

## **Comprehensive Engineering Statement**

prepared for

**Southern Broadcast Media, LLC**

W264DO Winston-Salem, North Carolina

Facility ID 201392

Channel 244D 0.065 kW 422 meters AMSL

Southern Broadcast Media, LLC (“*Southern Broadcast*”), is the Permittee for W264DO (file no. BNPFT-20180322ABG) on Channel 264D utilizing a directional antenna. W264DO is a fill-in translator for standard broadcast station WTOB(AM), 980 kHz, Winston-Salem, NC. Recent plans by the owner of the authorized tower (ASRN 1006653) have precluded installation of the translator on the structure. A search was performed for nearby towers with available space, and ASR 1240542 is available, with a move of only 12.8 km from the authorized site. *Southern Broadcast* proposes to use registered tower ASRN 1240542 with coordinates of 36° 05’ 53.4”N Latitude, and 80° 14’ 37.1”W Longitude (NAD 83). The proposed antenna will be omni-directional, circularly polarized and mounted at 139.6 meters Above Ground Level (“AGL”). An ERP of 65 Watts is being specified.

### **Nature of the Proposal**

The instant proposal is to request a channel change as discussed below. In support of demonstrating interference on Channel 264, **Figure 1** shows that the co-channel 40 dBμ F(50,10) interfering contour from WRDU(FM) (Ch 264C, Wake Forest, NC) completely encompasses both the 60 dBμ contour of the authorized CP and encloses the newly proposed transmitter site for W264DO. Based on the likelihood<sup>1</sup> of incoming interference for Channel 264, *Southern Broadcast* respectfully requests a channel change to Channel 244 as remediation to the predicted interference.

**Figure 2** is a depiction of the authorized and proposed 60 dBμ contours, along with the parent station’s 2 mV/m contour and the 40 km (25 mile) limit as described in §74.1201(g). As shown, the proposed Channel 244 60 dBμ F(50,50) contour is within both the 2 mV/m and the 40 km radius of parent station WTOB(AM).

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<sup>1</sup> §74.1233(a)(1)(i)(A)(2) states that channel changes to other than first, second, third adjacent, or IF relationship channels may be proposed to remediate based upon showing of likelihood of interference. The Report and Order that instituted the Rule suggested that the interference showing can be a simple engineering statement of interference. See Report & Order, “*Amendment of Part 74 of the Commission’s Rules Regarding FM Translator Interference*”, FCC 19-40, MB Docket No. 18-119, adopted May 9, 2019, paragraph 8.

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The antenna system for the proposed translator is an omni-directional antenna, which will be side-mounted on an existing structure (ASRN 1240542), along with other communication antennas. No change in structure overall height is necessary to carry out this proposal. Since no change to the structure's overall height is proposed, no change to structure marking/lighting requirements will result.

### **Allocation Considerations**

A study of nearby FM facilities on co-channel, adjacent-channel, and intermediate frequencies was conducted to identify which stations require further study to demonstrate compliance under §74.1204. The nearest co-channel facilities are FM translator W244CD (Ch 244D, Browns Summit, NC), and station WKRX(FM) (Ch 244A, Roxboro, NC). As demonstrated in **Figure 3**, no prohibited contour overlap will occur with co-channel facilities. The closest first adjacent stations are WKKT(FM) (Ch. 245C, Statesville, NC), translator W243EC (Ch 243D, Mocksville, NC) and LPFM station WLUL-LP (Ch. 243L, Thomasville, NC). As shown in **Figure 3**, the 54 dBμ F(50,10) contour of the proposed facility does not overlap the protected 60 dBμ F(50,50) contour of nearby first adjacent facilities.

The nearest second and third adjacent stations are WQMG(FM) (Ch 246C0, Greensboro, NC), and translator W242CC (Ch 242D, Bethania, NC). The proposal is well outside the protected service contours of all other second and third adjacent facilities. As depicted in **Figure 4**, the proposed site is located at the 80 dBμ contour for W242CC, and at the 70 dBμ contour of WQMG(FM). Since WQMG represents the worst case, studies were performed based on protection to WQMG(FM).

Protection of WQMG(FM) is achieved pursuant to §74.1204(d) by demonstrating that the proposed translator's interfering contour does not reach populated areas. The proposed facility's transmitter site is located at the 70 dBμ contour of WQMG(FM) as shown in **Figure 4**. Thus, based on the -40 dB desired-to-undesired ratio specified in §74.1204(a)(3), the appropriate second-adjacent interfering signal level at this location is 110 dBμ. Using the manufacturer's typical vertical (elevation) pattern for the antenna in question, calculations were performed to determine the predicted signal strengths at two meters above ground in the vicinity of the transmitter site.

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**Figure 5** depicts the results of the calculations. As demonstrated, the signal peak is 95.6 dBμ at 500 meters from the support structure. Thus, the 110 dBμ interfering signal will not reach population at ground level.

There is one building close to and below the support structure. Based on publicly available information, the nearby building has a platform or penthouse that is 44 meters below and approximately 50 meters horizontally from the proposed antenna. Using the same calculations used in **Figure 5**, the maximum predicted signal level on the rooftop of the nearby building would be less than 101.6 dBμ. Since this level is below the 110 dBμ limit, it is believed that population in or on the nearby building will not experience interference from the proposed facility.

The proposed facility will be on a 45 foot tower, on top of a building. Calculations for the rooftop area predict that the signal will be as high as 114 dBμ. However, the rooftop is not accessible to the general public, and the attenuation of the rooftop materials is expected to reduce the signal from the proposed translator enough to not cause interference to the WQMG signal for the general public inside the building. It is therefore believed that the predicted interference will not affect populated areas. The nearest IF relationship (53 or 54 channels removed) facility is WKZL(FM) (Ch 298C, Winston-Salem, NC) at a distance of 33.6 km, well beyond the required 29 km from the proposal. There are no directional AM stations within 3.2 km of the proposed facility.

There are two non-directional AM stations within 1.5 km of the proposal: WBFJ(AM) (1550 kHz, at 1.25 km), and WTOB(AM) (980 kHz, at 1.45 km). Per §1.30002(a), construction within one wavelength of a non-directional tower requires consideration of notification and study. The instant proposal is located 5.6 wavelengths from WTOB and 12.03 wavelengths from WBFJ. Therefore, notification of construction to nearby AM facilities should not be required.

The proposed site is located more than 600 km from the Canadian and Mexican borders, well beyond the 320 km coordination distance required for translators specified in §74.1235(d). The nearest FCC monitoring station is 455.1 km distant at Laurel, MD and the facility is 158.3 km from the Green Bank Quiet Zone. These distances exceed the threshold minimum distance specified in §73.1030 that would suggest consideration.

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It is therefore believed that the proposed facility satisfies all of the pertinent Commission Rules and Policies now in effect regarding allocation matters.

### **Environmental Considerations**

The proposed facility will operate with a Nicom BKG-77 Opposed V Dipole style, three-bay, 0.6 wavelength spaced, circularly-polarized antenna with an ERP of 65 Watts at 139.6 meters AGL on an existing registered tower (ASRN 1240542), along with other installations. The use of existing transmitting locations has been characterized as being environmentally preferable by the Commission, according to Note 1 of §1.1306 of the FCC Rules. Because no change in structure height is proposed, no change in current structure marking and lighting requirements is anticipated. Therefore, it is believed that this application may be categorically excluded from environmental processing pursuant to §1.1306 of the Commission's rules.

### **Human Exposure to Radiofrequency Radiation**

The proposed operation was evaluated for human exposure to radiofrequency energy using the procedures outlined in the Commission's OET Bulletin No. 65 ("OET 65"). OET 65 describes a means of determining whether a proposed facility meets the radiofrequency exposure guidelines adopted in §1.1310. Under present Commission policy, a facility may be presumed to comply with the limits specified in §1.1310 if it satisfies the exposure criteria set forth in OET 65. Based upon that methodology, and as demonstrated in the following, the proposed transmitting system will comply with the cited adopted guidelines.

The general population/uncontrolled maximum permitted exposure ("MPE") limit specified in §1.1310 for the entire FM broadcast band is  $200 \mu\text{W}/\text{cm}^2$ . For the purpose of this study, "public access" will be considered at the base of the structure at locations two-meters above ground. Using the FCC's FM Model program and an EPA Type 2 (Opposed V Dipole) antenna it was determined that the proposed facility would contribute a worst-case RF power density of  $0.008 \mu\text{W}/\text{cm}^2$  at two meters above ground level near the antenna support structure, or 0.004 percent of the general population/uncontrolled limit.

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§1.1307(b)(3) states that facilities at locations with multiple emitters are categorically excluded from responsibility for taking any corrective action in the areas where their contribution is less than five percent of the pertinent MPE limit. Since the instant situation meets the five percent exclusion test at all ground level areas, the impact of any other facilities near this site may be considered independently from this proposal. Accordingly, it is believed that the impact of the proposed operation should not be considered to be a factor at ground level as defined under §1.1307(b).

### **Safety of Tower Workers and the General Public**

The antenna is to be mounted on a tower located atop the Winston Tower building. The antenna's center of radiation will be 16.46 meters above the rooftop. Using the FCC's FM Model program and an EPA Type 2 (Opposed V Dipole) antenna it was determined that the proposed facility would contribute a worst-case RF power density of  $0.726 \mu\text{W}/\text{cm}^2$  at two meters above the rooftop level near the antenna support structure, or 0.363 percent of the general population/uncontrolled limit. Accordingly, it is believed that the impact of the proposed operation should not be considered to be a factor at the rooftop level as defined under §1.1307(b).

In the event that maintenance or other workers gain access to the rooftop, power output of the translator will be decreased or shut off if necessary to protect workers. With respect to worker safety, it is believed that based on the preceding analysis, excessive exposure would not occur in areas at ground or rooftop level. A site exposure policy will be employed protecting maintenance workers from excessive exposure when work must be performed on the tower above the rooftop in areas where high RF levels may be present. Such protective measures may include, but will not be limited to, restriction of access to areas where levels in excess of the guidelines may be expected, power reduction, or the complete shutdown of facilities when work or inspections must be performed in areas where the exposure guidelines would otherwise be exceeded. On-site RF exposure measurements may also be undertaken to establish the bounds of safe working areas. The applicant will coordinate exposure procedures with all pertinent stations. Based on the preceding, it is believed that the instant proposal may be categorically excluded from environmental processing under §1.1306 of the Rules, hence preparation of an Environmental Assessment is not required.

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### **Conclusion**

It is therefore believed that the proposed facility satisfies all of the pertinent Commission Rules and Policies now in effect.

**FIGURE 1**  
**INTERFERING CONTOUR STUDY**

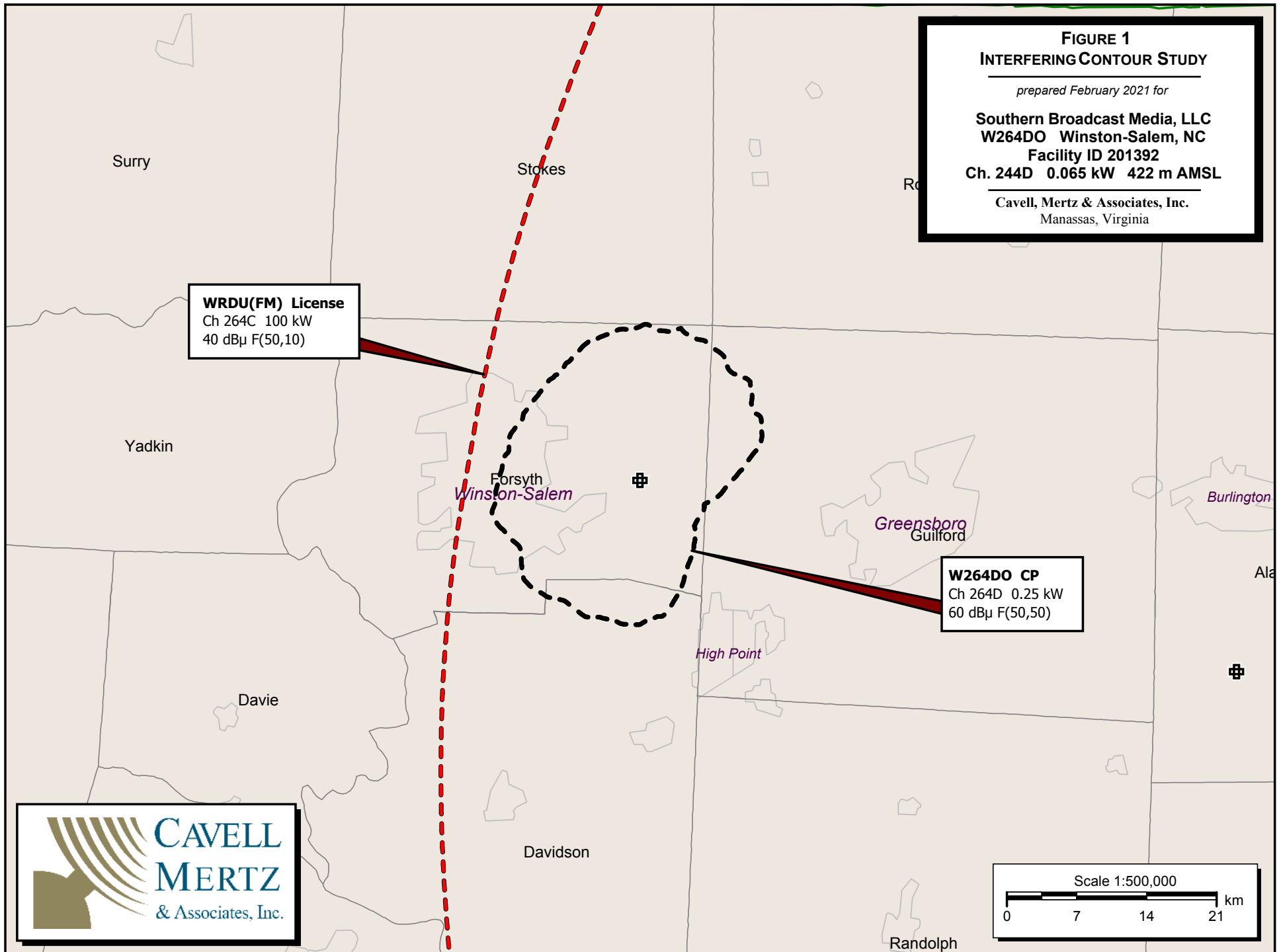
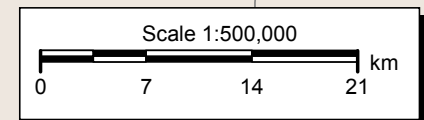
*prepared February 2021 for*

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**Facility ID 201392**  
**Ch. 244D 0.065 kW 422 m AMSL**

**Cavell, Mertz & Associates, Inc.**  
Manassas, Virginia

**WRDU(FM) License**  
Ch 264C 100 kW  
40 dB $\mu$  F(50,10)

**W264DO CP**  
Ch 264D 0.25 kW  
60 dB $\mu$  F(50,50)



**FIGURE 2**  
**COVERAGE CONTOUR COMPARISON**

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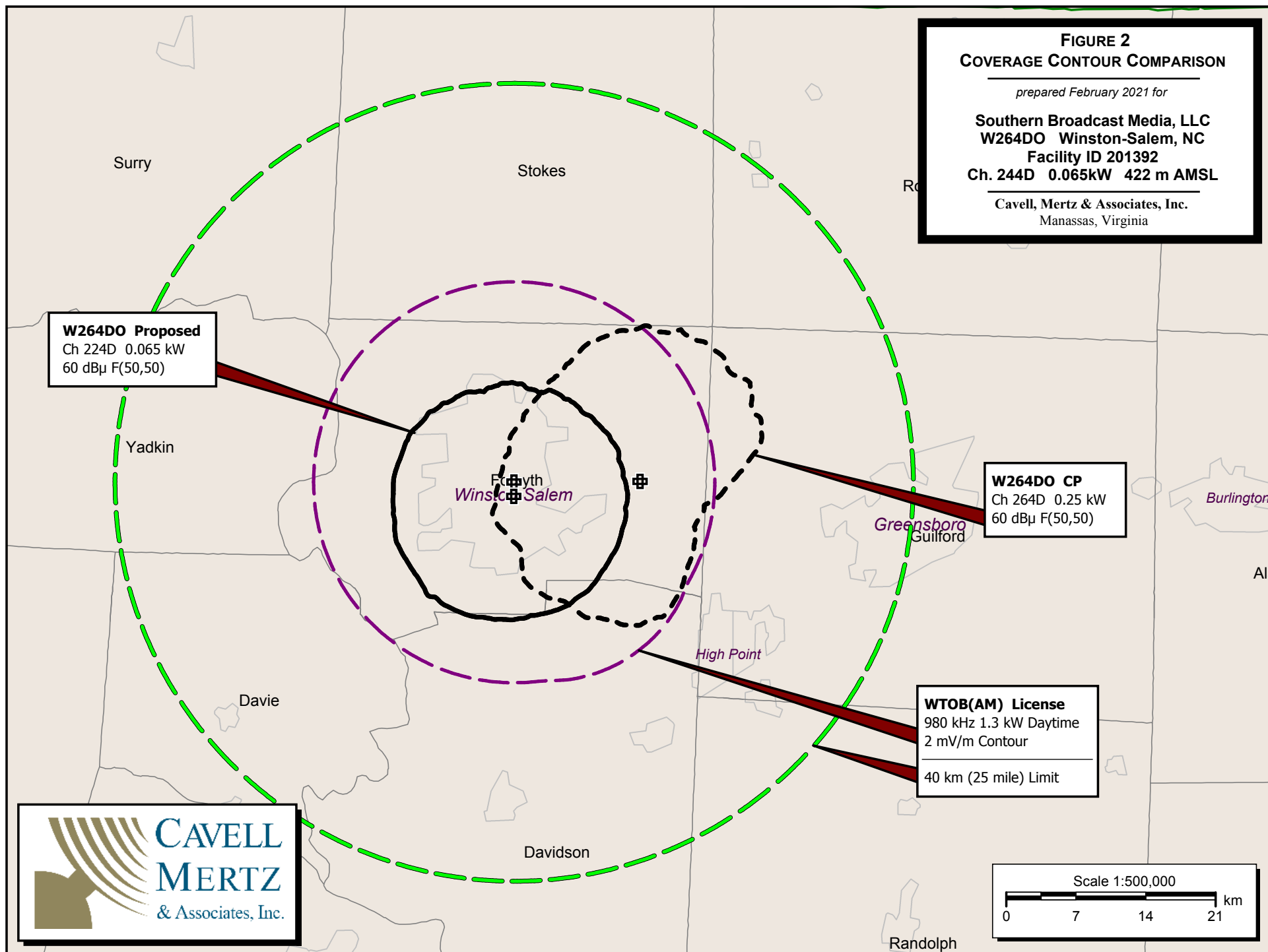
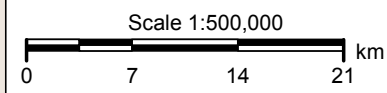
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Manassas, Virginia

**W264DO Proposed**  
Ch 224D 0.065 kW  
60 dBμ F(50,50)

**W264DO CP**  
Ch 264D 0.25 kW  
60 dBμ F(50,50)

**WTOB(AM) License**  
980 kHz 1.3 kW Daytime  
2 mV/m Contour  
  
40 km (25 mile) Limit





**FIGURE 3**  
**CO AND 1ST ADJ CONTOUR PROTECTION**

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Manassas, Virginia

**W264DO Proposed**  
Ch 244D 0.065 kW  
60 dBμ F(50,50)

54 dBμ F(50,10)

40 dBμ F(50,10)

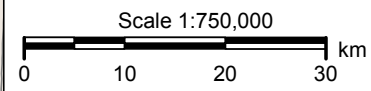
**WKRX(FM) License**  
Ch 244A 3 kW  
60 dBμ F(50,50)

**W244CD License**  
Ch 244D 0.01 kW  
60 dBμ F(50,50)

**W243EC License**  
Ch 243D 0.25 kW  
60 dBμ F(50,50)

**WLUL-LP License**  
Ch 243L 0.015 kW  
60 dBμ F(50,50)

**WKKT(FM) License**  
Ch 245C 100 kW  
60 dBμ F(50,50)



**FIGURE 4**  
**2ND AND 3RD ADJ CONTOUR PROTECTION**

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Manassas, Virginia

**WQMG(FM) License**

Ch 246C0 100 kW  
60 dBμ F(50,50)

70 dBμ F(50,50)

**W264DO Proposed**

Ch 244D 0.065 kW  
60 dBμ F(50,50)

**W242CC License**

Ch 242 0.25 kW  
60 dBμ F(50,50)

80 dBμ F(50,50)

Forsyth

Winston-Salem

High Point



Scale 1:250,000



**FIGURE 5**  
**POWER IN dB<sub>μ</sub> AT 2M ABOVE GROUND**

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