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Attention: Reviewing Engineer

The HZB-U53-45 radio is a full duty-cycle product exclusively designed for fixed-mount point-to-point applications. 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 applications.

The HZB-U53-45 radio antennas 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 tested for the HZG-U53-45 is below 1 W (30 dBm), and the biggest antenna could possibly be used with the radio is of 2' in diameter (28.4 dB gain). To comply with the U-NII EIRP limits, when a higher gain antenna is used, the output power will be reduced to make the overall EIRP less than +30dBm at the 5.25-5.35dBm band. At +30dBm EIRP, the power density at 1.5 meters from an antenna is:

$$S = \text{EIRP}/4\pi R^2 = 0.035 \text{ W/m}^2 \ll 1 \text{ mW/cm}^2$$

Where: S = Power density

R = distance to the center of radiation of the antenna

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 the certified power, $\eta=1$

$$S_{nf \text{ max}} = 16 \times 0.089 / \pi (2 \times 0.3048)^2 = 1.2 \text{ W/m}^2 = 0.012 \text{ mW/cm}^2 < 1 \text{ mW/cm}^2$$

Where: S_{nf} = maximum near -field power density

P = power fed to the antenna

η = aperture efficiency

D = antenna diameter

Therefore, 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,

A handwritten signature in black ink, appearing to read 'Caroline Yu'.

Caroline Yu
Homologation Product Manager
Western Multiplex Corporation