6.6. RF EXPOSURE REQUIRMENTS @ 1.1310 & 2.1091

6.6.1. Limits

- **FCC 1.1310:-** The criteria listed in the following table shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in 1.1307(b).

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Average Time (minutes)
(A) Limits for Occupational/Control Exposures				
300-1500	...	...	F/300	6
(B) Limits for General Population/Uncontrolled Exposure				
300-1500	...	...	F/1500	6

F = Frequency in MHz

6.6.2. Method of Measurements

Refer to FCC @ 1.1310, 2.1091 and Public Notice DA 00-705 (March 30, 2000)

- In order to demonstrate compliance with MPE requirements (see Section 2.1091), the following information is typically needed:

(1) Calculation that estimates the minimum separation distance (20 cm or more) between an antenna and persons required to satisfy power density limits defined for free space.
(2) Antenna installation and device operating instructions for installers (professional/unskilled users), and the parties responsible for ensuring compliance with the RF exposure requirement
(3) Any caution statements and/or warning labels that are necessary in order to comply with the exposure limits
(4) Any other RF exposure related issues that may affect MPE compliance

Calculation Method of RF Safety Distance:

$S = PG/4\Pi r^2 = EIRP/4\Pi r^2$

Where: P: power input to the antenna in mW
EIRP: Equivalent (effective) isotropic radiated power.
S: power density mW/cm^2
G: numeric gain of antenna relative to isotropic radiator
r: distance to centre of radiation in cm

FCC radio frequency exposure limits may be exceeded at distances closer than r cm from the antenna of this device

$r = \sqrt{PG/4\Pi S}$

FCC radio frequency exposure limits may not be exceeded at distances closer than r cm from the antenna of this device

- For portable transmitters (see Section 2.1093), or devices designed to operate next to a person's body, compliance is determined with respect to the SAR limit (define in the body tissues) for near-field exposure conditions. If the maximum average output power, operating condition configurations and exposure conditions are comparable to those of existing cellular and PCS phones., an SAR evaluation may be required in order to determine if such a device complies with SAR limit. When SAR evaluation data is not available, and the additional supporting information cannot assure compliance, the Commission may request that an SAR evaluation be performed, as provided for in Section 1.1307(d)

6.6.3. Test Data

Antenna Gain Limit specified by Manufactuer: 0 dBi

6.6.3.1. Antenna Separation Distance for Operators (Occupational/Control Exposures)

The following separation distance calculation is applied for the trained users or operators:

Frequency Range (MHz)	Peak Measured RF Conducted Power (Watts)	Average Measured RF Conducted Power with 50% Duty Cycle (Watts)	Average Calculated EIRP (Watts)	Laboratory's Recommended Minimum RF Safety Distance r (cm)
440 - 490	45.0	22.5	22.5	34.9

Note 1: RF EXPOSURE DISTANCE LIMITS: $r = (PG/4\pi S)^{1/2} = (EIRP/4\pi S)^{1/2}$
$S = F/300 = 440.10/300 = 1.467\ W/cm^2$

6.6.3.2. Antenna Separation for Bystanders (General Population/Uncontrolled Exposure)

The following separation distance calculation is applied for the bystanders:

Frequency Range (MHz)	Peak Measured RF Conducted Power (Watts)	Average Measured RF Conducted Power with 50% Duty Cycle (Watts)	Average Calculated EIRP (Watts)	Laboratory's Recommended Minimum RF Safety Distance r (cm)
440 - 490	45.0	22.5	22.5	78.1

Note 1: RF EXPOSURE DISTANCE LIMITS: $r = (PG/4\pi S)^{1/2} = (EIRP/4\pi S)^{1/2}$
$S = F/300 = 440.10/1500 = 0.2934\ W/cm^2$

Evaluation of RF Exposure Compliance Requirements	
RF Exposure Requirements	**Compliance with FCC Rules**
Minimum calculated separation distance between antenna and persons required: 34.9 cm for operators and 78.1 cm for bystanders	Manufacturer' instruction for separation distance between antenna and persons required: 79 cm (for both operators and bystanders) Please refer to page # 15 of the Users Manual
Caution statements and/or warning labels that are necessary in order to comply with the exposure limits	Please refer to page # 15 of the Users Manual for RF Safety Training