

*APPLICATION FOR MODIFICATION
OF CONSTRUCTION PERMIT*

WDRH-LD – RALEIGH, NORTH CAROLINA
FACILITY ID: 67783

DIGITAL NETWORKS–SOUTHEAST, LLC

AUGUST 2021

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JEREMY RUCK & ASSOCIATES, INC.

P.O. Box 415
221 S. 1st Avenue
Canton, IL 61520

Tel: 309.647.1200
Fax: 855.332.9537
jeremyruck.com

8.18.2021

APPLICATION FOR MODIFICATION OF CONSTRUCTION PERMIT

The following engineering statement and attached exhibits have been prepared for Digital Networks-Southeast, LLC ("Southeast"), licensee of digital low power television station WDRH-LD at Raleigh, North Carolina, and are in support of their application for modification of construction permit for that facility.¹

Under the current construction permit for the facility, assigned LMS File No. 0000130099, Southeast is authorized to operate WDRH-LD on television channel 16 with a maximum effective radiated power of 15 kW at a center of radiation of 210 meters above mean sea level, 82.3 meters above ground, utilizing a directional antenna. Under this application, Southeast proposes to increase the center of radiation to 230 meters above mean sea level, or 102.3 meters above ground level. No change in the authorized maximum effective radiated power of 15 kW is proposed, but the antenna will be rotated to an orientation of 58 degrees true.

Exhibit E-1 provides a comparison between the authorized and proposed 51 dBu service contours for WDRH. There is no change proposed to the site location, thus it is apparent that the licensed and proposed service contours would have a significant level of overlap.

Exhibit E-2 is the output of TVStudy for the proposed technical parameters. This study was based on a cell size of 1.0 kilometer, and a profile spacing of 1.0 km. This study demonstrates that there are no interference check failures from the proposed technical parameters.

¹ The Facility ID for WDRH-LD at Raleigh, North Carolina is 67783.

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The proposed facility would not constitute a significant environmental impact, and is exempt from environmental processing. The proposed antenna would be mounted to an existing tower that is registered with the Commission. The addition of the proposed antenna to this tower would not increase the already existing environmental impact present from the structure.

In addition, the proposed facility would not result in human exposure at ground level to radiofrequency radiation in excess of the Commission's safety standards. Using the equations in Supplement A of *OET Bulletin 65*, the calculated worst-case power density at ground level assuming a downward radiation relative field of 0.3 is $4.48 \mu\text{W}/\text{cm}^2$. This value is substantially below the upper limit of the uncontrolled environment condition. Southeast certifies it will coordinate with all other users of the site to ensure that workers and other personnel are not exposed to levels of radiofrequency radiation in excess of the applicable safety standards. Coordination activities will include, but are not necessarily limited to, a reduction in transmitter power or cessation of operation.

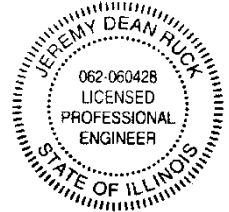
The proposed facility complies with the provisions of Section 74.709 of the Commission's Rules. No land mobile protection issues have been identified based on the tables in that section of the rules, or on the output of *TVStudy*. The proposed facility also complies with Sections 74.793(e)-(h) and 74.793(h) of the Commission's Rules. The proposed facility is not located within the vicinity of the Table Mountain receiving zone, nor is it located within the West Virginia quiet zone area. The proposed facility is located 409 kilometers from the Laurel, Maryland monitoring station.

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jeremyruck.com

The preceding statement and attached exhibits have been prepared by me, or under my direction, and are true and accurate to the best of my belief and knowledge.



Above signature is digitized copy of actual signature
License Expires November 30, 2021

Jeremy D. Ruck, PE
August 18, 2021

JEREMY RUCK & ASSOCIATES, INC.

P.O. Box 415
221 S. 1st Avenue
Canton, IL 61520

Tel: 309.647.1200
Fax: 855.332.9537
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WDRH-LD.X

0000130099

Latitude: 35-47-21.10 N

Longitude: 078-40-44.50 W

ERP: 15.00 kW

Channel: 16

Frequency: 485.0 MHz

AMSL Height: 230.0 m

Horiz. Pattern: Directional

Prop Model: FCC Contour

W16EH-D/WDRH-LD.C

0000130099

Latitude: 35-47-21.10 N

Longitude: 078-40-44.50 W

ERP: 15.00 kW

Channel: 16

Frequency: 485.0 MHz

AMSL Height: 210.0 m

Horiz. Pattern: Directional

Prop Model: FCC Contour

Jeremy Ruck & Associates, Inc.

- Proposed 51 dBu F(50,90) Service Contour
- Authorized 51 dBu F(50,90) Service Contour
- Proposed Site 30-mile Radius

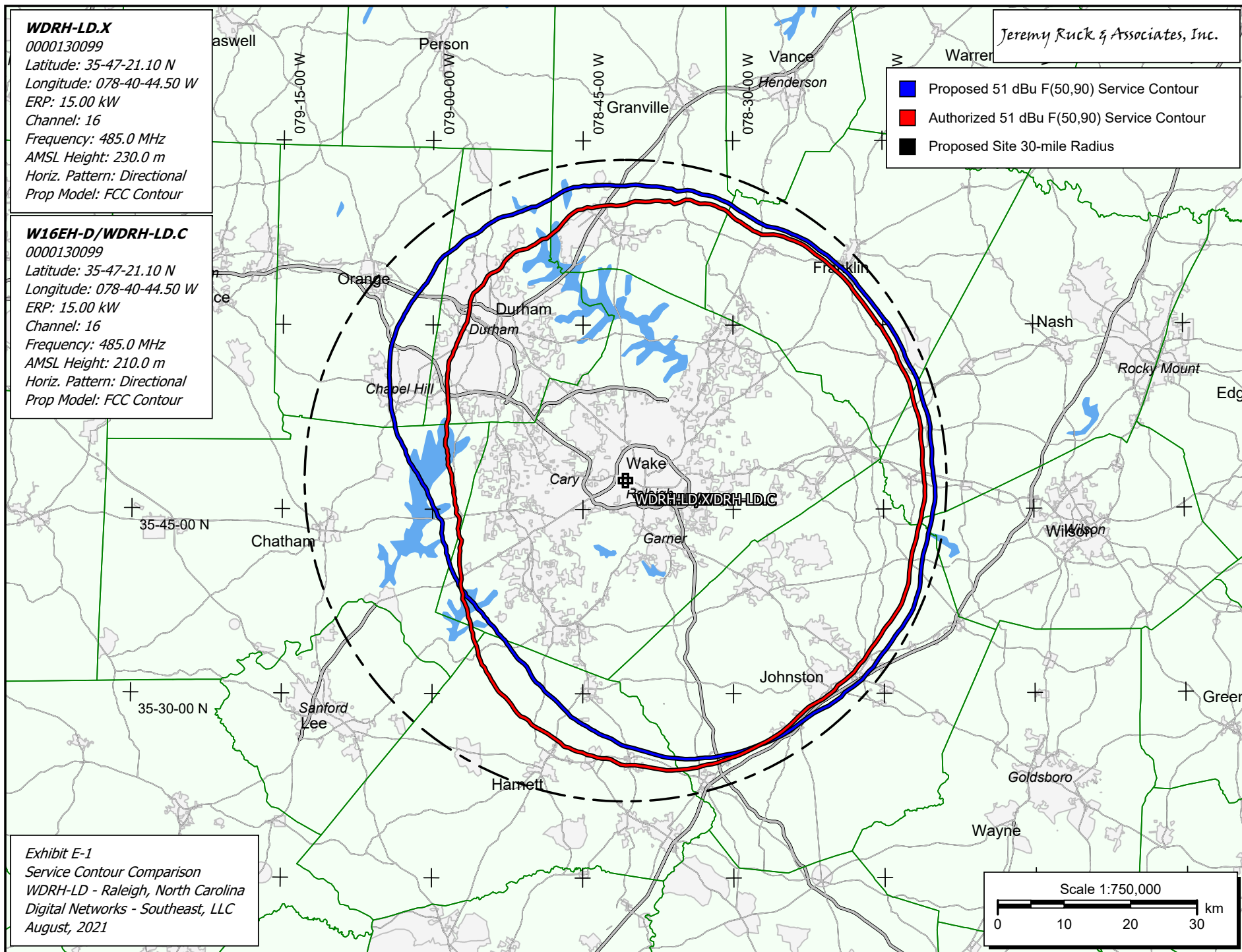


Exhibit E-2 - TVStudy Interference Study

tvstudy v2.2.5 (4uoc83)

Database: 127.0.0.1, Study: WDRH-LD CH 16 ASRN 1001697 230 m AMSL 15 kW ERP PSILP16EC @58, Model: Longley-Rice

Start: 2021.08.18 10:31:43

Study created: 2021.08.18 10:31:43

Study build station data: LMS TV 2021-08-18

Proposal: WDRH-LD D16- LD CP Raleigh, NC

File number: BLANK0000130099

Facility ID: 67783

Station data: User record

Record ID: 349

Country: U.S.

Build options:

Protect pre-transition records not on baseline channel

Stations potentially affected by proposal:

IX	Call	Chan	Svc	Status	City, State	File Number	Distance
No	W15EB-D	D15	DC	CP	CHARLOTTE, NC	BLANK0000127538	209.4 km
No	W15EB-D	D15	DC	LIC	CHARLOTTE, NC	BLANK0000083736	209.4
No	WRAZ	D15	DT	LIC	RALEIGH, NC	BLANK0000143683	18.7
No	WILM-LD	D15	LD	LIC	WILMINGTON, NC	BLANK0000055240	168.2
No	WHWD-LD	D15	LD	LIC	Winston-Salem, NC	BLANK0000143309	145.4
No	WLTX	D15	DT	LIC	COLUMBIA, SC	BLANK0000082085	267.3
No	W15DC-D	D15	LD	CP	FLORENCE, SC	BLANK0000036248	168.7
No	W15ES-D	D15	LD	CP	MYRTLE BEACH, SC	BLANK0000154524	223.5
No	W15DO-D	D15	LD	LIC	Norfolk, VA	BLANK0000120726	144.0
No	WVPT	D15	DT	APP	STAUNTON, VA	BLANK0000149712	270.0
No	W16EE-D	D16	LD	CP	AUGUSTA, GA	BLANK0000071936	408.5
No	WCPB	D16	DT	CP	SALISBURY, MD	BLANK0000143851	397.7
No	WCPB	D16	DT	LIC	SALISBURY, MD	BLANK0000080044	397.7
No	WCEE-LD	D16	LD	LIC	CHARLOTTE, NC	BLANK0000005163	191.2
No	WPXU-TV	D16	DT	LIC	JACKSONVILLE, NC	BLANK0000129487	180.0
No	W16DZ-D	D16	LD	LIC	TRYON, NC	BLANK0000121648	327.6
Yes	WXII-TV	D16	DT	LIC	WINSTON-SALEM, NC	BLANK0000081027	165.6
No	WJPM-TV	D16	DT	LIC	FLORENCE, SC	BLANK0000138174	193.7
No	WWYA-LD	D16	LD	LIC	HONEA PATH, SC	BLANK0000093423	351.2
No	WAPK-CD	D16	DC	LIC	BRISTOL VA/KINGSPORT, TN	BLANK0000070481	318.6
No	WVAW-LD	D16	LD	LIC	CHARLOTTESVILLE, VA	BLDTL20090218AEG	244.6
No	WTKR	D16	DT	LIC	NORFOLK, VA	BLANK0000118339	225.5
No	WUSV-LD	D16	LD	CP	Fairmont, WV	BLANK0000072244	412.8
No	W41DK-D	D16	LD	CP	KEYSER, WV	BLANK0000035614	400.9
No	WZTS-LD	D16	LD	LIC	SUMMERSVILLE, WV	BLANK0000025146	313.0
No	WCEE-LD	D17	LD	CP	CHARLOTTE, NC	BLANK0000054738	191.2
No	W24AY-D	D17	LD	CP	LILESVILLE/WADESBORO, NC	BLANK0000054532	143.2
No	WRAL-TV	D17	DT	LIC	RALEIGH, NC	BLANK0000143682	18.7
No	W17DO-D	D17	LD	CP	WILMINGTON, NC	BNPDTL20100422AAG	178.2
No	WKTD-CD	D17	DC	LIC	PORTSMOUTH, VA	BLTTA20050316ACC	225.5
No	WXOB-LP	D17z	LD	LIC	RICHMOND, VA	BLTTA20020809AAN	227.9
No	WVVA	D17	DT	LIC	BLUEFIELD, WV	BLANK0000087309	276.6
No	WVVA	D17	DT	CP	BLUEFIELD, WV	BLANK0000127491	276.6
No	DW19CA	N19-	TX	APP	LUMBERTON, NC	BLTT19961112JH	106.7

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D16-

Mask: Full Service

Latitude: 35 47 21.10 N (NAD83)

Longitude: 78 40 44.50 W

Height AMSL: 230.0 m

HAAT: 124.3 m

Peak ERP: 15.0 kW

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Exhibit E-2 - TVStudy Interference Study

Antenna: PSI-PSILP16EC (ID 1007720) 58.0 deg
Elev Pattn: Generic
Elec Tilt: 1.00

48.9 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	14.9 kW	114.6 m	46.5 km
45.0	13.1	143.5	48.0
90.0	13.4	153.6	48.8
135.0	14.6	140.9	48.3
180.0	5.29	126.7	42.3
225.0	1.01	104.4	32.0
270.0	1.50	97.4	33.3
315.0	9.84	113.2	44.4

Distance to Canadian border: 729.3 km

Distance to Mexican border: 2048.6 km

Conditions at FCC monitoring station: Laurel MD
Bearing: 23.0 degrees Distance: 409.4 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
Bearing: 289.7 degrees Distance: 2366.5 km

No land mobile station failures found

Proposal is not within the Offshore Radio Service protected area

Study cell size: 1.00 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%

Interference to BLANK0000081027 LIC scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	WXII-TV	D16	DT	LIC	WINSTON-SALEM, NC	BLANK0000081027	
Undesireds:	WDRH-LD	D16-	LD	CP	Raleigh, NC	BLANK0000130099	165.6 km
	W15EB-D	D15	DC	CP	CHARLOTTE, NC	BLANK0000127538	138.4
	WRAZ	D15	DT	LIC	RALEIGH, NC	BLANK0000143683	183.3
	WPXU-TV	D16	DT	LIC	JACKSONVILLE, NC	BLANK0000129487	334.6
	WJPM-TV	D16	DT	LIC	FLORENCE, SC	BLANK0000138174	239.8
	WAPK-CD	D16	DC	LIC	BRISTOL VA/KINGSPORT, TN	BLANK0000070481	157.9
	WTKR	D16	DT	LIC	NORFOLK, VA	BLANK0000118339	348.7
	WRAL-TV	D17	DT	LIC	RALEIGH, NC	BLANK0000143682	183.3
	WVVA	D17	DT	LIC	BLUEFIELD, WV	BLANK0000087309	121.4

	Service area	Terrain-limited	IX-free, before	IX-free, after	Percent New IX
45253.8	3,636,504	41821.9	3,292,043	40509.4	0.40 0.31

Undesired	Total IX	Unique IX, before	Unique IX, after
WDRH-LD D16- LD CP	435.7	20,790	162.2
W15EB-D D15 DC CP	12.9	1,427	9.0
WRAZ D15 DT LIC	294.1	10,362	0.0
WPXU-TV D16 DT LIC	108.5	2,735	16.9
WJPM-TV D16 DT LIC	310.9	17,729	239.2
WAPK-CD D16 DC LIC	228.8	18,497	211.7
WTKR D16 DT LIC	112.0	2,026	93.0
WRAL-TV D17 DT LIC	402.0	13,832	105.8
WVVA D17 DT LIC	121.8	1,092	116.8

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Canton, IL 61520

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jeremyruck.com

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Exhibit E-2 - TVStudy Interference Study

Interference to BLANK0000081027 LIC scenario 2

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	WXII-TV	D16	DT	LIC	WINSTON-SALEM, NC	BLANK0000081027	
Undesireds:	WDRH-LD	D16-	LD	CP	Raleigh, NC	BLANK0000130099	165.6 km
	W15EB-D	D15	DC	CP	CHARLOTTE, NC	BLANK0000127538	138.4
	WRAZ	D15	DT	LIC	RALEIGH, NC	BLANK0000143683	183.3
	WPXU-TV	D16	DT	LIC	JACKSONVILLE, NC	BLANK0000129487	334.6
	WJPM-TV	D16	DT	LIC	FLORENCE, SC	BLANK0000138174	239.8
	WAPK-CD	D16	DC	LIC	BRISTOL VA/KINGSPORT, TN	BLANK0000070481	157.9
	WTKR	D16	DT	LIC	NORFOLK, VA	BLANK0000118339	348.7
	WRAL-TV	D17	DT	LIC	RALEIGH, NC	BLANK0000143682	183.3
	WVVA	D17	DT	CP	BLUEFIELD, WV	BLANK0000127491	121.4

Service area	Terrain-limited	IX-free, before	IX-free, after	Percent New IX
45253.8 3,636,504	41821.9 3,292,043	40665.6 3,237,817	40503.4 3,227,830	0.40 0.31

Undesired	Total IX	Unique IX, before	Unique IX, after
WDRH-LD D16- LD CP	435.7 20,790	162.2 9,987	
W15EB-D D15 DC CP	12.9 1,427	9.0 1,347	
WRAZ D15 DT LIC	294.1 10,362	0.0 0	
WPXU-TV D16 DT LIC	108.5 2,735	16.9 551	
WJPM-TV D16 DT LIC	310.9 17,729	239.2 16,034	
WAPK-CD D16 DC LIC	228.8 18,497	211.7 18,028	
WTKR D16 DT LIC	112.0 2,026	93.0 1,337	
WRAL-TV D17 DT LIC	402.0 13,832	105.8 3,438	
WVVA D17 DT CP	127.8 1,768	122.8 1,760	

Interference to BLANK0000081027 LIC scenario 3

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	WXII-TV	D16	DT	LIC	WINSTON-SALEM, NC	BLANK0000081027	
Undesireds:	WDRH-LD	D16-	LD	CP	Raleigh, NC	BLANK0000130099	165.6 km
	W15EB-D	D15	DC	LIC	CHARLOTTE, NC	BLANK0000083736	138.4
	WRAZ	D15	DT	LIC	RALEIGH, NC	BLANK0000143683	183.3
	WPXU-TV	D16	DT	LIC	JACKSONVILLE, NC	BLANK0000129487	334.6
	WJPM-TV	D16	DT	LIC	FLORENCE, SC	BLANK0000138174	239.8
	WAPK-CD	D16	DC	LIC	BRISTOL VA/KINGSPORT, TN	BLANK0000070481	157.9
	WTKR	D16	DT	LIC	NORFOLK, VA	BLANK0000118339	348.7
	WRAL-TV	D17	DT	LIC	RALEIGH, NC	BLANK0000143682	183.3
	WVVA	D17	DT	LIC	BLUEFIELD, WV	BLANK0000087309	121.4

Service area	Terrain-limited	IX-free, before	IX-free, after	Percent New IX
45253.8 3,636,504	41821.9 3,292,043	40678.6 3,238,942	40516.3 3,228,955	0.40 0.31

Undesired	Total IX	Unique IX, before	Unique IX, after
WDRH-LD D16- LD CP	435.7 20,790	162.2 9,987	
W15EB-D D15 DC LIC	2.0 898	2.0 898	
WRAZ D15 DT LIC	294.1 10,362	0.0 0	
WPXU-TV D16 DT LIC	108.5 2,735	16.9 551	
WJPM-TV D16 DT LIC	310.9 17,729	242.2 16,055	
WAPK-CD D16 DC LIC	228.8 18,497	211.7 18,028	
WTKR D16 DT LIC	112.0 2,026	93.0 1,337	
WRAL-TV D17 DT LIC	402.0 13,832	105.8 3,438	
WVVA D17 DT LIC	121.8 1,092	116.8 1,084	

Interference to BLANK0000081027 LIC scenario 4

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	WXII-TV	D16	DT	LIC	WINSTON-SALEM, NC	BLANK0000081027	
Undesireds:	WDRH-LD	D16-	LD	CP	Raleigh, NC	BLANK0000130099	165.6 km
	W15EB-D	D15	DC	LIC	CHARLOTTE, NC	BLANK0000083736	138.4
	WRAZ	D15	DT	LIC	RALEIGH, NC	BLANK0000143683	183.3
	WPXU-TV	D16	DT	LIC	JACKSONVILLE, NC	BLANK0000129487	334.6
	WJPM-TV	D16	DT	LIC	FLORENCE, SC	BLANK0000138174	239.8

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Exhibit E-2 - TVStudy Interference Study

WAPK-CD	D16	DC	LIC	BRISTOL VA/KINGSPORT, TN	BLANK0000070481	157.9
WTKR	D16	DT	LIC	NORFOLK, VA	BLANK0000118339	348.7
WRAL-TV	D17	DT	LIC	RALEIGH, NC	BLANK0000143682	183.3
WVVA	D17	DT	CP	BLUEFIELD, WV	BLANK0000127491	121.4

Service area	Terrain-limited	IX-free, before	IX-free, after	Percent New IX
45253.8 3,636,504	41821.9 3,292,043	40672.6 3,238,266	40510.4 3,228,279	0.40 0.31

Undesired	Total IX	Unique IX, before	Unique IX, after
WDRH-LD D16- LD CP	435.7 20,790		162.2 9,987
W15EB-D D15 DC LIC	2.0 898	2.0 898	2.0 898
WRAZ D15 DT LIC	294.1 10,362	0.0 0	0.0 0
WPXU-TV D16 DT LIC	108.5 2,735	16.9 551	15.9 446
WJPM-TV D16 DT LIC	310.9 17,729	242.2 16,055	239.2 16,053
WAPK-CD D16 DC LIC	228.8 18,497	211.7 18,028	202.7 16,842
WTKR D16 DT LIC	112.0 2,026	93.0 1,337	77.0 1,187
WRAL-TV D17 DT LIC	402.0 13,832	105.8 3,438	53.3 1,232
WVVA D17 DT CP	127.8 1,768	122.8 1,760	121.8 1,760

Interference to proposal scenario 1
26.98% interference received

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WDRH-LD	D16-	LD	CP	Raleigh, NC	BLANK0000130099	
Undesireds:	WRAZ	D15	DT	LIC	RALEIGH, NC	BLANK0000143683	18.7 km
	WCEE-LD	D16	LD	LIC	CHARLOTTE, NC	BLANK0000005163	191.2
	WPXU-TV	D16	DT	LIC	JACKSONVILLE, NC	BLANK0000129487	180.0
	WXII-TV	D16	DT	LIC	WINSTON-SALEM, NC	BLANK0000081027	165.6
	WJPM-TV	D16	DT	LIC	FLORENCE, SC	BLANK0000138174	193.7
	WTKR	D16	DT	LIC	NORFOLK, VA	BLANK0000118339	225.5
	WRAL-TV	D17	DT	LIC	RALEIGH, NC	BLANK0000143682	18.7

Service area	Terrain-limited	IX-free	Percent IX
5947.9 1,502,200	5927.7 1,500,765	3019.5 1,095,885	49.06 26.98

Undesired	Total IX	Unique IX	Prct Unique IX
WRAZ D15 DT LIC	2554.0 314,890	0.0 0	0.00 0.00
WPXU-TV D16 DT LIC	33.2 3,642	1.0 0	0.02 0.00
WXII-TV D16 DT LIC	627.0 63,773	24.2 5,853	0.41 0.39
WJPM-TV D16 DT LIC	4.0 247	0.0 0	0.00 0.00
WTKR D16 DT LIC	39.3 2,306	2.0 63	0.03 0.00
WRAL-TV D17 DT LIC	2878.0 398,611	316.9 83,104	5.35 5.54

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