6 RF EXPOSURE

Applicable standard: FCC §1.1310 , §2.1091 §27.52 and IC RSS-102 4.2

Limit

According to §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.

According to §1.1310 and §2.1091 RF exposure is calculated. Limits for Maximum Permissible Exposure (MPE)

(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 Time $\|E\|^2$, $\|H\|^2$ 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
1500-100,000	--	--	1.0	30

Test Data

Predication of MPE limit at a given distance
Equation from page 18 of 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

Maximum peak output power at antenna input terminal: 47.95 (dBm) Maximum peak output power at antenna input terminals: 62.37(W)
Prediction distance: 400 (cm)
Predication frequency: 2135.0 (MHz)
Antenna Gain (typical): 13 (dBi)
Power density at predication frequency at 400 cm: 0.620 (mW/cm2)
MPE limit for uncontrolled exposure at prediction frequency: 1.0 (mW/cm2)

Test Result: pass

Limit

According to RSS-102 4.2 RF exposure limit for general uncontrolled use device

Frequency Range (MHz)	Electric Field (V/M rms)	Magnetic Field (A/m rms)	Power Density (W/m^2)	Time Averaging (min)
0.003-1	280	2.19	-	6
1-10	280 / f	2.19 / f	-	6
10-30	28	2.19 / f	-	6
30-300	28	0.073	2*	6
300-1 500	1.585 $f^{0.5}$	0.0042 $f^{0.5}$	f / 150	6
1 500-15 000	61.4	0.163	10	6
15 000-150 000	61.4	0.163	10	616000/ $f^{1.2}$
150 000-300 000	0.158 $f^{0.5}$	4.21 x 10^{-4} $f^{0.5}$	6.67 x 10^{-5} f	616000 / $f^{1.2}$

Note: f is frequency in MHz
* Power density limit is applicable at frequencies greater than 100 MHz

Test Data

Predication of MPE limit at a given distance
Equation from page 18 of 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

Maximum peak output power at antenna input terminal: 47.95 (dBm) Maximum peak output power at antenna input terminals:62.37(W)
Prediction distance: 4 (m)
Predication frequency: 2135.0 (MHz)
Antenna Gain (typical): 13 (dBi)
Power density at predication frequency at 4 m: 6.195 (W/m2)
MPE limit for uncontrolled exposure at prediction frequency: 10 (W/m2)

Test Result: pass