

***PRELIMINARY SPECIFICATION FOR
ANDREW HORIZONTALLY POLARIZED
VHF BATWING ANTENNA***

*Prepared for
KETG-TV & DT NTSC Channel 9 & DTV Channel 13 Arkadelphia, AR
April 26, 2002*

**ANTENNA TYPE:
ABW16V3-HTO-9/13**

**SPECIFICATION NO :
DAR092501-1005 RevA**



Andrew Corporation
10500 W. 153rd Street
Orland Park, Illinois U.S.A. 60462

DAR092501-1005 RevA

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PRELIMINARY SPECIFICATION FOR ANDREW HORIZONTALLY POLARIZED VHF BATWING ANTENNA

ELECTRICAL CHARACTERISTICS:

CHANNEL :	NTSC :	9
	DTV :	13
FREQUENCY RANGE :	NTSC :	186-192 MHz
	DTV :	210-216 MHz
AZIMUTH PATTERN NUMBER :	NTSC :	ABW-O
	DTV :	ABW-O
ELEVATION PATTERN NUMBER :	NTSC :	ABW16V3H-CH9
	DTV :	ABW16V3H-CH13
AZIMUTH DIRECTIVITY :	NTSC :	1.00 (0.00 dB)
	DTV :	1.00 (0.00 dB)
ELEVATION DIRECTIVITY :	NTSC :	14.60 (11.64 dB)
	DTV :	15.30 (11.85 dB)
PEAK POWER GAIN :	NTSC :	14.60 (11.64 dB)
	DTV :	15.30 (11.85 dB)
GAIN AT HORIZONTAL :	NTSC :	12.65 (11.02 dB)
	DTV :	12.70 (11.04 dB)
ELECTRICAL BEAM TILT :		0.75 degrees
INPUT POWER REQUIRED :	NTSC :	21.64 (13.35 dBk)
	DTV :	0.48 -(3.21 dB)
INPUT TYPE :		3 1/8-50 Ohm, EIA
VSWR (MAXIMUM) :	NTSC :	1.05:1 at Visual Carrier 1.08:1 Chroma
	DTV :	1.10: 1 Over the remainder of the Channel 1.10 Over 6 MHz Channel



PRELIMINARY SPECIFICATION FOR ANDREW HORIZONTALLY POLARIZED VHF BATWING ANTENNA

MECHANICAL CHARACTERISTICS:

MOUNTING CONFIGURATION:

*Top Mount, Flanged**

**(Tower Interface supplied and installed by others)*

HEIGHT OF ANTENNA (H1): 81.00 feet

HEIGHT OF CENTER OF RADIATION (H2) : 41.59 feet

HEIGHT OF CENTER OF PRESSURE (H3) : 40.51 feet

CLEARANCE OF LOWEST RADIATOR
ABOVE TOWER TOP (H4) : 2.75 feet

OVERALL HEIGHT (A) : 84.00 feet
(Includes two 3-foot Lightning Rods)

DIAMETER OF THE LARGEST POLE SECTION (D1): 9.63 inches

DIAMETER OF THE SMALLEST POLE SECTION (D2): 12.75 inches

DEICING : *Optional Cylindrical Radome*

RADOME COLOR : *Customized per Requirement*

CLIMBING DEVICE : *External Climbing Ladder*

CALCULATED WEIGHT : 9,900.00 lbs.
W/ Radomes and 1" Ice 13,100.00 lbs.

AERODYNAMIC AREA: 115.00 square feet
w/ 1 inch Radial Ice 194.00 square feet

This antenna is designed to be supported by a structure that can resist the antenna base reactions and which provides a support that is rigid in the three translational and three rotational degrees of freedom.

1 Calculated weight is based on the **PRELIMINARY** design of the antenna. The actual weight of the antenna will be within $\pm 10\%$ of the calculated weight. The actual weight will be given in the technical manual that accompanies the antenna. This figure is for the antenna only and does not include the antenna input section.

2 The Aerodynamic Area is in accordance with **EIA/TIA-222-F**.

NOTE: Localized conditions may require higher wind speed specifications than TIA/EIA specifications. Check with local authorities to verify wind speed requirements.



Broadcast Antenna System

Power Analysis

KETG-TV/DT

Arkadelphia, AR

ABW16V3-HTO-9/13

Channel

9

ANTENNA PARAMETERS :

Azimuth Directivity :

Hor. Pol : 1.00

dBd : 0.00

ERP :

kW : 316.00

dBk : 25.00

Elevation Directivity :

Hor. Pol : 14.60

dBd : 11.64

POWER GAIN :

Ratio : 14.60

dBd : 11.64

TRANSMISSION LINE :

VERTICAL RUN :

Type: 3 1/8 50 Ohm Rigid

Length, ft. : 984

Attenuation , dB/100 ft: 0.1332

ANTENNA INPUT :

kW : 21.64

dBk : 13.35

HORIZONTAL RUN :

Type: 3 1/8 50 Ohm Rigid

Length, ft. : 105

Attenuation , dB/100 ft: 0.1332

LINE LOSS :

kW : 8.58

dB : 1.45

Efficiency : 71.61%

TRANSMITTER POWER :

kW : 30.23

dBk : 14.80



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Broadcast Antenna System

Power Analysis

KETG-TV/DT

Arkadelphia, AR

ABW16V3-HTO-9/13

Channel

13

ANTENNA PARAMETERS :

Azimuth Directivity :

Hor. Pol : 1.00

dBd : 0.00

ERP :

kW : 7.30

dBd : 8.63

Elevation Directivity :

Hor. Pol : 15.30

dBd : 11.85

POWER GAIN :

Ratio : 15.30

dBd : 11.85

TRANSMISSION LINE :

VERTICAL RUN :

Type: 3 1/8 50 Ohm Rigid

Length, ft. : 984

Attenuation , dB/100 ft: 0.1416

ANTENNA INPUT :

kW : 0.48

dBd : -3.21

HORIZONTAL RUN :

Type: 3 1/8 50 Ohm Rigid

Length, ft. : 105

Attenuation , dB/100 ft: 0.1416

LINE LOSS :

kW : 0.20

dBd : 1.54

Efficiency :

70.11%

TRANSMITTER POWER :

kW : 0.68

dBk : -1.67

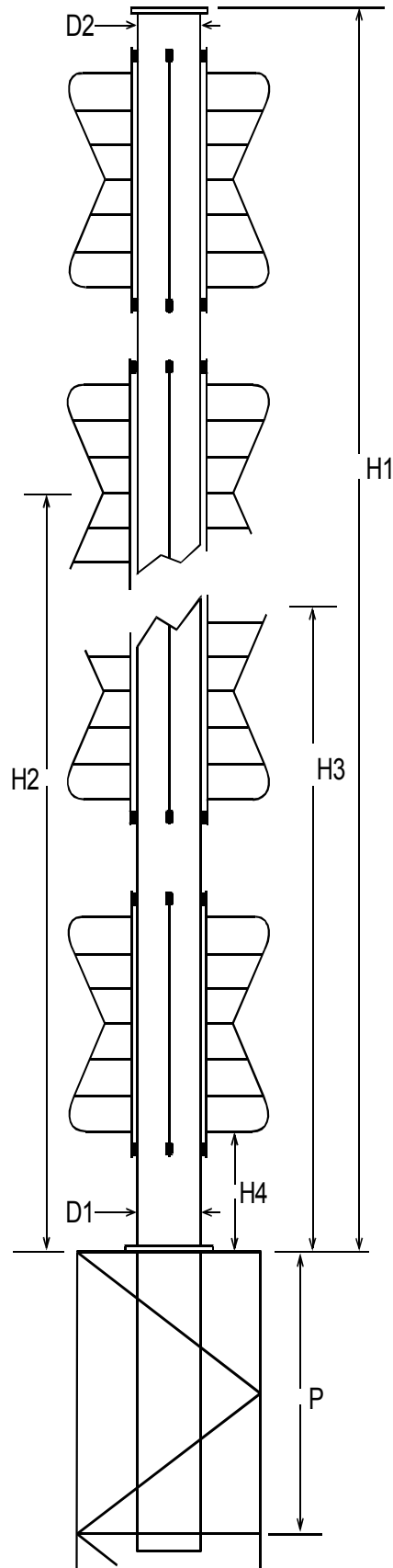


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TYPICAL MOUNTING CONFIGURATION SHOWN. ACTUAL CONFIGURATION MAY VARY.



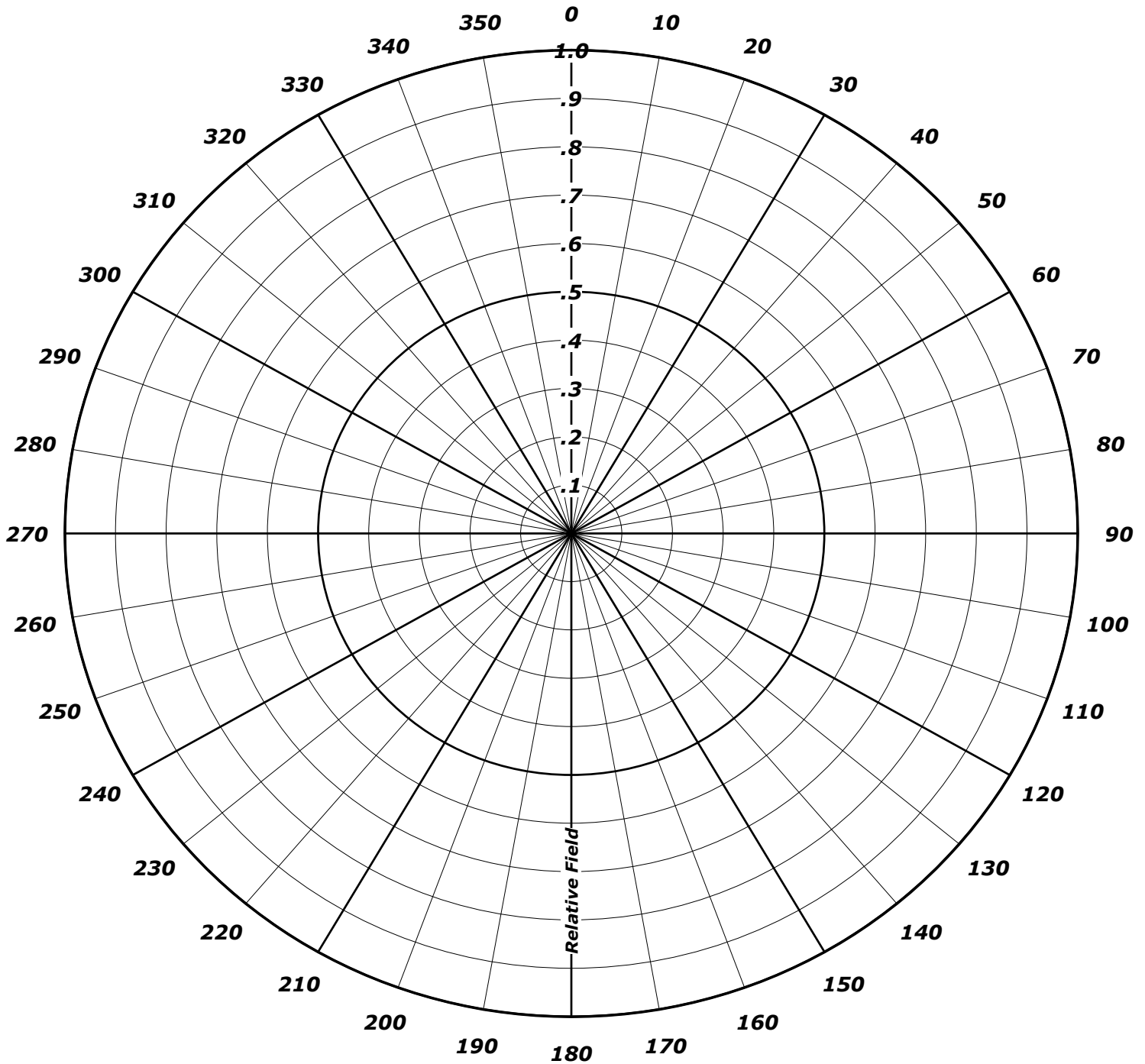
- * H1 Height of pole above tower top
- H2 Height of centre of radiation above tower top
- H3 Height of wind pressure center above tower top
- H4 Clearance of lowest radiator above tower top
- P Pole penetration into tower top
- D1 Diameter of largest pole section
- D2 Diameter of smallest pole section

* Excluding lightning conductor 1.1m (3.5ft.)

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AZIMUTH PATTERN

Type: ABW-O

	Numeric	dBd
Directivity:	<u>1.000</u>	<u>(0.00)</u>
Peak(s) At:	<u></u>	
Polarization:	<u>Horizontal</u>	
Channel:	<u>9 (Analog) / 13 (Digital)</u>	
Location:	<u>Arkadelphia, AR</u>	





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ELEVATION PATTERN

Type: ABW16V3H-CH9

Directivity: Numeric dBd

 Main Lobe: 14.60 (11.64)

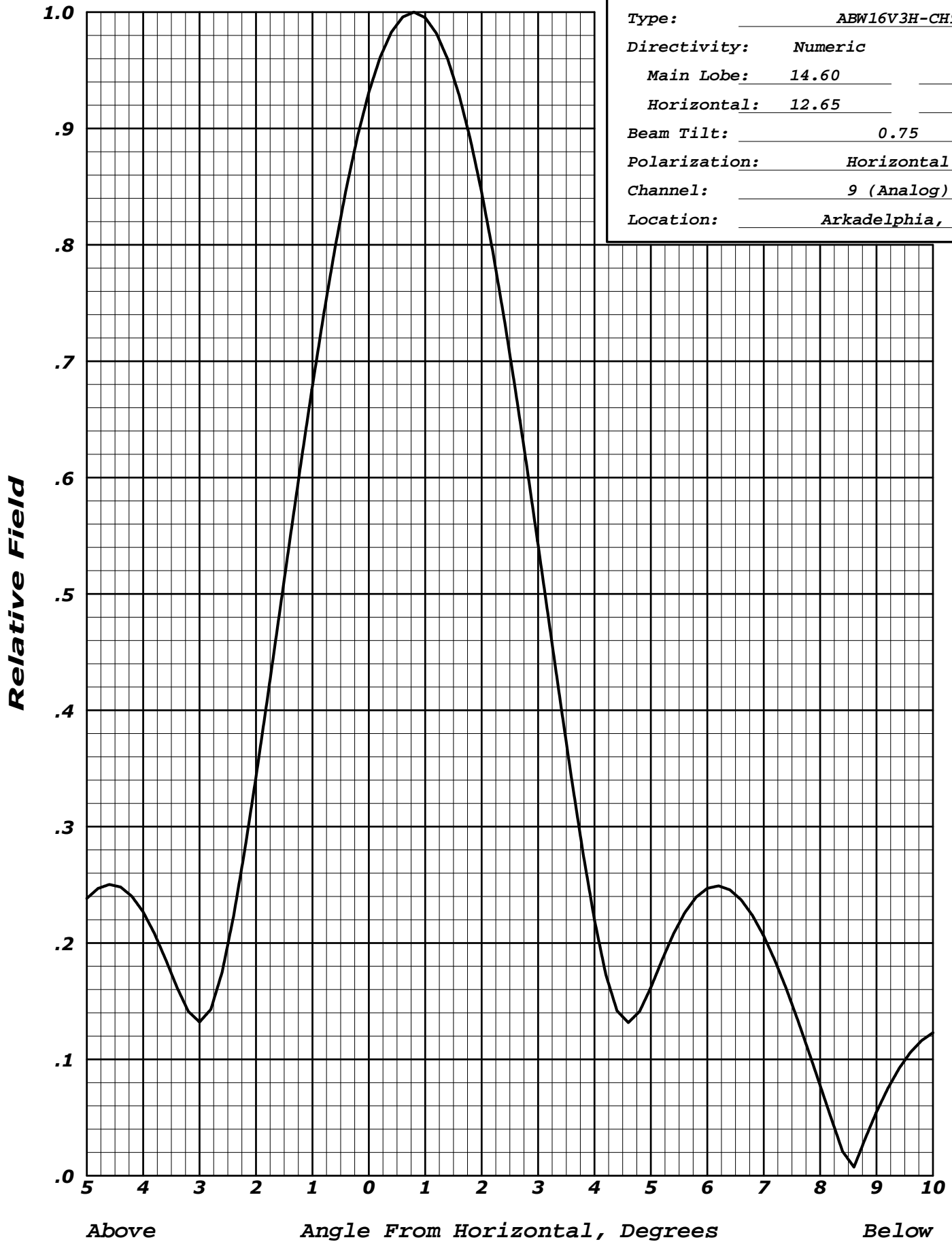
 Horizontal: 12.65 (11.02)

Beam Tilt: 0.75

Polarization: Horizontal

Channel: 9 (Analog)

Location: Arkadelphia, AR





TABULATED DATA FOR ELEVATION PATTERN

TYPE : ABW16V3H

Angle Field dB -5 To 10 In 0.25 Increments	Angle Field dB 10 To 90 In 0.5 Increments	Angle Field dB	Angle Field dB
-5.00 0.168 -15.47	8.75 0.113 -18.91	35.00 0.033 -29.68	62.50 0.002 -52.58
-4.75 0.183 -14.76	9.00 0.122 -18.30	35.50 0.033 -29.64	63.00 0.005 -45.85
-4.50 0.192 -14.34	9.25 0.133 -17.53	36.00 0.030 -30.57	63.50 0.007 -42.67
-4.25 0.196 -14.15	9.50 0.144 -16.86	36.50 0.023 -32.63	64.00 0.009 -40.72
-4.00 0.197 -14.10	9.75 0.152 -16.38	37.00 0.015 -36.25	64.50 0.011 -39.49
-3.75 0.199 -14.04	10.00 0.156 -16.12	37.50 0.009 -40.96	65.00 0.012 -38.79
-3.50 0.205 -13.76	10.50 0.153 -16.32	38.00 0.010 -39.66	65.50 0.012 -38.38
-3.25 0.221 -13.11	11.00 0.135 -17.36	38.50 0.017 -35.26	66.00 0.012 -38.34
-3.00 0.250 -12.04	11.50 0.110 -19.17	39.00 0.023 -32.58	66.50 0.012 -38.49
-2.75 0.295 -10.62	12.00 0.086 -21.26	39.50 0.027 -31.24	67.00 0.011 -38.86
-2.50 0.351 -9.10	12.50 0.076 -22.37	40.00 0.029 -30.84	67.50 0.011 -39.45
-2.25 0.416 -7.63	13.00 0.079 -22.05	40.50 0.027 -31.29	68.00 0.010 -40.18
-2.00 0.487 -6.25	13.50 0.085 -21.43	41.00 0.023 -32.65	68.50 0.009 -41.21
-1.75 0.561 -5.01	14.00 0.084 -21.49	41.50 0.017 -35.16	69.00 0.008 -42.38
-1.50 0.637 -3.92	14.50 0.073 -22.67	42.00 0.010 -39.66	69.50 0.007 -43.74
-1.25 0.710 -2.98	15.00 0.055 -25.15	42.50 0.004 -48.40	70.00 0.005 -45.35
-1.00 0.779 -2.17	15.50 0.037 -28.54	43.00 0.006 -45.04	70.50 0.004 -47.13
-0.75 0.841 -1.50	16.00 0.037 -28.61	43.50 0.011 -38.79	71.00 0.003 -49.37
-0.50 0.895 -0.96	16.50 0.056 -25.04	44.00 0.016 -35.81	71.50 0.003 -52.04
-0.25 0.940 -0.54	17.00 0.075 -22.44	44.50 0.019 -34.45	72.00 0.002 -55.39
0.00 0.973 -0.24	17.50 0.088 -21.14	45.00 0.020 -34.11	72.50 0.001 -58.42
0.25 0.992 -0.07	18.00 0.090 -20.88	45.50 0.018 -34.77	73.00 0.001 -60.00
0.50 0.999 -0.01	18.50 0.083 -21.64	46.00 0.015 -36.42	73.50 0.001 -60.00
0.75 0.992 -0.07	19.00 0.068 -23.40	46.50 0.011 -39.37	74.00 0.001 -60.00
1.00 0.973 -0.24	19.50 0.048 -26.30	47.00 0.007 -43.48	74.50 0.001 -58.06
1.25 0.939 -0.55	20.00 0.034 -29.47	47.50 0.007 -42.67	75.00 0.001 -57.08
1.50 0.893 -0.99	20.50 0.035 -29.00	48.00 0.012 -38.27	75.50 0.002 -56.48
1.75 0.836 -1.56	21.00 0.048 -26.43	48.50 0.018 -34.99	76.00 0.002 -55.92
2.00 0.769 -2.28	21.50 0.058 -24.69	49.00 0.023 -32.84	76.50 0.002 -55.92
2.25 0.694 -3.18	22.00 0.063 -24.08	49.50 0.027 -31.52	77.00 0.002 -55.92
2.50 0.613 -4.26	22.50 0.059 -24.64	50.00 0.029 -30.78	77.50 0.002 -56.48
2.75 0.528 -5.55	23.00 0.048 -26.41	50.50 0.030 -30.60	78.00 0.001 -57.08
3.00 0.441 -7.10	23.50 0.031 -30.06	51.00 0.029 -30.87	78.50 0.001 -57.72
3.25 0.358 -8.93	24.00 0.012 -38.13	51.50 0.026 -31.65	79.00 0.001 -58.42
3.50 0.280 -11.05	24.50 0.009 -41.21	52.00 0.023 -32.92	79.50 0.001 -59.17
3.75 0.215 -13.33	25.00 0.025 -32.08	52.50 0.018 -34.80	80.00 0.001 -60.00
4.00 0.172 -15.28	25.50 0.037 -28.67	53.00 0.014 -37.20	80.50 0.001 -60.00
4.25 0.165 -15.64	26.00 0.043 -27.35	53.50 0.011 -39.41	81.00 0.001 -60.00
4.50 0.185 -14.67	26.50 0.042 -27.55	54.00 0.010 -39.58	81.50 0.001 -60.00
4.75 0.217 -13.27	27.00 0.035 -29.17	54.50 0.013 -37.52	82.00 0.001 -60.00
5.00 0.251 -12.00	27.50 0.022 -33.03	55.00 0.017 -35.34	82.50 0.001 -60.00
5.25 0.280 -11.06	28.00 0.007 -43.61	55.50 0.021 -33.62	83.00 0.001 -60.00
5.50 0.301 -10.43	28.50 0.011 -39.09	56.00 0.024 -32.43	83.50 0.001 -60.00
5.75 0.314 -10.07	29.00 0.028 -31.21	56.50 0.026 -31.70	84.00 0.001 -60.00
6.00 0.318 -9.95	29.50 0.041 -27.71	57.00 0.027 -31.34	84.50 0.001 -60.00
6.25 0.312 -10.11	30.00 0.051 -25.90	57.50 0.027 -31.31	85.00 0.001 -60.00
6.50 0.299 -10.48	30.50 0.055 -25.21	58.00 0.026 -31.60	85.50 0.001 -60.00
6.75 0.280 -11.07	31.00 0.054 -25.35	58.50 0.025 -32.20	86.00 0.001 -60.00
7.00 0.255 -11.88	31.50 0.048 -26.38	59.00 0.022 -33.15	86.50 0.001 -60.00
7.25 0.226 -12.93	32.00 0.038 -28.29	59.50 0.019 -34.45	87.00 0.001 -60.00
7.50 0.195 -14.19	32.50 0.027 -31.32	60.00 0.016 -36.19	87.50 0.001 -60.00
7.75 0.166 -15.62	33.00 0.018 -35.14	60.50 0.012 -38.53	88.00 0.001 -60.00
8.00 0.139 -17.13	33.50 0.016 -35.73	61.00 0.008 -41.83	88.50 0.001 -60.00
8.25 0.121 -18.36	34.00 0.023 -32.96	61.50 0.004 -47.13	89.00 0.001 -60.00
8.50 0.112 -19.00	34.50 0.029 -30.75	62.00 0.001 -59.17	89.50 0.001 -60.00



ANDREW

ELEVATION PATTERN

Type: ABW16V3H-CH13

Directivity: Numeric dBd

 Main Lobe: 15.30 (11.85)

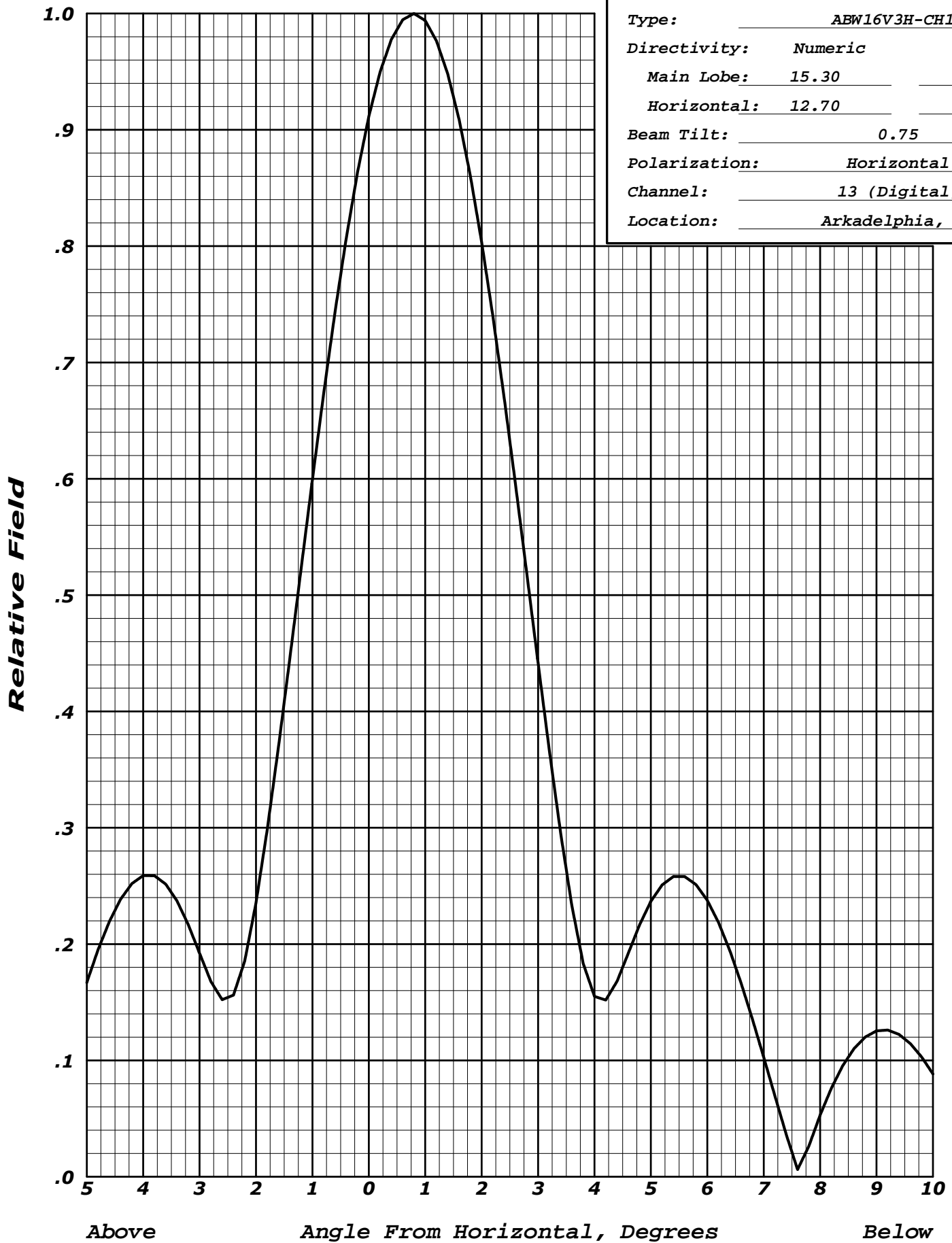
 Horizontal: 12.70 (11.04)

Beam Tilt: 0.75

Polarization: Horizontal

Channel: 13 (Digital)

Location: Arkadelphia, AR





TABULATED DATA FOR ELEVATION PATTERN
TYPE : ABW16V3H-CH13

Angle Field dB -5 To 10 In 0.25 Increments	Angle Field dB 10 To 90 In 0.5 Increments	Angle Field dB	Angle Field dB
-5.00 0.167 -15.55	8.75 0.118 -18.59	35.00 0.044 -27.07	62.50 0.040 -27.85
-4.75 0.201 -13.93	9.00 0.125 -18.03	35.50 0.039 -28.21	63.00 0.034 -29.47
-4.50 0.229 -12.81	9.25 0.125 -18.05	36.00 0.028 -31.03	63.50 0.030 -30.40
-4.25 0.249 -12.09	9.50 0.118 -18.54	36.50 0.013 -37.49	64.00 0.032 -29.84
-4.00 0.259 -11.74	9.75 0.106 -19.51	37.00 0.003 -50.46	64.50 0.039 -28.08
-3.75 0.257 -11.80	10.00 0.088 -21.08	37.50 0.019 -34.49	65.00 0.049 -26.16
-3.50 0.244 -12.24	10.50 0.043 -27.28	38.00 0.032 -29.87	65.50 0.060 -24.47
-3.25 0.222 -13.08	11.00 0.017 -35.44	38.50 0.041 -27.78	66.00 0.070 -23.07
-3.00 0.192 -14.33	11.50 0.057 -24.90	39.00 0.044 -27.05	66.50 0.080 -21.97
-2.75 0.164 -15.70	12.00 0.088 -21.10	39.50 0.042 -27.51	67.00 0.088 -21.09
-2.50 0.154 -16.24	12.50 0.100 -19.99	40.00 0.035 -29.19	67.50 0.095 -20.43
-2.25 0.178 -14.99	13.00 0.093 -20.60	40.50 0.023 -32.75	68.00 0.101 -19.94
-2.00 0.235 -12.56	13.50 0.069 -23.25	41.00 0.009 -40.92	68.50 0.105 -19.61
-1.75 0.317 -9.99	14.00 0.034 -29.45	41.50 0.007 -43.04	69.00 0.107 -19.40
-1.50 0.408 -7.79	14.50 0.008 -42.27	42.00 0.021 -33.64	69.50 0.108 -19.33
-1.25 0.504 -5.96	15.00 0.040 -27.96	42.50 0.032 -29.86	70.00 0.108 -19.36
-1.00 0.599 -4.45	15.50 0.064 -23.87	43.00 0.040 -28.02	70.50 0.106 -19.49
-0.75 0.691 -3.21	16.00 0.074 -22.57	43.50 0.042 -27.45	71.00 0.103 -19.72
-0.50 0.775 -2.21	16.50 0.069 -23.23	44.00 0.040 -27.89	71.50 0.100 -20.03
-0.25 0.849 -1.42	17.00 0.051 -25.90	44.50 0.034 -29.50	72.00 0.095 -20.41
0.00 0.911 -0.80	17.50 0.023 -32.67	45.00 0.023 -32.73	72.50 0.090 -20.87
0.25 0.957 -0.38	18.00 0.009 -41.21	45.50 0.010 -40.04	73.00 0.085 -21.41
0.50 0.986 -0.12	18.50 0.036 -28.86	46.00 0.004 -47.33	73.50 0.079 -22.01
0.75 0.999 -0.01	19.00 0.056 -24.97	46.50 0.018 -34.82	74.00 0.074 -22.67
1.00 0.994 -0.05	19.50 0.065 -23.72	47.00 0.030 -30.37	74.50 0.068 -23.40
1.25 0.969 -0.27	20.00 0.062 -24.14	47.50 0.039 -28.07	75.00 0.062 -24.19
1.50 0.928 -0.65	20.50 0.048 -26.47	48.00 0.045 -26.94	75.50 0.056 -25.04
1.75 0.873 -1.18	21.00 0.025 -31.94	48.50 0.046 -26.70	76.00 0.051 -25.93
2.00 0.803 -1.90	21.50 0.005 -45.68	49.00 0.043 -27.23	76.50 0.045 -26.89
2.25 0.722 -2.83	22.00 0.025 -31.90	49.50 0.037 -28.69	77.00 0.040 -27.89
2.50 0.632 -3.98	22.50 0.044 -27.07	50.00 0.027 -31.34	77.50 0.036 -28.96
2.75 0.538 -5.39	23.00 0.055 -25.24	50.50 0.015 -36.19	78.00 0.031 -30.09
3.00 0.442 -7.10	23.50 0.054 -25.28	51.00 0.006 -44.73	78.50 0.027 -31.23
3.25 0.349 -9.15	24.00 0.045 -26.96	51.50 0.013 -37.59	79.00 0.024 -32.47
3.50 0.264 -11.56	24.50 0.027 -31.26	52.00 0.025 -32.18	79.50 0.021 -33.72
3.75 0.196 -14.17	25.00 0.006 -44.88	52.50 0.034 -29.32	80.00 0.018 -35.04
4.00 0.155 -16.19	25.50 0.016 -35.65	53.00 0.041 -27.70	80.50 0.015 -36.42
4.25 0.156 -16.14	26.00 0.035 -29.07	53.50 0.045 -26.99	81.00 0.013 -37.86
4.50 0.180 -14.89	26.50 0.047 -26.51	54.00 0.045 -26.97	81.50 0.011 -39.37
4.75 0.210 -13.53	27.00 0.051 -25.80	54.50 0.041 -27.70	82.00 0.009 -40.92
5.00 0.237 -12.51	27.50 0.046 -26.69	55.00 0.034 -29.24	82.50 0.007 -42.56
5.25 0.253 -11.95	28.00 0.034 -29.37	55.50 0.025 -32.04	83.00 0.006 -44.29
5.50 0.258 -11.77	28.50 0.016 -35.81	56.00 0.013 -37.39	83.50 0.005 -46.02
5.75 0.253 -11.94	29.00 0.004 -48.64	56.50 0.003 -50.31	84.00 0.004 -47.96
6.00 0.238 -12.48	29.50 0.023 -32.96	57.00 0.013 -37.79	84.50 0.003 -49.76
6.25 0.212 -13.46	30.00 0.037 -28.54	57.50 0.026 -31.77	85.00 0.002 -52.04
6.50 0.180 -14.88	30.50 0.046 -26.78	58.00 0.038 -28.47	85.50 0.002 -54.42
6.75 0.143 -16.89	31.00 0.047 -26.54	58.50 0.048 -26.41	86.00 0.002 -56.48
7.00 0.103 -19.77	31.50 0.041 -27.81	59.00 0.056 -25.08	86.50 0.001 -59.58
7.25 0.061 -24.30	32.00 0.028 -30.93	59.50 0.061 -24.29	87.00 0.001 -60.00
7.50 0.021 -33.47	32.50 0.012 -38.45	60.00 0.064 -23.93	87.50 0.001 -60.00
7.75 0.021 -33.44	33.00 0.006 -44.29	60.50 0.063 -23.99	88.00 0.001 -60.00
8.00 0.053 -25.51	33.50 0.023 -32.90	61.00 0.060 -24.39	88.50 0.001 -60.00
8.25 0.081 -21.83	34.00 0.036 -28.95	61.50 0.055 -25.18	89.00 0.001 -60.00
8.50 0.103 -19.76	34.50 0.043 -27.31	62.00 0.048 -26.34	89.50 0.001 -60.00