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

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

MPE Prediction (BLE)

Max. output power including tune-up tolerancel:	2.19	(dBm)
Max. output power including tune-up tolerancel:	1.655769963	(mW)
Duty cycle:	70.59	(%)
Maximum Pav :	1.168808017	(mW)
Peak Antenna gain (Maximum):	2	(dBi)
Peak Antenna gain (linear):	1.584893192	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	2480	(MHz)
MPE limit for uncontrolled exposure at prediction frequency:	1	(mW/cm2)
Power density at predication frequency at 20 (cm) distance	0.0004	(mW/cm2)

Measurement Result

The predicted power density level at 20 cm is 0.0004 mW/cm2.

This is below the uncontrolled exposure limit of 1 mW/cm2 at 2480MHz.

MPE Prediction (802.11n_HT20 Worst Case)

MIMO gain= G+(10 logN)= 2+3.01= 5.01dBm

Max. output power including tune-up tolerancel:	16.53	(dBm)
Max. output power including tune-up tolerancel:	44.97798549	(mW)
Duty cycle:	95.57	(%)
Maximum Pav :	42.98546073	(mW)
Peak Antenna gain (Maximum):	5.01	(dBi)
Peak Antenna gain (linear):	3.169567463	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	2437	(MHz)
MPE limit for uncontrolled exposure at prediction frequency:	1	(mW/cm^2)
Power density at predication frequency at 20 (cm) distance	0.027	(mW/cm^2)

Measurement Result
The predicted power density level at 20 cm is 0.027 mW/cm2.
This is below the uncontrolled exposure limit of 1 mW/cm2 at 2437MHz.

MPE Prediction (802.11a Worst Case)

MIMO gain= G+(10 logN)= 2+3.01= 5.01dBm

Max. output power including tune-up tolerancel:	14.98	(dBm)
Max. output power including tune-up tolerancel:	31.47748314	(mW)
Duty cycle:	98.23	(%)
Maximum Pav :	30.92033169	(mW)
Peak Antenna gain (Maximum):	5.01	(dBi)
Peak Antenna gain (linear):	3.169567463	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	5785	(MHz)
MPE limit for uncontrolled exposure at prediction frequency:	1	(mW/cm2)
Power density at predication frequency at 20 (cm) distance	0.020	(mW/cm2)

Measurement Result
The predicted power density level at 20 cm is 0.02 mW/cm2.
This is below the uncontrolled exposure limit of 1 mW/cm2 at 5785MHz.

~ End of Report ~