

**DELAUDER COMMUNICATIONS, INC.**

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**ENGINEERING REPORT**

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**WAPK-CD, Bristol (VA)/Kingsport (TN) Minor Modification (Channel 16)**

**ENGINEERING STATEMENT**

This is a minor change application the CP facilities of BLANK0000026121 to increase the service of WAPK-CD on its authorized channel 16. Attached is a map showing the 51 dBu F50,90 contour. (All contours are based on USGS three arc-second data and 72 evenly-spaced azimuths.)

The output from the FCC's current "TVStudy" software is attached (as edited to remove superfluous scenarios) that demonstrates full compliance with the FCC's protection requirements.

**ENVIRONMENTAL STATEMENT**

This proposal does not involve a site location specified under Section 1.1307(a) through (a)(8) of the FCC Rules.

The digital Class A TV station of the Applicant at this location produces an ERP that is less than or equal to 15 kilowatts. Assuming: (a) a maximum ERP of 15 kilowatts; (b) a relative field of less than 0.2 in the critical downward angles; and (c) a distance of at least 45 meters from the lowest antenna element to 2 meters above ground level, the maximum power density is calculated as follows:

$$S = 33.4 (F)(F)(ERP) / [(R)(R)]$$

Where,        S equals power density in uW/cm<sup>2</sup>  
                  F equals the relative field factor  
                  ERP equals the effective radiate power in watts  
                  R equals the distance in meters

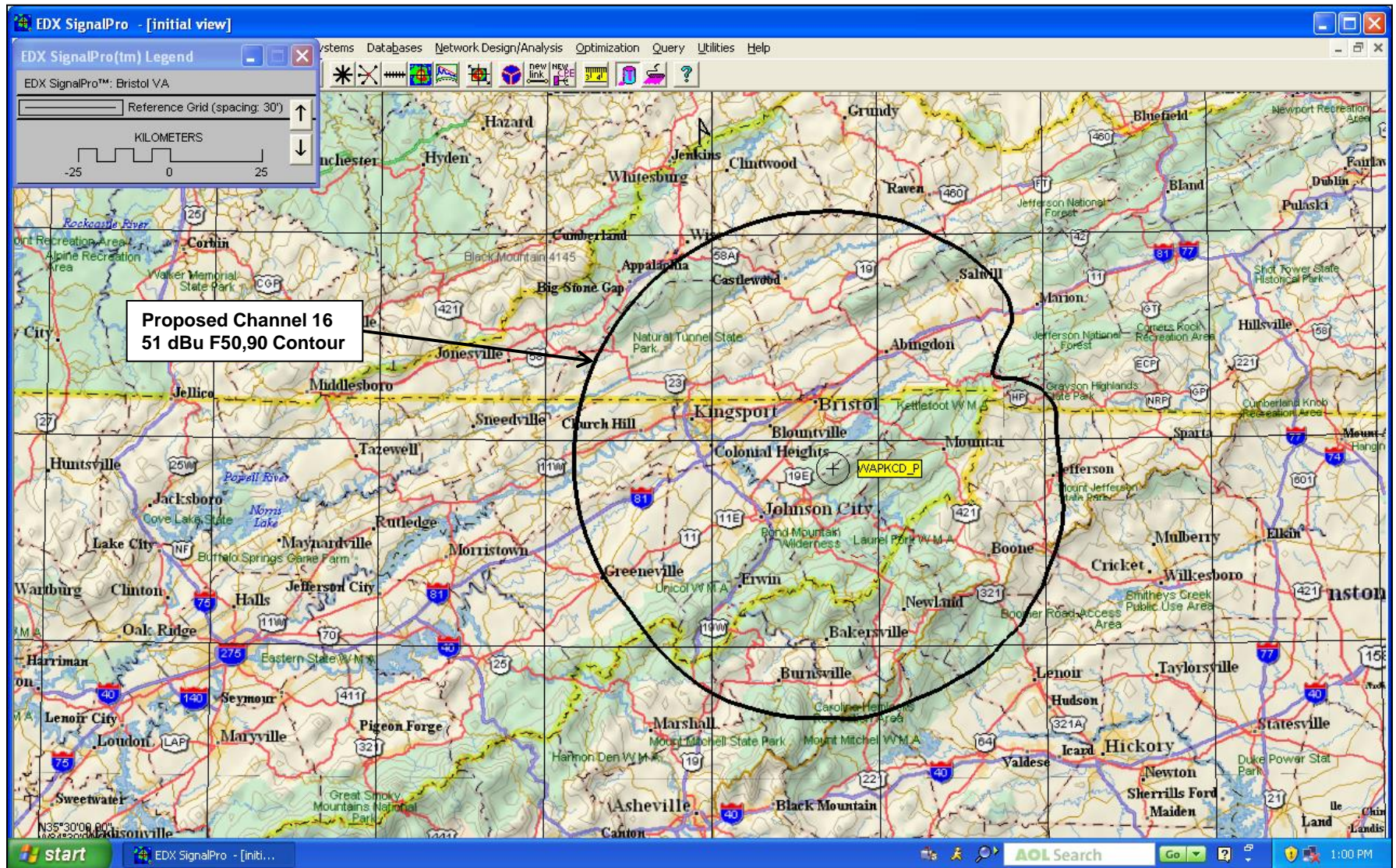
$$= 33.4 (0.2)(0.2)(15,000) / [(45)(45)]$$

$$= 9.9 \text{ uW/cm}^2$$

9.9  $\mu\text{W}/\text{cm}^2$  represents less than 5% of the uncontrolled power density limit (315.3  $\mu\text{W}/\text{cm}^2$  for UHF; 200  $\mu\text{W}/\text{cm}^2$  for VHF). The electromagnetic radiation from this proposed operation will not produce a value in excess of the radiation standard. The electromagnetic radiation from the proposed operation will not combine with other facilities on or near the structure to produce a significant change in value.

If this is a structure that may support various other operations, the applicant will cooperate with the other operators in establishing a plan for work done on the structure in close proximity to the existing antenna.

# PREDICTED COVERAGE CONTOUR



tvstudy v2.2.3 (DAezu1)  
Database: localhost, Study: BRISTOL16D15KWX, Model: Longley-Rice  
Start: 2017.10.27 08:55:40

Study created: 2017.10.27 08:10:51

Study build station data: LMS TV 2017-10-26 (3)

Proposal: WAPK-CD D16 DC APP BRISTOL VA/KINGSPORT, TN  
Facility ID: 77677  
Station data: User record  
Record ID: 143  
Country: U.S.

Build options:  
Protect LPTV records from Class A

Stations affected by proposal:

Call	Chan	Svc	Status	City, State	File Number	Distance
WTNZ	D15	DT	CP	KNOXVILLE, TN	BLANK00000025183	168.7 km
WTNZ	D15	DT	APP	KNOXVILLE, TN	BLANK00000034160	168.7
WTNZ	D15	DT	BL	KNOXVILLE, TN	DTVBL19200	168.7
W43BO	D15	LD	CP	MARION, ETC., VA	BDISDTL20090910AAZ	74.5
WPXA-TV	D16	DT	CP	ROME, GA	BLANK00000027423	327.4
WPXA-TV	D16	DT	BL	ROME, GA	DTVBL51969	327.4
WXII-TV	D16	DT	CP	WINSTON-SALEM, NC	BLANK00000024623	157.9
WXII-TV	D16	DT	BL	WINSTON-SALEM, NC	DTVBL53921	157.9
WHNS	D17	DT	CP	GREENVILLE, SC	BLANK00000024830	147.3
WHNS	D17	DT	BL	GREENVILLE, SC	DTVBL72300	147.3
WVVA	D17	DT	CP	BLUEFIELD, WV	BLANK00000027470	125.0
WVVA	D17	DT	BL	BLUEFIELD, WV	DTVBL74176	125.0

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: 36 25 53.00 N (NAD83)  
Longitude: 82 8 15.00 W  
Height AMSL: 1324.9 m  
HAAT: 0.0 m  
Peak ERP: 15.0 kW  
Antenna: Omnidirectional  
Elev Pattn: Generic  
Elec Tilt: 0.50

48.9 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	15.0 kW	811.2 m	75.5 km
45.0	15.0	637.4	71.6
90.0	15.0	473.9	66.5
135.0	15.0	613.1	71.0
180.0	15.0	693.8	73.0
225.0	15.0	706.5	73.3
270.0	15.0	811.2	75.5
315.0	15.0	843.1	76.2

Database HAAT does not agree with computed HAAT  
Database HAAT: 0 m    Computed HAAT: 699 m

\*\*Proposal service area extends beyond baseline plus 1.0%  
Proposal service area population is more than 95.0% of baseline

Distance to Canadian border: 583.4 km

Distance to Mexican border: 1820.0 km

Conditions at FCC monitoring station: Powder Springs GA  
Bearing: 220.2 degrees    Distance: 369.8 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:  
Bearing: 288.6 degrees Distance: 2049.7 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%

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Interference to BLANK0000025183 CP, scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	WTNZ	D15	DT	CP	KNOXVILLE, TN	BLANK0000025183	
Undesireds:	WAPK-CD	D16	DC	BL	BRISTOL VA/KINGSPORT, TN	DTVBL77677	168.7 km
	WAPK-CD	D16	DC	APP	BRISTOL VA/KINGSPORT, TN		168.7
	WDSI-TV	D14	DT	CP	CHATTANOOGA, TN	BLANK0000027938	149.5
	WLFG	D14	DT	CP	GRUNDY, VA	BLANK0000026306	190.3
	WAFF	D15	DT	CP	HUNTSVILLE, AL	BLANK0000025101	275.4
	WLCU-CD	D15	DC	CP	CAMPBELLSVILLE, KY	BLANK0000028622	195.3
	WXIX-TV	D15	DT	CP	NEWPORT, KY	BLANK0000025169	350.7
	WPBM-CD	D15	DC	CP	SCOTTSVILLE, KY	BLANK0000026401	212.5
	W21CK-D	D15	DC	CP	CHARLOTTE, NC	BLANK0000027832	291.2
	WQCW	D15	DT	CP	PORTSMOUTH, OH	BLANK0000025192	317.6
	WLTX	D15	DT	CP	COLUMBIA, SC	BLANK0000028035	358.5
	WPXA-TV	D16	DT	CP	ROME, GA	BLANK0000027423	198.5

Service area	Terrain-limited	IX-free, before	IX-free, after	Percent New IX
37837.0 1,718,604	31022.3 1,532,469	30122.2 1,504,613	30192.8 1,508,183	-0.23 -0.24

Undesired	Total IX	Unique IX, before	Unique IX, after
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WAPK-CD D16 DC BL	109.9	7,809	92.8	5,895		
WAPK-CD D16 DC APP	26.2	2,500			22.2	2,325
WDSI-TV D14 DT CP	64.7	1,093	56.7	1,013	56.7	1,013
WLFG D14 DT CP	63.4	4,286	49.3	2,533	60.4	4,159
WAFF D15 DT CP	104.6	4,468	53.3	2,329	53.3	2,329
WLCU-CD D15 DC CP	156.7	3,634	78.4	1,491	78.4	1,491
WXIX-TV D15 DT CP	60.1	1,143	14.0	31	14.0	31
WPBM-CD D15 DC CP	101.8	3,631	45.4	1,089	45.4	1,089
WQCW D15 DT CP	371.9	9,098	301.7	7,125	303.8	7,238
WLTX D15 DT CP	45.8	0	41.8	0	41.8	0
WPXA-TV D16 DT CP	6.0	0	6.0	0	6.0	0

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Interference to BLANK0000034160 APP, scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WTNZ	D15	DT	APP	KNOXVILLE, TN	BLANK0000034160	
Undesireds:	WAPK-CD	D16	DC	BL	BRISTOL VA/KINGSPORT, TN	DTVBL77677	168.7 km
	WAPK-CD	D16	DC	APP	BRISTOL VA/KINGSPORT, TN		168.7
	WDSI-TV	D14	DT	CP	CHATTANOOGA, TN	BLANK0000027938	149.5
	WLFG	D14	DT	CP	GRUNDY, VA	BLANK0000026306	190.3
	WAFF	D15	DT	CP	HUNTSVILLE, AL	BLANK0000025101	275.4
	WLCU-CD	D15	DC	CP	CAMPBELLSVILLE, KY	BLANK0000028622	195.3
	WXIX-TV	D15	DT	CP	NEWPORT, KY	BLANK0000025169	350.7
	WPBM-CD	D15	DC	CP	SCOTTSVILLE, KY	BLANK0000026401	212.5
	W21CK-D	D15	DC	CP	CHARLOTTE, NC	BLANK0000027832	291.2
	WQCW	D15	DT	CP	PORTSMOUTH, OH	BLANK0000025192	317.6
	WLTX	D15	DT	CP	COLUMBIA, SC	BLANK0000028035	358.5
	WPXA-TV	D16	DT	CP	ROME, GA	BLANK0000027423	198.5
	Service area	Terrain-limited		IX-free, before		IX-free, after	Percent New IX
	38830.1 1,750,704	31899.2	1,553,444	30956.1	1,524,999	31024.6 1,529,176	-0.22 -0.27

Undesired	Total IX	Unique IX, before	Unique IX, after
WAPK-CD D16 DC BL 110.9 7,580	89.8	5,465	
WAPK-CD D16 DC APP 26.2 1,449		21.2 1,288	
WDSI-TV D14 DT CP 65.7 1,262	57.7	1,258	57.7 1,258

WLFG D14 DT CP	74.5	4,811	54.4	2,711	69.5	4,618
WAFF D15 DT CP	122.7	3,297	72.4	2,348	72.4	2,348
WLCU-CD D15 DC CP	155.7	3,455	80.4	1,970	80.4	1,970
WXIX-TV D15 DT CP	65.1	1,523	19.0	215	19.0	215
WPBM-CD D15 DC CP	99.8	3,090	52.4	1,677	52.4	1,677
WQCW D15 DT CP	378.9	9,262	308.7	7,453	310.7	7,566
WLTX D15 DT CP	46.8	0	41.8	0	41.8	0
WPXA-TV D16 DT CP	6.0	0	6.0	0	6.0	0

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Interference to BDISDTL20090910AAZ CP, scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	W43BO	D15	LD	CP	MARION, ETC., VA	BDISDTL20090910AAZ	
Undesireds:	WAPK-CD	D16	DC	BL	BRISTOL VA/KINGSPORT, TN	DTVBL77677	74.5 km
	WAPK-CD	D16	DC	APP	BRISTOL VA/KINGSPORT, TN		74.5
	WLFG	D14	DT	CP	GRUNDY, VA	BLANK0000026306	48.4
	WXIX-TV	D15	DT	CP	NEWPORT, KY	BLANK0000025169	360.7
	W15CW-D	D15	LD	LIC	FRANKLIN, NC	BLDTT20111227ABE	265.5
	WRAZ	D15	DT	CP	RALEIGH, NC	BLANK0000025194	302.6
	W50DV-D	D15	LD	APP	SPARTA, NC	BLANK0000029790	56.5
	WHWD-LD	D15	LD	APP	STATESVILLE, NC	BLANK0000029372	139.6
	WQCW	D15	DT	CP	PORTSMOUTH, OH	BLANK0000025192	188.4
	WTNZ	D15	DT	CP	KNOXVILLE, TN	BLANK0000025183	236.7
	WUDW-LD	D15	LD	LIC	CROZET, VA	BLANK0000013385	304.5
	WXII-TV	D16	DT	CP	WINSTON-SALEM, NC	BLANK0000024623	119.6

Service area		Terrain-limited		IX-free, before		IX-free, after		Percent New IX	
12453.0	314,822	7982.5	191,235	7366.3	177,498	7365.3	177,254	0.01	0.14

Undesired	Total IX	Unique IX, before	Unique IX, after
WAPK-CD D16 DC BL	0.0	0	0
WAPK-CD D16 DC APP	14.1	1,427	1.0 244
WLFG D14 DT CP	302.6	10,304	207.4 7,690 201.4 7,324
WRAZ D15 DT CP	23.0	477	5.0 16 5.0 16
W50DV-D D15 LD APP	108.5	1,799	50.2 804 50.2 804
WHWD-LD D15 LD APP	18.1	265	2.0 50 2.0 50



WQCW D15 DT CP	270.4	3,411	141.1	934	141.1	934
WTNZ D15 DT CP	82.1	1,966	27.0	291	27.0	291
WXII-TV D16 DT CP	23.1	538	8.0	0	8.0	0

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Interference to BLANK0000027423 CP, scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WPXA-TV	D16	DT	CP	ROME, GA	BLANK0000027423	
Undesireds:	WAPK-CD	D16	DC	BL	BRISTOL VA/KINGSPORT, TN	DTVBL77677	327.5 km
	WAPK-CD	D16	DC	APP	BRISTOL VA/KINGSPORT, TN		327.4
	WAFF	D15	DT	CP	HUNTSVILLE, AL	BLANK0000025101	178.4
	WTNZ	D15	DT	CP	KNOXVILLE, TN	BLANK0000025183	198.5
	W47EI-D	D16	DC	CP	BIRMINGHAM, AL	BLANK0000027943	219.6
	WAGT-CD	D16	DC	LIC	AUGUSTA, GA	BLANK0000001455	258.6
	WDMA-CD	D16	DC	CP	MACON, GA	BLANK0000024851	187.0
	WSAV-TV	D16	DT	CP	SAVANNAH, GA	BLANK0000027673	399.8
	WLOV-TV	D16	DT	LIC	WEST POINT, MS	BLCDT20070405ABC	412.8
	WHTN	D16	DT	APP	MURFREESBORO, TN	BLANK0000034213	254.7
	WAAY-TV	D17	DT	CP	HUNTSVILLE, AL	BLANK0000027632	178.9
	WHNS	D17	DT	CP	GREENVILLE, SC	BLANK0000024830	203.9

Service area	Terrain-limited	IX-free, before	IX-free, after	Percent New IX
41070.0 6,577,038	37847.0 6,450,614	36549.7 6,378,170	36548.7 6,378,170	0.00 0.00

Undesired	Total IX	Unique IX, before	Unique IX, after
WAPK-CD D16 DC BL 0.0	0	0.0	0
WAPK-CD D16 DC APP 3.0	0	1.0	0
WAFF D15 DT CP 73.2	2,093	1.0	0
WTNZ D15 DT CP 15.9	38	7.0	0
W47EI-D D16 DC CP 47.6	830	34.7	543
WAGT-CD D16 DC LIC 1.0	0	0.0	0
WDMA-CD D16 DC CP 321.7	36,580	304.9	36,355
WSAV-TV D16 DT CP 22.8	404	7.9	179
WLOV-TV D16 DT LIC 2.0	0	0.0	0
WHTN D16 DT APP 836.6	31,899	476.2	19,284
WAAY-TV D17 DT CP 422.9	15,569	83.4	3,086

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Interference to BLANK0000024623 CP, scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	WXII-TV	D16	DT	CP	WINSTON-SALEM, NC	BLANK0000024623	
Undesireds:	WAPK-CD	D16	DC	BL	BRISTOL VA/KINGSPORT, TN	DTVBL77677	157.9 km
	WAPK-CD	D16	DC	APP	BRISTOL VA/KINGSPORT, TN		157.9
	W21CK-D	D15	DC	CP	CHARLOTTE, NC	BLANK0000027832	138.4
	WRAZ	D15	DT	CP	RALEIGH, NC	BLANK0000025194	183.3
	WPXU-TV	D16	DT	CP	JACKSONVILLE, NC	BLANK0000026976	335.7
	WJPM-TV	D16	DT	CP	FLORENCE, SC	BLANK0000025028	239.8
	WTKR	D16	DT	CP	NORFOLK, VA	BLANK0000027489	348.7
	WRAL-TV	D17	DT	CP	RALEIGH, NC	BLANK0000025193	183.3
	WVVA	D17	DT	CP	BLUEFIELD, WV	BLANK0000027470	121.4

Service area	Terrain-limited	IX-free, before	IX-free, after	Percent New IX
44687.0 3,483,532	41294.3 3,166,012	40533.9 3,138,107	40279.4 3,124,779	0.63 0.42

Undesired	Total IX	Unique IX, before	Unique IX, after
WAPK-CD D16 DC BL 21.1	58	20.1	58
WAPK-CD D16 DC APP 315.6	15,176	274.5	13,386
WRAZ D15 DT CP 153.7	4,269	0.0	0
WPXU-TV D16 DT CP 64.7	1,806	8.9	480
WJPM-TV D16 DT CP 266.2	17,963	221.4	16,818
WTKR D16 DT CP 104.1	1,791	91.0	1,539
WRAL-TV D17 DT CP 230.4	6,903	76.7	2,634
WVVA D17 DT CP 155.8	1,210	154.8	1,210

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Interference to BLANK0000024830 CP, scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	WHNS	D17	DT	CP	GREENVILLE, SC	BLANK0000024830	
Undesireds:	WAPK-CD	D16	DC	BL	BRISTOL VA/KINGSPORT, TN	DTVBL77677	147.3 km
	WAPK-CD	D16	DC	APP	BRISTOL VA/KINGSPORT, TN		147.3

WPXA-TV	D16	DT	CP	ROME, GA	BLANK0000027423	203.9
WAAY-TV	D17	DT	CP	HUNTSVILLE, AL	BLANK0000027632	354.3
WLGA	D17	DT	CP	OPELIKA, AL	BLANK0000028626	373.0
WKSO-TV	D17	DT	CP	SOMERSET, KY	BLANK0000025331	292.7
WRAL-TV	D17	DT	CP	RALEIGH, NC	BLANK0000025193	380.2
WTAT-TV	D17	DT	CP	CHARLESTON, SC	BLANK0000027762	371.1
WVVA	D17	DT	CP	BLUEFIELD, WV	BLANK0000027470	266.9
WUVG-DT	D18	DT	APP	ATHENS, GA	BLANK0000029625	215.4
WCCB	D18	DT	CP	CHARLOTTE, NC	BLANK0000027051	177.1
WPXK-TV	D18	DT	CP	JELICO, TN	BLANK0000026977	146.0

Service area		Terrain-limited		IX-free, before		IX-free, after		Percent	New IX
42370.3	2,550,583	35190.7	2,270,017	34814.6	2,257,657	34810.5	2,257,657	0.01	0.00

Undesired	Total IX	Unique IX, before	Unique IX, after
WAPK-CD D16 DC BL	11.1 1,833	2.0 1,605	
WAPK-CD D16 DC APP	23.2 2,229		6.1 1,605
WPXA-TV D16 DT CP	4.0 767	3.0 729	3.0 729
WAAY-TV D17 DT CP	18.9 0	16.9 0	16.9 0
WLGA D17 DT CP	36.1 2,054	35.1 2,016	35.1 2,016
WKSO-TV D17 DT CP	52.0 218	23.9 0	23.9 0
WRAL-TV D17 DT CP	47.8 1,292	26.9 289	26.9 289
WTAT-TV D17 DT CP	1.0 31	0.0 0	0.0 0
WVVA D17 DT CP	223.4 6,781	176.4 5,041	172.4 4,677
WCCB D18 DT CP	29.8 1,483	18.9 827	18.9 827
WPXK-TV D18 DT CP	25.9 186	12.9 0	12.9 0

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Interference to BLANK0000027470 CP, scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	WVVA	D17	DT	CP	BLUEFIELD, WV	BLANK0000027470	
Undesireds:	WAPK-CD	D16	DC	BL	BRISTOL VA/KINGSPORT, TN	DTVBL77677	125.0 km
	WAPK-CD	D16	DC	APP	BRISTOL VA/KINGSPORT, TN		125.0
	WXII-TV	D16	DT	CP	WINSTON-SALEM, NC	BLANK0000024623	121.4
	WKSO-TV	D17	DT	CP	SOMERSET, KY	BLANK0000025331	322.7
	WRAL-TV	D17	DT	CP	RALEIGH, NC	BLANK0000025193	295.2

WCET	D17	DT	CP	CINCINNATI, OH	BLANK0000026835	358.1
WHNS	D17	DT	CP	GREENVILLE, SC	BLANK0000024830	266.9
WLPX-TV	D18	DT	CP	CHARLESTON, WV	BLANK0000026970	144.7

Service area	Terrain-limited	IX-free, before	IX-free, after	Percent New IX
32666.1 1,037,940	26845.1 727,302	26216.8 719,102	26167.7 716,212	0.19 0.40

Undesired	Total IX	Unique IX, before	Unique IX, after
WAPK-CD D16 DC BL 2.0	0	0.0	0
WAPK-CD D16 DC APP 57.1	2,912		49.1 2,890
WXII-TV D16 DT CP 122.5	1,848	58.2 746	58.2 746
WKSO-TV D17 DT CP 16.1	0	9.0 0	7.0 0
WRAL-TV D17 DT CP 301.9	5,904	226.7 4,314	226.7 4,314
WCET D17 DT CP 24.2	648	13.1 648	13.1 648
WHNS D17 DT CP 87.3	1,090	48.2 320	46.2 298
WLPX-TV D18 DT CP 182.7	500	174.6 500	174.6 500

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Interference to proposal, scenario 1  
0.92% interference

Call	Chan	Svc	Status	City, State	File Number	Distance
Desired: WAPK-CD	D16	DC	APP	BRISTOL VA/KINGSPORT, TN		
Undesireds: WTNZ	D15	DT	CP	KNOXVILLE, TN	BLANK0000025183	168.7 km
WPXA-TV	D16	DT	CP	ROME, GA	BLANK0000027423	327.4
WXII-TV	D16	DT	CP	WINSTON-SALEM, NC	BLANK0000024623	157.9
WJPM-TV	D16	DT	CP	FLORENCE, SC	BLANK0000025028	322.9
WHNS	D17	DT	CP	GREENVILLE, SC	BLANK0000024830	147.3
WVVA	D17	DT	CP	BLUEFIELD, WV	BLANK0000027470	125.0

Service area	Terrain-limited	IX-free	Percent IX
16695.6 784,193	12503.0 653,083	12352.9 647,080	1.20 0.92

Undesired	Total IX	Unique IX	Prcnt Unique IX
WXII-TV D16 DT CP 147.1	6,003	146.1 5,995	1.17 0.92
WHNS D17 DT CP 3.0	8	2.0 0	0.02 0.00
WVVA D17 DT CP 1.0	0	1.0 0	0.01 0.00