

**ENGINEERING STATEMENT RE;  
AUXILIARY ANTENNA SYSTEMS  
COVERAGE PREDICTION AND  
RF EXPOSURE AND COMPLIANCE STATEMENT  
WKOW-TV 630 kW ERP MAX-DA Ch. 27 320 M AGL  
WKOW-DT 201 kW ERP MAX-DA Ch. 26 320 M AGL  
MADISON, WISCONSIN**

## **INTRODUCTION**

This statement was prepared on behalf of WKOW Television, Inc., licensee of WKOW-TV and WKOW-DT at Madison, Wisconsin. It provides predicted coverage contour maps and a showing of compliance with the Federal Communication Commission's radio frequency (RF) exposure rules at the multiple user site in support of the applications for auxiliary authorizations for the two WKOW facilities.

## **PROPOSED FACILITIES**

The referenced broadcast facilities have operations located on the existing WKOW television tower, FCC ARN No. 1033919, owned by the University of Wisconsin. There are numerous other authorized facilities co-located on the WKOW tower but no others within one kilometer. The site is located SW of Madison, in open farm land with access by way of an unpaved farm lane from a road to the north. The access road is closed by a locked gate. The individual transmitter buildings are closed and locked with warning signs prominently posted in the area. Sensitive areas such as power supply transformers, tower base and guy anchors are also protected by fences and locked gates. The various users will fully cooperate with each other in the area in accordance with the procedures outlined in OET Bulletin 65, Edition 97-01 in order to insure that no excessive RF levels will be generated in areas accessible to authorized personnel. The WKOW tower is thus an

electronic site located in a remote area that is not accessible to unauthorized personnel.

## **PREDICTED COVERAGE**

Attached as Exhibit 41 to FCC Form 301 is information regarding the Auxiliary antenna, a Dielectric Type TFU-14DSC-R CT160 DC. The horizontal plane pattern and the vertical plane pattern through 90 degrees below the horizontal are depicted for both the channel 26 and 27 frequencies. From that information and the ERP and HAAT specified above the predicted contours for the Auxiliary facility have been predicted. The WKOW-TV and WKOW-DT contours are shown on the maps attached to this statement. The auxiliary coverage lies entirely within the licensed full facility coverage and encompasses the city of assignment.

## **RF EXPOSURE ANALYSIS**

RF analysis shows that the WKOW-DT and WKOW-TV auxiliary facilities do not have a significant effect on the quality of the human environment and do not require an environmental assessment. They are categorically excluded from environmental processing by Section 1.1306 of the Commission's rules since the specified antenna will be supported at great height by an existing tower and the guidelines for human exposure to radio-frequency (RF) energy in Section 1.1307(b) will not be exceeded as described below.

The proposed facilities do not result in RF contributions exceeding the *RF Radiation Exposure Limits* specified in Section 1.1310. The ERP, channel and antenna height, employed for the WKOW auxiliary facilities, are listed above. The specific antenna

information is attached as Exhibit 41. The two WKOW RF exposure contributions were evaluated for compliance with the occupational maximum permissible exposure (MPE) limit for both controlled and uncontrolled environments based on an estimation of ground-level power density using calculation methods from the FCC OET Bulletin 65, Edition 97-01. The calculations disclose the calculated power density levels accessible at ground level locations are far less than 5% of the FCC guidelines.

Access to the area is generally difficult and controlled. The immediate site uses warning signs, fencing and locked gates to prohibit casual access. Since the immediate antenna tower location is physically isolated from the general population, compliance with the uncontrolled exposure guidelines is not an issue. The OET Bulletin 65 calculations predict a ground level exposure contribution are listed below. The actual TV antenna vertical pattern attached at Exhibit 41 was used to determine that the relative field is less than 18% of maximum for all depression angles more than 6 degrees below the horizontal plane. The analog TV facility was assumed to operate with 22% aural power. Each calculation yields a percentage of the Un-Controlled Environment (UCE) limit.

WKOW-TV is predicted to have an RF Exposure contribution of  $4.13 \mu\text{W}/\text{cm}^2$  at ground level. The maximum permitted FCC exposure level at channel 27 is  $1831 \mu\text{W}/\text{cm}^2$ , the uncontrolled limit is  $366 \mu\text{W}/\text{cm}^2$  and 5% of this is  $18.3 \mu\text{W}/\text{cm}^2$ . The WKOW-TV contribution is 1.1% of the uncontrolled environment limit.


WKOW-DT is predicted to have  $2.12 \mu\text{W}/\text{cm}^2$  at ground level. The maximum permitted FCC exposure level at channel 26 is  $1817 \mu\text{W}/\text{cm}^2$ , the uncontrolled limit is  $363 \mu\text{W}/\text{cm}^2$  and 5% of this is  $18.2 \mu\text{W}/\text{cm}^2$ . The WKOW-DT contribution is 0.58% of the uncontrolled environment limit.

Thus, both sources of RF Exposure supply far less than 5% of the FCC adopted Controlled or Un-controlled Environment limits at any ground level location around the tower and WKOW is not required to take any further efforts to reduce exposure at this multiple user site . Higher fields at higher angles will cause power density exposures that fall at much longer path lengths out from the base of the antenna tower and thus be attenuated by that longer path.

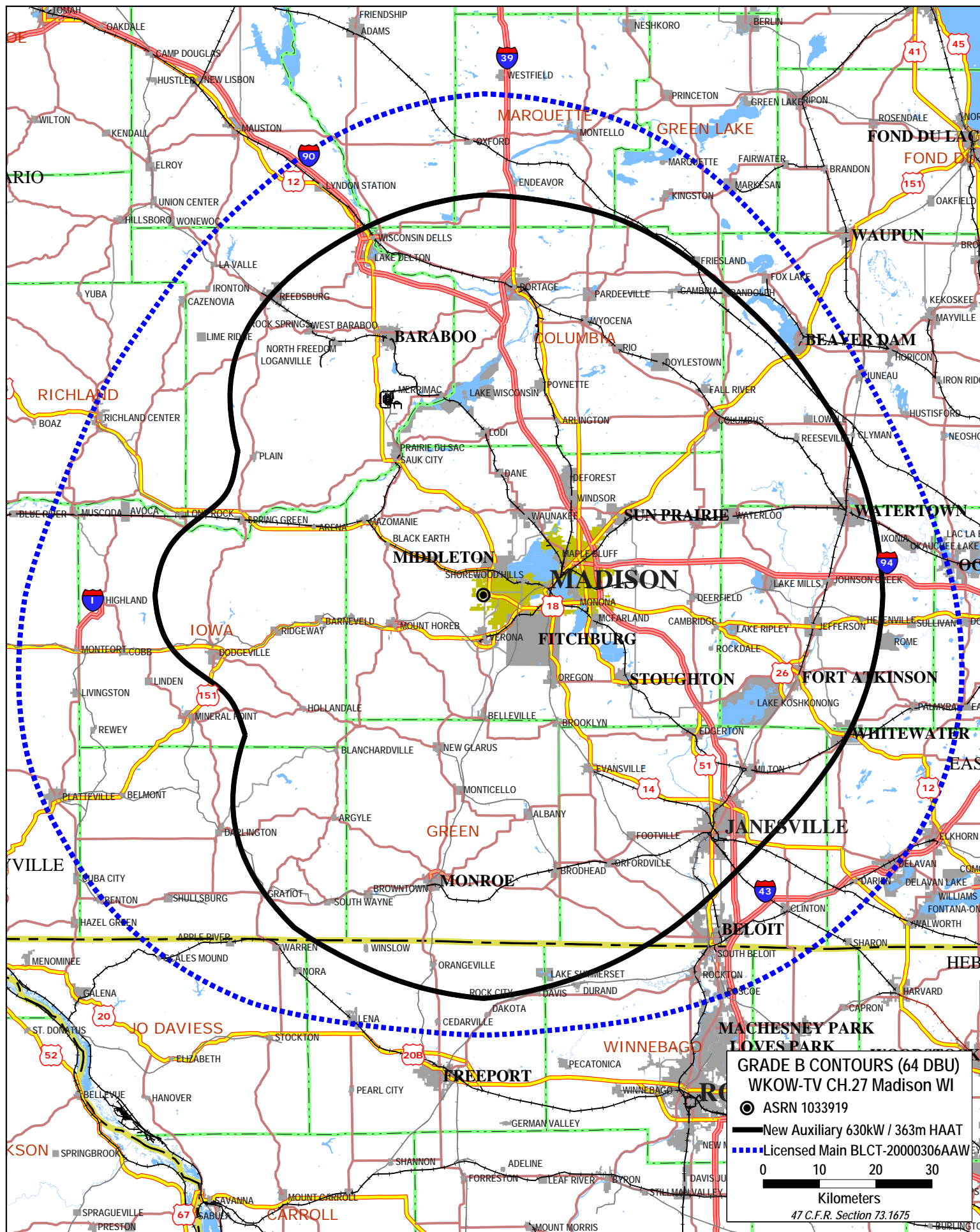
## **R.F. EXPOSURE COMPLIANCE**

The isolated and controlled access transmission site does not allow for the access of the general public and therefore un-controlled exposure is not an issue at the site. It has been demonstrated by the calculations above that the proposed facilities will comply with the FCC adopted un-controlled exposure guidelines, and thus also the controlled exposure guidelines, at any ground level location. At higher elevations on the antenna tower, workers will be protected from excessive exposure to RF fields in accordance with the methods recommended in *OET Bulletin No. 65, Version 97-01*. In regard to other site users, cooperative strategies shall be observed during periods of scheduled tower maintenance. Preventive steps for protecting workers at elevations above ground level include shutting down facilities and reduced power operation.

Respectfully submitted,  
**LOHNES AND CULVER**

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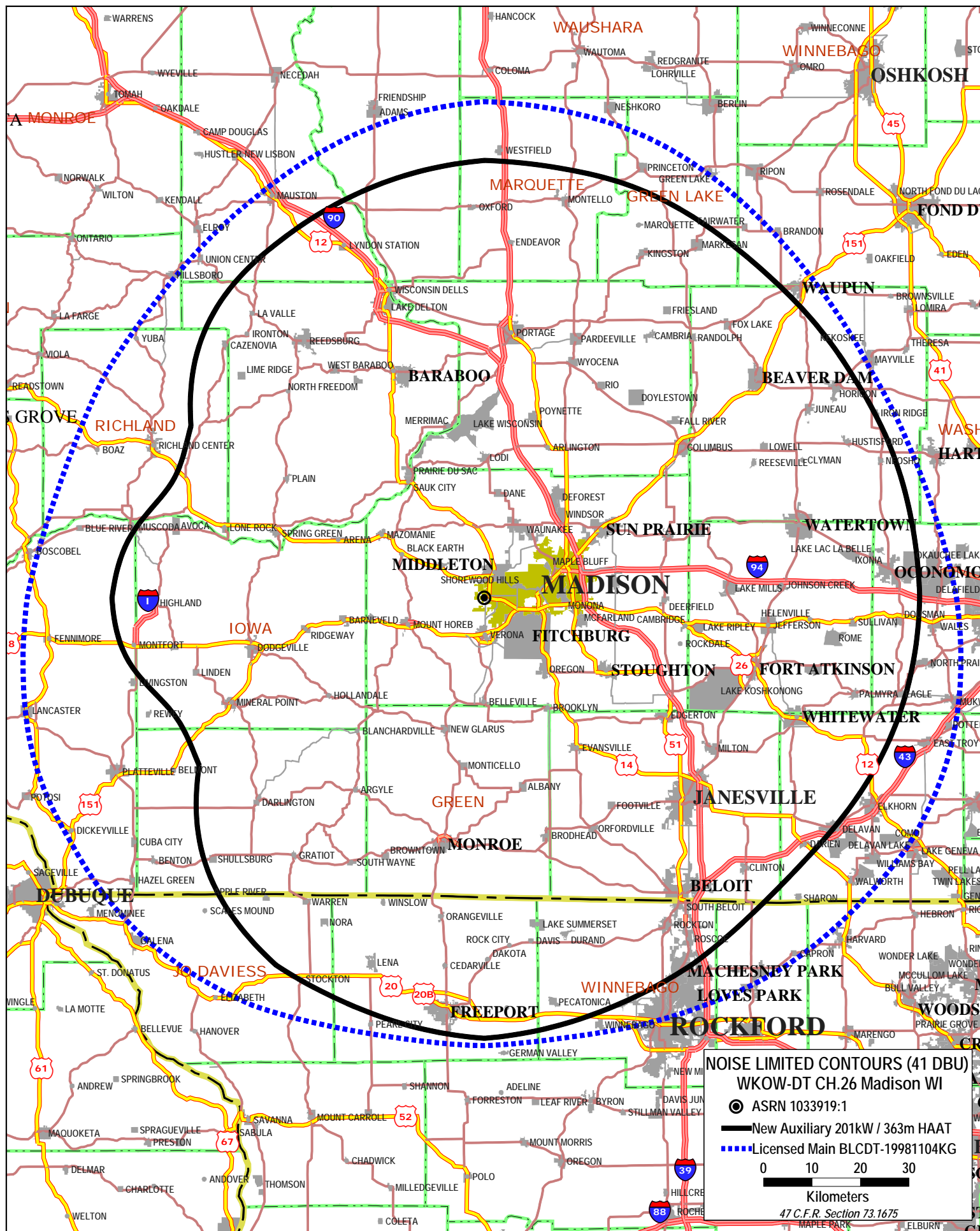


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