

Comprehensive Technical Exhibit
Application for Construction Permit - Displacement
KXTU-LP - Colorado Springs, Colorado
Barrington Colorado Springs License LLC
August, 2011

Application for Construction Permit

The following engineering statement and attached exhibits have been prepared for **Barrington Colorado Springs License LLC** ("Barrington"), licensee of low-power digital television station KXTU-LD at Colorado Springs, Colorado, and are in support of their application for construction permit.¹ This application is being submitted to change the facility channel of operation to an in-core channel.

The facility originally operated as an analog LPTV station on channel 57Z. In 2009 an application was filed to flash-cut to digital operation.² At the time of the submission of this application, spectrum was limited in the vicinity, and the potential for utilizing a different channel was remote. Since that time important developments have occurred, which now make the change in channel necessary and feasible.

Under the Commission's recently adopted and released *Second Report and Order* to MB Docket 03-185 (FCC 11-110), the deadline for filing a displacement application was established as September 1, 2011, with the goal of ceasing operations in the 700 MHz band by the end of 2011. This is the requirement that makes the change necessary, while the permission to utilize the full-service emission mask is what has made the transition feasible. To that end, Barrington proposes to substitute channel 20 for channel 57 for the operation of KXTU-LD.

Prior to the full-service transition to digital operations, co-owned television station KXRM operated on channel 20. The antenna and transmission line utilized for that facility remains *in situ*,

¹ The Facility ID for KXTU-LD is 22681.

² See FCC File No. BDFCDTL-20091028ACC. The flash-cut changes were licensed under FCC File No. BLDTL-20100901ACJ.

although is currently dormant at this time. Barrington proposes the utilization of this antenna and transmission line, which will allow them to make the necessary transition with minimal effort and resource expenditure.

The antenna that would be utilized is a Dielectric TFU-12DSB-J. This is an off-the shelf directional antenna. The antenna would be rotated 84 degrees clockwise, such that the major lobe directions occur at 16 and 154 degrees true. This antenna utilizes 1.1 degrees of electrical beamtilt, and 2 degrees of mechanical beamtilt at 67 degrees true.

The proposed facility would utilize the full-service emission mask. The "stringent" mask was checked on the form pages, as there was no option available for the full-service mask. As previously indicated, the full-service mask is permissible as discussed in paragraph 68 of the *Second Report and Order*. The use of the full-service mask is necessary to provide the required protection to adjacent channel facilities.

The proposed facility would comply with the appropriate interference protection provisions of the Commission's Rules. Each of the provisions listed on FCC Form 346 will be individually addressed.

The provisions of Section 74.709 are not applicable to this facility. KXTU-LD would operate on channel 20; however, the facility is located at a considerable distance from the Philadelphia and Los Angeles metropolitan areas where channel 20 is utilized for land mobile operation. No interference to such land mobile facilities would result from KXTU-LD.

The proposed facility would comply with the listed provisions of Section 74.793 of the Commission's Rules. Exhibit E-1 illustrates the areas where predicted interference would occur. A summary of these interference areas is tabulated in Exhibit E-2. As both of these exhibits demonstrate, the predicted interference would be in compliance with the Commission's Rules. Interference calculations were based on the output of the computer program *Probe 4*, which mimics the FCC's FORTRAN program. A cell size of 1.0 km was used for calculations, and terrain elevations were sampled at 0.1 km intervals.

The proposed facility does not constitute a significant environmental impact, and is exempt from environmental processing. The proposed change in the channel of operation would utilize an existing antenna system that is currently dormant. As a result, all construction required would occur inside the transmitter building, and would only require a change in the transmitter utilized by the facility.

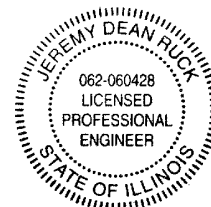
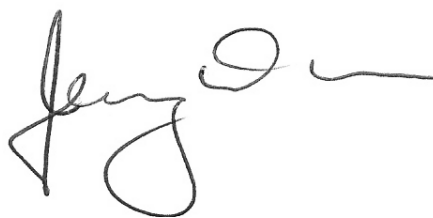
The proposed facility would not constitute an RF exposure hazard to persons at the site. Assuming a worst-case scenario in which all radiation from the antenna is directed at the ground, the power density calculated according to the equations in OET Bulletin 65 is $29.3 \mu\text{W}/\text{cm}^2$.³ Under the uncontrolled environment condition of the applicable safety standard, the maximum permissible power density is $337 \mu\text{W}/\text{cm}^2$. Clearly, the proposed facility would comply with the uncontrolled environment condition.

³ Power density based on calculated value at 2 meters above ground level.

The site on which this tower is located is a multi-user site. The applicant certifies that it will coordinate with all present and future users of the site during such periods when work is performed at the site in order to protect personnel from levels of radiofrequency radiation in excess of applicable standards. Such coordination will include, but is not necessarily limited to, a reduction in transmitter power or cessation of operation.

Affidavit

The preceding statement and attached exhibits have been prepared by me, or under my direction, and are true and accurate to the best of my belief and knowledge.



Above signature is digitized copy of actual signature
License Expires November 30, 2011

Jeremy D. Ruck, PE
August 12, 2011

KXTU-LD-D.X

PROPOSED

Latitude: 38-44-43 N

Longitude: 104-51-40 W

ERP: 1.20 kW

Channel: 20

Frequency: 509.0 MHz

AMSL Height: 2907.0 m

Horiz. Pattern: Directional

Vert. Pattern: Yes

Elec Tilt: 0.0

Prop Model: Longley/Rice

Climate: Cont temperate

Conductivity: 0.0050

Dielec Const: 15.0

Refractivity: 301.0

Receiver Ht AG: 10.0 m

Receiver Gain: 0 dB

Time Variability: 10.0%

Sit. Variability: 50.0%

ITM Mode: Broadcast

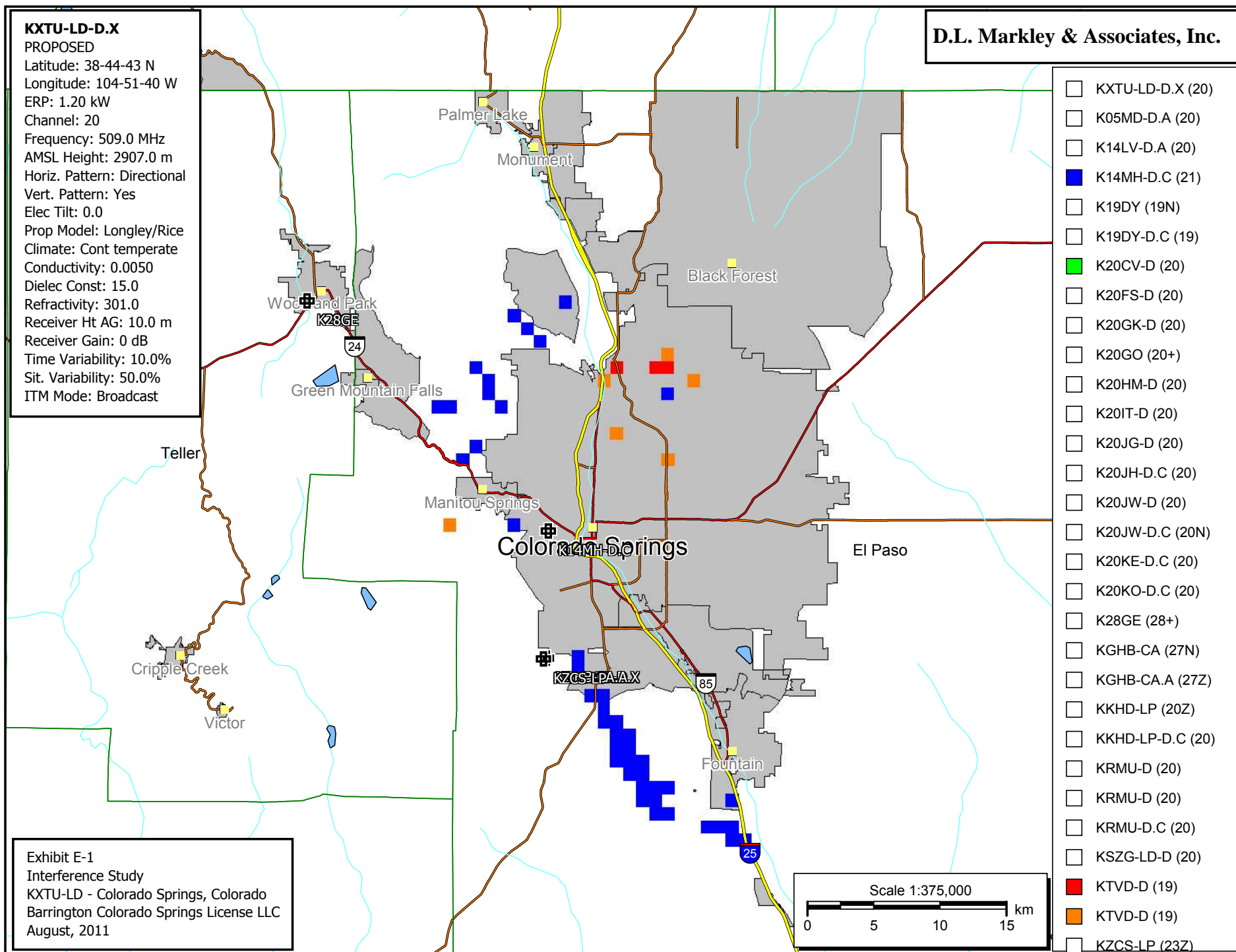
D.L. Markley & Associates, Inc.

Exhibit E-2
Outgoing Interference Population Report

KXTU-LD-D.X (20) Colorado Springs, CO - PROPOSED
Broadcast Type: Digital Service: G [Full Service Emission Mask]
Lat: 38-44-43 N Lng: 104-51-40 W ERP: 1.2 kW AMSL: 2907.0 m
TV Outgoing Interference Study
Signal Resolution: 1.0 km
Consider NTSC Taboo: Yes
KWX error points are considered as
possible interference points.
Default # of radials computed for contours: 72
Contours calculated using 8 radial HAAT.
LR Profile Spacing Increment: 0.1 km
Masked interference points are being
counted as interference.
Using LPTV/translator D/U rules.
Pop Centroid DB: 2000 US Census (SF1)

Study Date: 8/12/2011
TV Database Date: 8/9/2011

Primary Terrain: V-Soft 3 Second US Terrain
Secondary Terrain: V-Soft 30 Second US Database

Population Database: 2010 US Census (PL)

Stations Considered:

| Call Letters | City | State | Dist | Azi |
|------------------|---------------------|-------|-------|-------|
| K05MD-D.A (20) | Cripple Creek | CO | 72.8 | 347.3 |
| K14LV-D.A (20) | Loveland | CO | 169.4 | 356.3 |
| K14MH-D.C (21) | Colorado Springs | CO | 9.6 | 1.0 |
| K19DY (19N) | Canon City | CO | 43.9 | 215.3 |
| K19DY-D.C (19) | Canon City | CO | 43.9 | 215.3 |
| K20CV-D (20) | Raton | NM | 232.2 | 170.1 |
| K20FS-D (20) | Peetz | CO | 276.2 | 29.9 |
| K20GK-D (20) | Pleasant Valley | CO | 306.5 | 49.4 |
| K20GO (20+) | Eagle Nest/angelfir | NM | 237.3 | 188.0 |
| K20HM-D (20) | Idalia | CO | 232.7 | 61.2 |
| K20IT-D (20) | Boise City | OK | 307.1 | 136.2 |
| K20JG-D (20) | Salida, Etc. | CO | 105.5 | 252.0 |
| K20JH-D.C (20) | Rifle, Etc. | CO | 281.0 | 289.2 |
| K20JW-D (20) | Jacks Cabin | CO | 169.5 | 269.4 |
| K20JW-D.C (20N) | Jacks Cabin | CO | 169.5 | 269.4 |
| K20KE-D.C (20) | Fort Morgan | CO | 191.7 | 31.2 |
| K20KO-D.C (20) | Julesburg | CO | 320.6 | 40.8 |
| K28GE (28+) | Woodland Park | CO | 32.3 | 326.2 |
| KGHB-CA (27N) | Pueblo, Etc. | CO | 0.0 | 270.0 |
| KGHB-CA.A (27Z) | Pueblo, Etc. | CO | 0.0 | 90.0 |
| KKHD-LP (20Z) | Grand Junction | CO | 295.9 | 277.6 |
| KKHD-LP-D.C (20) | Grand Junction | CO | 295.9 | 277.6 |
| KRMU-D (20) | DURANGO | CO | 313.5 | 239.3 |

| | | | | |
|----------------|------------------|----|-------|-------|
| KRMU-D (20) | Durango | CO | 313.5 | 239.3 |
| KRMU-D.C (20) | Durango | CO | 313.5 | 239.3 |
| KSZG-LD-D (20) | Aspen | CO | 181.0 | 287.5 |
| KTVD-D (19) | DENVER | CO | 114.0 | 343.8 |
| KTVD-D (19) | Denver | CO | 114.0 | 343.8 |
| KZCS-LP (23Z) | Colorado Springs | CO | 0.2 | 252.3 |

| Call | Area | HUnits | Contour | Masked | Ix | Unmasked | Ix | % |
|------------------|------|--------|-----------|--------|----|----------|-------|------|
| K05MD-D.A (20) | 0.0 | 0 | 19,945 | | 0 | | 0 | 0.00 |
| K14LV-D.A (20) | 0.0 | 0 | 314,429 | | 0 | | 0 | 0.00 |
| K14MH-D.C (21) | 41.0 | 1,484 | 504,329 | | 0 | | 3,838 | 0.76 |
| K19DY (19N) | 0.0 | 0 | 6,823 | | 0 | | 0 | 0.00 |
| K19DY-D.C (19) | 0.0 | 0 | 34,265 | | 0 | | 0 | 0.00 |
| K20CV-D (20) | 17.6 | 0 | 8,724 | | 0 | | 0 | 0.00 |
| K20FS-D (20) | 0.0 | 0 | 3,386 | | 0 | | 0 | 0.00 |
| K20GK-D (20) | 0.0 | 0 | 85 | | 0 | | 0 | 0.00 |
| K20GO (20+) | 0.0 | 0 | 701 | | 0 | | 0 | 0.00 |
| K20HM-D (20) | 0.0 | 0 | 912 | | 0 | | 0 | 0.00 |
| K20IT-D (20) | 0.0 | 0 | 2,505 | | 0 | | 0 | 0.00 |
| K20JG-D (20) | 0.0 | 0 | 19,650 | | 0 | | 0 | 0.00 |
| K20JH-D.C (20) | 0.0 | 0 | 29,288 | | 0 | | 0 | 0.00 |
| K20JW-D (20) | 0.0 | 0 | 9,118 | | 0 | | 0 | 0.00 |
| K20JW-D.C (20N) | 0.0 | 0 | 214 | | 0 | | 0 | 0.00 |
| K20KE-D.C (20) | 0.0 | 0 | 28,580 | | 0 | | 0 | 0.00 |
| K20KO-D.C (20) | 0.0 | 0 | 3,499 | | 0 | | 0 | 0.00 |
| K28GE (28+) | 0.0 | 0 | 10,354 | | 0 | | 0 | 0.00 |
| KGHB-CA (27N) | 0.0 | 0 | 43,068 | | 0 | | 0 | 0.00 |
| KGHB-CA.A (27Z) | 0.0 | 0 | 731,184 | | 0 | | 0 | 0.00 |
| KKHD-LP (20Z) | 0.0 | 0 | 145,164 | | 0 | | 0 | 0.00 |
| KKHD-LP-D.C (20) | 0.0 | 0 | 174,173 | | 0 | | 0 | 0.00 |
| KRMU-D (20) | 0.0 | 0 | 107,909 | | 0 | | 0 | 0.00 |
| KRMU-D (20) | 0.0 | 0 | 85,948 | | 0 | | 0 | 0.00 |
| KRMU-D.C (20) | 0.0 | 0 | 85,948 | | 0 | | 0 | 0.00 |
| KSZG-LD-D (20) | 0.0 | 0 | 8,522 | | 0 | | 0 | 0.00 |
| KTVD-D (19) | 2.9 | 1,726 | 3,592,887 | | 0 | | 3,905 | 0.11 |
| KTVD-D (19) | 5.7 | 3,011 | 3,866,667 | | 0 | | 8,071 | 0.21 |
| KZCS-LP (23Z) | 0.0 | 0 | 255,009 | | 0 | | 0 | 0.00 |

| | Housing Units | Population |
|----------------|---------------|------------|
| Colorado | | |
| El Paso County | | |
| Total | 252,852 | 622,263 |
| K14MH-D.C (21) | 1,484 | 3,838 |
| KTVD-D (19) | 1,726 | 3,905 |
| KTVD-D (19) | 3,011 | 8,071 |