

ONE-STEP UPGRADE /
MINOR CHANGE APPLICATION
CUMULUS LICENSING LLC
KUSB (FM) RADIO STATION
CH 277C0 - 103.3 MHZ - 100.0 KW
HAZELTON, NORTH DAKOTA
January 2010

EXHIBIT C

Radio Frequency Assessment

Since the proposed KUSB will share an antenna with co-located FM stations KBYZ, KKCT and KACL 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, specifically KBYZ (permit), KKCT (permit), KACL (permit)¹, KGCD, KKBO, and TV station KNDX, and utilizes the appropriate formulas contained in the Bulletin.²

The proposed KUSB 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 KUSB antenna is a Dielectric DCRM twelve bay, 0.75 wavelength

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- 1) Since the upgrade of KUSB will be implemented at the same time as that of stations KBYZ, KKCT and KACL (shared antenna), only the proposed facilities of KBYZ, KKCT and KACL are considered in this study. The improved facilities for KUSB, KBYZ, KKCT and KACL will be implemented simultaneously.
 - 2) The FM Model program was used to calculate the FM stations' contributions. The EPA single bay dipole was used unless otherwise noted. Any broadcast facilities within 315 meters of the proposed site are considered a contributor, and further, will be considered co-located for the purposes of this instant review.

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 will contribute 0.0003 mw/cm^2 .³ 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 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 effective radiated power of 100.0 kilowatts in the horizontal and vertical planes (circularly polarized). The authorized 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 mw/cm^2 .⁴ 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 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

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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.

polarized). The authorized 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 mw/cm^2 .⁵ 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 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 authorized KKCT 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 KKCT antenna system will contribute 0.0003 mw/cm^2 .⁶ 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 138.0 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). The KGCD 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 0.0025 mw/cm^2 .⁷ Based on exposure limitations for a controlled environment, 0.3% of the allowable ANSI limit is reached at 2.0 meters above the ground at the base of the tower. For uncontrolled environments, 1.3% 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 (587.2 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 Shively, Model 6810, 12 bay half wavelength antenna system (FCC/EPA #6). At 2.0 meters, the height of an average person, above the ground at the base of the tower, KKBO contributes 0.0005 mw/cm^2 .⁸ 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 Channel 26 antenna system will be mounted with its center of radiation 202.0 meters (662.7 feet) above the ground at the existing tower location and will operate with an effective radiated power of 50.0 kilowatts in the horizontal plane. As denoted in

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- 7) This level of field occurs at 116.0 meters out from the base of the tower and is considered worst case.
 - 8) This level of field occurs at 387.0 meters out from the base of the tower and is considered worst case.

OET 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 will contribute 0.0002 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, <1.0% of the ANSI limit is reached at 2.0 meters above the ground at the base of the tower.

Combining the contributions of KUSB, KBYZ (permit), KKCT (permit), KACL (permit), KGCD, KKBO and KNDX, a total of 3.4% 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 KUSB 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.