW/cm ²)
Draft n 40MHz Ant.0	2412	7.11	5.14	2.00	20.0	0.00162080	1.0
	2437	6.61	4.58	2.00	20.0	0.00144454	1.0
	2452	6.67	4.65	2.00	20.0	0.00146463	1.0
Mode	Frequency (MHz)	OutputPower (dBm)	RF Power (mW)	Antenna Gain (dBi)	Distance (cm)	MPE (mW/cm ²)	Limit MPE (mW/cm ²)
Draft n 40MHz Ant.1	2412	10.95	12.45	2.00	20.0	0.00392400	1.0
	2437	11.22	13.24	2.00	20.0	0.00417570	1.0
	2452	11.31	13.52	2.00	20.0	0.00426314	1.0
Mode	Frequency (MHz)	OutputPower (dBm)	RF Power (mW)	Antenna Gain (dBi)	Distance (cm)	MPE (mW/cm ²)	Limit MPE (mW/cm ²)
Draft n 40MHz Ant.0+Ant.1	2412	12.45	17.59	2.00	20.0	0.00554480	1.0
	2437	12.51	17.82	2.00	20.0	0.00562024	1.0
	2452	12.59	18.17	2.00	20.0	0.00572777	1.0