



**Kessler and Gehman Associates**  
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# MINOR MODIFICATION TO A LICENSED TELEVISION BROADCAST STATION

**CALL SIGN: WRLK-TV**  
**FACILITY ID: 61013**  
**FCC FILE NO.: 0000081202**  
**LOCATION: COLUMBIA, SC**

## **Prepared For:**

South Carolina Educational  
TV Commission  
1041 George Rogers Boulevard  
Columbia, SC 29201

## **Prepared By:**

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## **1.0 MINOR MODIFICATION APPLICATION**

South Carolina Educational TV Commission is the licensee of a television broadcast station having call sign WRLK-TV facility ID 61013. It is herein proposed to increase the ERP from 282kW to 287kW and replace the licensed top mounted horizontally polarized omni directional antenna with a similar model capable of elliptical polarization.

Pursuant to 47 CFR § 73.3572 the instant application is considered a minor modification since:

- No change in frequency is proposed
- No change in community of licensed is proposed

## **2.0 ALLOCATION ANALYSIS**

Appendix B are the summarized results from TVStudy V2.2.5 which illustrates that there are no interference failures.

## **3.0 § 73.683 AND § 73.625 PREDICTED CONTOURS**

Appendix C illustrates the § 73.683 predicted F(50,90) 42.6 dB $\mu$ V/m noise limited protected contour and the § 73.625 predicted F(50,90) 48.0 dB $\mu$ V/m principal community coverage contour. As illustrated the 48 dB $\mu$ V/m contour completely subsumes the principal community of license as required.

The Appendix C predicted coverage contours were generated using V-Soft Probe-3<sup>1</sup> software in accordance with § 73.625(b) methodology using F(50,90) propagation curves. The average terrain was extracted from three arc second terrain along eight equally spaced cardinal radials from 3 kilometers to 16 kilometers from the site and beginning from true north.

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<sup>1</sup> Version 3.101

#### 4.0 RADIO FREQUENCY RADIATION COMPLIANCE

A theoretical analysis has been conducted of the human exposure to radio frequency radiation (“RFR”) using the calculation methodology described in OET Bulletin 65, Edition 97-01. The RFR analysis is conducted pursuant to the following methodology:

Terrain<sup>2</sup> extraction is compiled from the proposed tower site to radial lengths of 0.25 miles in 0.001 mile increments for 360 radials. The power density is calculated for each terrain point at 6 feet above ground level using the elevation and azimuth pattern of the proposed broadcast antenna. The power density calculations are conducted using the lower edge of the proposed channel frequency. To account for ground reflections, a coefficient of 1.6 was included in the calculation.

The resulting cylindrical polar analysis is then summarized into a coordinate plane graph using the following methodology:

Starting from the origin the maximum calculated RFR value is determined among the 360-degree radials for each 0.001 mile increment, the value is then converted into a percentage of the maximum allowable general population or uncontrolled exposure and plotted as a function of perpendicular distance from the tower.

The resulting RFR study in Appendix D demonstrates that the peak exposure is 0.050% of the most restrictive permissible exposure threshold. Pursuant to OET Bulletin 65 concerning multiple-user transmitter sites only those licensees whose transmitters produce power density levels greater than 5.0% of the exposure limit are considered significant contributors to RFR. Since the proposed operation is

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<sup>2</sup> Terrain extraction is based upon a 3 arc second point spacing terrain database.

within 5% of the most permissible exposure at any location 2 meters above the ground, it is not considered a significant contributor to RFR exposure. Thus, contributions to exposure from other RF sources in the vicinity of the proposed facility were not taken into account. The instant application is compliant with the FCC limits for human exposure to RF radiation and is excluded from further environmental processing since no changes are proposed to the tower structure in order to accommodate the proposed antenna.

A chain link fence encloses the support structure and the applicant will cooperate with any other users of the tower by reducing the power to the antenna or if necessary completely cutting it off to protect maintenance workers on the tower.

## **5.0 CERTIFICATION**

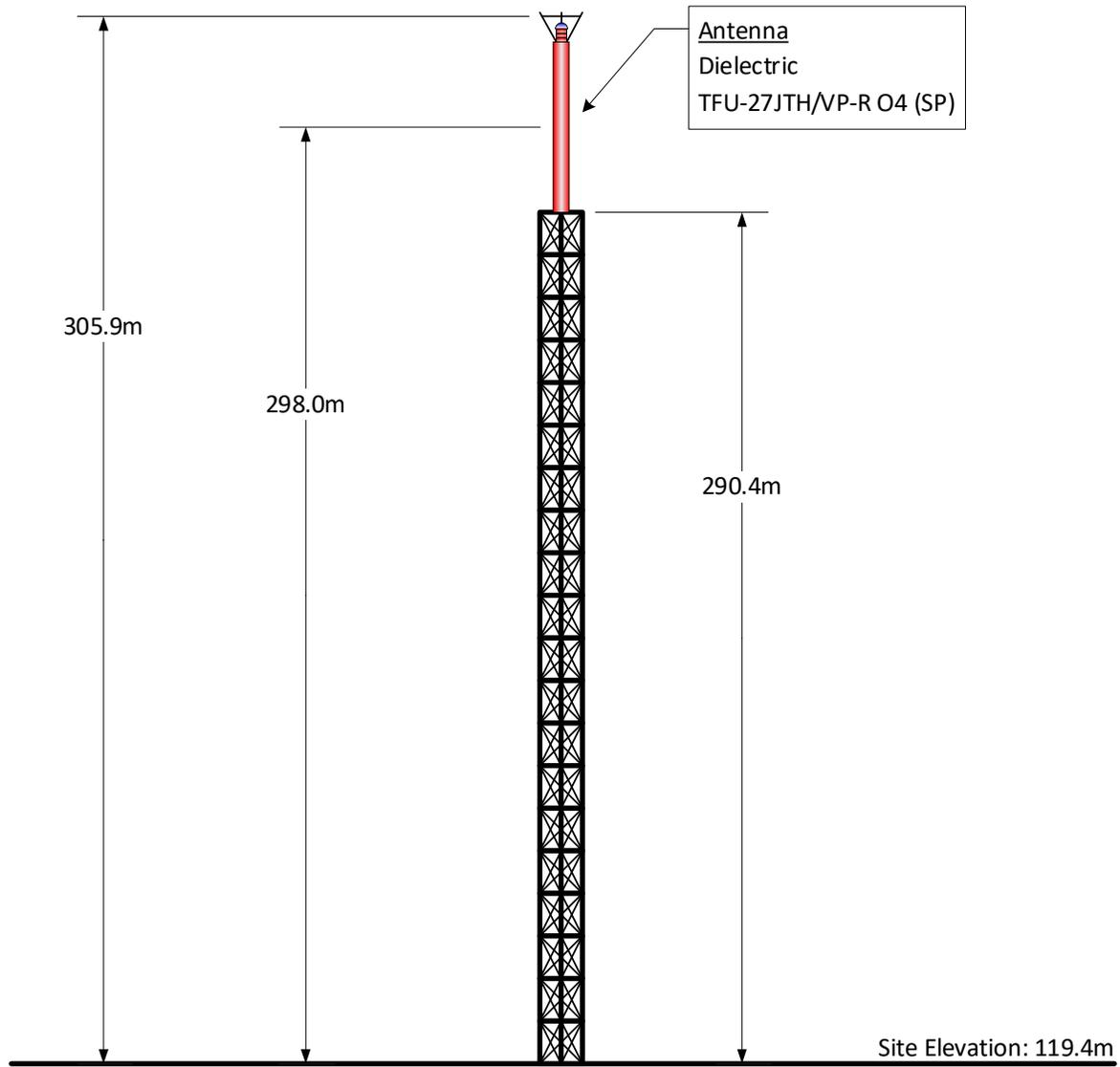
The foregoing statement and the report regarding the aforementioned engineering work are true and correct to the best of my knowledge. Executed on October 9, 2019

Ryan Wilhour



Consulting Engineer

**APPENDIX A – Tower Elevation Profile**



Antenna CRAGL:	298.0 m
Antenna CRMSL:	417.4 m
Antenna HAAT:	316.9 m

NAD 83 Coordinates:	
N. Latitude:	34° 07' 07.0"
W. Longitude:	80° 56' 12.7"
FCC Tower Registration Number:	1059176
FAA Study Number	2004-ASO-4292-OE

NOTE: NOT TO SCALE

## APPENDIX B – TVStudy V2.2.5 Allocation Analysis

Study created: 2019.10.09 13:35:28  
Study build station data: LMS TV 2019-10-08  
Proposal: WRLK-TV D33 DT LIC COLUMBIA, SC  
File number: Proposed  
Facility ID: 61013  
Station data: User record  
Record ID: 4257  
Country: U.S.  
Zone: II

Search options:  
Non-U.S. records included  
Baseline record excluded if station has CP  
Stations potentially affected by proposal:

IX	Call	Chan	Svc	Status	City, State	File Number	Distance
Yes	WAXN-TV	D32	DT	LIC	KANNAPOLIS, NC	BLANK0000081193	128.5 km
No	WJWJ-TV	D32	DT	CP	BEAUFORT, SC	BLANK0000025030	158.1
No	WMBF-TV	D32	DT	LIC	MYRTLE BEACH, SC	BLCDT20091105AAP	177.0
No	WIRE-CD	D33	DC	CP	ATLANTA, GA	BLANK0000025104	318.4
Yes	WGNM	D33	DT	CP	MACON, GA	BLANK0000025320	286.0
No	WKHA	D33	DT	LIC	HAZARD, KY	BLANK0000075043	397.6
No	WTNG-CD	D33	DC	CP	LUMBERTON-PEMBROKE, NC	BLANK0000026947	179.7
No	WTNG-CD	D33	DC	LIC	LUMBERTON-PEMBROKE, NC	BLANK0000081109	179.7
Yes	WUNL-TV	D33	DT	CP	WINSTON-SALEM, NC	BLANK0000034443	256.0
No	WPDP-CD	D33-	DC	LIC	CLEVELAND, TN	BLANK0000081661	355.5
No	WGWG	D34	DT	LIC	CHARLESTON, SC	BLCDT20060630ADJ	175.4
Yes	WNSC-TV	D34	DT	CP	ROCK HILL, SC	BLANK0000034493	80.5

No non-directional AM stations found within 0.8 km  
No directional AM stations found within 3.2 km  
Record parameters as studied:

Channel: D33  
Latitude: 34 7 7.00 N (NAD83)  
Longitude: 80 56 12.70 W  
Height AMSL: 417.4 m  
HAAT: 316.9 m  
Peak ERP: 287 kW  
Antenna: Omnidirectional  
Elev Pattn: Generic  
Elec Tilt: 0.50

40.6 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	287 kW	293.9 m	85.5 km
45.0	287	325.6	89.5
90.0	287	320.3	88.9
135.0	287	308.9	87.5
180.0	287	340.3	91.1
225.0	287	325.2	89.5
270.0	287	325.4	89.5
315.0	287	295.2	85.7

Distance to Canadian border: 849.7 km

Distance to Mexican border: 1781.4 km

Conditions at FCC monitoring station: Powder Springs GA  
Bearing: 266.4 degrees Distance: 350.1 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:  
Bearing: 294.4 degrees Distance: 2245.4 km

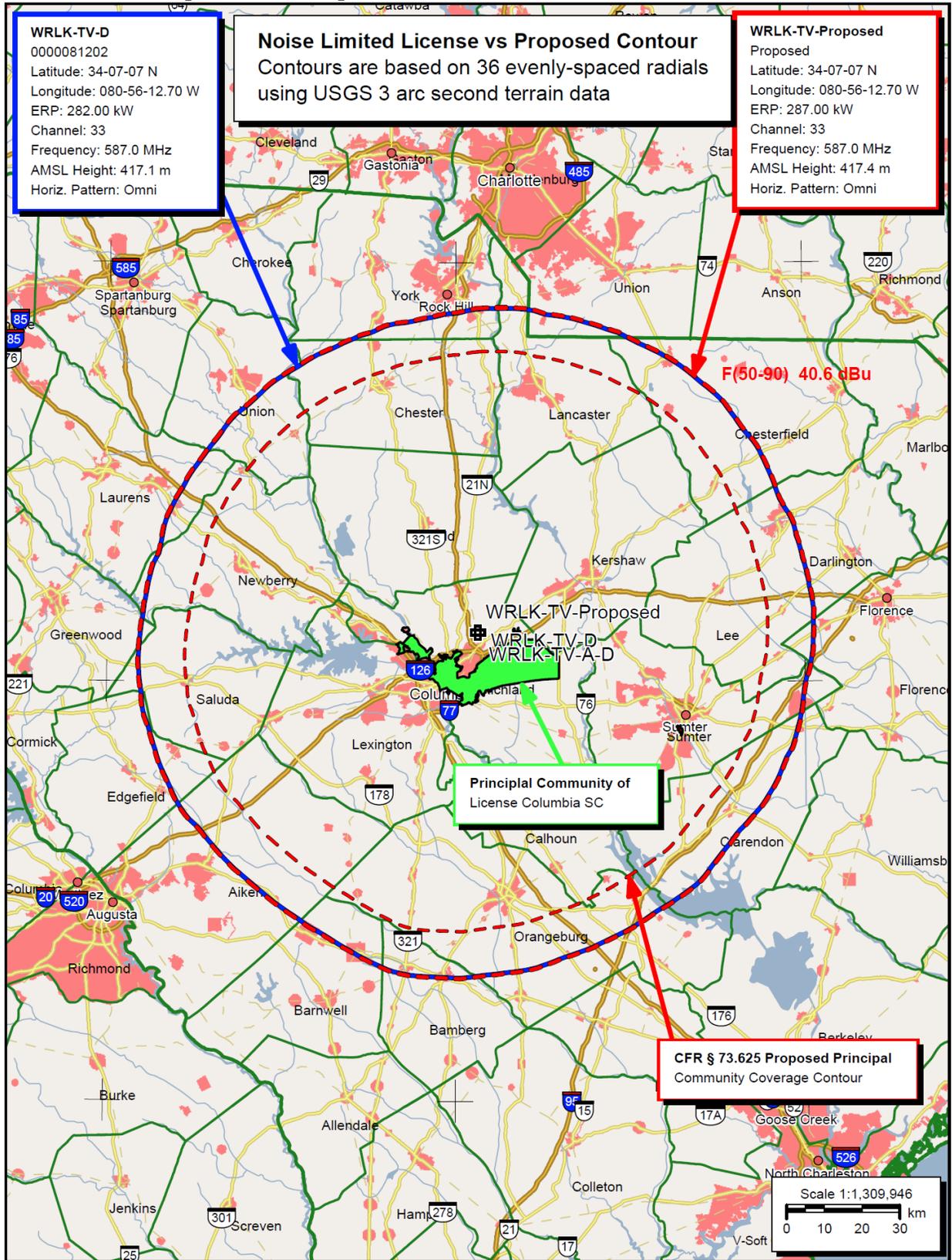
Study cell size: 2.00 km  
Profile point spacing: 1.00 km

Maximum new IX to full-service and Class A: 0.50%  
Maximum new IX to LPTV: 2.00%

---- Below is IX received by proposal Proposed ----

Proposal receives 2.72% interference from scenario 1  
Proposal receives 2.72% interference from scenario 2  
No IX check failures found.

**APPENDIX C – § 73.683 and § 73.625 Predicted Contours**



### APPENDIX D – Far Field Exposure to RF Emissions

