

Engineering Exhibit
AMENDMENT TO AN
APPLICATION FOR CONSTRUCTION PERMIT FOR A
NEW REPLACEMENT DIGITAL LOW POWER TELEVISION
TRANSLATOR STATION

prepared for

KTUL, LLC
KTUL(TV) Tulsa, Oklahoma
Replacement Digital LPTV Translator Station
McAlester, Oklahoma
Ch. 24 (Digital) 0.6 kW (MAX-DA)

Table of Contents

FCC Form 346, Section III – Engineering Data (Digital)

Exhibit 13 (Amended)

Statement A	Nature of the Proposal - Allocation Considerations
Figure 1	Antenna Horizontal Plane (Azimuth) Relative Field Pattern
Figure 2	Predicted Coverage Contours
Table I	Interference Study Results Summary

Exhibit 14 (Amended)

Statement B	Environmental Considerations
-------------	------------------------------

This material supplies a "hard copy" of the engineering portions of this application as entered February 15, 2013 for filing electronically. Since the FCC's electronic filing system may be accessed by anyone with the applicant's name and password, and electronic data may otherwise be altered in an unauthorized fashion, we cannot be responsible for changes made subsequent to our entry of this data and related attachments.

Section III - Engineering (Digital)																																																																																															
TECHNICAL SPECIFICATIONS																																																																																															
Ensure that the specifications below are accurate. Contradicting data found elsewhere in this application will be disregarded. All items must be completed. The response "on file" is not acceptable.																																																																																															
TECH BOX																																																																																															
1.	Channel: 24																																																																																														
2.	Translator Input Channel No. : 10																																																																																														
3.	Primary station proposed to be rebroadcast:																																																																																														
	Facility Identifier	Call Sign	City	State	Channel																																																																																										
	35685	KTUL	TULSA	OK	10																																																																																										
4.	Antenna Location Coordinates: (NAD 27) Latitude: Degrees 34 Minutes 59 Seconds 13 <input checked="" type="radio"/> North <input type="radio"/> South Longitude: Degrees 95 Minutes 42 Seconds 10 <input checked="" type="radio"/> West <input type="radio"/> East																																																																																														
5.	Antenna Structure Registration Number: 1051571 <input type="checkbox"/> Not Applicable [Exhibit 11] <input type="checkbox"/> Notification filed with FAA																																																																																														
6.	Antenna Location Site Elevation Above Mean Sea Level: 254.5 meters																																																																																														
7.	Overall Tower Height Above Ground Level: 150.2 meters																																																																																														
8.	Height of Radiation Center Above Ground Level: 106.7 meters																																																																																														
9.	Maximum Effective Radiated Power (ERP): 0.6 kW																																																																																														
10.	Transmitter Output Power: 0.2 kW																																																																																														
11.	<p>a. Transmitting Antenna: Before selecting Directional "Off-the-Shelf", refer to "Search for Antenna Information" under CDBS Public Access (http://licensing.fcc.gov/prod/cdbb/pubacc/prod/cdbb_pa.htm). Make sure that the Standard Pattern is marked Yes and that the relative field values shown match your values. Enter the Manufacturer (Make) and Model exactly as displayed in the Antenna Search. <input type="radio"/> Nondirectional <input type="radio"/> Directional Off-the Shelf <input checked="" type="radio"/> Directional composite Manufacturer KAT Model 770 881</p> <p>b. Electrical Beam Tilt: degrees <input checked="" type="checkbox"/> Not Applicable</p> <p>c. Mechanical Beam Tilt: degrees toward azimuth degrees True <input checked="" type="checkbox"/> Not Applicable</p>																																																																																														
	<p>d. Directional Antenna Relative Field Values: <input type="checkbox"/> N/A (Nondirectional or Off-the-Shelf)</p> <p>Rotation (Degrees): <input checked="" type="checkbox"/> No Rotation</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Degrees</th><th>Value</th><th>Degrees</th><th>Value</th><th>Degrees</th><th>Value</th><th>Degrees</th><th>Value</th><th>Degrees</th><th>Value</th><th>Degrees</th><th>Value</th></tr> </thead> <tbody> <tr> <td>0</td><td>0.931</td><td>10</td><td>0.93</td><td>20</td><td>0.948</td><td>30</td><td>0.976</td><td>40</td><td>0.996</td><td>50</td><td>0.996</td></tr> <tr> <td>60</td><td>0.975</td><td>70</td><td>0.941</td><td>80</td><td>0.904</td><td>90</td><td>0.882</td><td>100</td><td>0.886</td><td>110</td><td>0.914</td></tr> <tr> <td>120</td><td>0.956</td><td>130</td><td>0.99</td><td>140</td><td>1</td><td>150</td><td>0.985</td><td>160</td><td>0.951</td><td>170</td><td>0.91</td></tr> <tr> <td>180</td><td>0.88</td><td>190</td><td>0.872</td><td>200</td><td>0.892</td><td>210</td><td>0.929</td><td>220</td><td>0.966</td><td>230</td><td>0.984</td></tr> <tr> <td>240</td><td>0.979</td><td>250</td><td>0.953</td><td>260</td><td>0.917</td><td>270</td><td>0.886</td><td>280</td><td>0.871</td><td>290</td><td>0.881</td></tr> <tr> <td>300</td><td>0.912</td><td>310</td><td>0.949</td><td>320</td><td>0.972</td><td>330</td><td>0.977</td><td>340</td><td>0.966</td><td>350</td><td>0.947</td></tr> </tbody> </table> <p>Additional Azimuths</p>											Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	0	0.931	10	0.93	20	0.948	30	0.976	40	0.996	50	0.996	60	0.975	70	0.941	80	0.904	90	0.882	100	0.886	110	0.914	120	0.956	130	0.99	140	1	150	0.985	160	0.951	170	0.91	180	0.88	190	0.872	200	0.892	210	0.929	220	0.966	230	0.984	240	0.979	250	0.953	260	0.917	270	0.886	280	0.871	290	0.881	300	0.912	310	0.949	320	0.972	330	0.977	340	0.966	350	0.947
Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value																																																																																				
0	0.931	10	0.93	20	0.948	30	0.976	40	0.996	50	0.996																																																																																				
60	0.975	70	0.941	80	0.904	90	0.882	100	0.886	110	0.914																																																																																				
120	0.956	130	0.99	140	1	150	0.985	160	0.951	170	0.91																																																																																				
180	0.88	190	0.872	200	0.892	210	0.929	220	0.966	230	0.984																																																																																				
240	0.979	250	0.953	260	0.917	270	0.886	280	0.871	290	0.881																																																																																				
300	0.912	310	0.949	320	0.972	330	0.977	340	0.966	350	0.947																																																																																				

e. Does the proposed antenna propose elevation radiation patterns that vary with azimuth for reasons other than the use of mechanical beam tilt? ☐ Yes ☒ No

[Exhibit 12]

If Yes, attach an Exhibit (see instructions for details).

Relative Field Polar Plot

NOTE: In addition to the information called for in this section, an explanatory exhibit providing full particulars must be submitted for each question for which a "No" response is provided.

12. **Out-of-channel Emission Mask:** ☐ Simple ☒ Stringent ☐ Full Service

CERTIFICATION

13. **Interference :** The proposed facility complies with all of the following applicable rule sections. 47.C.F.R Sections 74.709, 74.793(e), 74.793(f), 74.793(g), 74.793(h), 74.794(b) and 73.1030. ☒ Yes ☐ No
See Explanation in [Exhibit 13]

14. **Environmental Protection Act.** The proposed facility is excluded from environmental processing under 47. C.F.R. Section 1.1306 (i.e., The facility will not have a significant environmental impact and complies with the maximum permissible radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments). Unless the applicant can determine RF compliance, an **Exhibit is required.** ☒ Yes ☐ No
See Explanation in [Exhibit 14]
By checking "Yes" above, the applicant also certifies that it, in coordination with other users of the site, will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency electromagnetic exposure in excess of FCC guidelines.

15. **Channels 52-59.** If the proposed channel is within channels 52-59, the applicant certifies compliance with the following requirements, as applicable:

☐ The applicant is applying for a digital companion channel for which no suitable channel from channel 2-51 is available.

☐ Pursuant to Section 74.786(d), the applicant has notified, within 30 days of filing this application, all commercial wireless licenses of the spectrum comprising the proposed TV channel and the first adjacent channels thereto, for which the proposed digital LPTV or TV translator antenna site lies inside the licensed geographic boundaries of the wireless licensees or within 75 miles and 50 miles, respectively, of the geographic boundaries of co-channel and adjacent-channel wireless licensees.

16. **Channels 60-69.** If the proposed channel is within channels 60-69, the applicant certifies compliance with the following requirements, as applicable:

☐ Pursuant to Section 74.786(e), the applicant has notified, within 30 days of filing this application, all commercial wireless licenses of the spectrum comprising the proposed TV channel and the first adjacent channels thereto, for which the proposed digital LPTV or TV translator antenna site lies inside the licensed geographic boundaries of the wireless licensees or within 75 miles and 50 miles, respectively, of the geographic boundaries of co-channel and adjacent-channel wireless licensees.

☐ Pursuant to Section 74.786(e), the applicant proposing operation on channel 63, 64, 68 and 69 ("public safety channels") has secured a coordinated spectrum use agreements(s) with 700 MHz public safety regional planning committee(s) and state administrator(s) of the region(s) and state(s) within which the antenna site of the digital LPTV or TV translator station is proposed to locate, and those adjoining regions and states with boundaries within 75 miles of the proposed station location.

☐ Pursuant to Section 74.786(e), the applicant for a channel adjacent to channel 63, 64, 68 or 69 has notified, within 30 days of filing this application, the 700 MHz public safety regional planning committee(s) and state administrator (s) of the region and state containing the proposed digital LPTV or TV translator antenna site and regions and

states whose geographic boundaries lie within 50 miles of the proposed LPTV or TV translator antenna site.

PREPARERS CERTIFICATION ON PAGE 3 MUST BE COMPLETED AND SIGNED.

SECTION III PREPARER'S CERTIFICATION

I certify that I have prepared Section III (Engineering Data) on behalf of the applicant, and that after such preparation, I have examined and found it to be accurate and true to the best of my knowledge and belief.

Name RICHARD H. MERTZ	Relationship to Applicant (e.g., Consulting Engineer) CONSULTANT	
Signature	Date 02/15/2013	
Mailing Address CAVELL, MERTZ & ASSOCIATES, INC. 7732 DONEGAN DRIVE		
City MANASSAS	State or Country (if foreign address) VA	Zip Code 20109 -
Telephone Number (include area code) 7033929090	E-Mail Address (if available) RMERTZ@CAVELLMERTZ.COM	

WILLFUL FALSE STATEMENTS ON THIS FORM ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. CODE, TITLE 18, SECTION 1001), AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION PERMIT (U.S. CODE, TITLE 47, SECTION 312(a)(1)), AND/OR FORFEITURE (U.S. CODE, TITLE 47, SECTION 503).

Exhibits

Exhibit 13

Description: KTUL REPLACEMENT TRANSLATOR AMENDMENT EXHIBIT 13

EXHIBIT 13 CONTAINS STATEMENT A, NATURE OF THE PROPOSAL, ALLOCATION CONSIDERATIONS; FIGURES 1 AND 2; AND TABLE I.

Attachment 13

Description
KTUL Replacement Translator Amendment Exhibit 13

Exhibit 14

Description: KTUL REPLACEMENT TRANSLATOR AMENDMENT EXHIBIT 14

EXHIBIT 14 CONTAINS A TABLE OF CONTENTS; A COPY OF THE ENGINEERING SECTIONS OF THE FORM; AND STATEMENT B, ENVIRONMENTAL CONSIDERATIONS.

Attachment 14

Description

[KTUL Replacement Translator Amendment Exhibit 14](#)

Exhibit 14 - Statement B (Amended)
ENVIRONMENTAL CONSIDERATIONS
prepared for
KTUL, LLC
New Replacement Digital LPTV Translator Station
McAlester, Oklahoma
Ch. 24 (Digital) 0.6 kW (MAX-DA)

Introduction

The instant proposal is not believed to have a significant environmental impact as defined under §1.1306 of the Commission's Rules. Consequently, preparation of an Environmental Assessment is not required.

KTUL, LLC, herein proposes to construct a new replacement digital LPTV translator station at an existing tower site have the Antenna Structure Registration No. 1051571.

The use of existing transmitting locations has been characterized as being environmentally preferable by the Commission, according to Note 1 of §1.1306 of the FCC Rules. No change in structure height is proposed, thus no change in current structure marking and lighting requirements is anticipated. Therefore, it is believed that this application may be categorically excluded from environmental processing pursuant to §1.1306 of the Commission's rules.

Human Exposure to Radiofrequency Electromagnetic Field

The proposed operation was evaluated for human exposure to radiofrequency electromagnetic field using the procedures outlined in the Commission's OET Bulletin 65 ("OET 65"). OET 65 describes a means of determining whether a proposed facility exceeds the radiofrequency exposure guidelines adopted in §1.1310. Under 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 upon that methodology, and as demonstrated in the following, the proposed transmitting system will comply with the cited adopted guidelines.

The proposed Channel 24 antenna center of radiation will be 106.7 meters above ground level. A maximum effective radiated power of 0.6 kilowatt, horizontally polarized, will be employed utilizing a Kathrein Model 770 881 directional antenna. A "worst-case" relative field value of 1.000 is assumed for purposes of the calculation. The "uncontrolled/general

Exhibit 14 - Statement B (Amended)
ENVIRONMENTAL CONSIDERATIONS
(Page 2 of 3)

population” limit specified in §1.1310 for Channel 24 (center frequency 533 MHz) is 355.3 $\mu\text{W}/\text{cm}^2$.

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:

- S = power density in microwatts/cm²
- ERP = total (average) ERP in Watts
- F = relative field factor
- D = distance in meters

Using this formula and the above assumptions, the proposed facility would contribute a power density of 1.83 $\mu\text{W}/\text{cm}^2$ at two meters above ground level near antenna support structure, or 0.52 percent of the general population/uncontrolled limit. At ground level locations away from the base of the building, the calculated RF power density is even lower, due to the increasing distance from the transmitting antenna.

§1.1307(b)(3) states that facilities contributing less than five percent of the exposure limit at locations with multiple transmitters are categorically excluded from responsibility for taking any corrective action. Since the instant situation meets the five percent exclusion test at all ground level areas, the impact of any other facilities near 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).

Safety of Tower Workers and the General Public

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.

Exhibit 14 - Statement B (Amended)
ENVIRONMENTAL CONSIDERATIONS
(Page 3 of 3)

Consequently, members of the general public will not be exposed to RF levels in excess of the Commission's guidelines. Nevertheless, tower access will be restricted and controlled through the use of a locked fence. Additionally, appropriate RF exposure warning signs will 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 be employed protecting maintenance workers from excessive exposure when work must be performed on the tower or 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 would otherwise 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.

Conclusion

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