Federal Communications Commission
Authorization and Evaluation Division
7435 Oakland Mills Road
Columbia, MD 21046

Attention: Reviewing Engineer

The HZB-S24-08 (MODEL 31350) radio is a full duty-cycle product exclusively designed for fixed-mount point-to-point applications (Please refer to Page 1-1 of the *Installation and Maintenance Manual*). Each radio's inputs are connected to external equipment through the radio's interfaces. The RF output port is connected to a RF cable or a waveguide, which connects on the other side to an antenna usually installed on top of a building or a tower. It is impossible to use the radio in any mobile application.

The HZB-S24-08 (MODEL 31350) radios need to be professionally installed outdoor either on top of a tower or a tall building. The installation sites are inaccessible to the general public. Only installation engineers may get close to the radio antenna during system installation. For the safety concern of the professional installers, we put a warning message on Page 3-22 of the product manual recommending installers stay at least 5 meters away from the antenna during system operation.

The maximum output power allowed for the 2.4GHz spread spectrum radios is 1W, and the biggest antenna to be used with our 2.4GHz radios is of 8' diameter (33.5dB gain). The worst case EIRP is when the highest gain antenna is used:

Maximum EIRP = 30 + 33.5 – (33.5-6)/3 = 54.3dBm (269W);

The power density at 5 meters from an antenna is:
$$S = EIRP/4\pi R^2 = 0.9 \text{ W/m}^2 = 0.09 \text{ mW/cm}^2 < 1 \text{ mW/cm}^2$$
Where: S = Power density
             R = distance to the center of radiation of the antenna

In the cases of using 4', 6' and 8' parabolic antennas, the near field power density is $S_{nf} = 16\eta P/\pi D^2$. The worst case of near-field power density is when the radio output at 1W, η=1, and the antenna diameter D=4ft.
$$S_{nf} \text{ max} = 16x1/\pi (4x0.3048)^2 = = 3.4 \text{ W/m}^2 = 0.34 \text{ mW/cm}^2 < 1 \text{ mW/cm}^2$$
Where: S_{nf} = maximum near –field power density
             P = power fed to the antenna
             η = aperture efficiency
             D = antenna diameter

So in all the above-mentioned situations, the power density is compliant with the limit for General Population/ Uncontrolled Exposure as specified in rule 1.1310.

If you should have any questions regarding this submission, please feel free to contact the undersigned.

Yours truly,

Caroline Yu
International Product Manager
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