

ENGINEERING TECHNICAL STATEMENT PREPARED BY WILLIAM T. GODFREY, JR. WITH THE TELECOMMUNICATIONS CONSULTING ENGINEERING FIRM KESSLER AND GEHMAN ASSOCIATES, INC. (KGA) IN CONNECTION WITH A DIGITAL TELEVISION TRANSLATOR DISPLACEMENT APPLICATION FOR THE UNIVERSITY OF ALASKA'S K10QW-D CONSTRUCTION PERMIT (BMPDTV-20121005AAE) REQUESTING AUTHORIZATION TO DISPLACE FROM CHANNEL 10 TO CHANNEL 13 DUE TO RECEIVED INTERFERENCE.

The firm Kessler and Gehman Associates, Inc. (KGA) has been retained by the University of Alaska (UA) to prepare engineering studies and the engineering portion of a displacement application requesting FCC authorization to change the authorized channel for the K10QW-D digital television translator facility (BMPDTV-20121005AAE) from Channel 10 to Channel 13 due to received interference from UA's KUAC-DT Channel 9 licensed full-service digital broadcast facility. It was determined, after extensive testing, that there is no way for the authorized K10QW-D Channel 10 facility to receive a signal from parent station KUAC-DT Channel 9 without significant interference; therefore, UA respectfully requests a channel change from 10 to 13.

UA is authorized to operate the K10QW-D digital translator (BMPDTV-20121005AAE) facility on Channel 10 with an ERP of 0.3 kW at an antenna height radiation center of 6.1 meters Above Ground Level (AGL) using a Scala model DRV-1/1 directional antenna. This application requests authorization to make the following changes:

- 1) Change from authorized high-band VHF CH10 to proposed high-band VHF CH13
- 2) Change antenna models from Kathrein Scala model DRV-1/1 to Kathrein Scala model 84010293.
- 3) Change main beam azimuth rotation from the authorized 180° to the proposed 270° in order to place maximum power over the principal community of Healy, AK.

UA hereby requests a waiver of the existing freeze on displacement applications in order to serve the public interest. Service is extremely limited in the Healy, AK area. Healy is a bush/mining community consisting of approximately 500 persons. UA received four phone

calls in the last week from viewers in Healy stating that they cannot receive the programming. While testing, UA has gone to great expense in attempts to correct the interference issue between KUAC-DT Channel 9 and the authorized K10WQ-D Channel 10. For example, UA has tried using new RX antennas, pre-amps and band-pass filters to reduce the interference with no success. The site is only accessible by four-wheel all-terrain vehicles in the winter which is coming soon; therefore, UA hereby respectfully requests expedited processing so that it can build-out the proposed Channel 13 facility as soon as possible in order to serve the Healy, AK community.

EXHIBITS

- Exhibits 1 and 2 represent the proposed K10QW-D CH13 digital TV translator facility's administration data as well as the antenna and antenna structure specifications.
- Exhibit 3 depicts the profile view of the proposed K10QW-D CH13 digital TV translator facility's antenna on the antenna structure with all the appropriate elevations.
- Exhibit 4 displays the antenna azimuth pattern without the requested 270-degree clockwise rotation.
- Exhibit 5 displays the antenna azimuth pattern tabulation without the requested 270-degree clockwise rotation.
- Exhibit 6 displays the antenna elevation pattern from ninety degrees above the horizontal to ninety degrees below the horizontal.
- Exhibit 7 displays the antenna elevation pattern tabulation from ninety degrees above the horizontal to ninety degrees below the horizontal in one-degree increments.
- Exhibit 8 depicts the location of the proposed K10QW-D CH13 digital TV translator facility's transmitter site using the Healy, AK Quadrangle, USGS, Topographic map.

- Exhibit 9 is a contour map demonstrating that the proposed K10QW-D CH13 digital TV translator facility's F(50,90) 48.0 dBuV/m contour completely encompasses the principal community of Healy, AK.
- Exhibit 10 is a contour map depicting the authorized digital K10QW-D CH10 facility's F(50,90) 48.0 dBuV/m protected contour (green) and the proposed digital K10QW-D CH13 facility's F(50,90) 48.0 dBuV/m protected contour (red).

Interference Study – Canadian Coordination Required

Exhibit 11 is a TVStudy 2.2.2 interference study demonstrating that the proposed K10QW-D Digital Channel 13 facility will not cause more than 0.5% interference to full-service and/or Class A LPTV/translator stations. Exhibit 11 also demonstrates that the proposed K10QW-D Digital Channel 13 facility will not cause more than 2.0% interference to secondary LPTV/translator stations and demonstrates compliance for FCC Monitoring Stations, West Virginia Quiet Zones, Table Mountain, and Mexican border coordination. However, the proposed K10QW-D Channel 4 digital translator is only 382.0 km from the Canadian border and is therefore, within the Canadian coordination distance. Accordingly, the proposed K10QW-D Digital Channel 13 television translator facility satisfies the interference protection provisions of 47.C.F.R Sections 74.709, 74.793(e), 74.793(f), 74.793(g), 74.793(h), 74.794(b) and 73.1030 of the FCC rules.

Freeze Waiver

The FCC released a Public Notice (PN) on June 11, 2014 (DA 14-808) stating that the Media Bureau established a freeze on the filing of applications for digital replacement translator (DRT) stations and displacement applications for low power television (LPTV), TV translator, and Class A TV stations pursuant to sections 73.3572(a)(4) and 74.787(a)(4) of the Commission's rules. However, the PN also states that the Media Bureau will consider waiver requests during the freeze period by LPTV and TV translator stations that wish to submit a displacement application demonstrating that they are causing or receiving "new

actual” interference to or from a full power television station. UA was prepared to begin operation of its K10QW-D TV translator on Channel 10; however, after extensive testing, UA discovered that there is no way the K10QW-D Channel 10 facility can receive Channel 9 off the air from its licensed KUAC-DT Channel 9 facility due to extensive interference. Also, the FCC released another PN on May 26, 2016 (DA 16-584) stating that LPTV and TV translator stations must be operating on the date that the Channel Reassignment Public Notice is released following the completion of the reverse auction order to participate in the post-Incentive Auction special displacement window. However, the K10QW-D Channel 10 facility cannot operate on Channel 10 due to interference received from the KUAC-DT Channel 9 full-service facility licensed to UA. Therefore, it would not be eligible to participate in the post-Incentive Auction special displacement window and would be stuck on a channel that is unusable.

The justifications for displacement via the proposed freeze waiver are as follows:

- The K10QW-D Channel 10 facility would receive “new actual” interference from the KUAC-DT Channel 9 full-service DTV station.
- The K10QW-D Channel 10 facility would not be eligible to participate in the post-Incentive Auction special displacement window since it would not be operating on the date that the Channel Reassignment Public Notice is released following the completion of the reverse auction order.
- The proposed displacement will not have an impact on the FCC Channel Reassignment plan due the geographic area.
- The proposed displacement will not have an impact on the FCC Channel Reassignment plan since the K10QW-D Channel 10 facility has secondary status as a TV translator.

Accordingly, UA requests a freeze waiver on the filing of applications for displacement applications.

Environmental Impact

The proposed K10QW-D Channel 13 digital television translator facility will have no significant environmental impact as defined in §1.1307 of the FCC Rules. The transmitter, transmission line and antenna system will produce an ERP of 300 W. It was determined that the maximum lobe of radiation from the base of the tower will occur at approximately 23.3 feet from the base of the tower (27.2-foot radial distance from the antenna center). At approximately 23.3 feet from the base of the tower, the depression angle of the main lobe will be 31° below the horizontal. At that point, the relative field is 0.646 and the power density six feet above the ground will be 0.0609 mW/cm² which equates to 6.1% of the Maximum Permissible Exposure (“MPE”) limits for Occupational/Controlled Exposure and 30.5% of the MPE limits for General Population/Uncontrolled Exposure authorized by the American National Standards Institute (“ANSI”). Since the operation of the proposed K10QW-D Channel 13 digital television translator facility will exceed 5.0% of the MPE limit for General Population/Uncontrolled Exposure at various points on the ground, the proposed facility is considered a “contributor” to the RF exposure environment pursuant to OET Bulletin 65, Edition 97-01. Therefore, all antennas on the support structure must be analyzed and a composite study is required to demonstrate that the total power density of all antennas on the tower will not exceed 100% of the MPE allowable.

The only other broadcast antenna that will be mounted on the proposed K10QW-D Channel 13 support structure is UA's K269AD FM translator antenna. The K269AD FM translator facility has no significant environmental impact at the new site as defined in §1.1307 of the FCC Rules. The FM transmitter, transmission line and antenna system produce an ERP of 50 Watts. It was determined that the maximum lobe of radiation from the base of the tower will occur at approximately 13.5 feet from the base of the tower (18.7-foot radial distance from the antenna center). At approximately 13.5 feet from the base of the tower, the depression angle of the main lobe will be 44.0° below the horizontal. At that point, the relative field is 0.666 and the power density six feet above the ground will be 0.1139 mW/cm² which equates

to 11.4% of the MPE limits for Occupational/Controlled Exposure and 56.9% of the MPE limits for General Population/Uncontrolled Exposure authorized by ANSI.

In conclusion, the proposed K10QW-D Channel 13 digital television translator facility is predicted to cause 6.1% of the MPE limits for Occupational/Controlled Exposure and 30.5% of the MPE limits for General Population/Uncontrolled Exposure. The K269AD FM translator facility is predicted to cause 11.4% of the MPE limits for Occupational/Controlled Exposure and 56.9% of the MPE limits for General Population/Uncontrolled Exposure. Therefore, the worst-case combined exposure from all facilities on the support structure is predicted to be 17.5% of the MPE limits for Occupational/Controlled Exposure and 87.4% of the MPE limits for General Population/Uncontrolled Exposure. Accordingly, the combined predicted exposure from all broadcast facilities on the structure will result in exposure levels below the allowable exposure threshold authorized by ANSI and the FCC. It is therefore safe to conclude that the emissions will be insignificant and 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 maximum permissible exposure level at any point on the ground.

Certification

This technical statement was prepared by William T. Godfrey, Jr., Engineering Associate with the firm Kessler and Gehman Associates, Inc. having offices in Gainesville, Florida, and has been working with the firm in the field of radio and television broadcast consulting since 1998. William was a graduate from the University of North Florida and also 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.
Engineering Associate

26 July, 2017