

TECHNICAL NARRATIVE

This Technical Narrative and attached exhibits were prepared on behalf of Alliance Radio, LLC (“Alliance”), licensee of WPNA-FM, Facility ID No. 74177, Channel 276A, Highland Park, Illinois. Alliance herein proposes an FCC minor change application to modify WPNA-FM to operate on Channel 276A (103.1 MHz) from a new transmit location.

The proposed transmit location is a building with a mast located in downtown Evanston, IL. The overall height of the structure with mast is 92 meters above ground level and is not registered with an FCC Antenna Registration Number ("ASR"). It is believed that a Section 106 review by the SHPO/THPO is not required. The proposed transmitting antenna is an ERI Model LP-3E 3 bay half wave antenna operating at 6.0 kW ERP with a center of radiation of 90.0 meters above ground level. The proposed new WPNA-FM facility would operate on Channel 276A with an effective radiated power of 6.0 kW non-directional at 91.2 meters height above average terrain.

The coordinates of the proposed application site are 42° 02' 50" North Latitude, 87° 40' 50" West Longitude (NAD 83). Based on the attached Channel Study, the site is fully spaced to all full power FM stations under Section 73.207 with three exceptions. WPNA-FM is short-spaced to second adjacent full power FM stations WVAZ, Channel 274B, Oak Park, IL and WKSC-FM, Channel 278B, Chicago, IL. WPNA-FM has been grandfather short-spaced to these two facilities since first signing on the air in November 1960. WPNA-FM is currently licensed under Section 73.213(a) with respect to WVAZ and WKSC-FM and will continue to do so following the proposed modification. No contour protections are required to second and third adjacent stations under Section 73.213(a). WPNA-FM is also short-spaced to co-channel full power FM

station WCSJ-FM, Channel 276A, Morris, IL. Alliance proposes to adopt Section 73.215 contour protection with respect to WCSJ-FM.

The WPNA-FM Application Site F(50,50) 70 dBu city grade contour does not cover 80 percent of the Highland Park, IL corporate boundaries. Therefore, a Section 73.315 Supplemental Showing is included to show city grade coverage using the Point-to-Point V2 methodology.

Studies have been undertaken to show the proposed WPNA-FM facility is in compliance with the Commission's radio frequency emission standards and are included as exhibits.

The current licensed WPNA-FM Channel 276A facility serves within the FCC F(50,50) 60 dBu protected contour an area of 1,775.6 sq. km and 2,213,964 persons (2010 U.S. Census). The proposed WPNA-FM Channel 276A facility would serve within the FCC F(50,50) 60 dBu protected contour an area of 2,312.9 sq. km. and a population of 2,912,584 persons (2010 U.S. Census). Thus granting of this instant application will result in a public service interest with a net gain in area served of 537.3 sq. km. and a net gain in population served of 698,620 persons.

WPNA-FM Section 73.315 Supplemental Showing City Grade Coverage of Highland Park, Illinois

This Supplemental Showing is based in part on the standards established in the FCC DA-10-1760 Skytower Communications decision. A supplemental showing using the FM Point to Point v2 70 dBu signal shading is used to show city coverage of Highland Park, IL. The FM-PTP v2 70 dBu contour distance was calculated using the standard settings established in OET Bulletin No. 69. The FCC FM PTP V2 maps were created using V-soft Probe Version 4.110 Professional. The specific software settings are listed on the coverage map in the upper left hand corner of each map. The NED 3 second terrain database was used for all calculations. Signal values were not interpolated. The cell size was set at 0.25 km and profile increment was set at 0.1 km.

Map One shows the FCC F(50,50) 60 dBu reaches 100 percent of the total area of Highland Park.

Table One, "Comparison of FCC F(50,50) 70 dBu contour distance vs. the FM Point to Point v2 70 dBu contour distance" shows the distances to the FCC 70 dBu contour and FM PTP v2 70 dBu contour for the sixteen radials that cross over Highland Park. This table clearly establishes that the 70 dBu PTP(V2) contours along the radials that cross the corporate boundaries of Highland Park are more than 10% greater than the FCC F(50,50) 70 dBu contours. 100% of Highland Park is contained in the FCC F(50,50) 60 dBu contour.

Map Two is a signal strength shading map showing the area around Highland Park. Signal shading of FM PTP v2 70 dBu or greater signal levels is shown in red. There are nine small areas inside Highland Park which would receive less than 70 dBu PTP v2 signal strength. Those areas are shaded in yellow and clearly identified on the map.

Table Two includes the area population totals from the nine polygon areas inside Highland Park which show less than a 70 dBu PTP(V2) signal strength. The total area of the nine polygons is 2.0 sq. km. which is 6.31 percent of the 31.7 sq. km. of the total area of Highland Park. Therefore, 93.69 percent of the area of Highland Park receives a Point-to-Point (v2) signal strength of 70 dBu or greater. The total population of the nine polygons inside Highland Park is 2,444 persons, which is 17.88 percent of the 29,763 total population of Highland Park. Therefore, 82.12 percent of the Highland Park population receives a PTP (v2) signal strength of 70 dBu or greater.

Table Three is a summary report showing the individual V-Soft Polygon Reports population and area totals.

Therefore, it is believed that this WPNA-FM modification application is in compliance with the Section 73.315 of the Commission's Community Coverage rules.

WPNA-FM

Highland Park, IL
Latitude: 42-02-50 N
Longitude: 087-40-50 W
ERP: 6.00 kW
HAAT: 91.24 m
Channel: 276
Frequency: 103.1 MHz
AMSL Height: 274.0 m
Elevation: 184.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

Map One
Section 73.315 Supplemental Showing
FCC F(50,50) 60 dBu Contour

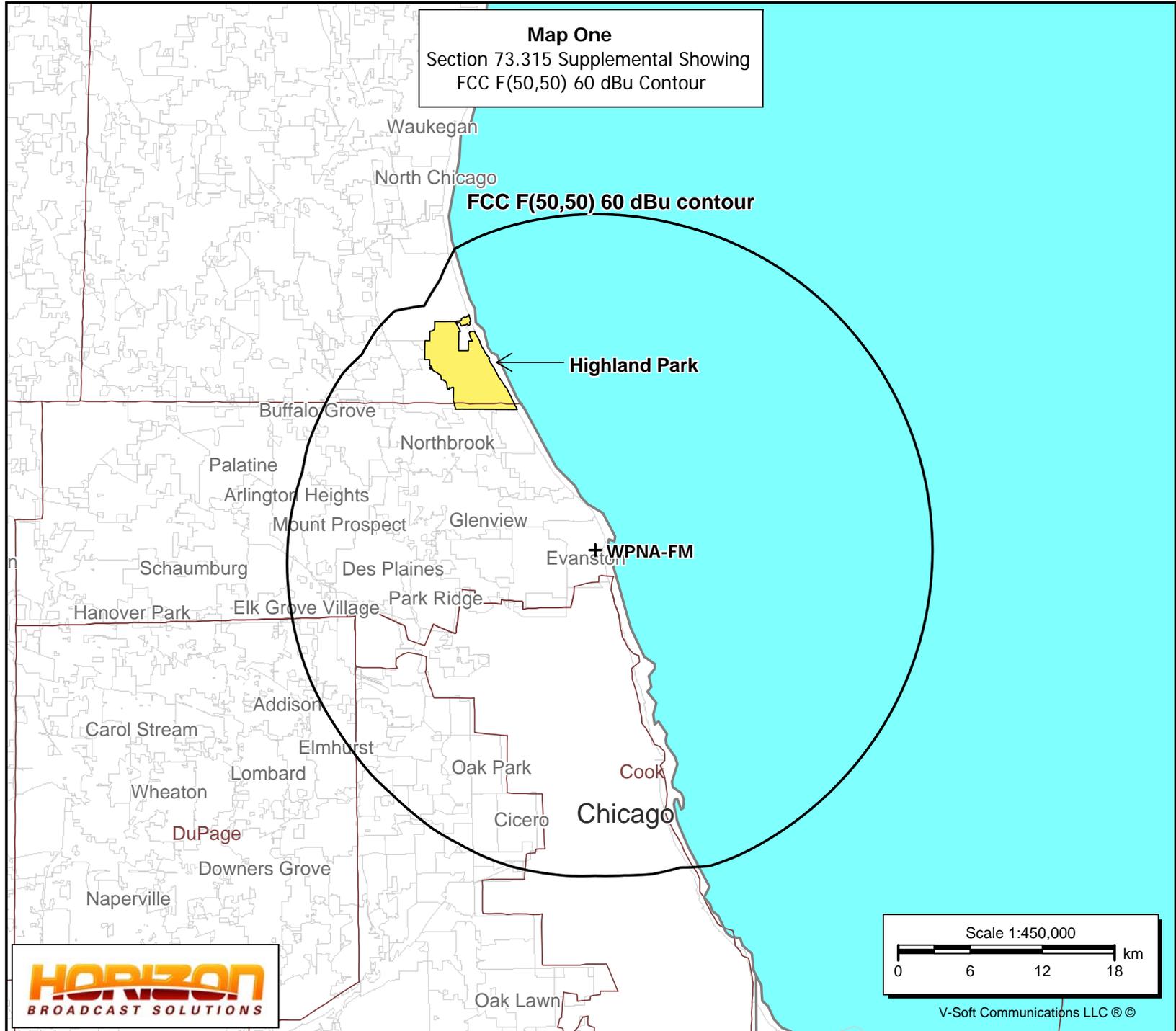


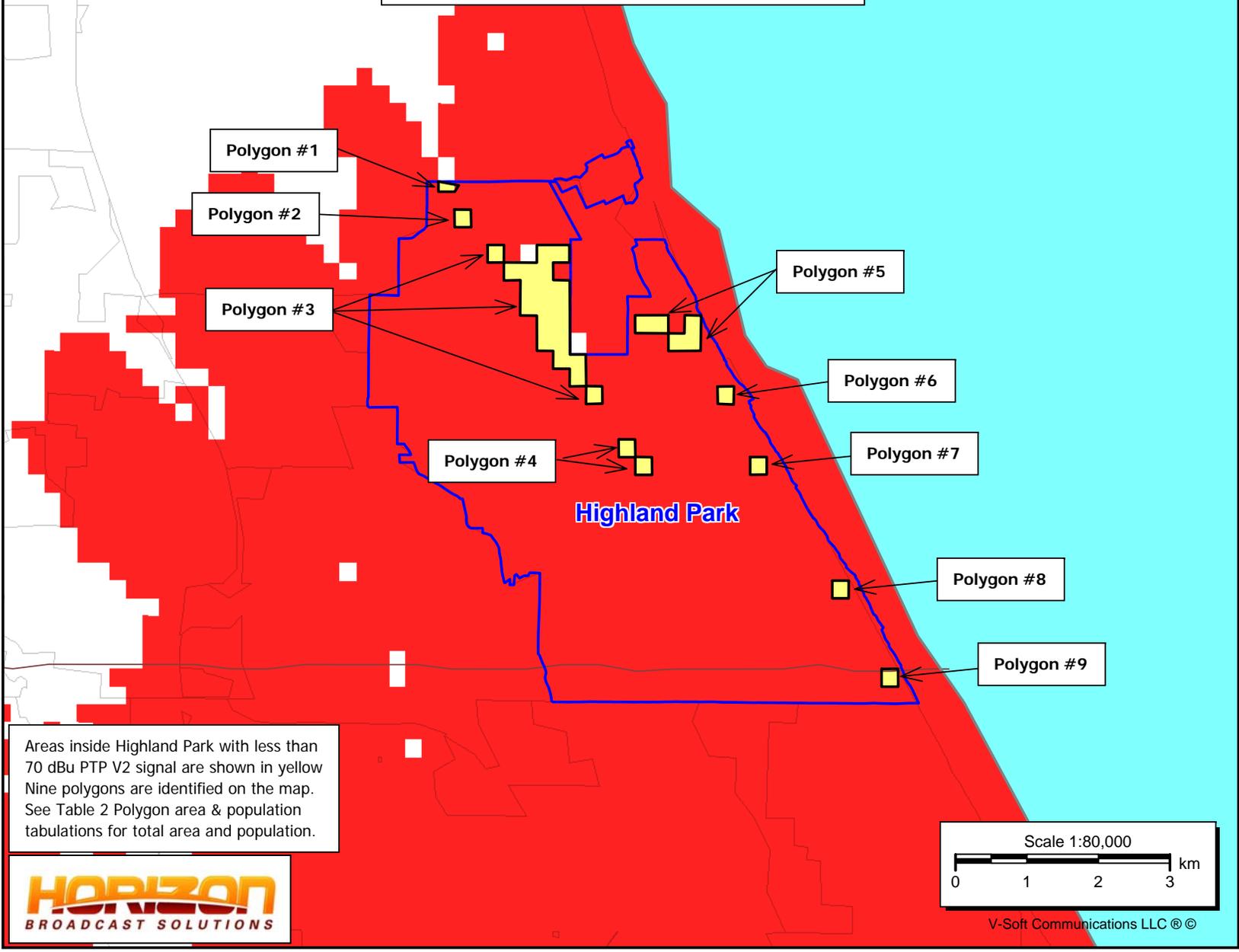
TABLE ONE
 WPNA-FM Supplemental Coverage Showing:
 Comparison of FCC F(50,50) 70 dBu contour distance
 vs.
 FM Point-to-Point v2 median occurrence 70 dBu contour distance
 (16 radials which cross Highland Park are shown)

Site:	WPNA-FM Modification Application				
Coordinates:	42-02-50 N ~ 87-40-50 W (NAD 83)				
Freq:	103.1 MHz				
ERP:	6.0 kW				
HAAT:	91 m				
Bearing (degrees)	ERP kW	HAAT (m)	FCC 70 dBu Distance (km)	FM-PTP V2 70 dBu contour distance (km)	Percentage Increase
316	6.0	81	14.4	24.50	70.1
317	6.0	82	14.5	25.10	73.1
318	6.0	82	14.5	25.70	77.2
319	6.0	82	14.5	26.85	85.2
320	6.0	82	14.5	26.70	84.1
321	6.0	81	14.4	22.80	58.3
322	6.0	80	14.3	23.40	63.6
323	6.0	79	14.2	23.80	67.6
324	6.0	77	14.0	25.50	82.1
325	6.0	75	13.8	23.80	72.4
326	6.0	75	13.8	21.55	56.2
327	6.0	76	13.9	22.45	61.5
328	6.0	78	14.1	25.30	79.4
329	6.0	79	14.2	23.00	62.0
330	6.0	84	14.6	22.55	47.4
331	6.0	91	15.3	28.30	85.0
Average	6.0	80.25	14.31	24.46	70.3

WPNA-FM

Highland Park, IL
Latitude: 42-02-50 N
Longitude: 087-40-50 W
ERP: 6.00 kW
HAAT: 91.24 m
Channel: 276
Frequency: 103.1 MHz
AMSL Height: 274.0 m
Elevation: 184.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: FM PTP v2

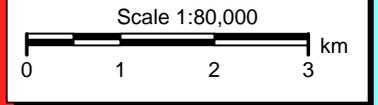
Map Two
WPNA-FM Channel 276A Highland Park, Illinois
Section 73.315 Supplemental Showing
Point to Point (V2) Signal Shading Map



Areas inside Highland Park with less than 70 dBu PTP V2 signal are shown in yellow
Nine polygons are identified on the map.
See Table 2 Polygon area & population tabulations for total area and population.

Point-to-Point V2
Signal Strength

 > 70.0 dBuV/m



V-Soft Communications LLC ©

TABLE TWO
WPNA-FM CH276A Highland Park, IL
 Summary of V-Soft Polygon Area and Population Reports
 (Areas of Highland Park that receive less than a 70 dBu signal.)

	A	B	C
1	Polygon	Area (sq.km.)	Population (2010 Census)
2	Highland Park	31.7	29,763
3	Polygon #1	0.0	0
4	Polygon #2	0.1	0
5	Polygon #3	1.1	1,480
6	Polygon #4	0.1	239
7	Polygon #5	0.3	279
8	Polygon #6	0.1	123
9	Polygon #7	0.1	0
10	Polygon #8	0.1	35
11	Polygon #9	0.1	288
12	Polygon Totals	2.0	2,444
13			
14	Total <70 dBu	6.31%	17.88%
15	Total >70 dBu	93.69%	82.12%

Table Three
V-Soft Polygon Area and Population Reports:

Polygon #1
Polygon Population Report
Population Database: 2010 US Census (PL)

Total Population: 0
Housing Units: 0
Total Area: 0.0 sq. km

Polygon #2
Polygon Population Report
Population Database: 2010 US Census (PL)

Total Population: 0
Housing Units: 0
Total Area: 0.1 sq. km

Polygon #3
Polygon Population Report
Population Database: 2010 US Census (PL)

Total Population: 1,480
Housing Units: 610
Total Area: 1.1 sq. km

Polygon #4
Polygon Population Report
Population Database: 2010 US Census (PL)

Total Population: 239
Housing Units: 84
Total Area: 0.1 sq. km

Polygon #5
Polygon Population Report
Population Database: 2010 US Census (PL)

Total Population: 279
Housing Units: 92
Total Area: 0.3 sq. km

Polygon #6
Polygon Population Report
Population Database: 2010 US Census (PL)

Total Population: 123
Housing Units: 42
Total Area: 0.1 sq. km

Polygon #7
Polygon Population Report
Population Database: 2010 US Census (PL)

Total Population: 0
Housing Units: 0
Total Area: 0.1 sq. km

Polygon #8
Polygon Population Report
Population Database: 2010 US Census (PL)

Total Population: 35
Housing Units: 16
Total Area: 0.1 sq. km

Polygon #9
Polygon Population Report
Population Database: 2010 US Census (PL)

Total Population: 288
Housing Units: 116
Total Area: 0.1 sq. km

WPNA-FM Application Site Channel Study

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REFERENCE                                     DISPLAY DATES
42 02 50.0 N.                                CLASS = A          DATA 02-20-20
87 40 50.0 W.                                Current Spacings to 3rd Adj. SEARCH 02-20-20
----- Channel 276 - 103.1 MHz -----

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Call	Channel	Location	Azi	Dist	FCC	Margin
Lat.	Lng.	Ant	Power	HAAT		

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WPNA-FM LIC-Z 276A Highland Park IL 292.0 26.9 114.5 -87.6
42 08 14.1 87 58 57.3 Z 6.000 kW 100 M
Alliance Radio, LLC BLH19990730KB

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WVAZ LIC 274B Oak Park IL 163.9 17.1 68.5 -51.4
41 53 56.1 87 37 23.2 3.800 kW 425 M
Amfm Broadcasting Licenses BLH20150622AFI

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Note: Section 73.213(a) Second adjacent grandfathered short-spaced station

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@WKSC-FM. APP 278B Chicago IL 168.9 19.1 68.5 -49.5
41 52 44.1 87 38 10.1 4.200 kW 472 M
Amfm Broadcasting Licenses BLH19830719AF

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@WKSC-FM. APP 278B Chicago IL 168.9 19.1 68.5 -49.5
41 52 44.1 87 38 10.1 4.200 kW 472 M
Amfm Broadcasting Licenses BLH19830223AI

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WKSC-FM LIC 278B Chicago IL 168.8 19.1 68.5 -49.4
41 52 44.1 87 38 08.2 4.300 kW 472 M
Amfm Broadcasting Licenses BLH20010413AAM

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Note: Section 73.213(a) Second adjacent grandfathered short-spaced station

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W276BM APP-D 276D Tinley Park IL 189.1 55.6 84.5 -28.9
41 33 10.0 87 47 09.0 DH 0.100 kW 0 M
Polnet Communications, Ltd 0000097678

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W276BM APP-D 276D Tinley Park IL 189.1 55.6 84.5 -28.9
41 33 10.0 87 47 09.0 DH 0.100 kW 0 M
Polnet Communications, Ltd 0000097678

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W276BM CP -D 276D Tinley Park IL 189.1 55.6 84.5 -28.9
41 33 10.0 87 47 09.0 D 0.100 kW 0 M
Polnet Communications, Ltd BPFT20170501ABP

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W276BM LIC 276D Park Forest IL 183.1 66.0 84.5 -18.5
41 27 15.1 87 43 22.2 0.010 kW 168 M
Polnet Communications, Ltd BLFT20121018AAL

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WCSJ-FM LIC-Z 276A Morris IL 213.2 99.9 114.5 -14.6
41 17 35.1 88 20 04.2 Z 6.000 kW 100 M
Grundy County Broadcasters BMLH20140205ACR

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Note: Adopt Section 73.215 contour protection with respect to WCSJ-FM

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WHQG LIC 275B Milwaukee WI 347.6 113.8 112.5 1.3
43 02 49.0 87 58 52.3 50.000 kW 130 M
Lakefront Communications, BLH20080717ADP

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WGFB LIC 276A Rockton IL 287.5 121.5 114.5 7.0
42 22 02.1 89 05 13.4 2.400 kW 160 M
Long Nine, Inc. BLH20090713AAM

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Call	Channel	Location	Azi	Dist	FCC	Page #	Margin
Lat.	Lng.	Ant	Power	HAAT			
WGFB	CP 276A	Rockton	IL 287.5	121.5	114.5		7.0
42 22 02.1	89 05 13.4		2.400 kW	160 M			
	Long Nine, Inc.		BPH20090320AAE				
WGFB	LIC 276A	Rockton	IL 287.5	121.5	114.5		7.0
42 22 02.1	89 05 13.4		1.200 kW	160 M			
	Long Nine, Inc.		BLH19891218KB				
WVLP-LP	LIC 276L1	Valparaiso	IN 140.9	82.8	66.5		16.3
41 28 05.1	87 03 14.1		0.100 kW	30 M			
	Neighbors, Corp.		BLL20151223BPW				
WHME	LIC 276A	South Bend	IN 111.6	131.4	114.5		16.9
41 36 11.1	86 12 51.0		3.000 kW	91 M			
	Family Broadcasting Corpor		BLH19831005AD				
WPWX	LIC-D 222B	Hammond	IN 164.7	48.0	14.5		33.5
41 37 50.1	87 31 40.2	D	50.000 kW	150 M			
	Dontron, Inc.		BMLH20110815ACZ				
WQBH-LP	LIC 275L1	St. Joseph	MI 86.7	101.3	55.5		45.8
42 05 34.1	86 27 28.0		0.061 kW	38 M			
	Marriage And Family Commit		BLL20150721AAG				
WXSS	LIC 279B	Wauwatosa	WI 351.1	118.0	68.5		49.5
43 05 48.0	87 54 18.3		19.500 kW	257 M			
	Entercom License, LLC		BMLH20010731ABY				
W277BM	LIC 277D	Lake Geneva	WI 315.6	88.2	33.5		54.7
42 36 38.1	88 26 03.3		0.019 kW	74 M			
	Gateway Technical College		BLFT20070822ABK				
WMKB	LIC 275A	Earlville	IL 248.4	126.2	71.5		54.7
41 37 16.1	89 05 20.3		2.150 kW	170 M			
	Km Radio Of Earlville, L.L		BLH20030203CNW				

WPNA-FM

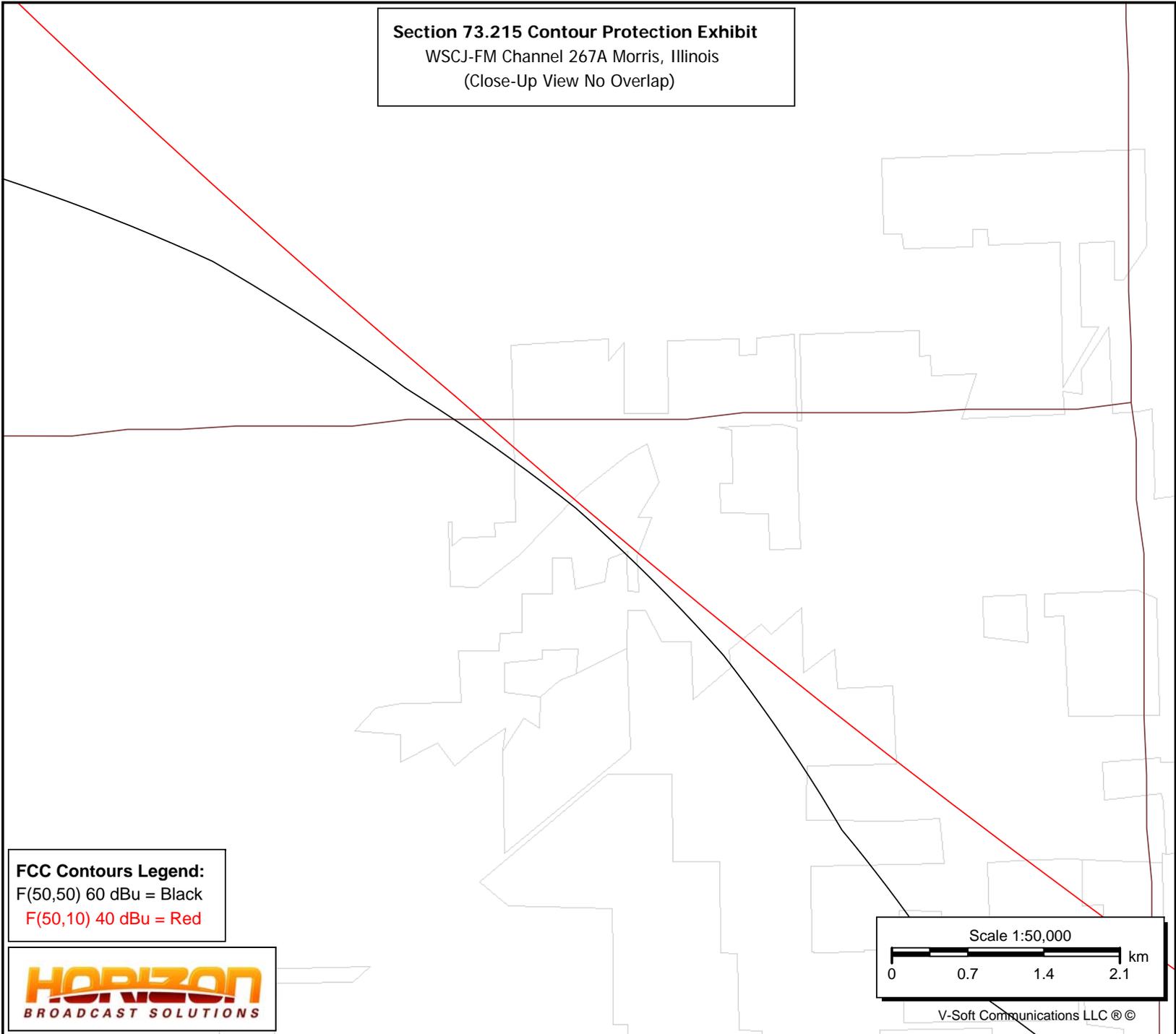
Highland Park, IL
Latitude: 42-02-50 N
Longitude: 087-40-50 W
ERP: 6.00 kW
HAAT: 91.24 m
Channel: 276
Frequency: 103.1 MHz
AMSL Height: 274.0 m
Elevation: 184.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

WCSJ-FM

Morris, IL
BMLH20140205ACR
Latitude: 41-17-34.98 N
Longitude: 088-20-03.97 W
ERP: 6.00 kW
HAAT: 100.0 m
Channel: 276
Frequency: 103.1 MHz
AMSL Height: 266.0 m
Elevation: 168.0 m
Horiz. Pattern: Directional
Vert. Pattern: No
Prop Model: None

Section 73.215 Contour Protection Exhibit

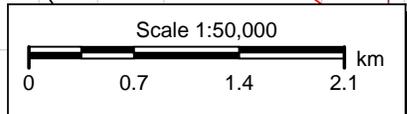
WCSJ-FM Channel 267A Morris, Illinois
(Close-Up View No Overlap)



FCC Contours Legend:

F(50,50) 60 dBu = Black

F(50,10) 40 dBu = Red



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

Alliance Radio, LLC (“Alliance”) is the licensee of WPNA-FM, Facility ID No. 74177, Channel 276A, Highland Park, IL. Alliance herein proposes an FCC minor modification application to modify WPNA-FM to operate from a new transmit location. The proposed transmit location is a 22 story office building with mast. The building including appurtenances is 92 meters in overall height above ground level and is not registered with an Antenna Registration Number ("ASR"). No changes are being made to the structure. Therefore, it is believed a Section 106 review by the SHPO/THPO is not required. The coordinates of the proposed application site are 42° 02' 50" North Latitude, 87° 40' 50" West Longitude (NAD 83). The proposed transmitting antenna is an ERI Model LP-3E side mounted 3 bay half wave antenna operating at 6.0 kW ERP non-directional with a center of radiation of 274.0 meters AMSL and 90.0 meters above ground level.

The ERI LP antenna is included in the recently revised OET FM Model Program under Type 3, opposed "U" dipole. Using the FM Model for Windows program, the proposed operation was evaluated for human exposure to RF energy using the procedures outlined in the Commission’s OET Bulletin Number 65. The proposed rooftop site has restricted access and is not available to the general public. The proposed antenna center of radiation is 90.0 meters above ground level. The building has 22 floors above ground level. The two top floors are unoccupied and are used for equipment storage. The highest occupied floor level is the 20th floor and it is 70.0 meters above ground level. Therefore, the height used on the FM Model program is 20.0 meters. The maximum calculated signal density near the tower at two meters above ground level attributable to the proposed facility is $53.17 \mu\text{W}/\text{cm}^2$ at 52.8 meters, which is 26.59 percent of the general population/uncontrolled maximum permitted exposure limit. It should be noted that 52.8 meters from the antenna is well beyond the perimeter of the building. The RFR levels experienced in the upper floors of the building will be substantially lower.

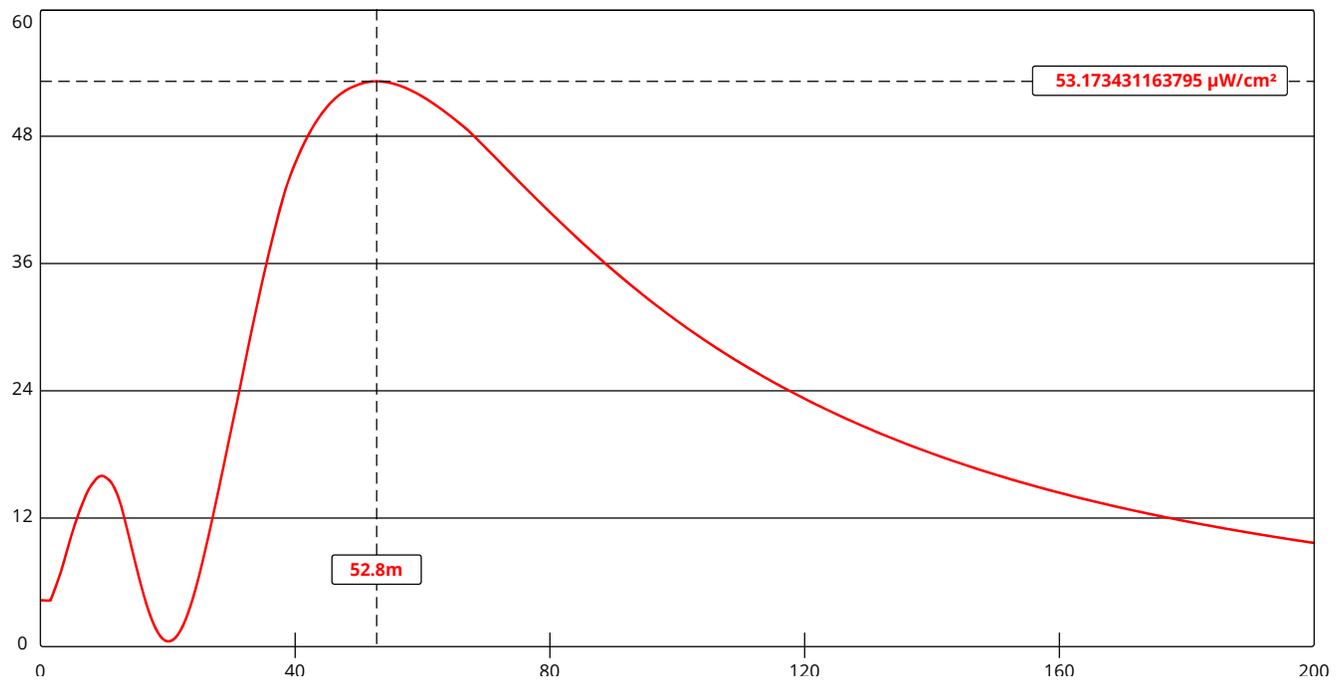
The applicant will see that signs are posted in the vicinity of the tower, warning of potential radio frequency hazards at the site. The applicant will cooperate with other users of the rooftop site to reduce power of the facility, or discontinue operation, as necessary to limit human exposure to levels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



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FM Model

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](http://nepis.epa.gov/Exe/ZyNET.exe/2000ED2W.TXT?ZyActionD=ZyDocument&Client=EPA&Index=1981+Thru+1985&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A\zyfiles\Index%20Data\81thru85\Txl\00000003\2000ED2W.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h|-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=p|f&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL) (<http://nepis.epa.gov/Exe/ZyNET.exe/2000ED2W.TXT?ZyActionD=ZyDocument&Client=EPA&Index=1981+Thru+1985&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A\zyfiles\Index%20Data\81thru85\Txl\00000003\2000ED2W.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h|-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=p|f&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL>). [Show More....](#)



[View Tabular Results +](#)

Channel Selection	Channel 276 (103.1 MHz) ▼		
Antenna Type +	EPA Type 3: Opposed U Dipole ▼		
Height (m)	<input type="text" value="20"/>	Distance (m)	<input type="text" value="200"/>
ERP-H (W)	<input type="text" value="6000"/>	ERP-V (W)	<input type="text" value="6000"/>
Num of Elements	<input type="text" value="3"/>	Element Spacing (λ)	<input type="text" value="0.5"/>
Num of Points	<input type="text" value="500"/>	Apply	