1   RF Exposure Requirements (MPE Calculations)

1.1   Test Limits

§ 1.1310:   The criteria listed in table 1 shall be used to evaluate the environmental impact of human exposure to radiofrequency (RF) radiation as specified in §1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of §2.1093 of this chapter.

Part 1.1310 Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*(900/f²)	6
30–300	61.4	0.163	1.0	6
300–1500			f/300	6
1500–100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f²)	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

NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

1.2   Test Procedure

The maximum equivalent isotropic radiated output power was calculated using the peak conducted output power (measured) and the manufacturer's peak declared antenna gain in dBi.

Calculation of EIRP:
Peak conducted output power = 19.37dBm
Peak declared antenna gain = 2.5dBi
Peak EIRP = 19.37dBm + 2.5dBi = 21.87dBm (EIRP)

Converting EIRP to milliwatts:
EIRP(mW) = $10^{(21.87/10)}$ = 153.8mW

The EIRP in milliwatts was used to calculate the maximum RF exposure at a 20 cm distance as follows:

Calculation of Maximum RF Exposure at 20cm:
Maximum RF Exposure at 20cm = (EIRP in mW) / $(4Pi(20cm)^2)$
Maximum RF Exposure at 20cm = 153.8mW / $(4Pi(20cm)^2)$
Maximum RF Exposure at 20cm = 153.8mW / $5025.6cm^2$
Maximum RF Exposure at 20cm = $0.03mW/cm^2$

1.3   Results:

The maximum RF exposure level ($0.03mW/cm^2$) is well below the limits for the general population described in the table above at a distance of 20cm ($1 \ mW/cm^2$).

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