

# ***KLEIN BROADCAST ENGINEERING, L.L.C.***

**dedicated to improving the science and technology of radio & television communications**

**FCC Form 301 Application  
for  
FM Broadcast Station Construction Permit  
(a minor change application)**

**NRC BROADCASTING, INC.  
K C U V(FM)  
(FCC FACILITY ID# 37028)  
FM CHANNEL 272 A / 102.3 MHz.  
GREENWOOD VILLAGE , COLORADO**

**SEPTEMBER 2006**

## **INTRODUCTION and ENGINEERING STATEMENT**

The firm of Klein Broadcast Engineering, L.L.C., has been retained by the applicant, NRC Broadcasting, Inc., the licensee of FM Broadcast Station KCUV(FM) at Greenwood Village, Colorado, to prepare the engineering necessary for the instant application.

The instant application specifies maximum Class A operation with the following parameters:

E.R.P. 1.0kW H & V

Radiation Center AGL 49 meters

Radiation Center AMSL 2,256 meters

Ground Level Elevation at site 2207 meters AMSL

HAAT 238 meters

The Proposed Antenna Location site coordinates for operation are:

NL:39-43-59 / WL: 105-14-10 (NAD1927)

The proposed site is located atop Lookout Mountain, Jefferson County, Colorado. The applicant proposes to operate the facility of KCUV(FM) diplexed into a common master antenna system of Station KMGG, Denver, Colorado.

## **INTRODUCTION and ENGINEERING STATEMENT cont'd page two: KCUV(FM)**

Engineering Exhibit E-1 is a complete FCC FM Channel Spacing Study that shows compliance with 47 C.F.R. Section 73.207 of the Commission's Rules for the requested maximum class A facility at the proposed antenna location. Stations marked with (\*) require some explanation.

1. Station KSMT at Breckenridge, Colorado, has simultaneously filed an FCC Form 301 application to change channel from 272A to 271A as specified in the KSMT 301 application. The facility specified in that simultaneous filing is clear under 47 CFR Section 73.207 to the proposed transmitter site specified herein for Station KCUV, Greenwood Village, Colorado. The reference coordinates for the allotment of FM channel 271A to Breckenridge, Colorado, reserved for Station KSMT are also clear under 47 CFR Section 73.207 to the facility proposed herein for Station KCUV. The reference coordinates for the allotment of FM channel 271A at Breckenridge, Colorado, are: NL:39-25-34 / WL:106-05-56 (NAD-27). The coordinates proposed for the actual operation of Station KSMT on FM channel 271A at Breckenridge, Colorado, are: NL:39-29-44 / WL:106-01-44 (NAD-27).

2. Station KRKY has applied for and been granted a requested One-Step Downgrade to FM Channel 271 class A as granted by the Commission in BPH-20060809AIK, on September 18, 2006, at a location specified in that application as NL:40-21-38 / WL:105-31-12 (NAD-27). Those location coordinates as a class A station facility for KRKY at Estes Park, Colorado, are clear under 47 CFR Section 73.207 to the proposed KCUV maximum class A facility proposed herein.

Stations KTUN, Eagle, Colorado, KSMT, Breckenridge, Colorado and KCUV, Greenwood Village, Colorado, are filing FCC Form 301 applications simultaneously with each other. The KSMT and KCUV applications are protecting the Class A facility of Station KRKY, Estes Park, Colorado, as authorized in BPH-20060809AIK.

## **INTRODUCTION and ENGINEERING STATEMENT cont'd page three: KCUV(FM)**

Engineering Exhibit E-2 is a detailed plot of the proposed KCUV FCC Service Contours, 60dBu & 70dBu f(50,50) operating with the proposed directional antenna system as now operated by Station KMGG, the applicant proposed operation from the common KMGG existing antenna.

Engineering Exhibit E-3 is an Azimuth Plot of the proposed directional antenna envelope pattern and a tabulation of the proposed Directional Antenna pattern field values.

Engineering Exhibit E-4 is a detailed study of the terrain between the proposed 47 CFR Section 73.215 transmitter site for KCUV(FM) and the stations' Community of License, Greenwood Village, Colorado. This exhibit evaluates several terrain plotted radials from the proposed transmitter site through the principal community and determines delta h to be between 205.66 and 309.18 meters which qualifies the applicant to use an alternate contour prediction method to prove compliance with 47 CFR Section 73.315 of the Commission's Rules. Additionally, this exhibit demonstrates there to be more than a 10% difference between the location of the 70dBu contour when predicted under the provisions of the FCC Standard Prediction Method F(50,50) and the alternate contour prediction used and demonstrated within Exhibit E-4. This exhibit contains supporting exhibits E4-A, E4-B, E4-C, E4-D and E4-E. These exhibits are terrain profile plots on pertinent radials from the proposed transmitter site through the principal community. Exhibit E4-F through E4-K are the tabulations of Delta h determined for this exhibit. Exhibit E4-L is a contour map showing the predicted 70dBu contour from the proposed facility when the FCC Standard Prediction Method is used f,(50,50) and the 70dBu contour location calculated under Longley-Rice and Free Space Methods with various levels of clutter losses considered as indicated. This map also has the principal community boundaries of Greenwood Village, Colorado, accurately plotted thereon. The map conclusively shows coverage of the principal community in compliance with 47 CFR Section 73.315. Exhibit E-4M is a tabulation of 360 radials distance to the 70dBu contour using the FCC Standard Prediction Method f(50,50) for the proposed facility of KCUV(FM).

## **INTRODUCTION and ENGINEERING STATEMENT cont'd page four: KCUV(FM)**

### PROTECTION of TABLE MOUNTAIN RADIO RECEIVING ZONE

The requirements of Section 1.924(b) of the Commission's Rules require that new or changed facilities of FM broadcast stations located in the vicinity of the Table Mountain Radio Receiving Zone of the Research Laboratories of the Department of Commerce located in Boulder County, Colorado, maintain a field strength of 80dBu or less, with noted exceptions.

The propagation path from the proposed KCUV common antenna facility with the proposed directional antenna pattern has analyzed and evaluated using a couple of different propagation models. Based on this modeling evaluation with an Effective Radiated Power of -1.0024dBk the signal strength at the Table Mountain facility is determined to be a worst case level of 75.39dBu based on Free Space modeling from the KCUV facility proposed herein, almost 5dB the lower than the prescribed 80dBu limit at Table Mountain.

Section 1.924(b)(iii) states: Stations located with 16 kilometers (10 miles) transmitting with 1 kW or more ERP in the primary plane of polarization in the azimuthal direction of Table Mountain Radio Receiving Zone; should consider their impact.

The proposed KCUV facility is located 26.63 kilometers distant from the closest point of the Table Mountain facility. At the azimuth of 0 degrees true the field from the proposed directional antenna is 0.891 which equals an ERP of 0.794kW or -1.0024dBk from the proposed KCUV facility. With this distance and ERP the KCUV facility is exempt from further consideration based on Section 1.924(2)(iii).

Engineering Exhibit E-10RHS is a complete and comprehensive RF Radiation Hazard Study/Evaluation of the facility proposed in the instant application. Based on the calculations and findings contained therein, the proposed new main transmission facility for KCUV(FM) complies with all of the requirements of the FCC O.S.T. Bulletin, Guidelines for Human Exposure to Non-Ionizing Radio Frequency Radiation, as amended to date.

**INTRODUCTION and ENGINEERING STATEMENT cont'd page five: KCUV(FM)**

The topographic data employed in the instant application is from the DMA 3 Arc Second Digitized Terrain Datafile, Conus.

An analysis of the engineering data presented herein demonstrates compliance of the proposed facility with all of the applicable Rules and Regulations of the Federal Communications Commission as amended to date. Therefore, the applicant and licensee of FM Broadcast Station KCUV(FM) at Greenwood Village, Colorado, requests the Commission consider and GRANT the instant application for the facility requested herein.

Respectfully submitted,

Elliott Kurt Klein, Consulting Broadcast Engineer

For the firm:

KLEIN BROADCAST ENGINEERING, L.L.C.

29 September 2006