

TECHNICAL EXHIBIT  
APPLICATION FOR CONSTRUCTION PERMIT  
TELEVISION STATION WJJA-DT  
RACINE, WISCONSIN

September 12, 2007

CHANNEL 48 30 KW (MAX-DA) 298 M

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APPLICATION OF CONSTRUCTION PERMIT  
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Technical Statement

This Technical Exhibit was prepared on behalf of digital television broadcast station WJJA-DT, Racine, Wisconsin, in support of an application for modification of construction permit (See FCC File No. BMPCDT-20070802ABH). WJJA-DT is paired with analog NTSC TV station WJJA(TV), Channel 49. The instant application proposes operation of the WJJA-DT facility using an existing tower structure located within 5 km of the WJJA-DT allotment reference point. The proposal complies with the DTV application “checklist” filing requirements.\*

The proposed facility will not result in any extension of the predicted 41 dBu noise-limited contour relative to the WJJA-DT allotment facility.<sup>†</sup> Therefore, the proposal meets the terms of the FCC Filing Freeze for television stations.<sup>‡</sup>

Proposed Facilities

The proposed transmitting antenna will be a Jampro model JSH-32/48-49 SHP, which will be side-mounted on the existing WDJT-TV/DT tower located in Milwaukee, Wisconsin. The transmitter site elevation is 190 m AMSL. The antenna

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\* See FCC *Public Notice*, “Commission Details Application Filing Procedures Digital Television (DTV)”, Released: October 16, 1997; and, FCC *Public Notice*, “Additional Application Processing Guidelines for Digital Television (DTV)”, Released: August 10, 1998.

<sup>†</sup> See Figure 1.

<sup>‡</sup> See *August 2004 Filing Freeze PN*, DA 04-2446 (MB rel. Aug. 3, 2004).

center of radiation will be located at 312 m above ground level and 502 m AMSL. The transmitting antenna will be oriented with boresight at 250°True. The proposed WJJA-DT facility will operate on Channel 48 with a maximum directional average ERP of 14.8 dBk (30 kW) and antenna radiation center HAAT of 298 m.<sup>§</sup>

The proposed facility is not located in the border area. The closest FCC Monitoring station is located at Allegan, Michigan, at distance of 171 km at a bearing of 109°True. The closest Radio Astronomy site conducting research on Channel 37 is located at North Liberty, Iowa, at distance of 335 km at a bearing of 245°True. There are no AM broadcast stations located within 3.2 km of the proposed transmitter site.

The proposed facility provides minimum 48 dBu, f(50,90), coverage of Racine in compliance with Section 73.625(a)(1) of the FCC Rules. Figure 1 herein is a map depicting the predicted coverage contours of the proposed facility.

#### Tower Registration

The existing tower structure has an FCC antenna structure registration number of 1047092. There will be no change in the overall height of the existing antenna structure.

#### Allocation Considerations

The proposed WJJA-DT facility meets the criteria of Section 73.622(f)(2) of the FCC Rules. Therefore, pursuant to that section, the application shall not be

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<sup>§</sup> The WJJA-DT digital allotment facility is for operation on Channel 48 with a maximum ERP of 176.4 kW and an antenna HAAT of 303 m. The allotment reference coordinates are: 43-05-15 N.L. / 087-54-01 W.L. (NAD27). See Appendix B, *Second Memorandum Opinion and Order on Reconsideration of the Fifth and Sixth Report and Orders* in MM Docket No. 87-268, FCC 98-315, 14 FCC Rcd 1348 (1998).

subject to further consideration of electromagnetic interference to other DTV or analog TV broadcast stations.<sup>\*\*</sup>

### Environmental Considerations

An evaluation was conducted for the proposed facility concerning compliance with Section 1.1307(b) of the FCC Rules regarding human exposure to radio frequency (RF) energy.<sup>††</sup> Calculations prepared in accordance with FCC Bulletin OET-65 (Edition 97-01) indicate that the proposal will not result in human exposure to RF radiation at ground level in excess of FCC standards. Power density calculations were conducted at 2-m above ground based on the following conservative assumptions, with the following results:

<b>Call Sign</b>	<b>Channel</b>	<b>Average ERP (kW)</b>	<b>Radiation Center Height Above Ground (m)</b>	<b>Relative Field Factor<sup>‡‡</sup></b>	<b>FCC Limit<sup>§§</sup> (mW/cm<sup>2</sup>)</b>	<b>Percentage of Limit</b>
WJJA-DT	48	30	312	0.15	0.451	0.05%

As indicated above, the total exposure to RF radiation at 2-m above ground level will not 0.05% of the FCC limit for general population / uncontrolled exposure. Therefore, the proposal complies with the FCC limits for human exposure to RF energy and it is

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<sup>\*\*</sup> This is presumed to include consideration of electromagnetic interference with respect to Class A television stations.

<sup>††</sup> See FCC Office of Engineering and Technology Bulletin No. 56 for background information on non-ionizing RF energy of the type discussed here. Internet web reference:

[http://www.fcc.gov/Bureaus/Engineering\\_Technology/Documents/bulletins/oet56/oet56e4.pdf](http://www.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet56/oet56e4.pdf)

<sup>‡‡</sup> This is a conservative estimate of the relative field factor in the downward direction. See Appendix.  
<sup>§§</sup> for general population/uncontrolled environments

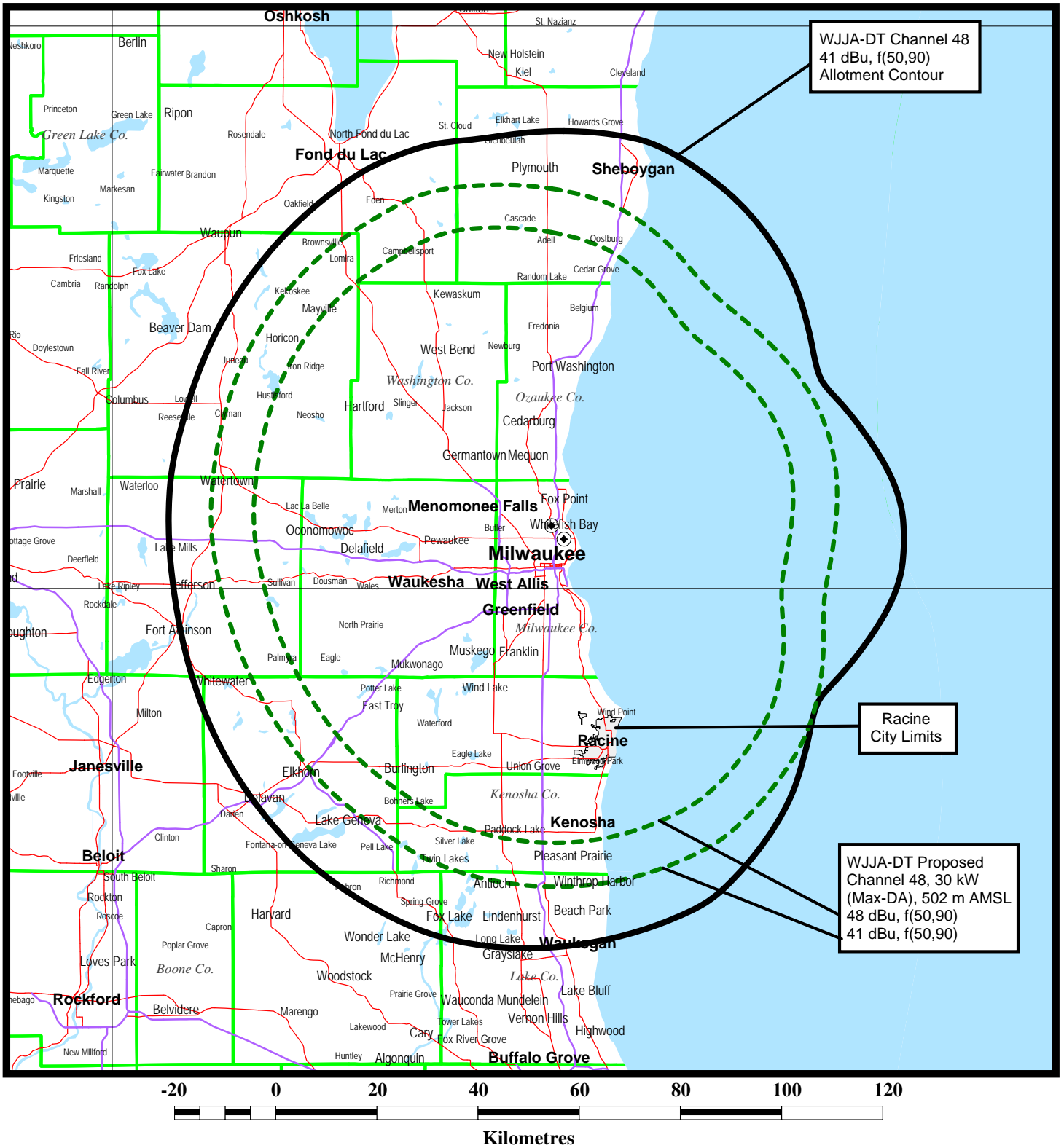
categorically excluded from environmental processing. The applicant, in coordination with other users of the transmission facility, shall reduce power or cease operation as necessary to protect persons having access to the tower or antenna from radio frequency radiation in excess of the FCC guidelines.

A handwritten signature in black ink, appearing to read "Louis Robert du Treil, Jr.", written in a cursive style.

Louis Robert du Treil, Jr.

du Treil, Lundin & Rackley, Inc.  
201 Fletcher Ave.  
Sarasota, FL 34237-6019

September 12, 2007



## PREDICTED COVERAGE CONTOURS

duTreil, Lundin & Rackley, Inc. Sarasota, Florida

Figure 2

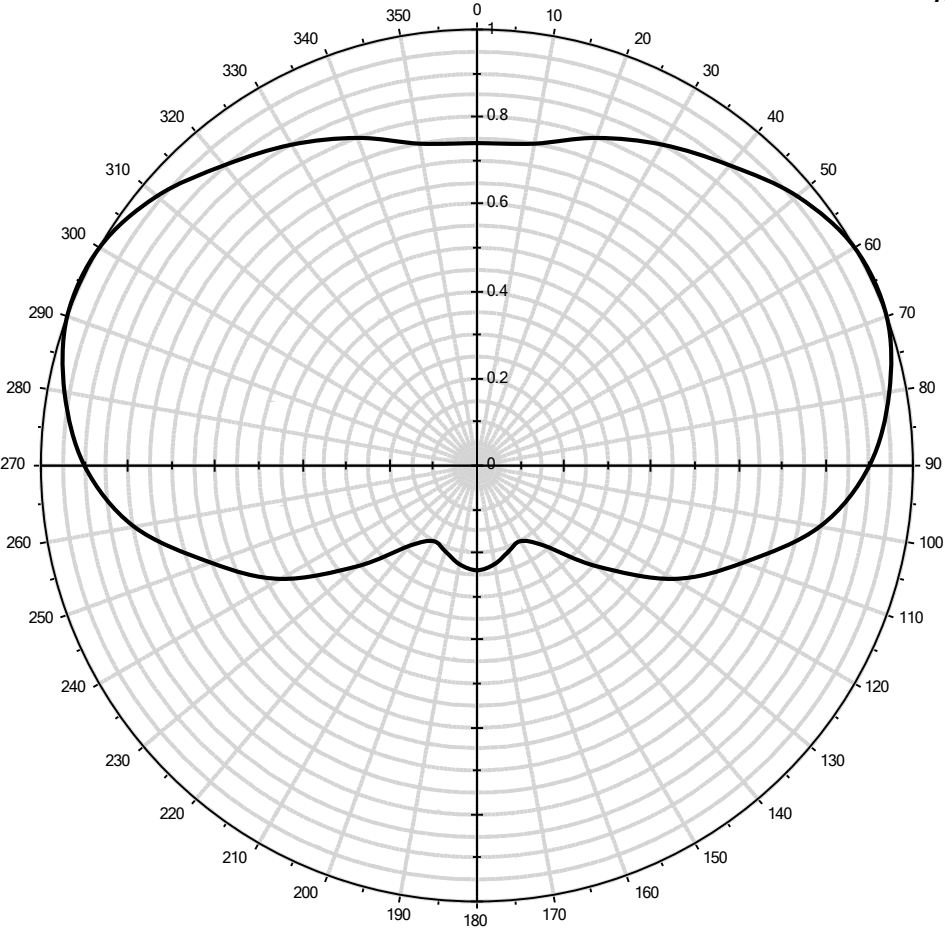
# DA Inquiry

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



**Antenna Pattern:**      **Antenna ID:**    JSH32SHP

**WJJA-DT, Racine, WI**  
**Ch. 48, 30 kW (Max-DA), 298 m**  
**Jampro, JSH-32/48-49 SHP**  
**Rotated to 250° True**



**Note:** display reflects rotation of 0.00°

**Antenna Details:**

0°	0.740	60°	1.000	120°	0.520	180°	0.240	240°	0.520	300°	1.000
10°	0.750	70°	1.000	130°	0.360	190°	0.230	250°	0.650	310°	0.960
20°	0.800	80°	0.960	140°	0.240	200°	0.210	260°	0.800	320°	0.900
30°	0.850	90°	0.900	150°	0.200	210°	0.200	270°	0.900	330°	0.850
40°	0.900	100°	0.800	160°	0.210	220°	0.240	280°	0.960	340°	0.800
50°	0.960	110°	0.650	170°	0.230	230°	0.360	290°	1.000	350°	0.750

**Antenna Make:**    JAM

**Standard Pattern:**

**Antenna Model:**   JSH-32/48-49 SHP

**Last Change Date:**



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Antenna Manufacturer's Elevation Pattern Data

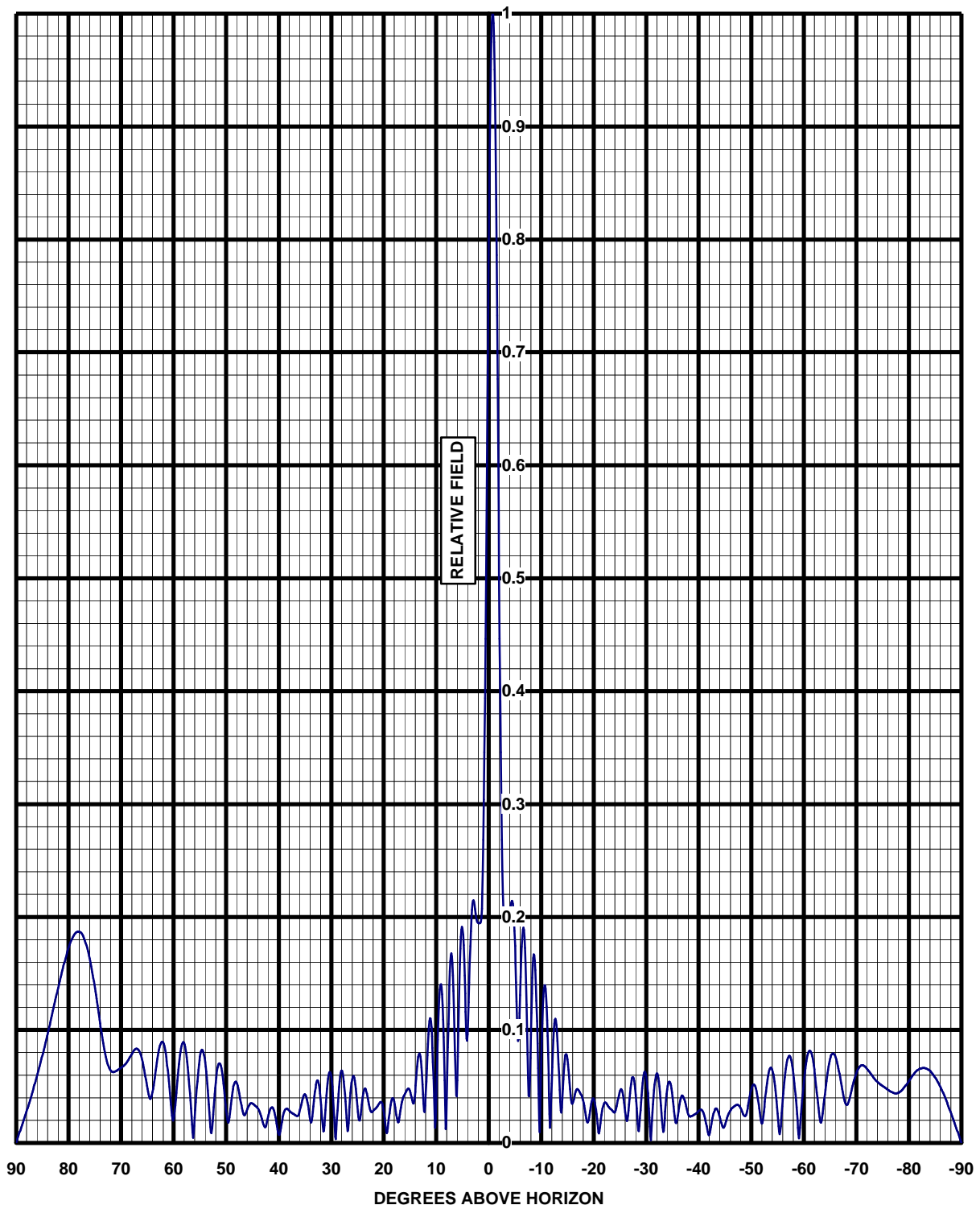
*(three pages follow)*



6340 Sky Creek Drive  
Sacramento, California 95828 USA

Telephone (916) 383-1177  
Fax (916) 383-1182

# COMPUTED ELEVATION PATTERN



Customer: WJJA-TV/DT

Channel: 48 (DT) & 49 (NTSC)

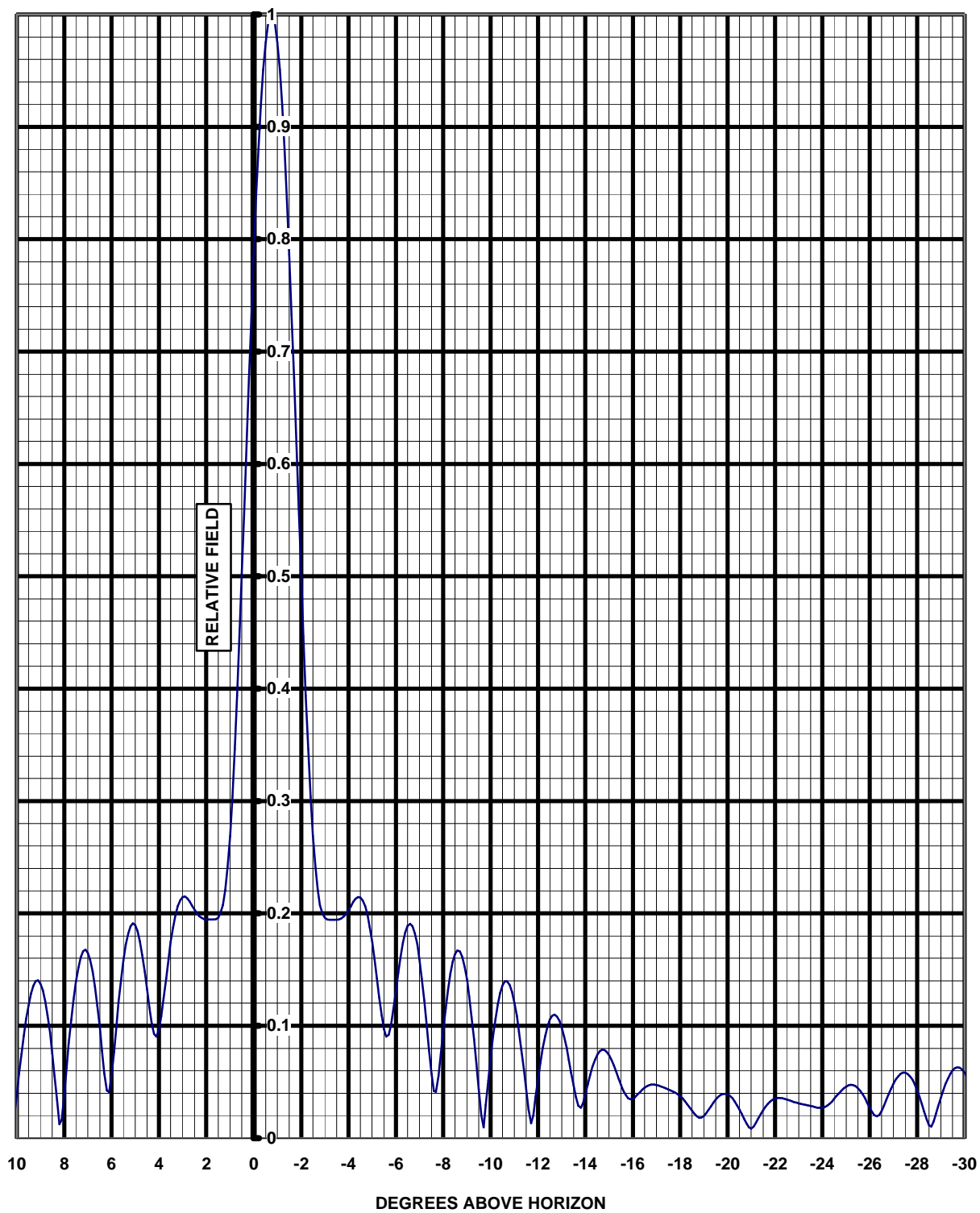
Model: JSH-32/48-49 SHP  
Description: UHF Slot Antenna  
-0.75° Beam Tilt, 20% Null Fill



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## Elevation Pattern Tabulation

### ELEVATION PATTERN TABULATION

#### RELATIVE FIELD VS ELEVATION ANGLE

<u>ELEVATION ANGLE</u>	<u>RELATIVE FIELD</u>	<u>ELEVATION ANGLE</u>	<u>RELATIVE FIELD</u>	<u>ELEVATION ANGLE</u>	<u>RELATIVE FIELD</u>
10	0.039	-26	0.027	-61	0.081
9	0.138	-27	0.048	-62	0.065
8	0.039	-28	0.043	-63	0.023
7	0.165	-29	0.036	-64	0.043
6	0.055	-30	0.058	-65	0.074
5	0.190	-31	0.011	-66	0.077
4	0.096	-32	0.061	-67	0.056
3	0.214	-33	0.020	-68	0.034
2	0.195	-34	0.047	-69	0.044
1	0.269	-35	0.041	-70	0.062
0	0.786	-36	0.024	-71	0.069
-1	0.975	-37	0.042	-72	0.066
-2	0.502	-38	0.025	-73	0.060
-3	0.196	-39	0.025	-74	0.054
-4	0.203	-40	0.028	-75	0.050
-5	0.174	-41	0.025	-76	0.047
-6	0.131	-42	0.007	-77	0.044
-7	0.159	-43	0.029	-78	0.044
-8	0.096	-44	0.023	-79	0.048
-9	0.141	-45	0.016	-80	0.055
-10	0.071	-46	0.029	-81	0.061
-11	0.121	-47	0.033	-82	0.065
-12	0.052	-48	0.031	-83	0.066
-13	0.098	-49	0.025	-84	0.064
-14	0.039	-50	0.047	-85	0.058
-15	0.074	-51	0.046	-86	0.050
-16	0.035	-52	0.017	-87	0.039
-17	0.047	-53	0.053	-88	0.027
-18	0.037	-54	0.065	-89	0.014
-19	0.020	-55	0.026	-90	0.000
-20	0.039	-56	0.038		
-21	0.008	-57	0.075		
-22	0.035	-58	0.062		
-23	0.031	-59	0.008		
-24	0.027	-60	0.053		
-25	0.046				

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