1 MAXIMUM PERMISSIBLE EXPOSURE (MPE)

1.1 Standard Applicable

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

This is a Mobile device, the MPE is required.

According to §1.1310 and §2.1093 RF exposure is calculated.

Limits for Maximum Permissive Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Averaging Time (minute)
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
1500-15000	/	/	1.0	30

F = frequency in MHz

* = Plane-wave equipment power density

1.2 Maximum Permissible Exposure (MPE) Evaluation

Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)
2412	16.75	0.0473	1
2437	**16.88**	0.0488	1
2462	16.59	0.0456	1

MPE Prediction (802.11b)

Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$S=PG/4\pi R^2$

Where: S = Power density

P = Power input to antenna

G = Power gain of the antenna in the direction of interest relative to an isotropic radiator

R = Distance to the center of radiation of the antenna

Maximum average output power at antenna input terminal:	16.88	(dBm)
Maximum average output power at antenna input terminal:	48.75284901	(mW)
Duty cycle:	98.5	(%)
Maximum Pav :	48.02155628	(mW)
Antenna gain (Maximum):	0.76	(dBi)
Antenna gain (linear):	1.191242008	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	2437	(MHz)
MPE limit for uncontrolled exposure at prediction frequency:	1	(mW/cm2)
Power density at predication frequency at 20 (cm) distance	0.0113864	(mW/cm^2)

Measurement Result

The predicted power density level at 20 cm is 0.0113864 mW/cm^2. This is below the uncontrolled exposure limit of 1 mW/cm^2 at 2437MHz.

Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)
2412	13.01	0.0200	0.2123
2437	**13.89**	0.0245	0.2123
2462	12.31	0.0170	0.2123

MPE Prediction (802.11g)

Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$S=PG/4\pi R^2$

Where: S = Power density

P = Power input to antenna

G = Power gain of the antenna in the direction of interest relative to an isotropic radiator

R = Distance to the center of radiation of the antenna

Maximum average output power at antenna input terminal:	13.89	(dBm)
Maximum average output power at antenna input terminal:	24.49063242	(mW)
Duty cycle:	98.6	(%)
Maximum Pav :	24.14776356	(mW)
Antenna gain (Maximum):	0.76	(dBi)
Antenna gain (linear):	1.191242008	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	2437	(MHz)
MPE limit for uncontrolled exposure at prediction frequency:	1	(mW/cm2)
Power density at predication frequency at 20 (cm) distance	0.0057257	(mW/cm^2)

Measurement Result

The predicted power density level at 20 cm is 0.0057257 mW/cm^2. This is below the uncontrolled exposure limit of 1 mW/cm^2 at 2437MHz.

Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)
2412	12.61	0.0182	1
2437	**12.62**	0.0183	1
2462	11.21	0.0132	1

MPE Prediction (802.11n_HT20)

Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$S=PG/4\pi R^2$

Where: S = Power density

P = Power input to antenna

G = Power gain of the antenna in the direction of interest relative to an isotropic radiator

R = Distance to the center of radiation of the antenna

Maximum average output power at antenna input terminal:	12.62	(dBm)
Maximum average output power at antenna input terminal:	18.28100216	(mW)
Duty cycle:	98.5	(%)
Maximum Pav :	18.00678713	(mW)
Antenna gain (Maximum):	0.76	(dBi)
Antenna gain (linear):	1.191242008	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	2437	(MHz)
MPE limit for uncontrolled exposure at prediction frequency:	1	(mW/cm2)
Power density at predication frequency at 20 (cm) distance	0.0042696	(mW/cm^2)

Measurement Result

The predicted power density level at 20 cm is 0.0042696 mW/cm^2. This is below the uncontrolled exposure limit of 1 mW/cm^2 at 2437MHz.