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

802.11b Power Table

Frequency (MHz)	Reading Power (dBm)	Cable Loss	Output Power (dBm)	Output Power (W)	Limit (W)
2412.00	**13.99**	0.00	**13.99**	0.02506	1
2437.00	13.88	0.00	13.88	0.02443	1
2462.00	13.92	0.00	13.92	0.02466	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 peak output power at antenna input terminal:	13.99	(dBm)
Maximum peak output power at antenna input terminal:	25.06109253	(mW)
Duty cycle:	100	(%)
Maximum Pav :	25.06109253	(mW)
Antenna gain (typical):	-3.06	(dBi)
Maximum antenna gain:	0.494310687	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	2412	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm2)
Power density at predication frequency at 20 (cm)	0.002466	(mW/cm^2)

Measurement Result

The predicted power density level at 20 cm is 0.00247mW/cm^2. This is below the uncontrolled exposure limit of 1 mW/cm^2 at 2412MHz.

802.11g Power Table

Frequency (MHz)	Reading Power (dBm)	Cable Loss	Output Power (dBm)	Output Power (W)	Limit (W)
2412.00	11.09	0.00	11.09	0.01285	1
2437.00	11.13	0.00	11.13	0.01297	1
2462.00	**11.38**	0.00	**11.38**	0.01374	1

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 peak output power at antenna input terminal:	11.38	(dBm)
Maximum peak output power at antenna input terminal:	13.74041975	(mW)
Duty cycle:	100	(%)
Maximum Pav :	13.74041975	(mW)
Antenna gain (typical):	-0.36	(dBi)
Maximum antenna gain:	0.920449572	(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)	0.002517	(mW/cm^2)

Measurement Result

The predicted power density level at 20 cm is 0.00252 mW/cm2. This is below the uncontrolled exposure limit of 1 mW/cm2 at 2462.

802.11n_20M (2.4G) Power Table

Frequency (MHz)	Reading Power (dBm)	Cable Loss	Output Power (dBm)	Output Power (W)	Limit (W)
2412.00	11.03	0.00	11.03	0.01268	1
2437.00	11.13	0.00	11.13	0.01297	1
2462.00	**11.18**	0.00	**11.18**	0.01312	1

MPE Prediction (802.11n_20M (2.4G))

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 peak output power at antenna input terminal:	11.18	(dBm)
Maximum peak output power at antenna input terminal:	13.12199899	(mW)
Duty cycle:	100	(%)
Maximum Pav :	13.12199899	(mW)
Antenna gain (typical):	-3.06	(dBi)
Maximum antenna gain:	0.494310687	(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)	0.001291	(mW/cm^2)

Measurement Result

The predicted power density level at 20 cm is 0.00129 mW/cm2. This is below the uncontrolled exposure limit of 1 mW/cm2 at 2462.