

Description of Application

This minor modification application is being filed to add tabulated elevation pattern data to LMS to correct a recently discovered error in the horizontal plane antenna pattern for KDEN-TV, Facility ID 38375, Longmont, CO, licensed to NBC Telemundo License LLC. This application does not propose any change in the currently licensed facility's (FCC File BLCDDT-20100317AAM covering BPCDDT-20080623AAA) effective radiated power (ERP), antenna height, antenna location, antenna azimuth pattern or antenna elevation pattern.

During a study to increase ERP, it was discovered the horizontal plane antenna pattern provided by the antenna manufacturer and included in the original application for construction permit at this site (FCC File BMPCDDT-20060207ABG) and the latest granted construction permit (FCC File BPCDDT-20080623AAA) did not match the horizontal plane calculated using the methodology in the FCC's TVStudy program version 2.2.5. After requesting a copy of the study (a spreadsheet) Dielectric used to calculate the pattern, it was discovered Dielectric had used an electrical beam tilt of 1.25 degrees to calculate the horizontal plane pattern rather than the 1.00 degree electrical beam tilt specified in Dielectric's specifications for the antenna and included with the construction permit applications.

Interference Analysis

A TVStudy interference analysis using the licensed azimuth and elevation patterns instead of the horizontal plane antenna pattern showed interference to KTFD-TV, Facility ID 24514, Denver, CO above 0.5% compared to the baseline interference from the invalid horizontal plane pattern. A second study was conducted to show that the difference in interference from the facility as built is below de minimis levels compared with a facility with the 1.25 degree electrical beam tilt used to create the current and incorrect horizontal plane pattern.

This TVStudy analysis modified the DTVBL38375 baseline facility to use the licensed main beam azimuth pattern and the elevation pattern with 1.25 degrees electrical tilt used to create the horizontal plane pattern instead of the invalid baseline horizontal plane pattern alone. The licensed mechanical beam tilt of 0.4 degrees and tilt azimuth of 10 degrees matched that used to create the original baseline horizontal plane pattern. The "new" interference to KTFD-TV from this baseline using accurate 3D (azimuth and elevation patterns) for both the baseline and "new" facility was 0.05 percent. Interference to other stations was the same or less than that from the baseline with the 1.25 degree electrical beam tilt elevation pattern. A copy of the tvstudyix.txt file is attached separately. The elevation pattern with 1.25 degrees electric beam tilt that Dielectric incorrectly used to calculate the horizontal plane pattern is also attached as a separate file to allow duplication of this study. Complete data for the existing antenna is in the attached file "KDEN-TV-LICENSED-73.625(c)\_antenna\_system-data.pdf"

## **KDEN-TV Application to Add Elevation Pattern Data (continued) January 19, 2022**

### Environmental Analysis

This application does not propose any change in the currently licensed KDEN-TV facility. However, for completeness, a new RF exposure study was conducted using the authorized facility's elevation pattern and the formulas in FCC OET Bulletin 65. This worst-case analysis is based on a combined vertical and horizontal ERP of 960 kW at a relative field of 1.0 at all azimuths. The power density at 61 meters above ground (to account for tank, building and power pole heights) plus 2 meters for the height of a person was calculated at 0.4 degrees down-tilt, 0.4 degrees up-tilt, and no-tilt with the worse-case numbers used. The study showed that the maximum RF power density on the ground is  $0.000676 \text{ mW/cm}^2$  at 91 meters from the base of the tower. This is 0.18% of the maximum allowed power density of  $0.375 \text{ mW/cm}^2$  at 563 MHz for an uncontrolled environment. At distances greater than 293 meters from the antenna the maximum RF power density in the main beam of the antenna is below the maximum permissible exposure level for an uncontrolled environment. The closest tower on which worker could be exposed to the main beam of the antenna is 314.5 meters from the KDEN-TV tower. At this distance, the calculated power density on this tower in the main beam of the KDEN-TV antenna is 17.3% of the maximum permissible occupational exposure level of  $1.877 \text{ mW/cm}^2$  for a controlled environment.

KDEN-TV will reduce power or cease operations as necessary to protect workers on the tower from exposure to RF power density above occupational limits.

### Broadcast Facility

*Compliance with Section 73.616:* See "Interference Analysis" above.

*Compliance with Section 73.623(e):* Not applicable on this channel

*Compliance with Section 73.625:* See "Description" above, attached elevation pattern and attached file "KDEN-TV-LICENSED-73.625(c)\_antenna\_system-data.pdf"

*Compliance with Section 73.1030:* The licensed azimuth and elevation patterns were submitted to the Department of Commerce as part of a request to increase ERP to 1,000 kW. The Department of Commerce replied "Per your request, the Department of Commerce has evaluated the effects of KDEN-TV Channel 25 proposed operation on the Table Mountain Radio Receiving Zone (Table Mountain). Based on this evaluation, the Department is pleased to inform you that the request has been successfully coordinated." See attachment "JoseOteroKDEN-TV05January2021.pdf"

*Compliance with Section 73.1125:* No change proposed.

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