



SYSTEMS WITH RELIABILITY, Inc.

Broadcast Antenna & Transmission Systems

SYSTEM DATA SHEET

Customer WDVX
 Contact Don Burggraf
 Location Knoxville, TN
 Antenna Model FMEC/2 HWS-2
 Channel / Frequency 89.9 MHz

ELECTRICAL SPECIFICATION

Polarization Type	Circular		
Polarization Ratio			
H-Pol. (PRH)	50.000	%	
V-Pol. (PRV)	50.000	%	
Elevation Directivity (ED)	1.390		
Azimuth Directivity (AD) H-Pol.	1.000		
Azimuth Directivity (AD) V-Pol.	1.000		
Antenna Efficiency	100.000	%	
Antenna Gain (GH)			
H-Pol. (GH)	0.695		
V-Pol. (GV)	0.695		
dB Gain (AG)			
H-Pol. (AGH)	-1.580		
V-Pol. (AGV)	-1.580		
ERP			
H-Pol. (ERPH)	0.200	kW	
V-Pol. (ERPV)	0.200	kW	
Line Type	1/2" Foam	LDF4-50A	
Attenuation per 100 ft.	0.63	dB/100ft	
Line Length (LL) AGL + 45'	85.00	ft.	
Total Line Attenuation	0.53	dB	
Line Efficiency (LE)	88.47	%	
Line Loss (LPL)	0.04	kW	
Antenna Input Power (AIP)	0.29	kW	
Req'd. Transmitter Output Power	0.325	kW	

MECHANICAL SPECIFICATION

No. Of Bays	2			
Antenna Aperture	5.47	ft.	1.67	m
Antenna Total Length	10.47	ft.	3.19	m
Center of Radiation AGL	39.37	ft.	12.00	m
Antenna Weight (W/O Brackets, Directors)	41.00	lbs.	18.64	kg
Windload (50/33)	80.00	lbs. 50/33PSF	2.15	ft^2

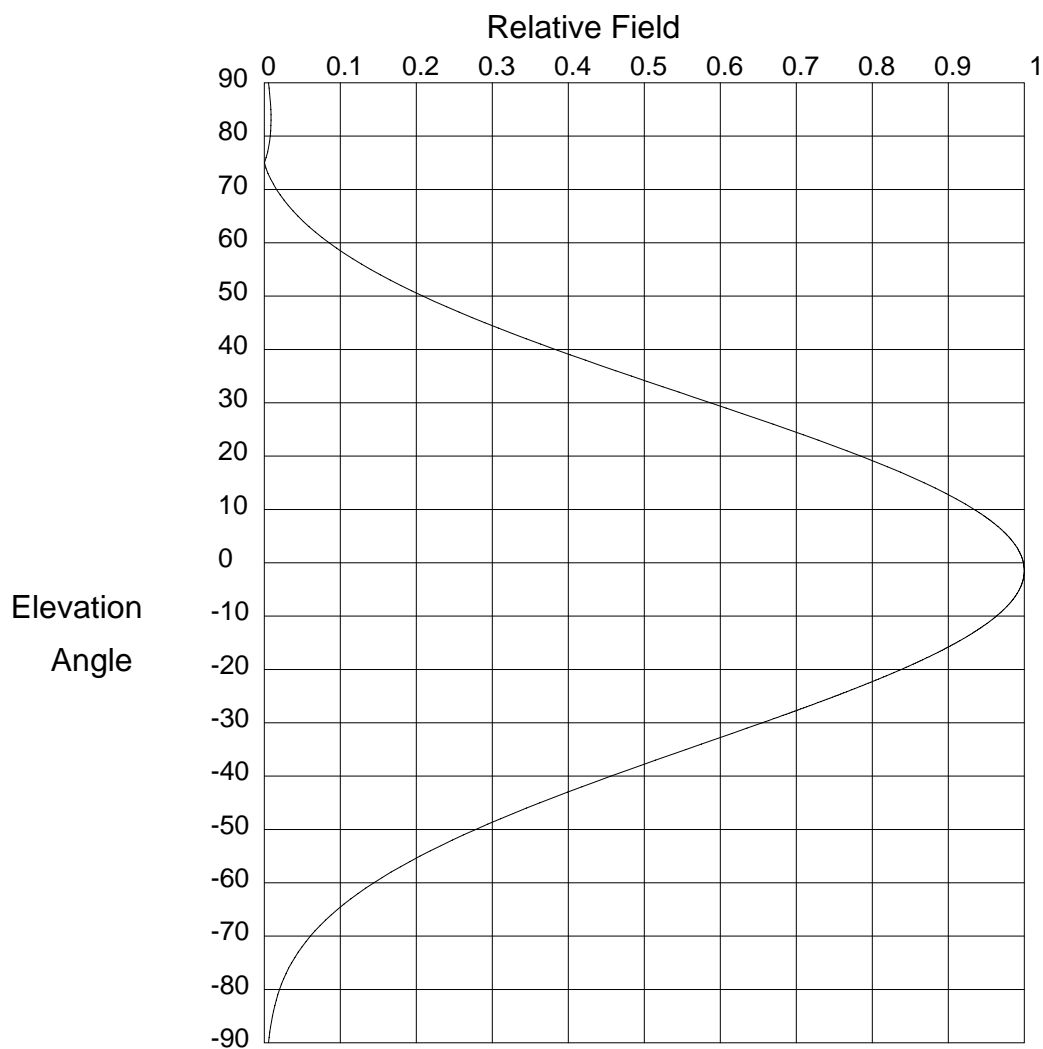
Mechanical Specifications will be certified upon final construction and testing.

Note: Given values can be used for planning system.

Prepared by:

David K. Edmiston Jr.

David K. Edmiston Jr.
 SWR Inc., Engineering



Elevation Pattern

Scale: Linear

Units: Field, Relative

Systems With Reliability (SWR) LLP

CLIENT: *WDVX*

Date: 6/5/2009

ANTENNA TYPE: FMEC/2 HWS-2

FREQUENCY: 89.9 MHz

PATTERN POL.: Circular

DIRECTIVITY(Peak): 1.39/1.43 dBd

Beam Tilt (Deg.) : -2.00

DIRECTIVITY(Horiz): 1.387/1.421 dBd

Null Fill(s)(%) : 0, 0, 0

Relative Field Tabulation

Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)
90.0	.005 (-45.222)	52.0	.18 (-14.91)	14.0	.883 (-1.08)
89.0	.006 (-43.993)	51.0	.194 (-14.245)	13.0	.897 (-0.944)
88.0	.007 (-43.002)	50.0	.209 (-13.605)	12.0	.91 (-0.817)
87.0	.008 (-42.217)	49.0	.224 (-12.99)	11.0	.923 (-0.699)
86.0	.008 (-41.618)	48.0	.24 (-12.396)	10.0	.934 (-0.591)
85.0	.009 (-41.194)	47.0	.256 (-11.824)	9.8	.936 (-0.57)
84.0	.009 (-40.945)	46.0	.273 (-11.272)	9.6	.939 (-0.55)
83.0	.009 (-40.876)	45.0	.29 (-10.739)	9.4	.941 (-0.53)
82.0	.009 (-41.006)	44.0	.308 (-10.224)	9.2	.943 (-0.511)
81.0	.009 (-41.366)	43.0	.326 (-9.728)	9.0	.945 (-0.492)
80.0	.008 (-42.009)	42.0	.345 (-9.248)	8.8	.947 (-0.473)
79.0	.007 (-43.029)	41.0	.364 (-8.784)	8.6	.949 (-0.455)
78.0	.006 (-44.603)	40.0	.383 (-8.336)	8.4	.951 (-0.437)
77.0	.004 (-47.12)	39.0	.403 (-7.904)	8.2	.953 (-0.419)
76.0	.003 (-51.721)	38.0	.422 (-7.486)	8.0	.955 (-0.402)
75.0	.00 (-67.294)	37.0	.442 (-7.083)	7.8	.957 (-0.385)
74.0	.002 (-53.557)	36.0	.463 (-6.693)	7.6	.958 (-0.368)
73.0	.005 (-45.988)	35.0	.483 (-6.317)	7.4	.96 (-0.352)
72.0	.008 (-41.573)	34.0	.504 (-5.953)	7.2	.962 (-0.336)
71.0	.012 (-38.35)	33.0	.525 (-5.603)	7.0	.964 (-0.321)
70.0	.016 (-35.768)	32.0	.545 (-5.265)	6.8	.965 (-0.306)
69.0	.021 (-33.589)	31.0	.566 (-4.94)	6.6	.967 (-0.291)
68.0	.026 (-31.69)	30.0	.587 (-4.626)	6.4	.969 (-0.277)
67.0	.032 (-29.999)	29.0	.608 (-4.324)	6.2	.97 (-0.263)
66.0	.038 (-28.469)	28.0	.629 (-4.034)	6.0	.972 (-0.249)
65.0	.044 (-27.069)	27.0	.649 (-3.755)	5.8	.973 (-0.236)
64.0	.051 (-25.775)	26.0	.669 (-3.487)	5.6	.975 (-0.223)
63.0	.059 (-24.571)	25.0	.689 (-3.229)	5.4	.976 (-0.211)
62.0	.067 (-23.444)	24.0	.709 (-2.983)	5.2	.977 (-0.199)
61.0	.076 (-22.384)	23.0	.729 (-2.747)	5.0	.979 (-0.187)
60.0	.085 (-21.383)	22.0	.748 (-2.522)	4.8	.98 (-0.176)
59.0	.095 (-20.434)	21.0	.767 (-2.307)	4.6	.981 (-0.164)
58.0	.106 (-19.533)	20.0	.785 (-2.102)	4.4	.982 (-0.154)
57.0	.116 (-18.675)	19.0	.803 (-1.907)	4.2	.984 (-0.143)
56.0	.128 (-17.855)	18.0	.82 (-1.722)	4.0	.985 (-0.133)
55.0	.14 (-17.072)	17.0	.837 (-1.547)	3.8	.986 (-0.124)
54.0	.153 (-16.321)	16.0	.853 (-1.382)	3.6	.987 (-0.115)
53.0	.166 (-15.601)	15.0	.868 (-1.226)	3.4	.988 (-0.106)

Systems With Reliability (SWR) LLP

Page 1 of 3

CLIENT: *WDVX*

Date: 6/5/2009

ANTENNA TYPE: FMEC/2 HWS-2

FREQUENCY: 89.9 MHz

PATTERN POL.: Circular

DIRECTIVITY(Peak): 1.39/1.43 dBd

Beam Tilt (Deg.) : -2.00

DIRECTIVITY(Horiz): 1.387/1.421 dBd

Null Fill(s)(%) : 0, 0, 0

Relative Field Tabulation

Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)
3.2	.989 (-0.097)	-4.4	.996 (-0.038)	-12.0	.945 (-0.494)
3.0	.99 (-0.089)	-4.6	.995 (-0.044)	-12.2	.943 (-0.513)
2.8	.991 (-0.081)	-4.8	.994 (-0.049)	-12.4	.941 (-0.532)
2.6	.992 (-0.074)	-5.0	.994 (-0.056)	-12.6	.938 (-0.552)
2.4	.992 (-0.067)	-5.2	.993 (-0.062)	-12.8	.936 (-0.572)
2.2	.993 (-0.06)	-5.4	.992 (-0.069)	-13.0	.934 (-0.592)
2.0	.994 (-0.054)	-5.6	.991 (-0.076)	-13.2	.932 (-0.613)
1.8	.995 (-0.048)	-5.8	.99 (-0.084)	-13.4	.93 (-0.634)
1.6	.995 (-0.042)	-6.0	.99 (-0.091)	-13.6	.927 (-0.655)
1.4	.996 (-0.037)	-6.2	.989 (-0.1)	-13.8	.925 (-0.677)
1.2	.996 (-0.032)	-6.4	.988 (-0.108)	-14.0	.923 (-0.699)
1.0	.997 (-0.027)	-6.6	.987 (-0.117)	-14.2	.92 (-0.722)
.8	.997 (-0.023)	-6.8	.986 (-0.127)	-14.4	.918 (-0.745)
.6	.998 (-0.019)	-7.0	.984 (-0.136)	-14.6	.915 (-0.768)
.4	.998 (-0.015)	-7.2	.983 (-0.146)	-14.8	.913 (-0.792)
.2	.999 (-0.012)	-7.4	.982 (-0.157)	-15.0	.91 (-0.816)
.0	.999 (-0.01)	-7.6	.981 (-0.167)	-15.2	.908 (-0.84)
-.2	.999 (-0.007)	-7.8	.98 (-0.178)	-15.4	.905 (-0.865)
-.4	.999 (-0.005)	-8.0	.978 (-0.19)	-15.6	.903 (-0.89)
-.6	1.00 (-0.003)	-8.2	.977 (-0.202)	-15.8	.90 (-0.915)
-.8	1.00 (-0.002)	-8.4	.976 (-0.214)	-16.0	.897 (-0.941)
-1.0	1.00 (-0.001)	-8.6	.974 (-0.226)	-16.2	.895 (-0.967)
-1.2	1.00 (0)	-8.8	.973 (-0.239)	-16.4	.892 (-0.994)
-1.4	1.00 (0)	-9.0	.971 (-0.253)	-16.6	.889 (-1.021)
-1.6	1.00 (0)	-9.2	.97 (-0.266)	-16.8	.886 (-1.048)
-1.8	1.00 (0)	-9.4	.968 (-0.28)	-17.0	.884 (-1.076)
-2.0	1.00 (-0.001)	-9.6	.967 (-0.294)	-17.2	.881 (-1.104)
-2.2	1.00 (-0.002)	-9.8	.965 (-0.309)	-17.4	.878 (-1.132)
-2.4	1.00 (-0.004)	-10.0	.963 (-0.324)	-17.6	.875 (-1.161)
-2.6	.999 (-0.006)	-10.2	.962 (-0.339)	-17.8	.872 (-1.19)
-2.8	.999 (-0.008)	-10.4	.96 (-0.355)	-18.0	.869 (-1.219)
-3.0	.999 (-0.01)	-10.6	.958 (-0.371)	-18.2	.866 (-1.249)
-3.2	.998 (-0.013)	-10.8	.956 (-0.388)	-18.4	.863 (-1.279)
-3.4	.998 (-0.017)	-11.0	.955 (-0.404)	-18.6	.86 (-1.31)
-3.6	.998 (-0.02)	-11.2	.953 (-0.422)	-18.8	.857 (-1.341)
-3.8	.997 (-0.024)	-11.4	.951 (-0.439)	-19.0	.854 (-1.372)
-4.0	.997 (-0.029)	-11.6	.949 (-0.457)	-19.2	.851 (-1.404)
-4.2	.996 (-0.033)	-11.8	.947 (-0.475)	-19.4	.848 (-1.436)

Systems With Reliability (SWR) LLP

Page 2 of 3

CLIENT: WDVX

Date: 6/5/2009

ANTENNA TYPE: FMEC/2 HWS-2

FREQUENCY: 89.9 MHz

PATTERN POL.: Circular

DIRECTIVITY(Peak): 1.39/1.43 dBd

Beam Tilt (Deg.) : -2.00

DIRECTIVITY(Horiz): 1.387/1.421 dBd

Null Fill(s)(%) : 0, 0, 0

Relative Field Tabulation

Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)
-19.6	.845 (-1.468)	-27.2	.71 (-2.976)	-54.0	.219 (-13.206)
-19.8	.841 (-1.501)	-27.4	.706 (-3.023)	-55.0	.205 (-13.767)
-20.0	.838 (-1.534)	-27.6	.702 (-3.071)	-56.0	.192 (-14.344)
-20.2	.835 (-1.567)	-27.8	.698 (-3.119)	-57.0	.179 (-14.937)
-20.4	.832 (-1.601)	-28.0	.694 (-3.167)	-58.0	.167 (-15.547)
-20.6	.828 (-1.635)	-28.2	.691 (-3.216)	-59.0	.155 (-16.174)
-20.8	.825 (-1.67)	-28.4	.687 (-3.265)	-60.0	.144 (-16.818)
-21.0	.822 (-1.705)	-28.6	.683 (-3.314)	-61.0	.134 (-17.48)
-21.2	.818 (-1.74)	-28.8	.679 (-3.364)	-62.0	.124 (-18.16)
-21.4	.815 (-1.776)	-29.0	.675 (-3.415)	-63.0	.114 (-18.86)
-21.6	.812 (-1.812)	-29.2	.671 (-3.465)	-64.0	.105 (-19.579)
-21.8	.808 (-1.849)	-29.4	.667 (-3.516)	-65.0	.096 (-20.318)
-22.0	.805 (-1.885)	-29.6	.663 (-3.568)	-66.0	.088 (-21.077)
-22.2	.801 (-1.923)	-29.8	.659 (-3.62)	-67.0	.081 (-21.857)
-22.4	.798 (-1.96)	-30.0	.655 (-3.672)	-68.0	.074 (-22.658)
-22.6	.794 (-1.998)	-31.0	.635 (-3.939)	-69.0	.067 (-23.48)
-22.8	.791 (-2.037)	-32.0	.615 (-4.217)	-70.0	.061 (-24.324)
-23.0	.787 (-2.075)	-33.0	.595 (-4.504)	-71.0	.055 (-25.19)
-23.2	.784 (-2.114)	-34.0	.575 (-4.802)	-72.0	.05 (-26.077)
-23.4	.78 (-2.154)	-35.0	.555 (-5.111)	-73.0	.045 (-26.987)
-23.6	.777 (-2.194)	-36.0	.535 (-5.43)	-74.0	.04 (-27.918)
-23.8	.773 (-2.234)	-37.0	.515 (-5.76)	-75.0	.036 (-28.87)
-24.0	.77 (-2.274)	-38.0	.495 (-6.101)	-76.0	.032 (-29.843)
-24.2	.766 (-2.315)	-39.0	.476 (-6.453)	-77.0	.029 (-30.835)
-24.4	.762 (-2.357)	-40.0	.456 (-6.816)	-78.0	.026 (-31.845)
-24.6	.759 (-2.399)	-41.0	.437 (-7.19)	-79.0	.023 (-32.872)
-24.8	.755 (-2.441)	-42.0	.418 (-7.577)	-80.0	.02 (-33.913)
-25.0	.751 (-2.483)	-43.0	.399 (-7.975)	-81.0	.018 (-34.968)
-25.2	.748 (-2.526)	-44.0	.381 (-8.385)	-82.0	.016 (-36.035)
-25.4	.744 (-2.569)	-45.0	.363 (-8.807)	-83.0	.014 (-37.112)
-25.6	.74 (-2.613)	-46.0	.345 (-9.242)	-84.0	.012 (-38.198)
-25.8	.736 (-2.657)	-47.0	.328 (-9.69)	-85.0	.011 (-39.294)
-26.0	.733 (-2.701)	-48.0	.311 (-10.151)	-86.0	.01 (-40.405)
-26.2	.729 (-2.746)	-49.0	.294 (-10.625)	-87.0	.008 (-41.536)
-26.4	.725 (-2.792)	-50.0	.278 (-11.112)	-88.0	.007 (-42.699)
-26.6	.721 (-2.837)	-51.0	.263 (-11.614)	-89.0	.006 (-43.917)
-26.8	.718 (-2.883)	-52.0	.247 (-12.13)	-90.0	.005 (-45.222)
-27.0	.714 (-2.929)	-53.0	.233 (-12.661)	90.0	.00 (-50)

Systems With Reliability (SWR) LLP

Page 3 of 3

CLIENT: *WDVX*

Date: 6/5/2009

ANTENNA TYPE: FMEC/2 HWS-2

FREQUENCY: 89.9 MHz

PATTERN POL.: Circular

DIRECTIVITY(Peak): 1.39/1.43 dBd

Beam Tilt (Deg.) : -2.00

DIRECTIVITY(Horiz): 1.387/1.421 dBd

Null Fill(s)(%) : 0, 0, 0