



The following documentation is an electronically-submitted vendor response to an advertised solicitation from the *West Virginia Purchasing Bulletin* within the Vendor Self-Service portal at wvOASIS.gov. As part of the State of West Virginia's procurement process, and to maintain the transparency of the bid-opening process, this documentation submitted online is publicly posted by the West Virginia Purchasing Division at WVPurchasing.gov with any other vendor responses to this solicitation submitted to the Purchasing Division in hard copy format.

Header 2

Procurement Folder: 609036

SO Doc Code: CRFQ

Procurement Type: Central Purchase Order

SO Dept: 0439

Vendor ID:

SO Doc ID: EBA2000000004

Legal Name: PROPAGATION SYSTEMS INC

Published Date: 8/9/19

Alias/DBA:

Close Date: 8/14/19

Total Bid: \$169,409.00

Close Time: 13:30

Response Date:

Status: Closed

Response Time: Solicitation Description:

Total of Header Attachments: 2

Total of All Attachments: 2

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
1	HIGH POWER UHF TV TRANSMIT ANTENNA	1.00000	EA	\$169,409.000000	\$169,409.00

Comm Code	Manufacturer	Specification	Model #
43221703			

Extended Description :	HIGH POWER UHF TV TRANSMIT ANTENNA
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Comments: Please see attached specifications for antenna and transmission line. We are supplying 6-1/8" rigid transmission line and components with PSI top mount antenna.

DESIGNATED CONTACT: Vendor appoints the individual identified in this Section as the Contract Administrator and the initial point of contact for matters relating to this Contract.

Douglas A. Ross PRESIDENT
(Name, Title)
Douglas A. Ross, President
719 Pensacola Road, PO Box 113, Ebensburg, PA 15931
(Printed Name and Title)
(Address)
814-472-5540 / 814-472-5676
(Phone Number) / (Fax Number)
doug@psibroadcast.com
(email address)

CERTIFICATION AND SIGNATURE: By signing below, or submitting documentation through wvOASIS, I certify that I have reviewed this Solicitation in its entirety; that I understand the requirements, terms and conditions, and other information contained herein; that this bid, offer or proposal constitutes an offer to the State that cannot be unilaterally withdrawn; that the product or service proposed meets the mandatory requirements contained in the Solicitation for that product or service, unless otherwise stated herein; that the Vendor accepts the terms and conditions contained in the Solicitation, unless otherwise stated herein; that I am submitting this bid, offer or proposal for review and consideration; that I am authorized by the vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the vendor has properly registered with any State agency that may require registration.

Propagation Systems, Inc.
(Company)
Douglas A. Ross PRESIDENT
(Authorized Signature) (Representative Name, Title)
Douglas A. Ross, President
(Printed Name and Title of Authorized Representative)
August 14, 2019
(Date)
814-472-5540 / 814-472-5676
(Phone Number) (Fax Number)

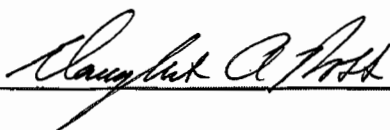
REQUEST FOR QUOTATION, RFQ# EBAr67877
High-Power UHF Television Transmit Antenna

Exhibit A
Pricing Page*

em#	Description	Quan	Unit Cost	Total Item Cost
1	High-Power UHF Television Transmit Antenna as described in section 3.1.1	1	\$169,409	\$ 169,409
	Total Bid Cost			\$ 169,409

***Per section 4.2.3 Vendor must also provide documentation for the equipment quoted sufficient for the Agency to determine whether the quoted equipment meets specifications. Vendor should provide this documentation with their initial bid.**

Authorized Signature: _____



Date: 8/14/2019

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

CONSTRUCTION CONTRACTS: Under W. Va. Code § 5-22-1(i), the contracting public entity shall not award a construction contract to any bidder that is known to be in default on any monetary obligation owed to the state or a political subdivision of the state, including, but not limited to, obligations related to payroll taxes, property taxes, sales and use taxes, fire service fees, or other fines or fees.

ALL CONTRACTS: Under W. Va. Code §5A-3-10a, no contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and: (1) the debt owed is an amount greater than one thousand dollars in the aggregate; or (2) the debtor is in employer default.

EXCEPTION: The prohibition listed above does not apply where a vendor has contested any tax administered pursuant to chapter eleven of the W. Va. Code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

DEFINITIONS:

"Debt" means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

"Employer default" means having an outstanding balance or liability to the old fund or to the uninsured employers' fund or being in policy default, as defined in W. Va. Code § 23-2c-2, failure to maintain mandatory workers' compensation coverage, or failure to fully meet its obligations as a workers' compensation self-insured employer. An employer is not in employer default if it has entered into a repayment agreement with the Insurance Commissioner and remains in compliance with the obligations under the repayment agreement.

"Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceed five percent of the total contract amount.

AFFIRMATION: By signing this form, the vendor's authorized signer affirms and acknowledges under penalty of law for false swearing (W. Va. Code §61-5-3) that: (1) for construction contracts, the vendor is not in default on any monetary obligation owed to the state or a political subdivision of the state, and (2) for all other contracts, that neither vendor nor any related party owe a debt as defined above and that neither vendor nor any related party are in employer default as defined above, unless the debt or employer default is permitted under the exception above.

WITNESS THE FOLLOWING SIGNATURE:

Vendor's Name: Propagation Systems, Inc.

Authorized Signature: *[Signature]* Date: August 14, 2019

State of PA

County of Cambria, to-wit:

Taken, subscribed, and sworn to before me this 14 day of August, 2019.

My Commission expires 5/27/2023, 20 .

AFFIX SEAL HERE

Commonwealth of Pennsylvania - Notary Seal
Donna M. Zerbee, Notary Public
Cambria County
My commission expires May 27, 2023
Commission number 1185124
Member, Pennsylvania Association of Notaries

NOTARY PUBLIC *[Signature]*



Purchasing Division
 2019 Washington Street East
 Post Office Box 50130
 Charleston, WV 25305-0130

State of West Virginia
 Request for Quotation
 04 - Audio/Video

Proc Folder: 609036

Doc Description: HIGH POWER UHF TELEVISION TRASMIT ANTENNA

Proc Type: Central Purchase Order

Date Issued	Solicitation Closes	Solicitation No	Version
2019-07-30	2019-08-14 13:30:00	CRFQ 0439 EBA2000000004	1

BID RECEIVING LOCATION

BID CLERK
 DEPARTMENT OF ADMINISTRATION
 PURCHASING DIVISION
 2019 WASHINGTON ST E
 CHARLESTON WV 25305
 US

VENDOR

Vendor Name, Address and Telephone Number:

Propagation Systems, Inc.
 719 Pensacola Road
 Ebensburg, PA 15931
 814-72-5540

FOR INFORMATION CONTACT THE BUYER

Stephanie L Gale
 (304) 558-8801
 stephanie.l.gale@wv.gov

Signature X

FEIN # 23-2876660

DATE 8/14/2019

All offers subject to all terms and conditions contained in this solicitation



Purchasing Division
 2019 Washington Street East
 Post Office Box 50130
 Charleston, WV 25305-0130

State of West Virginia
 Request for Quotation
 04 - Audio/Video

Proc Folder: 609036

Doc Description: Addendum #1 HIGH POWER UHF TELEVISION TRASMIT ANTENNA

Proc Type: Central Purchase Order

Date Issued	Solicitation Closes	Solicitation No	Version
2019-08-09	2019-08-14 13:30:00	CRFQ 0439 EBA2000000004	2

BID RECEIVING LOCATION


BID CLERK
 DEPARTMENT OF ADMINISTRATION
 PURCHASING DIVISION
 2019 WASHINGTON ST E
 CHARLESTON WV 25305
 US

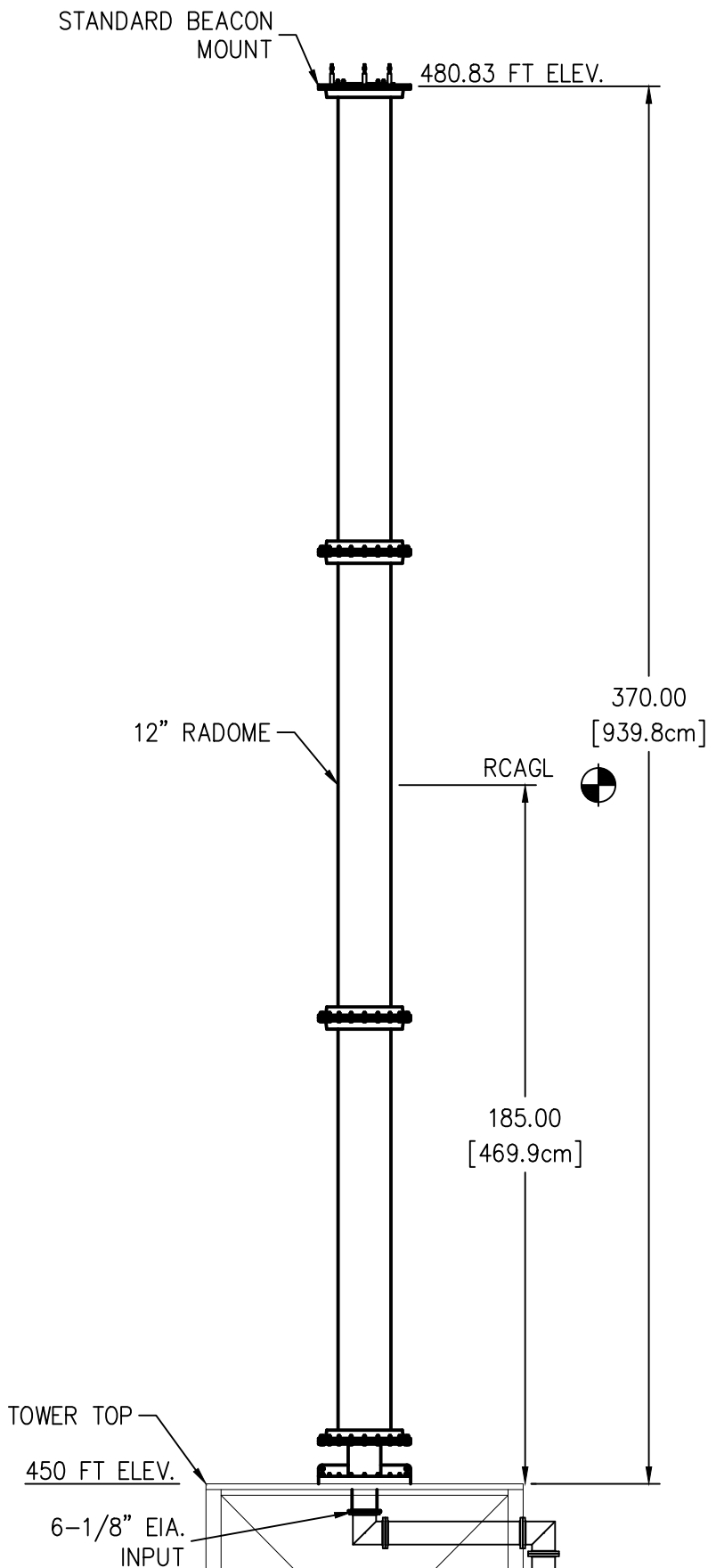
VENDOR

Vendor Name, Address and Telephone Number:
 Propagation Systems, Inc.
 719 Pensacola Road
 Ebensburg, PA 15931
 814-472-5540

FOR INFORMATION CONTACT THE BUYER

Stephanie L Gale
 (304) 558-8801
 stephanie.l.gale@wv.gov

Signature X  FEIN # 23-2876660 DATE 8/14/2019
 All offers subject to all terms and conditions contained in this solicitation



SYSTEM SPECIFICATIONS	
ERP H-POL:	660 kW (28.20 dBK)
ERP V-POL:	198 kW (22.97 dBK)
TPO:	28 kW (14.47 dBK)
LINE:	6-1/8 50Ω x 515 FT
LINE LOSS:	0.654 dB
POWER TO ANTENNA	24.08 kW (13.82 dBK)

ANTENNA SPECIFICATIONS	
LENGTH:	30.83 FT (9.4 M)
CENTER OF RADIATION ('COR'):	15.42 FT (4.7 M)
WEIGHT:	4450 LBS (2018 Kg)
WINDAREA:	38.5 FT ²
RATING:	36 kW
PEAK H-POL GAIN:	27.40 (14.38 dB)
PEAK V-POL GAIN:	8.22 (9.15 dB)
INPUT:	6-1/8" EIA. 50Ω
NOTE: 1. WEIGHT AND WIND AREA ARE ESTIMATED. WIND AREA IN ACCORDANCE WITH TIA/EIA-222-G Σ(CaAc)	

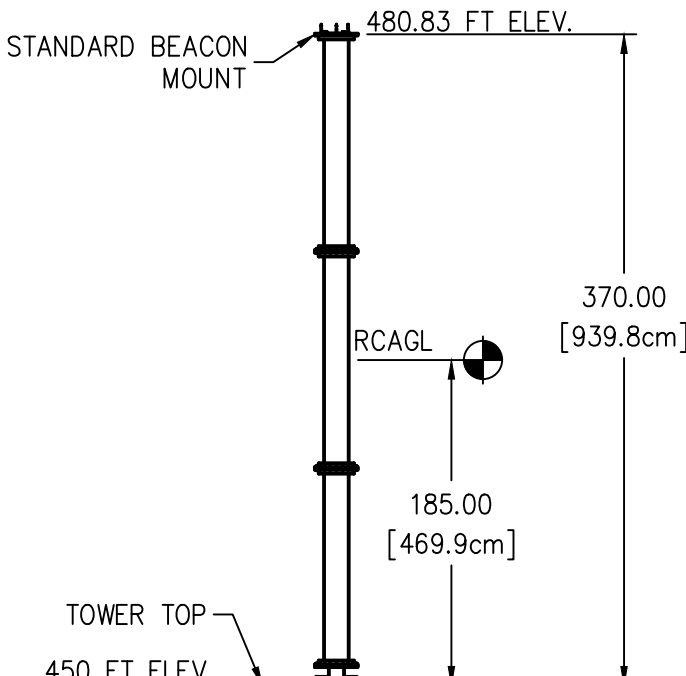
REV.	MADE BY	CHECKED BY	DATE	CHANGE

PROPAGATION SYSTEMS, INC.
 Ebensburg, Pennsylvania USA 814-472-5540

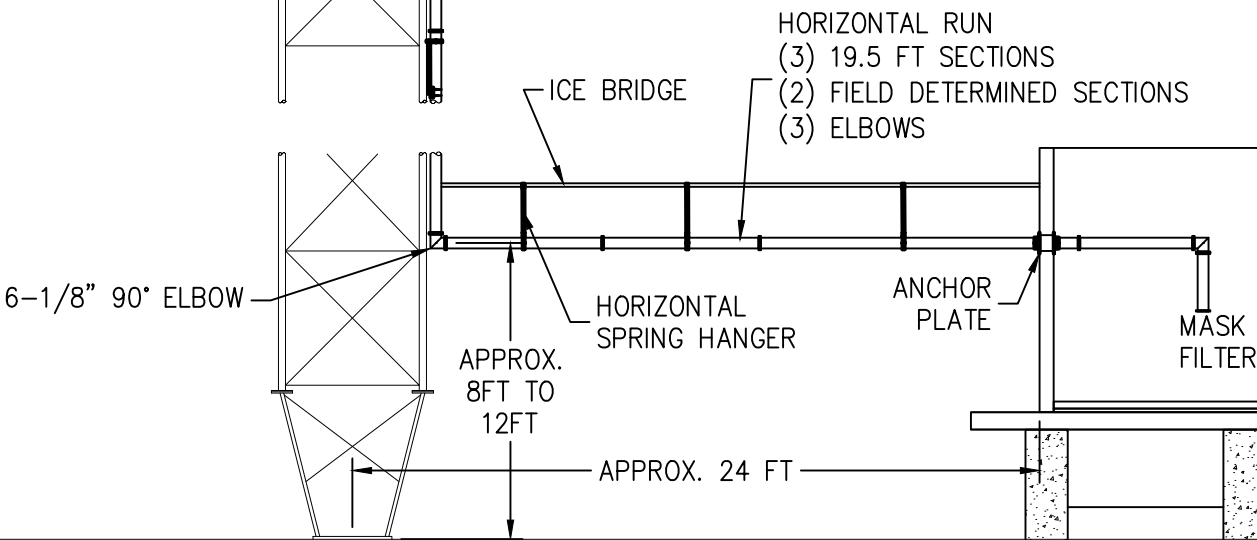
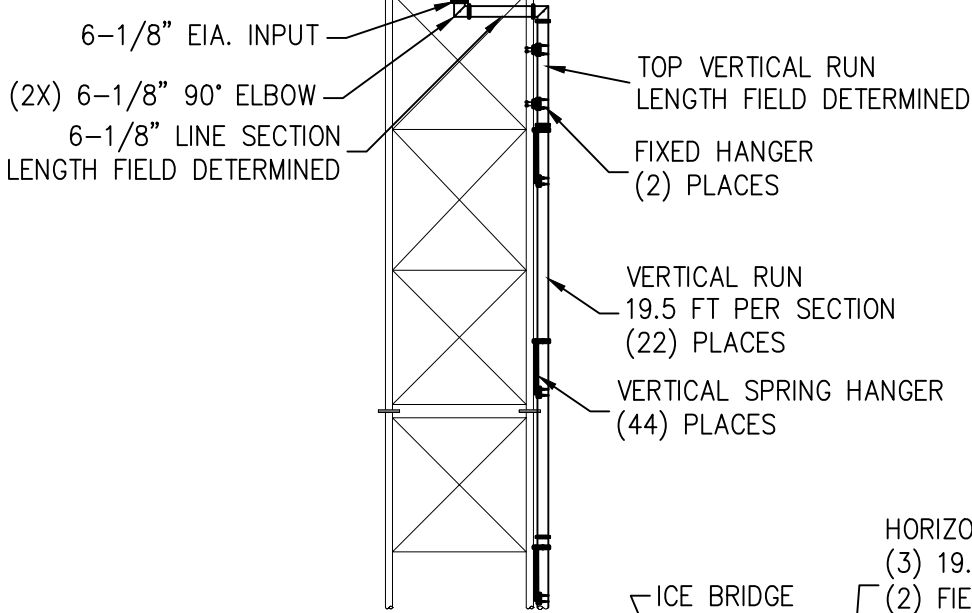
This drawing is loaned subject to the express understanding and agreement that the drawing and information therein contained are, and shall remain the property of PSI, and will not be otherwise utilized or disposed of, directly or indirectly, and will not be used in whole or in part or assist in making or finish any reproductions hereof, or for the design or making of any item, parts, object, apparatus or parts thereof, except upon the written permissions of PSI first obtained. The acceptance of this drawing will be construed as an acceptance of the forgoing agreement.

SIZE
A

ANTENNA ELEVATION AND SPECIFICATIONS			
MODEL:	PSIUSMT18C170-34-EP	DRAWN BY:	M.MOCK
CHANNEL/FREQUENCY:	CHANNEL 34	DATE:	08/13/19
SCALE:		APPROVED BY:	
		DRAWING NO.:	PR2430-001
		REV.:	



TRANSMISSION LINE	
LINE:	6-1/8" 50Ω EIA.
VERTICAL RUN:	440 FT (134 M)
HORIZONTAL RUN:	75 FT (23 M)
LOSS PER 100FT:	0.127 dB
TOTAL LINE LOSS:	0.654 dB



REV.	MADE BY	CHECKED BY	DATE	CHANGE

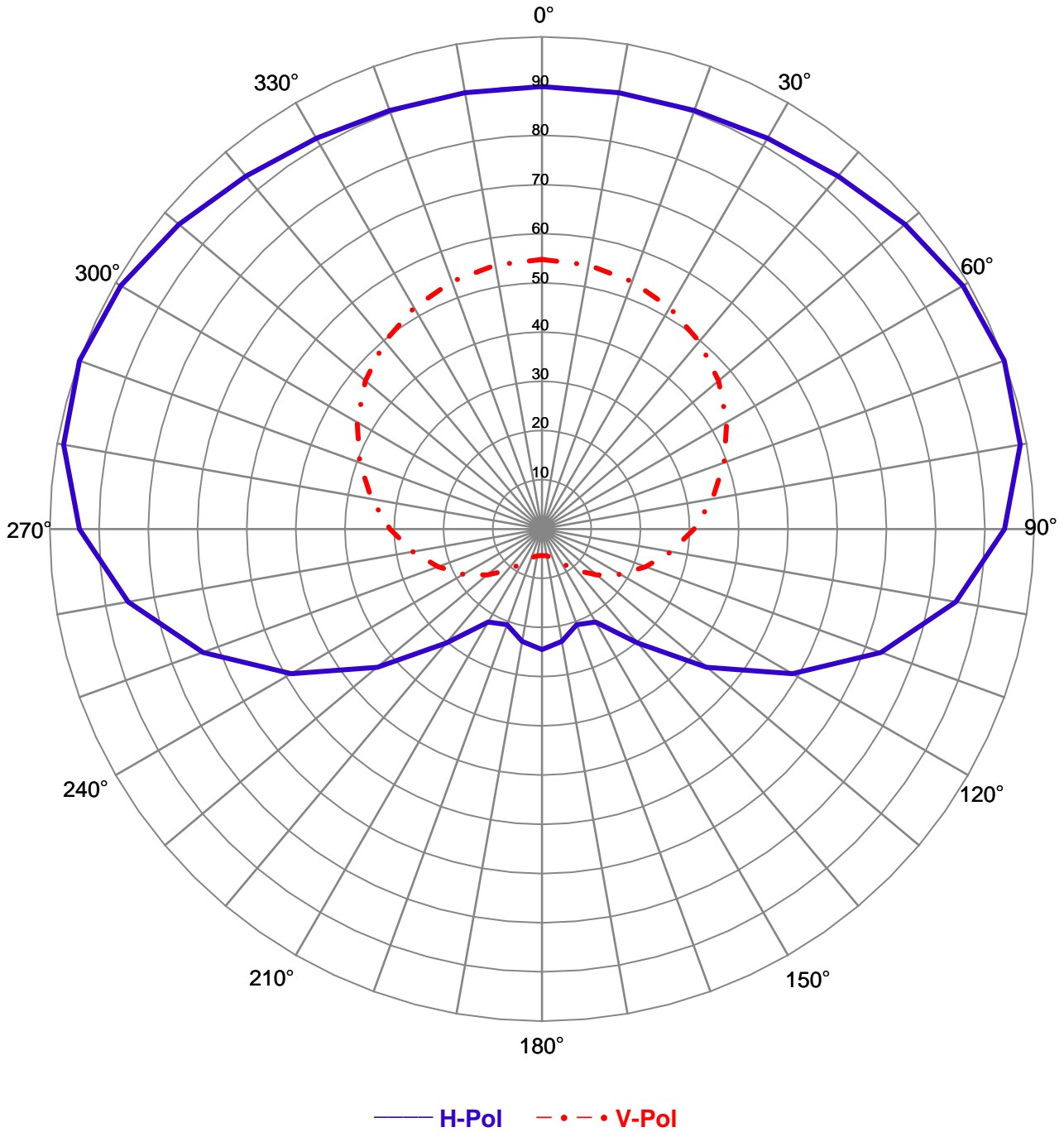
PROPAGATION SYSTEMS, INC.
Ebensburg, Pennsylvania USA 814-472-5540

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SYSTEM ELEVATION DETAILS			
MODEL:	PSIUSMT18C170-34-EP	DRAWN BY:	M.MOCK
CHANNEL/FREQUENCY:	CHANNEL 34	APPROVED BY:	
SCALE:		DRAWING NO.:	PR2430-002
		DATE:	08/13/19



Relative Field Azimuth Plane Pattern



Pattern Type:	Relative Field	Type:	Top Mount UHF Slot
Antenna Model:	PSIUSMT18C170-34-EP	Pattern:	C170
Polarization:	Elliptical	Number of Bays:	18
Peak Gain (H-pol)	27.4 (14.38 dB)	Reference:	WNPB
Peak Gain (V-pol):	8.22 (9.15 dB)	Date:	8/12/2019



PROPAGATION SYSTEMS INC.

Relative Field Tabulation Azimuth Pattern

Antenna Model: PSIOUSMT18C170-34-EP

Directivity (H-pol): 1.70 (2.30 dB)

Peak Gain (H-pol): 27.4 (14.38 dB)

Station: WNPB

Angle	Relative Field	Power Gain	Gain dB
0	0.899	22.14	13.45
10	0.900	22.19	13.46
20	0.905	22.44	13.51
30	0.917	23.04	13.62
40	0.936	24.01	13.80
50	0.963	25.41	14.05
60	0.988	26.75	14.27
70	1.000	27.40	14.38
80	0.987	26.69	14.26
90	0.940	24.21	13.84
100	0.854	19.98	13.01
110	0.733	14.72	11.68
120	0.588	9.47	9.77
130	0.437	5.23	7.19
140	0.302	2.50	3.98
150	0.218	1.30	1.15
160	0.207	1.17	0.70
170	0.232	1.47	1.69
180	0.245	1.64	2.16
190	0.232	1.47	1.69
200	0.207	1.17	0.70
210	0.218	1.30	1.15
220	0.302	2.50	3.98
230	0.437	5.23	7.19
240	0.588	9.47	9.77
250	0.733	14.72	11.68
260	0.854	19.98	13.01
270	0.940	24.21	13.84
280	0.987	26.69	14.26
290	1.000	27.40	14.38
300	0.988	26.75	14.27
310	0.963	25.41	14.05
320	0.936	24.01	13.80
330	0.917	23.04	13.62
340	0.905	22.44	13.51
350	0.900	22.19	13.46



PROPAGATION SYSTEMS INC.

ERP Tabulation Azimuth Pattern

Antenna Model: PSIOUSMT18C170-34-EP

Peak ERP (H-pol): 660 kW (28.20 dBk)

Antenna input: 24.09 kW (13.82 dBk)

Station: WNPB

Angle	Relative Field	ERP kW	ERP dBk
0	0.899	533	27.27
10	0.900	534	27.28
20	0.905	540	27.33
30	0.917	555	27.44
40	0.936	578	27.62
50	0.963	612	27.87
60	0.988	644	28.09
70	1.000	660	28.19
80	0.987	643	28.08
90	0.940	583	27.66
100	0.854	481	26.82
110	0.733	354	25.50
120	0.588	228	23.58
130	0.437	126	21.00
140	0.302	60	17.79
150	0.218	31	14.96
160	0.207	28	14.51
170	0.232	36	15.50
180	0.245	40	15.98
190	0.232	36	15.50
200	0.207	28	14.51
210	0.218	31	14.96
220	0.302	60	17.79
230	0.437	126	21.00
240	0.588	228	23.58
250	0.733	354	25.50
260	0.854	481	26.82
270	0.940	583	27.66
280	0.987	643	28.08
290	1.000	660	28.19
300	0.988	644	28.09
310	0.963	612	27.87
320	0.936	578	27.62
330	0.917	555	27.44
340	0.905	540	27.33
350	0.900	534	27.28



PROPAGATION SYSTEMS INC.

Relative Field Tabulation Azimuth Pattern

Antenna Model: PSIOUSMT18C170-34-EP

Directivity (V-pol): 2.49 (3.96 dB)

Peak Gain (V-pol): 8.22 (9.15 dB)

Station: WNPB

Angle	Relative Field	Power Gain	Gain dB
0	0.548	8.22	9.15
10	0.545	8.13	9.10
20	0.535	7.85	8.95
30	0.519	7.39	8.69
40	0.497	6.77	8.31
50	0.468	6.01	7.79
60	0.434	5.15	7.12
70	0.394	4.25	6.29
80	0.352	3.39	5.31
90	0.309	2.61	4.17
100	0.266	1.94	2.88
110	0.225	1.38	1.41
120	0.184	0.93	-0.32
130	0.145	0.58	-2.38
140	0.110	0.33	-4.83
150	0.080	0.18	-7.51
160	0.062	0.11	-9.74
170	0.055	0.08	-10.77
180	0.054	0.08	-10.95
190	0.055	0.08	-10.77
200	0.062	0.11	-9.74
210	0.080	0.18	-7.51
220	0.110	0.33	-4.83
230	0.145	0.58	-2.38
240	0.184	0.93	-0.32
250	0.225	1.38	1.41
260	0.266	1.94	2.88
270	0.309	2.61	4.17
280	0.352	3.39	5.31
290	0.394	4.25	6.29
300	0.434	5.15	7.12
310	0.468	6.01	7.79
320	0.497	6.77	8.31
330	0.519	7.39	8.69
340	0.535	7.85	8.95
350	0.545	8.13	9.10



PROPAGATION SYSTEMS INC.

ERP Tabulation Azimuth Pattern

Antenna Model: PSIOUSMT18C170-34-EP

Peak ERP (V-pol): 198 kW (22.97 dBk)

Antenna input: 24.09 kW (13.82 dBk)

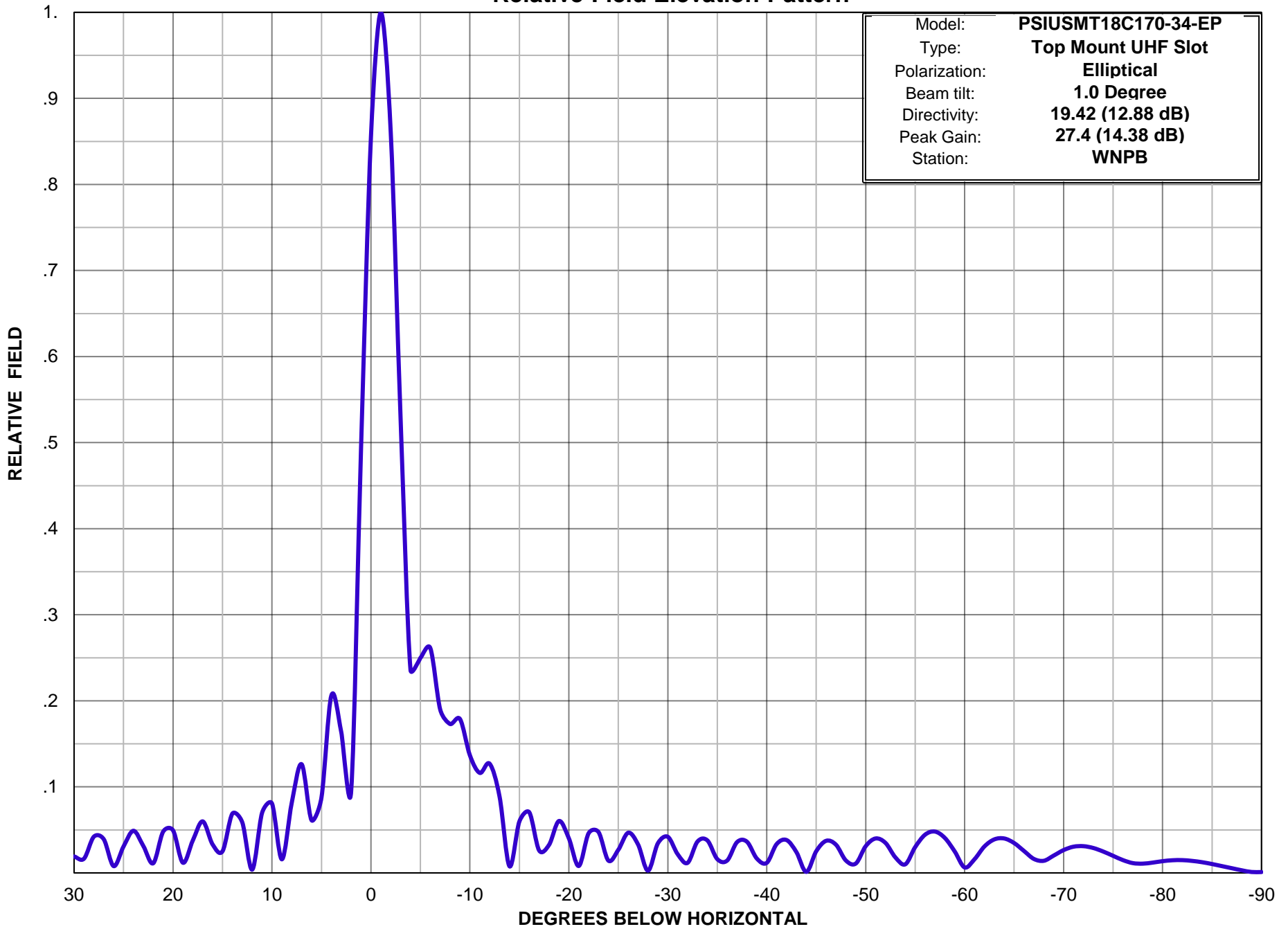
Station: WNPB

Angle	Relative Field	ERP kW	ERP dBk
0	0.548	198	22.97
10	0.545	196	22.92
20	0.535	189	22.77
30	0.519	178	22.51
40	0.497	163	22.13
50	0.468	145	21.61
60	0.434	124	20.94
70	0.394	102	20.11
80	0.352	82	19.13
90	0.309	63	17.99
100	0.266	47	16.70
110	0.225	33	15.23
120	0.184	22	13.50
130	0.145	14	11.44
140	0.110	8	8.99
150	0.080	4	6.31
160	0.062	3	4.08
170	0.055	2	3.05
180	0.054	2	2.87
190	0.055	2	3.05
200	0.062	3	4.08
210	0.080	4	6.31
220	0.110	8	8.99
230	0.145	14	11.44
240	0.184	22	13.50
250	0.225	33	15.23
260	0.266	47	16.70
270	0.309	63	17.99
280	0.352	82	19.13
290	0.394	102	20.11
300	0.434	124	20.94
310	0.468	145	21.61
320	0.497	163	22.13
330	0.519	178	22.51
340	0.535	189	22.77
350	0.545	196	22.92



Propagation Systems, Inc.

Relative Field Elevation Pattern





Propagation Systems Inc.

Relative Field Tabulation Elevation Pattern

Antenna Model: PSIUSMT18C170-34-EP

Peak Gain (H-pol): 27.4 (14.38 dB)

Peak Gain (V-pol): 8.22 (9.15 dB)

Station: WNPB

Angle	Field	dB	Angle	Field	dB	Angle	Field	dB
-90	0.001	-60.00	-50	0.031	-30.16	-10	0.137	-17.29
-89	0.001	-59.49	-49	0.011	-39.24	-9	0.179	-14.95
-88	0.003	-50.37	-48	0.014	-36.84	-8	0.173	-15.24
-87	0.005	-45.26	-47	0.033	-29.70	-7	0.190	-14.43
-86	0.008	-42.07	-46	0.037	-28.57	-6	0.261	-11.66
-85	0.010	-39.74	-45	0.025	-31.99	-5	0.250	-12.05
-84	0.012	-38.11	-44	0.001	-58.33	-4	0.236	-12.55
-83	0.014	-37.12	-43	0.024	-32.36	-3	0.527	-5.57
-82	0.015	-36.57	-42	0.038	-28.36	-2	0.861	-1.30
-81	0.015	-36.66	-41	0.033	-29.50	-1	1.000	0.00
-80	0.014	-37.31	-40	0.012	-38.66	0	0.855	-1.36
-79	0.012	-38.44	-39	0.017	-35.56	1	0.494	-6.13
-78	0.011	-39.37	-38	0.036	-28.82	2	0.095	-20.45
-77	0.011	-38.89	-37	0.036	-28.93	3	0.164	-15.72
-76	0.015	-36.57	-36	0.014	-36.84	4	0.206	-13.72
-75	0.020	-34.05	-35	0.016	-35.88	5	0.088	-21.15
-74	0.025	-32.09	-34	0.038	-28.47	6	0.061	-24.26
-73	0.029	-30.77	-33	0.036	-28.79	7	0.126	-17.98
-72	0.031	-30.16	-32	0.012	-38.66	8	0.082	-21.76
-71	0.030	-30.33	-31	0.022	-33.28	9	0.016	-36.05
-70	0.027	-31.53	-30	0.042	-27.54	10	0.081	-21.87
-69	0.020	-33.91	-29	0.034	-29.27	11	0.070	-23.12
-68	0.014	-37.02	-28	0.003	-51.78	12	0.004	-48.43
-67	0.016	-35.80	-27	0.033	-29.66	13	0.059	-24.64
-66	0.025	-31.88	-26	0.047	-26.62	14	0.069	-23.23
-65	0.035	-29.19	-25	0.027	-31.43	15	0.025	-31.99
-64	0.040	-27.96	-24	0.014	-36.93	16	0.033	-29.62
-63	0.039	-28.19	-23	0.047	-26.48	17	0.060	-24.46
-62	0.031	-30.24	-22	0.046	-26.73	18	0.038	-28.47
-61	0.016	-35.97	-21	0.008	-41.91	19	0.012	-38.55
-60	0.006	-43.93	-20	0.040	-27.93	20	0.049	-26.13
-59	0.025	-32.09	-19	0.060	-24.39	21	0.048	-26.40
-58	0.041	-27.83	-18	0.033	-29.74	22	0.011	-39.01
-57	0.048	-26.37	-17	0.026	-31.68	23	0.031	-30.11
-56	0.044	-27.05	-16	0.070	-23.04	24	0.049	-26.21
-55	0.030	-30.46	-15	0.060	-24.48	25	0.031	-30.24
-54	0.010	-40.00	-14	0.008	-42.24	26	0.008	-42.07
-53	0.018	-34.88	-13	0.088	-21.06	27	0.039	-28.16
-52	0.035	-29.16	-12	0.127	-17.94	28	0.042	-27.51
-51	0.040	-27.96	-11	0.116	-18.69	29	0.017	-35.64