

## 15. Maximum Permissible Exposure (MPE)

### 15.1 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 <sup>2</sup> )	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 <sup>2</sup> )	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

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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## 15.2 Maximum Permissible Exposure (MPE) Evaluation

### BDR mode:

Frequency (MHz)	Reading Power (dBm)	Output Power (dBm)	Output Power (W)	Limit (W)
2402.00	3.34	3.34	0.00216	1
2441.00	3.06	3.06	0.00202	1
2480.00	3.11	3.11	0.00205	1

### EDR mode:

Frequency (MHz)	Reading Power (dBm)	Output Power (dBm)	Output Power (W)	Limit (W)
2402.00	3.40	3.40	0.00219	1
2441.00	3.07	3.07	0.00203	1
2480.00	3.09	3.09	0.00204	1

### MPE Prediction (Bluetooth)

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

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Maximum peak output power at antenna input terminal:	3.4	(dBm)
Maximum peak output power at antenna input terminal:	2.187761624	(mW)
Duty cycle:	77.3	(%)
Maximum Pav :	1.691139735	(mW)
Antenna gain (typical):	-2.6	(dBi)
Maximum antenna gain:	0.549540874	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	2402	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm <sup>2</sup> )
Power density at predication frequency at 20 (cm)	0.0001850	(mW/cm <sup>2</sup> )
Power density at predication frequency at 20 (cm)	0.0018498	(W/m <sup>2</sup> )

### Measurement Result

The predicted power density level at 20 cm is 0.000185 mW/cm<sup>2</sup>. This is below the uncontrolled exposure limit of 1 mW/cm<sup>2</sup> at 2480MHz.

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