

**ONE-STEP UPGRADE/  
MINOR CHANGE APPLICATION  
CUMULUS LICENSING LLC  
KKCT RADIO STATION  
CH 248C0 - 97.5 MHZ - 100.0 KW  
BISMARCK, NORTH DAKOTA  
October 2009**

**EXHIBIT A**

**Radio Frequency Assessment**

Since the proposed KKCT will be co-located with FM stations KACL, KBYZ, and KUSB<sup>1</sup> and is located within 315 meters of a TV station, the use of the worksheets to demonstrate compliance with the radio frequency radiation rules is not possible. Therefore, this study has been made to determine whether this proposal is in compliance with 47 C.F.R. §1.1307 of the Commission's rules and with OET Bulletin #65, dated August 1997 ("Bulletin"), regarding human exposure to radio frequency radiation in the vicinity of broadcast towers. This study considers all nearby stations, KKBO, KGCD and TV station KNDX-DT<sup>2</sup>, and utilizes the appropriate formulas contained in the Bulletin.<sup>3</sup>

The proposed KKCT antenna system will be mounted with its center of radiation 210.3 meters (690.0 feet) above the ground at the existing tower location and will operate with an effective radiated power of 100.0 kilowatts in the horizontal and vertical planes (circularly polarized). The proposed KKCT antenna is a Dielectric DCRM twelve bay, 0.75 wavelength

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- 1) KUSB has a permit to upgrade to Class C0 and increase its height above ground at its existing site. However, the KUSB license will be considered in this study as worst case, since it is at the same power as the permit, but has a lower center of radiation on the tower
  - 2) Any broadcast facilities within 315 meters of the proposed site is considered a contributor, and further, will be considered co-located for the purposes of this instant review.
  - 3) The FM Model program was used to calculate the FM stations' contributions. The EPA single bay dipole was used unless otherwise stated.



spaced system (FCC/EPA Type #7). At 2.0 meters, the height of an average person above the ground at the base of the tower, the KKCT antenna system will contribute  $0.0003 \text{ mw/cm}^2$ .<sup>3</sup> Based on exposure limitations for a controlled environment, <0.1% of the allowable ANSI limit is reached at 2.0 meters above the ground at the base of the tower. For uncontrolled environments, 0.2% of the ANSI limit is reached at 2.0 meters above the ground at the base of the tower.

The proposed KACL antenna system will be mounted with its center of radiation 210.3 meters (690.0 feet) above the ground at the existing tower location and will operate with an effective radiated power of 100.0 kilowatts in the horizontal and vertical planes (circularly polarized). The proposed KACL antenna is a Dielectric DCRM twelve bay, 0.75 wavelength spaced system (FCC/EPA Type #7). At 2.0 meters, the height of an average person above the ground at the base of the tower, the KACL antenna system will contribute  $0.0003 \text{ mw/cm}^2$ .<sup>4</sup> Based on exposure limitations for a controlled environment, <0.1% of the allowable ANSI limit is reached at 2.0 meters above the ground at the base of the tower. For uncontrolled environments, 0.2% of the ANSI limit is reached at 2.0 meters above the ground at the base of the tower.

The proposed KBYZ antenna system will be mounted with its center of radiation 210.3 meters (690.0 feet) above the ground at the existing tower location and will operate with an

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- 3) This level of field occurs at 138.0 meters out from the base of the tower and is considered worst case.
  - 4) This level of field occurs at 138.0 meters out from the base of the tower and is considered worst case.



effective radiated power of 100.0 kilowatts in the horizontal and vertical planes (circularly polarized). The proposed KBYZ antenna is a Dielectric DCRM twelve bay, 0.75 wavelength spaced system (FCC/EPA Type #7). At 2.0 meters, the height of an average person above the ground at the base of the tower, the KBYZ antenna system will contribute  $0.0003 \text{ mw/cm}^2$ .<sup>5</sup> Based on exposure limitations for a controlled environment, <0.1% of the allowable ANSI limit is reached at 2.0 meters above the ground at the base of the tower. For uncontrolled environments, 0.2% of the ANSI limit is reached at 2.0 meters above the ground at the base of the tower.

The KUSB antenna system is mounted with its center of radiation 198.6 meters (651.6 feet) above the ground at the existing tower location and operates with an effective radiated power of 100.0 kilowatts in the horizontal and vertical planes (circularly polarized). The KUSB antenna is a Dielectric DCRM twelve bay, 0.75 wavelength spaced system (FCC/EPA Type #7). At 2.0 meters, the height of an average person above the ground at the base of the tower, the KUSB antenna system contributes  $0.0003 \text{ mw/cm}^2$ .<sup>6</sup> Based on exposure limitations for a controlled environment, <0.1% of the allowable ANSI limit is reached at 2.0 meters above the ground at the base of the tower. For uncontrolled environments, 0.2% of the ANSI limit is reached at 2.0 meters above the ground at the base of the tower.

The authorized KGCD antenna system is mounted with its center of radiation 118.0 meters (387.2 feet) above the ground at the existing tower location and operates with an effective

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5) This level of field occurs at 138.0 meters out from the base of the tower and is considered worst case.

6) This level of field occurs at 131.0 meters out from the base of the tower and is considered worst case.



radiated power of 2.3 kilowatts in the horizontal and vertical planes (circularly polarized).<sup>7</sup> The GCD antenna is an Electronics Research, Inc., rototiller type system (FCC/EPA Type #3). At 2.0 meters, the height of an average person above the ground at the base of the tower, the KGCD antenna system contributes  $0.0016 \text{ mw/cm}^2$ .<sup>8</sup> Based on exposure limitations for a controlled environment, 0.2% of the allowable ANSI limit is reached at 2.0 meters above the ground at the base of the tower. For uncontrolled environments, 0.8% of the ANSI limit is reached at 2.0 meters above the ground at the base of the tower.

The KKBO antenna system is mounted with its center of radiation 179.0 meters (587.3 feet) above the ground at the existing tower location and operates with an effective radiated power of 100.0 kilowatts in the horizontal and vertical planes (circularly polarized). The KKBO antenna is a Shively Labs Model 6810 twelve bay, 0.5 wavelength spaced system (FCC/EPA Type #6). At 2.0 meters, the height of an average person above the ground at the base of the tower, the KKBO antenna system contributes  $0.0005 \text{ mw/cm}^2$ .<sup>9</sup> Based on exposure limitations for a controlled environment, 0.1% of the allowable ANSI limit is reached at 2.0 meters above the ground at the base of the tower. For uncontrolled environments, 0.3% of the ANSI limit is reached at 2.0 meters above the ground at the base of the tower.

The authorized KNDX-DT Channel 26 antenna system is mounted with its center of radiation 202.0 meters (662.7 feet) above the ground at the existing tower location and operates with an effective radiated power of 50 kilowatts in the horizontal plane. As denoted in OET

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- 7) Based on its permitted system (BMP-20090901AEA), as covered by license file # BLED-20090924ABD.
  - 8) This level of field occurs at 116.0 meters out from the base of the tower and is considered worst case.
  - 9) This level of field occurs at 387.0 meters out from the base of the tower and is considered worst case.



Bulletin #65, Supplement A, Page 31, the typical UHF antenna system has a downward radiation field of 0.1. As such, the KNDX antenna system radio frequency radiation calculations were made based on an effective radiated power of 0.5 kilowatt. At 2.0 meters, the height of an average person above the ground at the base of the tower, the KNDX antenna system contributes  $0.0002 \text{ mw/cm}^2$ . Based on exposure limitations for a controlled environment,  $<0.1\%$  of the allowable ANSI limit is reached at 2.0 meters above the ground at the base of the tower. For uncontrolled environments,  $<0.1\%$  of the ANSI limit is reached at 2.0 meters above the ground at the base of the tower.

Combining the contributions of KKCT, KACL (proposed), KBYZ (proposed), KUSB, KGCD, KKBO and KNDX-DT, a total of less than 2.0% of the uncontrolled environment limit is reached at 2.0 meters above ground at the base of the tower. Since this level for uncontrolled environments is well below the 100% limit defined by the Commission, the proposed KBYZ facility is believed to be in compliance with the radio frequency radiation exposure limits as is required by the Federal Communications Commission. Further, Cumulus will posted warning signs in the vicinity of the tower warning of potential radio frequency radiation hazards at the site. In addition, Cumulus will reduce the power of the facility or cease operation, in cooperation and coordination with other tower users, as necessary, to protect persons having access to the site, tower or antenna from radio frequency radiation in excess of FCC guidelines.