

ENGINEERING EXHIBIT

Application for Auxiliary Antenna Construction Permit

prepared for

North Texas Public Broadcasting, Inc.

KKXT(FM) Dallas, TX

Facility ID 55768

Ch. 219C0 (91.7 MHz) 19 kW 474 m

North Texas Public Broadcasting, Inc. ("NTPB") is the licensee of non-commercial educational FM radio station KKXT(FM) Ch. 219C, Dallas, TX. *NTPB* has completed construction of the KKXT main facility relocation as authorized in its construction permit ("CP" file number BPED-20131216DGS) and is currently operating pursuant to automatic program authority. A license application (BLED-20140903AFT) is pending to cover the CP. *NTPB* herein requests authorization for an auxiliary antenna facility for KKXT.

KKXT's main facility is authorized to operate at 19.5 kW effective radiated power ("ERP") using a non-directional antenna at a height above average terrain ("HAAT") of 572 meters. The proposed auxiliary facility would employ an existing side-mounted antenna on a tower structure at a separate location, 4.5 km distant from the new main KKXT facility. The tower structure is associated with FCC Antenna Structure Registration number 1059733. No change to the overall structure height is proposed.

As specified herein, the auxiliary antenna will operate at 19 kW ERP with a nondirectional antenna at 474 meters HAAT. Figure 1 shows that the 60 dB μ (1 mV/m) contour of the proposed auxiliary facility does not extend beyond the 60 dB μ contour of the main facility, in compliance with §73.1675(a)(1). The contours were plotted pursuant to §73.313 using NGDC/FCC 30 second digitized terrain data.

The proposed auxiliary antenna will employ 0.75 degree of electrical beamtilt. Figure 2 provides the antenna's calculated elevation pattern. The proposed maximum ERP is 19 kW and the ERP at the horizontal is 18.5 kW.

Human Exposure to Radiofrequency Electromagnetic Field (Environmental)

The proposed auxiliary antenna operation was evaluated for human exposure to RF energy using the procedures outlined in the FCC's OET Bulletin Number 65. Based on OET-65 equation (10), and assuming the worst-case of 100 percent relative field at downward elevations, the calculated signal density near the tower at two meters above ground level attributable to the proposed facility is $6.9 \mu\text{W}/\text{cm}^2$, which is 3.5 percent of the general population/uncontrolled maximum permitted exposure limit. This is below the five percent threshold limit described in §1.1307(b) regarding sites with multiple emitters, categorically excluding the applicant from responsibility for taking any corrective action in the areas where the proposal's contribution is less than five percent. The calculated RF exposure will be much lower when the antenna's elevation pattern is considered.

The general public will not be exposed to RF levels attributable to the proposed auxiliary facility in excess of the FCC's guidelines. RF exposure warning signs will continue to be posted. With respect to worker safety, the applicant will coordinate exposure procedures with all pertinent stations and will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from RF electromagnetic field exposure in excess of FCC guidelines.

This exhibit is limited to the evaluation of exposure to RF electromagnetic field. The proposal involves continued use of an existing side-mounted transmitting antenna. No tower work or change in structure height is proposed.

Certification

The undersigned hereby certifies that the foregoing statement and associated attachments were prepared by him or under his direction, and that they are true and correct to the best of his knowledge and belief.

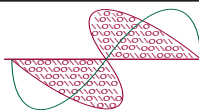


Joseph M. Davis, P.E.
February 9, 2015

Chesapeake RF Consultants, LLC
207 Old Dominion Road
Yorktown, VA 23692
703-650-9600

List of Attachments

| | |
|----------|---|
| Figure 1 | Coverage Contour Comparison |
| Figure 2 | Antenna Elevation Pattern |
| Form 340 | Saved Version of Engineering Sections from FCC Form at Time of Upload |

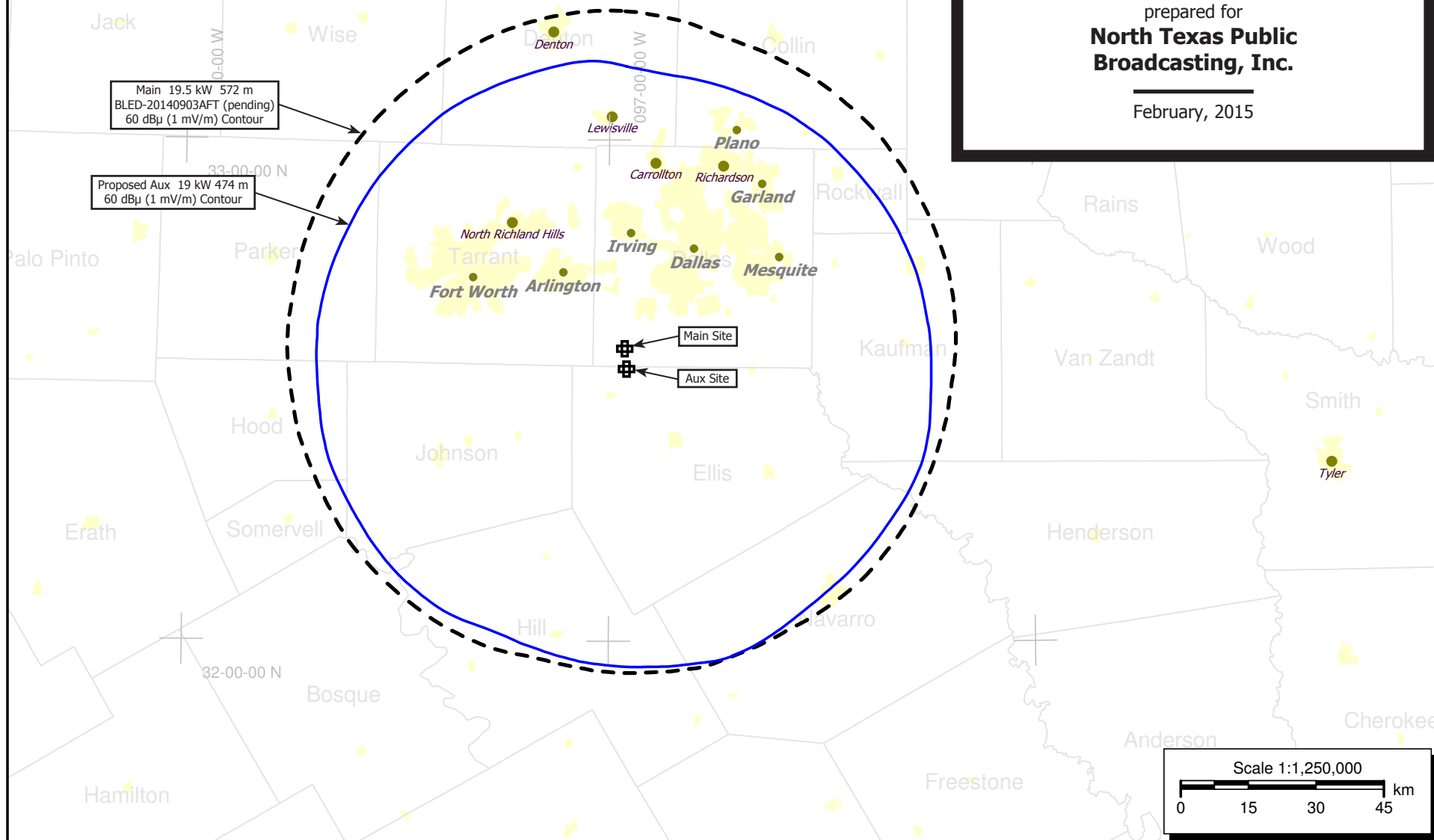


Chesapeake RF Consultants, LLC
Radiofrequency Consulting Engineers
Digital Television and Radio

Figure 1
Coverage Contour Comparison
Main and Proposed Auxiliary
KKXT(FM) Dallas, TX
Facility ID 55768
Ch. 219C0 (91.7 MHz) 19 kW 474 m

prepared for
North Texas Public
Broadcasting, Inc.

February, 2015





Date **09 Feb 2015**
Call Letters **KKXT(FM)** Channel
Location **Dallas, TX**
Customer
Antenna Type

ELEVATION PATTERN

RMS Gain at Main Lobe
RMS Gain at Horizontal
Calculated / Measured

3.82 (5.82 dB)
3.71 (5.70 dB)
Calculated

Beam Tilt **0.75 Degrees**
Frequency **91.7 MHz**
Drawing # **08C076075a-90**

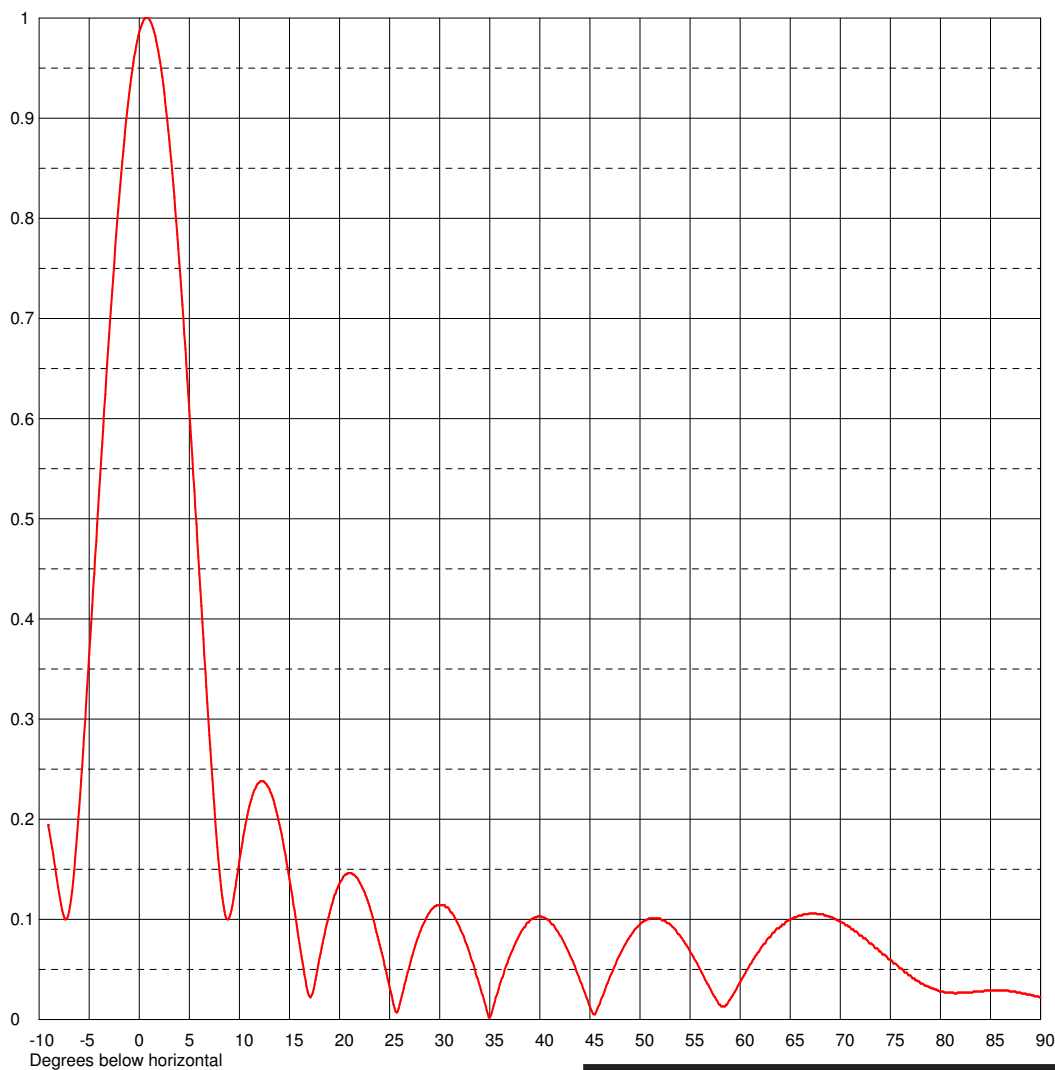


Figure 2
Antenna Elevation Pattern
KKXT(FM) Dallas, TX
Facility ID 55768
Ch. 219C0 (91.7 MHz) 19 kW 474 m

prepared for
North Texas Public Broadcasting, Inc.

February, 2015

Section VII Preparer's Certification

I certify that I have prepared Section VII (Engineering Data) on behalf of the applicant, and that after such preparation, I have examined and found it to be accurate and true to the best of my knowledge and belief.

| | | |
|--|--|--------------------|
| Name JOSEPH M. DAVIS, P.E. | Relationship to Applicant (e.g., Consulting Engineer) CONSULTING ENGINEER | |
| Signature | Date 02/09/2015 | |
| Mailing Address CHESAPEAKE RF CONSULTANTS, LLC 207 OLD DOMINION ROAD | | |
| City YORKTOWN | State or Country (if foreign address) VA | Zip Code 23692- |
| Telephone Number (include area code) 7036509600 | E-Mail Address (if available) JOSEPH.DAVIS@RF-CONSULTANTS.COM | |

WILLFUL FALSE STATEMENTS ON THIS FORM ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. CODE, TITLE 18, SECTION 1001), AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION PERMIT (U.S. CODE, TITLE 47, SECTION 312(a)(1)), AND/OR FORFEITURE (U.S. CODE, TITLE 47, SECTION 503).

Section VII - FM Engineering**TECHNICAL SPECIFICATIONS**

Ensure that the specifications below are accurate. Contradicting data found elsewhere in this application will be disregarded. All items must be completed. The response "on file" is not acceptable.

TECH BOX

| 1. | Channel Number: 219 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------|---|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|---|--|----|--|----|--|----|--|----|--|----|--|----|--|----|--|----|--|----|--|-----|--|-----|--|-----|--|-----|--|-----|--|-----|--|-----|--|-----|--|-----|--|-----|--|-----|--|-----|--|-----|--|-----|--|-----|--|-----|--|-----|--|-----|--|-----|--|-----|--|-----|--|-----|--|-----|--|-----|--|-----|--|-----|--|
| 2. | Class (select one): <input type="radio"/> D <input type="radio"/> A <input type="radio"/> B1 <input type="radio"/> B <input type="radio"/> C3 <input type="radio"/> C2 <input type="radio"/> C1 <input checked="" type="radio"/> C0 <input type="radio"/> C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3. | Antenna Location Coordinates: (NAD 27) Latitude: Degrees 32 Minutes 32 Seconds 36 <input checked="" type="radio"/> North <input type="radio"/> South Longitude: Degrees 96 Minutes 57 Seconds 32 <input checked="" type="radio"/> West <input type="radio"/> East | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4. | Proposed Assignment Coordinates: (NAD 27) - RESERVED CHANNELS ABOVE 220 ONLY <input checked="" type="checkbox"/> Not Applicable Latitude: Degrees Minutes Seconds <input type="radio"/> North <input type="radio"/> South Longitude: Degrees Minutes Seconds <input type="radio"/> West <input type="radio"/> East | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5. | Antenna Structure Registration Number: 1059733 <input type="checkbox"/> Not Applicable <input type="checkbox"/> Notification filed with FAA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6. | Overall Tower Height Above Ground Level: 498.4 meters | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7. | Height of Radiation Center Above Mean Sea Level: 678 meters(H) 678 meters(V) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8. | Height of Radiation Center Above Ground Level: 430 meters(H) 430 meters(V) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9. | Height of Radiation Center Above Average Terrain: 474 meters(H) 474 meters(V) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10. | Effective Radiated Power: 18.5 kW(H) 18.5 kW(V) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11. | Maximum Effective Radiated Power: <input type="checkbox"/> Not Applicable 19 kW(H) 19 kW(V) (Beam-Tilt Antenna ONLY) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12. | Directional Antenna Relative Field Values: <input checked="" type="checkbox"/> Not applicable (Nondirectional) Rotation (Degrees): <input type="checkbox"/> No Rotation <table><thead><tr><th>Degrees</th><th>Value</th><th>Degrees</th><th>Value</th><th>Degrees</th><th>Value</th><th>Degrees</th><th>Value</th><th>Degrees</th><th>Value</th><th>Degrees</th><th>Value</th></tr></thead><tbody><tr><td>0</td><td></td><td>10</td><td></td><td>20</td><td></td><td>30</td><td></td><td>40</td><td></td><td>50</td><td></td></tr><tr><td>60</td><td></td><td>70</td><td></td><td>80</td><td></td><td>90</td><td></td><td>100</td><td></td><td>110</td><td></td></tr><tr><td>120</td><td></td><td>130</td><td></td><td>140</td><td></td><td>150</td><td></td><td>160</td><td></td><td>170</td><td></td></tr><tr><td>180</td><td></td><td>190</td><td></td><td>200</td><td></td><td>210</td><td></td><td>220</td><td></td><td>230</td><td></td></tr><tr><td>240</td><td></td><td>250</td><td></td><td>260</td><td></td><td>270</td><td></td><td>280</td><td></td><td>290</td><td></td></tr><tr><td>300</td><td></td><td>310</td><td></td><td>320</td><td></td><td>330</td><td></td><td>340</td><td></td><td>350</td><td></td></tr></tbody></table> | Degrees | Value | Degrees | Value | Degrees | Value | Degrees | Value | Degrees | Value | Degrees | Value | 0 | | 10 | | 20 | | 30 | | 40 | | 50 | | 60 | | 70 | | 80 | | 90 | | 100 | | 110 | | 120 | | 130 | | 140 | | 150 | | 160 | | 170 | | 180 | | 190 | | 200 | | 210 | | 220 | | 230 | | 240 | | 250 | | 260 | | 270 | | 280 | | 290 | | 300 | | 310 | | 320 | | 330 | | 340 | | 350 | |
| Degrees | Value | Degrees | Value | Degrees | Value | Degrees | Value | Degrees | Value | Degrees | Value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | | 10 | | 20 | | 30 | | 40 | | 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 60 | | 70 | | 80 | | 90 | | 100 | | 110 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 120 | | 130 | | 140 | | 150 | | 160 | | 170 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 180 | | 190 | | 200 | | 210 | | 220 | | 230 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 240 | | 250 | | 260 | | 270 | | 280 | | 290 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 300 | | 310 | | 320 | | 330 | | 340 | | 350 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| Additional Azimuths | | | | | | | | | |
|---------------------|--|--|--|--|--|--|--|--|--|

[Relative Field Polar Plot](#)

| | |
|---|--|
| NOTE: In addition to the information called for in this section, an explanatory exhibit providing full particulars must be submitted for each question for which a "No" response is provided. | |
| CERTIFICATION | |
| AUXILIARY ANTENNA APPLICANTS ARE NOT REQUIRED TO RESPOND TO ITEMS 13-17. PROCEED TO ITEM 18. | |
| 13. Main Studio Location. The proposed main studio location complies with 47 C.F.R. Section 73.1125. | <input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 15] |
| 14. Community Coverage. The proposed facility complies with 47 C.F.R. Section 73.315. (Channels 221 and above) or 47 C.F.R. Section 73.515 (Channels 220 and below). | <input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 16] |
| 15. Interference. The proposed facility complies with all of the following applicable rule sections. Check all that apply: | <input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 17] |
| Contour Overlap Requirements. a. <input type="checkbox"/> 47 C.F.R. Section 73.509 Exhibit Required. [Exhibit 18] | |
| Spacing Requirements. b. <input type="checkbox"/> 47 C.F.R. Section 73.207 with respect to station(s) | |
| Grandfathered Short-Spaced. c. <input type="checkbox"/> 47 C.F.R. Section 73.213(a) with respect to station(s) Exhibit Required. [Exhibit 19] | |
| Contour Protection. d. <input type="checkbox"/> 47 C.F.R. Section 73.215(a) with respect to station(s) Exhibit Required. [Exhibit 20] | |
| Television Channel 6 Protection. e. <input type="checkbox"/> 47 C.F.R. Section 73.525 with respect to station(s) Exhibit Required. [Exhibit 21] | |
| 16. Reserved Channels Above 220. a. Availability of Channels. The proposed facility complies with the assignment requirements of 47 C.F.R. Section 73.203. | <input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 22] |
| 17. International Borders. The proposed antenna location is not within 320 kilometers of the common border between the United States and Canada or Mexico. If "No," specify the country and provide an exhibit of compliance with all provisions of the relevant International Agreement. | <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Canada <input type="radio"/> Mexico [Exhibit 23] |
| 18. Environmental Protection Act. The proposed facility is excluded from environmental processing under 47. C.F.R. Section 1.1306 (i.e., The facility will not have a significant environmental impact and complies with the maximum permissible radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments). Unless the applicant can determine compliance through the use of the RF worksheets in Worksheet #7, an Exhibit is required. By checking "Yes" above, the applicant also certifies that it, in coordination with other users of the site, will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency electromagnetic exposure in excess of FCC guidelines. | <input checked="" type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 24] |
| 19. Community of License Change - Section 307(b). If the application is being submitted to change the facility's community of license, then the applicant certifies that it has attached an exhibit containing information demonstrating that the proposed community of license change comports with the fair distribution of service policies underlying Section 307(b) of the Communications Act of 1934, as amended (47 U.S.C. Section 307(b)). An exhibit is required unless this question is not applicable. | <input type="radio"/> Yes <input type="radio"/> No <input checked="" type="radio"/> N/A [Exhibit 25] |
| PREPARER'S CERTIFICATION ON PAGE 8 MUST BE COMPLETED AND SIGNED. | |