

Engineering Statement

In Support of a New Digital Television
Broadcast Auxiliary Facility
WFUP(TV) – Facility ID No.: 25395
Vanderbilt, MI

BACKGROUND AND DISCUSSION

Kessler and Gehman Associates, Inc. has been retained by Cadillac Telecasting Co., licensee of full-power digital television broadcast station WFUP(TV) to prepare an application for a new post-incentive auction broadcast auxiliary facility for emergency, maintenance and test operations. It is proposed to utilize a tower¹ co-located in very close proximity to the main tower² to mount a Dielectric TFU-8WB-R S230 antenna to produce an ERP of 55.6KW at 145.4m above ground level as demonstrated in Appendix A.

ALLOCATION ANALYSIS

Appendix B demonstrates that the proposed broadcast auxiliary facility has a service contour which is subsumed by the permitted WFUP(TV) contour as required by 47 C.F.R Section 73.1675³. The broadcast auxiliary facility shall also provide Section

¹ Antenna Structure Registration Number 1000437

² Antenna Structure Registration Number 1000438

³ 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 μ dipole adjusted contour instead.

73.625 48-dB μ F(50,90) principal community coverage to the entire Vanderbilt, MI incorporated boundaries.

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:

Terrain⁴ 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.

The resulting RFR study in Appendix C demonstrates that the peak exposure is 0.12% 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

⁴ Terrain extraction is based upon a 3 arc second point spacing terrain database.

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

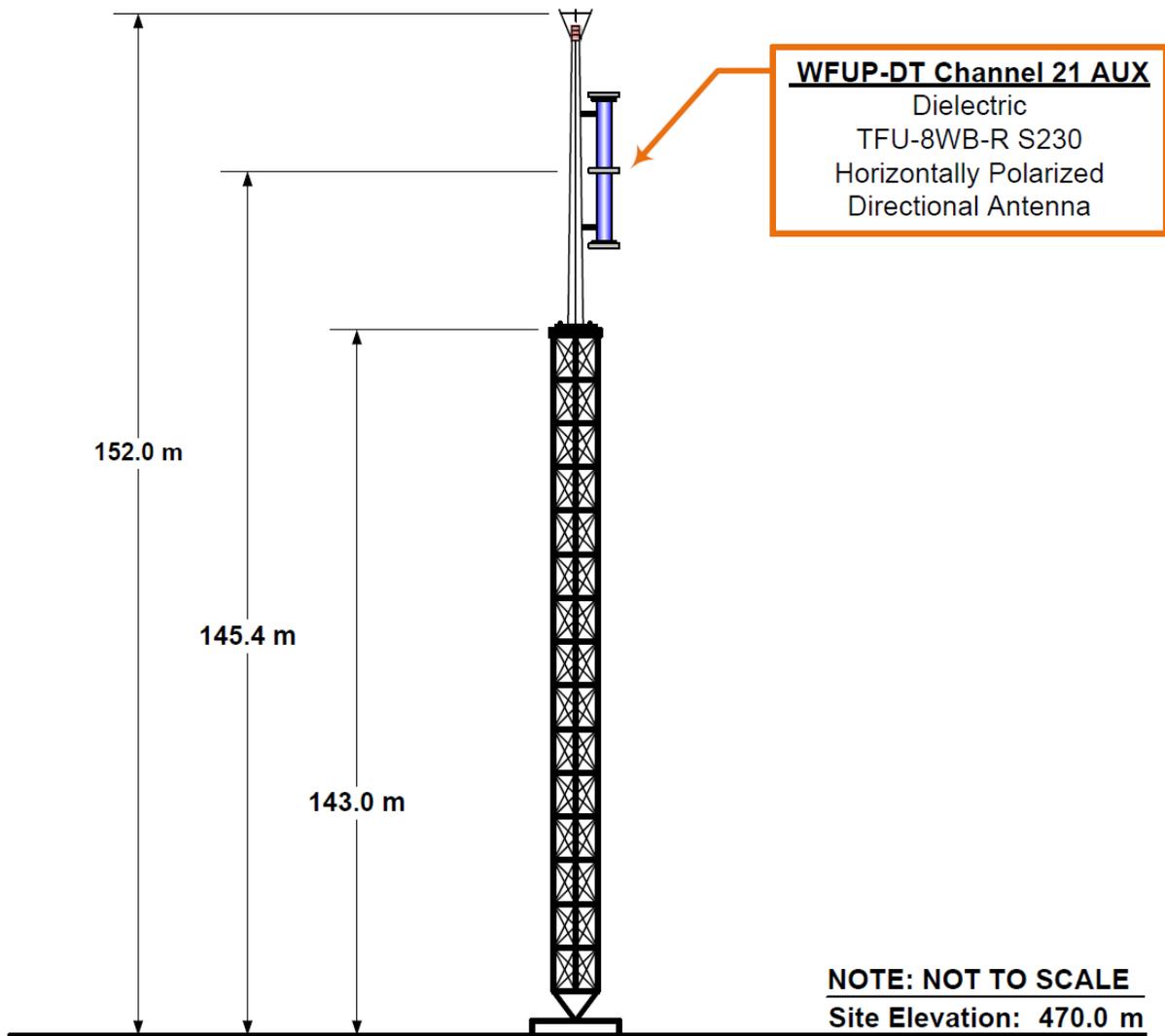
The foregoing statement and the report regarding the aforementioned engineering work are true and correct to the best of my knowledge.

Ryan Wilhour



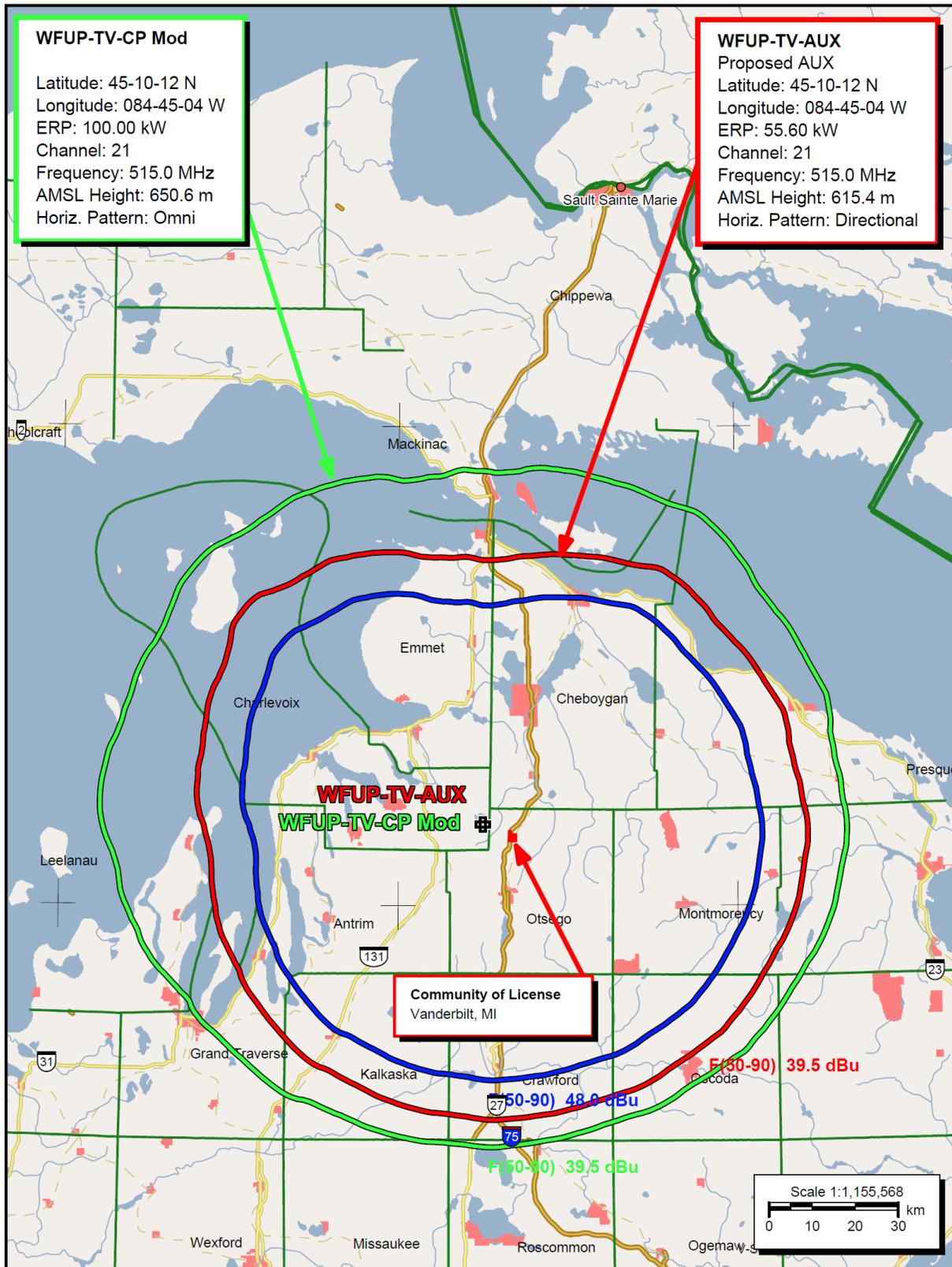
Consulting Engineer
March 19, 2019

Appendix A – Tower Elevation Sketch



Radiation Center AMSL:	615.4 m	ASR Coordinates (NAD 83):	
Radiation Center HAAT:	289.4 m	N. Latitude	45° 10' 12.0"
FCC ASR Number:	1000437	W. Longitude	84° 45' 04.0"

Appendix B – Contour Analysis



Appendix C – Far Field Exposure to RF Emissions

