

**TECHNICAL STATEMENT  
WREX 30 KW-ND 216 M HAAT CH. 13  
ROCKFORD, ILLINOIS**

**INTRODUCTION**

WREX License, LLC (the “Applicant”), the licensee of digital television station WREX, Facility ID No. 73940, proposes a minor modification during the temporary lifting of the freeze by the Media Bureau to increase WREX’s noise-limited contour beyond the station’s authorized facilities.<sup>1</sup> More specifically, the Applicant seeks to expand the contour through an increase in effective radiated power (ERP) to 30 kW. No other change to WREX’s existing facility is proposed.

**INTERFERENCE PROTECTION AND OET-69 ANALYSIS SETTINGS**

A copy of the *TVStudy* analysis report is provided in Figure 1.<sup>2</sup> This report indicates the proposal is mutually exclusive with the pending construction permit application to modify co-channel station WTHR Indianapolis, IN, File No. BPCDT-20130702ABM.<sup>3</sup> Because the only scenario involving mutual exclusivity with WTHR’s application is attributable to the predicted interference that WREX receives from WTHR, the Applicant agrees to accept the unique new interference caused by the technical facilities proposed in BPCDT-20130702ABM. So aside from the aforementioned mutual exclusivity with WTHR, the analysis found no other

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<sup>1</sup> *Media Bureau Temporarily Lifts the Freeze on the Filing of Minor Modifications Applications That Expand the Contour of Full Power and Class A Television Stations From November 28 Through December 7, 2017*, Public Notice, DA 17-1086 (rel. Nov. 6, 2017).

<sup>2</sup> *TVStudy* Program, Version 2.2.3.

<sup>3</sup> WTHR’s construction permit application was filed after the FCC Media Bureau imposed the freeze on minor modification applications on April 5, 2013 and, therefore, this application does not have “cut-off” protection.



interference check failures. The summary further indicates that the following analysis settings were used:

Study cell size:	2.0 kilometer
Profile point spacing:	1.0 kilometer

## ENVIRONMENTAL IMPACT

The construction permit application specifies an existing FCC registered tower that was constructed before March 16, 2001.<sup>4</sup> Given that the station will continue to utilize its existing antenna, the criteria outlined in 47 CFR § 1.1307(a) for certain types of facilities that may significantly affect the environment do not apply. With regard to the rules for limiting human exposure to radio-frequency (RF) energy in 47 CFR § 1.1307(b), this application seeks authority to operate a television broadcast antenna in full compliance with those guidelines as described in more detail below. The following technical specifications are proposed:

Frequency:	210 - 216 MHz (UHF Channel 13)
Effective Radiated Power:	30 kW
Antenna Type:	RCA TF-12AH
Antenna Polarization:	Horizontal
Antenna Height:	190 meters above ground level (AGL)
Location coordinates:	42-17-48.0 N, 89-14-22.0 W (NAD83)
Site elevation:	271.3 meters above mean sea level (AMSL)
Overall tower height:	198.7 meters AGL
FCC ASRN:	1011422; Constructed in 1953

Using the methodology for predicting power density levels for television broadcast antennas outlined in *FCC OET Bulletin No. 65, Edition 97-01*, (OET-65), the proposed

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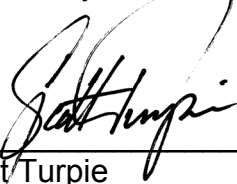
<sup>4</sup> 47 CFR Part 1, App. B, § III.A. "An antenna may be mounted on an existing tower constructed on or before March 16, 2001 without such collocation being reviewed through the Section 106 process set forth in the NPA, unless: 1. The mounting of the antenna will result in a substantial increase in the size of the tower as defined in Stipulation I.E, above; or, 2. The tower has been determined by the FCC to have an adverse effect on one or more historic properties, where such effect has not been avoided or mitigated through a conditional no adverse effect determination, a Memorandum of Agreement, a programmatic agreement, or a finding of compliance with Section 106 and the NPA; or, 3. The tower is the subject of a pending environmental review or related proceeding before the FCC involving compliance with Section 106 of the National Historic Preservation Act; or, 4. The collocation licensee or the owner of the tower has received written or electronic notification that the FCC is in receipt of a complaint from a member of the public, an Indian Tribe, a SHPO or the Council, that the collocation has an adverse effect on one or more historic properties."



increase in WREX's facilities is calculated to produce a maximum power density of 4.00  $\mu\text{W}/\text{cm}^2$  at points 2 meters above ground (approximate human head height). As shown in Figure 2, this maximum ground-level exposure value was calculated at a horizontal distance of 152.24 meters from the base of the tower. This determination was made using the antenna relative field pattern shown in the plot of Figure 3. The maximum exposure limits applicable to Channel 13, as indicated in 47 CFR § 1.1310 for uncontrolled and controlled situations, are 200  $\mu\text{W}/\text{cm}^2$  and 1,000  $\mu\text{W}/\text{cm}^2$  respectively. Because the worst-case exposure level determined for WREX is not more than 5% of those guidelines and considering warning signs are posted to establish awareness of the potential for exposure, no further showing of compliance is necessary. Accordingly, this application complies with the RF exposure limits and is categorically excluded from environmental processing by 47 CFR § 1.1306.

Steps to limit exposure to persons authorized to access the transmitter site will be consistent with the appropriate recommendations in OET-65. All maintenance and other related work to be performed at elevations higher than 2 meters above ground will be coordinated to prevent exposure to RF fields in excess of the controlled limit. Such preventative steps shall include reducing power or shutting down the facility.

Respectfully submitted,



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November 28, 2017

Attachment  
Figure 1 – TVStudy Results  
Figure 2 – RF Exposure Analysis  
Figure 3 – Antenna Elevation Pattern

## FIGURE 1 Analysis Summary TVSTUDY, VERSION 2.2.3.

tvstudy v2.2.3 (04ezul)  
Database: localhost. Study: WREX13 30KW-ND UPDATE. Model: Longley-Rice  
Start: 2017.11.28 00:32:15

Study created: 2017.11.28 00:30:45

Study build station data: LMS TV 2017-11-26 (84)

Proposal: WREX D13 DT APP ROCKFORD, IL

Facility ID: 73940

Station data: User record

Record ID: 364

Country: U.S.

Zone: 1

Stations affected by proposal:

Call	Chan	Svc	Status	City, State	File Number	Distance
WBBM-TV	D12	DT	LIC	CHICAGO, IL	BLCDT20090612ADR	140.2 km
WHO-DT	D13	DT	LIC	DES MOINES, IA	BLCDT20090410ASQ	365.1
WTHR	D13	DT	APP	INDIANAPOLIS, IN	BP0DT20130702ABM	367.2
WZZM	D13	DT	LIC	GRAND RAPIDS, MI	BLCDT20100726AKV	293.7
WNOV	D13	DT	BL	GRANDON, WI	DTVBL81503	365.3

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D13

Latitude: 42 17 48.00 N (NAD83)

Longitude: 89 14 22.00 W

Height AMSL: 461.3 m

HAAT: 216.0 m

Peak ERP: 30.0 kW

Antenna: Omnidirectional

Elev Pattern: Generic

36.0 dBu contour:	Azimuth	ERP	HAAT	Distance
0.0 deg	0.0 deg	30.0 kW	230.6 m	97.2 km
45.0	30.0	30.0	203.6	94.8
90.0	30.0	30.0	230.7	97.3
135.0	30.0	30.0	219.3	96.2
180.0	30.0	30.0	202.7	94.7
225.0	30.0	30.0	200.0	94.4
270.0	30.0	30.0	219.5	96.3

315.0 30.0 214.9 95.8

Database HAAT does not agree with computed HAAT

Database HAAT: 216 m Computed HAAT: 215 m

ERP exceeds maximum

ERP: 30.0 kW ERP maximum: 30.0 kW

\*\*Proposal service area extends beyond baseline plus 1.0%

Proposal service area population is more than 95.0% of baseline

Distance to Canadian border: 502.4 km

Distance to Mexican border: 1766.2 km

Conditions at FCC monitoring station: Allegan MI

Bearing: 81.6 degrees Distance: 271.5 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:

Bearing: 265.2 degrees Distance: 1355.4 km

Study cell size: 2.00 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%

Interference to BLCDT20090612ADR LIC, scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WBBM-TV	D12	DT	LIC	CHICAGO, IL	BLCDT20090612ADR	
Undesireds:	WREX	D13	DT	BL	ROCKFORD, IL	DTVBL73940	140.3 km
	WREX	D13	DT	APP	ROCKFORD, IL		140.2
	WISQ-TV	D11	DT	APP	MADISON, WI	BLANK0000029886	203.4
	KLIN	D12	DT	LIC	IOWA CITY, IA	BLCDT20091229ABP	307.6
	WINM	D12	DT	LIC	ANGOLA, IN	BLCDT20130711ABN	239.9
	WJRT-TV	D12	DT	LIC	FLINT, MI	BLCDT20100503ACT	329.1
	WLUK-TV	D12	DT	CP	GREEN BAY, WI	BLANK0000027369	282.7
Service area	34583.4	9,977.169	Terrain-limited		IX-free, before	IX-free, after	Percent New IX
			34382.6	9,967.841	33181.2	9,900.819	0.02 0.00
Undesired	WREX D13 DT BL	139.9	1,521	4.0	9	Unique IX, after	
	WREX D13 DT APP	271.8	4,803			12.0	58
	KLIN D12 DT LIC	613.1	44,702	405.3	37,395	317.3	35,082
	WINM D12 DT LIC	436.1	7,715	383.7	7,172	383.7	7,172
	WJRT-TV D12 DT LIC	56.4	899	0.0	0	0.0	0
	WLUK-TV D12 DT CP	256.2	20,631	140.3	14,205	140.3	14,205

Interference to BLCDT20090612ADR LIC, scenario 2

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WBBM-TV	D12	DT	LIC	CHICAGO, IL	BLCDT20090612ADR	
Undesireds:	WREX	D13	DT	BL	ROCKFORD, IL	DTVBL73940	140.3 km
	WREX	D13	DT	APP	ROCKFORD, IL		140.2
	WISQ-TV	D11	DT	APP	MADISON, WI	BLANK0000029886	203.4
	KLIN	D12	DT	LIC	IOWA CITY, IA	BLCDT20091229ABP	307.6
	WINM	D12	DT	LIC	ANGOLA, IN	BLCDT20130711ABN	239.9
	WJRT-TV	D12	DT	LIC	FLINT, MI	BLCDT20100503ACT	329.1
	WLUK-TV	D12	DT	BL	GREEN BAY, WI	DTVBL4150	282.7

34583.4	9,977,169	Service area	Terrain-limited		IX-free, before	IX-free, after	Percent New IX
	34382.6		9,967,841	33181.2	9,900,819	33173.2	9,900,770
							0.02
							0.00
Undesired			Total IX	Unique IX, before	Unique IX, after		
WREX D13 DT BL	139.9		1,521	4.0	9		
WREX D13 DT APP	271.8		4,803			12.0	58
K11N D12 DT LIC	613.1		44,702	405.3	37,395	317.3	35,082
W1M1 D12 DT LIC	436.1		7,715	383.7	7,172	383.7	7,172
WJRT-TV D12 DT LIC	56.4		899	0.0	0	0.0	0
WLUK-TV D12 DT BL	256.2		20,631	140.3	14,205	140.3	14,205
Interference to BLC0D720090410ASQ LIC, scenario 1							
Desired:	Call	Chan	Svc Status	City, State	File Number	Distance	
	WHO-DT	D13	DT LIC	DES MOINES, IA	BLC0D720090410ASQ		
Undesireds:	WREX	D13	DT BL	ROCKFORD, IL	DTVBL73940	365.1 km	
	WREX	D13	DT APP	ROCKFORD, IL		365.1	
	K11N	D12	DT LIC	IOWA CITY, IA	BLED720091229ABP	188.7	
	W1BW-TV	D13	DT LIC	TOPEKA, KS	BLC0D72011011AB0	373.5	
	KSFY-TV	D13	DT LIC	STOIX FALLS, SD	BLC0D720090223ABE	305.0	
Service area	Terrain-limited		IX-free, before		IX-free, after	Percent New IX	
49101.2	1,151,807	48004.8	1,127,810	47467.5	1,113,022	47443.5	1,112,917
							0.05
							0.01
Undesired			Total IX	Unique IX, before	Unique IX, after		
WREX D13 DT BL	48.2		8,074	36.1	8,024	60.1	8,129
WREX D13 DT APP	76.2		8,197			52.3	394
K11N D12 DT LIC	68.4		462	56.3	412	219.9	403
W1BW-TV D13 DT LIC	244.2		444	219.9	403	188.6	5,858
KSFY-TV D13 DT LIC	212.9		5,899	188.6	5,858		
Interference to BPC0D720130702ABM APP, scenario 1							
Desired:	Call	Chan	Svc Status	City, State	File Number	Distance	
	WTHR	D13	DT APP	INDIANAPOLIS, IN	BPC0D720130702ABM		
Undesireds:	WREX	D13	DT BL	ROCKFORD, IL	DTVBL73940	367.2 km	
	WREX	D13	DT APP	ROCKFORD, IL		367.2	
	WPXS	D13	DT CP	MOUNT VERNON, IL	BLANK0000029698	363.8	
	WTSF	D13	DT CP	ASHLAND, KY	BLANK0000029774	366.3	
	WBKO	D13	DT LIC	BOWLING GREEN, KY	BLC0D720090423ABM	319.2	
	WZZM	D13	DT LIC	GRAND RAPIDS, MI	BLC0D720100726AKV	376.5	
	WTVG	D13	DT LIC	TOLEDO, OH	BLC0D720110415ABN	303.8	
Service area	Terrain-limited		IX-free, before		IX-free, after	Percent New IX	
37429.5	3,105,106	36266.5	3,054,464	35743.2	3,039,637	35699.2	3,039,435
							0.12
							0.01
Undesired			Total IX	Unique IX, before	Unique IX, after		
WREX D13 DT BL	16.0		607	12.0	586	56.0	788
WREX D13 DT APP	59.9		809			139.6	1,771
WPXS D13 DT CP	175.4		3,097	139.6	1,771	131.8	8,383
WBKO D13 DT LIC	167.6		9,709	131.8	8,383	0.0	0
WZZM D13 DT LIC	8.0		63	0.0	0	196.2	2,698
WTVG D13 DT LIC	200.2		2,740	196.2	2,698		
Interference to BPC0D720130702ABM APP, scenario 2							
Desired:	Call	Chan	Svc Status	City, State	File Number	Distance	
	WTHR	D13	DT APP	INDIANAPOLIS, IN	BPC0D720130702ABM		
Undesireds:	WREX	D13	DT BL	ROCKFORD, IL	DTVBL73940	367.2 km	
	WREX	D13	DT APP	ROCKFORD, IL		367.2	
	WPXS	D13	DT BL	MOUNT VERNON, IL	DTVBL40861	340.8	
	WTSF	D13	DT CP	ASHLAND, KY	BLANK0000029774	366.3	

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WBKO WZZM WTVG	D13	DT	LIC	BOWLING GREEN, KY	IX-free, before IX-free, after	35834.8	3,041,204	Percent New IX 0.12
	D13	DT	LIC	GRAND RAPIDS, MI				
	D13	DT	LIC	TOLEDO, OH				
	Terrain-limited							
	36266.5							
Service area	37429.5	3,105,106	3,054,464	35878.8	3,041,406			
	Total IX		Unique IX, before		Unique IX, after			
	WREX D13 DT BL	16.0	607	12.0	586	56.0	788	
	WREX D13 DT APP	59.9	809			4.0	2	
	WPXS D13 DT BL	4.0	2	4.0	2	167.6	9,709	
WBKO WZZM WTVG	D13	DT	LIC	167.6	9,709	167.6	9,709	
	D13	DT	LIC	8.0	63	0.0	0	
	D13	DT	LIC	200.2	2,740	196.2	2,698	
	Total IX		Unique IX, before		Unique IX, after			
	WREX D13 DT BL	16.0	607	12.0	586	56.0	788	
Interference to BLCDT20100726AKV LIC, scenario 1								
Desired:	Call	Chan	Svc Status	City, State	File Number	Distance		
	WZZM	D13	DT LIC	GRAND RAPIDS, MI	BLCDT20100726AKV	293.8 km		
Undesireds:	WREX	D13	DT BL	ROCKFORD, IL	DTVBL73940	293.7		
	WREX	D13	DT APP	ROCKFORD, IL		150.3		
	WJRT-TV	D12	DT LIC	FLINT, MI	BLCDT20100503ACT	376.5		
	WTHR	D13	DT APP	INDIANAPOLIS, IN	BPCDT20130702ABM	273.1		
	WTVG	D13	DT LIC	TOLEDO, OH	BLCDT20110415ABN	344.7		
	WVOW	D13	DT CP	CRANDON, WI	BLANK0000027451			
Service area	Terrain-limited		IX-free, before		IX-free, after		Percent New IX	
	32199.0	1,574,546	31546.9	1,548,835	31188.1	1,519,042	0.06	0.04
WBKO WZZM WTVG	D13	DT	LIC	BOWLING GREEN, KY	IX-free, before IX-free, after	35834.8	3,041,204	Percent New IX 0.12
	D13	DT	LIC	GRAND RAPIDS, MI				
	D13	DT	LIC	TOLEDO, OH				
	Terrain-limited							
	36266.5							
Service area	37429.5	3,105,106	3,054,464	35878.8	3,041,406			
	Total IX		Unique IX, before		Unique IX, after			
	WREX D13 DT BL	16.0	607	12.0	586	56.0	788	
	WREX D13 DT APP	59.9	809			4.0	2	
	WPXS D13 DT BL	4.0	2	4.0	2	167.6	9,709	
WBKO WZZM WTVG	D13	DT	LIC	167.6	9,709	167.6	9,709	
	D13	DT	LIC	8.0	63	0.0	0	
	D13	DT	LIC	200.2	2,740	196.2	2,698	
	Total IX		Unique IX, before		Unique IX, after			
	WREX D13 DT BL	16.0	607	12.0	586	56.0	788	
Interference to BLCDT20100726AKV LIC, scenario 2								
Desired:	Call	Chan	Svc Status	City, State	File Number	Distance		
	WZZM	D13	DT LIC	GRAND RAPIDS, MI	BLCDT20100726AKV	293.8 km		
Undesireds:	WREX	D13	DT BL	ROCKFORD, IL	DTVBL73940	293.7		
	WREX	D13	DT APP	ROCKFORD, IL		150.3		
	WJRT-TV	D12	DT LIC	FLINT, MI	BLCDT20100503ACT	376.5		
	WTHR	D13	DT APP	INDIANAPOLIS, IN	BLCDT2010127AIE	273.1		
	WTVG	D13	DT LIC	TOLEDO, OH	BLCDT20110415ABN	344.7		
	WVOW	D13	DT CP	CRANDON, WI	BLANK0000027451			
Service area	Terrain-limited		IX-free, before		IX-free, after		Percent New IX	
	32199.0	1,574,546	31546.9	1,548,835	31188.1	1,519,042	0.06	0.04
WBKO WZZM WTVG	D13	DT	LIC	BOWLING GREEN, KY	IX-free, before IX-free, after	35834.8	3,041,204	Percent New IX 0.12
	D13	DT	LIC	GRAND RAPIDS, MI				
	D13	DT	LIC	TOLEDO, OH				
	Terrain-limited							
	36266.5							
Service area	37429.5	3,105,106	3,054,464	35878.8	3,041,406			
	Total IX		Unique IX, before		Unique IX, after			
	WREX D13 DT BL	16.0	607	12.0	586	56.0	788	
	WREX D13 DT APP	59.9	809			4.0	2	
	WPXS D13 DT BL	4.0	2	4.0	2	167.6	9,709	
WBKO WZZM WTVG	D13	DT	LIC	167.6	9,709	167.6	9,709	
	D13	DT	LIC	8.0	63	0.0	0	
	D13	DT	LIC	200.2	2,740	196.2	2,698	
	Total IX		Unique IX, before		Unique IX, after			
	WREX D13 DT BL	16.0	607	12.0	586	56.0	788	
Interference to DTVBL81503 BL, scenario 1								
Desired:	Call	Chan	Svc Status	City, State	File Number	Distance		
	WVOW	D13	DT BL	CRANDON, WI	DTVBL81503	365.2 km		
Undesireds:	WREX	D13	DT BL	ROCKFORD, IL	DTVBL73940	365.3		
	WREX	D13	DT APP	ROCKFORD, IL				

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WLJK-TV		D12	DT	CP	GREEN BAY, WI	BLANK0000027369	147.1
WZZM		D13	DT	LIC	GRAND RAPIDS, MI	BLCDT20100726AKV	344.7
Service area		Terrain-limited		IX-free, before		IX-free, after	
15335.2	121.432	13685.4	105.504	13649.3	105.237	13645.3	105.111
Undesired		Total IX		Unique IX, before		Unique IX, after	
WREX D13 DT BL		0.0	0	0.0	0		
WREX D13 DT APP		4.0	126			4.0	126
WZZM D13 DT LIC		36.1	267	36.1	267	36.1	267
Percent New IX							
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
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15335.2		121.432		13685.4		105.111	
15335.2		121.432		13685.4		105.111	
15335.2							

**FIGURE 2**

ERP (H-Pol):	30.0 kW	Channel:	13
ERP (V-Pol):	0.0 kW	Bottom Frequency:	210
Antenna ht. AGL:	190.0 m		
Exposure ht. AGL:	2.0 m	General MPE Limit:	200
Ground reflection factor:	2.56	Occupational MPE Limit:	1000
Isotropic factor:	1.64		

Depression Angle	Distance (meters)	Slope (meters)	Relative Field	Power Density ( $\mu\text{W}/\text{cm}^2$ )	General MPE Limit	Occupational MPE Limit
90	0.00	188.00	0.000	0.00	0.00%	0.00%
85	16.45	188.72	0.004	0.00	0.00%	0.00%
80	33.15	190.90	0.008	0.00	0.00%	0.00%
75	50.37	194.63	0.029	0.02	0.01%	0.00%
70	68.43	200.07	0.077	0.15	0.07%	0.01%
65	87.67	207.44	0.057	0.08	0.04%	0.01%
60	108.54	217.08	0.032	0.02	0.01%	0.00%
55	131.64	229.51	0.228	0.99	0.49%	0.10%
51	152.24	241.91	0.483	4.00	2.00%	0.40%
50	157.75	245.42	0.437	3.18	1.59%	0.32%
45	188.00	265.87	0.138	0.27	0.14%	0.03%
40	224.05	292.48	0.040	0.02	0.01%	0.00%
35	268.49	327.77	0.030	0.01	0.00%	0.00%
30	325.63	376.00	0.116	0.10	0.05%	0.01%
25	403.17	444.85	0.112	0.06	0.03%	0.01%
20	516.53	549.68	0.040	0.01	0.00%	0.00%
15	701.63	726.38	0.055	0.01	0.00%	0.00%
10	1066.20	1082.65	0.145	0.02	0.01%	0.00%

# Dielectric

Proposal Number

Revision

Date

18 Oct 2000

Call Letters

WREX

Channel 13

Location

Rockford, IL

Customer

Antenna Type

TF-12AH

## ELEVATION PATTERN

RMS Gain at Main Lobe

11.7 (10.68 dB)

Beam Tilt

0.00 Degrees

RMS Gain at Horizontal

11.7 (10.68 dB)

Frequency

213.00 MHz

Calculated / Measured

Calculated

Drawing #

12S117000-90

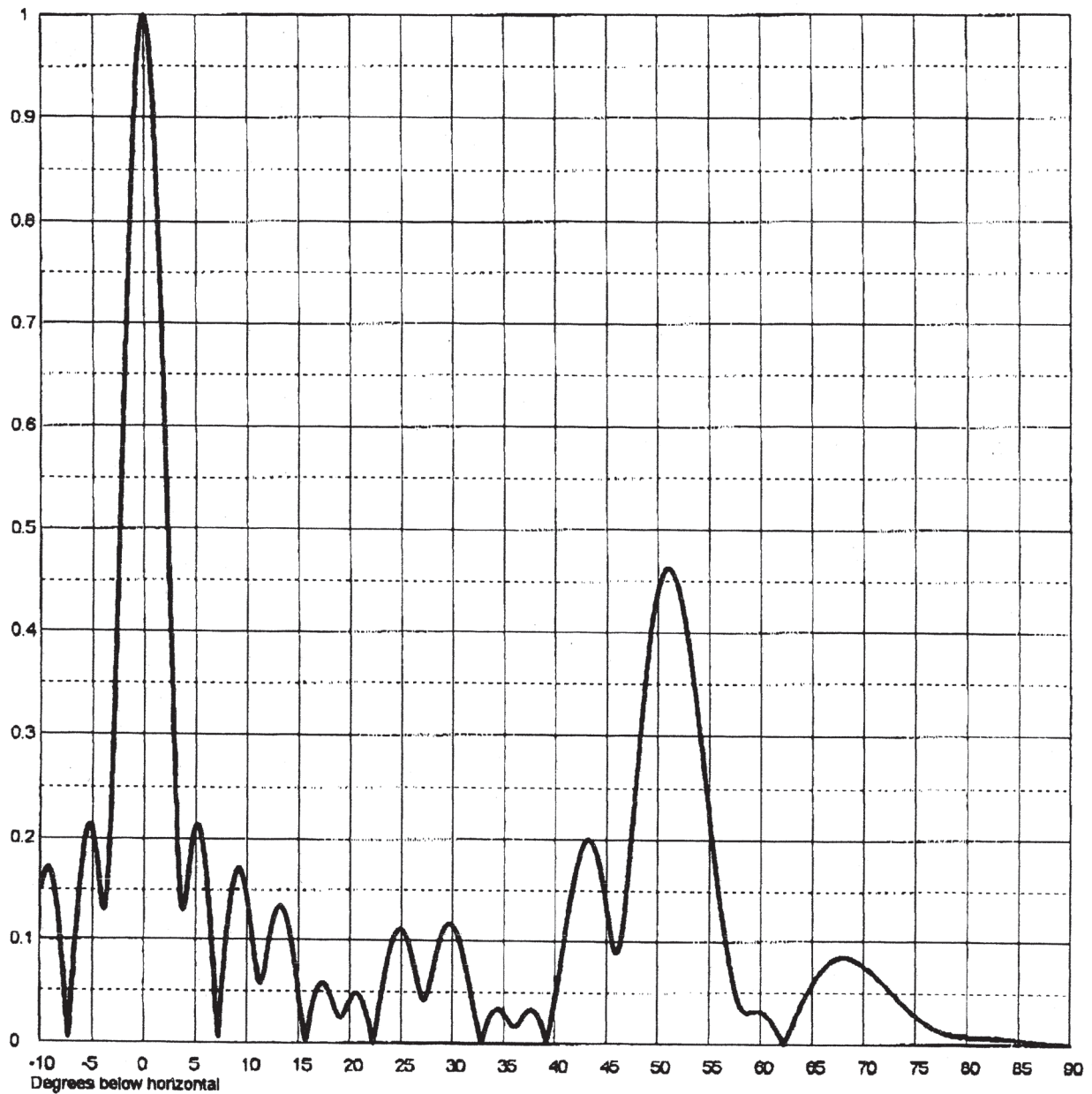


FIGURE 3