

**Technical Exhibit**  
**Comprehensive Engineering Statement**

prepared for

**Monticello Media LLC**

W231AD Charlottesville, Virginia

Facility ID 11670

Channel 231D 0.15 kW 464 meters AMSL

Monticello Media LLC (“*MONTICELLO*”), is the licensee of translator W231AD (file no. BLFT-20130911ABO) operating on Channel 231D utilizing a non-directional antenna. W231AD has been granted a Construction Permit (“CP”) (LMS file no. 0000192707) to move to a new transmitting location utilizing a directional antenna. W231AD is a fill-in translator for standard broadcast station WKAV(AM), 1400 kHz, Charlottesville, VA. *MONTICELLO* herein requests a minor modification of the CP to specify a different directional antenna. In particular, *MONTICELLO* proposes to specify a Kathrein model 2xCL-FM/RM/CV antenna with the same coordinates, antenna height and ERP in the current CP and a different orientation.

**Nature of the Proposal**

*MONTICELLO* proposes to combine operation utilizing a common transmitting antenna for the instant proposal along with two other translators (W300DV, Facility ID 202503 and W285EF, Facility ID 81122). All three applications are expected to be filed concurrently, so new file numbers are not available for reference. The proposed antenna is a Scala 2xCL-FM/RM/CV, a broadband directional, circularly polarized antenna, oriented with a rotation to 20 degrees True. After construction of all three facilities, measurements will be taken to confirm that any out-of-band emissions comply with FCC regulations. The antenna pattern is provided in tabular form in the application. **Figure 1** provides a graphical representation of the relative field values after rotation. Separately, *MONTICELLO* will be tendering a minor modification of parent station WKAV to relocate to another transmitting location as discussed in more detail below.

**Allocation Considerations**

The location of the 60 dB $\mu$  coverage contour of the proposed translator includes overlap with the original authorization, and lies within the greater of either the 2 mV/m daytime contour, or a 40 km radius from the transmitter site, thus complying with §74.1201(g). **Figure 2** provides a comparison between the current authorization and the proposed contour. As shown on the figure,

## Comprehensive Engineering Statement

(page 2 of 5)

the proposed transmitter site is 5.16 km from the WKAV(AM) transmitter site and the proposed contour does not cross the 40 km circle limit. As noted above, *MONTICELLO* is preparing an application, proposing to move WKAV(AM) to another transmitting location. **Figure 2** also provides the proposed new WKAV location and associated 40 km radius, demonstrating that the instant proposal will be in compliance with §74.1201(g) after the WKAV move.

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 WQZK-FM (Ch. 231B, Keyser, WV), WVSP-FM (Ch 231B, Yorktown, VA), translators W231BJ (Ch. 231D, Fredericksburg, VA), W231CE (Ch 231D, Lynchburg, VA) and LPFM station WJHH-LP (Ch. 231L1, Rice, VA). As demonstrated in **Figure 3**, no prohibited contour overlap will occur with co-channel facilities. The nearest first adjacent stations are WTON-FM (Ch. 2232B1, Staunton, VA), WLZV(FM) (Ch. 232A, Buckland, VA), WKYS(FM) (Ch. 230B, Washington, DC) and translator W230BD (Ch 230D, Lovington, VA). As shown in **Figure 4**, the pertinent first adjacent channel interfering contours of the proposed facility do not overlap the protected contours of each first adjacent facility<sup>1</sup>.

Also, as shown in **Figure 5**, the proposed interfering and service contour is well outside the protected contours of second and third adjacent WAZR(FM) (Ch. 229B1, Woodstock, VA) and LPFM station WCCA-LP (Ch. 230L1, Scottsville, VA). Thus the proposal complies with all FCC Rules regarding interference protection.

### Other and International Considerations

There are no IF relationship (53 or 54 channels removed) facilities within 50 km of the proposal. The nearest standard broadcast station is WKAV(AM) (1400 kHz, Charlottesville, VA), at a distance of 3.18 km. §1.30002(a) states that construction within one wavelength of a non-directional station must be examined for potential impact. One wavelength at 1400 kHz is 214.1 meters. Since WKAV is non-directional and the proposal is located 3.18 km

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<sup>1</sup> Further, studies were performed on co-channel and adjacent channel stations to their 45 dB $\mu$  contour based on the FCC's D/U contour method, and have concluded that no new areas of interference will be created with those stations by the instant proposal.

## **Comprehensive Engineering Statement**

(page 3 of 5)

(14.85 wavelengths) distant, the operation of WKAV will not be affected. There are no other AM stations within 3.2 km of the proposed facility.

The proposed site is located more than 500 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 195.1 km distant at Laurel, MD and the facility is 53.8 km from the Green Bank Quiet Zone. These distances exceed the threshold minimum distance specified in §73.1030 that would suggest consideration.

Therefore, 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 circularly-polarized ERP of 150 Watts with a directional antenna at 20.1 meters AGL on an existing unregistered tower. The use of existing transmitting locations has been characterized as 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, 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.

## Comprehensive Engineering Statement

(page 4 of 5)

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 tower at a location two-meters above ground. Using the FCC’s FM Model program and a worst-case single-bay EPA Type 1 antenna, it was determined that the proposed facility would contribute a worst-case RF power density of  $18.41 \mu\text{W}/\text{cm}^2$  at two meters above ground level and at locations 5 meters from the base of the tower structure, or 9.21 percent of the general population/uncontrolled limit.

### Total RF Electromagnetic Field

Carter’s Mountain is a popular location for broadcast facilities, with a number of towers and more than twenty other operating facilities. The contributions to RF power density of other nearby facilities within 600 meters of the proposed site were also evaluated. Calculations for each facility were based on that facility’s coordinates, ERP and antenna pattern and height above mean sea level as reported in the Commission’s engineering databases and its respective distance from the proposal. For each facility considered, the maximum contribution to power density at any location within 5 meters of the proposal was calculated (where the proposal’s contribution is over five percent). The attached **Table I** provides a summary of calculated RF contributions from other known, authorized, non-excluded facilities<sup>2</sup>.

The individual RF contributors have been summed to predict a total worst case percentage of RF electromagnetic field at locations for the 8 cardinal radials within 5 meters of the proposal. The highest calculated level from other contributors near the proposal was 5 meters south of the proposal. **Table I** indicates that the total “worst-case” exposure level from other contributors would be 31.32 percent of the general population/uncontrolled MPE limit. A sum of the proposal and all nearby contributors is 40.55 percent of the general population/uncontrolled MPE limit.

Since many of the calculated levels used worst case assumptions, it is believed that the total RF electromagnetic field at any point where the proposal’s exposure exceeds 5% at two meters

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<sup>2</sup> Elevation patterns were developed for each television facility. Where the FCC’s database provides an antenna model number, the manufacturer’s pattern is used. In the case of WAHU-LD and WCAV(DT), the manufacturer’s pattern specifies a relative field of 0.000 for locations at the base of the tower. A worst case field of 0.1 was assumed for these two facilities. All FM facilities used the FCC’s FM Model to calculate power density at the calculated horizontal distances. The two additional proposed translators discussed also used the FCC’s FM Model results. See notes in the table for additional assumptions.

## **Comprehensive Engineering Statement**

(page 5 of 5)

above ground level would be less than the calculated 40.55 percent of the general population / uncontrolled MPE limit.

As shown, in no case will the human exposure to RF electromagnetic fields exceed the uncontrolled/general population MPE limit specified in §1.1310. Access to the supporting structure will be restricted and appropriate RF exposure warning signs will continue to be posted.

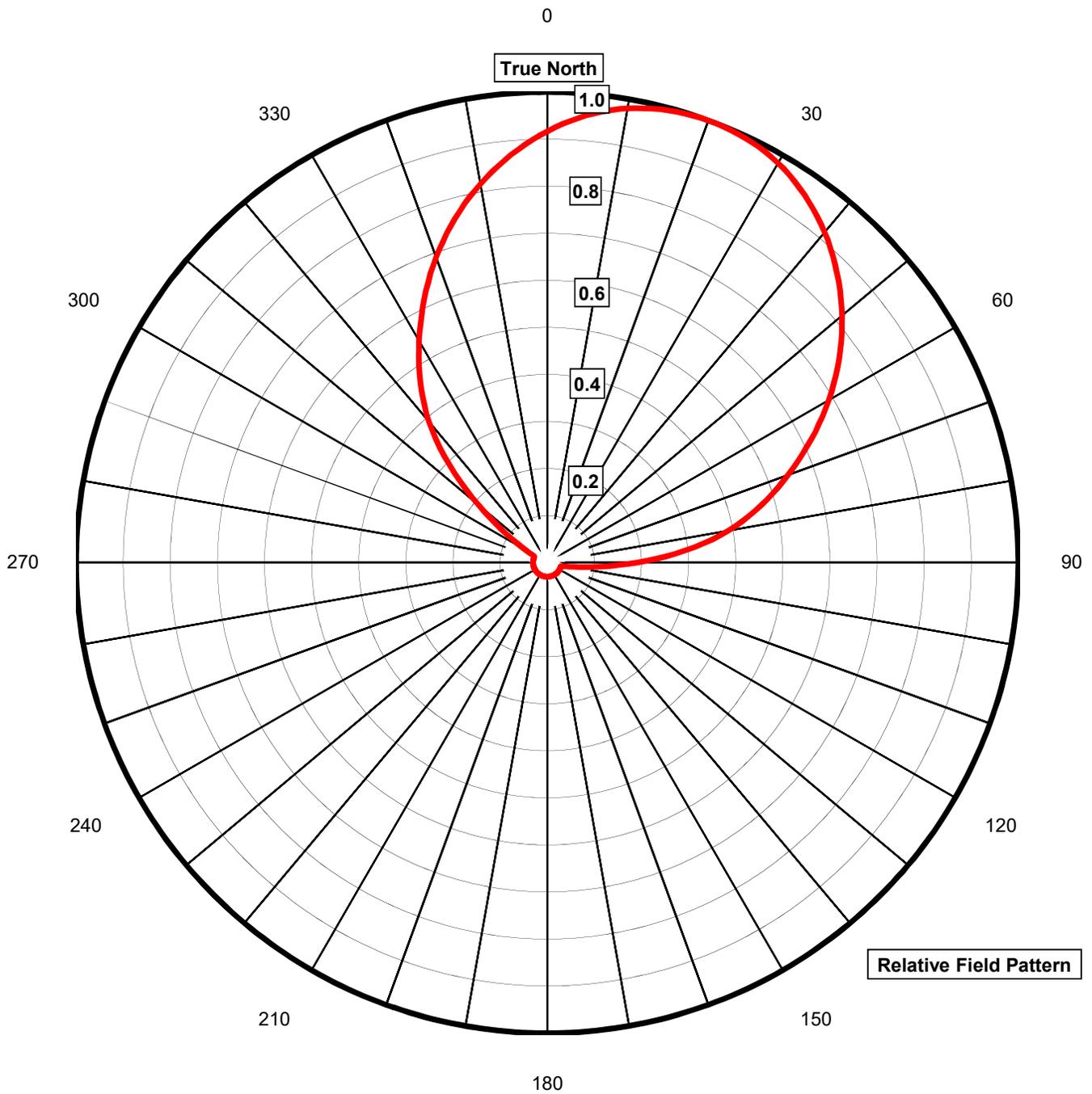
### **Safety of Tower Workers and the General Public**

As demonstrated herein, excessive levels of RF energy will not be caused by the proposal at ground level in publicly accessible areas near the antenna supporting structure. Consequently, members of the general public will not be exposed to RF levels in excess of the Commission's guidelines. Nevertheless, tower access will continue to be restricted and controlled through the use of a locked gate. According to information provided by the applicant, appropriate RF exposure warning signs are posted. In the event that maintenance or other workers gain access to the tower, power output of the translator will be decreased or shut off 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 level. A site exposure policy will be employed protecting maintenance workers from excessive exposure when work must be performed on the tower 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, the instant proposal may be categorically excluded from environmental processing under §1.1306 of the Rules and preparation of an Environmental Assessment is not required.

### **Conclusion**

Therefore, the proposed facility satisfies all of the pertinent Commission Rules and Policies now in effect.



**FIGURE 1**  
**ANTENNA HORIZONTAL PLANE**  
**RADIATION PATTERN (Post-Rotation)**

prepared May 2022 for

**Monticello Media LLC**

W231AD Charlottesville, Virginia

Facility Id 11670

Ch. 231D 0.15 kW 464 m AMSL

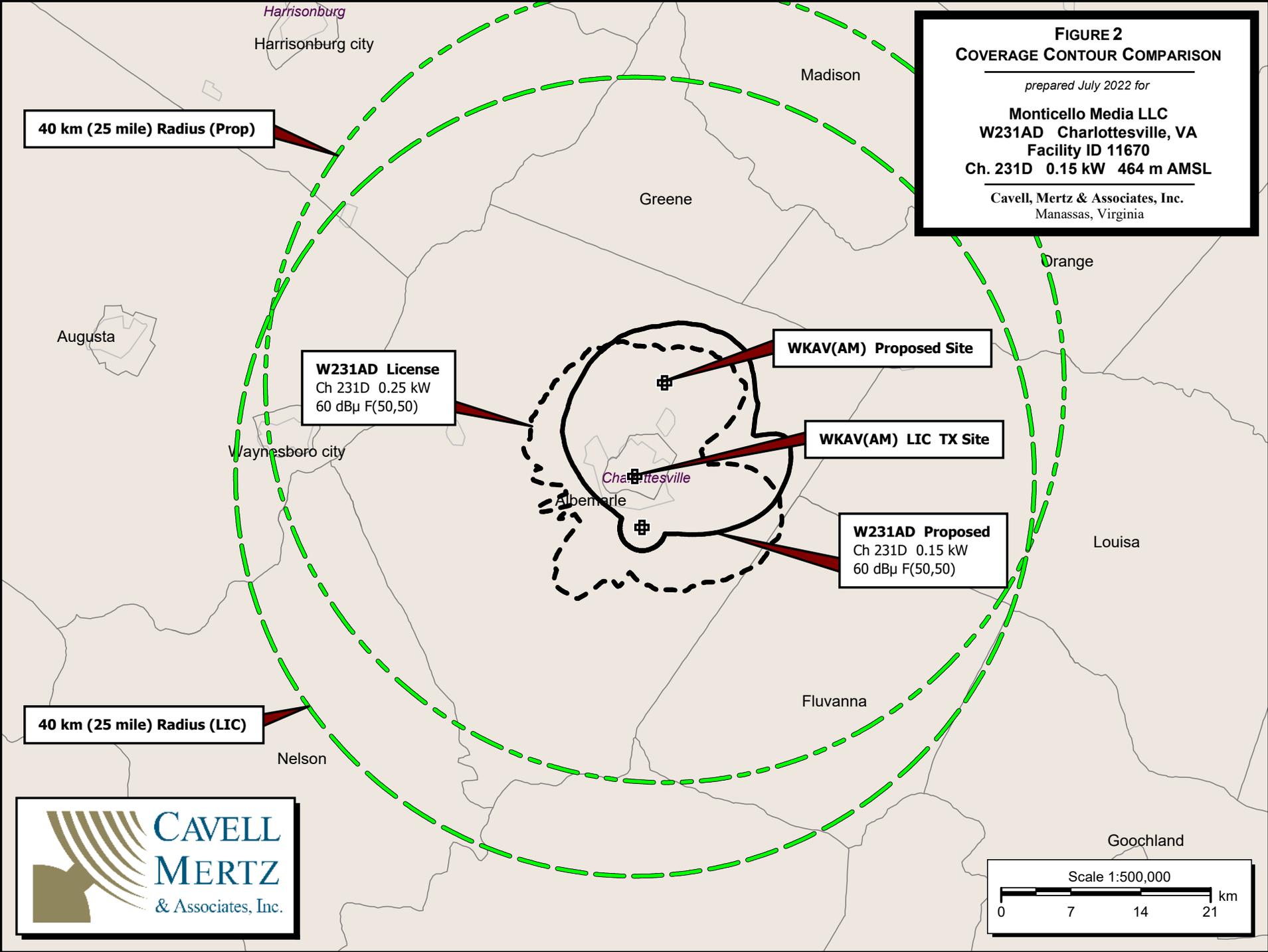
**Cavell, Mertz & Associates, Inc.**  
 Manassas, Virginia

**FIGURE 2  
COVERAGE CONTOUR COMPARISON**

*prepared July 2022 for*

**Monticello Media LLC  
W231AD Charlottesville, VA  
Facility ID 11670  
Ch. 231D 0.15 kW 464 m AMSL**

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



**FIGURE 3**  
**CO-CHANNEL CONTOUR PROTECTION**

*prepared May 2022 for*

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**W231AD Charlottesville, VA**  
**Facility ID 11670**  
**Ch. 231D 0.15 kW 464 m AMSL**

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

**WQZK-FM License**  
Ch 231B 13 kW  
54 dBμ F(50,50)

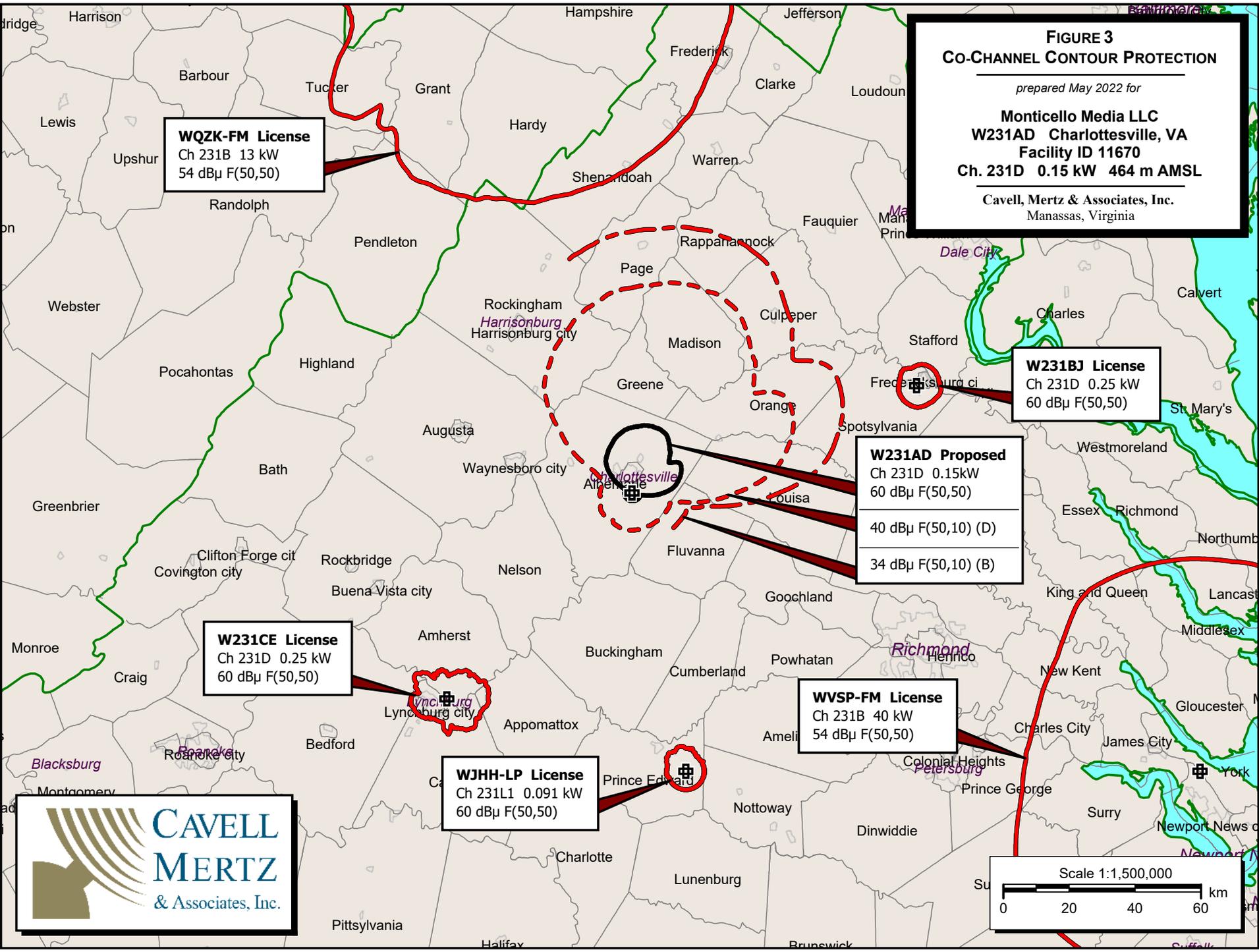
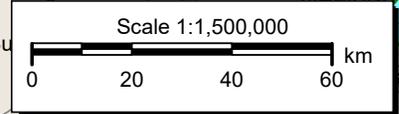
**W231BJ License**  
Ch 231D 0.25 kW  
60 dBμ F(50,50)

**W231AD Proposed**  
Ch 231D 0.15kW  
60 dBμ F(50,50)  
40 dBμ F(50,10) (D)  
34 dBμ F(50,10) (B)

**W231CE License**  
Ch 231D 0.25 kW  
60 dBμ F(50,50)

**WVSP-FM License**  
Ch 231B 40 kW  
54 dBμ F(50,50)

**WJHH-LP License**  
Ch 231L1 0.091 kW  
60 dBμ F(50,50)



**FIGURE 4**  
**1ST ADJACENT CHANNEL PROTECTION**

*prepared July 2022 for*

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**W231AD Charlottesville, VA**  
**Facility ID 11670**  
**Ch. 231D 0.15 kW 464 m AMSL**

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

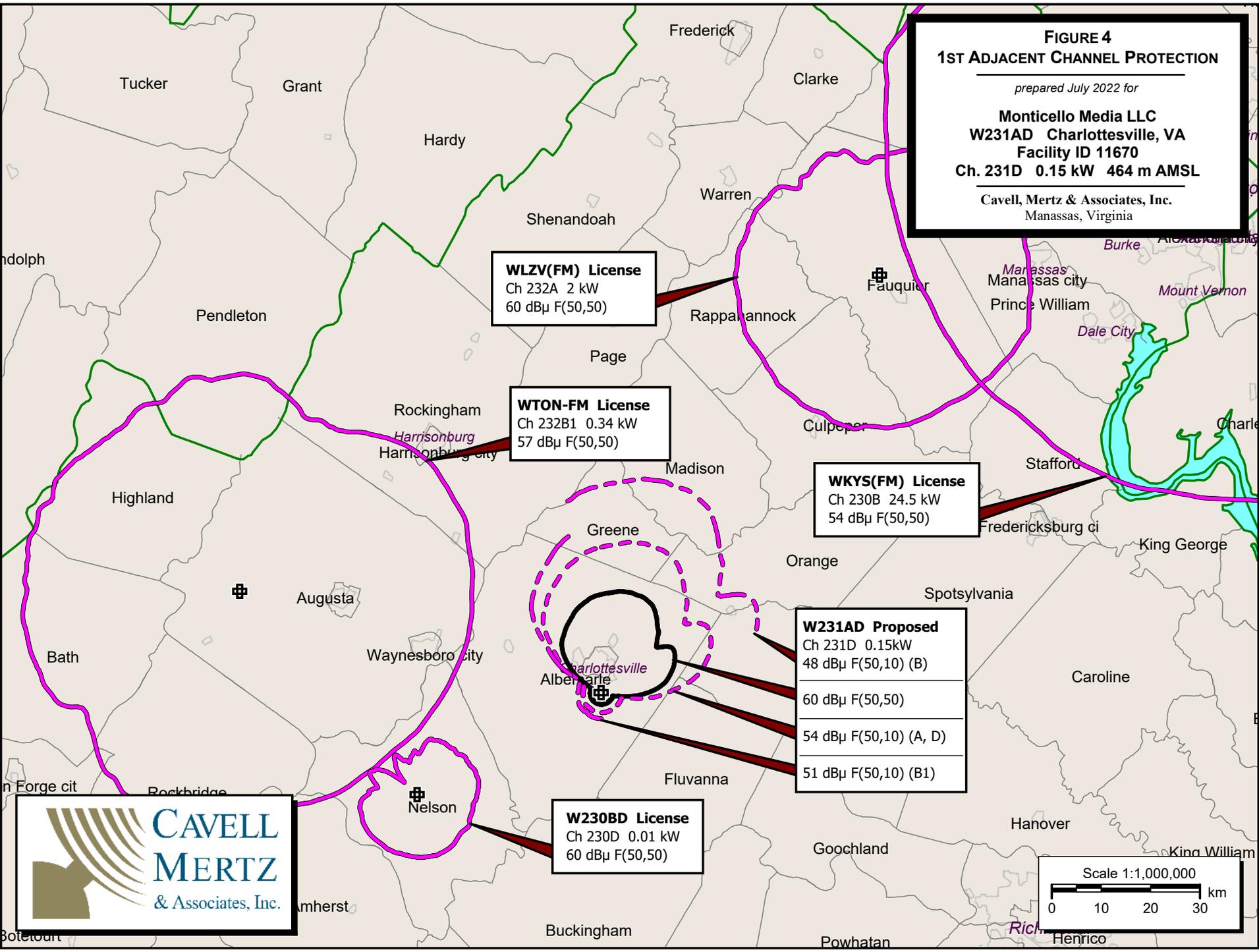
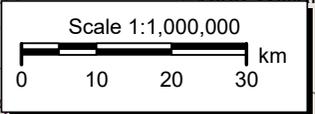
**WLZV(FM) License**  
 Ch 232A 2 kW  
 60 dBμ F(50,50)

**WTON-FM License**  
 Ch 232B1 0.34 kW  
 57 dBμ F(50,50)

**WKYS(FM) License**  
 Ch 230B 24.5 kW  
 54 dBμ F(50,50)

**W231AD Proposed**  
 Ch 231D 0.15kW  
 48 dBμ F(50,10) (B)  
 60 dBμ F(50,50)  
 54 dBμ F(50,10) (A, D)  
 51 dBμ F(50,10) (B1)

**W230BD License**  
 Ch 230D 0.01 kW  
 60 dBμ F(50,50)



**FIGURE 5**  
**2ND & 3RD ADJACENT PROTECTION**

*prepared July 2022 for*

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**Facility ID 11670**  
**Ch. 231D 0.15 kW 464 m AMSL**

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

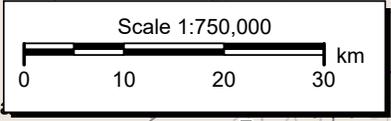
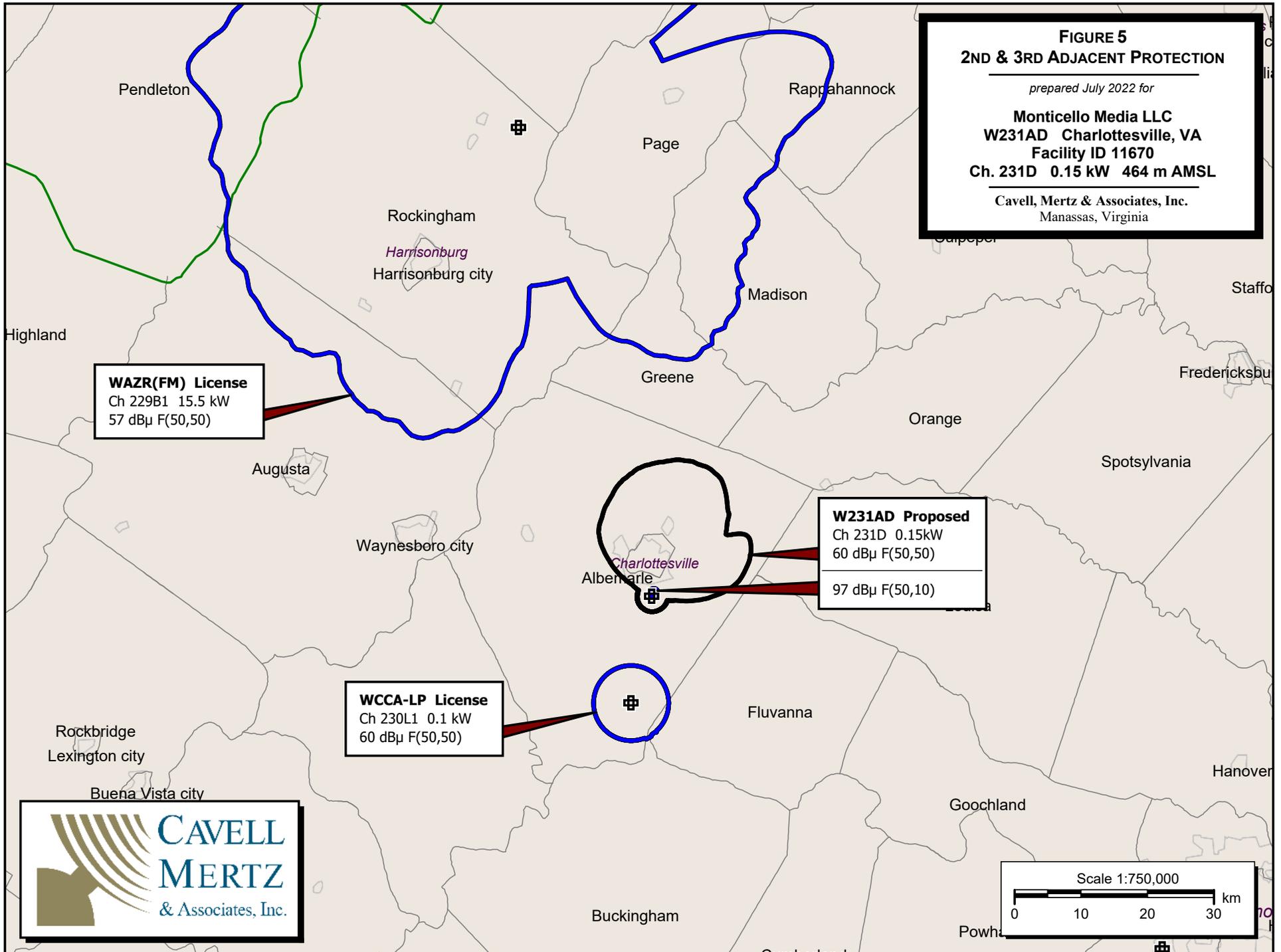


Table I  
**RFR Exposure Calculation Summary**

prepared for  
 Monticello Media LLC  
 W231AD Proposed Charlottesville, VA  
 Facility ID 11670  
 Ch. 231D 0.15 kW 464m AMSL

**Location to analyze:**

**Loc #**    **Location Name**                      **Height AMSL**  
 6        5 m from WCAV South                      445.5        (2 m Above Ground Level)

**Calculate RFR exposure for:**

Call Sign	FM/TV/DT	Channel	Freq	ERP*	C/R AMSL	Horiz Dist	Slant Dist	Brng (to)	Brng (frm)	V Angle	Rel Field	uW/cm^2	GPop Lim	% GPop
W209AA (LIC)	FM	209D	89.7	0.25	477.0	373.9		FM Model Results >>				0.10	200.0	0.05
W240AF (LIC)	FM	240D	95.9	0.1	448.0	87.9		FM Model Results >>				0.40	200.0	0.20
W242CL (LIC)	FM	242D	96.3	0.02	481.0	273.4		FM Model Results >>				0.00	200.0	0.00
W246DD (LIC)	FM	246D	97.1	0.198	463.0	273.4		FM Model Results >>				0.10	200.0	0.05
W255CT (LIC)	FM	255D	98.9	0.25	483.0	253.2		FM Model Results >>				0.10	200.0	0.05
W275CL (CP)	FM	296D	107.1	0.5	474.7	125.4		FM Model Results >>				1.00	200.0	0.50
W275CL (LIC)	FM	275D	102.9	0.24	475.0	125.4		FM Model Results >>				0.50	200.0	0.25
W294BY (LIC)	FM	294D	106.7	0.02	481.0	273.4		FM Model Results >>				0.00	200.0	0.00
WAHU-LD (LIC)	DT	31	575.0	30	484.2	4.9	39.0	180.0	0.0	82.73	0.100	6.59	383.3	1.72
WCAV(DT) (LIC)	DT	32	581.0	410	495.0	4.9	49.7	180.0	0.0	84.30	0.100	55.35	387.3	14.29
WCHV-FM (LIC)	FM	298A	107.5	0.42	506.0	87.9		FM Model Results >>				1.20	200.0	0.60
WCNR(FM) (LIC)	FM	291A	106.1	1.2	479.4	125.4		FM Model Results >>				2.30	200.0	1.15
WCVL-FM (LIC)	FM	224A	92.7	1.22	478.0	125.4		FM Model Results >>				2.20	200.0	1.10
WHTJ(DT) (LIC)	DT	26	545.0	0	499.1	271.2		Channel Share Guest **				0.00	363.3	0.00
WNRN(FM) (CP)	FM	220A	91.9	1.12	493.0	373.9		FM Model Results >>				0.30	200.0	0.15
WNRN(FM) (LIC)	FM	220A	91.9	0.64	493.0	373.9		FM Model Results >>				0.10	200.0	0.05
WNVV(DT) (LIC)	DT	26	545.0	300	499.1	271.2	276.5	62.6	242.6	11.18	0.044	0.26	363.3	0.07
WTJU(FM) (LIC)	FM	216B1	91.1	3	493.0	373.9		FM Model Results >>				0.70	200.0	0.35
WVAW-LD (LIC)	DT	16	485.0	30	484.6	16.8	42.6	351.7	171.7	66.69	0.106	6.21	323.3	1.92
WVIR-CD (LIC)	DT	35	599.0	30	515.4	52.3	87.3	24.7	204.7	53.18	0.064	0.54	399.3	0.13
WVIR-TV (LIC)	DT	2	57.0	20	534.8	104.6	137.5	26.2	206.2	40.49	0.092	0.30	200.0	0.15
WVTW(FM) (LIC)	FM	203B1	88.5	2	485.0	373.9		FM Model Results >>				0.50	200.0	0.25
WWWV(FM) (LIC)	FM	248B	97.5	17.8	514.0	87.9		FM Model Results >>				4.30	200.0	2.15
W285EF (Proposed)	FM	285D	104.9	0.1	464.0	5		FM Model Results >>				6.14	200.0	3.07
W300DV (Proposed)	FM	257D	99.3	0.1	464.0	5		FM Model Results >>				6.13	200.0	3.07

=====  
 % of Gen Pop Limit =        31.32

Notes:

\* ERP Values are doubled as worst case where polarization is Circular or Elliptical  
 \*\* WHTJ(DT) is listed for completeness, but is a guest to Channel Share Host WNVV(DT) (no additional contribution)  
 All television facilities provide a relative field value based on publicly available information about each antenna -  
 - except WAHU-LD and WCAV(DT), which assume a worst case relative field value of 0.1 (see text)  
**Blue** Relative Field values are worst case 15-90 degree values for the co-located facilities  
 All FM facilities were calculated by entering the ERP and difference in AMSL height in FM Model  
 WWWV(FM) assumes a 2-bay, full wave antenna; all other FMs assume a single bay antenna as worst case  
 Two FM CPs are included in the list for completeness and to demonstrate no issue if Licensed  
 The last two lines represent the other two proposed translator facilities noted in the text, based on FM Model results