AMENDED RF ANALYSIS – MARCH 2024

Our radiation hazard analysis shows that in the worst case, our antennas location for 220-225 MHz and 450-465 MHz will be 4 meters above the closest walkway at the 2 meters over ground level (2 meters is pedestrian height estimation), so that the antenna will be 6 meters overall above ground level, where the general population would be exposed to the RF. The walkway is 3 meters away in the worst case, resulting in a slant range to the general population of 5 meters, again conservatively and in the worst case.

For low frequency antennas 20-37 MHz we plan 2 meters of additional increase for the antenna installation height. In other words, the ERP/EIRP stay the same for the 20-37 MHz band because we plan to scale the antenna with the frequency so gain and power out stay constant. The gain and beamwidth of the low frequency antennas will approximately equal to 9.5 dBi, the same as for current 220-225 MHz antenna. The FCC limits for is same for 30-300 MHz and even increases to 4.5 W/m^2 for 20 MHz.

The center and peak gain of our antenna main beam of 9.5 dBi will be pointed skyward at 40 degrees above the horizon. Therefore, the general population will be at a 93 degree angle from where our antenna is pointed.

The gain at this angle of 93 degrees to the general population is -3.5 dBi. We plan to use a 1000-watt power amplifier. As a result, - 3.5 dBi at a slant range of 5 meters results in approximately 1.42 W/m^2 power density and approximately 23.1 V/m field strength, both less than the 2 W/m^2 and less than 27.5 V/m electric field strength for 220-225 MHz and less than the 3 W/m^2 and less than 33.7 V/m electric field strength for 450-465 MHz, as FCC's general population/ uncontrolled exposure limits at these frequency bands. At 20 MHz the exposure limits are higher at 20 MHz than at 220-225 MHz and 450-465 MHz, so again we stay under the limits. *See* 47 C.F.R. 1.1310(e)(1).

The next closest walkway is approximately 10 meters slant range behind the antenna, located within the back lobe of the antenna, where the gain is approximately 0 dBi in that direction. As a result, utilizing the 1000-watt power amplifier with a 0 dBi of gain at 10 meters away is approximately 0.83 W/m^2 power density, and 17.4 V/m electric field strength, both well below the FCC's general population/uncontrolled exposure limits at these frequency bands.

With respect to the unpopulated mountain area where we will point the main beam, we anticipate that a portion of the beam 4 dBi down from the peak/center of the main beam will hit the mountain top. With a 1000-Watt power amplifier, a 9.5 dBi peak main beam (5.5 dBi worth of gain in the direction of the mountain top), at 24,000 meters away, if any general population were present in this area, they would receive about 0.023 V/m, well below the FCC's general population/uncontrolled exposure limits at these frequency bands.

Finally, our occupational workers will be inside our building when the RF is transmitting, behind the antenna, such that minimal radiation is received, also well below both the FCC's general population/uncontrolled and the occupational/controlled exposure limits at these frequency bands.