5 FCC §255(g), §2.1091, §1.1310(d) (3) - RF Exposure

5.1 Applicable Standards

As per FCC §15.255(g): Radio frequency devices operating under the provisions of this part are subject to the radio frequency radiation exposure requirements specified in §§ 1.1307(b), 1.1310, 2.1091, and 2.1093 of this chapter, as appropriate. Applications for equipment authorization of mobile or portable devices operating under this section must contain a statement confirming compliance with these requirements. Technical information showing the basis for this statement must be submitted to the Commission upon request.

As per FCC §1.1310(d) (3), At operating frequencies above 6 GHz, the MPE limits listed in Table 1 in paragraph (e)(1) of this section shall be used in all cases to evaluate the environmental impact of human exposure to RF radiation as specified in §1.1307(b) of this part.

TABLE 1 TO §1.1310(E)(1)—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(i) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*(100)	≤6
3.0-30	1842/f	4.89/f	*($900/f^2$)	<6
30-300	61.4	0.163	1.0	<6
300-1,500			f/300	<6
1,500-100,000			5	<6
(ii) 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
300-1,500			f/1500	<30
1,500-100,000			1.0	<30

f = frequency in MHz. * = Plane-wave equivalent power density.

5.2 MPE Prediction

Predication of MPE limit at a given distance, Equation from OET Bulletin 65, Edition 97-01

$$S = EIRP/4\pi R^2$$

Where: S = power density
EIRP = Effective Isotropic Radiated Power
R = distance to the center of radiation of the antenna

5.3 MPE Results for the FCC

Radar Standalone

Maximum EIRP (dBm):	0.5
Maximum EIRP (mW):	1.12
Prediction distance (cm):	20.1
Prediction frequency (MHz):	60500
Power density of prediction frequency at 20.1 cm (mW/cm^2):	0.0002
FCC MPE limit for uncontrolled exposure at prediction frequency (mW/cm^2):	1.0

The device is compliant with the FCC requirement MPE limit for uncontrolled exposure. The maximum power density at the distance of 20.1 cm is 0.0002mW/cm^2. Limit is 1.0 mW/cm^2.

Worst Case Co-location MPE Calculation

Radio	Max EIRP (dBm)	Evaluated Distance (cm)	Worst-Case Exposure Level [mW/cm^2]	Limit [mW/cm^2]	Worst-Case Ratios	Sum of Ratios	Limit
Worst Case							
BLE	9.5	20.1	0.00176mW/cm^2	1.0 mW/cm^2	0.176%	99.26%	100%
Radar	0.5	20.1	0.0002 mW/cm^2	1.0 mW/cm^2	0.02%		
GSM850	34.541	20.1	0.561 mW/cm^2	0.566mW/cm^2	99.06%		

Note: For BLE and GSM850 data referenced above, please refer to original FCC certification's MPE calculations