



**Kessler and Gehman Associates**  
Consultants • Broadcast • Wireless

**DIGITAL TELEVISION  
TRANSLATOR POST  
TRANSITION CHANNEL  
DISPLACEMENT  
RELIEF APPLICATION  
FOR W30CO-D  
FACILITY ID 167354**

Wheeling, WV

***Prepared For:***

West Virginia Educational  
Broadcasting Authority  
600 Capitol Street  
Charleston, WV 25301

***Prepared By:***

Ryan Wilhour  
Consulting Engineer  
Kessler and Gehman Associates  
507 NW 60<sup>th</sup> Street, Suite D  
Gainesville, FL 32607-2055  
352-332-3157 Extension 3  
[ryan@kesslerandgehman.com](mailto:ryan@kesslerandgehman.com)  
[www.kesslerandgehman.com](http://www.kesslerandgehman.com)

***Prepared On:***

May 25, 2018

**TABLE OF CONTENTS**

1.0 MINOR MODIFICATION CHANNEL DISPLACEMENT RELIEF ELIGIBILITY ..... 2

2.0 STATION TRANSMITTER LOCATION AND ELEVATION..... 3

3.0 ALLOCATION ANALYSIS ..... 3

4.0 AM STATION PROXIMITY ..... 3

5.0 INTERNATIONAL COORDINATION ..... 3

6.0 RADIO FREQUENCY RADIATION COMPLIANCE..... 4

7.0 CERTIFICATION..... 5

APPENDIX A – TVStudy v2.2.5 Channel Displacement Study ..... 6

APPENDIX B – Tower Elevation Diagram..... 9

APPENDIX C – TVStudy V2.2.5 Allocation Analysis..... 10

APPENDIX D – 51dB $\mu$  F(50,90) Licensed and Proposed Contour ..... 12

APPENDIX E – Far Field Exposure to RF Emissions ..... 13

## **1.0 MINOR MODIFICATION CHANNEL DISPLACEMENT RELIEF ELIGIBILITY**

West Virginia Educational Broadcasting Authority (“WVEBA”) is the licensee of a digital Low Power Television Station (“LPTV”) having call sign W30CO-D, Facility ID 167354 which is licensed<sup>1</sup> to operate on channel 30 with an ERP of 4.5KW through a directional antenna using a stringent Emission Mask.

Translator or LPTV stations which receive more than 2% new interference in aggregate or causes more than 0.5% new interference to the interference-free population of a full power or Class A station, more than 2% new interference to the interference-free population of another translator, are eligible for channel displacement relief<sup>2</sup>. Appendix A is a study generated by TVStudy v2.2.5 which demonstrates that the licensed W30CO-D facility causes 0.52% prohibited interference to post transition station WHIZ-TV having FCC File No.: 0000024560. W30CO-D is thus clearly eligible to file for channel displacement relief in the April 10, 2018 through June 1, 2018 post-incentive auction special displacement window and is the purpose of the instant application.

Pursuant to 47 CFR Section 74.787(b) the instant application is considered a “minor” change because:

- The change in frequency is related to displacement relief as outlined above.
- There is no change in transmitting antenna location such that the protected contour resulting from the change does not overlap some portion of the protected contour of the authorized facilities of the existing station as illustrated in Appendix D.

---

<sup>1</sup> FCC File No.: BLDTT-20100112AAM

<sup>2</sup> See *Incentive Auction Task Force and Media Bureau Announce Post-incentive Auction Special Displacement Window April 10, 2018, Through May 15, 2018, and Make Location and Channel Data Available*, Public Notice, DA/FCC: DA-18-124 Released On: Feb 9, 2018, Section II, Paragraph 9 using a 2x2 km cell.

- There is no change in transmitting antenna location greater than 30 miles (48km) from the reference coordinates of the existing station's antenna location.

## **2.0 STATION TRANSMITTER LOCATION AND ELEVATION**

It is proposed to keep W30CO-D at its licensed location on an existing tower which has an FCC Antenna Structure Registration (“ASR”) number of 1035146. The instant application does not propose to increase or modify the existing support structure nor modify the existing ASR number.

## **3.0 ALLOCATION ANALYSIS**

Appendix C are the summarized results from TVStudy V2.2.5 **It is hereby requested that the Commission use a study cell size of 0.5 km and a profile point spacing of 0.5 km for interference compliance evaluation.** Using the alternate granularity, the proposed W30CO-D facility on its new channel is not predicted to cause prohibited interference to pre or post transition facilities; however, 7.70% cumulative inbound interference is predicted to occur. WVEBA shall accept the cumulative inbound interference.

## **4.0 AM STATION PROXIMITY**

No AM stations are located within 3.2 km of the proposed facility. Pursuant to 47 C.F.R. Section 1.30002(e), the construction or extension of an antenna-supporting structure shall be considered subject to the moment method analysis and prior notification requirement; however, the instant application does not propose to extend the existing structure or build a new structure. Thus, the proposed facility is exempt from further AM analysis consideration.

## **5.0 INTERNATIONAL COORDINATION**

The W30CO-D transmitter site is 2166.2 km and 226.6km from the Mexican and Canadian border respectively and will not require international coordination.

## **6.0 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>3</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 E demonstrates that the peak exposure is 1.68% 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

---

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

are considered significant contributors to RFR. Since the proposed operation is 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 near 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 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.

## **7.0 CERTIFICATION**

The foregoing statement and the report regarding the engineering work are true and correct to the best of my knowledge. Executed May 25, 2018.

Kessler and Gehman Associates, Inc.



Ryan Wilhour  
Consulting Engineer

# W30CO-D – Post Transition Channel Displacement Relief

Wheeling, WV

## APPENDIX A – TVStudy v2.2.5 Channel Displacement Study

Study created: 2018.05.25 11:09:27

Study build station data: LMS TV 2018-05-25

Proposal: W30CO-D D30 LD LIC WHEELING, WV  
File number: BLDTT20100112AAM  
Facility ID: 167354  
Station data: LMS TV 2018-05-25  
Record ID: cce358a35e45496c891ecf6212b6c0ea  
Country: U.S.

Build options:  
Protect pre-transition records not on baseline channel

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
No	WOOH-LP	N16-	TX	LIC	ZANESVILLE, OH	BLTT20021211AAM	103.9 km
No	W22CY	N22-	TX	LIC	CLARKSBURG, WV	BLTTL20060120ADM	95.7
No	WWPB	D29	DT	CP	HAGERSTOWN, MD	BLANK0000034108	241.7
Yes	WNEO	D29	DT	CP	ALLIANCE, OH	BLANK0000034304	94.9
No	WIVN-LD	D29	LD	CP	NEWCOMERSTOWN, OH	BPDTL20141020AAD	71.6
No	WIVN-LD	D29	LD	LIC	NEWCOMERSTOWN, OH	BLDTL20101222AAZ	71.6
No	W29EG-D	D29	LD	LIC	ZANESVILLE, OH	BLANK0000048395	149.9
Yes	WWAT-CD	D29	DC	CP	CHARLEROI, PA	BLANK0000034569	67.7
No	WJAC-TV	D29	LD	LIC	JOHNSTOWN, PA	BLCDT20130416AAU	176.5
No	WIIC-LD	N29+	TX	LIC	PITTSBURGH, PA	BLTTL19981230JB	79.4
No	W29CO	N29z	TX	LIC	SHARON, PA	BLTTL20031216ACI	133.6
No	W29CO	D29	LD	CP	SHARON, PA	BDFCDTL20100405ABT	133.6
No	WCHS-TV	D29	DT	CP	CHARLESTON, WV	BLANK0000034592	208.8
No	WIAV-CD	D30	DC	CP	WASHINGTON, DC	BLANK0000029340	338.6
No	WKPC-TV	D30	DT	CP	LOUISVILLE, KY	BLANK0000034634	476.2
No	WKMR	D30	DT	CP	MOREHEAD, KY	BLANK0000029752	310.1
No	WNEM-TV	D30	DT	CP	BAY CITY, MI	BLANK0000024833	457.4
No	WEYI-TV	D30	DT	LIC	SAGINAW, MI	BLCDT20040123ASH	428.7
No	WYDC	D30	DT	CP	CORNING, NY	BLANK0000034651	384.9
No	WSKA	D30	DT	LIC	CORNING, NY	BLEDT20060705ABL	384.9
No	W30BW	N30+	TX	LIC	OLEAN, NY	BLTT20020307ABR	295.1
No	W30BW	D30	LD	CP	OLEAN, NY	BLANK0000022310	336.0
Yes	WBNX-TV	D30	DT	LIC	AKRON, OH	BLCDT20070430AXX	167.1
No	WRGT-TV	D30	DT	LIC	DAYTON, OH	BLANK0000001064	301.0
Yes	WHIZ-TV	D30	DT	CP	ZANESVILLE, OH	BLANK0000024560	106.0
No	NEW	D30	LD	APP	ERIE, PA	BNPDTL20100714AAI	235.1
Yes	WPCW	D30	LD	APP	JEANNETTE, PA	BLANK0000053374	138.6
No	KYW-TV	D30	DT	CP	PHILADELPHIA, PA	BLANK0000033618	468.7
No	WBPA-LP	N30+	TX	LIC	PITTSBURGH, PA	BLANK0000007299	71.9
Yes	WPTG-CD	D30	DC	CP	PITTSBURGH, PA	BLANK0000029758	79.4
Yes	W29CO	D30z	LD	APP	SHARON, PA	BLANK0000054172	133.6
No	W30CT-D	D30	LD	LIC	HARRISONBURG, VA	BLDTT20110512AAN	252.0
No	WDBJ	D30	DT	CP	ROANOKE, VA	BLANK0000029919	322.8
No	WLSL-TV	D30	DT	LIC	ROANOKE, VA	BLCDT20110615ABO	322.2
No	WDCO-CD	D30	DC	CP	WOODSTOCK, VA	BLANK0000027758	293.5
Yes	W30CH	D30	LD	CP	CLARKSBURG, WV	BDFCDTL20120329AOK	91.5
No	W30CH	N30-	TX	LIC	CLARKSBURG, WV	BLTTL20070319AAK	91.5
No	W30DG-D	D30	LD	LIC	HUNTINGTON, WV	BLDTL20120629AAX	231.2
No	W30DU-D	D30	LD	CP	SUTTON, WV	BNPDTL20100514AAO	160.4
Yes	WYTV	D31	DT	CP	YOUNGSTOWN, OH	BLANK0000028136	111.6
Yes	WYTV	D31	DT	APP	YOUNGSTOWN, OH	BLANK0000034845	111.0
No	WATM-TV	D31	DT	CP	ALTOONA, PA	BLANK0000028661	203.6
No	WWBP-LP	N31+	TX	LIC	FREEDOM, PA	BLTTL20040909ABD	82.0
No	WWBP-LP	D31	LD	APP	FREEDOM, PA	BDFCDTL20121022ACD	83.5
No	WIIC-LD	D31+	LD	LIC	PITTSBURGH, PA	BLANK0000001503	79.4
Yes	KDKA-TV	D31	LD	APP	PITTSBURGH, PA	BDRTCDT20090630ADY	93.7

## W30CO-D – Post Transition Channel Displacement Relief

### Wheeling, WV

No	W31CQ	N31+	TX	LIC	ELKINS, WV	BLTTL20070711ACO	150.8
No	WOAY-TV	D31	DT	CP	OAK HILL, WV	BLANK0000028013	236.4
No	CFTV-DT(1)	D30	DC	LIC	LEAMINGTON, ON	BLANKCANLP389	273.5
No	CITS-DT-2	D30	DT	LIC	LONDON, ON	BLANKCANADA185	325.6
No	CITY-DT	D30	DT	LIC	TORONTO, ON	BLANKCANADA238	413.7

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D30  
Mask: Stringent  
Latitude: 40 3 41.30 N (NAD83)  
Longitude: 80 45 7.30 W  
Height AMSL: 455.6 m  
HAAT: 0.0 m  
Peak ERP: 4.50 kW  
Antenna: SCA-SL-8 (ID 94717) 0.0 deg  
Elev Pattn: Generic  
Elec Tilt: 1.75

50.3 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	2.42 kW	133.4 m	37.1 km
45.0	4.20	135.3	40.0
90.0	4.50	132.3	40.2
135.0	3.54	120.4	38.2
180.0	2.01	213.1	40.9
225.0	2.15	119.0	35.6
270.0	2.31	110.2	35.2
315.0	1.98	110.6	34.4

Database HAAT does not agree with computed HAAT  
Database HAAT: 0 m Computed HAAT: 134 m

Proposal 25.32 dBu contour does not cross Canadian border  
Distance to Canadian border: 226.6 km

Distance to Mexican border: 2166.2 km

Conditions at FCC monitoring station: Laurel MD  
Bearing: 105.2 degrees Distance: 351.0 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:  
Bearing: 278.2 degrees Distance: 2073.9 km

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%

\*\*IX check failure to BLANK0000024560 CP scenario 1, 0.52% interference caused

---- Below is IX received by proposal BLDTT20100112AAM ----

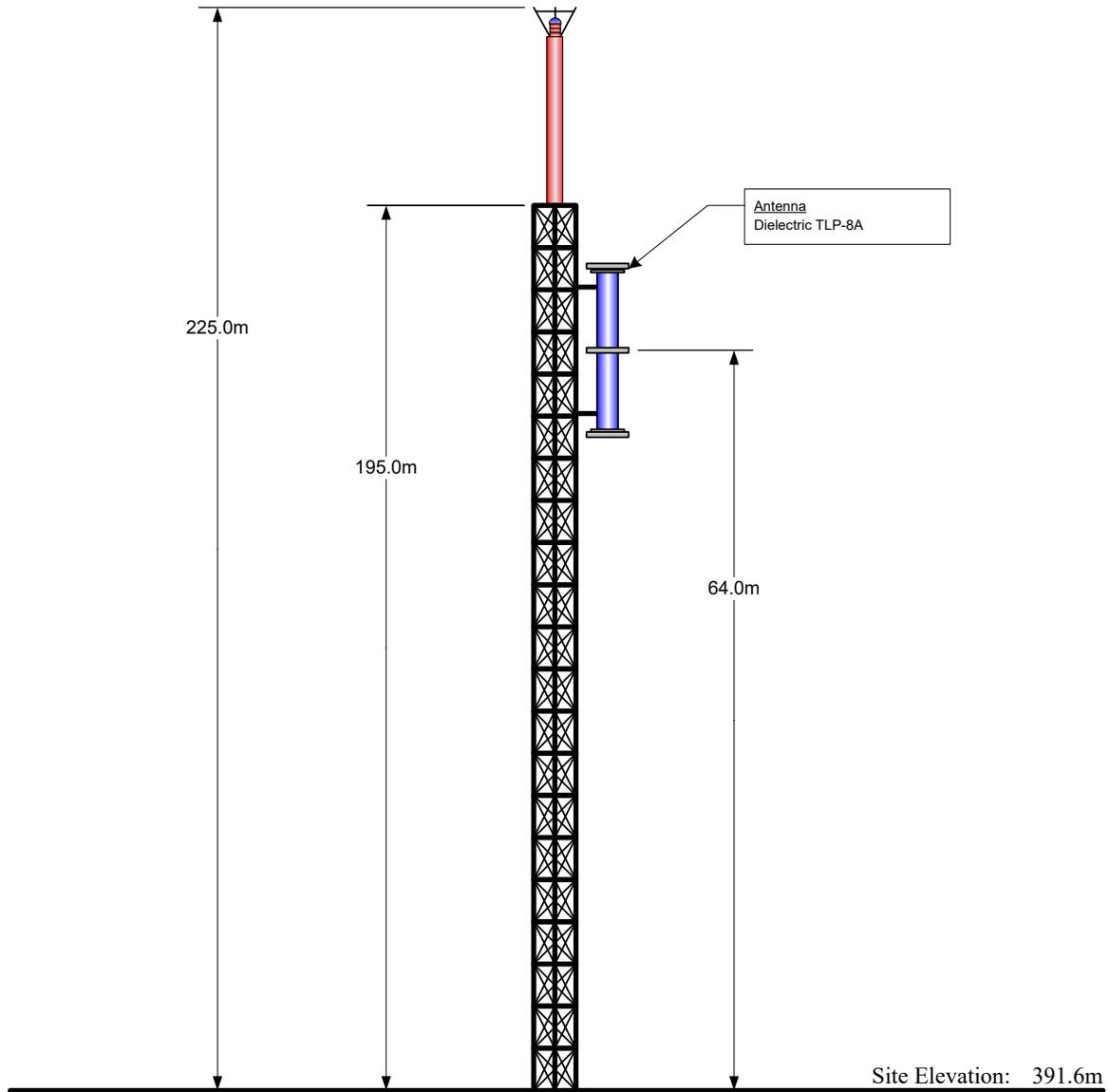
\*\*MX with scenario 1, 10.83% interference received  
\*\*MX with scenario 2, 10.83% interference received  
\*\*MX with scenario 3, 10.83% interference received  
\*\*MX with scenario 4, 10.83% interference received

## W30CO-D – Post Transition Channel Displacement Relief

---

*Wheeling, WV*

**APPENDIX B – Tower Elevation Diagram**



Antenna CRAGL:	64.0 m
Antenna CRAMSL:	455.6 m
Antenna HAAT:	134.3 m

NAD 83 Coordinates:	
N. Latitude:	43° 03' 41.3"
W. Longitude:	80° 45' 07.3"

FCC Tower Registration Number:	1035146
FAA Study Number	1-OE-1765

NOTE: NOT TO SCALE

# W30CO-D – Post Transition Channel Displacement Relief

Wheeling, WV

## APPENDIX C – TVStudy V2.2.5 Allocation Analysis

Study created: 2018.12.21 10:28:32

Study build station data: LMS TV 2018-12-20

Proposal: W30CO-D D17 LD APP WHEELING, WV  
File number: BLANK0000054635  
Facility ID: 167354  
Station data: User record  
Record ID: 3615  
Country: U.S.

Build options:  
Protect pre-transition records not on baseline channel

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
No	W16DO-D	D16	DC	LIC	CLEVELAND, OH	BLANK0000001124	167.1 km
No	WOSU-TV	D16	DT	CP	COLUMBUS, OH	BLANK00000033620	184.9
No	WOOH-LP	N16-	TX	LIC	ZANESVILLE, OH	BLTT20021211AAM	103.9
No	WOOH-LP	D16	LD	APP	ZANESVILLE, OH	BDFCDTT20060330ADJ	103.9
No	WSEE-TV	D16	DT	LIC	ERIE, PA	BLCDT20071219AAS	231.3
Yes	WINP-TV	D16	DT	CP	PITTSBURGH, PA	BLANK00000034405	79.4
No	WUSV-LD	D16	LD	LIC	CLARKSBURG, WV	BLDTL20140616AEQ	95.7
No	W41DK-D	D16	LD	CP	KEYSER, WV	BLANK00000035614	161.7
No	W16CV-D	D16	LD	LIC	PARKERSBURG, WV	BLDTL20140527AHW	95.8
No	WEIJ-LD	D17	LD	APP	FORT WAYNE, IN	BLANK00000054397	392.2
No	WKPC-TV	D17	DT	LIC	LOUISVILLE, KY	BMLEDT20120625ABZ	476.2
No	WUNE-TV	D17	DT	LIC	LINVILLE, NC	BLEDT20091118ADR	454.4
No	WBXZ-LP	D17	LD	LIC	BUFFALO, NY	BLDTL20140501AAD	350.1
No	W16BE-D	D17	LD	CP	HORNELL, ALFRED, NY	BLANK00000052817	358.7
Yes	WBNX-TV	D17	DT	CP	AKRON, OH	BLANK00000028072	167.1
No	WCET	D17	DT	CP	CINCINNATI, OH	BLANK00000026835	339.2
Yes	WKYC	D17	DT	LIC	CLEVELAND, OH	BLCDT20090619ADC	167.1
No	W44DC-D	D17	LD	CP	COLUMBUS, OH	BLANK00000054287	194.0
No	WDEM-CD	D17	DC	LIC	COLUMBUS, OH	BLDTA20090223ACT	194.0
No	WOIW-LD	D17	LD	CP	Lima, OH	BLANK00000051874	300.6
Yes	WQCW	D17	DT	LIC	PORTSMOUTH, OH	BLCDT20100422ABY	213.6
Yes	WJMB-CD	D17	DC	LIC	BUTLER, PA	BLDTA20121108ALX	120.4
No	W17DU-D	D17	LD	CP	DUBOIS, PA	BNPDTL20100609AGF	235.0
No	WPHL-TV	D17	DT	LIC	PHILADELPHIA, PA	BLANK00000040408	469.0
No	WFXR	D17	DT	LIC	ROANOKE, VA	BLCDT20090609ABS	322.6
Yes	WVVA	D17	DT	CP	BLUEFIELD, WV	BLANK00000027470	314.1
No	WCBZ-CD	D18	DC	CP	Columbus, OH	BLANK00000034600	189.7
No	W43CZ-D	D18	LD	CP	MANSFIELD, OH	BLANK00000053016	163.5
No	WOIO	D18	LD	APP	SHAKER HEIGHTS, OH	BLANK00000054106	131.7
Yes	WSSS-LP	D18z	LD	APP	STEUBENVILLE, OH	BLANK00000054719	36.6
No	WLPX-TV	D18	DT	CP	CHARLESTON, WV	BLANK00000034886	197.6
No	WSSS-LP	N25z	TX	LIC	STEUBENVILLE, OH	BLTTL19980506JD	36.6
No	WWBP-LP	N25-	TX	LIC	FREEDOM, PA	BLTTL19990124JD	82.0
No	CIII-DT-41D17	D17	DT	LIC	TORONTO, ON	BLANKCANADA237	413.7
No	CHWI-DT-60D17	D17	DT	LIC	WINDSOR, ON	BLANKCANADA243	315.3

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D17  
Mask: Full Service  
Latitude: 40 3 41.30 N (NAD83)  
Longitude: 80 45 7.30 W

## W30CO-D – Post Transition Channel Displacement Relief

### Wheeling, WV

Height AMSL: 455.6 m  
HAAT: 0.0 m  
Peak ERP: 15.0 kW  
Antenna: Omnidirectional  
Elev Pattn: Generic  
Elec Tilt: 1.00

#### 49.0 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	15.0 kW	133.4 m	47.8 km
45.0	15.0	135.3	48.0
90.0	15.0	132.3	47.8
135.0	15.0	120.4	46.9
180.0	15.0	213.1	52.8
225.0	15.0	119.0	46.8
270.0	15.0	110.2	46.1
315.0	15.0	110.6	46.1

Database HAAT does not agree with computed HAAT  
Database HAAT: 0 m Computed HAAT: 134 m

Proposal 24.04 dBu contour does not cross Canadian border  
Distance to Canadian border: 226.6 km

Distance to Mexican border: 2166.2 km

Conditions at FCC monitoring station: Laurel MD  
Bearing: 105.2 degrees Distance: 351.0 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:  
Bearing: 278.2 degrees Distance: 2073.9 km

No land mobile station failures found

Proposal is not within the Offshore Radio Service protected area

Study cell size: 0.50 km  
Profile point spacing: 0.50 km

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

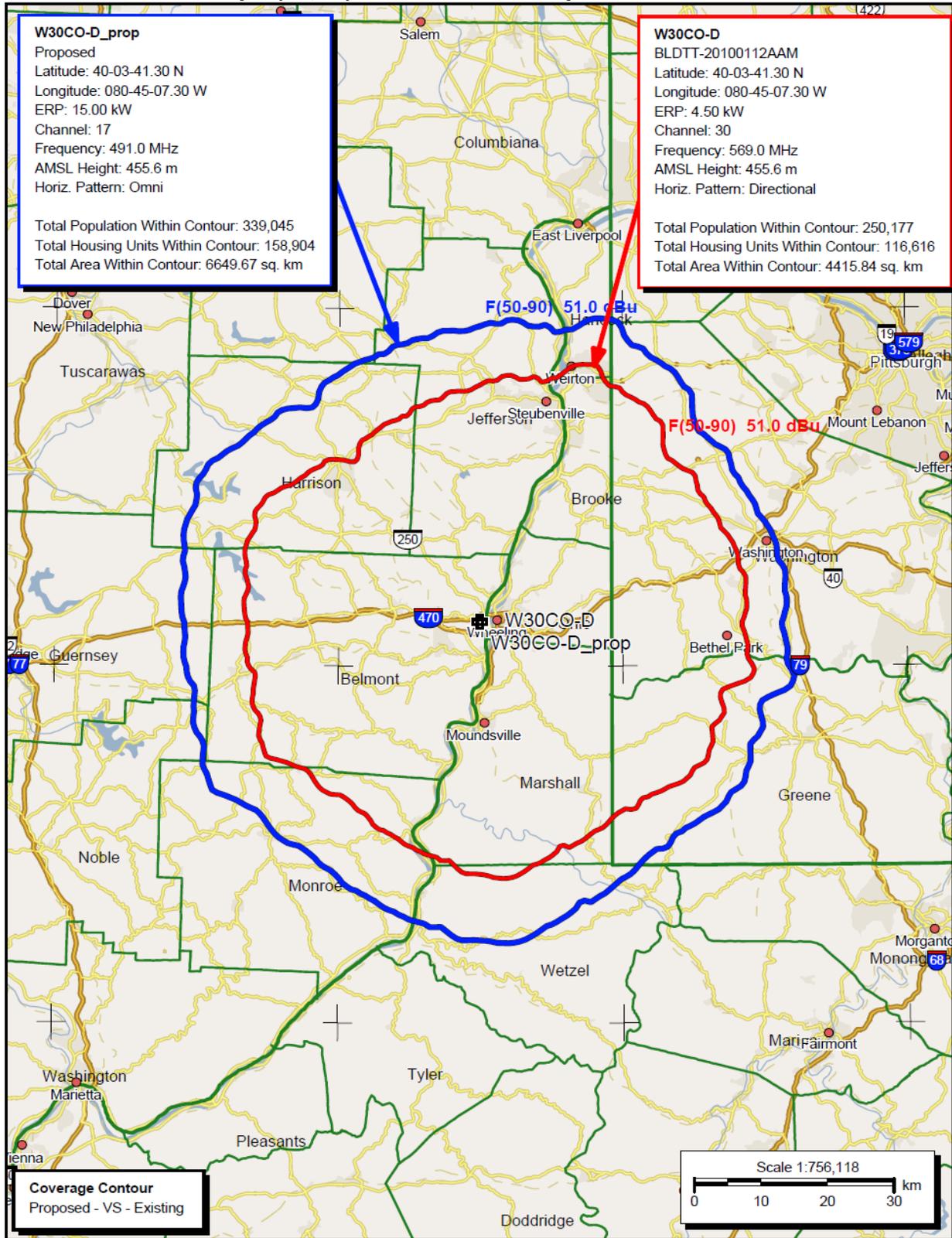
---- Below is IX received by proposal BLANK0000054635 ----

\*\*MX with BLANK0000054719 APP scenario 1, 7.70% interference received

# W30CO-D – Post Transition Channel Displacement Relief

Wheeling, WV

## APPENDIX D – 51dBμ F(50,90) Licensed and Proposed Contour



APPENDIX E – Far Field Exposure to RF Emissions

