

## **EXHIBIT 16**

### **NON-IONIZING ELECTROMAGNETIC RADIATION (NIER) ANALYSIS**

This application proposes using an SWR FMEC/2, two-bay, half-wavelength-spaced antenna, with 250 watts of power at 7 meters AGL. The applicant is proposing the use of such an antenna to greatly minimize RF exposure to the public. Using the OET program *FM Model for Windows, Version 2.1*, and using the “Jampro Double-V”, which is essentially electrically identical to the SWR FMEC antenna, the maximum RF Exposure for a human standing on the ground would be 70.2: w/cm<sup>2</sup>, at 9.3 meters from the tower. This represents 35.1% of the FCC Maximum Permissible Exposure (MPE) of 200: w/cm<sup>2</sup> for uncontrolled environments. **Exhibit 16a** shows a plot of the predicted exposure levels to a human standing on the ground.

The antenna would be mounted at the 4 meter level of a 5 meter tower located on a 3 meter single-story flat-roofed commercial building. Access to the roof is strictly controlled, and not accessible to the public. Using *FM Model for Windows*, it has been determined that the maximum exposure for a human standing on the roof would be 439: w/cm<sup>2</sup>, at 3.7m from the tower. Thus, no point on the roof would exceed the 1000: w/cm<sup>2</sup> FCC MPE for *controlled* environments. If tower climbing becomes necessary, transmitter power will be reduced or operation will cease, as necessary, so as to not exceed the MPE for controlled environments.

Further calculations were done with *FM Model for Windows*, showing that even using the worst case “EPA Dipole” setting, the MPE standards for the ground (uncontrolled) or the roof (controlled) areas would not be exceeded with any common brand of circularly-polarized omnidirectional antenna, as long as the 2-bay, half-wavelength topology is maintained. The applicant therefore respectfully requests that the Construction Permit only specify that a 2-bay, half-wavelength antenna be used, and not specify that a specific brand or model be employed. However, the applicant will, in any case, respect the Commission’s decision in this matter.

**BROWN BROADCAST SERVICES**  
I N C O R P O R A T E D

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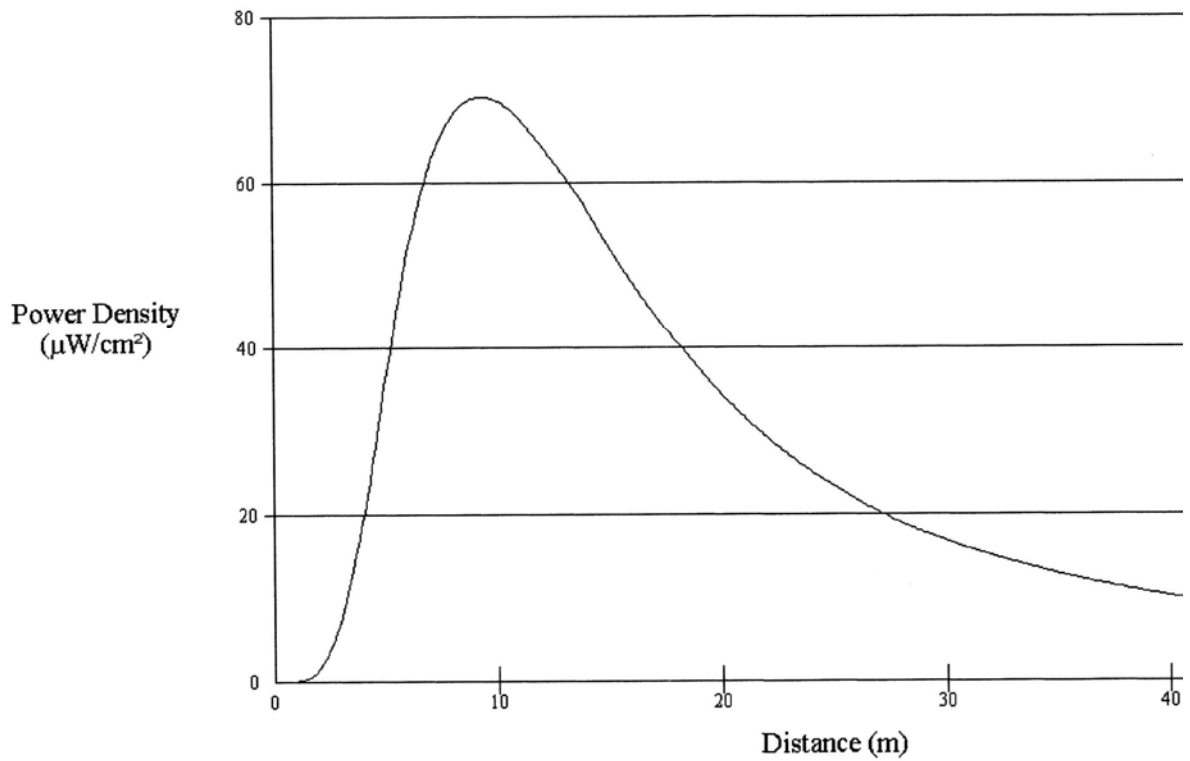
503-245-6065

# EXHIBIT 16a

## RF Exposure (NIER) Analysis

MAXIMUM EXPOSURE IS 70.2uw/cm<sup>2</sup> @9.3m

Power Density vs Distance



Office of Engineering and Technology

Distance (m):	<input type="text" value="50"/>	Antenna Type:	<input type="text" value="Jampro 'Double V' (EPA)"/>
Horizontal ERP (W):	<input type="text" value="250"/>	Number of Elements:	<input type="text" value="2"/>
Vertical ERP (W):	<input type="text" value="250"/>	Element Spacing:	<input type="text" value=".5"/>
Antenna Height (m):	<input type="text" value="7"/>		