

TECHNICAL EXHIBIT
APPLICATION FOR MINOR CHANGE
OF CONSTRUCTION PERMIT
WDIN-FM2 BOOSTER STATION
MAYAGUEZ, PUERTO RICO
FACILITY ID 178107

December 15, 2015

CH 275 8 KW 402 M AMSL

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Engineering Statement

This Technical Exhibit was prepared on behalf of HQ-103, Inc., licensee of FM radio station WDIN, Camuy, Puerto Rico in support of an application for a minor change of the existing construction permit (CP) of WDIN-FM2, Mayaguez, Puerto Rico, FCC File Num. BPFTB-20150303ACJ. The instant application proposes to increase the effective radiated power (ERP) to 8 kW using a non-directional antenna. The proposed booster facility will operate on Channel 275 (102.9 MHz) with an antenna radiation center height above mean sea level of 402 meters. The proposed operating parameters are shown in Figure 1.

Transmitter Location

The proposed transmitting facility will employ an ERI circularly polarized LPX-6C antenna. The antenna will be side-mounted on an existing self-support tower. The following NAD27 geographic coordinates describe the proposed site location:

18° 10' 56.4" North Latitude

67° 05' 39.3" West Longitude

Tower Registration

It is proposed to mount the FM booster antenna on an existing registered tower property of PRTC, Inc., with an overall height above ground of 56.5 m and ASR 1223547. There will be no change in the overall height of the existing structure.

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Notification of FCC Monitoring Station and Arecibo Observatory

FCC rules, Section 73.1030(c), requires that the proposed facility do not produce a field strength greater than 10 mV/m at the FCC stations. The closest FCC monitoring station to the proposed operation is located at Santa Isabel, Puerto Rico, at a distance of 78.5 kilometers on a bearing of 104.3° True. The proposed FM booster operation is predicted to be significantly less than 10 mV/m at the FCC Santa Isabel, PR station. Therefore, notification to the FCC monitoring station is not considered necessary.

Pursuant to Section 73.1030 of the FCC Rules, the Arecibo Observatory located near Arecibo, Puerto Rico has been notified of the proposal. Copies of the notification letter and of the letter of consent of the Observatory are included in Appendix 1.

Environmental Considerations

The proposed facility is excluded from environmental processing pursuant to Section 1.1306 of the FCC Rules. With respect to the potential for human exposure to radio frequency (RF) radiation, a conservative calculation of the FM energy in the downward direction indicates an RF level for the FM Booster of no greater than 18.7 % of the FCC uncontrolled standard.* Since the RF exposure is predicted not to exceed the FCC limits for uncontrolled environments, the proposal complies with the FCC limits for human exposure to RF radiation. The applicant shall reduce power or cease operation as necessary to protect persons having access to fenced area around the tower from RF energy in excess of the FCC guidelines.

Predicted Coverage Contour

The predicted 54 dBu coverage contours were calculated in accordance with Section 73.313 of the FCC Rules. The average terrain elevations from 3 to 16 km from the proposed site were computed using the U.S.G.S. 3-second terrain database. The distances to the predicted 54 dBu coverage contour for the proposed booster was determined using the

* This is based on the proposed FM booster antenna radiation center height above ground of 42 m, effective radiated power in each polarization plane of 8 kW, and a downward relative field factor of 0.335 for any antenna depression angle greater than 10 degrees. Calculations were made at 2-m AGL according procedures outlined in FCC OET Bulletin No. 65. Calculated combined RF energy will not exceed 37.5 uW/cm² according to these assumptions. This is 18.7% of the FCC limit of 200 uW/cm² for uncontrolled environments.

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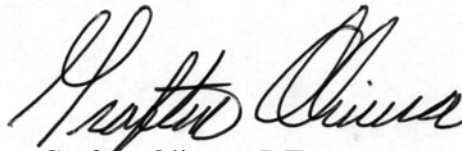
average elevations of radials spaced every 5-degree of azimuth. The antenna radiation center height above average terrain and the ERP in each radial direction were used in conjunction with the propagation prediction curves of Section 73.333 to determine the distances to the contour.

Figure 2 is a map showing the predicted 54 dBu coverage contours of the WDIN main facility and the proposed booster. As indicated in Figure 2, the proposed predicted 54 dBu contour of the booster will be contained within the WDIN main facility predicted 54 dBu contour over land. The proposed maximum ERP for the booster is within 20% of the licensed ERP of the primary station, WDIN. As shown in Figure 2, the 1 mV/m contour of the proposal overlaps the 1 mV/m of the license facility, as required for a minor change application.

Allocation Considerations

The closest adjacent-channel FM facility in proximity to the proposed booster is W276AI, an FM translator on Channel 276 in Ponce, Puerto Rico. As shown in Figure 2, the 6-dB contour protection requirement is met with respect to W276AI. Therefore, the proposed facility meets the adjacent-channel protection requirements of the FCC Rules.

As the proposed station has an ERP greater than 100 Watts, minimum distance requirements to stations spaced 53 or 54 channels apart apply. Station WZET, channel 221A, to which the proposed facility should be at least 10 kilometers apart, is located 17.48 kilometers from the proposed site. Thus, it is believed that the proposed booster facility meets all allocation requirements.



Grafton Olivera, P.E.
Consulting Engineer

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

December 15, 2015

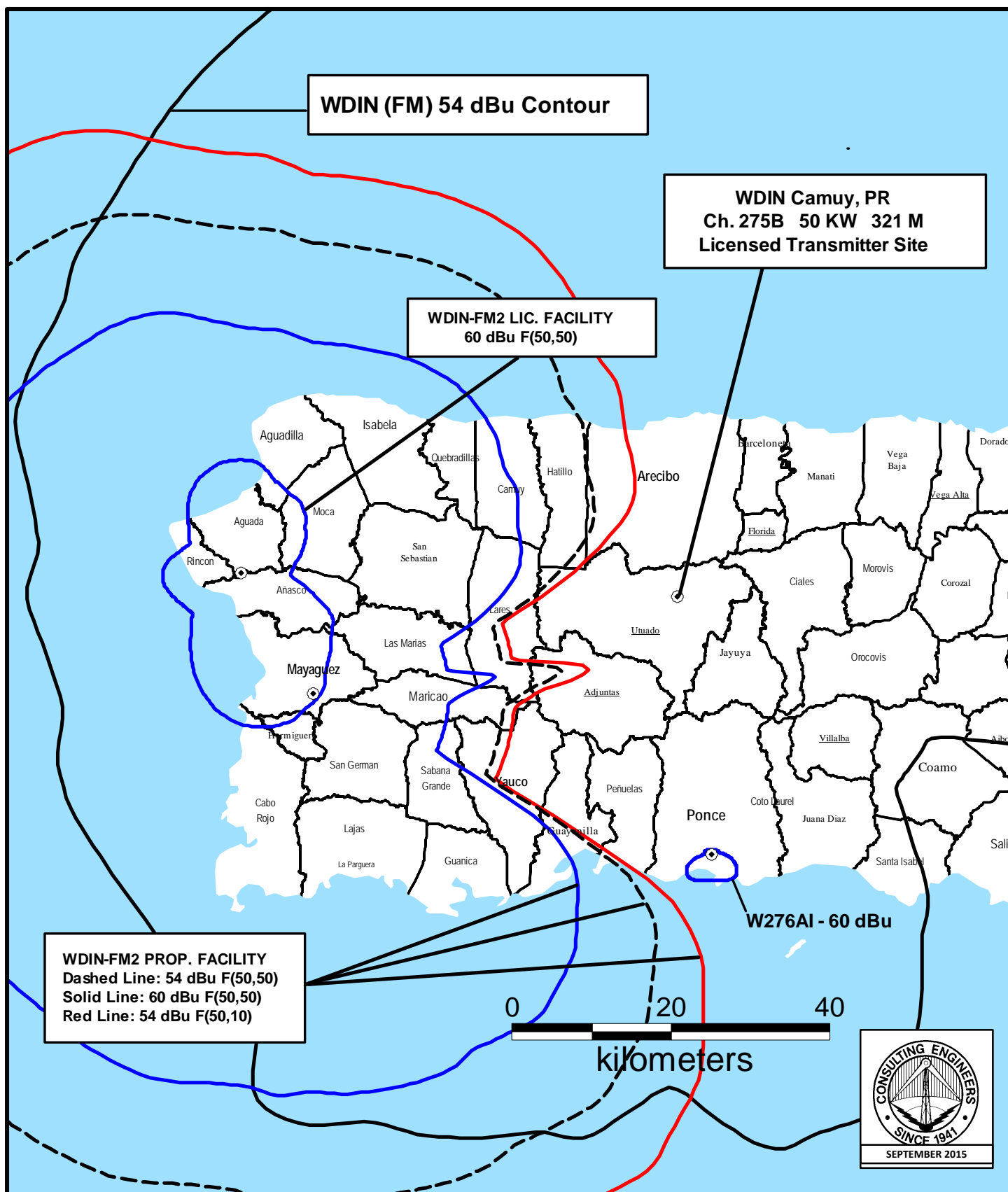
Figure 1

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Engineering Specifications

Channel / Frequency	275 / 102.9 MHz
Site Coordinates (NAD27)	18° 10' 56" North Latitude 67° 05' 39" West Longitude
Site elevation	360 m AMSL
Overall height of existing structure	56.5 m AGL / 416.4 m AMSL
Height of antenna radiation center	42 m AGL / 402 m AMSL
Transmitter	Nautel, VS2.5
Transmitter power output	2.6 kW
Transmission line	Andrew, 1-5/8" Air, HJ7-50A
Transmission line length	49 m
Transmission line efficiency	92.5%
Antenna	ERI, LPX-6C
Polarization	Circular
Power gain	3.303X
Antenna input power	2.42 kW
Effective radiated power (H & V)	8.0 kW

Figure 2



PREDICTED COVERAGE CONTOURS

FM BOOSTER STATION WDIN-FM2

MAYAGUEZ, PUERTO RICO

CH 275 8 KW 402 M AMSL

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

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Notification & Letter of Consent
National Astronomy and Ionosphere Center

{two sheets follow}



201 Fletcher Ave.
Sarasota, FL 34237-6019
941-329-6000
941-329-6031 FAX

Grafton Olivera
Direct Dial 941-329-6001
e-mail: grifton@dlr.com

December 15, 2015

Via email (prcz@naic.edu)

Angel M. Vázquez, Spectrum Manager
National Astronomy and Ionosphere Center
Arecibo Observatory
HC3 Box 53995
Arecibo, PR 00612

Gentlemen:

On behalf of our client, HQ-103, Inc., licensee of FM station WDIN of Camuy, PR and applicant of a minor change of the standing CP of FM booster station WDIN-FM2, in Mayaguez, Puerto Rico, in accordance with Section 73.1030 of the FCC Rules, we are hereby notifying of the proposed changes to the facility of WDIN-FM2. The particulars of the proposal are as follows:

Proposed Facilities

Geographical coordinates of antenna location (NAD83): 18-10-49.2 / 67-05-37.9
Antenna radiation center height: 42 m AGL; 402 m AMSL
Antenna directivity: non-directional
Operating channel: 275 (102.9 MHz)
Type of emission: F3E
Effective isotropic radiated power: 13.1 kW (Circular Polarization)

Please review this proposal and if you find any cause of concern, let us know immediately, so appropriate action can be taken.

Please feel free to communicate via email (<mailto:Grafton@dlr.com>), telefax (941-329-6030) or regular mail.

Very truly yours,

Grafton Olivera, P.E.

ARECIBO OBSERVATORY

The William E. Gordon Telescope



December 21, 2015

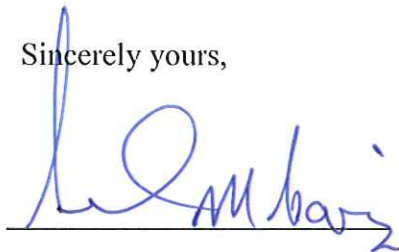
Mr. Grafton Olivera, P.E.
du Treil, Lundin & Rackley, Inc.
201 Fletcher Ave.
Sarasota, FL 34237-6019

Re: WDIN-FM2, FM Booster Station in Mayagüez, PR

Dear Grafton Olivera:

Thank you very much for the copy of your FCC application sent to us in accordance with the Puerto Rico Coordination zone agreements. We have considered the technical aspects of your application and find that your installation/path originating in Mayaguez is unlikely to cause harmful interference to the passive use of the Radio Astronomy bands at the Observatory. We therefore have no objection to your proposed installation.

Sincerely yours,



Angel M. Vázquez
Spectrum Manager

AV:ws

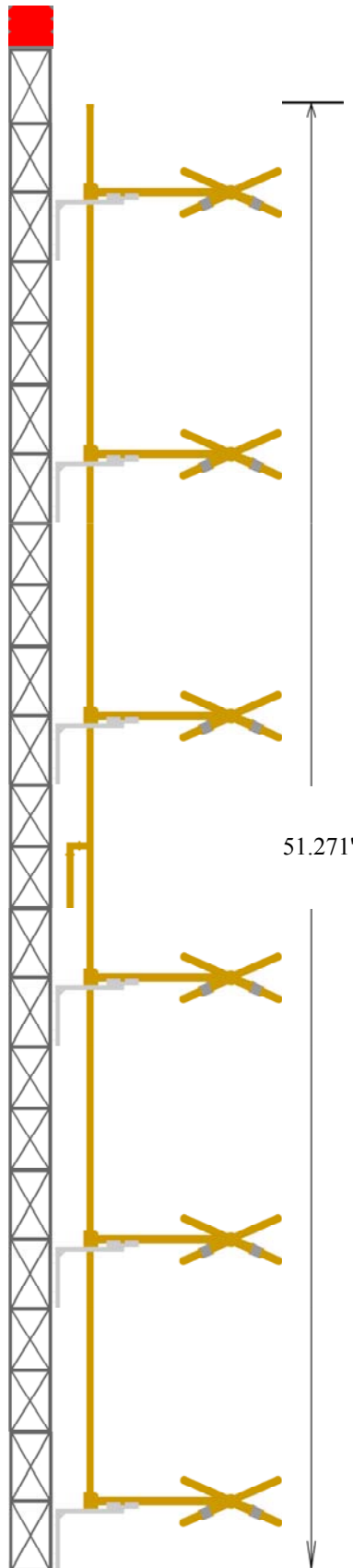
Cc: PRCZ files [File #001500120006]

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Antenna Manufacturer's Data:

Electrical and Mechanical Specifications
Vertical Plane Radiation Pattern

{two sheets follow}



Antenna Type: LPX-6C
Frequency: 102.9 MHz
Bay Spacing: 114.286 in.
System Length: 51.271 ft.
Vertical tower space: 62.619 ft.
System Gain: 3.303 (5.189 dBdc)
ERP: 8 kW (9.031 dBk)
Input power: 2.422 kW (3.842 dBk)
System Weight: 411 lbs.
System CaAa: 21.582 ft².
Input connector is 3 1/8 in. female.

System CaAa is based on TIA/EIA-222-F Standards

Vertical tower space is based on the top bay mounted 5 feet from the top of the tower. Add 5 feet if the antenna is to be mounded somewhere other than near the top of the tower.

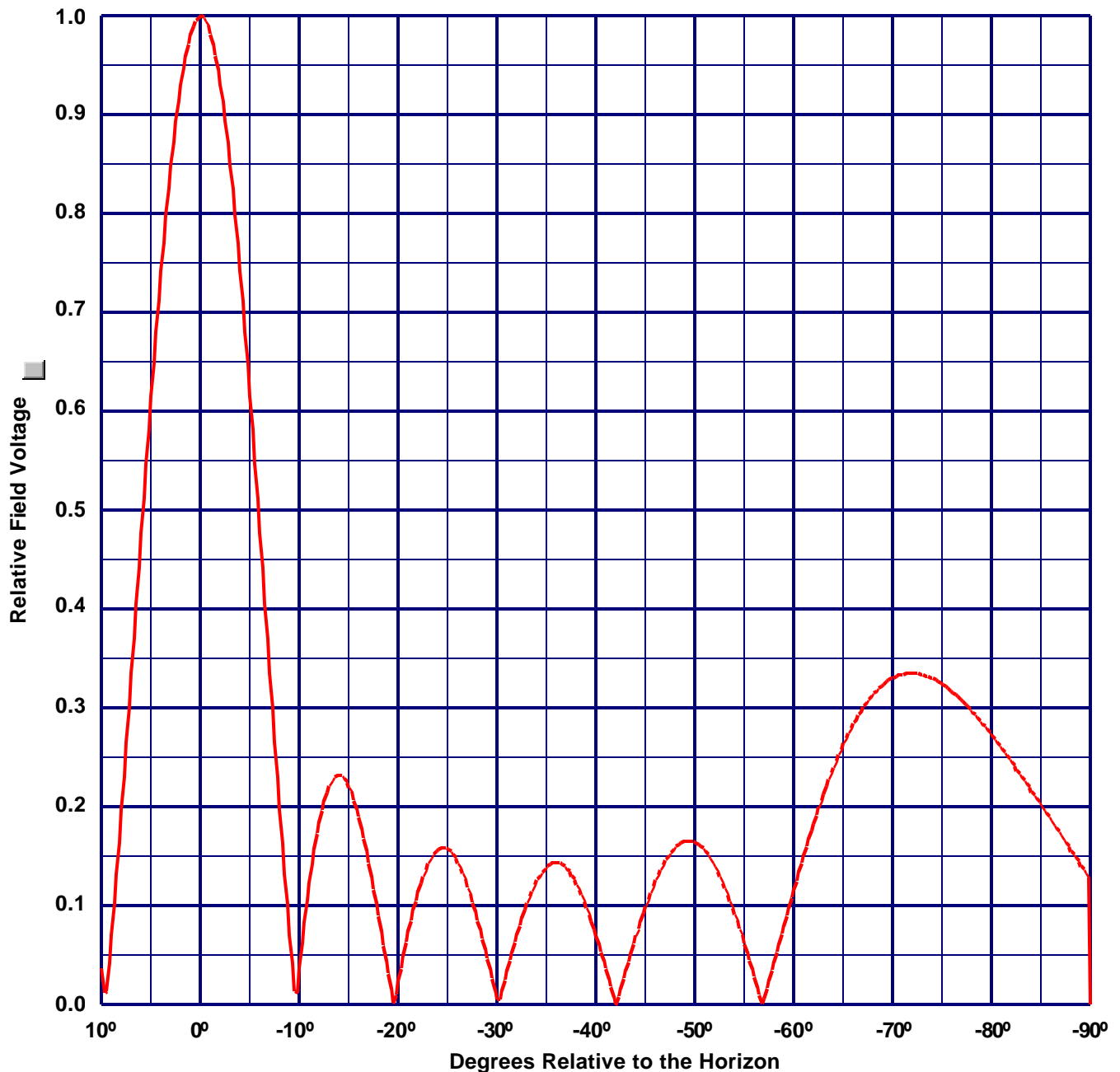
Weight and wind figures do not include radomes or radial ice



Vertical Plane Relative Field Pattern

ERI TYPE SHP, SHPX, MP, MPX, LP OR LPX ELEMENTS

**A 6 level, 1 wave-length spaced non directional antenna
with 0° beam tilt, 0% null fill and a H/V maximum power ratio of 1.000**



Vertical Polarization Gain:

Maximum: 3.303 (5.189 dB)

Horizontal Plane: 3.303 (5.189 dB)

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Maximum: 3.303 (5.189 dB)

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