

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 §2.1091 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 – High Speed Mode

Conducted Power result:

Cable loss = 0	Output Power		Limit (dBm)
Frequency (MHz)	Detector		
	PK (dBm)	AV (dBm)	
903.64900	14.51	14.48	30
910.0	14.64	14.60	
926.93600	14.64	14.60	

MPE Prediction (High Speed) with the max antenna gain 3 dBi

Prediction of MPE limit at a given distance

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

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

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:	14.64	(dBm)
Maximum peak output power at antenna input terminal:	29.10717118	(mW)
Duty cycle:	100	(%)
Maximum Pav :	29.10717118	(mW)
Antenna gain (typical):	3	(dBi)
Maximum antenna gain:	1.995262315	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	910	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm ²)
Power density at predication frequency at 20 (cm)	0.0115598	(mW/cm ²)

Evaluation Result

The predicted power density level at 20 cm is 0.012 mW/cm². This is below the uncontrolled exposure limit of 1 mW/cm² at 910MHz.

**Maximum Permissible Exposure (MPE) Evaluation– Low Speed High Power Mode
Conducted Power result:**

Frequency (MHz)	Reading Power (dBm)	Cable Loss	Output Power (dBm)	Output Power (W)	Limit (W)
902.80	16.60	0.00	16.60	0.04571	1
915.14	15.90	0.00	15.90	0.03890	1
927.48	16.20	0.00	16.20	0.04169	1

offset: 0.5dB

MPE Prediction with the max antenna gain 3 dBi

Prediction of MPE limit at a given distance

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

$$S = \frac{PG}{4R^2}$$

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:	16.6	(dBm)
Maximum peak output power at antenna input terminal:	45.70881896	(mW)
Duty cycle:	100	(%)
Maximum Pav :	45.70881896	(mW)
Antenna gain (typical):	3	(dBi)
Maximum antenna gain:	1.995262315	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	910	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm ²)
Power density at predication frequency at 20 (cm)	0.0181531	(mW/cm ²)

Evaluation Result

The predicted power density level at 20 cm is 0.018 mW/cm². This is below the uncontrolled exposure limit of 1 mW/cm² at 902.80MHz.