Directional FM Antenna
KBRE
Mapleton Communications
Atwater, CA

A standard model PSIFM antenna with parasitic element was used in conjunction with the customer's 6-5/8" diameter support pipe to create the necessary directional radiation pattern. The final antenna consists of four radiating elements each secured to the mast with a custom-mounting bracket. The antenna bays are half wave spaced and there are a total of two horizontal parasitic elements per bay. The antenna array is center fed from an existing 1-5/8" flexible transmission line. Each radiating element receives equal power and phase.

Pattern testing was performed using a 1/3 scale model element and mast. The azimuth plane measurements were taken on a ground reflection test range. This type of test range utilizes the reflected signal and direct signal from the source antenna to form an interference pattern on the antenna under test. The antenna and support mast under test was mounted to a turntable that allowed the structure to be rotated 360° in the azimuth plane. The source antenna was located approximately 75 ft. from the antenna under test. The source height above ground was adjusted to peak the first lobe of the interference pattern at the antenna under test.

The test antenna was mounted in the center of rotation of the turntable. The antenna and mounting structure were rotated clockwise while data was recorded in a counter clockwise direction. All feed cables to the antenna were secured and grounded during pattern measurements. A Hewlett Packard 8753A-network analyzer operating at 277.5 MHz was used as both the source and receiver. The level of the received signal was compared with a standard dipole to establish the directivity of the final pattern. The final pattern measured does not exceed the envelope pattern and is 85% of the envelope RMS.

The antenna and support mast is to be mounted above the tower top as shown in drawing J1003FM-375-002. The antenna center is to be 10 ft. above the tower top. No other antenna can be installed within 10 ft of any radiating element. The antenna is to be positioned 70° True. It is recommended that a broadcast engineer is present to supervise the installation of the antenna and that he or she certifies the antenna has been installed according to the enclosed instructions.

An input power level of 3.05 kW will be required at the antenna input in order to reach the licensed 6.0 kW ERP. The transmitter output power requirements are dependent upon the transmission line size and length used to feed the antenna. The length of 1-5/8" air dielectric transmission line feeding the antenna is estimated to be 350 ft. The line efficiency is 84.87% with a resulting transmitter output power of 3.59 kW.

Antenna Specifications

Antenna Model	PSIFM-4-HWS-DA
Type	4-bay directional FM antenna
Bay Spacing	½ wave spaced elements
Frequency	92.5 MHz
Polarization	Circular
Envelope RMS	.838
Gain (h-pol)	1.97 (2.95 dB)
RMS (h-pol)	.716
Gain (v-pol)	1.89 (2.76 dB)
RMS (v-pol)	.732
Input	1-5/8" EIA end fed input
Power rating	12 kW
Length	17 ft. 7-5/8 in.
Weight	275 lbs.

Uncrating

When uncrating the antenna system, open each crate carefully so that the crates may be used to return any merchandise that may have been damaged in shipping. Separate all parts and confirm that all items on the packing list have been received. If any parts are missing, notify PSI or it's agent prior to assembling the antenna. If any parts are damaged through shipment or are missing, **promptly** notify the shipping carrier.

Step Two

Attach bay two and bay three with bay mounting bracket to the center tee section. Position the elements with the feed points as shown in drawing J1003FM-375-001. Use the 5/16-18 x 7/8" bolts, locks and O-rings. Attach an inter-bay bracket at approximately the mid point of the center tee using the supplied #28 hose clamps. Attach a horizontal parasitic element to each inter-bay tee block with the supplied 5/16-18 x 7/8" bolts and lock washers. Carefully hoist the assembly and connect with inter-bay one that was installed in step one. Secure the brackets to the support mast. Position the center tee output angled back toward the support mast and orientate the elements 70 degrees true. Attach parasitic elements to the support mast directly behind each bay as done in step one.

Step Three

Follow the same procedure for bay four. When installing, bay four should be approximately 20.2" above the tower top.

Attach the short input section and 1-5/8" elbow to the center tee. Note; the elbow has been pre attached to the short input section. Be sure to position the input with the black band toward the center tee. Connect the fine matcher to the center tee section, black band up. Secure the fine matcher to inter-bay two with the supplied input bracket using #28 hose clamps.

Step Four

Check all bolted connections for tightness. Connect the main transmission line to the antenna input located at the base of the fine matcher. **Do not allow the weight of the feed line to be supported by antenna.** The antenna system should be tested before the erector leaves the premises to insure that the complete antenna system is functioning properly. The antenna has been tested and tuned at the factory. It should not require tuning, however the antenna has been supplied with a fine matcher that can be adjusted for optimum VSWR. Consult the factory before making adjustments to the fine matcher. The system should be tested before the tower crew leaves the site. The antenna requires pressurization with dry air or nitrogen to a maximum of 5 psi.

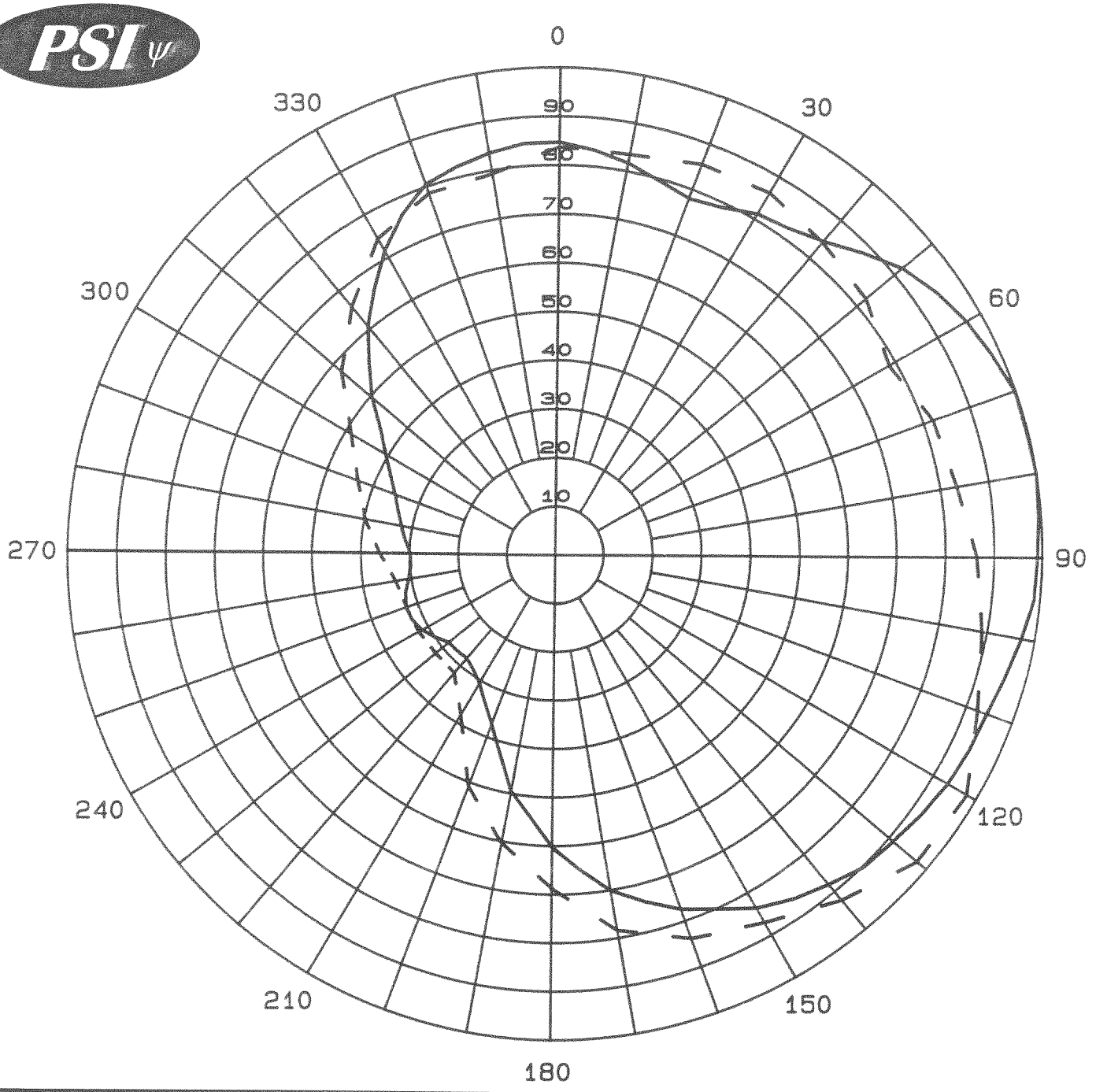
Statement of Certification

This is to certify the antenna has been designed, fabricated and tested under my supervision and it meets the required envelope pattern limitations set forth in the stations construction permit.

Douglas A. Ross
President
Propagation Systems Inc.

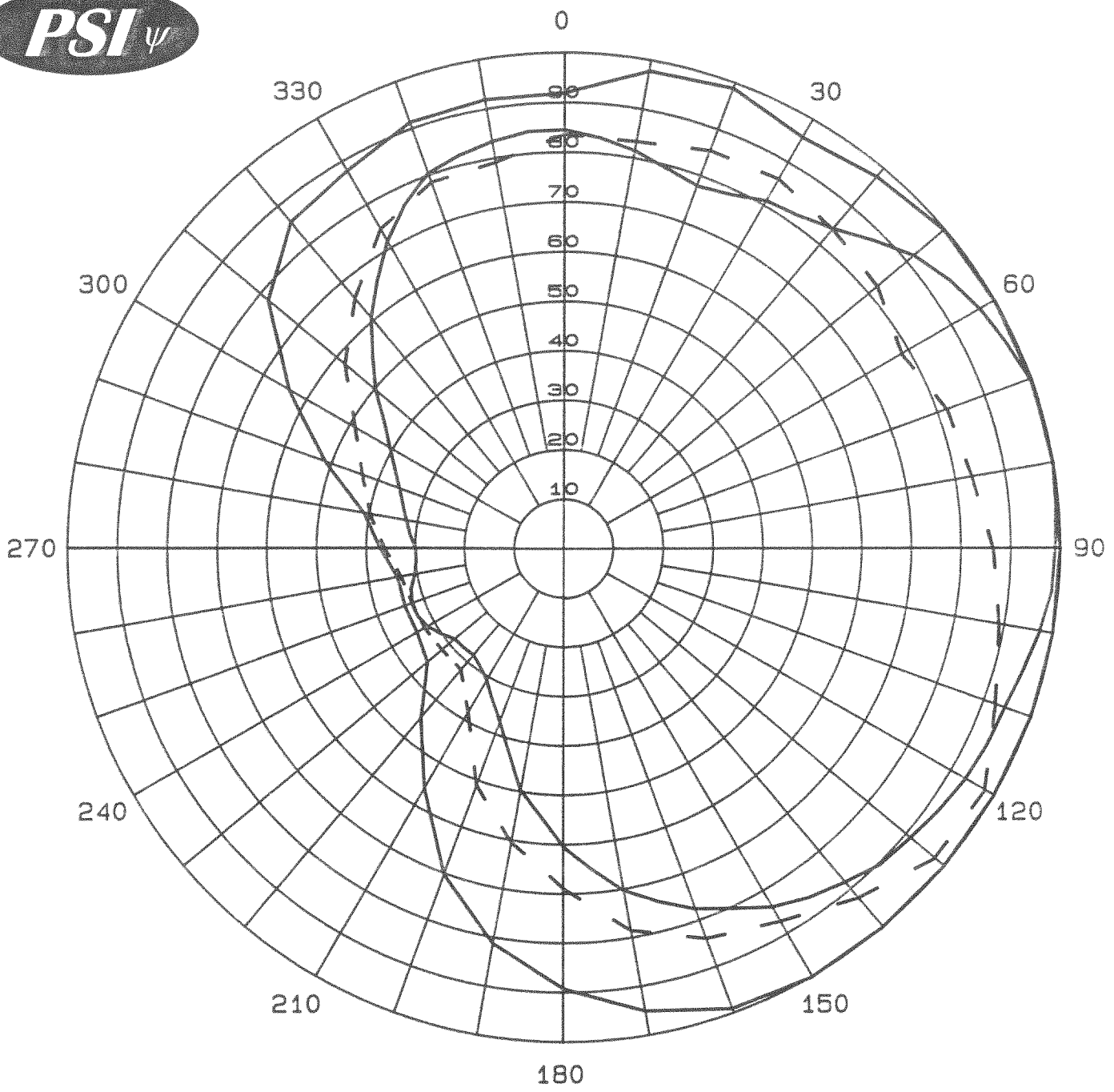
Drawing Index

Drawing Number	Description
J1003FM-375-002	Antenna Elevation
J1003FM-375-001	Antenna Plan View, Orientation
J1003FM-375-013	Bay Three and Four Installation
J1003FM-375-019	Input section
J1003FM-375-014	Inter-bay Parasitic
J1003FM-375-016	Mast Parasitic
J1003FM-375-017	Bay Mounting Bracket
J1003FM-375-018	Inter-bay Mounting Bracket
J1003FM-375-020	Input Bracket
33-00006	Fine Matcher



Measure Relative Field
Azimuth Plane Pattern
Antenna: PSIFM-4-HWS-DA
Type: FM Directional Antenna
Gain H-pol (solid): 1.97 (2.95 dB)
Gain V-pol (dash): 1.89 (2.76 dB)
Call Letters: KBRE
Mapleton Communications

Propagation Systems Inc.
PO Box 113
Ebensburg, PA 15931



Measure Relative Field and
Envelope Pattern Comparison
Antenna: PSIFM-4-HWS-DA
Type: FM Directional Antenna
Gain H-pol (solid): 1.97 (2.95 dB)
Gain V-pol (dash): 1.89 (2.76 dB)
Call Letters: KBRE
Mapleton Communications

Propagation Systems Inc.
PO Box 113
Ebensburg, PA 15931

Measured Relative Field Tabulation

Antenna: PSIFM-4-HWS-DA
Mapleton Communications, LLC
Station: KBRE
Frequency: 92.5 MHz
Location: Atwater, CA

Horizontal Polarization

Angle	Relative Field	Power Gain	Gain (dB)
0	0.8467	1.41	1.50
10	0.8163	1.31	1.18
20	0.7801	1.20	0.79
30	0.8120	1.30	1.14
40	0.8442	1.40	1.47
50	0.9208	1.67	2.23
60	0.9669	1.84	2.65
70	0.9985	1.96	2.93
80	1.0000	1.97	2.94
90	0.9899	1.93	2.86
100	0.9719	1.86	2.70
110	0.9442	1.76	2.45
120	0.9337	1.72	2.35
130	0.9110	1.63	2.14
140	0.8808	1.53	1.84
150	0.8375	1.38	1.40
160	0.7758	1.19	0.74
170	0.7020	0.97	-0.13
180	0.6021	0.71	-1.46
190	0.4942	0.48	-3.18
200	0.3703	0.27	-5.68
210	0.3059	0.18	-7.34
220	0.2800	0.15	-8.11
230	0.2840	0.16	-7.99
240	0.3150	0.20	-7.09
250	0.3250	0.21	-6.82
260	0.3050	0.18	-7.37
270	0.2980	0.17	-7.57
280	0.3215	0.20	-6.91
290	0.3520	0.24	-6.12
300	0.4050	0.32	-4.91
310	0.4962	0.49	-3.14
320	0.6076	0.73	-1.38
330	0.7155	1.01	0.04
340	0.8050	1.28	1.06
350	0.8350	1.37	1.38

Maximum Value

Field	1.00
Gain	1.97 (2.94 dB)
Azimuth Bearing	80 degrees
Pattern RMS	0.72

Minimum Field

Field	0.280
Gain	.15 (-8.11 dB)
Azimuth Bearing	220 degrees

Vertical Polarization

Angle	Relative Field	Power Gain	Gain (dB)
0	0.8380	1.38	1.41
10	0.8350	1.37	1.38
20	0.8558	1.44	1.59
30	0.8623	1.46	1.66
40	0.8419	1.40	1.45
50	0.8236	1.34	1.26
60	0.7852	1.21	0.84
70	0.8209	1.33	1.23
80	0.8334	1.37	1.36
90	0.8642	1.47	1.68
100	0.8902	1.56	1.93
110	0.9252	1.69	2.27
120	0.9795	1.89	2.76
130	0.9758	1.88	2.73
140	0.9225	1.68	2.24
150	0.8705	1.49	1.74
160	0.8395	1.39	1.43
170	0.7846	1.21	0.84
180	0.6866	0.93	-0.32
190	0.6020	0.71	-1.46
200	0.5075	0.51	-2.95
210	0.3812	0.29	-5.43
220	0.3189	0.20	-6.98
230	0.3183	0.20	-7.00
240	0.3220	0.20	-6.90
250	0.3240	0.21	-6.84
260	0.3320	0.22	-6.63
270	0.3610	0.26	-5.90
280	0.3965	0.31	-5.09
290	0.4326	0.37	-4.33
300	0.4866	0.47	-3.31
310	0.5785	0.66	-1.81
320	0.6590	0.86	-0.68
330	0.7439	1.09	0.38
340	0.7857	1.22	0.85
350	0.7919	1.24	0.92

Maximum Value

Field	0.98
Gain	1.89 (2.76 dB)
Azimuth Bearing	120 degrees
Pattern RMS	0.73

Minimum Field

Field	0.318
Gain	.20 (-7.00 dB)
Azimuth Bearing	230 degrees

ERP Tabulation

Antenna: PSIFM-4-HWS-DA
Mapleton Communications, LLC
Station: KBRE
Frequency: 92.5 MHz
Location: Atwater, CA
Maximum ERP: 6.0 kW (7.78 dBk)

Horizontal Polarization

Angle	Relative Field	ERP kW	ERP dBK
0	0.8467	4.30	6.34
10	0.8163	4.00	6.02
20	0.7801	3.65	5.62
30	0.8120	3.96	5.97
40	0.8442	4.28	6.31
50	0.9208	5.09	7.06
60	0.9669	5.61	7.49
70	0.9985	5.98	7.77
80	1.0000	6.00	7.78
90	0.9899	5.88	7.69
100	0.9719	5.67	7.53
110	0.9442	5.35	7.28
120	0.9337	5.23	7.19
130	0.9110	4.98	6.97
140	0.8808	4.65	6.68
150	0.8375	4.21	6.24
160	0.7758	3.61	5.58
170	0.7020	2.96	4.71
180	0.6021	2.18	3.37
190	0.4942	1.47	1.66
200	0.3703	0.82	-0.85
210	0.3059	0.56	-2.51
220	0.2800	0.47	-3.28
230	0.2840	0.48	-3.15
240	0.3150	0.60	-2.25
250	0.3250	0.63	-1.98
260	0.3050	0.56	-2.53
270	0.2980	0.53	-2.73
280	0.3215	0.62	-2.07
290	0.3520	0.74	-1.29
300	0.4050	0.98	-0.07
310	0.4962	1.48	1.69
320	0.6076	2.22	3.45
330	0.7155	3.07	4.87
340	0.8050	3.89	5.90
350	0.8350	4.18	6.22

Maximum Value (H-pol)

Field	1.00
ERP	6.0 kW (7.78 dBk)
Azimuth Bearing	80 degrees

Minimum Field (H-pol)

Field	0.280
ERP	.47 kW (-3.28 dBk)
Azimuth Bearing	220 degrees

Vertical Polarization

Angle	Relative Field	ERP kW	ERP dBk
0	0.8380	4.21	6.25
10	0.8350	4.18	6.22
20	0.8558	4.39	6.43
30	0.8623	4.46	6.49
40	0.8419	4.25	6.29
50	0.8236	4.07	6.10
60	0.7852	3.70	5.68
70	0.8209	4.04	6.07
80	0.8334	4.17	6.20
90	0.8642	4.48	6.51
100	0.8902	4.75	6.77
110	0.9252	5.14	7.11
120	0.9795	5.76	7.60
130	0.9758	5.71	7.57
140	0.9225	5.11	7.08
150	0.8705	4.55	6.58
160	0.8395	4.23	6.26
170	0.7846	3.69	5.67
180	0.6866	2.83	4.52
190	0.6020	2.17	3.37
200	0.5075	1.55	1.89
210	0.3812	0.87	-0.59
220	0.3189	0.61	-2.14
230	0.3183	0.61	-2.16
240	0.3220	0.62	-2.06
250	0.3240	0.63	-2.01
260	0.3320	0.66	-1.80
270	0.3610	0.78	-1.07
280	0.3965	0.94	-0.25
290	0.4326	1.12	0.50
300	0.4866	1.42	1.53
310	0.5785	2.01	3.03
320	0.6590	2.61	4.16
330	0.7439	3.32	5.21
340	0.7857	3.70	5.69
350	0.7919	3.76	5.76

Maximum Value (V-pol)

Field	0.98
ERP	5.76 kW (7.60 dBk)
Azimuth Bearing	120 degrees

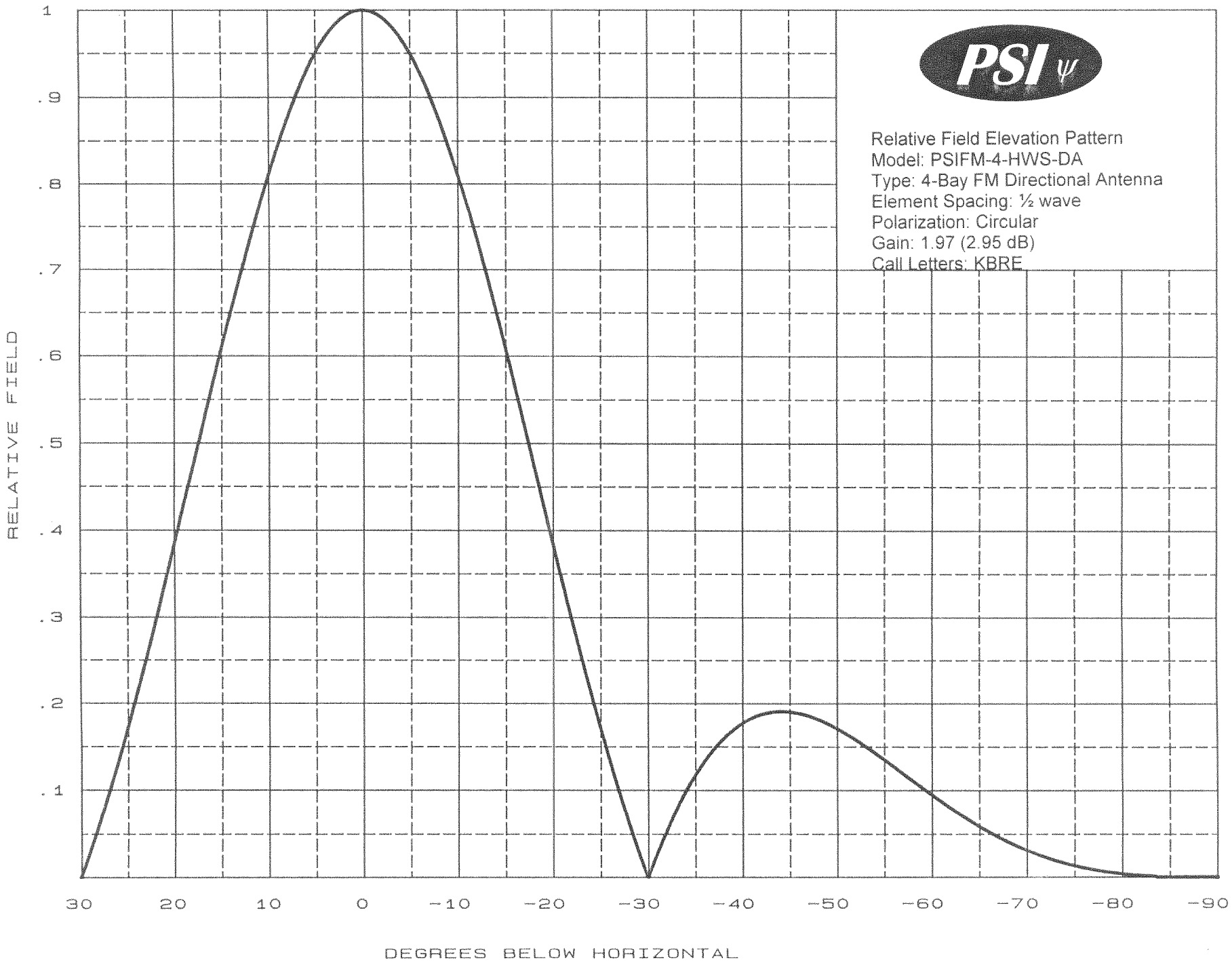
Minimum Field (V-pol)

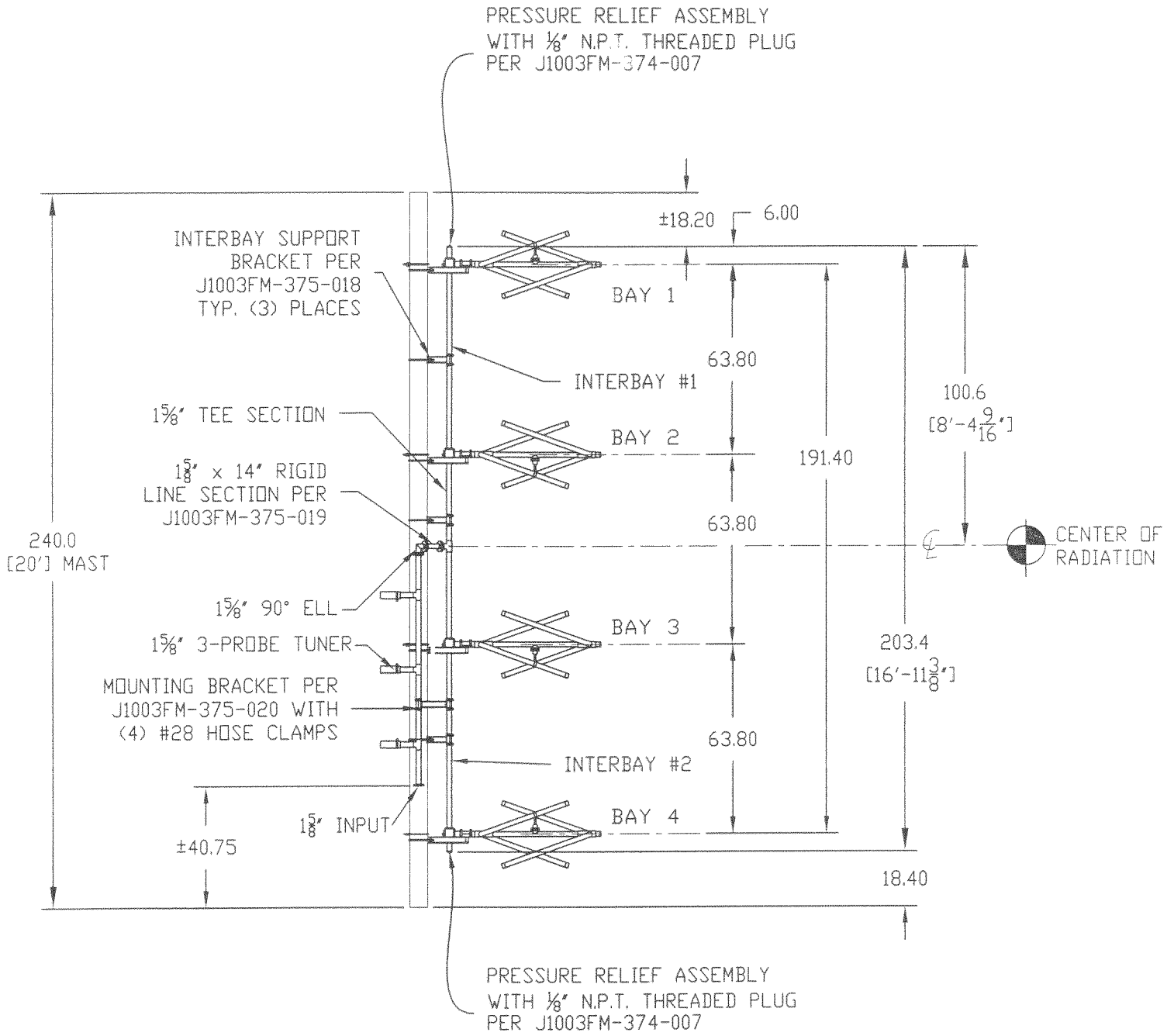
Field	0.318
ERP	.61 kW (-2.16 dBk)
Azimuth Bearing	230 degrees

Envelope Pattern

Antenna: PSIFM-4-HWS-DA
Mapleton Communications, LLC
Station: KBRE
Frequency: 92.5 MHz
Location: Atwater, CA
Maximum ERP: 6.0 kW (7.78 dBk)

Angle	Relative Field	ERP kW	ERP dBK
0	0.920	5.08	7.06
10	0.980	5.76	7.61
20	0.990	5.88	7.69
30	0.960	5.53	7.43
40	0.980	5.76	7.61
50	1.000	6.00	7.78
60	1.000	6.00	7.78
70	1.000	6.00	7.78
80	1.000	6.00	7.78
90	1.000	6.00	7.78
100	1.000	6.00	7.78
110	1.000	6.00	7.78
120	1.000	6.00	7.78
130	1.000	6.00	7.78
140	1.000	6.00	7.78
150	1.000	6.00	7.78
160	0.990	5.88	7.69
170	0.950	5.42	7.34
180	0.890	4.75	6.77
190	0.810	3.94	5.95
200	0.700	2.94	4.68
210	0.559	1.87	2.73
220	0.447	1.20	0.79
230	0.357	0.76	-1.17
240	0.340	0.69	-1.59
250	0.340	0.69	-1.59
260	0.340	0.69	-1.59
270	0.370	0.82	-0.85
280	0.409	1.00	0.02
290	0.512	1.57	1.97
300	0.640	2.46	3.91
310	0.780	3.65	5.62
320	0.860	4.44	6.47
330	0.880	4.65	6.67
340	0.915	5.02	7.01
350	0.920	5.08	7.06


PSI ψ
Relative Field Elevation Pattern
Model: PSIFM-4-HWS-DA
Type: 4-Bay FM Directional Antenna
Element Spacing: ½ wave
Polarization: Circular
Gain: 1.97 (2.95 dB)
Call Letters: KBRE
RELATIVE FIELD
1
.9
.8
.7
.6
.5
.4
.3
.2
.1
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
DEGREES BELOW HORIZONTAL



REV.	MADE BY / CHECKED BY	DATE	CHANGE

MATERIAL: NOT APPLICABLE

TOLERANCES UNLESS OTHERWISE NOTED	
FRACTIONS X/X	±1/16"
DECIMALS XX	± .01"
DECIMALS XXX	± .005"
ANGLES	± 3°

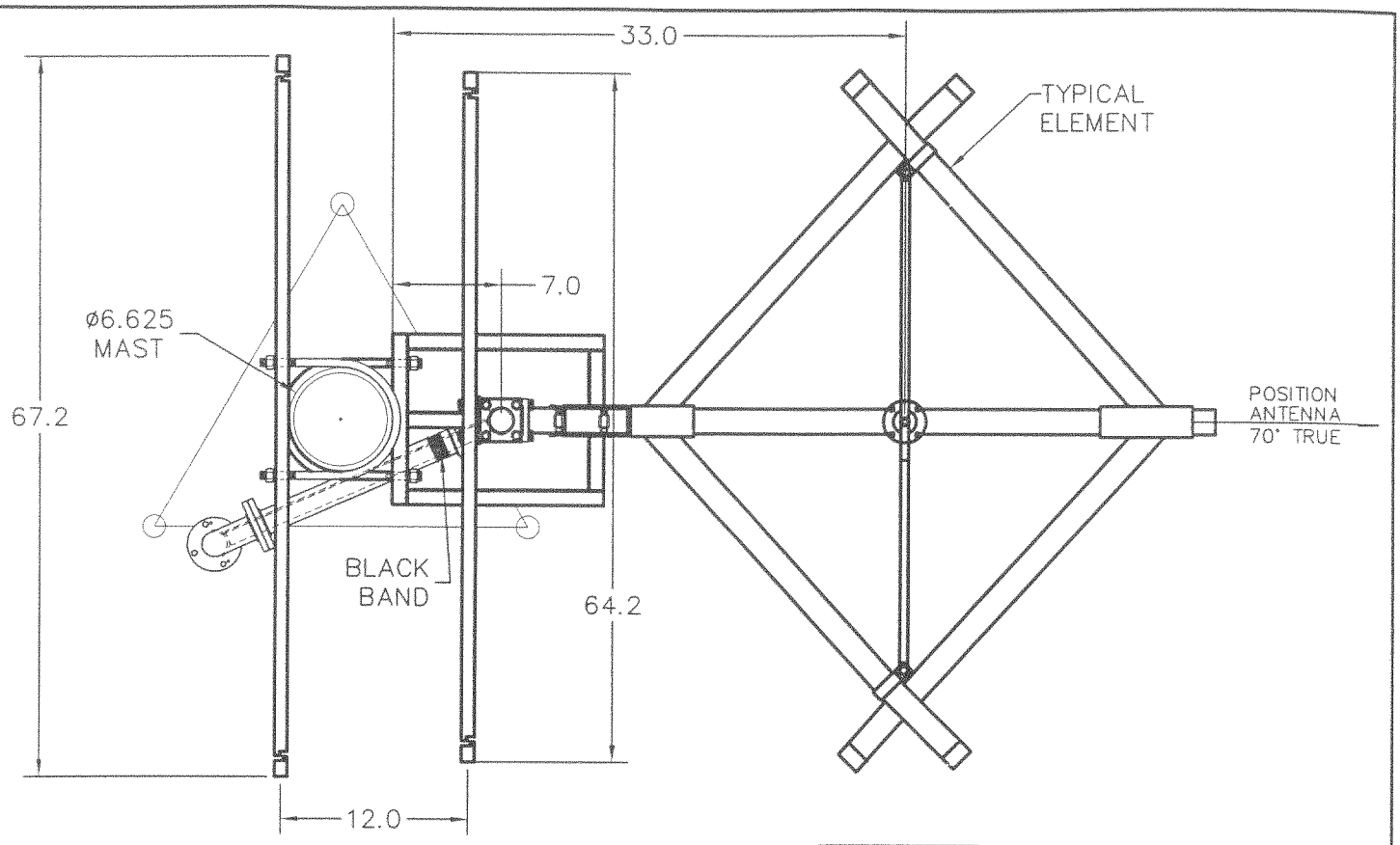
SIZE: A

PROPAGATION SYSTEMS, INC.

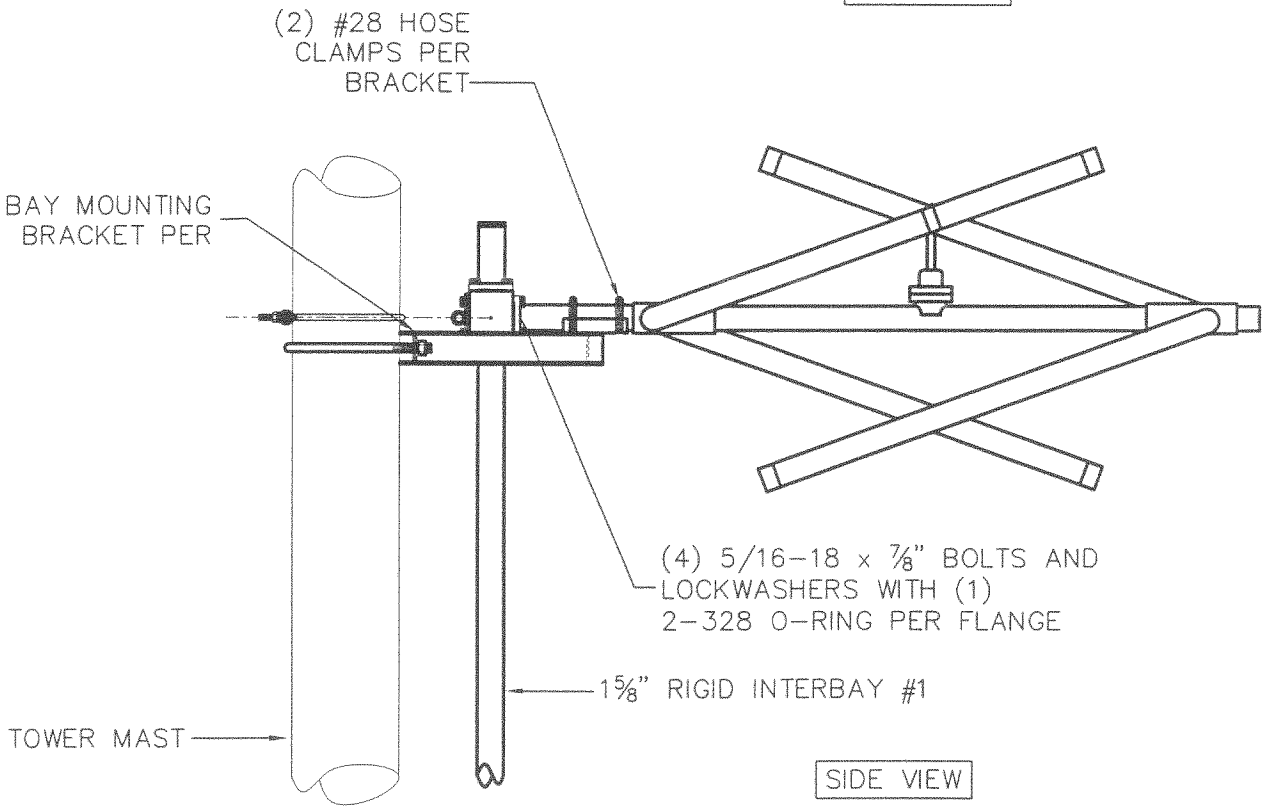
Ebensburg, Pennsylvania USA

CENTER FED ANTENNA ELEVATIONS, HALF WAVE SPACED

MODEL: PSIFM-4C-HWS-DA	DRAWN BY: D.G. Kellar	DATE: 10/17/03	
CHANNEL/FREQUENCY: 92.5 MHz	APPROVED BY:	DATE:	
SCALE: 1:50	PART NO.:	DRAWING NO.: J1003FM-375-002	REV: 0



PLAN VIEW



SIDE VIEW

	MADE BY	DATE	CHANGE
	CHECKED BY		

MATERIAL: NOT APPLICABLE

TOLERANCES UNLESS OTHERWISE NOTED
FRACTIONS X/X ±1/16"
DECIMALS XX ± .01"
DECIMALS XXX ± .005"
ANGLES ± 3°

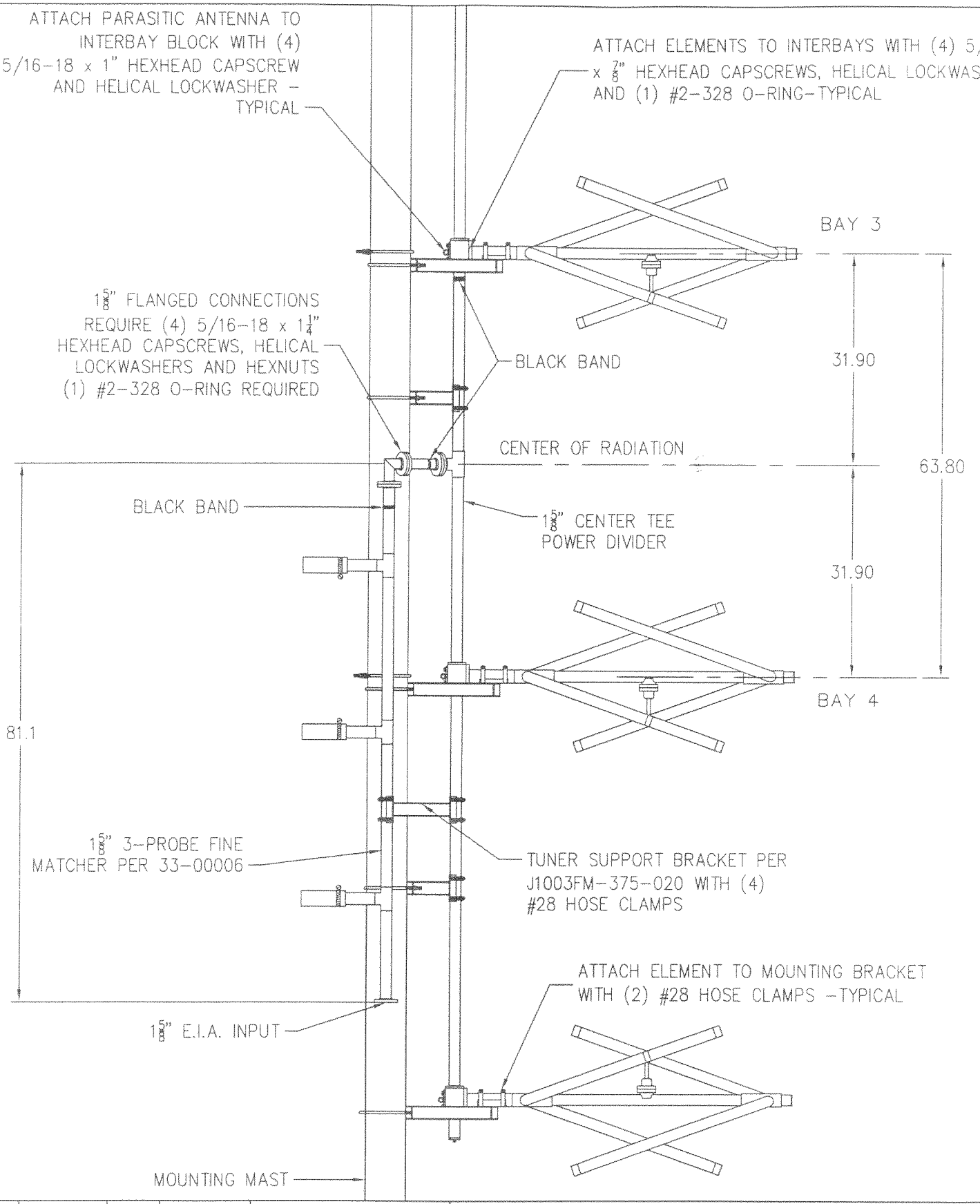
SIZE: A

PROPAGATION SYSTEMS, INC.

Ebensburg, Pennsylvania USA

ANTENNA ORIENTATION-TOP BAY

MODEL: PSIFM-4C-HWS-DA	DRAWN BY: D.G. Kellar	DATE: 10/17/03
CHANNEL/FREQUENCY: 92.5 MHz	APPROVED BY:	DATE:
SCALE: 1:12	PART NO.:	DRAWING NO.: J1003FM-375-001 REV: 0



V.	MADE BY / CHECKED BY	DATE	CHANGE

MATERIAL: NOT APPLICABLE

TOLERANCES UNLESS OTHERWISE NOTED
FRACTIONS X/X ±1/16"
DECIMALS XX ± .01"
DECIMALS XXX ± .005"
ANGLES ± 3°

SIZE: A

PROPAGATION SYSTEMS, INC.

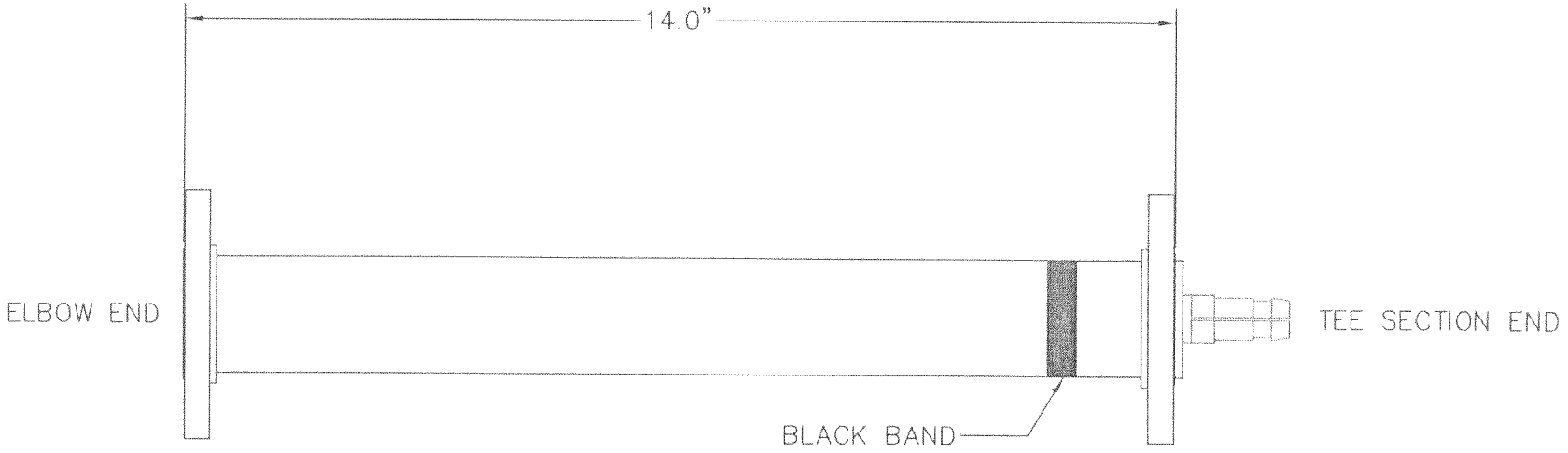
Ebensburg, Pennsylvania USA

BAYS 3 AND 4 ASSEMBLY ELEVATIONS

MODEL:	DRAWN BY:	DATE:
PSIFM-4-HWS-DA	[illegible]	10/22/03
CHANNEL/FREQUENCY: 92.5 MHz	APPROVED BY:	DATE:
SCALE: 1:20	PART NO.:	DRAWING NO.: J1003FM-375-013

REV: 0

12-00003



REV.	MADE BY CHECKED BY	DATE	CHANGE

TOLERANCES UNLESS OTHERWISE NOTED
FRACTIONS X/X ±1/16"
DECIMALS XX ± .01"
DECIMALS XXX ± .005"
ANGLES ± 5'

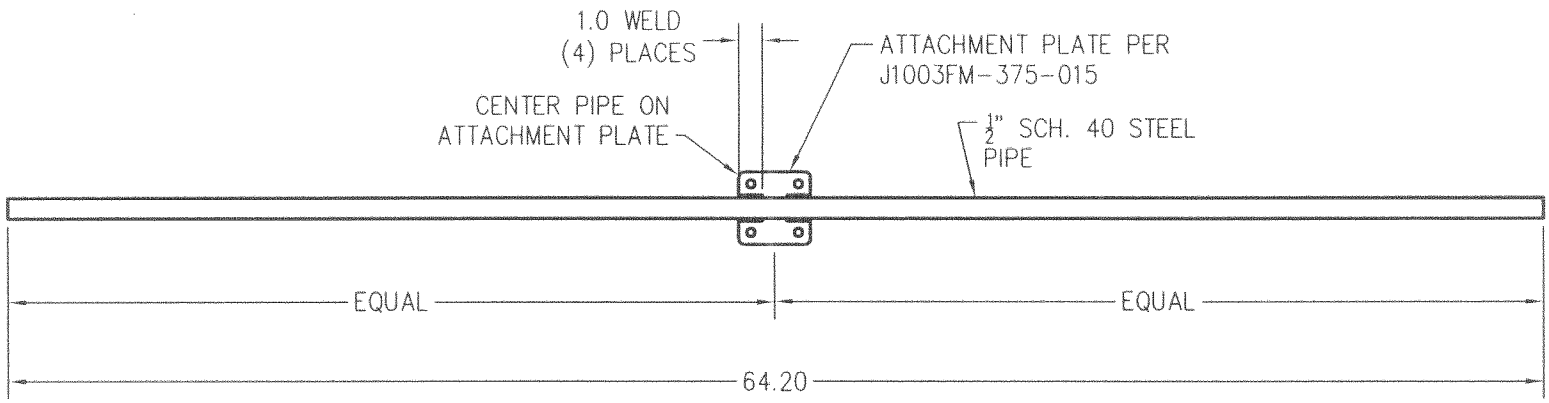
SIZE A

PROPAGATION SYSTEMS, INC.

Ebensburg, Pennsylvania USA

1-5/8" FLANGED RIGID LINE ASSEMBLY.

PSIFM-4C-HWS-DA	D.G. Kellar	12/11/03
92.5 MHz		
1: 2.66	12-00003	J1003FM-375-019 0



FRONT VIEW

TOP VIEW

END VIEW

NOTE: (4) ASSEMBLIES REQUIRED

REV.	MADE BY / CHECKED BY	DATE	CHANGE
A			

MATERIAL: AS SHOWN

PROPAGATION SYSTEMS, INC.

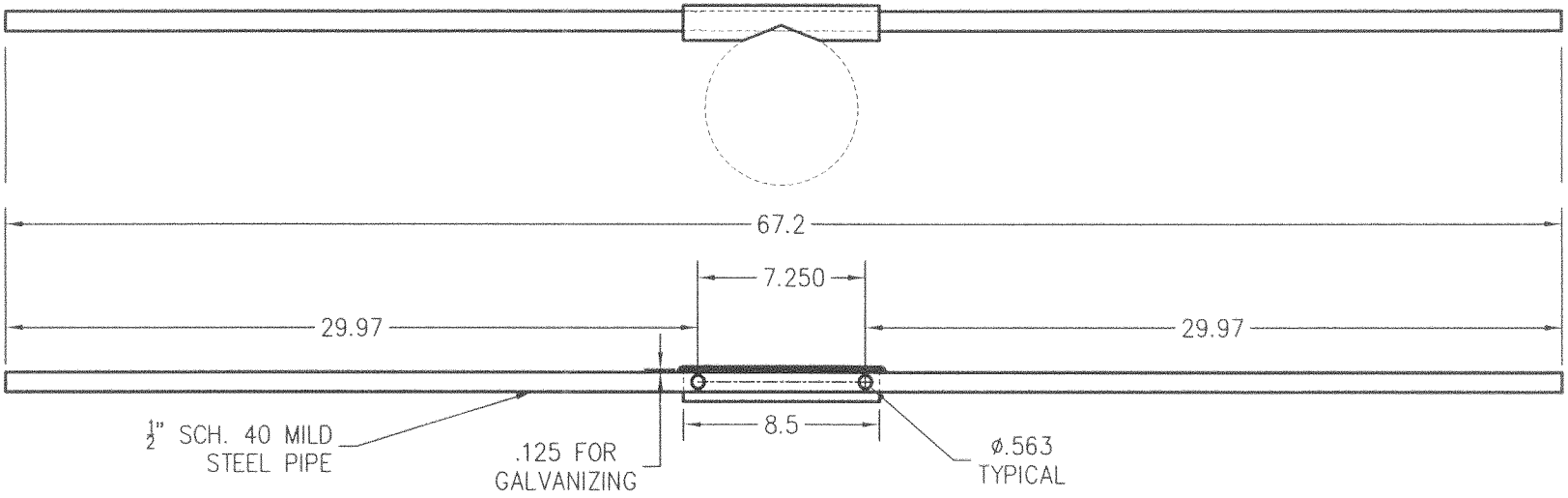
Ebensburg, Pennsylvania USA

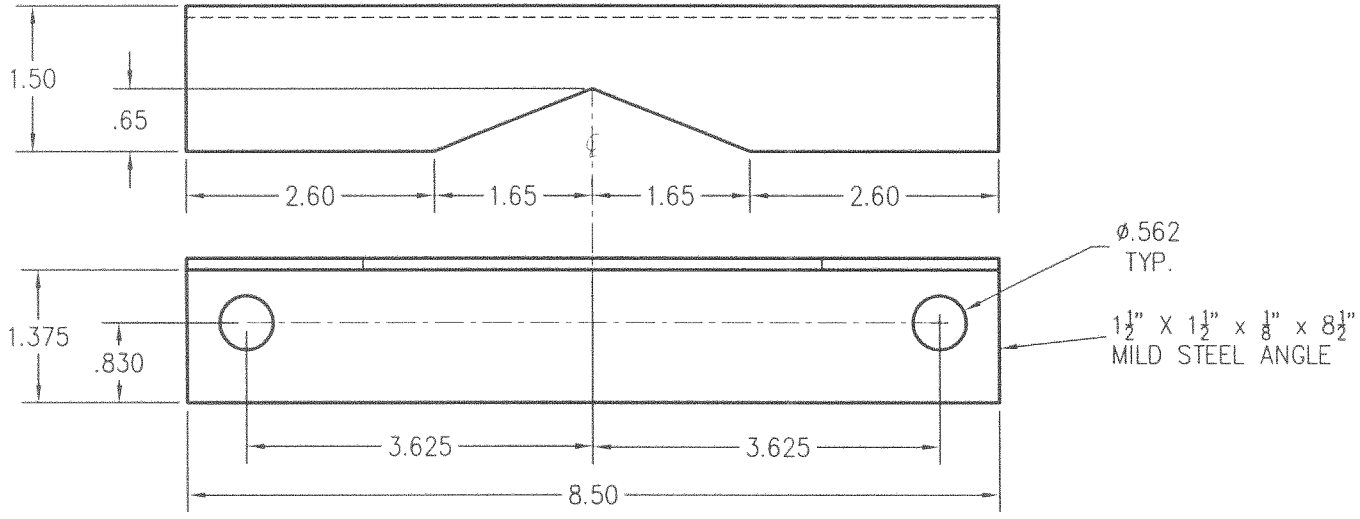
HORIZONTAL PARASITIC ASSEMBLY

MODEL: PSIFM-4-HWS-DA	DRAWN BY: D.G. Kellar	DATE: 12/02/03	
CHANNEL/FREQUENCY: 92.5 MHz	APPROVED BY:	DATE: 12/3/03	
SCALE: 1:8	PART NO.:	DRAWING NO.: J1003FM-375-014	REV: 0

TOLERANCES
UNLESS OTHERWISE NOTED
FRACTIONS X/X ±1/16"
DECIMALS XX ± .01"
DECIMALS XXX ± .005"
ANGLES ± 3°

SIZE: A





REINFORCING ANGLE DETAIL
4x SCALE

NOTES:
1. DEBURR ENTIRE ASSEMBLY.
2. (4) ASSEMBLIES REQUIRED AS SHOWN.
3. WEIGHT: 4.97 Lbs/EACH, 19.9 Lbs TOTAL.
4. REQUIRES 24+ Ft. OF ½" SCH. 40 STEEL PIPE

REV.	MADE BY / CHECKED BY	DATE	CHANGE

MATERIAL: AS SHOWN, HOT DIP GALVANIZE AFTER ASSEMBLY

TOLERANCES UNLESS OTHERWISE NOTED
FRACTIONS X/X ±1/16"
DECIMALS XX ± .01"
DECIMALS XXX ± .005"
ANGLES ± 3°

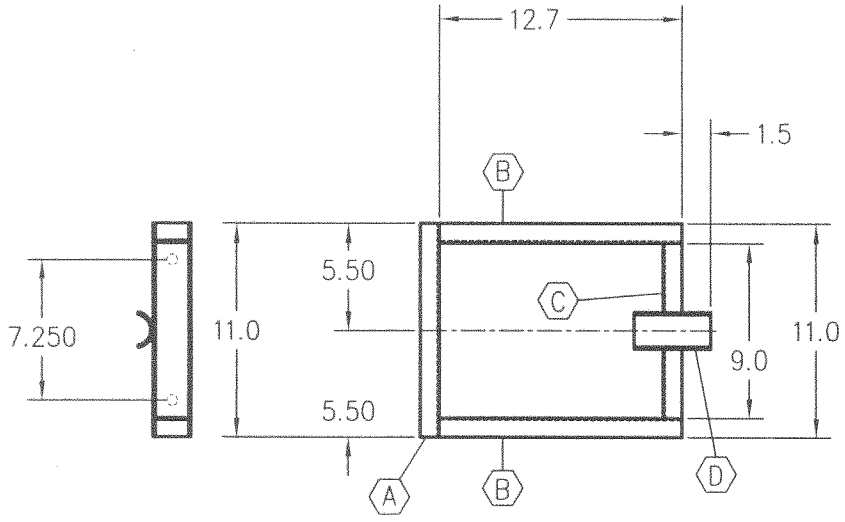
SIZE: A

PROPAGATION SYSTEMS, INC.

Ebensburg, Pennsylvania USA

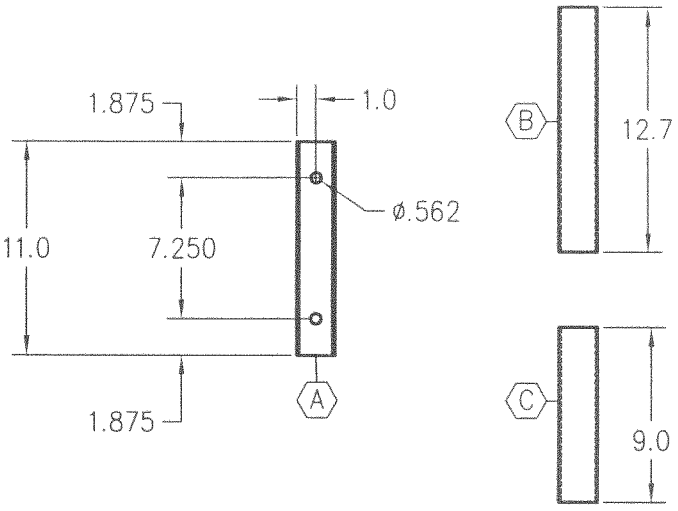
MAST MOUNTED PARASITIC ASSEMBLY

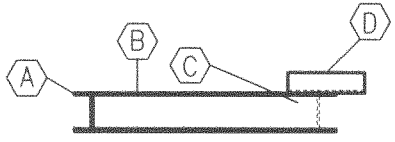
MODEL: PSIFM-4-HWS-DA	DRAWN BY: D.G. Kellar	DATE: 12/02/03	
CHANNEL/FREQUENCY: 92.5 MHz	APPROVED BY:	DATE: 12/3/03	
SCALE: 1:8	PART NO.:	DRAWING NO.: J1003FM-375-016	REV: 0



FRONT VIEW

PLAN VIEW





SIDE VIEW

MATERIALS LIST		
ITEM	QTY	SIZE AND DESCRIPTION
A	1	2" x 1" x 11.0" CHANNEL
B	2	2" x 1" x 12.7" CHANNEL
C	1	2" x 1" x 9" CHANNEL
D	1	1-5/8" SADDLE
E		

NOTES: DEBURR ENTIRE ASSEMBLY. (4) ASSEMBLIES REQUIRED. APPROX. WEIGHT: 5.1 Lb/EACH. 3.7 Ft. CHANNEL REQ'D/EACH, 14.7 Ft. TOTAL

REV.	MADE BY CHECKED BY	DATE	CHANGE
A			

MATERIAL:
MILD STEEL CHANNEL, HOT DIP GALVANIZE AFTER ASSEMBLY

TOLERANCES
UNLESS OTHERWISE NOTED
FRACTIONS X/X ±1/16"
DECIMALS XX ± .01"
DECIMALS XXX ± .005"
ANGLES ± 3°

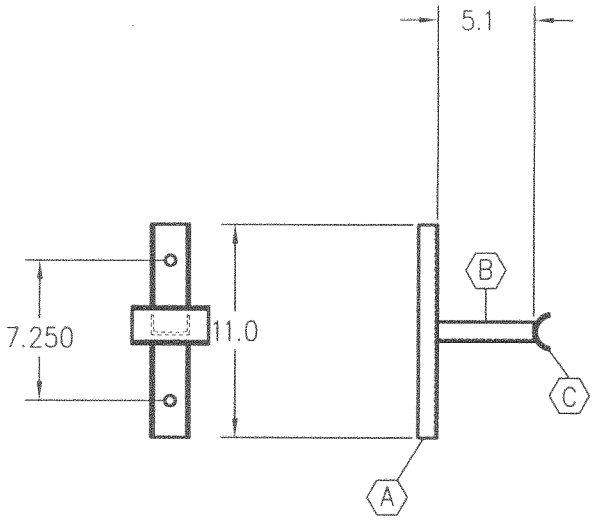
SIZE: A

PROPAGATION SYSTEMS, INC.

Ebensburg, Pennsylvania USA

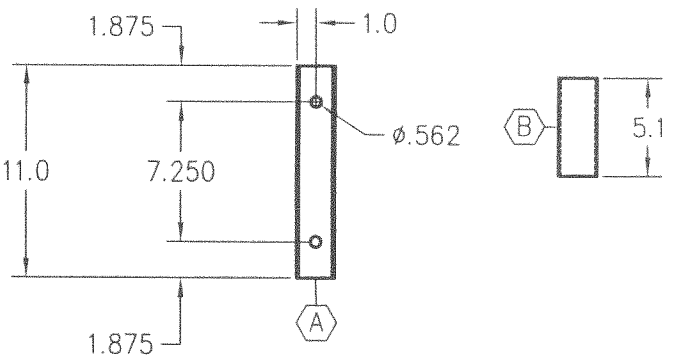
BAY MOUNTING BRACKET

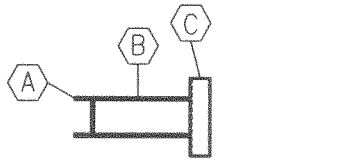
MODEL: PSIFM-4-HWS-DA	DRAWN BY: D.G. Kellar	DATE: 12/02/03	
CHANNEL/ FREQUENCY: 92.5 MHz	APPROVED BY:	DATE: 12/3/03	
SCALE: 1:10	PART NO.:	DRAWING NO.: J1003FM-375-017	REV: 0



FRONT VIEW

PLAN VIEW





SIDE VIEW

MATERIALS LIST		
ITEM	QTY	SIZE AND DESCRIPTION
A	1	2" x 1" x 11.0" CHANNEL
B	1	2" x 1" x 5.1" CHANNEL
C	1	1-5/8" SADDLE
D		
E		

NOTES: DEBURR ENTIRE ASSEMBLY. (3) ASSEMBLIES REQUIRED.

REV.	MADE BY CHECKED BY	DATE	CHANGE
A			

MATERIAL:
MILD STEEL CHANNEL, HOT DIP GALVANIZE AFTER ASSEMBLY

TOLERANCES
UNLESS OTHERWISE NOTED
FRACTIONS X/X ±1/16"
DECIMALS XX ± .01"
DECIMALS XXX ± .005"
ANGLES ± 3°

SIZE: A

PROPAGATION SYSTEMS, INC.
Ebensburg, Pennsylvania USA

INTERBAY MOUNTING BRACKET

MODEL: PSIFM-4-HWS-DA	DRAWN BY: D.G. Kellar	DATE: 12/02/03	
CHANNEL / FREQUENCY: 92.5 MHz	APPROVED BY:	DATE: 12/3/03	
SCALE: 1:10	PART NO.:	DRAWING NO.: J1003FM-375-018	REV: 0

PLAN VIEW

SIDE VIEW

REV.	MADE BY / CHECKED BY	DATE	CHANGE
A			

MATERIAL:
STAINLESS STEEL
CHANNEL AND SADDLES

PROPAGATION SYSTEMS, INC.

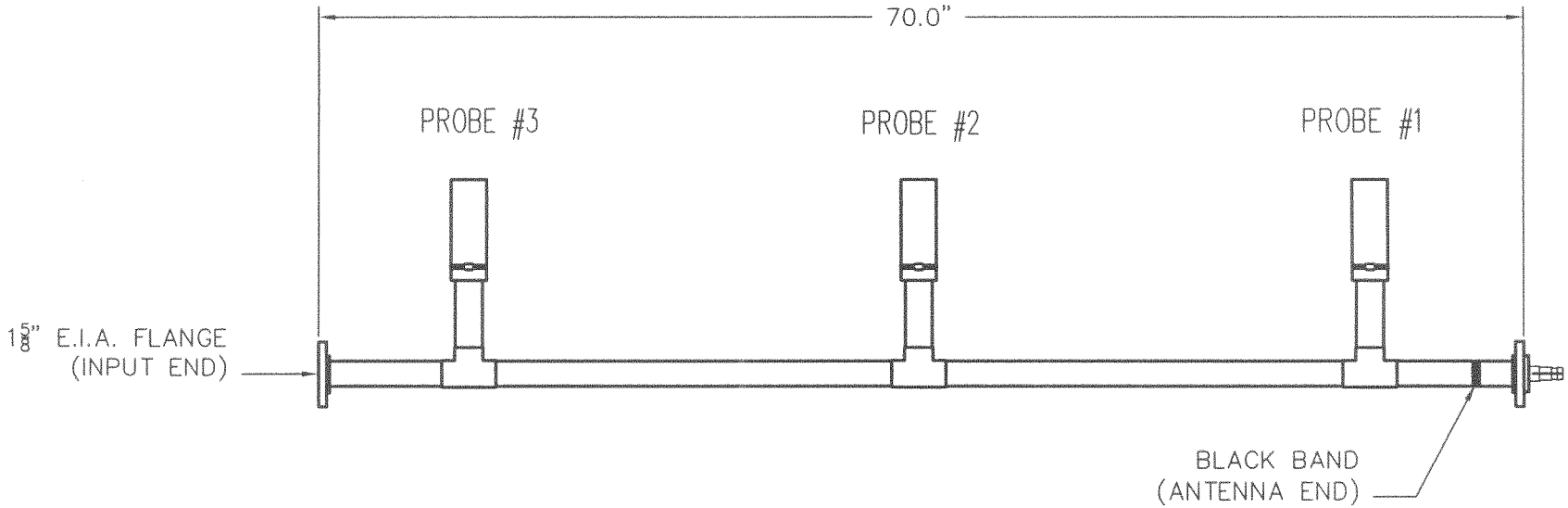
Ebensburg, Pennsylvania USA

TUNER SUPPORT BRACKET

MODEL: PSIFM-4-HWS-DA	DRAWN BY: D.G. Kellar	DATE: 12/12/03	
CHANNEL/FREQUENCY: 92.5 MHz	APPROVED BY:	DATE:	
SCALE: 1:10	PART NO.:	DRAWING NO.: J1003FM-375-020	REV: 0

TOLERANCES
UNLESS OTHERWISE NOTED
FRACTIONS X/X ±1/16"
DECIMALS XX ± .01"
DECIMALS XXX ± .005"
ANGLES ± 3°

SIZE
A



REV.	MADE BY / CHECKED BY	DATE	CHANGE

MATERIAL: NOT APPLICABLE

TOLERANCES UNLESS OTHERWISE NOTED
FRACTIONS X/X ±1/16"
DECIMALS XX ± .01"
DECIMALS XXX ± .005"
ANGLES ± 3°

SIZE: A

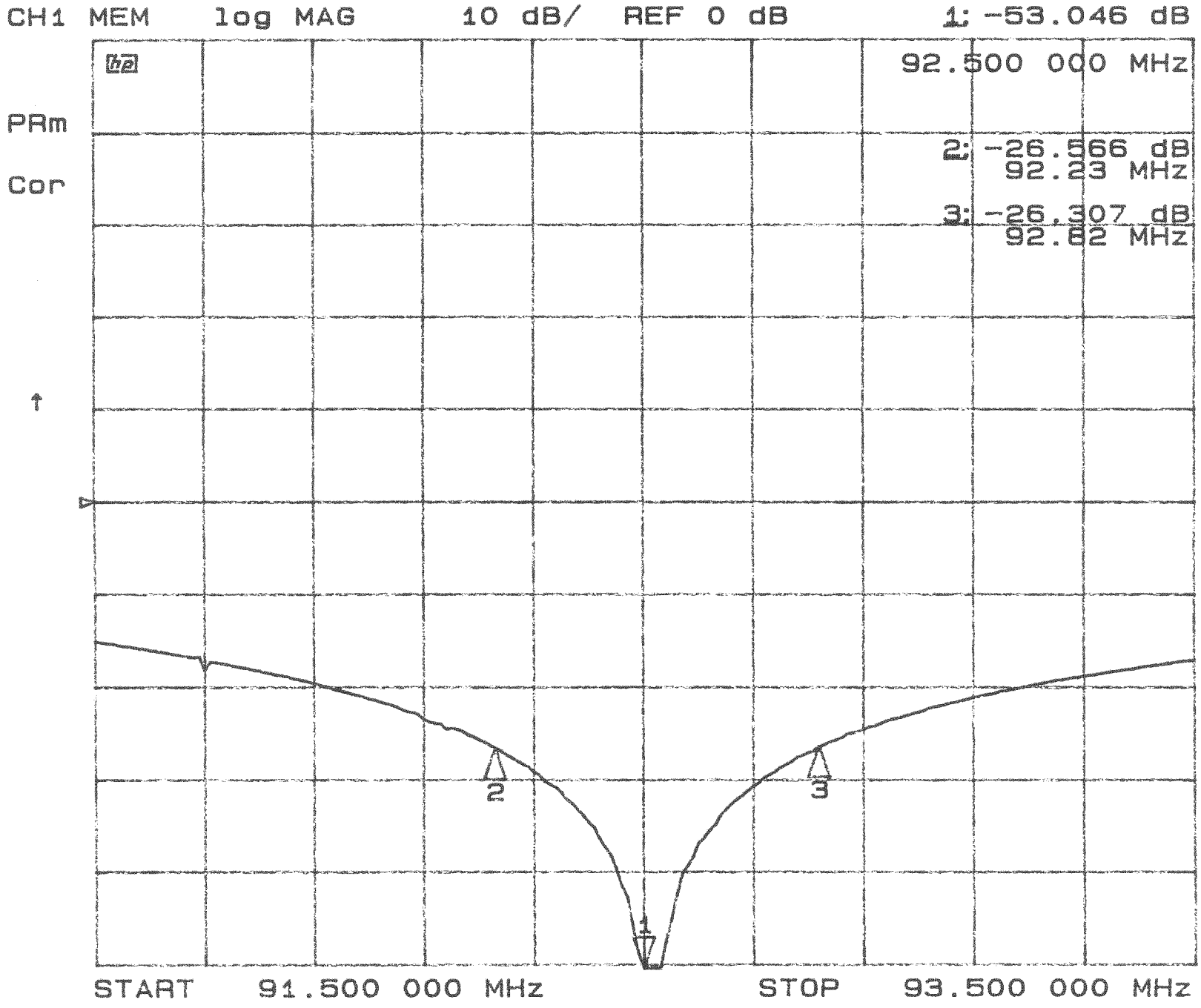
PROPAGATION SYSTEMS, INC.

Ebensburg, Pennsylvania USA

3 PROBE TUNER ASSEMBLY

MODEL:	DRAWN BY:	DATE:
FM	D. RICHEY	1-28-98
CHANNEL/ FREQUENCY:	APPROVED BY:	DATE:

SCALE:	PART NO.:	DRAWING NO.:	REV
1:16	33-00006	33-00006	0


CH1 MEM log MAG 10 dB/ REF 0 dB
1: -53.046 dB
92.500 000 MHz
PRm
Cor
2: -26.566 dB
92.23 MHz
3: -26.307 dB
92.82 MHz
START 91.500 000 MHz
STOP 93.500 000 MHz