

**Larry H. Will, P.E.**

**Broadcast Engineering**

---

1055 Powderhorn Drive  
Glen Mills, PA 19342-9504

PH (610) 399-1826  
E-Mail lhwill@verizon.net

**MBC GRAND BROADCASTING, Inc.**

**GRAND JUNCTION, CO**

**MODIFIED LICENSE APPLICATION FOR**

**KSTR-FM, CHANNEL 241**

**Montrose, Colorado**

**FCC FAC ID 21629**

**EXHIBIT 31 – RFR STATEMENT**

**November 27, 2012**

**MBC GRAND BROADCASTING COMPANY, INCORPORATED**

**MODIFIED LICENSE APPLICATION FOR**

**KSTR-FM, CHANNEL 241**

**Montrose, Colorado**

**FCC FAC ID 21629**

**EXHIBIT 31 – RFR STATEMENT**

**ENVIRONMENTAL STATEMENT**

The instant application is excluded under 1.1306. The proposed License application replaces the existing Jampro 10 bay antenna with a Shively 10 bay of identical aperture and HAAT. KSTR-FM, Channel 241 is one of several FM and LPTV broadcast antennas at the station location required to be considered by 47 CFR 1.1307(b). Per the FCC CDBS, as of this date, there are no AM facilities within 3.2 km.

There are four other facilities operating from nearby towers that are approximately 20, 70, and 80 meters from the operation of KSTR-FM. They are KKNN, CH 232, 95.1 MHz, 100 kW H&V at 29m AG; KPRU, CH 277, 103.3 MHz, 12 kW H&V at 19 meters AG; K30IU with 17 kW DA at 308 degrees and 10 meters AG; and co-located K38JX-D at 5.3 kW DA at 308 degrees and 10 meters AG.

Using the guidelines in Appendix B of FCC OET 65, the multi user transmitter site is in a very remote and rugged area and meets the OET-65 requirements of "a remote area not likely to be visited by the general public". Therefore the requirements for compliance with the uncontrolled/general public limits may be accomplished by posting RFR warning signs at the perimeter of each of the small areas where measured exposure levels could exceed the guidelines.

The replacement KSTR-FM main antenna is mounted on a new tower situated within 4-5 feet of the previously utilized tower, which has been dismantled and removed. Using the procedures outlined in OET Bulletin 65, Edition 97-01 with Supplement A and specifically Equation 10, Page 22 and Appendix B of OET 65 and Figure 11 of Supplement A, I have evaluated the RFR energy from the antenna system of the replacement KSTR-FM antenna system as follows:

**KSTR-FM MAIN:** With this application, the KSTR-FM transmitter on Channel 241 continues to operate with a maximum ERP of 100 KW (H & V); 200 KW total power. The installed new

KSTR-FM transmitting antenna is a Shively 6810-10R-CF-BT\_NF high gain unit with a power gain of 5.197X side mounted with the C/R at 47 meters up the tower (lowest element is at least 26.6 meters above head height). Utilizing Equation 10, Page 22, and taking into account the actual factory measured pattern, the maximum downward radiation occurs at -60 and -77 degrees from the horizon. The measured field at -60 degrees is 0.169 or 5700 watts while the measured field at -77 degrees is 0.157 or 4900 watts. The -60 degree minor lobe produces maximum energy at a radius of 15.4 meters from the tower base while the -77 degree minor lobe energy lobe at 6.6 meters from the tower.

First, for -60 degrees and using Equation 10, for the occupational/trained worker controlled environment, the required minimum physical separation from the antenna is 13.8 meters. Again using Equation 10, for the general population/uncontrolled environment, the required minimum physical separation from the antenna is 30.9 meters. For the occupational/controlled environment, since the slant distance to a point 2 meters above ground is 30.83 meters, the height of the structure limits the possible occupational reference excessive radiation values from the new KSTR-FM antenna to at least 17 meters above head height at the ground. For general population/uncontrolled environment, since the slant distance to a point 2 meters above ground is 30.83 meters, the height of the structure limits the possible general public/uncontrolled environment radiation values from the KSTR-FM antenna to approximately head height at the ground. The calculated RFR level is essentially 0.2 mW/cm<sup>2</sup> or 100% of the allowable limit for the general public/uncontrolled environment per OET 65.

For -77 degrees and using Equation 10, for the occupational/trained worker controlled environment, the required minimum physical separation from the antenna is 12.8 meters. Again using Equation 10, for the general population/uncontrolled environment, the required minimum physical separation from the antenna is 28.6 meters. For the occupational/controlled environment, since the slant distance to a point 2 meters above ground is now 27.4 meters, the height of the structure limits the possible occupational reference excessive radiation values from the new KSTR-FM antenna to at least 14.6 meters above head height at the ground. For general population/uncontrolled environment, since the slant distance to a point 2 meters above ground is 27.4 meters, the height of the structure limits the possible excessive radiation values from the new KSTR-FM antenna to at least 0.8 meters above head height at the ground. Therefore the calculated RFR level is essentially 0.2 mW/cm<sup>2</sup> or 100% of the allowable limit for the general public/uncontrolled environment per OET 65.

**KKNN:** As shown in the KKNN application for a covering License, the station is using a similar 10 bay antenna and is located at least 70 meters from KSTR-FM. The physical separation between the respective towers results in no significant energy overlap between the stations downward radiation and therefore KKNN is not considered further here.

**K30IU:** K30IU analog operation on Channel 30 with 17 kW (H) ERP from a highly directional antenna, 80 meters from, and pointed away from KSTR-FM does not contribute significant RFR in the 16 meter radius around KSTR-FM and therefore is not considered further.

**K38JX-D:** K38JX-D, co-located with K30IU, operation on Channel 38 (DIGITAL) with 5.3 kW (H) ERP from a highly directional antenna, 80 meters from, and pointed away from KSTR-FM does not contribute significant RFR in the 16 meter radius around KSTR-FM and therefore is not considered further.

Therefore the instant antenna replacement for KSTR-FM results in no significant change in the RFR environment at this multi-user site. RFR levels are expected to be near or at the limit for uncontrolled environment only at or near two very small rings located approximately 6.6 and 15.4 meters from the base of the KSTR-FM antenna tower.

The site therefore, with proper posting of RFR signs, will remain in compliance with 1.1307(b) with the change out of the KSTR-FM antenna and tower.

In addition, as a precaution to employees, a suitable sign will be posted at the base of the KSTR-FM Auxiliary tower alerting maintenance personnel to the presence of radiofrequency energy so that appropriate action can be taken when access on the tower above 17 meters above ground is required.

Also, even though the applicant owns the tower, not all broadcast transmitters, that are co-located on the site, are owned by the applicant. The applicant further states that during periods of maintenance where workers on the tower could be exposed to excessive levels of RFR energy, any transmitting system that could pose a hazard will be either turned off or reduced in power to insure that workers are not subject to excessive values of RFR energy and that periodic RFR measurements will be conducted to insure both worker safety and that the actual perimeter of high RFR energy areas will be posted with suitable warning signs.

With these procedures in place, we believe the replacement antenna system for KSTR-FM will be in compliance with the RFR energy protection requirements of 47 CFR 1.1307(b).

## **BLANKETING INTERFERENCE**

The area surrounding the proposed site is in a generally uninhabited mountaintop, therefore, no blanketing interference is anticipated. However, the applicant will investigate and cure any complaints reported within the blanketing area. There are no AM facilities within 3.2 KM.