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 N ADSL 2/2+ Modem Router	Test Mode	: IEEE 802.11b/g/Draft n
Test Item	: RF Exposure	Temperature	: 25 ℃
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/4∏R2 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: 22.73 dBm = 187.50 mW (802.11b/g, 2412MHz) 25.25 dBm = 335.03 mW (Draft n, 2462MHz,20MHz) 25.50 dBm = 354.87 mW (Draft n, 2422MHz,40MHz) Prediction distance: 20 cm Antenna gain : 802.11b/g (2.0 dBi); 802.11n(5.01dBi) MPE limit for uncontrolled exposure at prediction frequency: 10 W/m^2 Power density at 20 cm: 802.11b/g: 0.0591 mW/cm^2 Draft n(20MHz) : 0.2113 mW/cm^2 Draft n(40MHz) : 0.2238 mW/cm^2

802.11b/g

Mode	Frequency (MHz)	OutputPower (dBm)	RF Power (mW)	Antenna Gain (dBi)	Distance(cm)	MPE (mW/cm2)	Limit MPE (mW/cm2)
802.11b	2412	20.44	110.66	2.00	20.0	0.03489226	1.0
	2437	20.15	103.51	2.00	20.0	0.03263842	1.0
	2462	20.09	102.09	2.00	20.0	0.03219060	1.0
Mode	Frequency (MHz)	OutputPower (dBm)	RF Power (mW)	Antenna Gain (dBi)	Distance(cm)	MPE (mW/cm2)	Limit MPE (mW/cm2)
802.11g	2412	22.73	187.50	2.00	20.0	0.05911928	1.0
	2437	22.56	180.30	2.00	20.0	0.05684982	1.0
	2462	22.09	161.81	2.00	20.0	0.05101867	1.0

IEEE 802.11n

Mode	Frequency (MHz)	OutputPower (dBm)	RF Power (mW)	Antenna Gain (dBi)	Distance(cm)	MPE (mW/cm2)	Limit MPE (mW/cm2)
Draft n 20MHz Ant.0	2412	22.12	162.93	2.00	20.0	0.05137231	1.0
	2437	21.95	156.68	2.00	20.0	0.04940025	1.0
	2462	22.31	170.22	2.00	20.0	0.05366970	1.0
Mode	Frequency (MHz)	OutputPower (dBm)	RF Power (mW)	Antenna Gain (dBi)	Distance(cm)	MPE (mW/cm2)	Limit MPE (mW/cm2)
Draft n 20MHz Ant.1	2412	22.04	159.96	2.00	20.0	0.05043466	1.0
	2437	22.35	171.79	2.00	20.0	0.05416629	1.0
	2462	22.17	164.82	2.00	20.0	0.05196718	1.0
Mode	Frequency (MHz)	OutputPower (dBm)	RF Power (mW)	Antenna Gain (dBi)	Distance(cm)	MPE (mW/cm2)	Limit MPE (mW/cm2)
Draft n 20MHz Ant.0+Ant.1	2412	25.09	322.89	5.01	20.0	0.20361396	1.0
	2437	25.16	328.47	5.01	20.0	0.20713309	1.0
	2462	25.25	335.03	5.01	20.0	0.21127375	1.0
Mode	Frequency (MHz)	OutputPower (dBm)	RF Power (mW)	Antenna Gain (dBi)	Distance(cm)	MPE (mW/cm2)	Limit MPE (mW/cm2)
Draft n 40MHz Ant.0	2412	22.54	179.47	2.00	20.0	0.05658862	1.0
	2437	22.76	188.80	2.00	20.0	0.05952907	1.0
	2452	22.43	174.98	2.00	20.0	0.05517332	1.0
Mode	Frequency (MHz)	OutputPower (dBm)	RF Power (mW)	Antenna Gain (dBi)	Distance(cm)	MPE (mW/cm2)	Limit MPE (mW/cm2)
Draft n 40MHz Ant.1	2412	22.18	165.20	2.00	20.0	0.05208697	1.0
	2437	22.09	161.81	2.00	20.0	0.05101867	1.0
	2452	22.55	179.89	2.00	20.0	0.05671907	1.0
Mode	Frequency (MHz)	OutputPower (dBm)	RF Power (mW)	Antenna Gain (dBi)	Distance(cm)	MPE (mW/cm2)	Limit MPE (mW/cm2)
Draft n 40MHz Ant.0+Ant.1	2412	25.37	344.67	5.01	20.0	0.21735120	1.0
	2437	25.45	350.61	5.01	20.0	0.22109549	1.0
	2452	25.50	354.87	5.01	20.0	0.22378479	1.0

Note:
1.Total Output Power (w) = Chain 0(10^(Outpu Power / 10)/1000)+Chain2 (10^(Output Power/10)/1000)
2.The maximum antenna gain is 5.01 dBi;