

## **Engineering Statement**

In Support of an Application  
for a New Digital Television  
Auxiliary Broadcast Facility

**WEAO(TV)**

Akron, OH

### **BACKGROUND AND DISCUSSION**

Kessler and Gehman Associates, Inc. has been retained by Northeastern Educational Television of Ohio, Inc., licensee of full-power digital television broadcast station WEAO(DT) to prepare a new post-incentive auction broadcast auxiliary facility for emergency, maintenance and test operations. It is proposed to use a co-located ERI antenna having model number ALP24M2-HSOC-24 on the same support structure<sup>1</sup> as the main WEAO(DT) licensed<sup>2</sup> channel 24 post-incentive auction facility. It is proposed to mount the antenna 193.5m (635 ft) AGL with an effective radiated power of 536kW.

### **ALLOCATION ANALYSIS**

Appendix A demonstrates that the proposed broadcast auxiliary facility has a service contour which is subsumed by the license WEAO(DT) contour as required by 47 C.F.R Section 73.1675<sup>3</sup>. The broadcast auxiliary facility shall also provide Section 73.625 48-

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<sup>1</sup> Structure Registration Number 1018464

<sup>2</sup> FCC File No.: 0000095195

<sup>3</sup> Section 73.1675 requires a comparison of Grade B coverage contour; however, "Grade B" is not defined in a digital television context and is thus substituted by the 41 dB $\mu$  dipole adjusted contour instead.

dBμ F(50,90) principal community coverage to the entire Akron, OH incorporated boundaries. The Appendix A predicted coverage contours were generated using V-Soft Probe-3 software in accordance with § 73.625(b) methodology using F(50,90) propagation curves. The average terrain was extracted from three arc second terrain along eight equally spaced cardinal radials from 3 kilometers to 16 kilometers from the site and beginning from true north.

## **RADIO FREQUENCY RADIATION COMPLIANCE**

A theoretical analysis has been conducted of the human exposure to radio frequency radiation (“RFR”) using the calculation methodology described in OET Bulletin 65, Edition 97-01. The RFR analysis is conducted pursuant to the following methodology:

Terrain<sup>4</sup> extraction is compiled from the proposed tower site to radial lengths of 0.25 miles in 0.001 mile increments for 360 radials. The power density is calculated for each terrain point at 6 feet above ground level using the elevation and azimuth pattern of the proposed broadcast antenna. The power density calculations are conducted using the lower edge of the proposed channel frequency. To account for ground reflections, a coefficient of 1.6 was included in the calculation.

The resulting cylindrical polar analysis is then summarized into a coordinate plane graph using the following methodology:

Starting from the origin the maximum calculated RFR value is determined among the 360 degree radials for each 0.001 mile increment, the value is then converted into a percentage of the maximum allowable general population or uncontrolled exposure and plotted as a function of perpendicular distance from the tower.

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<sup>4</sup> Terrain extraction is based upon a 3 arc second point spacing terrain database.

The resulting RFR study in Appendix B demonstrates that the peak exposure is 0.179% of the most restrictive permissible exposure threshold. Pursuant to OET Bulletin 65 concerning multiple-user transmitter sites only those licensees whose transmitters produce power density levels greater than 5.0% of the exposure limit are considered significant contributors to RFR. Since the proposed operation is within 5% of the most permissible exposure at any location 2 meters above the ground, it is not considered a significant contributor to RFR exposure. Thus, contributions to exposure from other RF sources in the vicinity of the proposed facility were not taken into account. The instant application is compliant with the FCC limits for human exposure to RF radiation and is excluded from further environmental processing since no changes are proposed to the tower structure in order to accommodate the proposed antenna.

A chain link fence encloses the support structure and the applicant will cooperate with any other users of the tower by reducing the power to the antenna or if necessary completely cutting it off to protect maintenance workers on the tower.

## **ENVIRONMENTAL PROCESSING**

The proposed antenna shall be side mounted to an existing support structure and thus will make no change in overall height, marking specifications, or lighting and thus is categorically excluded from environmental processing.

## CERTIFICATION

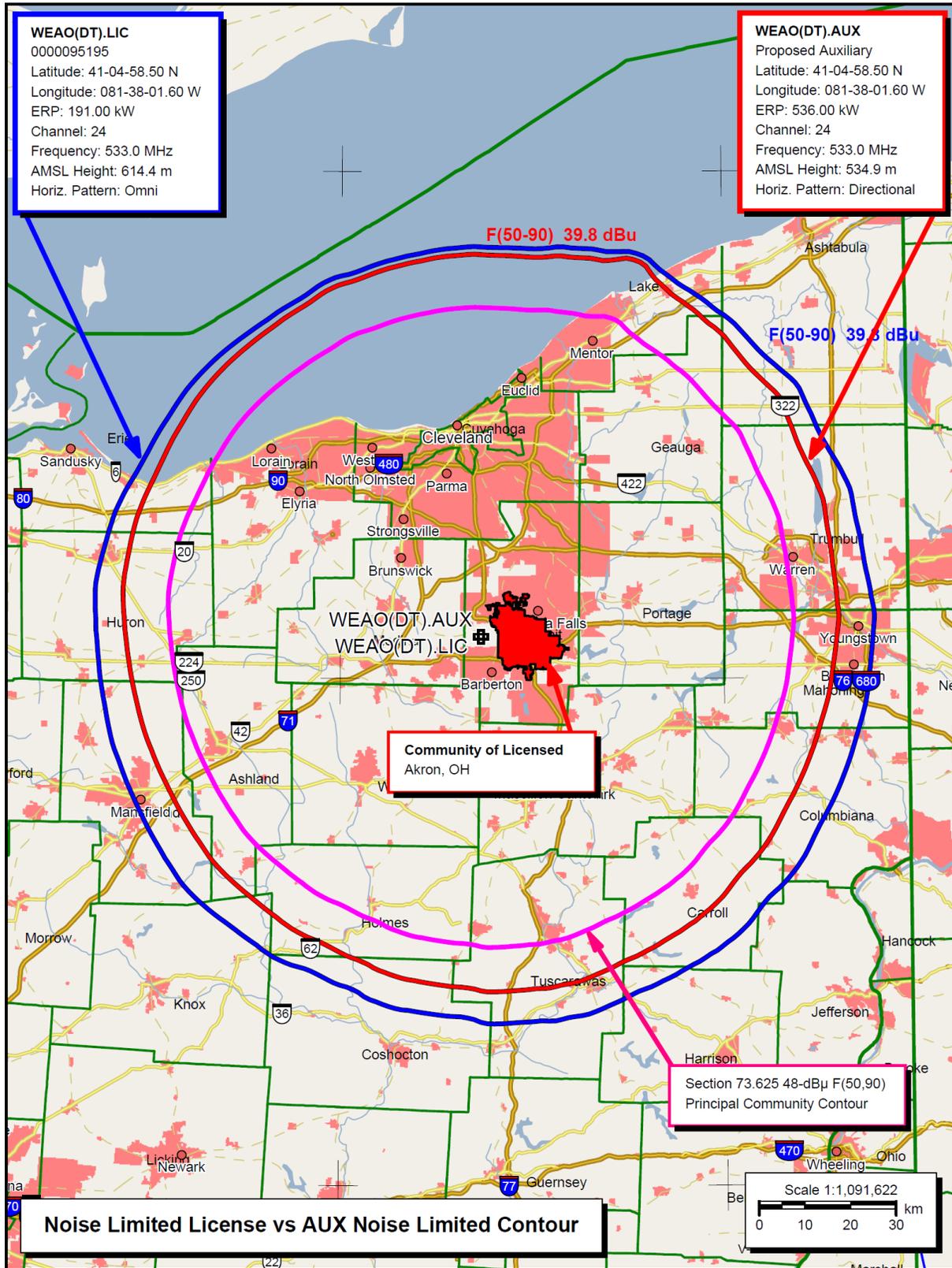
The foregoing statement and the report regarding the aforementioned engineering work are true and correct to the best of my knowledge.

Ryan Wilhour



Consulting Engineer  
January 30, 2020

Appendix A – Contour Analysis



### Appendix B – Far Field Exposure to RF Emissions

