

Engineering Statement  
**REQUEST FOR SPECIAL TEMPORARY AUTHORIZATION**

prepared for  
**United Communications Corporation**  
KEYC-TV Mankato, Minnesota  
Facility ID 68853  
Ch. 38 300 kW 291 m

*United Communications Corporation* (“*United*”) is the licensee of analog station KEYC-TV, Channel 12, Mankato, Minnesota (see BLCT-2071), and permittee of the companion pre-transition digital station, KEYC-DT, Channel 38 (see BMPCDT-20060628ABX).<sup>1</sup> *United* is currently authorized to construct the final post-transition KEYC-DT facility on Channel 12 (see “CP”, BPCDT- 20080410ABU). Due to weather constraints and tower crew availability, *United* proposes now to avail itself of the “phased transition” provisions contained in the Third Periodic Review<sup>2</sup> by remaining on its pre-transition digital allotment past the February 17, 2009 shut down of full-service analog television. Accordingly, the instant engineering statement has been prepared to support the request for a Special Temporary Authorization to continue digital operation on Channel 38 beyond February 17, 2009.

The facility proposed for the temporary post-transition operation is identical to that of the current KEYC-DT authorized facility.<sup>3</sup> The following table compares the population coverage of various KEYC-DT modes of operation to the KEYC-TV analog facility:

<u>Facility</u>	<u>File No. or Description</u>	<u>Interference-Free Service Population (2000 Census)</u>	<u>Percent Match</u>
Analog Ch. 12	BLCT-2071	328,916	--
Digital Channel 12	CP, BPCDT-20080410ABU	399,335	121.4%
Appendix B	Ch. 12, 15.275 kW (MAX-DA) 317 m	394,828	120.0%
Proposed STA	Same as BLCDT-20060726APV	274,276	83.4%

As shown in the above table, the proposed facility would serve 83.4% of the target baseline service population, which satisfies the 80% baseline population match requirement of

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<sup>1</sup> KEYC-DT has been operating pursuant to Special Temporary Authorization (BDSTA-20060629ACJ) at the same antenna height and power as the pre-transition Channel 38 CP. This record is currently “archived” in the FCC’s CDBS database.

<sup>2</sup> See paragraphs 92 and 93, *Report and Order, Third Periodic Review of the Commission’s Rules and Policies Affecting the Conversion To Digital Television*, MB Docket No. 07-91, FCC 07-228, Released December 31, 2007.

<sup>3</sup> Note that as of January 6, 2009, the KEYC-TV CP (file number BMPCDT- 20060628ABX) shows up as an “archived” record in CDBS.

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the DTV Channel Election process for stations not in the top 100 markets.<sup>4</sup> **Exhibit 21 - Figure 1** provides a coverage contour comparison. As demonstrated therein, the resulting coverage and interfering contour locations are the same as those of the authorized facility. Further, the proposed STA facility complies with the Commission's 0.5 percent new interference limit in that no new interference is caused with the exception of KTVI-DR (Ch. 38, St. Paul, MN - NPRM) as described below.

As shown in **Exhibit 21 – Table I**, two NPRM proposals are predicted to receive interference. KXVO-DR (Ch. 38, Omaha, NE – NPRM) is predicted to receive 0.04 percent new interference, which is well below the 0.5 percent interference limit for new post-transition proposals. KTCI-DR (Ch. 38, St. Paul, MN – NPRM – file number BPRM-2008-620AFM) is predicted to receive more than one percent new interference. However, the KTCI Channel 38 proposal is awaiting resolution of a counter proposal, Canadian coordination, a concluding Report and Order, and publication in the Federal Register. Then, forty-five days must transpire from the Federal Register publication time before a Construction Permit application may be filed for operation on Channel 38 in St. Paul, MN. It is believed that the tower scheduling work delays will be resolved long before interference with Channel 38 in St. Paul will become an actual issue. In the event that the NPRM process moves along quickly, *United* will cease operation on Channel 38 as necessary when KTCI-TV is ready to switch to Channel 38.

The antenna for the proposed STA facility is the existing Dielectric TFU-30DSC-R 3C130-38 antenna which is directional in the horizontal plane. **Exhibit 21 - Figure 1** also provides the proposed facility's principal community coverage contour. As demonstrated therein, the principal community of Mankato, Minnesota is predicted to receive the enhanced signal level of 43 dB $\mu$  as required in §73.625(a) of the Commission's Rules.

The proposed operation was evaluated for human exposure to radiofrequency energy using the procedures outlined in the Commission's OET Bulletin No. 65 ("OET 65"). OET 65 describes a means of determining whether a proposed facility exceeds the radiofrequency

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<sup>4</sup> See Report and Order, "*Second Periodic Review of the Commission's Rules and Policies Affecting the Conversion to Digital Television*," FCC 04-192, released September 7, 2004.

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exposure guidelines adopted in §1.1310 of the Commission's Rules. Under the present Commission policy, a facility may be presumed to comply with the limits specified in §1.1310 if it satisfies the exposure criteria set forth in OET 65. Based on that methodology, and as demonstrated in the following, the proposed STA operation will comply with the cited adopted guidelines.

OET 65's formula for television transmitting antennas is based on the NTSC transmission standards, where the average power is normally much less than the peak power. For the DTV facility in the instant proposal, the peak-to-average ratio is different than the NTSC ratio. The DTV ERP figure herein refers to the *average* power level. The formula used for calculating DTV signal density in this analysis is essentially the same as equation (10) in OET 65.

$$S = (33.4098) (F^2) (ERP) / D^2$$

Where:

<i>S</i>	=	power density in microwatts/cm <sup>2</sup>
<i>ERP</i>	=	total (average) ERP in Watts
<i>F</i>	=	relative field factor
<i>D</i>	=	distance in meters

The installed KEYC-DT authorized antenna will be employed for the proposed STA post-transition operation. It has a center of radiation 296.3 meters above ground level. According to elevation pattern data provided by the antenna manufacturer, the KEYC-DT antenna has a relative field of 10 percent or less from 10 to 90 degrees below the horizontal plane (i.e.: below the antenna). Thus, a value of 10 percent relative field is used for this calculation. The "uncontrolled/general population" limit specified in §1.1310 for Channel 38 (center frequency 617 MHz) is 411.3 μW/cm<sup>2</sup>.

Using this formula, the above inputs, and employing the antenna's elevation relative field pattern, the proposed facility would contribute a maximum power density of 1.2 μW/cm<sup>2</sup> at two meters above ground, or 0.29 percent of the general population/uncontrolled limit. At ground level locations away from the base of the tower, the calculated RF power density is lower, due to the increasing distance from the transmitting antenna. Thus, the proposed facility complies with §1.1307(b) of the Commission's Rules regarding exposure to radiofrequency radiation.

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§1.1307(b)(3) states that facilities at locations with multiple transmitters (such as the case at hand) are categorically excluded from responsibility for taking any corrective action in the areas where their contribution is less than five percent. Since the instant situation meets the five percent exclusion test at all ground level areas, the impact of the any other facilities using this site may be considered independently from this proposal. Accordingly, it is believed that the impact of the proposed operation should not be considered to be a factor at or near ground level as defined under §1.1307(b).

As demonstrated herein, excessive levels of RF energy attributable to the proposal will not be caused at publicly accessible areas at ground level near the antenna supporting structure. Consequently, members of the general public will not be exposed to RF levels in excess of the Commission's guidelines. Nevertheless, tower site access will continue to be restricted and controlled through the use of a locked fence. Additionally, appropriate RF exposure warning signs will continue to be posted.

With respect to worker safety, it is believed that based on the preceding analysis, excessive exposure would not occur in areas at ground level. A site exposure policy will continue to be employed protecting maintenance workers from excessive exposure when work must be performed on the tower in areas where high RF levels may be present. Such protective measures may include, but will not be limited to, restriction of access to areas where levels in excess of the guidelines may be expected, power reduction, or the complete shutdown of facilities when work or inspections must be performed in areas where the exposure guidelines will be exceeded. On-site RF exposure measurements may also be undertaken to establish the bounds of safe working areas. The applicant will coordinate exposure procedures with all pertinent stations.

Based on the preceding, it is believed that the instant proposal may be categorically excluded from environmental processing under Section 1.1306 of the Rules, hence preparation of an Environmental Assessment is not required.

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**Certification**

Under the penalty of perjury, the undersigned hereby certifies that the foregoing statement was prepared by him or under his direction and that it is true and correct to the best of his knowledge and belief. Mr. Clinton is a senior engineer in the firm of Cavell, Mertz & Associates, Inc. He has submitted numerous engineering exhibits to the Federal Communications Commission and his qualifications are a matter of record with that agency.

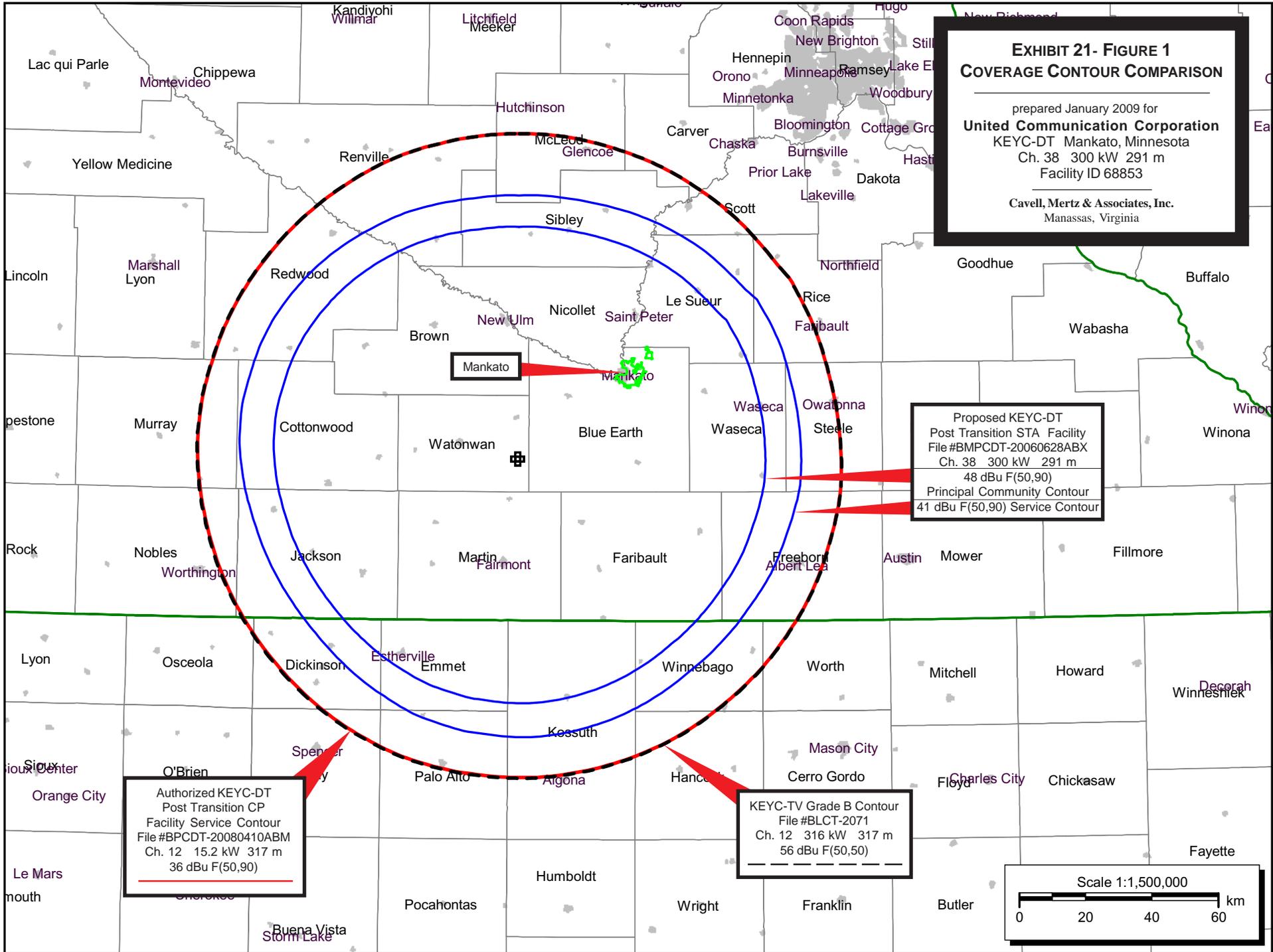


Robert J. Clinton  
January 9, 2009

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703-392-9090

**Attachments**

Exhibit 21 - Figure 1 Coverage Contour Comparison  
Exhibit 21 - Table I Interference Study Results



**EXHIBIT 21- FIGURE 1**  
**COVERAGE CONTOUR COMPARISON**

prepared January 2009 for  
**United Communication Corporation**  
 KEYC-DT Mankato, Minnesota  
 Ch. 38 300 kW 291 m  
 Facility ID 68853

Cavell, Mertz & Associates, Inc.  
 Manassas, Virginia

Proposed KEYC-DT  
 Post Transition STA Facility  
 File #BMPCDT-20060628ABX  
 Ch. 38 300 kW 291 m  
 48 dBu F(50,90)  
 Principal Community Contour  
 41 dBu F(50,90) Service Contour

Authorized KEYC-DT  
 Post Transition CP  
 Facility Service Contour  
 File #BPCDT-20080410ABM  
 Ch. 12 15.2 kW 317 m  
 36 dBu F(50,90)

KEYC-TV Grade B Contour  
 File #BLCT-2071  
 Ch. 12 316 kW 317 m  
 56 dBu F(50,50)

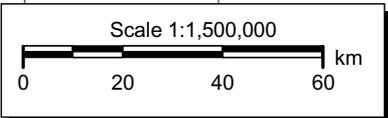


Exhibit 21 - Table I  
**INTERFERENCE STUDY RESULTS**  
 prepared for  
**United Communications Corporation**  
 KEYC-TV Mankato, MN  
 Facility Id: 68853  
 Ch. 38 300 kW 291 m

<u>Channel</u>	<u>Affected Station</u>	<u>City, State</u>	<u>File Number</u>	<u>7th R&amp;O Table Baseline (2000 Census)</u>	<u>Calculated Baseline (2000 Census)</u>	<u>Interference Population without Proposal (2000 Census)</u>	<u>Interference Population with Proposal (2000 Census)</u>	<u>New Interference</u>	
								<u>Population</u>	<u>Percentage</u>
38	KTCI-DR	St. Paul, MN	BPRM-20080620AFM		3,338,586	0	38,565	38,565	1.155 % *
38	KXVO-DR	Omaha, NE	BPRM-20080623ADT		1,198,866	343	818	475	0.040 %
39	KMEG(TV)	Sioux City, IA	BLCDT-20070129AAZ	662,000			---	---	---
39	KMEG(TV)	Sioux City, IA	Reference	662,000			---	---	---

\* Note: The calculated interference to KTCI-DR is to a facility described in an NPRM which may take some time before it is granted. Please see text for discussion regarding this facility.