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Engineering Statement
Minor Modification Application for KTVR-DT
Post-Transition Channel 13 at La Grande, Oregon
May 2008

This Engineering Statement has been prepared on behalf of Oregon Public Broadcasting ("OPB"), licensee of digital television station KTVR-DT at La Grande, Oregon. KTVR-DT presently operates on digital Channel 5, paired with analog Channel 13. This material has been prepared in connection with a minor modification application for the KTVR-DT post-transition facilities on digital Channel 13.

The following table lists the KTVR-DT post-transition facilities approved in Appendix B of the DTV Seventh Report and Order[1], as well as OPB's requested post-transition facilities as proposed herein:

	DTV Table Appendix B	**Proposed Form 340**
Channel	13	13
ERP	31.8 kW	16.1 kW
HAAT	775 meters	775 meters
Antenna	ID #74341 (FCC-created directional)	Jampro JSL-8/13 SHC-V directional
Coordinates	45-18-33 117-43-54	45-18-33 117-43-54

[1] See *Advanced Television Systems and their Impact Upon the Existing Television Broadcast Service*, MB Docket No. 87-268, Seventh Report and Order and Eighth Further Notice of Proposed Rulemaking, FCC 07-138, Released August 6, 2007.

I. Allocation Study

Study has been made of all cochannel and adjacent-channel facilities in the vicinity of the proposed operation, including a detailed Longley-Rice interference study to demonstrate that the proposed operation will not cause impermissible interference (i.e. more than 0.5 percent new interference) to any stations beyond that level listed in the post-transition DTV Table Appendix B. This study was performed using the SunDTV program from V-Soft Communications and a 2 km grid spacing. The SunDTV program identically duplicates the FCC's OET-69 processing program.

The results of this study indicate that the proposed facility is predicted to cause zero additional interference to any of the listed stations.

Based on the foregoing allocation and interference study, it is believed that the proposed facility can operate without risk of interference to other stations.

Summary Study

TV INTERFERENCE and SPACING ANALYSIS PROGRAM

Date: 05-19-2008 Time: 17:19:54

Record Selected for Analysis

KTVR USERRECORD-01 LA GRANDE OR US
Channel 13 ERP 16.1 kW HAAT 777. m RCAMSL 02193 m
Latitude 045-18-33 Longitude 0117-43-54
Status APP Zone 2 Border
Dir Antenna Make usr Model USRPAT01 Beam tilt N Ref Azimuth 255.
Last update Cutoff date Docket
Comments
Applicant

Cell Size for Service Analysis 2.0 km/side

Distance Increments for Longley-Rice Analysis 1.00 km

Facility meets maximum height/power limits

Azimuth (Deg)	ERP (kW)	HAAT (m)	36.0 dBu F(50,90) (km)
0.0	10.826	492.0	107.0
45.0	0.852	532.2	88.8
90.0	0.744	481.5	84.7
135.0	6.390	307.2	89.5
180.0	15.545	832.1	123.1
225.0	13.703	1169.3	129.0
270.0	14.827	1330.1	133.0
315.0	14.990	1071.5	127.8

Evaluation toward Class A Stations

No Spacing violations or contour overlap to Class A stations

Class A Evaluation Complete

SPACING VIOLATION FOUND BETWEEN STATION

KTVR 13 LA GRANDE OR USERRECORD01

and station

SHORT TO: KTRV 13 NAMPA ID BDTV 0504
43 -45-18 116 -05-52
Req. separation 273.6 Actual separation 216.1 Short 57.5 km

SHORT TO: KTVR 13 LA GRANDE OR BDTV 1278
45 -18-33 117 -43-54
Req. separation 273.6 Actual separation 0.0 Short 273.6 km

Proposed facility OK to FCC Monitoring Stations

Proposed facility OK toward West Virginia quite zone

Proposed facility OK toward Table Mountian

Proposed facility is beyond the Canadian coordination distance

Proposed facility is beyond the Mexican coordination distance

Proposed station is OK toward AM broadcast stations

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Start of Interference Analysis

Proposed Station			
Channel	Call	City/State	ARN
13	KTVR	LA GRANDE OR	USERRECORD01

Stations Potentially Affected by Proposed Station

Chan	Call	City/State	Dist(km)	Status	Application	Ref. No.
12	KUID-TV	MOSCOW ID	163.5	LIC	BDTV	-0503
13	KTRV	NAMPA ID	215.9	LIC	BDTV	-0504
13	KECITV	MISSOULA MT	343.5	LIC	BDTV	-0938
13	KXLY-TV	SPOKANE WA	294.2	LIC	BDTV	-1716

%%%

Study of this proposal found the following interference problem(s):

NONE.

II. NIER Study

The power density calculations shown below were made using the techniques outlined in OET Bulletin No. 65. "Ground level" calculations in this report have been made at a reference height of 2 meters above ground to provide a worst-case estimate of exposure for persons standing on the ground in the vicinity of the tower. The equation shown below was used to calculate the ground level power density figures from each antenna.

$$S(mW/cm^2) = \frac{33.40981 \times AdjERP(Watts)}{D^2}$$

Where: *AdjERP(Watts)* is the maximum lobe effective radiated power times the element pattern factor times the array pattern factor.

D is the distance in meters from the center of radiation to the calculation point.

Ground level power densities have been calculated for locations extending from the base of the tower to a distance of 1000 meters. Values past this point are increasingly negligible.

Power density levels produced by the proposed facility were calculated for an elevation of 2 meters above ground (47 meters below the antenna radiation center). The worst case power density levels occur at depression angles between 45 and 90 degrees below the horizontal. The calculations in this report assume a worst-case relative field value of 0.172 at these angles. This value occurs at a depression angle of 75 degrees below the horizontal, as shown on the manufacturer's vertical plane pattern for the horizontally-polarized Jampro JSL-8/13 SHC-V antenna proposed in this application. This relative field value yields a worst-case adjusted effective radiated power of 476 Watts at depression angles between 45 and 90 degrees below the horizontal. Assuming this worst-case effective radiated power and the shortest distance between the antenna radiation center and 2 meters above ground level (i.e. straight down), the highest calculated power density from the proposed antenna alone occurs at the base of the

antenna support structure. At this point the power density is calculated to be 7.2 μW/cm², which is 3.6% of 200 μW/cm² (the FCC maximum for uncontrolled environments at the Channel 13 frequency).

These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed operation alone is less than 5% of the applicable FCC exposure limit at all locations between 1 and 1000 meters from the base of the antenna support structure. Section 1.1307(b)(3) of the Commission's Rules excludes applications for new facilities or modifications to existing facilities from the requirement of preparing an environmental assessment when the calculated emissions from the applicants proposed facility are predicted to be less than 5% of the applicable FCC exposure limit. Therefore, the proposed facility is in compliance with Section 1.1301 et seq and no further analysis of non-ionizing radiation at this site is required in this application.

Public access to the transmitter site is restricted. Pursuant to OET Bulletin No. 65, all station personnel and contractors are required to follow appropriate safety procedures before any work is commenced on the antenna tower, including reduction in power or discontinuance of operation before any maintenance work is undertaken. The permittee/licensee in coordination with other users of the site must reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency radiation in excess of FCC guidelines.

May 19, 2008

Erik C. Swanson

KTVR-DT Ch. 13 La Grande, Oregon
Directional Antenna Statement

Oregon Public Broadcasting proposes to construct the modified KTVR-DT facility using a Jampro JSL-8/13 SHC-V slot antenna oriented at 255 degrees True. This antenna is already in use by KTVR for analog operations. The proposed directional antenna pattern has a ratio of maximum to minimum radiation which exceeds 10 dB at several azimuths. Specifically, the 10 dB ratio is exceeded for the azimuth span of 35 to 85 degrees True. The pattern minimum is –13.6 dB, which occurs at 160 and 200 degrees True.

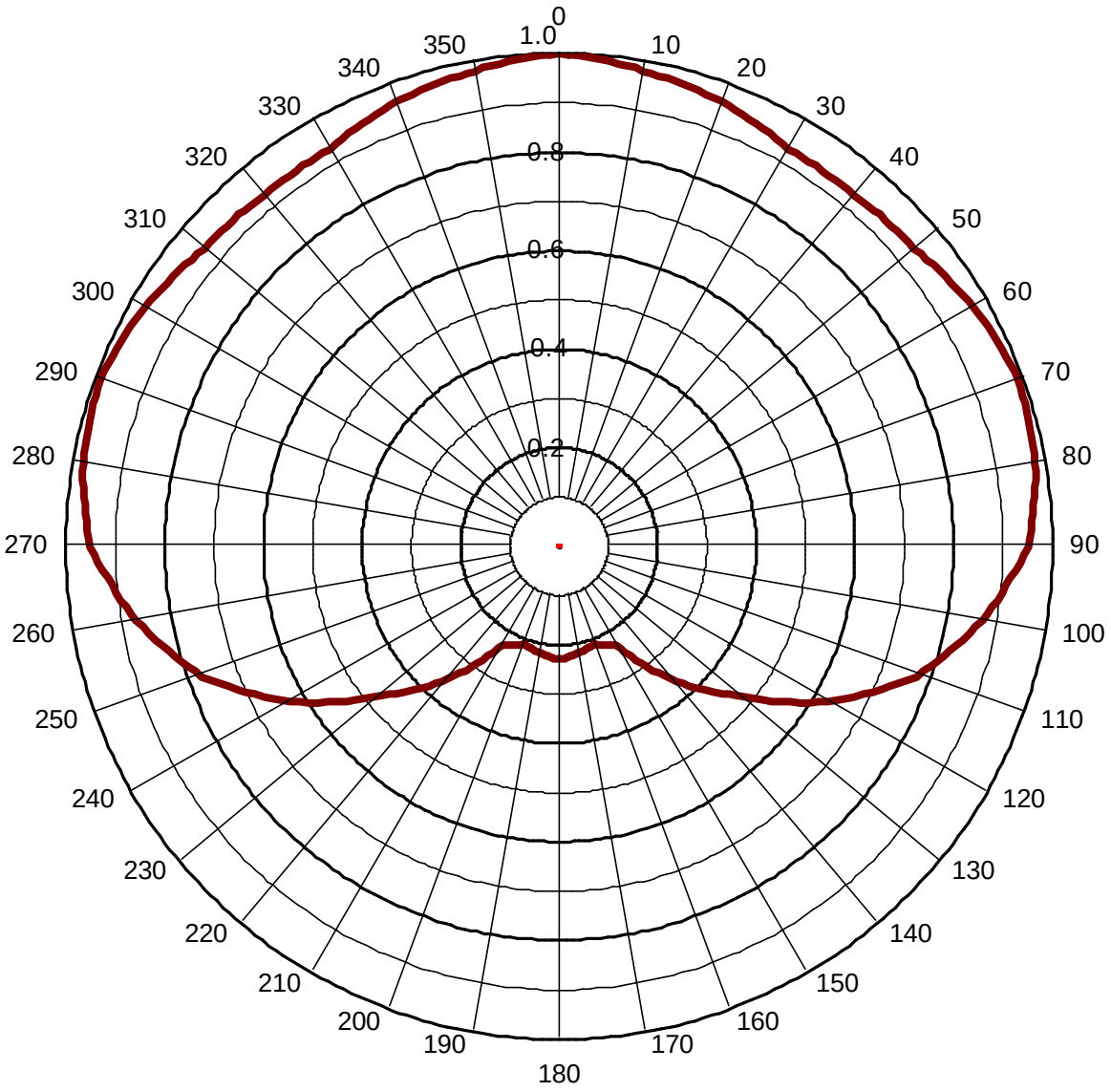
The proposed transmitter site is located on Mount Fanny, a peak in the Wallowa Mountains in northeastern Oregon. Northeast of this location, the Wallowa Mountains rise to elevations in excess of 8000, which is 1000 feet above the Mount Fanny transmitter site. Most of this mountainous territory is encompassed by the Wallowa and Whitman National Forests, and is unpopulated. The mountains extend for 20 miles to the northeast, effectively blocking any signal penetration into the communities in the Wallow River Valley (e.g. Enterprise and Wallowa).

The directional antenna pattern specified herein has been designed to provide maximum signal strength to the populated areas of the Grande Ronde Valley. At the same time, this pattern minimizes "wasted" signal over the azimuth spans listed above, in which lie largely unpopulated and inhospitable regions of mountainous terrain.

It should be noted that the maximum to minimum ratio specified herein is not necessary to ensure interference protection to any NTSC or digital station.

Grant of the instant application will enable Oregon Public Broadcasting to economically implement permanent DTV operations for KTVR-DT (one of the few television stations serving this sparsely-populated corner of the State of Oregon) on its post-transition channel. Oregon Public Broadcasting believes that utilization of this antenna provides the best balance of cost and coverage.

Therefore, Oregon Public Broadcasting respectfully requests waiver of §73.685(e) of the Commission's Rules with respect to the ratio of maximum to minimum radiation specified in the instant application.



Customer: KTVR (OPB)

Location: La Grande, OR

Channel: 13 (210-216 MHz)

Model: JSL-8/13 SHC-V

Gain: 13.42x / 11.27 dB with 5 % null fill

Notes: TOP is 6 kW Pattern #22 Large Cardioid

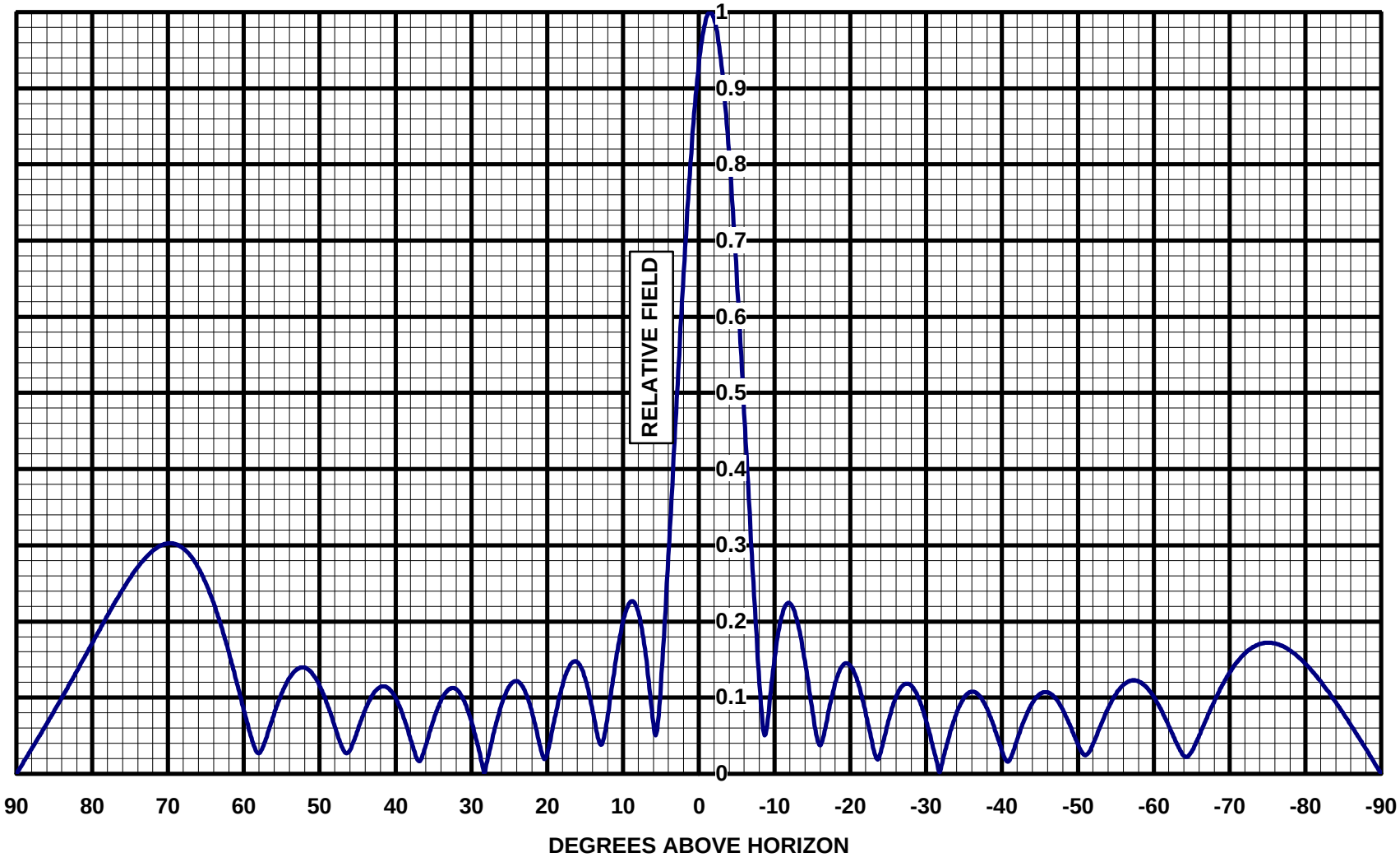
PATTERN # 22 - Large Cardioid
SLOT ANTENNA PATTERN TABULATION

0 DEGREES = TRUE NORTH

AZIMUTH	FIELD	dB
0	1.00	0.00
10	0.98	-0.18
20	0.96	-0.35
30	0.93	-0.63
40	0.93	-0.63
50	0.94	-0.54
60	0.97	-0.26
70	0.99	-0.09
80	0.98	-0.18
90	0.95	-0.45
100	0.87	-1.21
110	0.77	-2.27
120	0.63	-4.01
130	0.47	-6.56
140	0.35	-9.12
150	0.23	-12.77
160	0.21	-13.56
170	0.22	-13.15
180	0.23	-12.77
190	0.22	-13.15
200	0.21	-13.56
210	0.23	-12.77
220	0.35	-9.12
230	0.47	-6.56
240	0.63	-4.01
250	0.77	-2.27
260	0.87	-1.21
270	0.95	-0.45
280	0.98	-0.18
290	0.99	-0.09
300	0.97	-0.26
310	0.94	-0.54
320	0.93	-0.63
330	0.93	-0.63
340	0.96	-0.35
350	0.98	-0.18

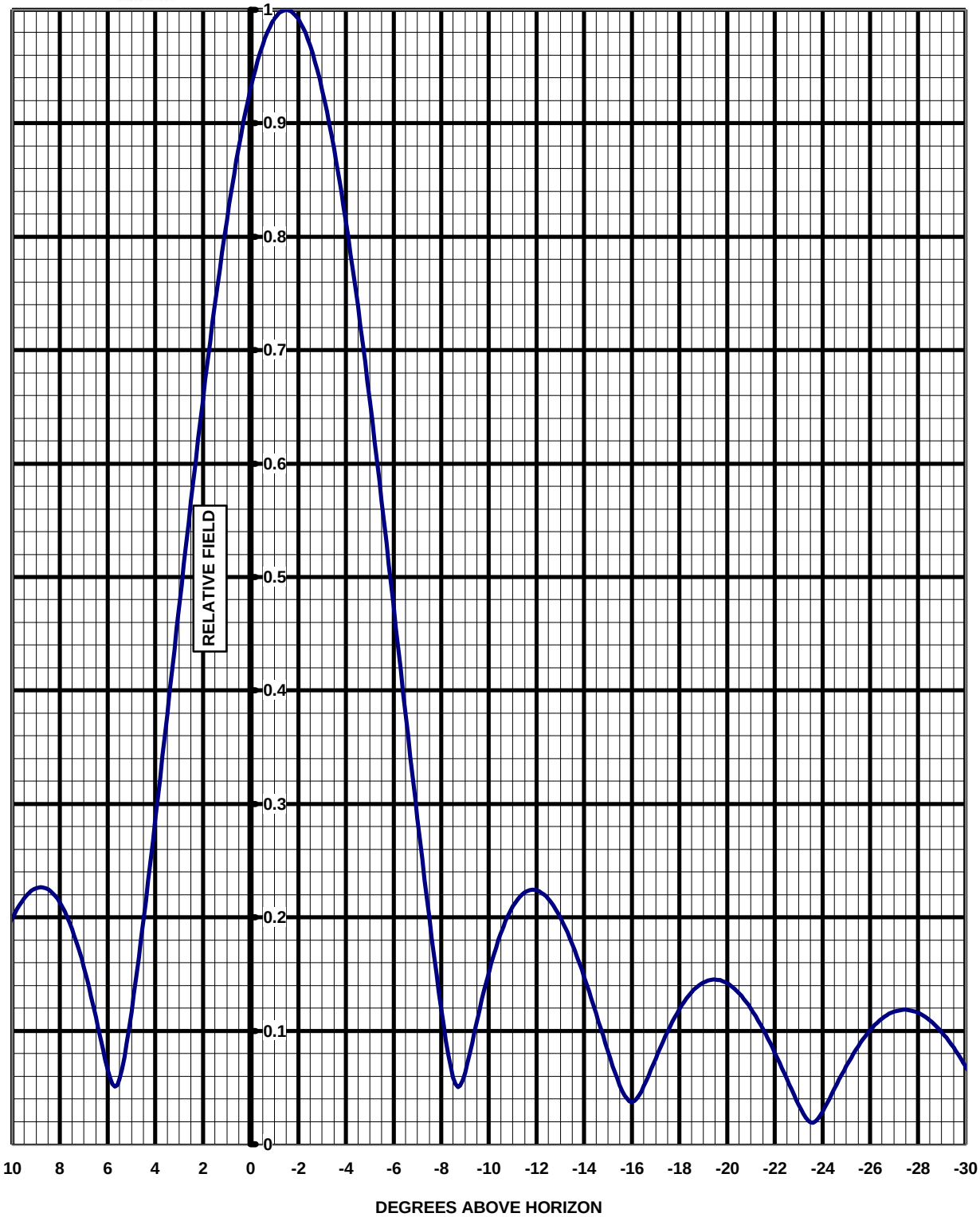
JAMPRO ANTENNAS, INC.

JSL-8/13 SHC-V , B.T. = 1.5º, N.F. = 5% First Null
COMPUTED ELEVATION PATTERN



JAMPRO ANTENNAS, INC.

JSL-8/13 SHC-V , B.T. = 1.5º, N.F. = 5% First Null
COMPUTED ELEVATION PATTERN



JSL-8/13 SHC-V , B.T. = 1.5º, N.F. = 5% First Null
TABULATION

RELATIVE FIELD VS ELEVATION ANGLE

ELEVATION ANGLE	RELATIVE FIELD	ELEVATION ANGLE	RELATIVE FIELD	ELEVATION ANGLE	RELATIVE FIELD
10	0.199	-26	0.101	-61	0.084
9	0.226	-27	0.117	-62	0.063
8	0.213	-28	0.116	-63	0.041
7	0.156	-29	0.099	-64	0.023
6	0.065	-30	0.069	-65	0.029
5	0.117	-31	0.031	-66	0.050
4	0.286	-32	0.010	-67	0.073
3	0.474	-33	0.049	-68	0.096
2	0.657	-34	0.080	-69	0.115
1	0.815	-35	0.100	-70	0.133
0	0.931	-36	0.108	-71	0.147
-1	0.992	-37	0.103	-72	0.158
-2	0.992	-38	0.086	-73	0.166
-3	0.930	-39	0.060	-74	0.170
-4	0.813	-40	0.030	-75	0.172
-5	0.656	-41	0.018	-76	0.171
-6	0.474	-42	0.045	-77	0.168
-7	0.287	-43	0.072	-78	0.162
-8	0.119	-44	0.093	-79	0.154
-9	0.063	-45	0.105	-80	0.145
-10	0.152	-46	0.107	-81	0.134
-11	0.210	-47	0.100	-82	0.121
-12	0.224	-48	0.084	-83	0.108
-13	0.200	-49	0.063	-84	0.094
-14	0.148	-50	0.039	-85	0.079
-15	0.082	-51	0.025	-86	0.064
-16	0.037	-52	0.039	-87	0.048
-17	0.076	-53	0.063	-88	0.032
-18	0.119	-54	0.086	-89	0.016
-19	0.143	-55	0.105	-90	0.000
-20	0.142	-56	0.117		
-21	0.119	-57	0.122		
-22	0.081	-58	0.121		
-23	0.035	-59	0.114		
-24	0.029	-60	0.101		
-25	0.069				