

**Proposed Amendment to LMS File
No. 0000208180
Modify FM Translator W236CZ
Channel 236D - 95.1 MHz - 0.088 kW
Columbus, Ohio
Proposed
CH 231D – 94.1 MHz – 0.250 kW DA
Columbus, Ohio**

July 31, 2023

TECHNICAL NARRATIVE

This Technical Narrative and attached exhibits were prepared for North American Broadcasting Co., Inc., ("NABCO"), for the minor modification of FM translator W236CZ, Facility ID Number 142835, Columbus, Ohio. This proposed amendment changes the transmit antenna. No other changes are proposed.

NABCO herein requests non-adjacent channel 231D (94.1 MHz) which is being vacated by WGRN-LP, Channel 231L1, Columbus, Ohio. An exhibit demonstrates that the channel change complies with FCC policies established in 1940 MB Docket No.18-119 for non-adjacent channel changes. The proposed W236CZ application site is an existing tower 313.5 meters in overall height and associated with FCC Antenna Structure Registration ("ASR") 1040501. The application site coordinates are 39° 58' 16" N. ~ 83° 01' 40" W. (NAD 83). W236CZ would operate on Channel 231D (94.1 MHz) with .250 kW directional at 167 meters AGL and 142 meters HAAT. The modified W236CZ will be used as a fill-in translator for WJKR-HD2, Channel 280A, Facility ID No. 60099, Worthington, Ohio.

An exhibit demonstrates compliance with FCC Section 74.1201(g) for use as a Fill-In Translator. The proposed W236CZ FCC F(50,50) 60 dBu contour is contained within the FCC F(50,50) 60 dBu contour of primary station WJKR. Therefore, it is believed this application is in compliance with Section 74.1201(g) of the Commission's rules as a fill-in translator.

A channel study is included as an exhibit using Section 73.207 spacing for Class A FM stations. The study is provided as a convenience to FCC staff. Exhibits demonstrating Section 74.1204 contour protection compliance are provided for third adjacent full power FM station WSNY, Channel 234B, Columbus, Ohio, first adjacent channel full power FM Station WKKJ, Channel 232B1, Chillicothe, Ohio, co-channel full power FM stations WNNF, Channel 231B, Cincinnati, Ohio and WHBC-FM, Channel 231B, Canton, Ohio, co-channel FM translator W231BY, Channel 231D, Bellefontaine, Ohio and second adjacent full power FM station WQIO, Channel 229B, Mount Vernon, Ohio.

No change in the transmit site is being proposed. Therefore, an exhibit demonstrating compliance with Section 74.1233(a) "Common Overlap" is not included.

Studies have been undertaken to show the proposed W236CZ facility is in compliance with the Commission's radio frequency emission limits and are attached as exhibits .

Non-Adjacent Channel Change Request

North American Broadcasting, Inc, ("NABCO") is seeking non-adjacent Channel 231D (94.1 MHz) for FM translator W236CZ, Facility ID Number 142835, Columbus, Ohio. In FCC Report and Order, FCC 19-40, MB Docket No. 18-119 (released May 9, 2019), the Commission adopted changes to Section 74.1233(a)(1) which allows an FM translator to change to any available same-band FM channel as a minor change, upon a showing of actual or predicted interference to or from any other broadcast station. The standard established by this policy recognizes predicted interference when there is overlap between the FCC F(50,50) 60 dBu contour and the FCC F(50,50) 45 dBu contour of co-channel or first-adjacent channel stations.

The map included with this exhibit demonstrates that the 45 dBu contour of co-channel full power FM station WVXG, Channel 236A, Mt. Gilead, Ohio overlaps the FCC F(50,50) 60 dBu contour of the W236CZ licensed facility.

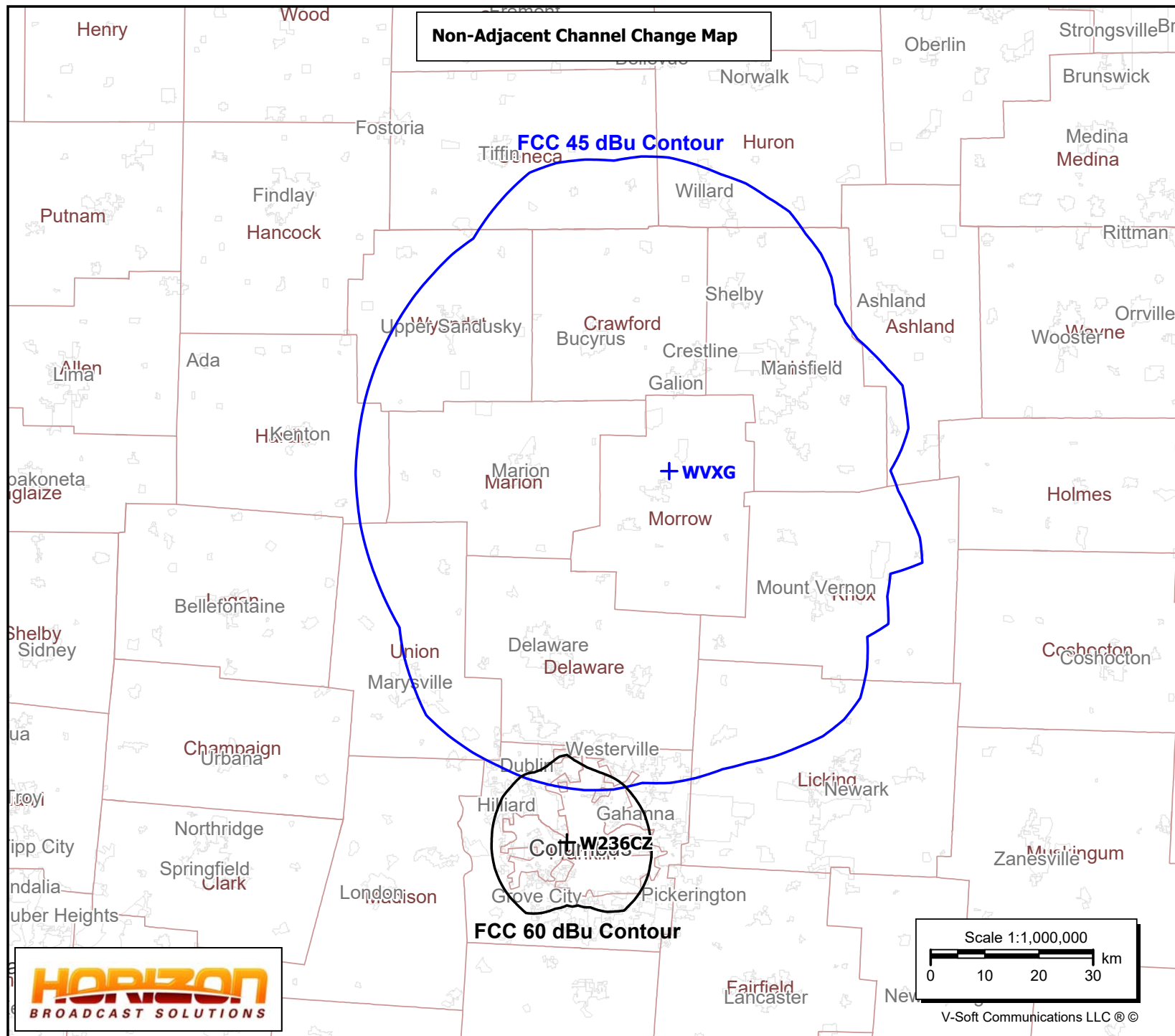
Therefore, it is believed that the proposed W236CZ non-adjacent channel change meets the requirements established in FCC 19-40, MB Docket No. 18-119.

W236CZ Appl.

Columbus, OH
Latitude: 39-58-16.20 N
Longitude: 083-01-39.70 W
ERP: 0.25 kW
HAAT: 141.51
Channel: 236
Frequency: 95.1 MHz
AMSL Height: 387.0 m
Elevation: 220.0 m
Horiz. Pattern: Directional
Vert. Pattern: No
Prop Model: None

WVXG

Mount Gilead, OH
BMLH20031029ACW
Latitude: 40-35-15.20 N
Longitude: 082-48-19.60 W
ERP: 6.00 kW
HAAT: 100.0
Channel: 236
Frequency: 95.1 MHz
AMSL Height: 460.0 m
Elevation: 363.0 m
Horiz. Pattern: Directional
Vert. Pattern: No
Prop Model: None

Non-Adjacent Channel Change Map

W236CZ Appl.

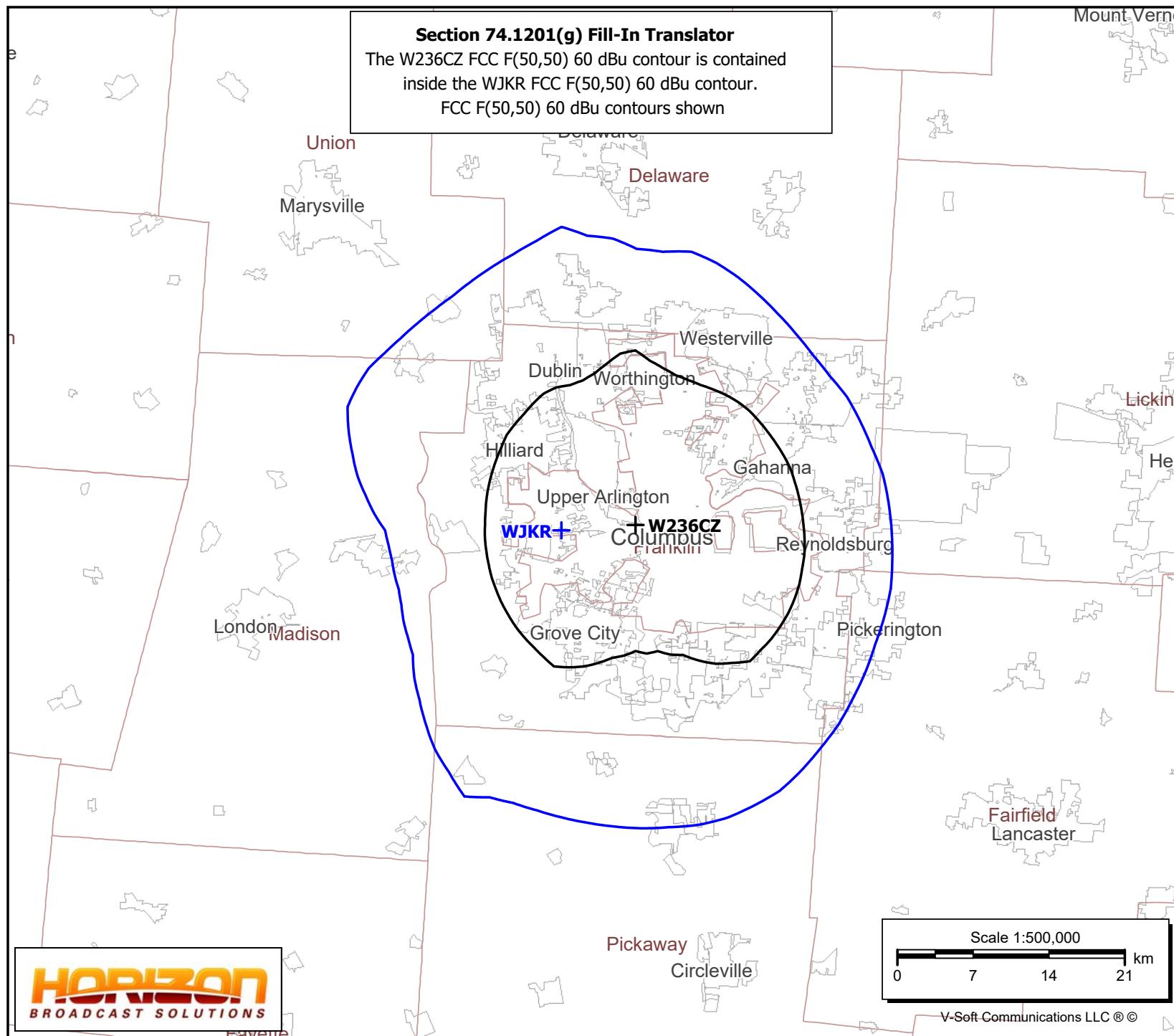
Columbus, OH
Latitude: 39-58-16.20 N
Longitude: 083-01-39.70 W
ERP: 0.25 kW
HAAT: 141.51
Channel: 231
Frequency: 94.1 MHz
AMSL Height: 387.0 m
Elevation: 220.0 m
Horiz. Pattern: Directional
Vert. Pattern: No
Prop Model: None

WJKR

Worthington, OH
BLH20130816ACY
Latitude: 39-58-00.20 N
Longitude: 083-06-27.70 W
ERP: 6.00 kW
HAAT: 99.3
Channel: 280
Frequency: 103.9 MHz
AMSL Height: 349.6 m
Elevation: 260.6 m
Horiz. Pattern: Directional
Vert. Pattern: No
Prop Model: None

Section 74.1201(g) Fill-In Translator

The W236CZ FCC F(50,50) 60 dBu contour is contained inside the WJKR FCC F(50,50) 60 dBu contour.
FCC F(50,50) 60 dBu contours shown



W236CZ CH231 Channel Study

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REFERENCE                                     DISPLAY DATES
39 58 16.0 N.                                CLASS = A   Int = A   DATA 12-26-22
83 01 40.0 W.                                Current Spacings to 3rd Adj. SEARCH 12-29-22
----- Channel 231 - 94.1 MHz -----
Call      Channel  Location      Azi      Dist      FCC      Margin
      Lat.      Lng.      Ant      Power      HAAT
-----
WSNY      LIC      234B      Columbus      OH      56.9      0.0      68.5      -68.5
39 58 16.2 83 01 39.6 CN      22.000 kW      230 M
Franklin Communications, I      BLH19850605KO
Note: See Section 74.1204 Contour Protection Exhibit: WSNY

WGRN-LP   LIC      231L1   Columbus      OH      344.9      2.6      66.5      -63.9
39 59 37.2 83 02 08.6 CN      0.100 kW      15 M
Central Ohio Green Educati      BLL20160128BBF
Note: WGRN-LP has filed an application to move to Channel 220L1

WKKJ      LIC-Z 232B1   Chillicothe      OH      177.9      71.1      95.5      -24.4
39 19 52.2 82 59 48.6 ZCN      19.000 kW      108 M
Ihm Licenses, LLC      BLH20061101ADJ
Note: See Section 74.1204 Contour Protection Exhibit: WKKJ

WNNF      LIC      231B      Cincinnati      OH      233.5      158.3      177.5      -19.2
39 06 59.2 84 30 06.8 CN      16.000 kW      264 M
Cumulus Licensing LLC      BLH20070313AAT
Note: See Section 74.1204 Contour Protection Exhibit: WNNF & WHBC-FM

W231BY    LIC      231D      Bellefontaine      OH      306.8      74.4      84.5      -10.1
40 22 09.2 83 43 46.8 CN      0.010 kW      0 M
Educational Media Foundati      BLFT20141203AAA
Note: See Section 74.1204 Contour Protection Exhibit: W231BY

WHBC-FM   LIC      231B      Canton      OH      54.0      177.9      177.5      0.36
40 53 53.2 81 19 06.3 CN      45.000 kW      157 M
Alpha Media Licensee LLC      BMLH19880406KA
Note: See Section 74.1204 Contour Protection Exhibit: WNNF & WHBC-FM

WQIO      LIC      229B      Mount Vernon      OH      45.8      69.6      68.5      1.1
40 24 18.2 82 26 19.5 CN      37.000 kW      172 M
Bas Broadcasting, Inc.      BLH19870625KB
Note: See Section 74.1204 Contour Protection Exhibit: WQIO

WMRN-FM   LIC      232A      Marion      OH      346.0      72.9      71.5      1.4
40 36 27.2 83 14 13.7 CN      3.000 kW      91 M
Ihm Licenses, LLC      BLH6599

WCVO      LIC-N 285A      Gahanna      OH      52.9      17.9      9.5      8.4
40 04 04.2 82 51 37.6 NCN      6.000 kW      96 M
River Radio Ministries      BLH20110822ABQ

W231AZ    LIC      231D      Sidney      OH      293.8      102.4      84.5      17.9
40 20 14.2 84 07 50.8 CN      0.027 kW      82 M
Educational Media Foundati      BLFT20070110ABD

W231CQ    LIC      231D      Athens      OH      130.2      105.5      84.5      21.1
39 21 19.3 82 05 26.5 CN      0.013 kW      0 M
Educational Media Foundati      0000164372

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Call	Channel	Location	Power	Azi	Dist	FCC	Margin
Lat.	Lng.	Ant			HAAT		
W231AJ	LIC 231D	Findlay	OH 335.8	128.4	84.5	43.9	
41 01 23.2	83 39 22.8	CN	0.050 kW	47 M			
Clyde Educational Broadcas BLFT19980924TA							
W284CH	LIC 284D	Newark	OH 82.3	53.9	9.5	44.4	
40 02 02.2	82 24 07.5	CN	0.250 kW 0 M				
Wclt Radio Inc. BLFT20150622AAJ							
WFCJ	LIC 229B	Miamisburg	OH 252.9	115.5	68.5	47.0	
39 39 35.2	84 18 52.8	CN	50.000 kW	150 M			
Miami Valley Christian Bro BMLH20080102ABQ							
WBKS	LIC 230B1	Columbus Grove	OH 319.9	144.1	95.5	48.6	
40 57 24.2	84 07 55.8	CN	14.000 kW	133 M			
Ihm Licenses, LLC BMLH20050201BMF							

Section 74.1204

Contour Protection to WSNY

This exhibit has been prepared to demonstrate that the proposed W236CZ modification will not cause prohibited interference to WSNY, Channel 234B, Columbus, OH.

This statement demonstrates that a lack of population and/or other factors allow this proposal to be compliant with Section 74.1204. The process commonly called "Living Way," allows for the use of U/D Analysis, also known as "signal strength ratio methodology." In this instant case the facilities to be protected are third adjacent and are to be afforded protection from signals 40 dB stronger than they present in the location of the proposed antenna location.

WSNY is co-located with the proposed W236CZ modification on the tower registered with FCC antenna structure registration ("ASR") 1040501. As a result, the FCC F(50,50) contour for WSNY at the W236CZ application site cannot be calculated but is in excess of 150 dBu. Therefore the W236CZ F(50,10) interfering contour with respect to WSNY is in excess of 190 dB and also cannot be calculated. If it was possible to calculate the interfering contour with respect to WSNY, it would only extend a few inches from the antenna. The proposed modification to W236CZ will not cause prohibited interference to WSNY as no interference reaches the ground or any population.

Therefore, it is believed that the proposed modification to W236CZ is in compliance with Section 74.1204 with respect to WSNY.

W236CZ Appl.

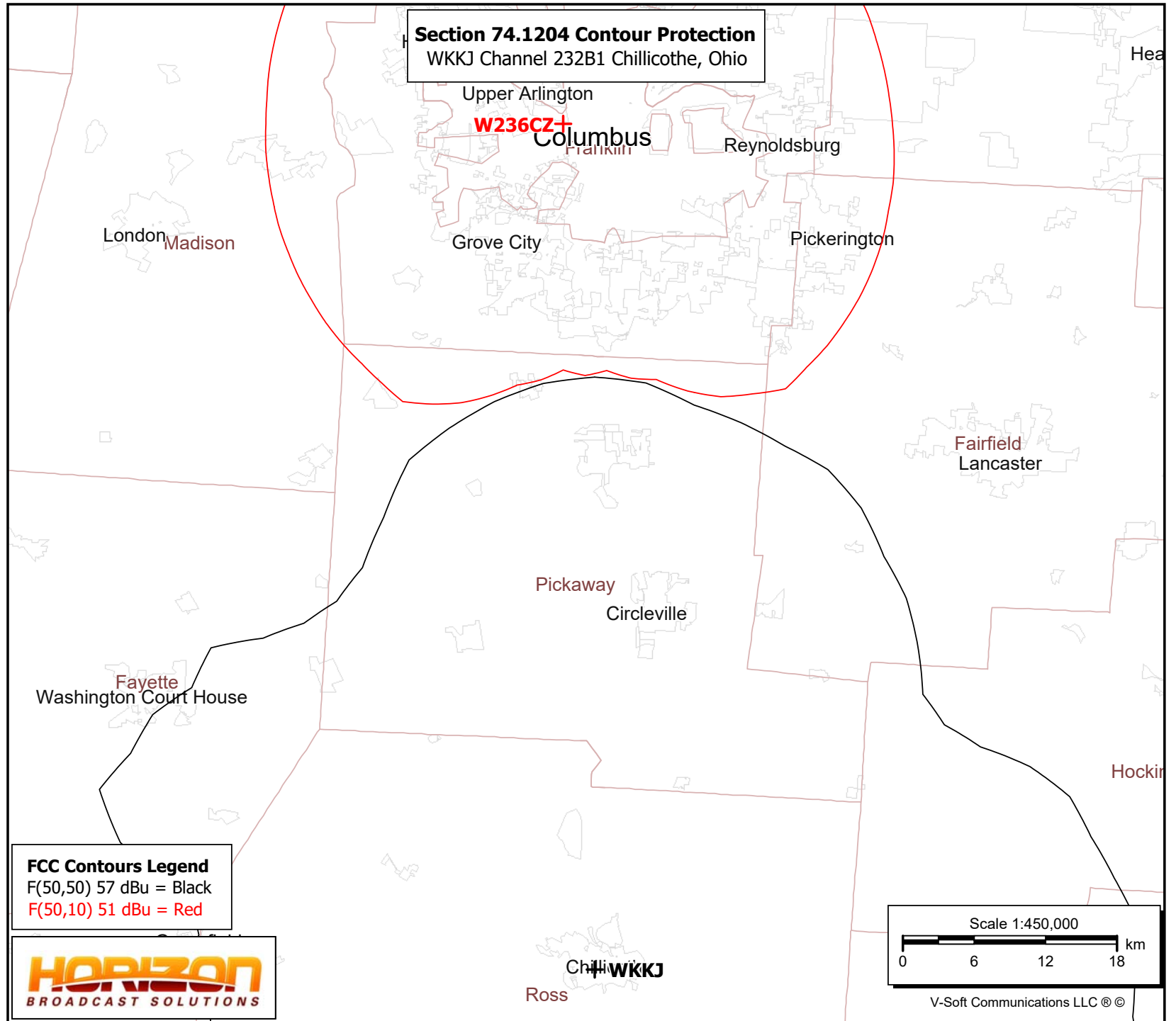
Columbus, OH
Latitude: 39-58-16.20 N
Longitude: 083-01-39.70 W
ERP: 0.25 kW
HAAT: 141.51
Channel: 231
Frequency: 94.1 MHz
AMSL Height: 387.0 m
Elevation: 220.0 m
Horiz. Pattern: Directional
Vert. Pattern: No
Prop Model: None

WKKJ

Chillicothe, OH
BLH20061101ADJ
Latitude: 39-19-52.20 N
Longitude: 082-59-48.60 W
ERP: 19.00 kW
HAAT: 107.6
Channel: 232
Frequency: 94.3 MHz
AMSL Height: 343.0 m
Elevation: 256.0 m
Horiz. Pattern: Directional
Vert. Pattern: No
Prop Model: None

Section 74.1204 Contour Protection

WKKJ Channel 232B1 Chillicothe, Ohio

**FCC Contours Legend**

F(50,50) 57 dBu = Black

F(50,10) 51 dBu = Red

HORIZON
BROADCAST SOLUTIONS

Scale 1:450,000

0 6 12 18 km

V-Soft Communications LLC ©

W236CZ Appl.

Columbus, OH
Latitude: 39-58-16.20 N
Longitude: 083-01-39.70 W
ERP: 0.25 kW
HAAT: 141.51
Channel: 231
Frequency: 94.1 MHz
AMSL Height: 387.0 m
Elevation: 220.0 m
Horiz. Pattern: Directional
Vert. Pattern: No
Prop Model: None

WNNF

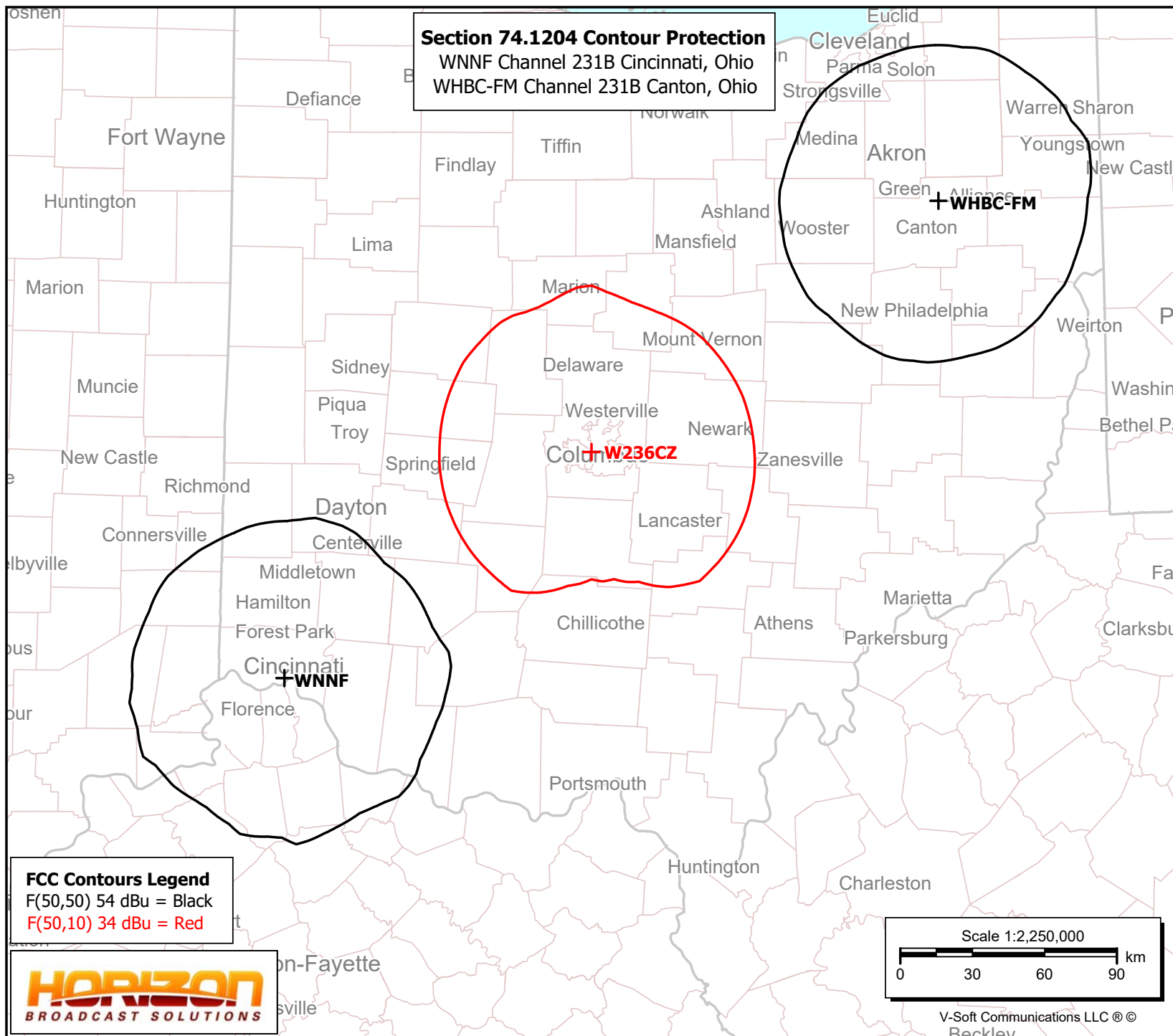
Cincinnati, OH
BLH20070313AAT
Latitude: 39-06-59.20 N
Longitude: 084-30-06.80 W
ERP: 16.00 kW
HAAT: 264.0
Channel: 231
Frequency: 94.1 MHz
AMSL Height: 483.0 m
Elevation: 236.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

WHBC-FM

Canton, OH
BMLH19880406KA
Latitude: 40-53-53.20 N
Longitude: 081-19-06.30 W
ERP: 45.00 kW
HAAT: 157.0
Channel: 231
Frequency: 94.1 MHz
AMSL Height: 509.0 m
Elevation: 343.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

Section 74.1204 Contour Protection

WNNF Channel 231B Cincinnati, Ohio
WHBC-FM Channel 231B Canton, Ohio



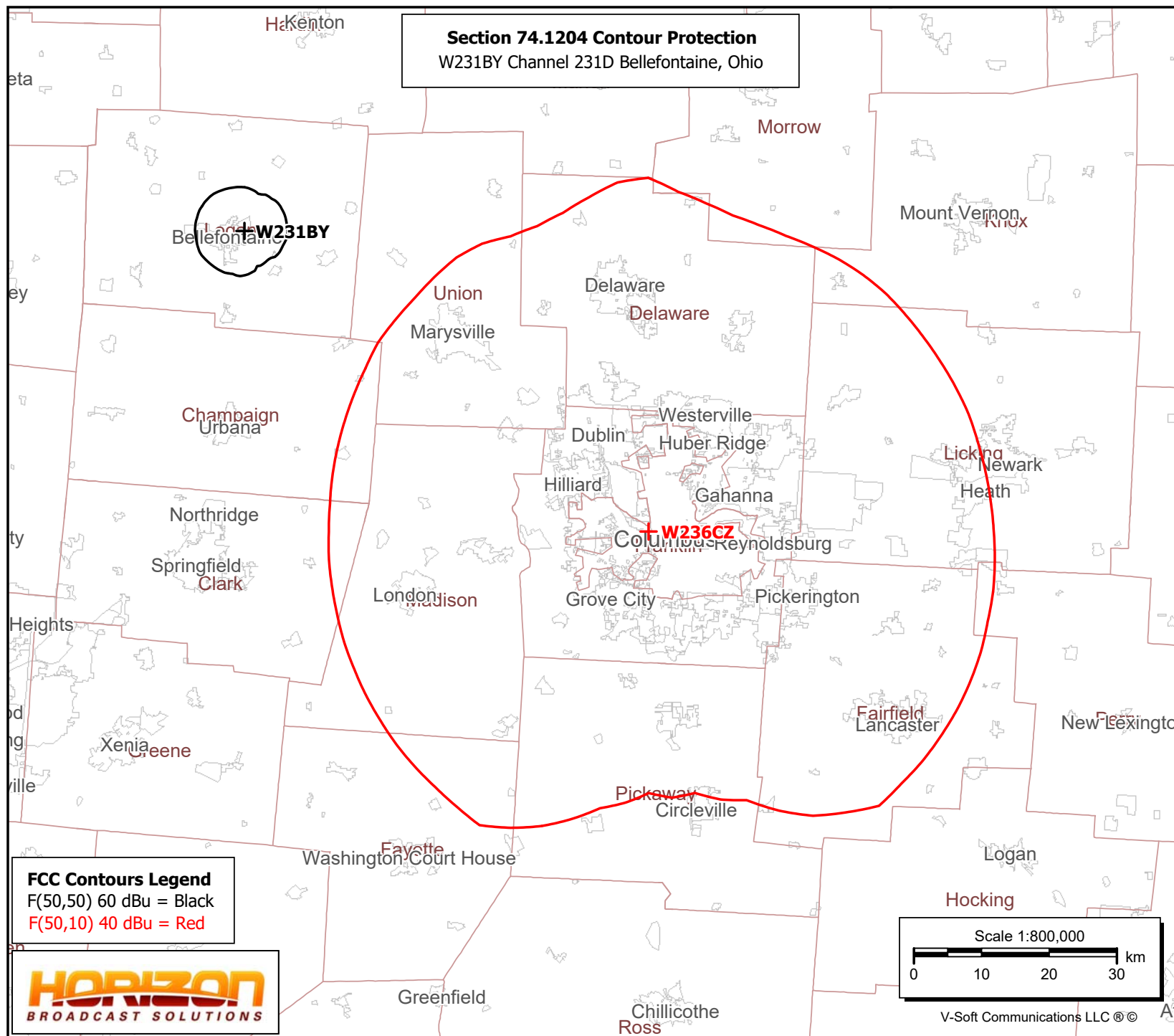
Columbus, OH
Latitude: 39-58-16.20 N
Longitude: 083-01-39.70 W
ERP: 0.25 kW
HAAT: 141.51
Channel: 231
Frequency: 94.1 MHz
AMSL Height: 387.0 m
Elevation: 220.0 m
Horiz. Pattern: Directional
Vert. Pattern: No
Prop Model: None

Bellefontaine, OH
 BLFT20141203AAA
 Latitude: 40-22-09.20 N
 Longitude: 083-43-46.80 W
 ERP: 0.01 kW
 HAAT: 129.42
 Channel: 231
 Frequency: 94.1 MHz
 AMSL Height: 490.0 m
 Elevation: 446.0 m
 Horiz. Pattern: Omni
 Vert. Pattern: No
 Prop Model: None

F(50,50) 60 dBu = Black
F(50,10) 40 dBu = Red



W231BY Channel 231D Bellefontaine, Ohio



W236CZ Appl.

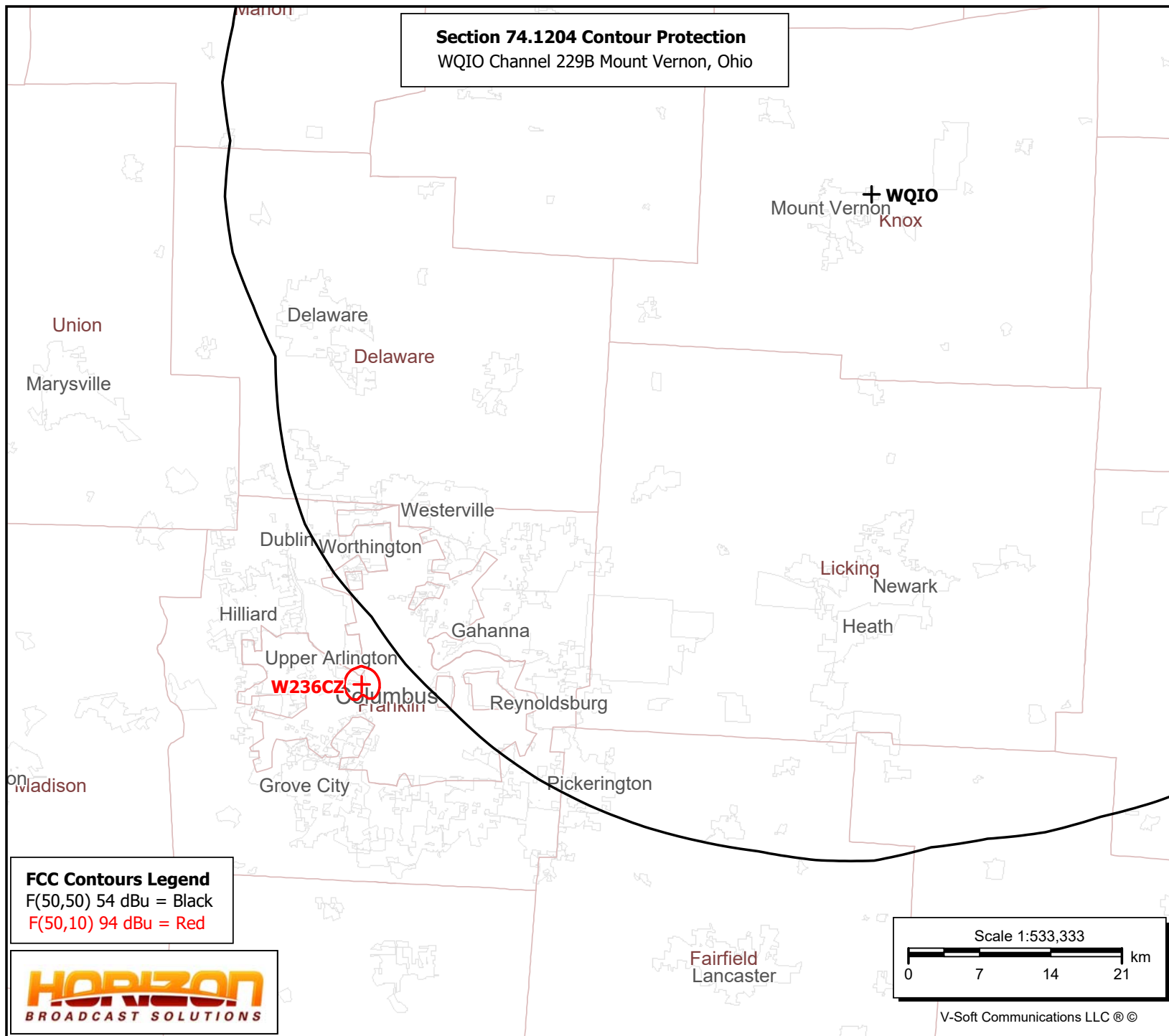
Columbus, OH
Latitude: 39-58-16.20 N
Longitude: 083-01-39.70 W
ERP: 0.25 kW
HAAT: 141.51
Channel: 231
Frequency: 94.1 MHz
AMSL Height: 387.0 m
Elevation: 220.0 m
Horiz. Pattern: Directional
Vert. Pattern: No
Prop Model: None

WQIO

Mount Vernon, OH
BLH19870625KB
Latitude: 40-24-18.20 N
Longitude: 082-26-19.50 W
ERP: 37.00 kW
HAAT: 172.0
Channel: 229
Frequency: 93.7 MHz
AMSL Height: 507.0 m
Elevation: 362.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

Section 74.1204 Contour Protection

WQIO Channel 229B Mount Vernon, Ohio



**Human Exposure to Radiofrequency Electromagnetic Field
&
Section 106 Compliance
(Environmental)**

A study has been made to determine whether this proposal is in compliance with 47 C.F.R. 1.1307 of the Commission's rules and with OET Bulletin #65, dated August 1997, regarding human exposure to radio frequency radiation in the vicinity of broadcast towers. This is an amendment to pending W236CZ LMS application No. 0000208180, Channel 231D (94.1 MHz), Facility ID No. 142835, Columbus, Ohio. This proposed amendment changes the transmit antenna. No other changes are proposed. The proposed modification would operate on Channel 231D (94.1 MHz) with an effective radiated power of 250 watts directional at 167 meters RC-AMSL and 142 meters HAAT. The transmitting site is an existing tower located at Columbus, OH. The tower is 313.5 meters in overall height and is registered with Antenna Structure Registration (ASR) number 1040501. The tower is located at 39° 58' 16.0" N ~ 83° 01' 40" W (NAD 83). The proposed antenna is a side mounted Shively Model 6832 one bay circularly polarized directional antenna with a center of radiation of 167 meters AGL. The use of existing transmitting locations has been characterized as being environmentally preferable by the Commission, according to Note 1 of § 1.1306 of the FCC Rules. Because the W236CZ proposal specifies operation from an existing tower, and no modifications to the tower are being made, it is believed to be exempt from a Section 106 review by the SHPO/THPO.

The proposed operation was evaluated for human exposure to RF energy using the procedures outlined in the Commission's OET Bulletin Number 65. The Shively antenna is included in the revised OET FM Model Program under Type 2, Opposed "V" dipole. Using the Type 2 selection, the maximum calculated signal density near the tower at two meters above ground level attributable to the proposed facility is 0.169 $\mu\text{W}/\text{cm}$ at 169 meters, which is 0.085 percent of the general population/uncontrolled maximum permitted exposure limit. This is well below the five percent threshold limit described in 1.1307(b) regarding sites with multiple emitters, which excludes applicant from responsibility for taking any corrective action in areas where the proposal's contribution is less than five percent.

The licensee will see that signs are posted in the vicinity of the tower, warning of potential radio frequency hazards at the site. The licensee will cooperate with other users of the tower to reduce power of the facility, or discontinue operation, as necessary to limit human exposure to levels less than specified by the Federal Communications Commission should anyone be required to climb the tower for maintenance or inspection.

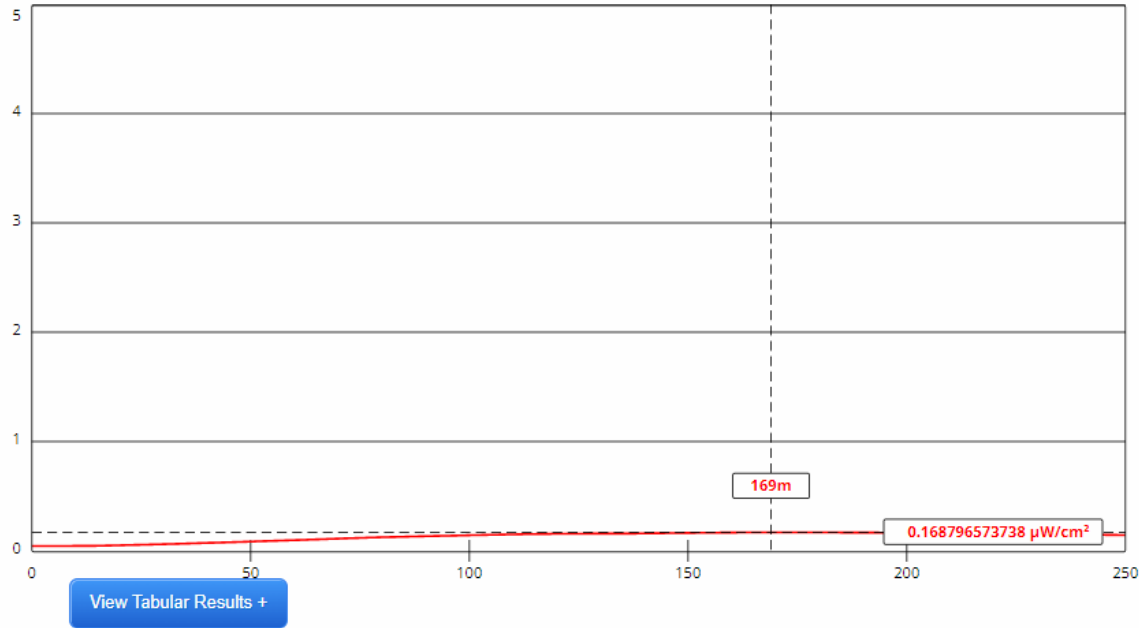
FM Model

Radio Frequency Safety

- FCC Policy on Human Exposure
- RF Safety Highlighted Releases
- RF Safety FAQ
- FM Model**
- Body Tissue Dielectric Parameters

The FM Model calculator determines the potential exposure from radiofrequency (RF) electromagnetic fields produced by FM broadcast station antennas at ground level. The FM Model software was originally developed by the FCC in 1997 as a standalone executable program and this improved version provides more precise predictions and runs via a JavaScript enabled web browser. The FM Model is originally based on measured data published in 1985 by the EPA.

[Show More....](#)



Channel Selection	Channel 231 (94.1 MHz) ▼		
Antenna Type +	EPA Type 2: Opposed V Dipole ▼		
Height (m)	167	Distance (m)	250
ERP-H (W)	250	ERP-V (W)	250
Num of Elements	1	λ	1
Num of Points	500	Apply	