

**TECHNICAL STATEMENT
WESTERN PACIFIC WACP, LLC
WACP 79.4 KW-ND 258.4 M HAAT CH. 4
ATLANTIC CITY, NEW JERSEY**

INTRODUCTION

Western Pacific WACP, LLC (“Western Pacific”), the licensee of digital television station WACP, Facility ID No. 189358, proposes a minor modification during the temporary lifting of the freeze by the Media Bureau to increase WACP’s noise-limited contour beyond the station’s authorized facilities.¹ More Specifically, Western Pacific seeks to increase WACP’s effective radiated power (ERP) to 79.4 kW as part of a contingent mutual power increase and interference consent agreement involving three other Low-band VHF stations, namely WVIR-TV, KJWP and WJLP (collectively the “Joint Applicants”).² Western Pacific proposes no other changes to WACP’s existing facility.

INTERFERENCE PROTECTION AND OET-69 ANALYSIS SETTINGS

A copy of the *TVStudy* analysis is provided in [Figure 1](#). This study indicates that the proposed power increase for WACP will cause excessive interference to WJLP Channel 3, Middletown Township, NJ, Facility ID No. 86537. As stated above, Western Pacific and the licensee of WJLP have entered into a mutual power increase and interference consent agreement in which both stations propose to increase ERP by 9 dB and will accept the resulting interference. Aside from the aforementioned interference that WJLP and WACP have agreed to accept, this proposal is not predicted to cause new interference beyond the normal

¹ *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).

² The contingent mutual power increase and interference consent agreement involves the following four stations: WVIR-TV Channel 2, Charlottesville, VA Facility ID No. 70309; KJWP Channel 2, Wilmington, DE, Facility ID No. 1283; WJLP Channel 3, Middletown Township, NJ Facility ID No. 86537; and, WACP Channel 4, Atlantic City, NJ, Facility ID No. 189358 (the “Joint Applicants”).



tolerance to any other full-service or Class A TV stations.³ The study further reflects that the following analysis settings were used:

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

The proposed technical facilities for the Joint Applicants are listed below.⁴ The User Records for WJLP and KJWP were included in the aforementioned *TVStudy* analysis.

Call	Channel	Latitude	Longitude	ERP	RCAMSL	Ant. ID	FCC File/User record
WACP	4	39-44-04.0	74-50-27.0	79.4	287.7	118440	USERRECORD01
WJLP	3	40-42-46.8	74-00-47.3	18.11	484.6	118158	USERRECORD02
KJWP	2	40-02-30.14	75-14-10.08	74.3	378.9	117588	USERRECORD03
WVIR-TV	2	37-59-01.0	78-28-53.0	79.4	534.8	1002063	0000034904

WAIVER OF THE MAXIMUM POWER LIMIT

Western Pacific respectfully requests waiver of the maximum power limit in 47 CFR § 73.622(f)(6) to permit an ERP in excess of the power limit for WACP's height above average terrain (HAAT) of 258.4 meters. WACP is currently authorized on Channel 4 to operate with 10 kW ERP pursuant to its license in File Number BMLCDT-20140304AAS. Western Pacific desires to increase WACP's ERP by 9 dB (for a resultant ERP of 79.4 kW) to help resolve the numerous reception problems that the station has experienced since it began operations on June 21, 2012. For clarification, the power increase proposed by Western Pacific is not intended to broaden the outer reaches of WACP's signal contour; instead, the intent is to strengthen the station's signal in its present core and fringe areas in order to improve over-the-air reception.

WACP's reception problems are principally due to WACP's low power low-band VHF Channel 4 authorization and the widespread use by viewers of poor indoor antennas, and high

³ *TVStudy* Program, Version 2.2.3.

⁴ As part of the negotiated agreement between the Joint Applicants, WVIR-TV submitted its application to increase power to 79.4 kW in the second filing window, which closed on November 2, 2017. This filing window was the only opportunity for WVIR-TV to request a power increase as the station was assigned a new channel as a result of the Incentive Auction. WVIR-TV's application was assigned FCC File No. 0000034904.



levels of consumer electronic “noise.”⁵ Indeed, the Commission is aware that VHF channels have certain characteristics that pose challenges for DTV broadcast stations and that such stations have been experiencing some difficulty in ensuring consistent reception of their VHF signals. Specifically, the propagation characteristics of VHF channels enable undesired signals and noise to be receivable at greater distances, electrical devices in close proximity tend to emit noise that can cause interference, and VHF signals require relatively large antennas for reception. In June of 2010, the third Omnibus Broadband Initiative technical paper was released, which recommended that the Commission address the reception issues that DTV stations are experiencing on their VHF channels so that the lower and upper VHF bands may be utilized more effectively for DTV broadcasting.⁶ Furthermore, the Commission’s rulemaking initiative in ET Docket 10-235 to permit VHF stations located in Zone 1, such as WACP, to increase ERP by 6 dB, also makes it clear that the Commission understands the hardship to viewers caused by VHF signal issues.⁷

Under the Commission’s current case-by-case practice of granting power increase waivers through the license modification process, applicants are generally expected to make a showing of service loss that has resulted from the station’s conversion from analog to digital. WACP operates on a new DTV channel assignment that was created subsequent to the initial DTV Table of Allotments and, therefore, the station does not have former analog viewers. Nonetheless, WACP is still faced with the same reception problems as other VHF stations that previously had analog viewers. For example, WPVI-TV Channel 6 in Philadelphia, PA, a former analog TV station that is located in the same designated market area (DMA) as WACP, was granted a waiver to increase power to 34 kW at a HAAT of 330 meters. The Commission has underscored the importance of ensuring that all stations are able to provide DTV service competitively within their markets by creating the largest station within the market rule in 47

⁵ See generally *Innovation in the Broadcast Television Bands: Allocations, Channel Sharing and Improvements to VHF*, Notice of Proposed Rule Making, 25 FCC Rcd 16498 (2010), ¶¶ 42-57 (discussing the various sources of interference, causes of poor reception, and suggesting potential strategies to mitigate the issues).

⁶ See Federal Communications Commission, Omnibus Broadband Initiative, Spectrum Analysis: Options for Broadcast Spectrum, [OBI Technical Paper No. 3](#) (June 2010) at pp.6-7. “Currently, broadcast TV stations in the VHF bands are experiencing reception issues after the Digital Television (DTV) transition due to low antenna gain, fading, weak signal levels and environmental noise from other electronic devices in homes. To ensure the most efficient use of the VHF bands, the FCC should first work to address these reception issues so that TV stations can continue broadcasting in the lower and upper VHF bands.”

⁷ See *Innovation in the Broadcast Television Bands: Allocations, Channel Sharing and Improvements to VHF*, Notice of Proposed Rule Making (“NPRM”), ET Docket 10-235, 25 FCC Rcd 16498 (2010), ¶¶ 42-49.



CFR § 73.622(f)(5). Absent a waiver of 47 CFR § 73.622(f)(6), WACP will remain less competitive with 10 kW at an HAAT of 258.4 meters.

The “largest station” rule allows licensees assigned a DTV channel in the initial DTV Table of Allotments to request the maximum ERP and HAAT combination needed to provide the same geographic coverage area as the largest station within the DMA. The Commission has clarified that under this provision an application cannot request a power higher than the maximum ERP to compensate for an antenna HAAT that is lower than the value specified in the rule and further it cannot request a power and antenna height combination that would serve more square kilometers of area than the largest station in the market.⁸ While expanding coverage is not the objective here, it is notable that the proposed increase in WACP’s ERP to 79.4 kW at an HAAT of 258.4 meters will not serve more square kilometers of land area than that currently served by WPVI-TV. A map that depicts the geographical coverage area of WPVI-TV as compared to WACP’s present and proposed coverage is attached as Figure 2.⁹

In addition to core and fringe viewers experiencing reception problems, complaints of poor signal quality from cable systems continue to persist in fringe areas. The FCC record supports the fact that WACP has a history of cable headend reception difficulties in fringe areas based on the documented cases in which mandatory carriage by cable systems has been rebutted on the grounds of poor signal quality.¹⁰

Given the nature of the reception issues that currently limit the utility of VHF spectrum for DTV broadcasts, the Joint Applicants mutually agree that all four stations will do a better job of serving the public with a 9 dB increase in ERP. Therefore, Western Pacific submits that deviation from the rule in 47 CFR § 73.622(f)(6) is appropriate given the special circumstances and that such deviation is necessary and will further the public interest goal espoused in both

⁸ See *Report And Order And Further Notice Of Proposed Rule Making*, 16 FCC Rcd 5946 (2001), ¶¶ 73-74.

⁹ The land area coverage for WPVI-TV is 39,088.6 square kilometers. WACP’s present coverage is 22,255.0 square kilometers and its proposed coverage is 30,806.0 square kilometers. The DTV noise-limited contours shown in Figure 2 were calculated in accordance with 47 CFR §§ 73.622(e) and 73.625(b).

¹⁰ For example, see *Armstrong Utilities, Inc.*, CSR-8752-M in Docket No. 12-364 and CSR-8838-A in Docket No. 13-245; *Service Electric Cable Television, Inc.*, CSR-8757-M in Docket No. 13-14 and CSR-8772-A in Docket No. 13-68; and, *Blue Ridge Cable Technologies*, CSR-8753-M in Docket 12-365.



the OBI Technical Paper No. 3 and ET Docket 10-235. Western Pacific further submits that the following special circumstances are present here.

First, Western Pacific's proposal is predicted to cause no prohibited interference to any other primary station, with the exception of WJLP which as indicated above is part of a contingent agreement to mutually increase power and accept interference.

Second, while WACP's power increase proposal exceeds the maximum power permitted under 47 CFR § 73.622(f)(6), it is not intended to expand WACP's coverage area. Rather, the purpose of WACP's proposed operation is to enhance service to viewers who cannot receive WACP's DTV signal despite being located in WACP's digital service area.

WACP respectfully submits that the instant request satisfies the Commission's waiver standard. WACP's low-band VHF digital reception issues and the lack of any interference implications by WACP's proposed operation are special circumstances that warrant deviation from 47 CFR § 73.622(f)(6), and such deviation will serve the public interest by improved television service to the public.

For the foregoing reasons, Western Pacific respectfully requests that the Media Bureau waive 47 CFR § 73.622(f)(6).

ENVIRONMENTAL IMPACT

The construction permit application specifies an existing FCC registered tower that was constructed before March 16, 2001.¹¹ Given that WACP will continue to utilize its existing antenna in connection with the proposed increase in ERP, the criteria outlined in 47 CFR §

¹¹ 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."



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 greater detail below. Below are the technical specifications under consideration:

Frequency :	66 - 72 MHz (VHF Channel 4)
Effective Radiated Power:	79.4 kW
Antenna Type:	JAM JHD-LV2-3/3 (18) SR
Antenna Polarization:	Horizontal
Antenna Height:	251.8 meters above ground level (AGL)
Location coordinates:	39-44-04.0 N, 74-50-27.0 W (NAD83)
Site elevation:	35.9 meters above mean sea level (AMSL)
Overall tower height:	284.0 meters AGL
FCC ASRN:	1042989; Constructed in 1981

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 increase in WACP's facilities is calculated to produce a maximum power density of 2.45 $\mu\text{W}/\text{cm}^2$ at points 2 meters above ground (approximate human head height). This exposure level was determined using 24 percent antenna relative field, which is the maximum value for the specified antenna at downward angles greater than 16 degrees below the horizontal. A plot and tabulation of the antenna elevation pattern supplied by the manufacturer are attached as Figures 3 and 3A. The maximum exposure limits applicable to Channel 4, 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 WACP is not more than 5% of those guidelines and considering that the existing tower location is fenced and suitable warning signs are posted, 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,

A handwritten signature in black ink, appearing to read 'Scott Turpie', written over a horizontal line.

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November 27, 2017

Attachments

Figure 1 – TVStudy Results
Figure 2 – Geographical Coverage Map
Figure 3 – Antenna Elevation Pattern Plot
Figure 3A – Antenna Elevation Pattern Tabulation

FIGURE 1 Analysis Report TVSTUDY, VERSION 2.2.3.

tvstudy v2.2.3 (04ezul)
Database: localhost. Study: WACP_USERRECORD10. Model: Longley-Rice
Start: 2017.11.25 10:08:41

Study created: 2017.11.25 10:08:22

Study build station data: LMS TV 2017-11-23 (32)

Proposal: WACP D4 DT APP ATLANTIC CITY, NJ
File number: USERRECORD01
Facility ID: 189358
Station data: User record
Record ID: 10
Country: U.S.
Zone: 1

User records included:
8 WJLP D3 DT APP MIDDLETOWN TOWNSHIP, NJ USERRECORD02
9 KJWP D2 DT APP WILMINGTON, DE USERRECORD03

Stations affected by proposal:

Call	Chan	Svc	Status	City, State	File Number	Distance
WJLP	D3	DT	LIC	MIDDLETOWN TOWNSHIP, NJ	BLANK0000001037	134.7 km
WJLP	D3	DT	APP	MIDDLETOWN TOWNSHIP, NJ	USERRECORD02	129.5

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D4
Latitude: 39 44 4.00 N (NAD83)
Longitude: 74 50 27.00 W
Height AMSL: 287.7 m
HAAT: 258.4 m
Peak ERP: 79.4 kW
Antenna: JAW-JHD-LV2-3/3(18)SR (ID 118440) 0.0 deg
Elev Pattn: Generic

28.0 dBu contour:	Azimuth	ERP	HAAT	Distance
0.0 deg	79.4	kW	262.4 m	125.4 km
45.0	79.4	261.6	125.3	
90.0	79.4	271.9	126.2	
135.0	79.4	268.7	126.0	
180.0	79.4	259.3	125.1	

225.0 79.4 253.3 124.6
270.0 79.4 242.8 123.6
315.0 79.4 242.6 123.6
ERP exceeds maximum
ERP: 79.4 kW ERP maximum: 10.0 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: 462.5 km

Distance to Mexican border: 2555.1 km

Conditions at FCC monitoring station: Laurel MD
Bearing: 250.2 degrees Distance: 181.4 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
Bearing: 280.9 degrees Distance: 2576.9 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 BLANK0000001037 LIC, scenario 1
**IX: 0.95% interference

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WJLP	D3	DT	LIC	MIDDLETOWN TOWNSHIP, NJ	BLANK0000001037	
Undesireds:	WACP	D4	DT	BL	ATLANTIC CITY, NJ	DTVBL189358	134.7 km
	WACP	D4	DT	APP	ATLANTIC CITY, NJ	USERRECORD01	134.7
	KJWP	D2	DT	LIC	WILMINGTON, DE	BLCDT20131129AIH	132.3
Service area				Terrain-limited	IX-free, before	IX-free, after	Percent New IX
34960.2	21,384,863	33761.6	21,119,366	33157.3	20,907,225	32589.0	20,709,497
Undesired				Total IX	Unique IX, before	Unique IX, after	
WACP D4 DT BL				387.2	132,963	193.7	44,044
WACP D4 DT APP				1104.3	399,296		762.0
KJWP D2 DT LIC				410.6	168,097	217.1	79,178
						68.3	10,573

Interference to BLANK0000001037 LIC, scenario 2

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WJLP	D3	DT	LIC	MIDDLETOWN TOWNSHIP, NJ	BLANK0000001037	
Undesireds:	WACP	D4	DT	BL	ATLANTIC CITY, NJ	DTVBL189358	134.7 km
	WACP	D4	DT	APP	ATLANTIC CITY, NJ	USERRECORD01	134.7
	KJWP	D2	DT	APP	WILMINGTON, DE	USERRECORD03	132.3
Service area				Terrain-limited	IX-free, before	IX-free, after	Percent New IX
34960.2	21,384,863	33761.6	21,119,366	32494.0	20,633,811	32247.8	20,597,740
Undesired				Total IX	Unique IX, before	Unique IX, after	
WACP D4 DT BL				387.2	132,963	4.0	4,867
WACP D4 DT APP				1104.3	399,296		250.2
KJWP D2 DT APP				1263.6	480,688	880.4	352,592
						409.5	122,330

Interference to USERRECORD02 APP, scenario 1

**MX: 0.83% interference

Desired:	Call	Chan	Svc Status	City, State	File Number	Distance
	WJLP	D3	DT APP	MIDDLETOWN TOWNSHIP, NJ	USERRECORD02	
Undesireds:	WACP	D4	DT BL	ATLANTIC CITY, NJ	DTVBL189358	129.5 km
	WACP	D4	DT APP	ATLANTIC CITY, NJ	USERRECORD01	129.5
	KJWP	D2	DT LIC	WILMINGTON, DE	BLOD120131179A1H	127.6
Service area	48437.5	24,524,414	Terrain-limited	IX-free, before	IX-free, after	Percent New IX
				46957.9 24,184,827 44940.6 22,636,498	44353.5 22,448,850	1.31 0.83
Undesired			Total IX	Unique IX, before	Unique IX, after	
WACP D4 DT BL		1462.0	1,090,892	921.2	89,636	
WACP D4 DT APP		2307.0	1,562,314		1508.3	277,284
KJWP D2 DT LIC		1096.1	1,458,693	555.3	457,437	297.4 173,663

Interference to USERRECORD02 APP, scenario 2

Desired:	Call	Chan	Svc Status	City, State	File Number	Distance
	WJLP	D3	DT APP	MIDDLETOWN TOWNSHIP, NJ	USERRECORD02	
Undesireds:	WACP	D4	DT BL	ATLANTIC CITY, NJ	DTVBL189358	129.5 km
	WACP	D4	DT APP	ATLANTIC CITY, NJ	USERRECORD01	129.5
	KJWP	D2	DT APP	WILMINGTON, DE	USERRECORD03	127.6
Service area	48437.5	24,524,414	Terrain-limited	IX-free, before	IX-free, after	Percent New IX
				46957.9 24,184,827 44309.7 22,350,233	43911.9 22,288,104	0.90 0.28
Undesired			Total IX	Unique IX, before	Unique IX, after	
WACP D4 DT BL		1462.0	1,090,892	476.9	2,861	
WACP D4 DT APP		2307.0	1,562,314		874.7	64,990
KJWP D2 DT APP		2171.3	1,831,733	1186.2	743,702	739.0 334,409

Interference to proposal, scenario 1
16.77% interference

Desired:	Call	Chan	Svc Status	City, State	File Number	Distance
	WACP	D4	DT APP	ATLANTIC CITY, NJ	USERRECORD01	
Undesireds:	WJLP	D3	DT LIC	MIDDLETOWN TOWNSHIP, NJ	BLANK0000001037	134.7 km
Service area	49125.4	13,457,182	Terrain-limited	IX-free	Percent IX	
			48256.0 13,072,446	47332.1 10,879,575	1.91 16.77	
Undesired			Total IX	Unique IX	Pront Unique IX	
WJLP D3 DT LIC		923.9	2,192,871	923.9	2,192,871	1.91 16.77

Interference to proposal, scenario 2
**MX: 19.96% interference

Desired:	Call	Chan	Svc Status	City, State	File Number	Distance
	WACP	D4	DT APP	ATLANTIC CITY, NJ	USERRECORD01	
Undesireds:	WJLP	D3	DT APP	MIDDLETOWN TOWNSHIP, NJ	USERRECORD02	129.5 km
Service area	49125.4	13,457,182	Terrain-limited	IX-free	Percent IX	
			48256.0 13,072,446	46362.5 10,463,535	3.92 19.96	
Undesired			Total IX	Unique IX	Pront Unique IX	
WJLP D3 DT APP		1893.5	2,608,911	1893.5	2,608,911	3.92 19.96



FIGURE 2
 GEOGRAPHICAL COVERAGE MAP
 LARGEST STATION IN THE DMA COMPARISON
 WACP 79.4 KW-ND 258.4 M HAAT CH.4
 ATLANTIC CITY, NEW JERSEY

November 2017

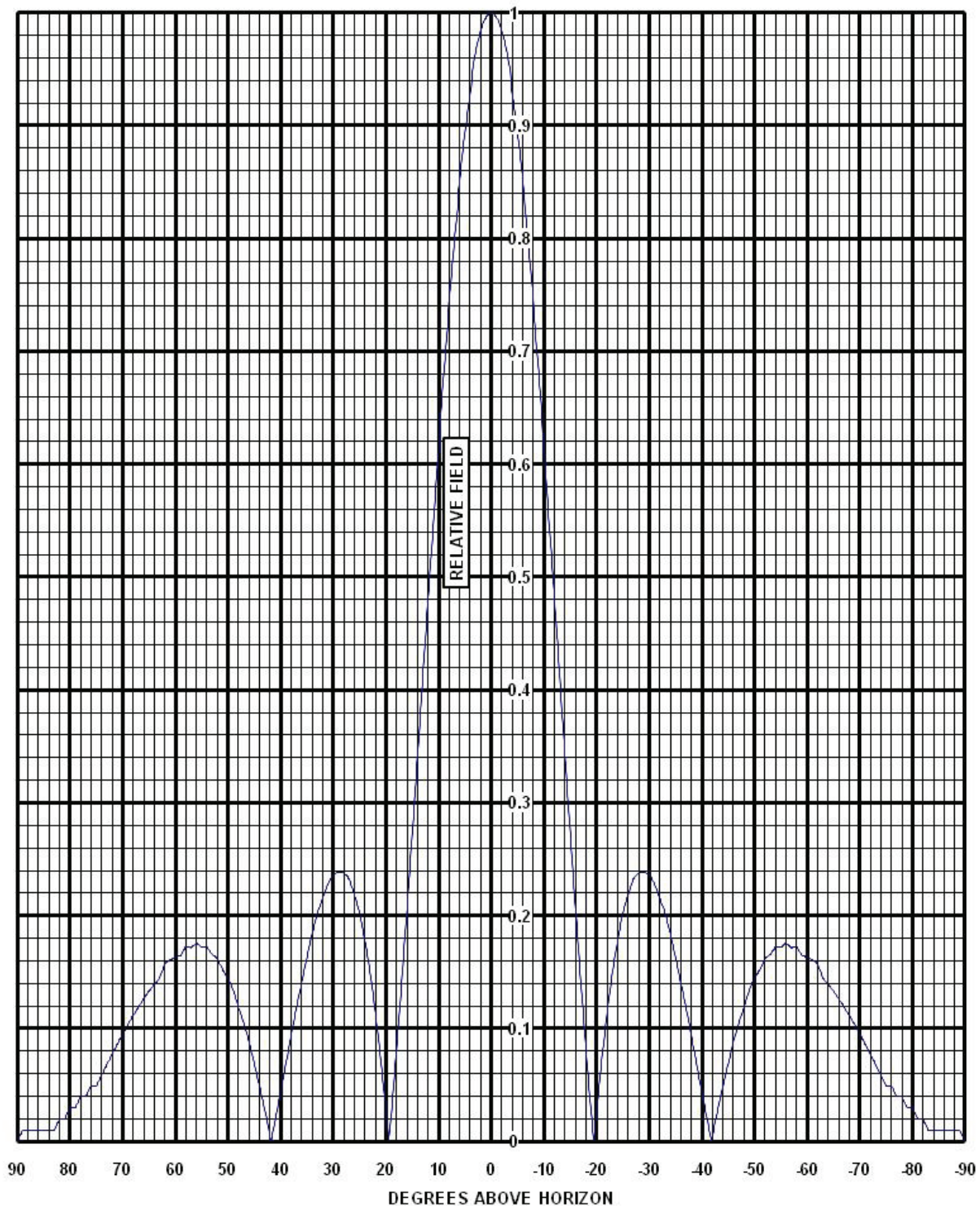


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Fax (916) 383-1182

FIGURE 3

COMPUTED ELEVATION PATTERN



Customer: Richland Towers
For: Philadelphia
Bays: 3

Model: JHD-LV2-3/3 (18)
Description: VHF Panel Antenna
-0° Beam Tilt, 0% Null Fill



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Sacramento, California 95828 USA

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FIGURE 3A

Elevation Pattern Tabulation

RELATIVE FIELD VS ELEVATION ANGLE

<u>ELEVATION</u> <u>ANGLE</u>	<u>RELATIVE</u> <u>FIELD</u>	<u>ELEVATION</u> <u>ANGLE</u>	<u>RELATIVE</u> <u>FIELD</u>	<u>ELEVATION</u> <u>ANGLE</u>	<u>RELATIVE</u> <u>FIELD</u>
10	0.615	-26	0.219	-61	0.161
9	0.682	-27	0.232	-62	0.157
8	0.746	-28	0.238	-63	0.144
7	0.798	-29	0.238	-64	0.139
6	0.853	-30	0.237	-65	0.133
5	0.893	-31	0.228	-66	0.127
4	0.928	-32	0.215	-67	0.119
3	0.964	-33	0.203	-68	0.112
2	0.984	-34	0.184	-69	0.104
1	0.996	-35	0.163	-70	0.095
0	1.000	-36	0.141	-71	0.087
-1	0.996	-37	0.119	-72	0.077
-2	0.984	-38	0.094	-73	0.068
-3	0.964	-39	0.069	-74	0.059
-4	0.928	-40	0.044	-75	0.049
-5	0.893	-41	0.020	-76	0.049
-6	0.853	-42	0.004	-77	0.040
-7	0.798	-43	0.027	-78	0.040
-8	0.746	-44	0.049	-79	0.030
-9	0.682	-45	0.069	-80	0.030
-10	0.615	-46	0.088	-81	0.020
-11	0.547	-47	0.105	-82	0.020
-12	0.482	-48	0.119	-83	0.010
-13	0.412	-49	0.134	-84	0.010
-14	0.341	-50	0.144	-85	0.010
-15	0.273	-51	0.152	-86	0.010
-16	0.206	-52	0.162	-87	0.010
-17	0.142	-53	0.166	-88	0.010
-18	0.081	-54	0.172	-89	0.010
-19	0.025	-55	0.172	-90	0.000
-20	0.027	-56	0.176		
-21	0.073	-57	0.171		
-22	0.114	-58	0.172		
-23	0.149	-59	0.165		
-24	0.178	-60	0.163		
-25	0.202				

Customer: Richland Towers
For: Philadelphia
Bays: 3

Model: JHD-LV2-3/3 (18)
Description: VHF Panel Antenna
-0° Beam Tilt, 0% Null Fill

FIGURE 3A