

MINOR CHANGE APPLICATION
NEW AUXILIARY FM ANTENNA
WDAS LICENSE LIMITED PARTNERSHIP
WRDW-FM RADIO STATION
CH 243B - 96.5 MHZ - 5.0 KW
PHILADELPHIA, PENNSYLVANIA
August 2005

EXHIBIT B

Radio Frequency Assessment

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 the WRDW-FM main antenna system², WRTI, WXTU, WMGK, WBEB, WBEN-FM and WPPZ-FM and TV stations WPHA-CA, WELL-CA, WFPA-CA, WPSG, WTXF-TV and WTXF-DT,³ and utilizes the appropriate formulas contained in the Bulletin.⁴

The WRDW-FM auxiliary antenna system is mounted with its center of radiation 152.1 meters (499.0 feet) above the ground at the existing tower location and will operate with an effective radiated power of 5.0 kilowatts in the horizontal and vertical planes (circularly polarized). At two meters, the height of an average person, above the ground at the base of the

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- 2) As the proposed WRDW-FM auxiliary will be used for digital and, if needed, analog operation, the contribution of both the main and auxiliary antennas are considered.
- 3) Some of these stations are located at sites within 315 meters of the proposed WRDW-FM auxiliary facility, but are considered co-located for the purposes of this review.
- 4) The FM Model program was used to calculate the FM stations' contributions. The EPA single bay dipole was used unless otherwise stated.

tower, the WRDW-FM auxiliary antenna system will contribute 0.0089 mw.⁵ Based on exposure limitations for a controlled environment, 0.9% of the allowable ANSI limit is reached at two meters above the ground at the base of the tower. For uncontrolled environments, 4.5% of the ANSI limit is reached at two meters above the ground at the base of the tower.

The WRDW-FM main antenna system is mounted with its center of radiation 256.0 meters (839.9 feet) above the ground at the existing tower location and operates with an effective radiated power of 17.0 kilowatts in the horizontal and vertical planes (circularly polarized). At two meters, the height of an average person, above the ground at the base of the tower, the WRDW-FM main antenna system contributes 0.0106 mw.⁶ Based on exposure limitations for a controlled environment, 1.1% of the allowable ANSI limit is reached at two meters above the ground at the base of the tower. For uncontrolled environments, 5.3% of the ANSI limit is reached at two meters above the ground at the base of the tower.

The WRTI antenna system is mounted with its center of radiation 300.0 meters (984.3 feet) above the ground at the existing tower and operates with an effective radiated power of 12.5 kilowatts in the horizontal and vertical planes (circularly polarized). At two meters, the height of an average person, above the ground at the base of the tower, the WRTI antenna system contributes 0.0056 mw.⁷ Based on exposure limitations for a controlled environment, 0.6% of

5) This level of field occurs at 41.0 meters out from the base of the tower and is considered worst case.

6) This level of field occurs at 68.0 meters out from the base of the tower and is considered worst case.

7) This level of field occurs at 80.0 meters out from the base of the tower and is considered worst case.

the allowable ANSI limit is reached at two meters above the ground at the base of the tower. For uncontrolled environments, 2.8% of the ANSI limit is reached at two meters above the ground at the base of the tower.

The WXTU main antenna system is mounted with its center of radiation 267.0 meters (876.0 feet) above the ground at the existing tower and operates with an effective radiated power of 15.0 kilowatts in the horizontal and vertical planes (circularly polarized). At two meters, the height of an average person, above the ground at the base of the tower, the WXTU antenna system contributes 0.0086 mw.⁸ Based on exposure limitations for a controlled environment, 0.9% of the allowable ANSI limit is reached at two meters above the ground at the base of the tower. For uncontrolled environments, 4.3% of the ANSI limit is reached at two meters above the ground at the base of the tower.

The WMGK antenna system is mounted with its center of radiation 342.0 meters (1,122.0 feet) above the ground at the existing tower and operates with an effective radiated power of 8.9 kilowatts in the horizontal and vertical planes (circularly polarized). At two meters, the height of an average person, above the ground at the base of the tower, the WMGK antenna system contributes 0.0031 mw.⁹ Based on exposure limitations for a controlled environment, 0.3% of the allowable ANSI limit is reached at two meters above the ground at the base of the tower. For uncontrolled environments, 1.5% of the ANSI limit is reached at two meters above the ground at the base of the tower.

8) This level of field occurs at 71.0 meters out from the base of the tower and is considered worst case.

9) This level of field occurs at 91.0 meters out from the base of the tower and is considered worst case.

The WBEB antenna system is mounted with its center of radiation 280.0 meters (918.6 feet) above the ground at the existing tower and operates with an effective radiated power of 14.0 kilowatts in the horizontal and vertical planes (circularly polarized). At two meters, the height of an average person, above the ground at the base of the tower, the WBEB antenna system contributes 0.0073 mw.¹⁰ Based on exposure limitations for a controlled environment, 0.7% of the allowable ANSI limit is reached at two meters above the ground at the base of the tower. For uncontrolled environments, 3.6% of the ANSI limit is reached at two meters above the ground at the base of the tower.

The WBEN-FM antenna system is mounted with its center of radiation 342.0 meters (1,122.0 feet) above the ground at the existing tower and operates with an effective radiated power of 8.9 kilowatts in the horizontal and vertical planes (circularly polarized). At two meters, the height of an average person, above the ground at the base of the tower, the WBEN-FM antenna system contributes 0.0031 mw.¹¹ Based on exposure limitations for a controlled environment, 0.3% of the allowable ANSI limit is reached at two meters above the ground at the base of the tower. For uncontrolled environments, 1.5% of the ANSI limit is reached at two meters above the ground at the base of the tower.

The WPPZ-FM antenna system is mounted with its center of radiation 304.0 meters (997.4 feet) above the ground at the existing tower and operates with an effective radiated power of 0.340 kilowatts in the horizontal and vertical planes (circularly polarized). At two meters, the

10) This level of field occurs at 75.0 meters out from the base of the tower and is considered worst case.

11) This level of field occurs at 91.0 meters out from the base of the tower and is considered worst case.

height of an average person, above the ground at the base of the tower, the WPPZ-FM antenna system contributes 0.0002 mw.¹² Based on exposure limitations for a controlled environment, <0.1% of the allowable ANSI limit is reached at two meters above the ground at the base of the tower. For uncontrolled environments, 0.1% of the ANSI limit is reached at two meters above the ground at the base of the tower.

The WPHA-CA Channel 38 antenna system is mounted with its center of radiation 213.0 meters (699.0 feet) above the ground at the existing tower location and operates with an effective radiated power of 40.0 kilowatts in the horizontal plane. As denoted in OET Bulletin #65, Supplement A, Page 29, the typical UHF antenna system has a downward radiation field of 0.1. As such, the WPHA-CA antenna system radio frequency radiation calculations were made based on an effective radiated power of 0.400 kilowatts. At two meters, the height of an average person, above the ground at the base of the tower, the WPHA-CA antenna system contributes 0.0002 mw. Based on exposure limitations for a controlled environment, <0.1% of the allowable ANSI limit is reached at two meters above the ground at the base of the tower. For uncontrolled environments, <0.1% of the ANSI limit is reached at two meters above the ground at the base of the tower.

The WELL-CA Channel 45 (construction permit) antenna system is to be mounted with its center of radiation 330.2 meters (1,083.3 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

12) This level of field occurs at 81.0 meters out from the base of the tower and is considered worst case.

denoted in OET Bulletin #65, Supplement A, Page 29, the typical UHF antenna system has a downward radiation field of 0.1. As such, the WELL-CA antenna system radio frequency radiation calculations were made based on an effective radiated power of 0.500 kilowatts. At two meters, the height of an average person, above the ground at the base of the tower, the WELL-CA antenna system contributes 0.0001 mw. Based on exposure limitations for a controlled environment, <0.1% of the allowable ANSI limit is reached at two meters above the ground at the base of the tower. For uncontrolled environments, <0.1% of the ANSI limit is reached at two meters above the ground at the base of the tower.

The WFLA-CA Channel 28 antenna system is mounted with its center of radiation 152.2 meters (499.3 feet) above the ground at the existing tower location and operates with an effective radiated power of 10.9 kilowatts in the horizontal plane. As denoted in OET Bulletin #65, Supplement A, Page 29, the typical UHF antenna system has a downward radiation field of 0.1. As such, the WFLA-CA antenna system radio frequency radiation calculations were made based on an effective radiated power of 0.109 kilowatts. At two meters, the height of an average person, above the ground at the base of the tower, the WFLA-CA antenna system contributes 0.0001 mw. Based on exposure limitations for a controlled environment, <0.1% of the allowable ANSI limit is reached at two meters above the ground at the base of the tower. For uncontrolled environments, <0.1% of the ANSI limit is reached at two meters above the ground at the base of the tower.

The WPSG Channel 57 antenna system is mounted with its center of radiation 351.0 meters (1,151.6 feet) above the ground at the existing tower location and operates with an effective radiated power of 3,470 kilowatts in the horizontal plane. As denoted in OET Bulletin #65, Supplement A, Page 29, the typical UHF antenna system has a downward radiation field of 0.1. As such, the WPSG antenna system radio frequency radiation calculations were made based on an effective radiated power of 34.7 kilowatts. At two meters, the height of an average person, above the ground at the base of the tower, the WPSG antenna system contributes 0.0059 mw. Based on exposure limitations for a controlled environment, 0.2% of the allowable ANSI limit is reached at two meters above the ground at the base of the tower. For uncontrolled environments, 1.2% of the ANSI limit is reached at two meters above the ground at the base of the tower.

The authorized WTXF-TV Channel 29 antenna system is mounted with its center of radiation 338.0 meters (1,108.9 feet) above the ground at the existing tower location and operates with an effective radiated power of 5,000 kilowatts in the horizontal plane. As denoted in OET Bulletin #65, Supplement A, Page 31, the typical UHF antenna system has a downward radiation field of 0.1. As such, the WTXF-TV antenna system radio frequency radiation calculations were made based on an effective radiated power of 50.0 kilowatts. At two meters, the height of an average person, above the ground at the base of the tower, the WTXF-TV antenna system will contribute 0.0092 mw. Based on exposure limitations for a controlled environment, 0.5% of the

allowable ANSI limit is reached at two meters above the ground at the base of the tower. For uncontrolled environments, 2.5% of the ANSI limit is reached at two meters above the ground at the base of the tower.

The authorized WTXF-DT Channel 42 antenna system is mounted with its center of radiation 276.4 meters (906.8 feet) above the ground at the existing tower location and operates with an effective radiated power of 1,000 kilowatts in the horizontal plane. As denoted in OET Bulletin #65, Supplement A, Page 31, the typical UHF antenna system has a downward radiation field of 0.1. As such, the WTXF-DT antenna system radio frequency radiation calculations were made based on an effective radiated power of 10.0 kilowatts. At two meters, the height of an average person, above the ground at the base of the tower, the WTXF-DT antenna system will contribute 0.0028 mw. Based on exposure limitations for a controlled environment, 0.1% of the allowable ANSI limit is reached at two meters above the ground at the base of the tower. For uncontrolled environments, 0.6% of the ANSI limit is reached at two meters above the ground at the base of the tower.

Combining the contributions of WRDW-FM (auxiliary), WRDW-FM (main), WRTI, WXTU, WMGK, WBEB, WBEN-FM, WPPZ-FM, WPHA-CA, WELL-CA, WFPA-CA, WPSG, WTXF-TV and WTXF-DT a total of <28.2% is reached at two meters above the ground at the base of the WRDW-FM tower. Since this level for uncontrolled environments is well below the 100% limit defined by the Commission, the proposed WRDW-FM auxiliary facility is believed

to be in compliance with the radio frequency radiation exposure limits as is required by the Federal Communications Commission. Further, WLLP has posted warning signs in the vicinity of the tower warning of potential radio frequency radiation hazards at the site. In addition, WLLP will reduce the power of the proposed 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.