1.1. RF EXPOSURE REQUIREMENTS @ 1.1310, 2.1091 & RSS-102

1.1.1. 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	30

F = Frequency in MHz

1.1.2. Method of Measurements

Refer to FCC @ 1.1310, 2.1091, RSS-102, IEEE C95.3 (2002).

1.1.3. MPE Measurements for EIRP $\geq$ 20 Watts

For the transmitter with EIRP $\geq$ 20 watts, the MPE measurement is required.

$S = PG / 4\Pi r^2$ and $E = (30PG)^{1/2}/r$

- $PG = (Er)^2/30$
- $S = PG/(4\Pi r^2) = (Er)^2/120\,\Pi r^2 = E^2 / (120\Pi)$
- $E = (120\Pi S)^{1/2} = 19.42S^{1/2}$

Where: E is Field Strength in (V/m) at distance r (meters)
S: is power density in $Watts/m^2$

The MPE measurements were conducted as below:

(1) Connect the transmitter to it's antenna with maximum gain as specified by the manufacturer
(2) Set the transmitter to operate at it's maximum power as rated by the manufacturer
(3) Place the EUT and E-Field Isotropic probe in the Semi-Anechoic Chamber at the height of 2 meters above the ground plane.
(4) Move the E-Field isotropic probe from the EUT's transmitter to further away until obtaining the field strength E (V/m) that produce the power density S (W/m^2) as specified in FCC 1.1310
(5) Rotate the Antena 360° to measure the distance at peak radiation.
(6) Record the distance "r" where the E-Field "E" or Power Density "S" is obtained
(7) Repeat steps (4) to (5) with the transmitter's antennas placed in three different axis at different test frequencies and record the highest distance.

1.1.4. Test Equipment List

	EQUIPMENT DESCRIPTION
1.	Braden Fully Anechoic Chamber, 12'x24'x12' , Ferrite Tiles on all six surfaces (walls, ceiling and floor)
2.	Holaday Industries HI-4455 E-Field Isotropic Probe, S/N 109331, 200kHz - 40GHz, 2 – 300 V/m
3.	Trillium 486DX66 Personal Computer with GPIB card, S/N 930583
4.	Ultratech EMC Control Software for Windows, Version EMC2000, Rev 1.0
5.	Lightwave Communications FO-232, Fiber Optic RS-232 Modems, S/N 32961
6.	Motorola Quarter-wave Antenna for EUT, Model: HAF4016A, 764-870 MHz

1.1.5. Test Setup Diagram

1.1.6. Test Data

RF EXPOSURE DISTANCE LIMITS: $r = (PG/4\Pi S)^{1/2} = (EIRP/4\Pi S)^{1/2}$

$S = 0.54/ mW/cm^2 = 5.4W/m^2$

$E = (120\Pi S)^{1/2} = 19.42S^{1/2} = 19.42(5.4)^{1/2} = 45$ V/m

Antenna Gain Limit specified by Manufactuer: 2.15 dBi

Frequency (MHz)	Required E-Field (V/m)	Distance "r" to obtain E-Field=45V/m cms
806	45	**54**
815.5	45	53
825	45	53
851	45	53
860.5	45	**54**
870	45	52

Evaluation of RF Exposure Compliance Requirements	
RF Exposure Requirements	**Compliance with FCC Rules**
A minimum safe RF separation distance required, where E field = 45 V/m	Manufacturer' instruction for separation distance between antenna and persons required: **54 cm**. Please refer to page # 4 of the Users Manual and FCC RF Exposure folder
Antenna installation and device operating instructions for installers (professional/unskilled users), and the parties responsible for ensuring compliance with the RF exposure requirement	Please refer to Users Manual.
Caution statements and/or warning labels that are necessary in order to comply with the exposure limits	Please refer to page # 4 of the Users Manual and FCC RF Exposure folder

1.1.7. Test Setup Photos