

**THE UNIVERSITY OF NORTH CAROLINA**  
**RESEARCH TRIANGLE PARK, NC**  
**STATION AUTHORIZATION MODIFICATION**  
**FOR STATION WUNP-TV**  
**ROANOKE RAPIDS, NORTH CAROLINA**

**EXHIBIT 7 – ANTENNA AND TRANSMITTER REPLACEMENT**

The University of North Carolina (“UNC-TV”), licensee of WUNP-TV, Roanoke Rapids, North Carolina (FCC Facility ID No. 69397) hereby requests to modify its station authorization in FCC File No. BLEDT-20100315ABH. WUNP-TV is operating with a different antenna system than is currently authorized.

The WUNP-TV transmit antenna has been replaced with a new, smaller model TFU-15JTH/VP-R O4 antenna manufactured by SPX Communications Inc. The difference in the antenna model results in the new antenna’s radiation center being 3 meters lower than indicated on the current station authorization. The actual heights of the new antenna will be:

Height of Radiation Center Above Ground:	343 Meters
Height of Radiation Center Above Mean Sea Level:	429.5 Meters
Height of Radiation Center Above Average Terrain:	365 Meters
Overall Tower Height Above Ground:	348.4 Meters

The new antenna, like the model that it replaced, maintains a non-directional azimuth pattern. However, the new antenna differs electrically from the former antenna by having elliptical polarization. The vertically polarized signal component is 0.25 referenced to the horizontally polarized signal component. The elevation patterns of both the horizontal and vertical polarizations are included as Attachment 7.

**Environmental Considerations**

The action being taken has minimal impact on the RF radiation levels at the site. The WUNP-TV transmit antenna at the station site is the only antenna required to be considered by 47 CFR § 1.1307(b). Other radiation sources at the site contributing less than 5% of the total have not been considered.

WUNP-TV, Channel 36 operates with an effective radiated power (ERP) of 125 kW (average digital power) utilizing an SPX Communications, Inc. TFU-15JTH/VP-R O4 antenna with the antenna’s center of radiation located 343 meters above ground level. This antenna is non-directional and is elliptically polarized with the vertical polarization having a field ratio of 0.25

referenced to the horizontal polarization. For the purposes of RFR analysis, the antenna manufacturer supplied elevation pattern data was used to determine radiation levels directed at downward angles from the antenna. Because the antenna radiates a horizontal and vertical polarized signal, exposure levels were calculated for each polarization then the sum of those levels was used to determine the percentage of maximum allowed exposure.

Utilizing Table 1 of OET 65, the general population / uncontrolled environment maximum exposure level for channel 36 is  $0.405 \text{ mW/cm}^2$ . Using formulas available in OET 65 the distance to the  $0.405 \text{ mW/cm}^2$  contour is 113.61 meters.

The maximum occupational / controlled exposure level for channel 36 is  $2.027 \text{ mW/cm}^2$ . The distance to the  $2.027 \text{ mW/cm}^2$  contour is calculated to be 50.81 meters.

The worst case maximum exposure level at 2 meters above ground level was calculated to be  $0.000235 \text{ mW/cm}^2$  and is located about 276.14 meters from the base of the tower. The calculated exposure level for general population / uncontrolled environment is 0.06% and 0.01% for occupational / controlled environments.

Access to the transmission site is restricted and appropriately marked with warning signs. An electromagnetic radiation abatement plan is in place at the site to educate employees and workers as to the potential hazards when working on the tower. In the event that workers or other authorized personnel need to enter restricted areas or climb the tower, appropriate measures will result in maintaining worker safety with respect to radio frequency radiation exposure.

With these procedures in place, we believe the WUNP-TV operation is in compliance with the RFR energy protection requirements of 47 CFR § 1.1307(b).