

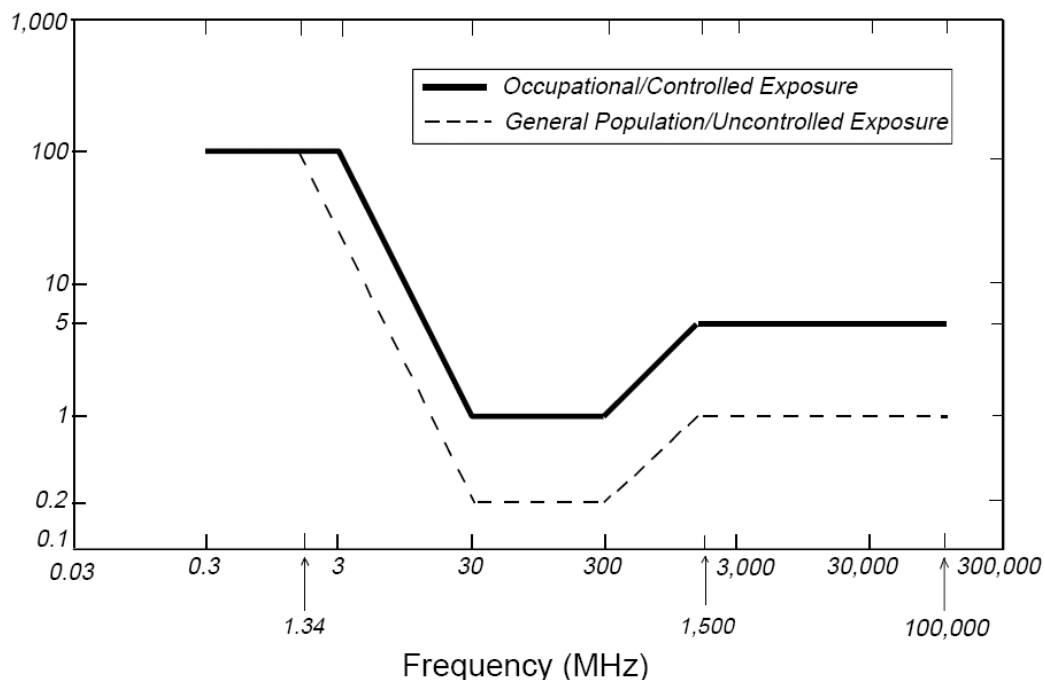
The Heli-Coder 4 (HC4) is built to best commercial practices and is meant for use in a professional environment. It is assumed that users are familiar with basic RF equipment operation and safety concepts. The following discussion is offered with the recommendation that individuals and organizations establish an RF Safety and Awareness program based on their combination of hardware and usage environment.

The FCC reference document is OET Bulletin 65 and can be viewed here;
http://www.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet65/oet65.pdf
Link valid as of 2/25/2014

The OET 65 document sets maximum permitted exposure (MPE) and is widely cited within the U. S. and Canada. It is divided into two categories, “controlled” and “uncontrolled” environment. BMS recommends users comply with limits for the uncontrolled environment.

The limit table from FCC OET Bulletin 65 is reproduced below. X axis is frequency and Y axis is mW/cm².

*Figure 1. FCC Limits for Maximum Permissible Exposure (MPE)
Plane-wave Equivalent Power Density*



Using different combinations of frequency, output power, antenna type, etc. results in different MPE limits.

Limit your exposure by raising awareness and using some common sense rules:

- Default to low power, using hi-power only as required.
- Never stand in front of a transmitting directional antenna.
- Limit transmission duty cycles (turn on/off as needed).

The safe working distance from a transmitting antenna may be calculated from the relationship:

$$D = \sqrt{\frac{Pt \cdot Gr}{4\pi \cdot W}}$$

- In which D = safe working distance (meters)
- PT = transmitter or combiner power output (watts)
- GR = antenna gain ratio = anti log (gain dBi ÷ 10)
- W = power density (watts/square meter) $[1 \text{ mW/cm}^2 = 10 \text{ W/m}^2]$

MPE DISTANCE CALCULATOR FOR COMMON ANTENNAS - DISTANCE IN INCHES								
TRANSMITTER OUTPUT (w)	10							
ANTENNA GAIN dBi	0	2	4	6	9	11	14	22
UNCONTROLLED ENVIRONMENT: MINIMUM PERMISSABLE DISTANCE INCHES (1.005 mW/cm ²)	11.08	13.95	17.56	22.10	31.22	39.31	55.52	139.47
CONTROLLED ENVIRONMENT: MINIMUM PERMISSABLE DISTANCE INCHES (5.005 mW/cm ²)	4.96	6.25	7.87	9.91	13.99	17.61	24.88	62.50

Table 1: Example MPE distances for a 10W transmitter