

TECHNICAL EXHIBIT  
APPLICATION FOR FM CONSTRUCTION PERMIT  
FM STATION WHPZ(FM)  
BREMEN, INDIANA

APRIL 5, 2002

CH 245A    5 KW (MAX-DA)    105 M

TECHNICAL EXHIBIT  
APPLICATION FOR FM CONSTRUCTION PERMIT  
RADIO STATION WHPZ(FM)  
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Technical Narrative

The technical exhibit of which this narrative is part was prepared in support of an application for construction permit for FM station WHPZ(FM) at Bremen, Indiana. WHPZ(FM) is currently licensed for operation on channel 245A (96.9 MHz) with a non-directional effective radiated power (ERP) of 2 kilowatts and an antenna radiation center height above average terrain (HAAT) of 141 meters. This application proposes to modify the licensed facility by proposing operation from an alternate site location, changing to a directional antenna system, increasing ERP and decreasing the HAAT. No other changes are proposed.

The proposal requests processing under Section 73.215 with respect to stations WLAV-FM, WTNX(FM) and WCOE(FM). It is also noted that waivers of Section 73.316(b) and 73.215 are also respectfully requested.

Proposed Transmitter Location

A 1-bay FM panel antenna will be side-mounted on the existing 982 foot tower located at the intersection of Fern and Roosevelt Rds. in South Bend, Indiana. The proposed tower location, which is the current licensed site of WHME-TV, is uniquely described by the following geographic coordinates:

41° 35' 43" North Latitude

86° 09' 38" West Longitude

A map showing the transmitter site location is provided in Figure 1. A sketch showing the proposed antenna and supporting structure is shown on Figure 2. The FCC Tower Registration for the existing tower is 1060842.

Waiver of Section 73.316(b)

Sheets 1 and 2 of Figure 3 are a graph and tabulation of the WHPZ(FM) proposed directional composite pattern. It is necessary to employ the composite pattern in order to provide protection to three short-spaced stations, while providing the required city coverage of Bremen. As shown in Figure 3, the proposed composite pattern will require a waiver of Section 73.316(b), as the pattern does not meet the maximum to minimum radiation ratio of 15 dB, and the pattern does vary by more than 2 dB per 10 degrees of azimuth. The pattern proposal was analyzed extensively in an attempt to satisfy the requirements of Section 73.316(b). However, in order to provide contour protection to short-spaced stations and also to provide city coverage to Bremen, the pattern of Figure 3 is necessary. It is noted that the proposed pattern will be achieved by a panel antenna which will be side-mounted on the existing tower. Since a panel is proposed, it is believed that the antenna will be stable due to its inherent design. Hence, a waiver of Section 73.316(b) is respectfully requested.

Interference Concerns

The 115 dBu predicted "blanketing" contour of the proposed station would extend radially 0.9 kilometer from the transmitting site. No interference is expected as the proposed transmitter site is located in a rural area.

However, the applicant recognizes its responsibility to resolve complaints of interference, including blanketing and receiver-induced interference as required by Sections 73.315(b), 73.316(e) and 73.318.

#### Coverage Contours

The predicted coverage contours for the proposed operation were calculated in accordance with the provisions of Section 73.313. The average terrain elevations from 3 to 16 km from the proposed site were computed using the U.S.G.S. 30-meter terrain database.<sup>1</sup> Pursuant to Section 73.313(d)(2) of the FCC Rules, 36 radials were employed in computing the overall antenna HAAT.

The distances to the conventional FCC predicted coverage contours were determined using the average elevations of 3-16 km radials spaced every 10-degrees of azimuth. The antenna radiation center HAAT in each radial direction and the ERP were used in conjunction with the propagation prediction curves of Section 73.333 to determine the distances to contours. Figure 4 is a map showing the predicted coverage contours.

As can be seen in Figure 4, the FCC predicted 70 dBu coverage contour does not encompass the principal community of Bremen. However, as discussed below, the use of an alternate propagation model will in fact demonstrate 70 dBu coverage over Bremen.

#### Prediction of 70 dBu Coverage Over Community of Bremen

The 70 dBu contour, calculated by employing the FCC propagation curves, is predicted to extend a radial

distance of at least 14.0 kilometers toward the principal community of Bremen as shown on Sheet 1 of Figure 6. The community is located beyond the FCC predicted 70 dBu contour but within the FCC predicted 60 dBu contour.

A study of 3 elevation profiles (172° true, 178° true, and 184° true) between the transmitter site and Bremen, shown in Sheets 2, 3, and 4 of Figure 6, indicate that a higher field strength would be expected over the community than predicted using the FCC propagation curves. In order to verify the enhanced propagation path, a computer model employing the Commission's proposed alternate propagation model was employed. Using this point-to-point irregular terrain model, data was obtained and plotted on the attached graphs, provided on Sheets 5, 6, and 7 of Figure 6.

Employing the Commission's interpolating procedure, the 70 dBu coverage contour is actually predicted to extend at least 24 kilometers along these three bearings (172, 178, and 184) and therefore it entirely encompasses Bremen.

Additionally, the Commission's present staff policies, with respect to the application of the Longley-Rice model, are satisfied. As evident within the exhibit, the FCC predicted 60 dBu coverage contour entirely encompasses the principal community of Bremen and the radial distance to the alternate propagation model contour exceeds the distance to the comparable FCC coverage contour by ten percent.

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<sup>1</sup> The U.S.G.S. 30-meter database is a high-resolution terrain database that provides terrain data with accuracy similar to that obtainable through use of U.S.G.S. 7.5-minute topographic maps.

Allocation Study

Figure 5 is an allocation study for channel 245A at the proposed site. The figure contains a tabulation of actual and required separation distances from other pertinent stations and allotments. The proposed site meets the FCC's minimum separation requirements, specified in Section 73.207(b) of the Commission's Rules, to all assignments and stations except with respect to FM stations WCOE(FM) on channel 244A at La Porte, Indiana, WLAV-FM on channel 245B at Grand Rapids, Michigan, and WTNX(FM) on channel 245B at Zion, Illinois. Processing according to Section 73.215 of the FCC Rules is requested with respect to each of the stations. Sheet 2 of Figure 5 is a map demonstrating compliance with the contour overlap requirements of Section 73.215 of the FCC Rules with respect to WLAV-FM and WTNX(FM). It is noted that contour calculations for both facilities were made at 10-degree azimuthal intervals (36 radials) using the 3-second linearly interpolated terrain database. A waiver is requested with respect to WCOE(FM). Support for the waiver request is addressed below.

Waiver of Section 73.215

As mentioned above, the proposed WHPZ(FM) transmitter site is short-spaced with respect to station WCOE(FM). The proposed WHPZ(FM) transmitter site is located 50.3 kilometers from WCOE(FM), which does not meet the Section 73.207 minimum distance requirement of 72.0 kilometers, but satisfies the minimum Section 73.215 separation of 49 kilometers.

Sheet 3 of Figure 5 shows the protected (60 dBu F(50,50) and interfering contours (54 dBu F(50,10) for WCOE(FM), the proposed WHPZ(FM) operation, and also a

presumed maximum non-directional Class A WHPZ(FM) operation at its currently licensed site.

As shown, only the 54 dBu F(50,10) interfering contour of station WCOE(FM) slightly overlaps the protected 60 dBu contour of the proposed WHPZ(FM) operation. The area of overlap is approximately 11 square kilometers (sq. kms), in which 740 persons reside. In comparison, Sheet 3 of Figure 5 also shows the predicted overlap if WHPZ(FM) operated with maximum equivalent Class A facilities (3.1 kW/141 m) from its licensed site. In this case, both the interfering contours of WCOE(FM) and WHPZ(FM) overlap the protected contour of the other station. Based on the WHPZ(FM) maximum equivalent facility, the area of overlap would be approximately 160 sq. kms in which 3,050 persons reside. Thus, based on the WHPZ(FM) proposed operation, no interference is predicted to occur to WCOE(FM), and WHPZ(FM) is predicted to receive less interference.

In addition, based on the proposed operation, WHPZ(FM)'s 60 dBu coverage population will increase from 120,098 to 379,527. Since a waiver of the prohibited contour overlap will allow WHPZ(FM) to decrease potential interference to WCOE(FM), while allowing an increase in its service population, it is believed a waiver would be in the best interest of the public. Finally, it is noted that a full Class A non-directional facility was employed for WCOE(FM) for the purposes of the Section 73.215 analysis as required under the FCC Rules.

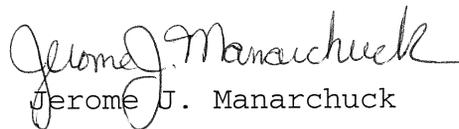
#### Radiofrequency Electromagnetic Field Exposure

The proposed facility has been evaluated in terms of potential radiofrequency electromagnetic field exposure at ground level in accordance with OET Bulletin No. 65, *Evaluating Compliance with FCC Specified Guidelines for*

*Human Exposure to Radiofrequency Electromagnetic Fields.*<sup>2</sup>  
The power density at the base of the tower was calculated using the appropriate procedure contained in Section 2, Supplement A, *Additional Information for Radio and Television Broadcast Stations*, of the Bulletin.

For the calculation, an assumed downward vertical factor of 0.2 was employed with a combined (horizontal and vertical polarization) effective radiated power of 10 kilowatts and radiation center of 88.5 meters (290 feet) above ground level. The proposed power density at 2 meters above ground at the tower base will be 0.0018 mW/cm<sup>2</sup>, which is less than 1.0% of the recommended limit of 0.2 mW/cm<sup>2</sup> for FM stations. Therefore, the proposed WHPZ(FM) facility will comply with the FCC's RF emission rules.

Access to the transmitting site is restricted and appropriately marked with warning signs. When it becomes necessary for workers to ascend the tower, appropriate measures, such as reduction or shut down of power if necessary, shall be taken to ensure that the human exposure to radiofrequency radiation will not exceed the FCC guidelines.

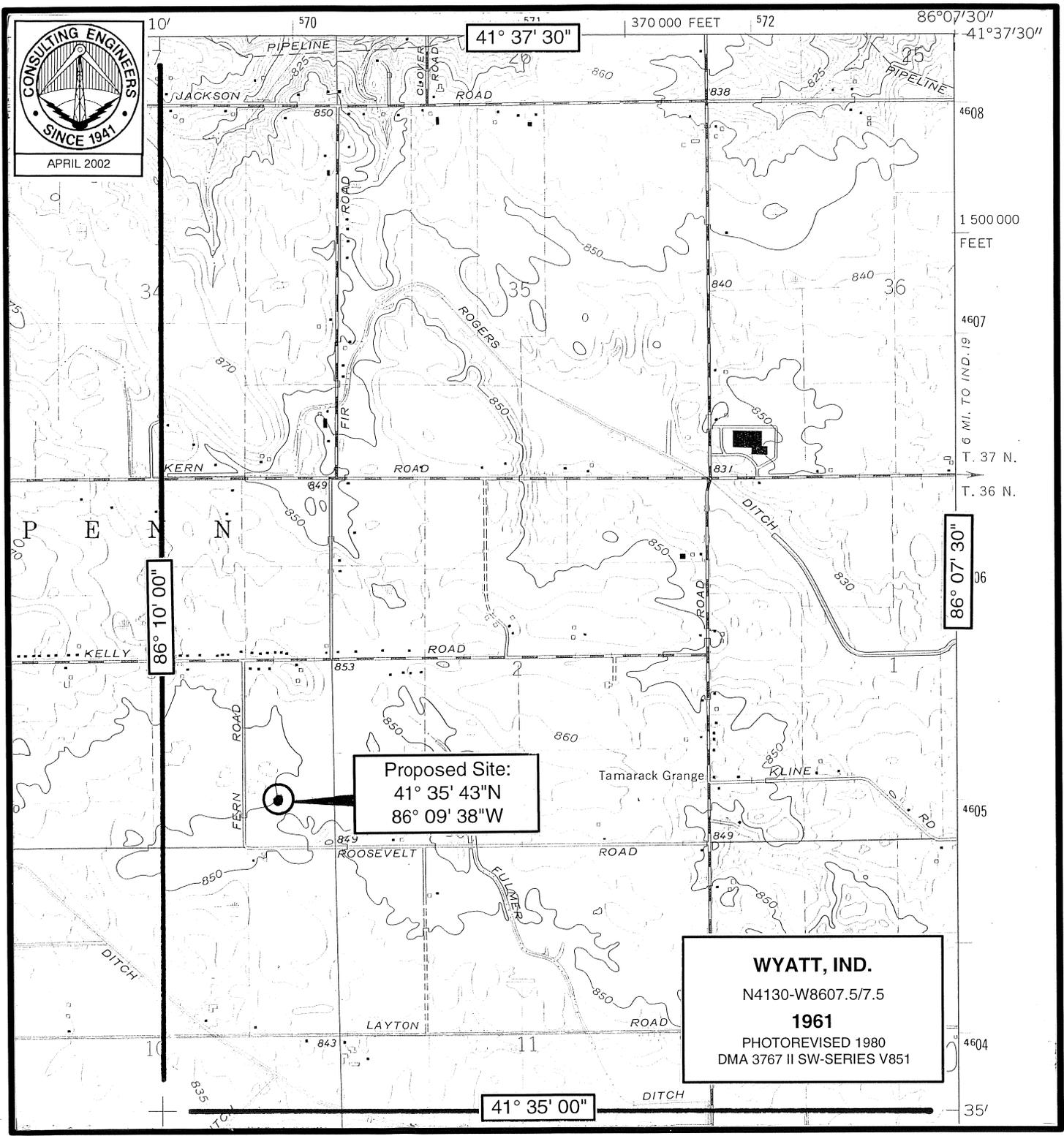
  
Jerome J. Manarchuck

April 5, 2002

du Treil, Lundin & Rackley, Inc.  
201 Fletcher Avenue  
Sarasota, Florida 34237  
941.329.6000

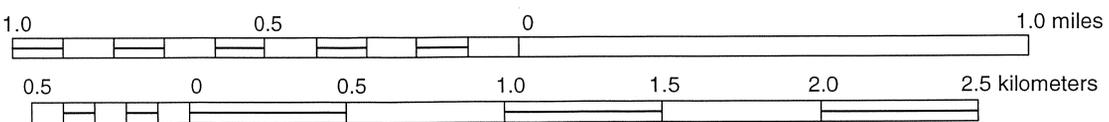
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<sup>2</sup> OET Bulletin 65, Second Edition 97-01, August, 1997.



Proposed Site:  
 41° 35' 43"N  
 86° 09' 38"W

**WYATT, IND.**  
 N4130-W8607.5/7.5  
**1961**  
 PHOTOREVISED 1980  
 DMA 3767 II SW-SERIES V851



**PROPOSED TRANSMITTER LOCATION**

FM STATION WHPZ (FM)  
 BREMEN, INDIANA  
 CH 245A 5 KW (MAX-DA) 105 M

du Treil, Lundin & Rackley, Inc., Sarasota, Florida



FCC Tower Registration No. 1060842

558.4 m AMSL  
(1832 ft AMSL)

299.3 m  
(982 ft)

Proposed WHPZ(FM) Panel Antenna

Radiation Center  
347.6 m AMSL  
(1140 ft AMSL)

88.5 m  
(290 ft)

Site Coordinates:  
41° 35' 43" N  
86° 09' 38" W

259.1 m AMSL  
(850 ft) AMSL

Not to Scale

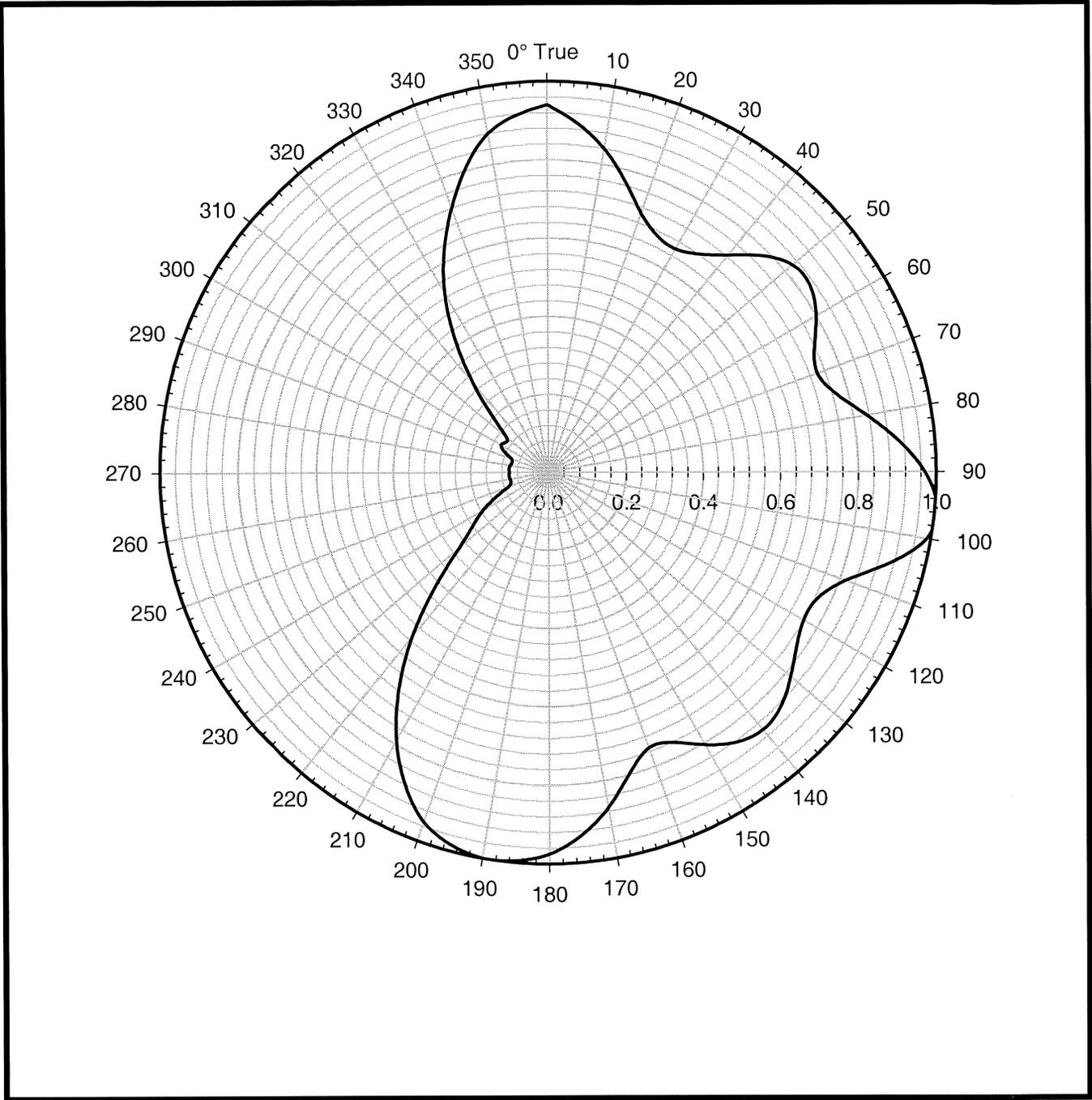
## PROPOSED ANTENNA AND SUPPORTING STRUCTURE

FM STATION WHPZ(FM)

BREMEN, INDIANA

CH 245A 5.0 KW (MAX-DA) 105 M

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**HORIZONTAL RELATIVE FIELD PATTERN**

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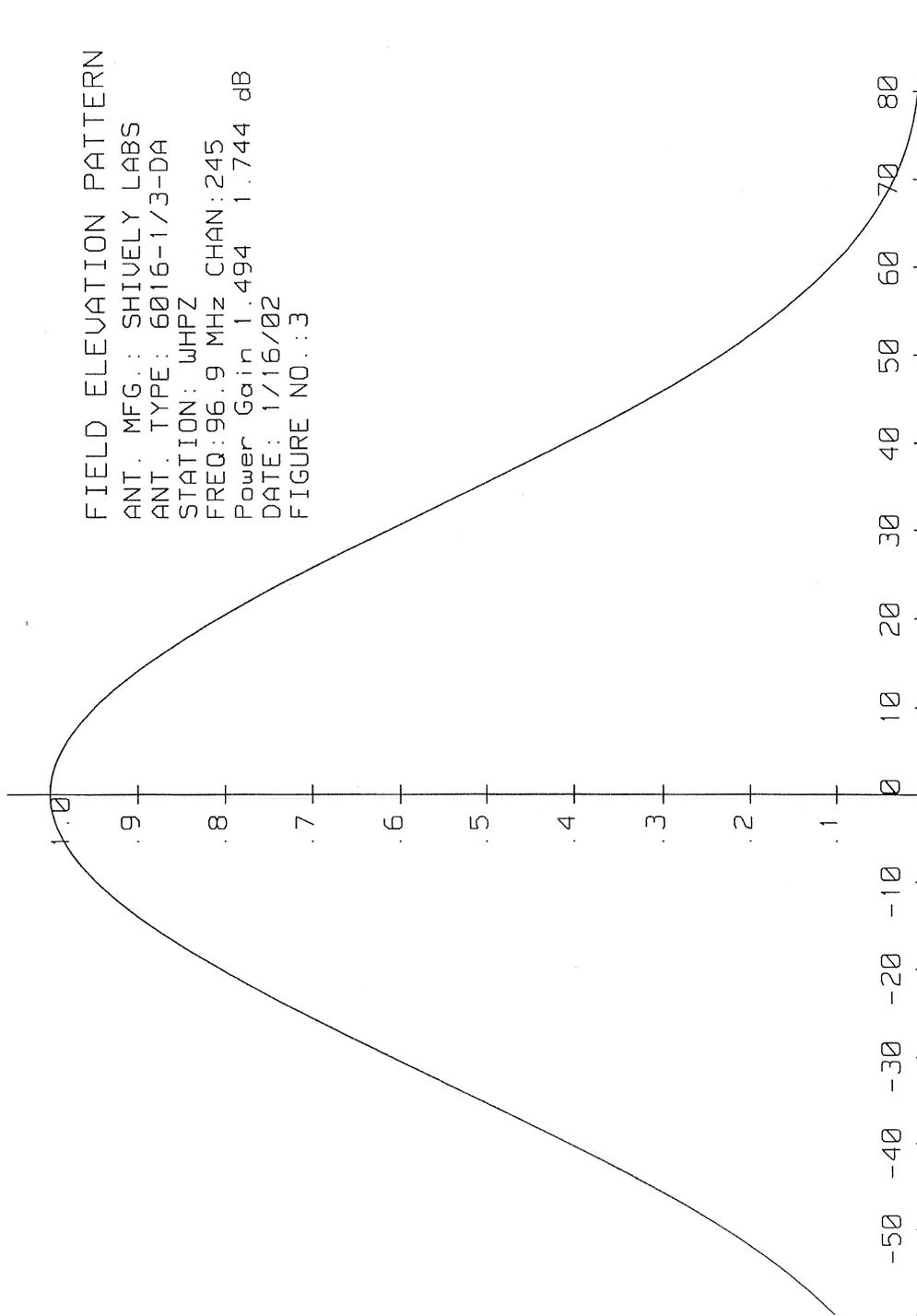
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Tabulation of Horizontal Relative Fields For  
The Proposed Directional Envelope

Azimuth (deg. True)	Relative Field	Azimuth (deg. True)	Relative Field
0	0.940	180	0.975
10	0.840	190	1.000
20	0.705	200	0.950
30	0.660	210	0.790
40	0.725	220	0.550
50	0.825	230	0.300
60	0.800	240	0.195
70	0.740	250	0.110
80	0.835	260	0.100
90	0.970	270	0.100
100	0.990	280	0.100
110	0.815	290	0.100
120	0.760	300	0.140
130	0.815	310	0.140
140	0.860	320	0.300
150	0.805	330	0.530
160	0.750	340	0.720
170	0.870	350	0.880

FIELD ELEVATION PATTERN

ANT. MFG.: SHIVELY LABS  
ANT. TYPE: 6016-1/3-DA  
STATION: WHPZ  
FREQ: 96.9 MHz CHAN: 245  
Power Gain 1.494 1.744 dB  
DATE: 1/16/02  
FIGURE NO.: 3

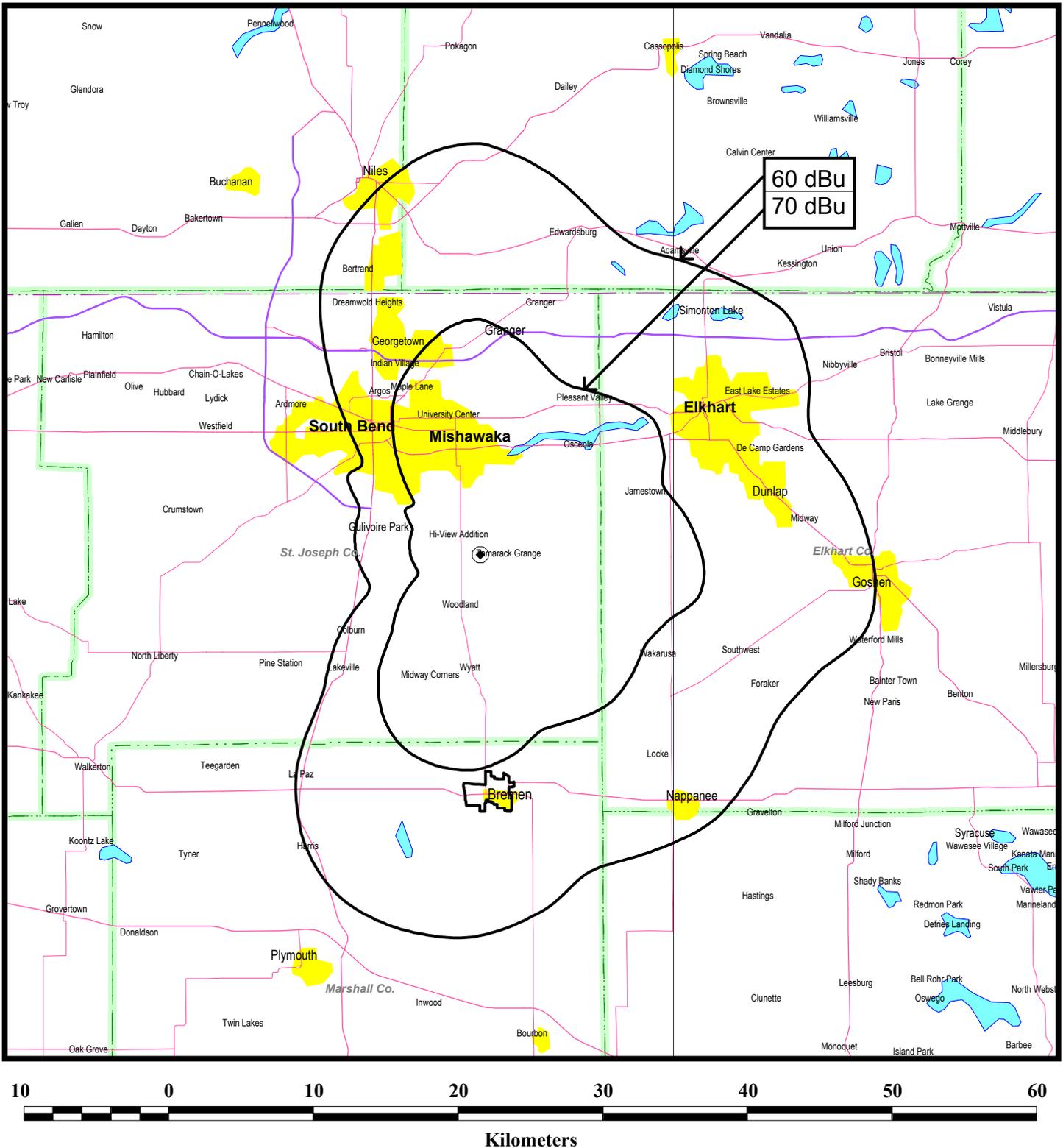


**VERTICAL PLANE PATTERN (RELATIVE FIELD)**

FM STATION WHPZ (FM)  
BREMEN, INDIANA  
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Figure 4



## PREDICTED COVERAGE CONTOURS

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Channel 245A Allocation Study

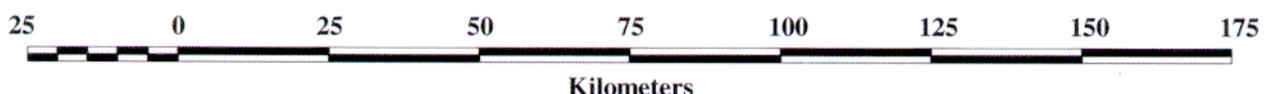
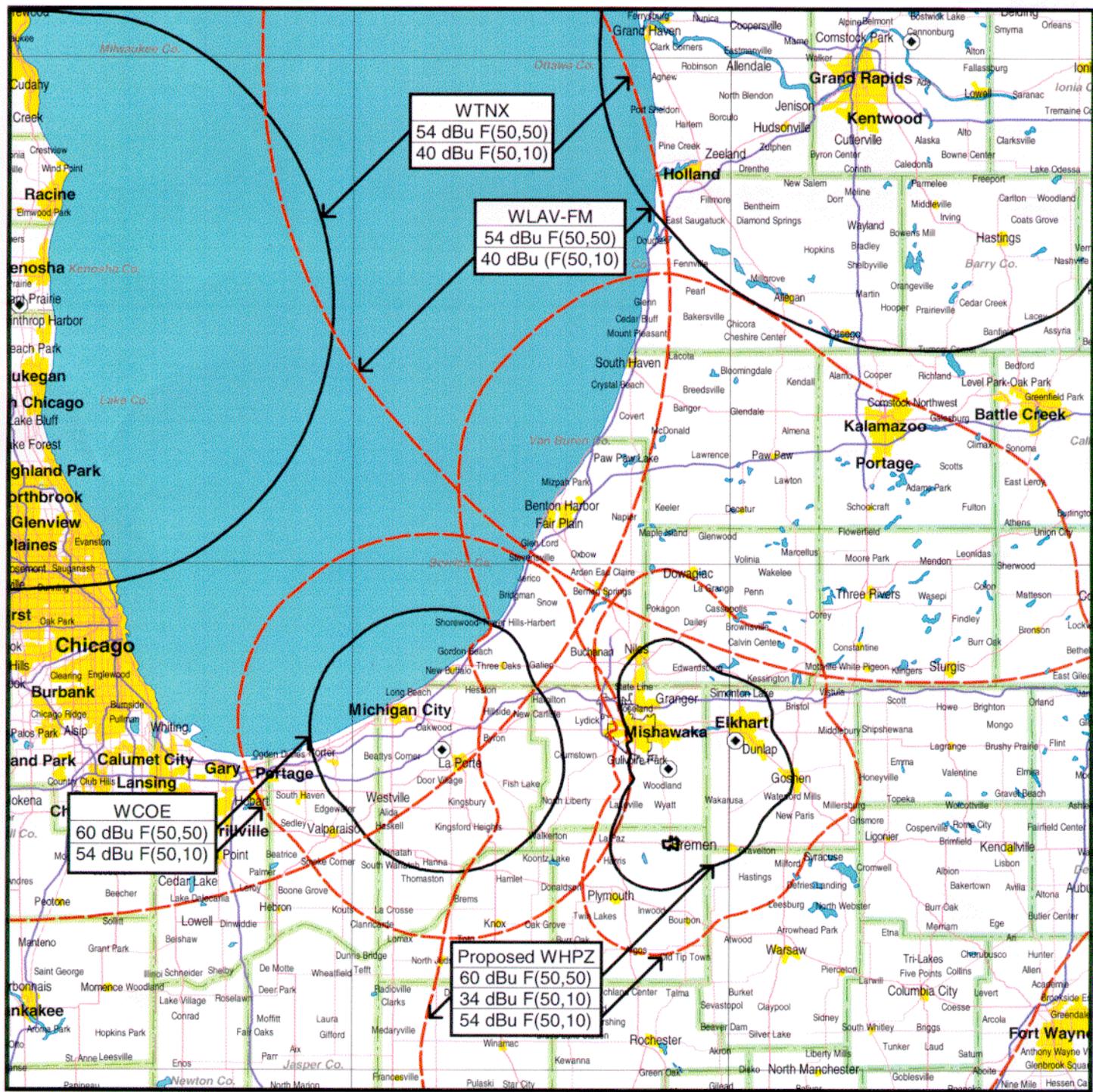
41° 35' 43" North Latitude  
86° 09' 38" West Longitude

FM SEPARATION STUDY

Job Title: WHPZ(FM)  
Channel: 245 A

Separation Buffer: 32 km  
Coordinates: 41-35-43 86-09-38

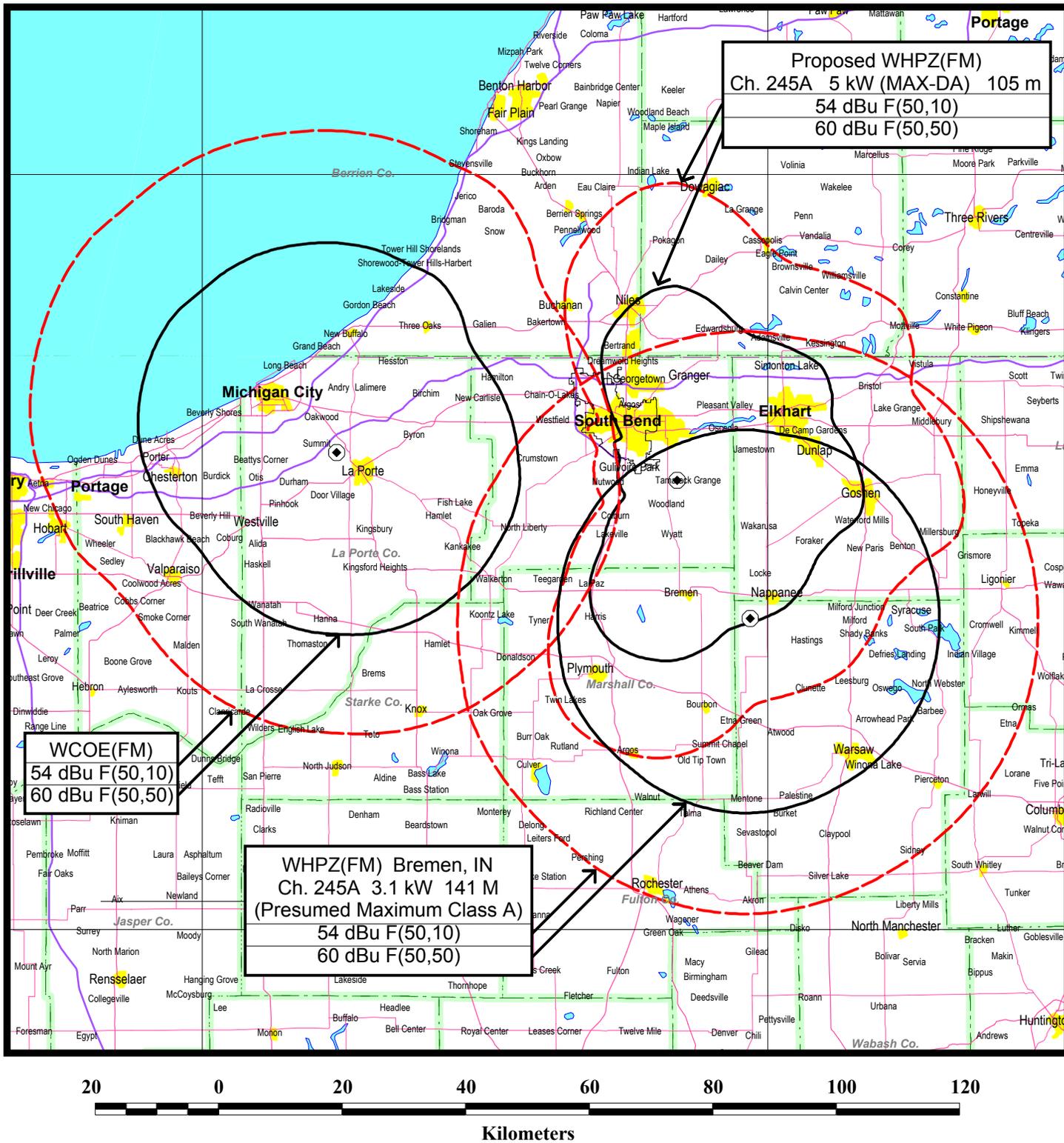
Call Id	City St	File Status Num	Channel Freq	ERP HAAT	DA Id	Latitude Longitude	73 215	Bear	Dist. (km)	Req. (km) min
WCOE 36541	LA PORTE IN	BLH LIC C 2496	244 A 96.7	3.000 81	N	41-37-55 86-45-43	N	274.9	50.29 -21.71	72.0 Short
Horizontally Polarized only, Accepted by Canada on 901108										
WHPZ 6335	BREMEN IN	BLH LIC C 19930121KA	245 A 96.9	2.000 141	N	41-24-43 86-01-51	N	152.0	23.06	
WLAV-F 41680	GRAND RAPID MI	BLH LIC C 19940822KC	245 B 96.9	50.000 149	N	43-02-01 85-31-15	N	18.0	168.25 -9.75	178.0 Short
WTNX 49547	ZION IL	BLH LIC C 19870127KB	245 B 96.9	50.000 148	Y 13676	42-30-36 87-53-11	N	306.1	175.32 -2.68	178.0 Short
WDRV 49552	CHICAGO IL	BLH LIC C 19840515CP	246 B 97.1	8.400 363	Y 13571	41-53-08 87-37-15	N	285.4	125.68 12.68	113.0 Close
WDRV 49552	CHICAGO IL	BPH APP C 20010702AAQ	246 B 97.1	7.900 370	Y 40222	41-53-06 87-37-18	N	285.4	125.74 12.74	113.0 Close
WMEE 51726	FORT WAYNE IN	BLH LIC C 19890914KB	247 B 97.3	26.000 210	N	41-06-42 85-11-43	N	123.4	97.01 28.01	69.0 Clear
WYTZ 17734	BRIDGMAN MI	BLH LIC C 19930402KB	248 A 97.5	3.800 126	N	41-59-19 86-31-46	N	325.2	53.37 22.37	31.0 Clear



### ALLOCATION MAP

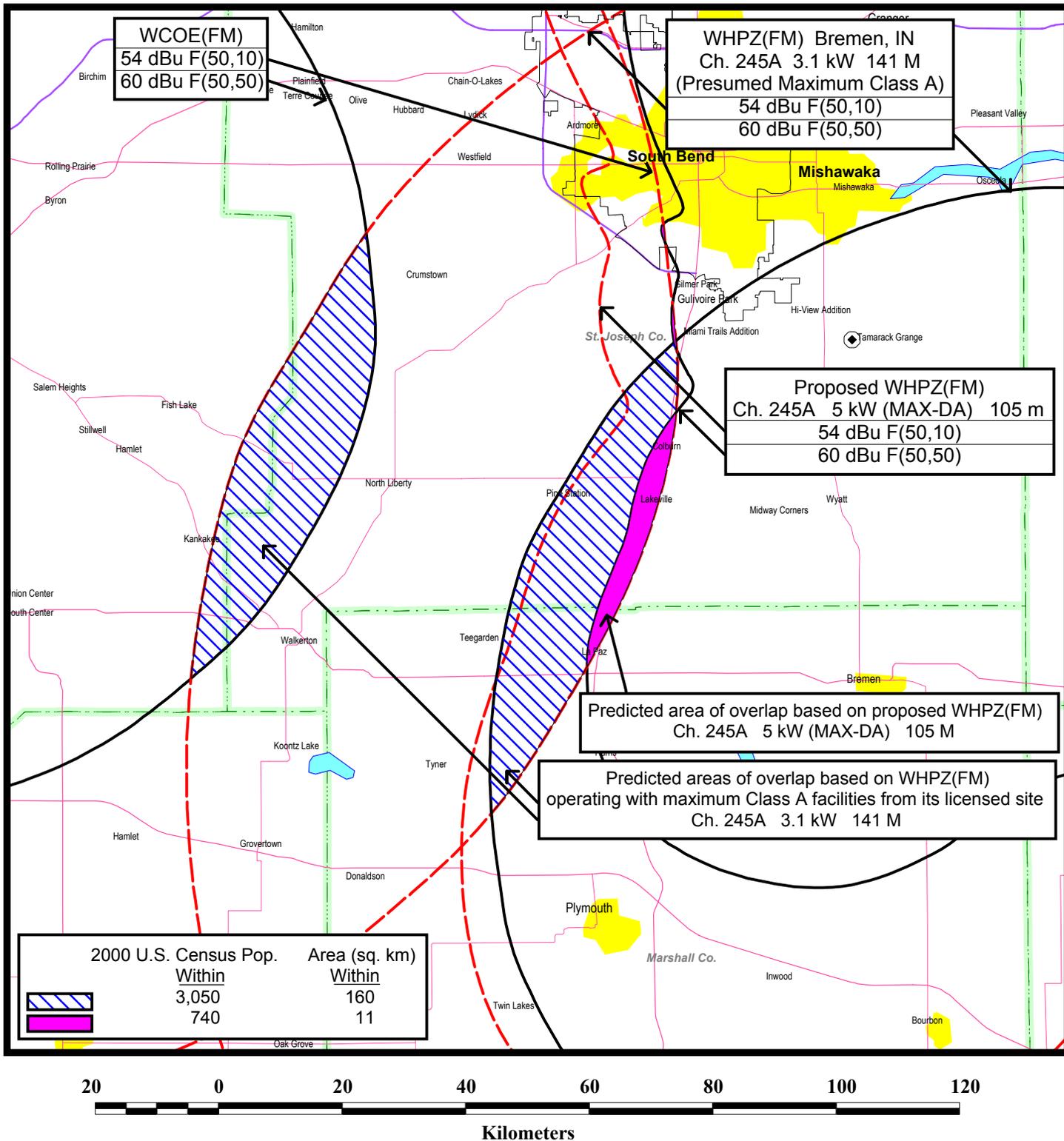
FM STATION WHPZ  
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**CONTOUR OVERLAP COMPARISON IN SUPPORT OF WAIVER**

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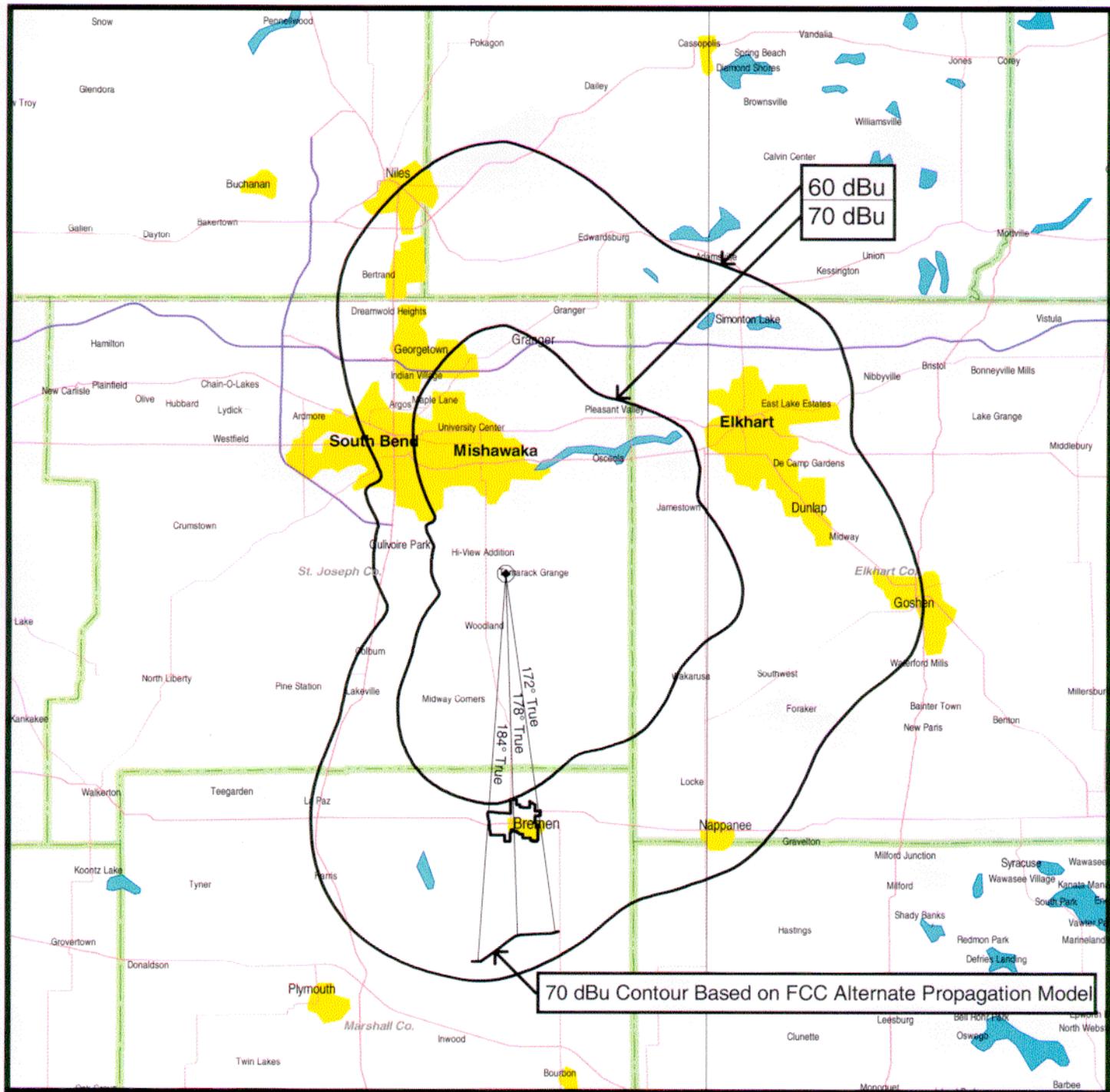


## CONTOUR OVERLAP COMPARISON IN SUPPORT OF WAIVER

FM STATION WHPZ(FM)  
BREMEN, INDIANA

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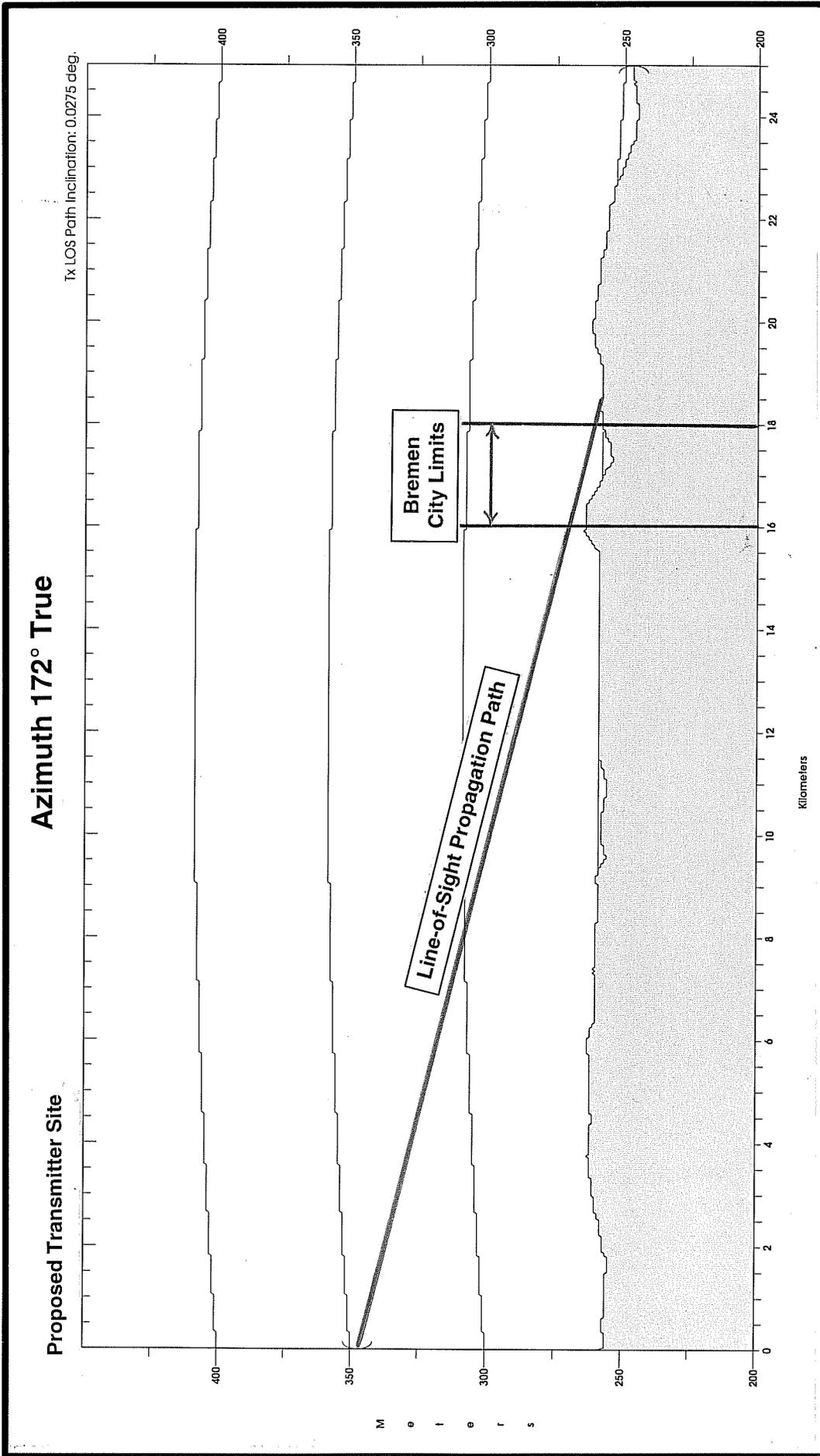
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## PRINCIPAL COMMUNITY COVERAGE OF BREMEN

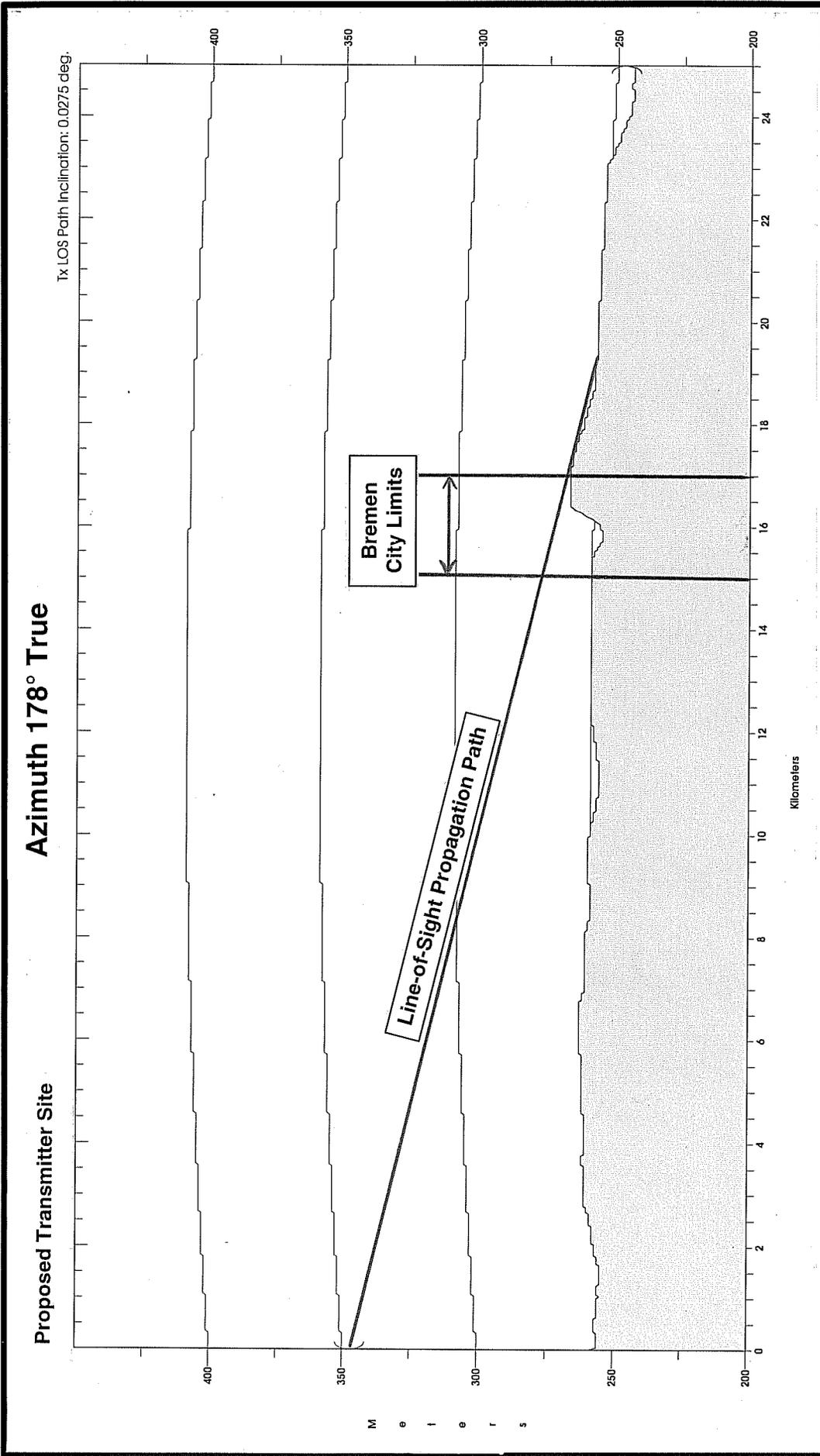
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## TERRAIN PROFILE FROM PROPOSED TRANSMITTER SITE TO BREMEN, INDIANA

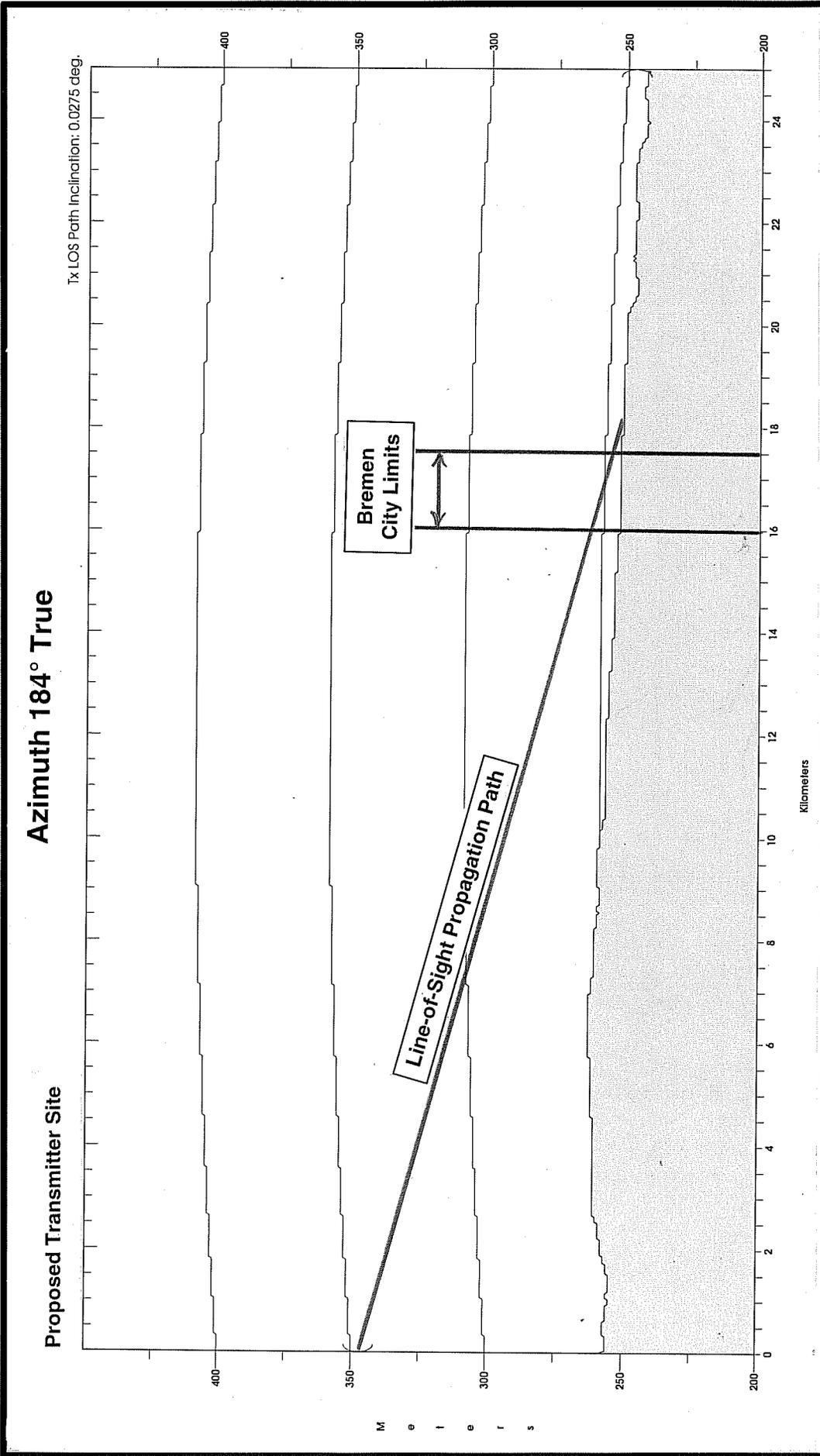
FM STATION WHPZ (FM)  
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**TERRAIN PROFILE FROM PROPOSED TRANSMITTER SITE  
TO BREMEN, INDIANA**

FM STATION WHPZ (FM)  
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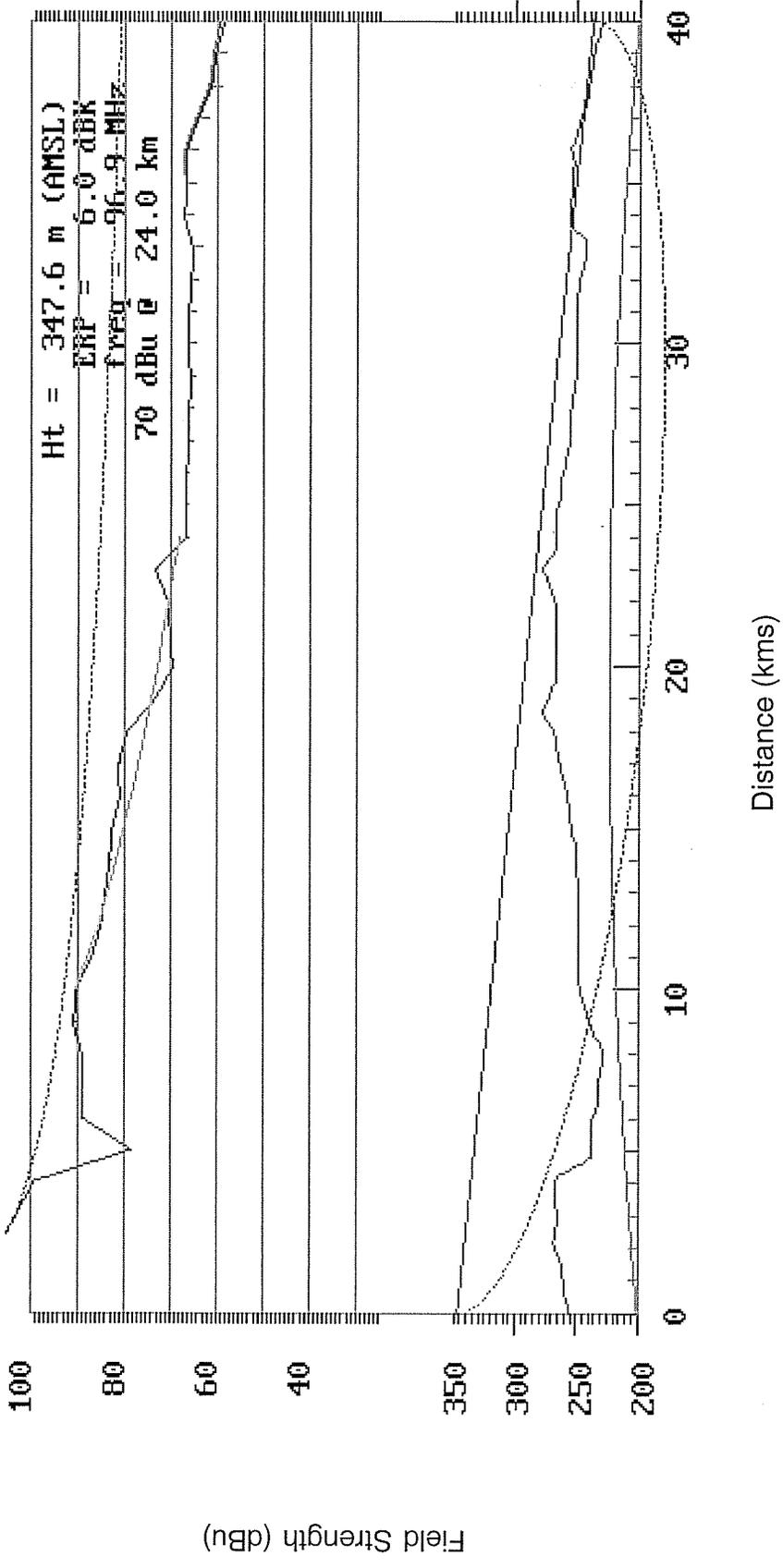
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### TERRAIN PROFILE FROM PROPOSED TRANSMITTER SITE TO BREMEN, INDIANA

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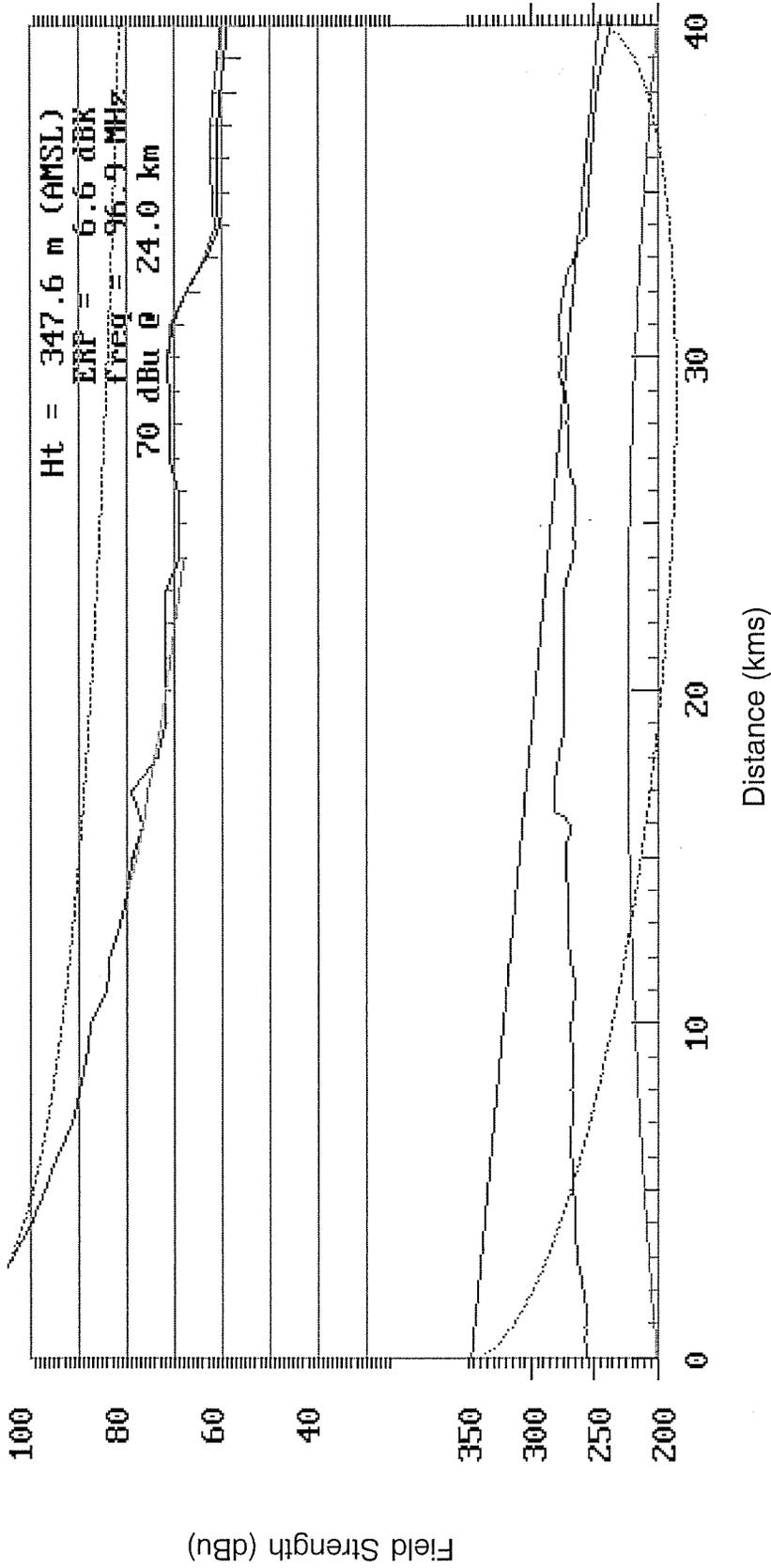


**PROPOSED FCC PROPAGATION MODEL  
172° TRUE (TOWARD BREMEN)**

FM STATION WHPZ(FM)  
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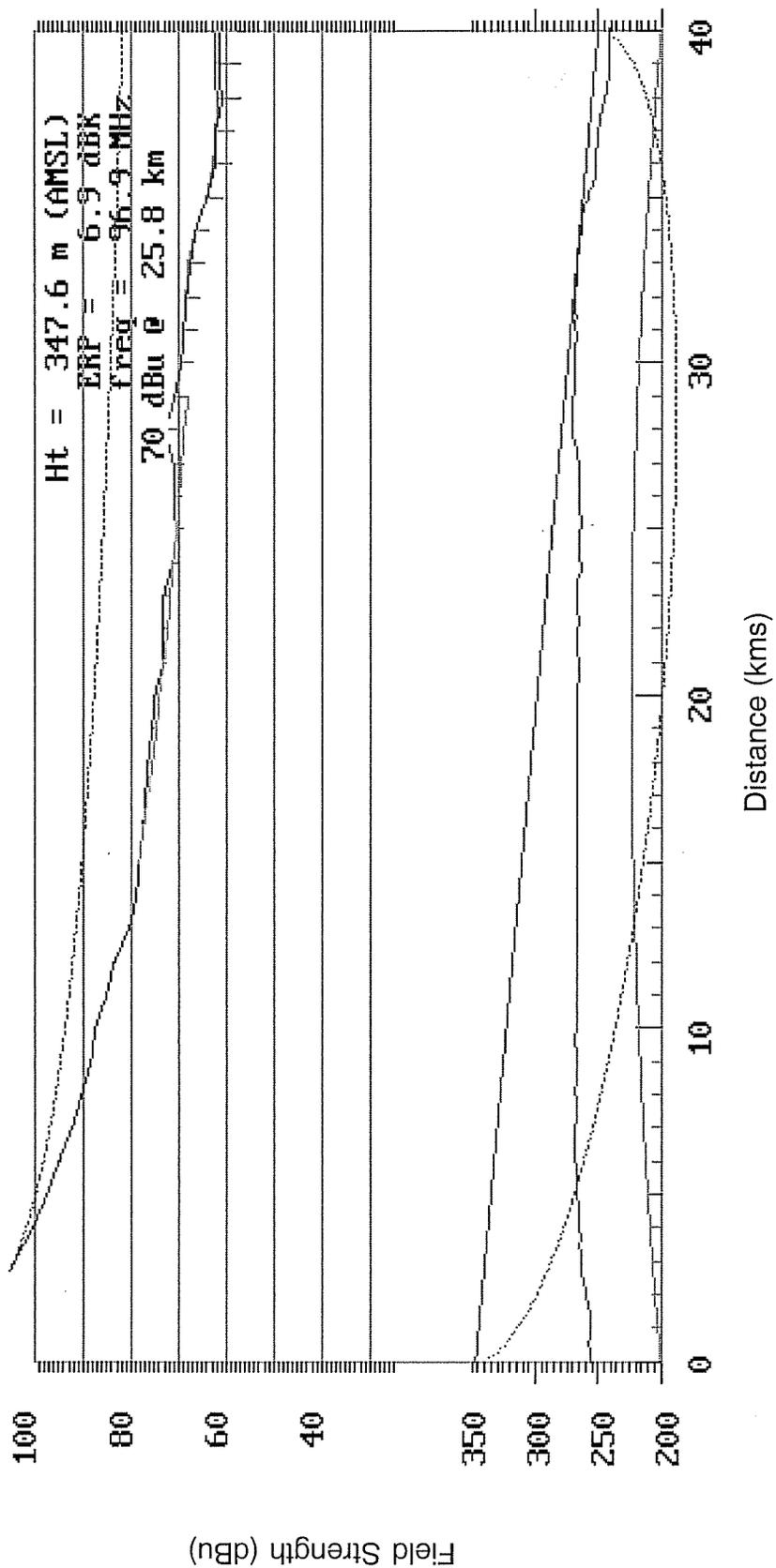


### PROPOSED FCC PROPAGATION MODEL 178° TRUE (TOWARD BREMEN)

FM STATION WHPZ(FM)  
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### PROPOSED FCC PROPAGATION MODEL 184° TRUE (TOWARD BREMEN)

FM STATION WHPZ(FM)

BREMEN, INDIANA

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