Maximum Permissible Exposure

1 Applicable standard

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 limit for maximum permissible exposure. IN accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2m normally can be maintained between the user and the device.

(a) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Times E^2, H^2 or S (minutes)
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
300-1500	--	--	f/300	6
1500-100000	--	--	5	6

(b) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Times E^2, H^2 or S (minutes)
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
1500-100000	--	--	1.0	30

Note: f=frequency in MHz; * Plane-wave equivalent power density

2. MPE Calculation Method

$E (V/m) = (30*P*G)^{0.5}/d$ Power Density: $Pd (W/m^2) = E^2/377$
E= Electric Field (V/m)
P= Peak RF output power (W)
G= EUT Antenna numeric gain (numeric)
d = Separation distance between radiator and human body (m)
The formula can be changed to
$Pd = (30*P*G)/ (377*d^2)$
From the peak EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained.

APPLICANT: Innovation Specialties
FCC ID: VMH-10100S00

3. Calculated Result and Limit

Test CH (MHz)	Antenna Gain (Numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm^2)	Limit of Power Density (S) (mW/cm^2)	Test Result
Low CH: 920.150	3.1623	26.89	488.652	0.307413[4]	0.613433[1]	Compiles
Middle CH: 922.516	3.1623	26.90	489.779	0.308122[5]	0.615011[2]	Compiles
High CH: 924.791	3.1623	26.93	493.174	0.310258[6]	0.616527[3]	Compiles

Note: 1.Antenna gain: 5dBi (3.1623)

2. 1) Limit of Power density S (mW/cm^2) for uncontrolled area at 920.150
   S=f (MHz)/1500=920.15/1500=0.613433

   2) Limit of Power density S (mW/cm^2) for uncontrolled area at 922.516
   S=f (MHz)/1500=922.516/1500=0.615011

   3) Limit of Power density S (mW/cm^2) for uncontrolled area at 924.791
   S=f (MHz)/1500=924.791/1500=0.616527

3. 4) Power density S (mW/cm^2) for uncontrolled area at 920.150
   S= (30*P*G)/ (377*d^2) = (30*488.652Mw*3.1623)/ (377*20cm^2) =0.307413

   5) Power density S (mW/cm^2) for uncontrolled area at 922.516
   S= (30*P*G)/ (377*d^2) = (30*488.779Mw*3.1623)/ (377*20cm^2) =0.308122

   6) Power density S (mW/cm^2) for uncontrolled area at 924.791
   S= (30*P*G)/ (377*d^2) = (30*493.174Mw*3.1623)/ (377*20cm^2) =0.310258

The S at the position which is 20cm far from the EUT is smaller than the uncontrolled exposure limit line. So the EUT also complies with the limits for Occupational /Controlled Exposure.