5 FCC §2.1091, §1.1307 – RF Exposure

5.1 Applicable Standards

According to FCC §2.1091, and §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Averaging Time (minutes)
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
1500-100,000	/	/	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

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

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

5.3 MPE Result

RFID Standalone

Maximum Peak E.R.P. (dBm):	-52.31
Maximum Peak E.R.P. (mW):	0.0000059
Prediction distance (cm):	20
Prediction frequency (MHz):	13.56
Power density of prediction frequency at 20 cm (mW/cm^2):	0.0000000012
FCC MPE limit for uncontrolled exposure at prediction frequency (mW/cm^2):	0.979

The device is compliant with the FCC requirement MPE limit for uncontrolled exposure. The maximum power density at the distance of 20 cm is 0.0000000012 mW/cm^2. Limit is 0.979 mW/cm^2.

Note: Per ANSI C63.10 Sections 10.3.9 and G.4, Max ERP was determined by the following calculation: 45.14 dBuV/m @ 3m – 95.3 – 2.15 dB = -52.31 dBm