MAXIMUM PERMISSIBLE EXPOSURE (MPE)

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

Maximum Permissible Exposure (MPE) Evaluation

Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Limit (mW)
2412	16.00	39.81	1000
2437	16.50	44.67	1000
2462	16.50	44.67	1000

MPE Prediction (802.11b 2412~2462)

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	14.10	(dBm)
Maximum average output power at antenna input	25.703958	(mW)
Duty cycle:	99	(%)
Maximum Pav :	25.446918	(mW)
Antenna gain (Maximum):	2.88	(dBi)
Antenna gain (linear):	1.9408859	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	2437	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm2)
Power density at predication frequency at 20 (cm)	0.0098307	(mW/cm^2)

Measurement Result

The predicted power density level at 20 cm is 0.0098mW/cm^2. This is below the uncontrolled exposure limit of 1mW/cm^2 at 2437MHz.

Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Limit (mW)
2412	12.50	17.78	1000
2437	12.50	17.78	1000
2462	12.75	18.84	1000

MPE Prediction (802.11g 2412~2462)

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	12.75	(dBm)
Maximum average output power at antenna input	18.836491	(mW)
Duty cycle:	97.12	(%)
Maximum Pav :	18.294	(mW)
Antenna gain (Maximum):	2.8	(dBi)
Antenna gain (linear):	1.9054607	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	2462	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm2)
Power density at predication frequency at 20 (cm)	0.0069384	(mW/cm^2)

Measurement Result

The predicted power density level at 20 cm is 0.0069mW/cm^2. This is below the uncontrolled exposure limit of 1mW/cm^2 at 2462MHz.

Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Limit (mW)
2412	11.65	14.61	1000
2437	12.15	16.40	1000
2462	12.61	18.25	1000

MPE Prediction (802.11n_HT20 2412~2462) (MIMO)

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	12.61	(dBm)
Maximum average output power at antenna input	18.238957	(mW)
Duty cycle:	94.5	(%)
Maximum Pav :	17.235814	(mW)
Antenna gain (Maximum):	5.81	(dBi)
Antenna gain (linear):	3.8106582	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	2462	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm2)
Power density at predication frequency at 20 (cm)	0.0130732	(mW/cm^2)

Measurement Result

The predicted power density level at 20 cm is 0.0131mW/cm^2. This is below the uncontrolled exposure limit of 1mW/cm^2 at 2462MHz.