RF Exposure Requirements

Applicant: Crescend Technologies, LLC
FCC ID: CWWDSDTV100XX

General information

Device type: Part 90 RF amplifier designed to increase the RF output power of a mobile push to talk type of radio.

Device category: Mobile

Mobile devices that operate under Part 90 of this chapter are subject to RF exposure evaluation prior to equipment authorization or use.

Antenna

The manufacturer does not specify an antenna, but a typical mobile mounted antenna has a gain of 0 dBi.

Configuration	Antenna p/n	Type	Max. Gain (dBi)
mobile mounted	Any	omni	0

Operating configuration and exposure conditions:

The conducted output power is 100 Watts. Typical use qualifies for a maximum duty cycle factor of 100%.

- Mobile operation: A typical installation consists of an antenna system with a coaxial cable of the type RG 213/ U type which has a loss of 1dB for a length of 30 feet at VHF frequencies.

MPE Calculation:

The minimum separation distance is calculated as follows:

$$E(V/m) = \frac{\sqrt{30 \times P \times G}}{d} \qquad \text{Power density: } P_d(mW/cm^2) = \frac{E^2}{3770}$$

The limit for general population/uncontrolled exposure environment below 300 MHz is 0.2 mW/cm^2 .

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The conducted power output is 100 watt.
The coax loss was taken as 1 dB.
Antenna gain was taken as 0 dBi
100% duty cycle

Uncontrolled environment

G = 1 (0dBi)

P = 50dBm – cable loss (1dB) = 49dBm = 79.4W

Limit = 27.5 V/m

d = √(30 x 1 x 79.4) ÷ 27.5 = 1.77m

1.77m rounded up to 1.8m for a 100% duty cycle

Conclusion:
The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 1.8m from all passengers and bystanders.

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