

WBRA-TV PETITION FOR RULEMAKING

PETITION FOR RULEMAKING TO AMEND THE
DTV TABLE OF ALLOTMENTS TO SUBSTITUTE NCE
CHANNEL *3 FOR NCE CHANNEL *13

(BLUE RIDGE PUBLIC TELEVISION, INC.)

ENGINEERING TECHNICAL STATEMENT PREPARED BY WILLIAM T. GODFREY, JR. OF THE FIRM KESSLER AND GEHMAN ASSOCIATES, INC., TELECOMMUNICATIONS CONSULTING ENGINEERS ON BEHALF OF BLUE RIDGE PUBLIC TELEVISION, INC. (“BRPTV”), LICENSEE OF WBRA-TV (FILE NUMBER 0000047419) IN SUPPORT OF A PETITION FOR RULE MAKING TO AMEND THE DTV TABLE OF ALLOTMENTS TO SUBSTITUTE CHANNEL *13 FOR WBRA-TV IN LIEU OF CHANNEL *3, ROANOKE, VA.

SUMMARY

BRPTV is the licensed to operate on reserved low-band VHF Channel *3 with an ERP of 9.8 kW using a nondirectional antenna with an antenna height radiation center of 55.0 m AGL. The operation of WBRA-TV Channel *3 in the low-band VHF spectrum has proven to be highly ineffective for satisfactory viewership. A comprehensive engineering analysis revealed that the proposed high-band VHF channel is suitable for substitution since it would comply with all FCC rules and requirements including §73.616 post-transition DTV station interference protection, §73.622 DTV Table of Allotments, §73.623(e) Protection of land mobile operations, §73.625 DTV coverage of principal community, §73.1030 Notifications concerning interference to radio astronomy, and §73.1125 Station telephone number. Therefore, Channel *13 can be allotted to WBRA-TV in lieu of channel *3.

BRPTV wishes to change from allotted low-band VHF Channel *3 to high-band VHF Channel *13 in order to provide superior over-the-air service to its viewers. Propagation and reception issues for television stations operating on low-band VHF channels are well documented. In addition to substandard propagation issues, other inherent problems associated with the low-VHF band include environmental noise, lower power levels, and unavailability of quality low-band VHF receive antennas to the public. Substituting channel *13 for channel *3 at the same transmitter site will provide a more robust indoor and outdoor signal and would therefore serve the public interest. Accordingly, BRPTV requests to move from Channel *3 to Channel *13 with the specifications set forth below, so that Roanoke-area viewers may benefit from substantially improved over-the-air digital television broadcast service.

<u>City/State</u>	<u>Channel</u>	<u>DTV Power (kW)</u>	<u>Antenna HAAT (m)</u>
Roanoke, VA	*13	66	630.6

REQUESTED CHANGES

- Change the channels from *3 to *13
- Increase the ERP from 9.8 kW to 66.0kW
- Increase antenna height radiation center from 55.0 m AGL to 68.4 m AGL
- Change antenna azimuth pattern from nondirectional to directional
- Change antenna from Dielectric THA-O4-2L/8H-1-R to Dielectric THV-10A13/VP-R C150
- Change electrical beam tilt from 0.0 to 1.0
- Change polarization from horizontal to elliptical

POWER AND HEIGHT

Section 73.622(f)(7) of the FCC Rules states that the maximum allowable ERP (kW) for a DTV station located in Zone II operating on channel 13 with an HAAT that exceeds 610 meters is determined using the following formula, with HAAT expressed in meters:

$$ERP_{max} = 62.34 - 17.08 \cdot \log_{10}(HAAT)$$

Therefore, since the proposed Channel *13 Zone II facility will have an HAAT of 630.6 m, the maximum allowable ERP is $62.34 - 17.08 \cdot \log_{10}(630.6) = 14.52$ dBk which equates to 28.3 kW.

LARGEST STATION IN MARKET

In order for WBRA-TV to replicate its licensed F(50,90) 28.0 dBuV/m protected noise limited service contour as closely as possible, it will need to operate with an ERP of 66 kW which will exceed the maximum allowable ERP limit pursuant to Section 73.622(f)(7) of the FCC Rules; however, Section 73.622(f)(5) of the FCC rules states that licensees and permittees assigned a DTV channel in the initial DTV Table of Allotments may request an increase in either ERP in some azimuthal direction or antenna HAAT, or both, that exceed the initial technical facilities specified in Appendix B, up to that needed to provide the same geographic coverage

area as the largest station within their market, whichever would allow the largest service area. It was determined that the licensed WBRA-TV Channel *3 (9.8 kW ERP) facility is the largest station in the Roanoke-Lynchburg, VA market. The licensed WBRA-TV Channel *3 facility's F(50,90) 28.0 dBuV/m protected noise limited service contour encompasses an area of 51,076.4 sq. km. With an ERP of 66 kW, the WBRA-TV Channel *13 facility will encompass an area of only 51,044.6 sq. km which is 31.8 sq km less than the licensed WBRA-TV Channel *3 allowable limit of 51,076.4 sq. km.

TVSTUDY – REQUEST 0.1 KM PROFILE SPACING

BRPTV proposes to operate with an elliptically polarized Dielectric model THV-10A13/VP-R C150 directional, top-mount antenna tuned specifically for Channel 13 at the licensed WBRA-TV transmitter site (ASRN 1017598) with a centerline height above mean sea level of 1,208.4 meters and 630.6 meters above average terrain (See Exhibit 1). The proposed changes include a new antenna from nondirectional to directional, electrical beam tilt from 0.0 to 1.0 degrees, a 56.2 kW increase in ERP from 9.8 kW to 66.0 kW, a 13.4 m increase in antenna height from 55.0 m AGL (side-mount) to 68.4 m AGL (top-mount) and a change in frequency from low-band VHF channel *3 to high-band VHF channel *13. All other station parameters shall remain unchanged.

Section 73.616(d) of the FCC Rules states that an application will not be accepted if it is predicted to cause interference to more than an additional 0.5 percent of the population served by another DTV station. The attached TVStudy (v2.2.5) report was calculated using a 0.1 km profile point spacing and a 2.0 km study cell size and demonstrates that the proposed WBRA-TV Channel *13 facility would not cause impermissible interference to any stations. Referring to the attached TVStudy, it can be seen that the WVPT Channel 12 facility was intentionally removed from the study. VPM Media Corporation ("VPM") is the licensee of WVPT which requested a rulemaking proceeding for the purpose of amending the DTV Table of Allotments to substitute Channel 15 for Channel 11 which would also release VPM's Channel 12 authorization (DTS) and clear the way for WBRA to operate on Channel *13. The

FCC released a Report and Order on September 1, 2022 (MB Docket No. 21-248) which adopted and ordered amendment of the DTV Table of Allotments effective immediately designating Channel 15 at Staunton, VA for the WVPT facility. Accordingly, BPPTV hereby requests amendment of the DTV Table of Allotments to substitute channel *13 for WBRA-TV in lieu of channel *3, for Roanoke, VA. As previously mentioned, WBRA-TV has experienced a substantial loss of viewers within its protected noise limited service contour due to the poor propagation characteristics of the low-band VHF channel as well as the surrounding area's rugged terrain not to mention that it is the only low-band VHF station in the Roanoke-Lynchburg, VA DMA. Therefore, the proposed channel substitution from *3 to *13 would significantly serve the public interest. BRPTV is willing to accept the predicted 1.15% receive interference (See TVStudy Report).

PRINCIPAL COMMUNITY

Referring to Exhibit 2, it can be seen that the proposed facility's F(50,90) 43.0 dBuV/m principal community contour (dashed magenta contour) fully encompasses the entire Roanoke, VA community in all directions pursuant to §73.625 of the FCC Rules (DTV Coverage of Principal Community and Antenna System).

PBS POPULATION LOSS ANALYSIS

The FCC weighs the public interest when a television broadcast facility proposes a service area reduction. As demonstrated in Exhibit 2, the proposed facility's F(50,90) 36.0 dBuV/m protected noise limited service contour slightly decreases from approximately the 120° radial through the 240° radial clockwise relative to the licensed facility's F(50,90) 28.0 dBuV/m protected noise limited service contour; therefore, it is subject to a population loss analysis. As previously mentioned, modifying the WBRA-TV facility from its licensed facility operating with a low-band VHF frequency to the proposed facility operating with a high-band VHF frequency will significantly serve the public interest, especially since the lost PBS population will be de minimis as shown in Exhibit 3. The contours depicted in Exhibit 3 were generated from TVStudy. The blue contour represents the licensed WBRA-TV Channel *3 facility's F(50,90) 28.0 dBuV/m protected noise limited service contour (PNLSC) and the green

contour represents the proposed WBRA-TV Channel *13 facility's F(50,90) 36.0 dBuV/m PNLSC. The black contours depicted in Exhibit 3 represent surrounding PBS stations with PNLSCs that overlap the WBRA-TV licensed and proposed PNLSCs. Longley-Rice studies were conducted using TVStudy to identify terrain limited population centroids within the licensed WBRA-TV Channel *3 facility's PNLSC. All centroids were then eliminated with the exception of those that are covered by the licensed WBRA-TV Channel *3 PNLSC but not by the proposed WBRA-TV Channel *13 PNLSC. Furthermore, centroids located within the surrounding PBS station's PNLSCs were also eliminated which resulted in only three unserved population centroids containing a total of only 94 people which is well within the 500 person de minimis threshold. It should be noted that the three unserved population centroids for this PBS population loss study depicted in Exhibit 3 would likely be fully covered with a signal greater than the minimum threshold required for reception if Longley-Rice coverage were used instead of contours which would then show a zero (0.0) PBS population loss. Accordingly, the proposed channel change should be granted since it would significantly benefit the public interest.

RADIO FREQUENCY RADIATION COMPLIANCE

The proposed WBRA-TV Channel *13 full-service NCE digital television broadcast facility will have no significant environmental impact as defined in §1.1307 of the FCC Rules. The digital transmitter, transmission line and antenna system shall produce a horizontally polarized ERP of 66 kW and a vertically polarized ERP of 62.7 kW (E-pol). It was determined that the maximum lobe of radiation will occur at approximately 92.7 feet from the base of the tower (237.3 ft radial distance from the antenna center). At 92.7 feet from the base of the tower, the depression angle of the main lobe will be approximately 67° below the horizontal. At that point, the relative field is 0.173 and the power density six feet above the ground will be 0.02461 mW/cm². This equates to only 2.46% of the Maximum Permissible Exposure (MPE) limits for Occupational/Controlled Exposure and only 12.30% of the MPE limits for General Population/Uncontrolled Exposure authorized by the American National Standards Institute (ANSI). Since operation of the proposed WBRA-TV Channel *13 full-service NCE digital

television broadcast facility would exceed 5.0% of the MPE limit for Occupational/Controlled Exposure or General Population/Uncontrolled Exposure at any point on the ground, the proposed WBRA-TV Channel *13 full-service NCE digital television broadcast facility is considered a “contributor” to the RF exposure environment pursuant to OET Bulletin 65, Edition 97-01. Therefore, contributions of exposure from other sources were accounted for in this analysis. Therefore, all broadcast antennas on the WBRA-TV tower must be analyzed and a composite study is required to demonstrate that the total power density of all antennas on the tower would not exceed 100% of the MPE allowable.

Since the only broadcast antenna mounted on the WBRA-TV support structure is the WBRA-TV antenna, the composite power density on the support structure is equal to the power density produced by the WBRA-TV facility. Therefore, the total RF energy emanating from the single antenna mounted on the WBRA-TV support structure will be 2.46% of the MPE limits for Occupational/Controlled Exposure and 12.30% of the MPE limits for General Population/Uncontrolled Exposure. Accordingly, the total exposure, which would be generated by the WBRA-TV facility alone, would result in exposure levels well below the allowable exposure threshold authorized by the ANSI and the FCC. Accordingly, it is safe to conclude that the emissions would be insignificant and well within the maximum allowable requirements.

If other antennas are placed on the tower in the future, the licensee will cooperate with those users by reducing or completely terminating the power to the antenna when maintenance workers are in danger from the electromagnetic radiation emanating from the antenna. It is also understood that additional antennas on the support structure could increase the overall RF exposure levels and it is the responsibility of each licensee to ensure that the total RF exposure resulting from the operation of all antennas on the support structure do not exceed the MPE level at any point on the ground.

CERTIFICATION

This engineering technical statement was prepared by William T. Godfrey, Jr., with the professional firm Kessler and Gehman Associates, Inc., Telecommunications Consulting Engineers having offices in Gainesville, Florida, and has been working with the firm in the field of television and radio broadcast consulting since 1998 and his qualifications are a matter of record with the Federal Communications Commission. Mr. Godfrey is a Graduate from the University of North Florida and a Distinguished Military Graduate from the University of Florida. As a Professional in the field of Telecommunications he states under penalty of perjury that the information contained in this report is true and correct to the best of his knowledge and belief.

A handwritten signature in blue ink that reads 'William T. Godfrey, Jr.'.

WILLIAM T. GODFREY, JR., CBT
Kessler and Gehman Associates, Inc.
Consulting Engineers

November 17, 2022