SYSTEMS WITH RELIABILITY, LLP
BROADCAST ANTENNAS AND TRANSMISSION LINE

PATTERN CERTIFICATION

DIRECTIONAL FM ANTENNA
WXLQ
December 8, 2008

Station	: WXLQ
Location	: Bristol, VT
Frequency	: 90.5 MHz
Channel	: 213A
Antenna Model	: FMECH/1-DA
Maximum Antenna Gain	
Vertical	: 0.815 / -0.888 dB
Horizontal	: 0.815 / -0.888 dB

ANTENNA DESCRIPTION

A custom designed **FMECH/1-DA** antenna was used to produce the required directional azimuth pattern. The antenna bay consists of a circularly polarized dipole-radiating element with a horizontal parasitic system. The array is comprised of one bay mounted to a tower pointing **244°** true north.

DESCRIPTION OF TEST PROCEDURE

The test antenna consists of a third-scale model antenna and parasitic system. This antenna was mounted to a pole and then mounted to an exact replicated third-scale 24-inch model tower with the use of mounting brackets supplied with the finalized antenna. The tower and antenna were placed 20 ft. on a platform. All feed cables were properly grounded during pattern testing. Horizontal parasitic elements were used to obtain the submitted directional azimuth pattern.

The source antenna, a vertical/horizontal dipole Cavity Back Resonator antenna configuration was mounted approximately 100 feet from the test antenna. The source's height was adjusted to provide a uniform field at the test antenna location. The CBR antenna was operated in the transmit mode at a frequency of 271.5 MHz. The antenna under test was rotated in a clockwise direction. A gain reference was taken using a dipole tuned to 271.5 MHz. Nowhere, does the received signal exceed a maximum to minimum ratio of 15 dB.

619 Industrial Park Road, Ebensburg, PA 15931♦Tel. 800 762 7743 / 814 472 5436 ♦ Fax 814 472 5552♦davide@swr-rf.com

TEST RESULTS

The attached calculations verify that the **RMS** value of this antenna is ***90.90 %*** of the **RMS** value of the pattern authorized in the related construction permit **BMPED-20080813ABE**. The vertical component **RMS** value is ***0.728***. The horizontal component **RMS** value is **0.744**. The circular polarized component **RMS** value is **0.777**.

Azimuth and elevation plots and associated tabulations of this antenna are included with this package.

Measured vertical polarized directivity:	**1.8891 / 2.760 dB**
Measured horizontal polarized directivity:	**1.80494 / 2.560 dB**
Measured circular polarized pattern directivity:	**1.65737 / 2.190 dB**

Gain in each polarization was calculated using the following relation:

GAIN = *Azimuth Directivity x Elevation Directivity x Power Ratio Between Polarizations*

Using this relationship along with ratio measured at our testing facilities:

V-Pol. Gain =	(1.8891)(.4886)(.883)	**= 0.815 / -0.888 dB**
H-Pol. Gain =	(1.80494)(.5114)(.883)	**= 0.815 / -0.888 dB**

INSTALLATION AND MOUNTING

The antenna is to be mounted in accordance with the supplied drawings. The antenna center of radiation is to be ***22 meters*** (72.18 ft.) above ground level. The antenna aperture is **5.0 feet**. No other antennas are to be mounted within ***10 feet*** of the antenna. No other obstructions other than those specified by original drawings supplied are to be mounted at the same level as the antenna. The antenna is to be oriented **244°** true north.

The parasitic system is custom designed to shape and direct the antenna pattern as required. The systems orientation and the mounting details are described in the following drawings:

DRAWING NO.	**TITLE**
1251D00	ELEVATION
1251D01	ANTENNA ORENTATION WITH PARASITICS
2105A10	TEST RANGE SCHEMATIC

The array shall be mounted according to **DWG. 1251D00**. The parasitic assembly is shown in **DWG. 1251D01**. The antenna elements shall be aligned at the same heading as in **DWG. 1251D01**. This will ensure that the antenna is oriented properly at **244°** true north.

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DOCUMENT EXHIBITS

The following exhibits are included as part of this Certificate of Compliance:

Exhibit 1	Circular Polarized Azimuth Pattern Field Strength Tabulations (Composite)
Exhibit 2	Measured Horizontal Polarized Azimuth Pattern Measured Field Strength Tabulations (Horizontal)
Exhibit 3	Measured Vertical Polarized Azimuth Pattern Measured Field Strength Tabulations (Vertical)
Exhibit 4	Elevation Pattern Elevation Tabulations
Exhibit 5	Antenna Data Sheet
Exhibit 6	RMS Calculations
Exhibit 7	Drawings

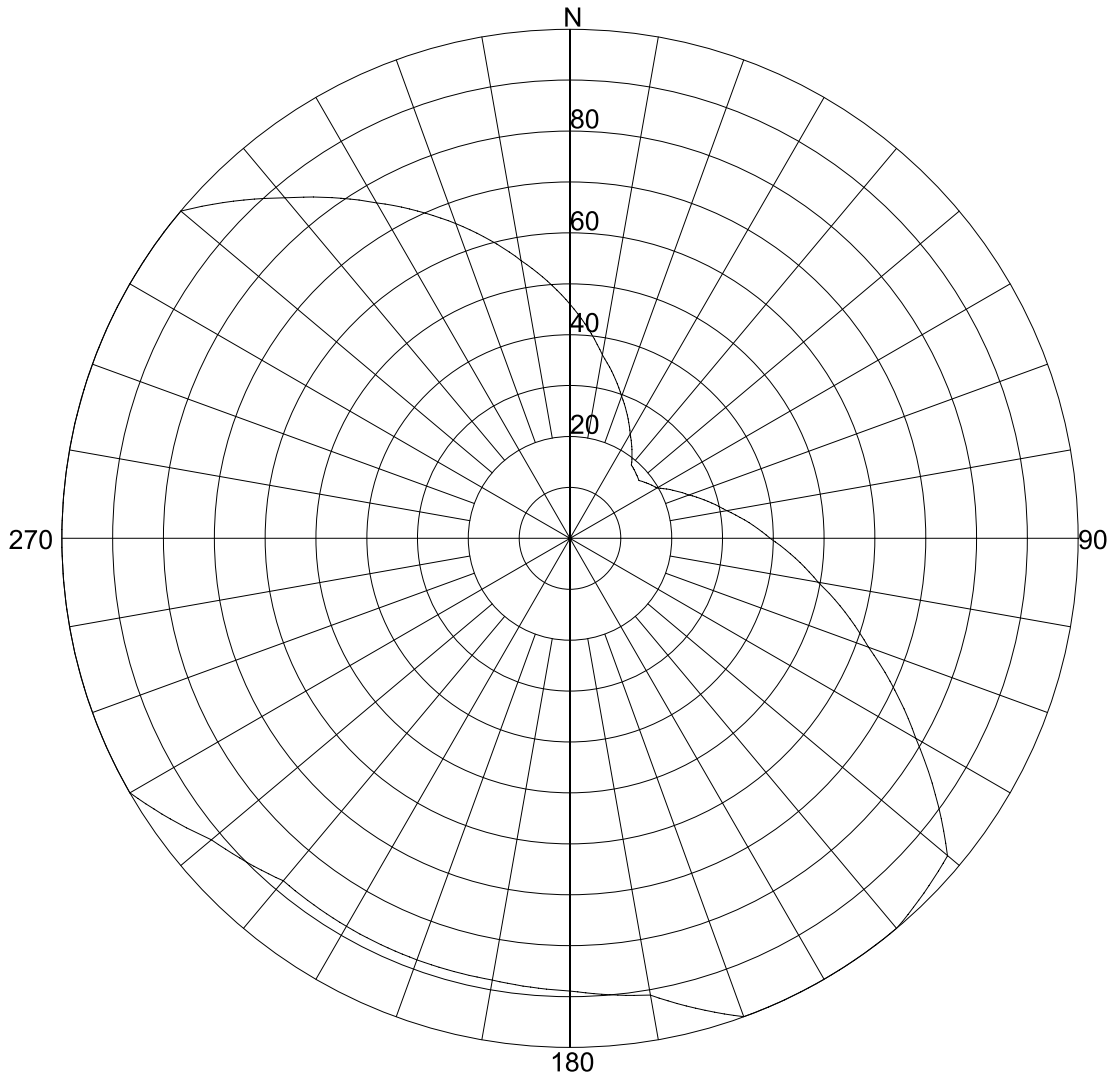
TEST EQUIPMENT

Network Analyzer	:	Hewlett Packard Model # 8753C Serial Number: 08753 – 69138 Calibrated 4/26/08, SWR, Inc.
Computer	:	Pentium 3, 450 MHz, Range Program
Printer	:	Hewlett-Packard Laser Jet 6L
Positioner	:	Orbit Positioner Calibrated 1/10/08, SWR, Inc.

Prepared by:

Mark A. Gergely
Electrical Engineer
Systems With Reliability LLP

Exhibit 1: Circular Polarized Composite Azimuth Pattern



Azimuth Pattern

Scale: Linear

Unit: Relative Field

Systems With Reliability (SWR) LLP

CLIENT: *WXLQ-FM / Bob Sauter*

Date: 12/5/2008

ANTENNA TYPE: FMECH/1-DA

FREQUENCY: 90.5 MHz

PATTERN POL.: Circular

CIRCULARITY(+/-dB):

AZ. DIRECTIVITY: 1.65737 / 2.19dB

PATTERN RMS: *0.777*

Micro-Tek Eng. Ver.2.5.1

Relative Field Tabulation(Azimuth)

Azimuth Heading	Relative Field(dB)	Azimuth Heading	Relatve Field(dB)
0	.4600 (-6.73)	180	.8890 (-1.01)
5	.4130 (-7.66)	185	.8850 (-1.05)
10	.3660 (-8.71)	190	.8810 (-1.09)
15	.3315 (-9.56)	195	.8810 (-1.09)
20	.2970 (-10.52)	200	.8810 (-1.09)
25	.2670 (-11.44)	205	.8805 (-1.1)
30	.2370 (-12.47)	210	.8800 (-1.1)
35	.2125 (-13.41)	215	.8790 (-1.11)
40	.1880 (-14.47)	220	.8780 (-1.12)
45	.1825 (-14.73)	225	.8995 (-0.91)
50	.1770 (-14.99)	230	.9210 (-0.71)
55	.1875 (-14.49)	235	.9605 (-0.34)
60	.1980 (-14.02)	240	1.0000 (0.01)
65	.2235 (-12.98)	245	1.0000 (0.01)
70	.2490 (-12.04)	250	1.0000 (0.01)
75	.2810 (-11)	255	1.0000 (0.01)
80	.3130 (-10.06)	260	1.0000 (0.01)
85	.3535 (-9.01)	265	1.0000 (0.01)
90	.3940 (-8.07)	270	1.0000 (0.01)
95	.4450 (-7.01)	275	1.0000 (0.01)
100	.4960 (-6.07)	280	1.0000 (0.01)
105	.5605 (-5.01)	285	1.0000 (0.01)
110	.6250 (-4.07)	290	1.0000 (0.01)
115	.7055 (-3.02)	295	1.0000 (0.01)
120	.7860 (-2.08)	300	1.0000 (0.01)
125	.8780 (-1.12)	305	1.0000 (0.01)
130	.9700 (-0.26)	310	1.0000 (0.01)
135	.9850 (-0.12)	315	.9365 (-0.56)
140	1.0000 (0.01)	320	.8730 (-1.17)
145	1.0000 (0.01)	325	.8170 (-1.74)
150	1.0000 (0.01)	330	.7610 (-2.36)
155	1.0000 (0.01)	335	.7095 (-2.97)
160	1.0000 (0.01)	340	.6580 (-3.62)
165	.9555 (-0.39)	345	.6060 (-4.34)
170	.9110 (-0.8)	350	.5540 (-5.11)
175	.9000 (-0.91)	355	.5070 (-5.88)

Systems With Reliability (SWR) LLP

CLIENT: *WXLQ-FM / Bob Sauter*

Date: 12/5/2008

ANTENNA TYPE: FMECH/1-DA

FREQUENCY: 90.5 MHz

PATTERN POL.: Circular

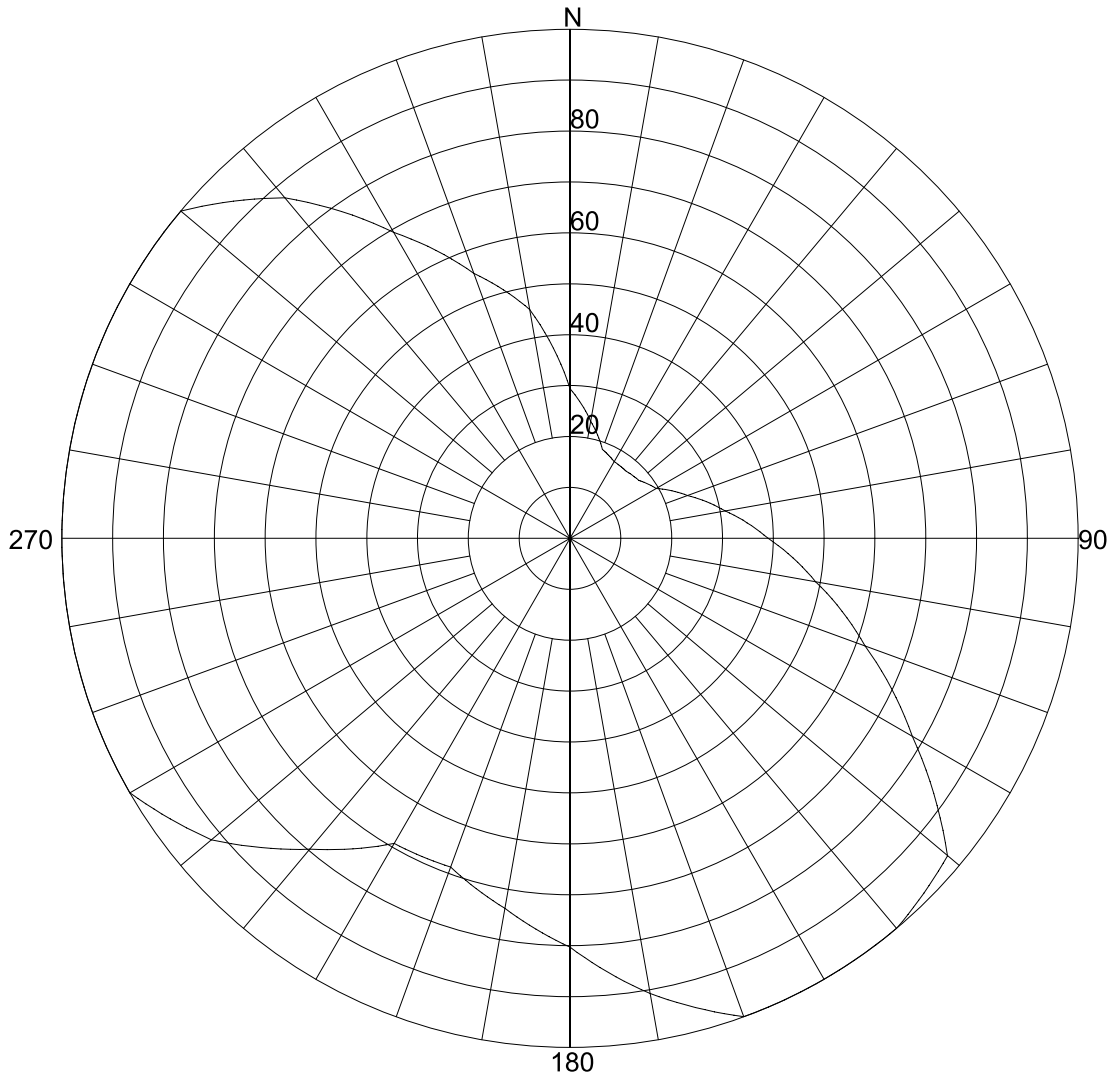
CIRCULARITY(+/-dB):

AZ. DIRECTIVITY: 1.65737 / 2.19dB

PATTERN RMS: *0.777*

Micro-Tek Eng. Ver.2.5.1

Exhibit 2: Measured Horizontal Polarized Azimuth Pattern



Azimuth Pattern

Scale: Linear

Unit: Relative Field

Systems With Reliability (SWR) LLP

CLIENT: *WXLQ-FM / Bob Sauter*

Date: 12/5/2008

ANTENNA TYPE: FMECH/1-DA

FREQUENCY: 90.5 MHz

PATTERN POL.: Horizontal

CIRCULARITY(+/-dB):

AZ. DIRECTIVITY: 1.80494 / 2.56dB

PATTERN RMS: *0.744*

Micro-Tek Eng. Ver.2.5.1

Relative Field Tabulation(Azimuth)

Azimuth Heading	Relative Field(dB)	Azimuth Heading	Relatve Field(dB)
0	.2940 (-10.6)	180	.8030 (-1.89)
5	.2640 (-11.54)	185	.7705 (-2.25)
10	.2340 (-12.58)	190	.7380 (-2.63)
15	.2100 (-13.51)	195	.7125 (-2.93)
20	.1860 (-14.56)	200	.6870 (-3.25)
25	.1800 (-14.85)	205	.6895 (-3.22)
30	.1740 (-15.14)	210	.6920 (-3.19)
35	.1730 (-15.19)	215	.7445 (-2.55)
40	.1720 (-15.24)	220	.7970 (-1.96)
45	.1745 (-15.11)	225	.8590 (-1.31)
50	.1770 (-14.99)	230	.9210 (-0.71)
55	.1865 (-14.54)	235	.9605 (-0.34)
60	.1960 (-14.11)	240	1.0000 (0.01)
65	.2210 (-13.07)	245	1.0000 (0.01)
70	.2460 (-12.15)	250	1.0000 (0.01)
75	.2780 (-11.09)	255	1.0000 (0.01)
80	.3100 (-10.14)	260	1.0000 (0.01)
85	.3500 (-9.09)	265	1.0000 (0.01)
90	.3900 (-8.16)	270	1.0000 (0.01)
95	.4405 (-7.1)	275	1.0000 (0.01)
100	.4910 (-6.16)	280	1.0000 (0.01)
105	.5545 (-5.11)	285	1.0000 (0.01)
110	.6180 (-4.17)	290	1.0000 (0.01)
115	.6980 (-3.11)	295	1.0000 (0.01)
120	.7780 (-2.17)	300	1.0000 (0.01)
125	.8740 (-1.16)	305	1.0000 (0.01)
130	.9700 (-0.26)	310	1.0000 (0.01)
135	.9850 (-0.12)	315	.9365 (-0.56)
140	1.0000 (0.01)	320	.8730 (-1.17)
145	1.0000 (0.01)	325	.7835 (-2.11)
150	1.0000 (0.01)	330	.6940 (-3.16)
155	1.0000 (0.01)	335	.6240 (-4.08)
160	1.0000 (0.01)	340	.5540 (-5.11)
165	.9540 (-0.4)	345	.5050 (-5.92)
170	.9080 (-0.83)	350	.4560 (-6.8)
175	.8555 (-1.35)	355	.3750 (-8.5)

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Date: 12/5/2008

ANTENNA TYPE: FMECH/1-DA

FREQUENCY: 90.5 MHz

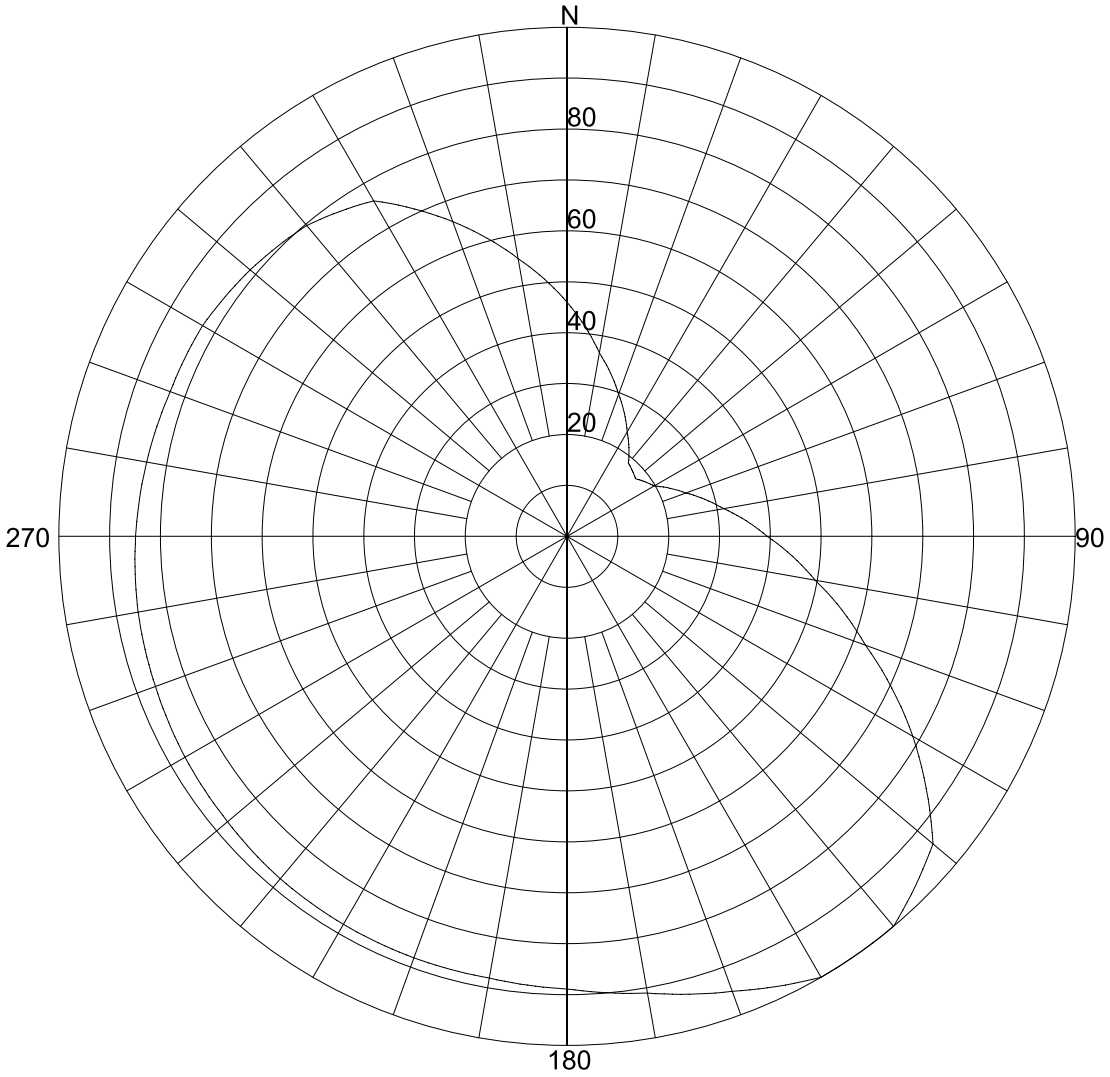
PATTERN POL.: Horizontal

CIRCULARITY(+/-dB):

AZ. DIRECTIVITY: 1.80494 / 2.56dB

PATTERN RMS: *0.744*

Micro-Tek Eng. Ver.2.5.1



Azimuth Pattern

Scale: Linear

Unit: Relative Field

Systems With Reliability (SWR) LLP

CLIENT: *WXLQ-FM / Bob Sauter*

Date: 12/5/2008

ANTENNA TYPE: FMECH/1-DA

FREQUENCY: 90.5 MHz

PATTERN POL.: Vertical

CIRCULARITY(+/-dB):

AZ. DIRECTIVITY: 1.8891 / 2.76dB

PATTERN RMS: *0.728*

Micro-Tek Eng. Ver.2.5.1

Relative Field Tabulation(Azimuth)

Azimuth Heading	Relative Field(dB)	Azimuth Heading	Relatve Field(dB)
0	.4600 (-6.73)	180	.8890 (-1.01)
5	.4130 (-7.66)	185	.8850 (-1.05)
10	.3660 (-8.71)	190	.8810 (-1.09)
15	.3315 (-9.56)	195	.8810 (-1.09)
20	.2970 (-10.52)	200	.8810 (-1.09)
25	.2670 (-11.44)	205	.8805 (-1.1)
30	.2370 (-12.47)	210	.8800 (-1.1)
35	.2125 (-13.41)	215	.8790 (-1.11)
40	.1880 (-14.47)	220	.8780 (-1.12)
45	.1820 (-14.75)	225	.8750 (-1.15)
50	.1760 (-15.04)	230	.8720 (-1.18)
55	.1870 (-14.52)	235	.8700 (-1.2)
60	.1980 (-14.02)	240	.8680 (-1.22)
65	.2235 (-12.98)	245	.8650 (-1.25)
70	.2490 (-12.04)	250	.8620 (-1.28)
75	.2810 (-11)	255	.8595 (-1.3)
80	.3130 (-10.06)	260	.8570 (-1.33)
85	.3535 (-9.01)	265	.8530 (-1.37)
90	.3940 (-8.07)	270	.8490 (-1.41)
95	.4450 (-7.01)	275	.8445 (-1.46)
100	.4960 (-6.07)	280	.8400 (-1.5)
105	.5605 (-5.01)	285	.8355 (-1.55)
110	.6250 (-4.07)	290	.8310 (-1.6)
115	.7055 (-3.02)	295	.8295 (-1.61)
120	.7860 (-2.08)	300	.8280 (-1.63)
125	.8630 (-1.27)	305	.8210 (-1.7)
130	.9400 (-0.53)	310	.8140 (-1.78)
135	.9700 (-0.26)	315	.8055 (-1.87)
140	1.0000 (0.01)	320	.7970 (-1.96)
145	1.0000 (0.01)	325	.7790 (-2.16)
150	1.0000 (0.01)	330	.7610 (-2.36)
155	.9755 (-0.21)	335	.7095 (-2.97)
160	.9510 (-0.43)	340	.6580 (-3.62)
165	.9310 (-0.61)	345	.6060 (-4.34)
170	.9110 (-0.8)	350	.5540 (-5.11)
175	.9000 (-0.91)	355	.5070 (-5.88)

Systems With Reliability (SWR) LLP

CLIENT: *WXLQ-FM / Bob Sauter*

Date: 12/5/2008

ANTENNA TYPE: FMECH/1-DA

FREQUENCY: 90.5 MHz

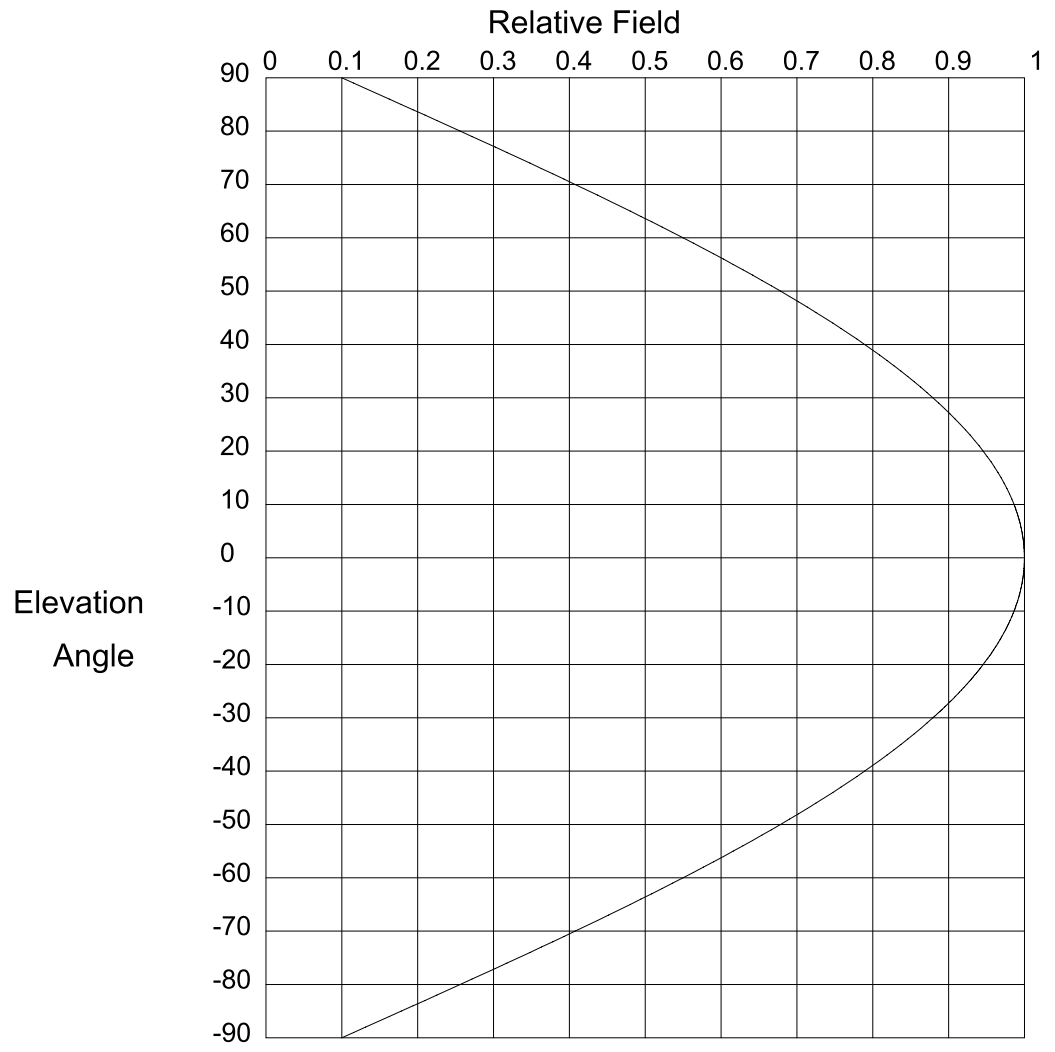
PATTERN POL.: Vertical

CIRCULARITY(+/-dB):

AZ. DIRECTIVITY: 1.8891 / 2.76dB

PATTERN RMS: *0.728*

Micro-Tek Eng. Ver.2.5.1



Elevation Pattern

Scale: Linear

Units: Field, Relative

Systems With Reliability (SWR) LLP

CLIENT: *WXLQ-FM / Bob Sauter*

Date: 12/8/2008

ANTENNA TYPE: FMECH/1-DA

FREQUENCY: 90.5 MHz

PATTERN POL.: Circular

DIRECTIVITY(Peak): 0.883/-0.539 dBd

Beam Tilt (Deg.) : *0*

DIRECTIVITY(Horiz): 0.883/-0.539 dBd

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

Micro-Tek Eng. Ver.2.5.1

Relative Field Tabulation

Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)
90.0	.10 (-20)	52.0	.654 (-3.687)	14.0	.973 (-0.235)
89.0	.116 (-18.733)	51.0	.666 (-3.525)	13.0	.977 (-0.203)
88.0	.131 (-17.627)	50.0	.679 (-3.369)	12.0	.98 (-0.173)
87.0	.147 (-16.648)	49.0	.69 (-3.217)	11.0	.983 (-0.145)
86.0	.163 (-15.768)	48.0	.702 (-3.071)	10.0	.986 (-0.12)
85.0	.178 (-14.97)	47.0	.714 (-2.928)	9.8	.987 (-0.115)
84.0	.194 (-14.241)	46.0	.725 (-2.791)	9.6	.987 (-0.11)
83.0	.21 (-13.569)	45.0	.736 (-2.658)	9.4	.988 (-0.106)
82.0	.225 (-12.946)	44.0	.747 (-2.529)	9.2	.988 (-0.101)
81.0	.241 (-12.367)	43.0	.758 (-2.404)	9.0	.989 (-0.097)
80.0	.256 (-11.826)	42.0	.769 (-2.283)	8.8	.989 (-0.093)
79.0	.272 (-11.317)	41.0	.779 (-2.167)	8.6	.99 (-0.088)
78.0	.287 (-10.839)	40.0	.789 (-2.054)	8.4	.99 (-0.084)
77.0	.302 (-10.387)	39.0	.799 (-1.944)	8.2	.991 (-0.08)
76.0	.318 (-9.959)	38.0	.809 (-1.839)	8.0	.991 (-0.076)
75.0	.333 (-9.553)	37.0	.819 (-1.737)	7.8	.992 (-0.073)
74.0	.348 (-9.167)	36.0	.828 (-1.638)	7.6	.992 (-0.069)
73.0	.363 (-8.799)	35.0	.837 (-1.543)	7.4	.993 (-0.065)
72.0	.378 (-8.448)	34.0	.846 (-1.451)	7.2	.993 (-0.062)
71.0	.393 (-8.112)	33.0	.855 (-1.363)	7.0	.993 (-0.058)
70.0	.408 (-7.791)	32.0	.863 (-1.277)	6.8	.994 (-0.055)
69.0	.423 (-7.483)	31.0	.871 (-1.195)	6.6	.994 (-0.052)
68.0	.437 (-7.187)	30.0	.879 (-1.116)	6.4	.994 (-0.049)
67.0	.452 (-6.904)	29.0	.887 (-1.04)	6.2	.995 (-0.046)
66.0	.466 (-6.631)	28.0	.895 (-0.967)	6.0	.995 (-0.043)
65.0	.48 (-6.369)	27.0	.902 (-0.897)	5.8	.995 (-0.04)
64.0	.495 (-6.116)	26.0	.909 (-0.83)	5.6	.996 (-0.037)
63.0	.509 (-5.873)	25.0	.916 (-0.765)	5.4	.996 (-0.035)
62.0	.523 (-5.638)	24.0	.922 (-0.704)	5.2	.996 (-0.032)
61.0	.536 (-5.411)	23.0	.928 (-0.645)	5.0	.997 (-0.03)
60.0	.55 (-5.193)	22.0	.934 (-0.589)	4.8	.997 (-0.027)
59.0	.564 (-4.982)	21.0	.94 (-0.535)	4.6	.997 (-0.025)
58.0	.577 (-4.778)	20.0	.946 (-0.485)	4.4	.997 (-0.023)
57.0	.59 (-4.58)	19.0	.951 (-0.437)	4.2	.998 (-0.021)
56.0	.603 (-4.39)	18.0	.956 (-0.391)	4.0	.998 (-0.019)
55.0	.616 (-4.205)	17.0	.961 (-0.348)	3.8	.998 (-0.017)
54.0	.629 (-4.027)	16.0	.965 (-0.308)	3.6	.998 (-0.015)
53.0	.642 (-3.854)	15.0	.969 (-0.271)	3.4	.998 (-0.014)

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Date: 12/8/2008
ANTENNA TYPE: FMECH/1-DA
FREQUENCY: 90.5 MHz
PATTERN POL.: Circular
DIRECTIVITY(Peak): 0.883/-0.539 dBd
Beam Tilt (Deg.) : *0*
DIRECTIVITY(Horiz): 0.883/-0.539 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	.999 (-0.012)	-4.4	.997 (-0.023)	-12.0	.98 (-0.173)
3.0	.999 (-0.011)	-4.6	.997 (-0.025)	-12.2	.98 (-0.178)
2.8	.999 (-0.009)	-4.8	.997 (-0.027)	-12.4	.979 (-0.184)
2.6	.999 (-0.008)	-5.0	.997 (-0.03)	-12.6	.978 (-0.19)
2.4	.999 (-0.007)	-5.2	.996 (-0.032)	-12.8	.978 (-0.196)
2.2	.999 (-0.006)	-5.4	.996 (-0.035)	-13.0	.977 (-0.203)
2.0	.999 (-0.005)	-5.6	.996 (-0.037)	-13.2	.976 (-0.209)
1.8	1.00 (-0.004)	-5.8	.995 (-0.04)	-13.4	.975 (-0.215)
1.6	1.00 (-0.003)	-6.0	.995 (-0.043)	-13.6	.975 (-0.222)
1.4	1.00 (-0.002)	-6.2	.995 (-0.046)	-13.8	.974 (-0.229)
1.2	1.00 (-0.002)	-6.4	.994 (-0.049)	-14.0	.973 (-0.235)
1.0	1.00 (-0.001)	-6.6	.994 (-0.052)	-14.2	.973 (-0.242)
.8	1.00 (-0.001)	-6.8	.994 (-0.055)	-14.4	.972 (-0.249)
.6	1.00 (0)	-7.0	.993 (-0.058)	-14.6	.971 (-0.256)
.4	1.00 (0)	-7.2	.993 (-0.062)	-14.8	.97 (-0.263)
.2	1.00 (0)	-7.4	.993 (-0.065)	-15.0	.969 (-0.271)
.0	1.00 (0)	-7.6	.992 (-0.069)	-15.2	.969 (-0.278)
-.2	1.00 (0)	-7.8	.992 (-0.073)	-15.4	.968 (-0.285)
-.4	1.00 (0)	-8.0	.991 (-0.076)	-15.6	.967 (-0.293)
-.6	1.00 (0)	-8.2	.991 (-0.08)	-15.8	.966 (-0.3)
-.8	1.00 (-0.001)	-8.4	.99 (-0.084)	-16.0	.965 (-0.308)
-1.0	1.00 (-0.001)	-8.6	.99 (-0.088)	-16.2	.964 (-0.316)
-1.2	1.00 (-0.002)	-8.8	.989 (-0.093)	-16.4	.963 (-0.324)
-1.4	1.00 (-0.002)	-9.0	.989 (-0.097)	-16.6	.962 (-0.332)
-1.6	1.00 (-0.003)	-9.2	.988 (-0.101)	-16.8	.962 (-0.34)
-1.8	1.00 (-0.004)	-9.4	.988 (-0.106)	-17.0	.961 (-0.348)
-2.0	.999 (-0.005)	-9.6	.987 (-0.11)	-17.2	.96 (-0.357)
-2.2	.999 (-0.006)	-9.8	.987 (-0.115)	-17.4	.959 (-0.365)
-2.4	.999 (-0.007)	-10.0	.986 (-0.12)	-17.6	.958 (-0.374)
-2.6	.999 (-0.008)	-10.2	.986 (-0.124)	-17.8	.957 (-0.383)
-2.8	.999 (-0.009)	-10.4	.985 (-0.129)	-18.0	.956 (-0.391)
-3.0	.999 (-0.011)	-10.6	.985 (-0.134)	-18.2	.955 (-0.4)
-3.2	.999 (-0.012)	-10.8	.984 (-0.14)	-18.4	.954 (-0.409)
-3.4	.998 (-0.014)	-11.0	.983 (-0.145)	-18.6	.953 (-0.418)
-3.6	.998 (-0.015)	-11.2	.983 (-0.15)	-18.8	.952 (-0.427)
-3.8	.998 (-0.017)	-11.4	.982 (-0.156)	-19.0	.951 (-0.437)
-4.0	.998 (-0.019)	-11.6	.982 (-0.161)	-19.2	.95 (-0.446)
-4.2	.998 (-0.021)	-11.8	.981 (-0.167)	-19.4	.949 (-0.456)

Systems With Reliability (SWR) LLP

CLIENT: *WXLQ-FM / Bob Sauter*
Date: 12/8/2008
ANTENNA TYPE: FMECH/1-DA
FREQUENCY: 90.5 MHz
PATTERN POL.: Circular
DIRECTIVITY(Peak): 0.883/-0.539 dBd
Beam Tilt (Deg.) : *0*
DIRECTIVITY(Horiz): 0.883/-0.539 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	.948 (-0.465)	-27.2	.90 (-0.911)	-54.0	.629 (-4.027)
-19.8	.947 (-0.475)	-27.4	.899 (-0.924)	-55.0	.616 (-4.205)
-20.0	.946 (-0.485)	-27.6	.898 (-0.939)	-56.0	.603 (-4.39)
-20.2	.945 (-0.495)	-27.8	.896 (-0.953)	-57.0	.59 (-4.58)
-20.4	.944 (-0.505)	-28.0	.895 (-0.967)	-58.0	.577 (-4.778)
-20.6	.942 (-0.515)	-28.2	.893 (-0.981)	-59.0	.564 (-4.982)
-20.8	.941 (-0.525)	-28.4	.892 (-0.996)	-60.0	.55 (-5.193)
-21.0	.94 (-0.535)	-28.6	.89 (-1.01)	-61.0	.536 (-5.411)
-21.2	.939 (-0.546)	-28.8	.889 (-1.025)	-62.0	.523 (-5.638)
-21.4	.938 (-0.556)	-29.0	.887 (-1.04)	-63.0	.509 (-5.873)
-21.6	.937 (-0.567)	-29.2	.886 (-1.055)	-64.0	.495 (-6.116)
-21.8	.936 (-0.578)	-29.4	.884 (-1.07)	-65.0	.48 (-6.369)
-22.0	.934 (-0.589)	-29.6	.883 (-1.085)	-66.0	.466 (-6.631)
-22.2	.933 (-0.6)	-29.8	.881 (-1.101)	-67.0	.452 (-6.904)
-22.4	.932 (-0.611)	-30.0	.879 (-1.116)	-68.0	.437 (-7.187)
-22.6	.931 (-0.622)	-31.0	.871 (-1.195)	-69.0	.423 (-7.483)
-22.8	.93 (-0.633)	-32.0	.863 (-1.277)	-70.0	.408 (-7.791)
-23.0	.928 (-0.645)	-33.0	.855 (-1.363)	-71.0	.393 (-8.112)
-23.2	.927 (-0.656)	-34.0	.846 (-1.451)	-72.0	.378 (-8.448)
-23.4	.926 (-0.668)	-35.0	.837 (-1.543)	-73.0	.363 (-8.799)
-23.6	.925 (-0.68)	-36.0	.828 (-1.638)	-74.0	.348 (-9.167)
-23.8	.923 (-0.692)	-37.0	.819 (-1.737)	-75.0	.333 (-9.553)
-24.0	.922 (-0.704)	-38.0	.809 (-1.839)	-76.0	.318 (-9.959)
-24.2	.921 (-0.716)	-39.0	.799 (-1.944)	-77.0	.302 (-10.387)
-24.4	.92 (-0.728)	-40.0	.789 (-2.054)	-78.0	.287 (-10.839)
-24.6	.918 (-0.74)	-41.0	.779 (-2.167)	-79.0	.272 (-11.317)
-24.8	.917 (-0.753)	-42.0	.769 (-2.283)	-80.0	.256 (-11.826)
-25.0	.916 (-0.765)	-43.0	.758 (-2.404)	-81.0	.241 (-12.367)
-25.2	.914 (-0.778)	-44.0	.747 (-2.529)	-82.0	.225 (-12.946)
-25.4	.913 (-0.791)	-45.0	.736 (-2.658)	-83.0	.21 (-13.569)
-25.6	.912 (-0.803)	-46.0	.725 (-2.791)	-84.0	.194 (-14.241)
-25.8	.91 (-0.816)	-47.0	.714 (-2.928)	-85.0	.178 (-14.97)
-26.0	.909 (-0.83)	-48.0	.702 (-3.071)	-86.0	.163 (-15.768)
-26.2	.908 (-0.843)	-49.0	.69 (-3.217)	-87.0	.147 (-16.648)
-26.4	.906 (-0.856)	-50.0	.679 (-3.369)	-88.0	.131 (-17.627)
-26.6	.905 (-0.87)	-51.0	.666 (-3.525)	-89.0	.116 (-18.733)
-26.8	.903 (-0.883)	-52.0	.654 (-3.687)	-90.0	.10 (-20)
-27.0	.902 (-0.897)	-53.0	.642 (-3.854)	90.0	.00 (-50)

Systems With Reliability (SWR) LLP

CLIENT: *WXLQ-FM / Bob Sauter*
Date: 12/8/2008
ANTENNA TYPE: FMECH/1-DA
FREQUENCY: 90.5 MHz
PATTERN POL.: Circular
DIRECTIVITY(Peak): 0.883/-0.539 dBd
Beam Tilt (Deg.) : *0*
DIRECTIVITY(Horiz): 0.883/-0.539 dBd
Null Fill(s)(%) : *0, 0, 0*

SYSTEMS WITH RELIABILITY, LLP

BROADCAST ANTENNAS AND TRANSMISSION LINE

SYSTEM DATA SHEET

Customer	WXLQ
Contact	Bob Sauter
Location	Bristol, VT
Antenna Model	FMECH/1-DA
Channel / Frequency	213A / 90.5 MHz

ELECTRICAL SPECIFICATIONS

Antenna Specifications:

		H-POL		dB	V. Pol.		dB	
License ERP (KW)		0.160		-7.959	**dB**	0.160	-7.959	**dB**
FCC Limit Pattern Directivity		1.524		1.831	**dB**	1.524	1.831	**dB**
Elevation Directivity		0.883		-0.540	**dB**	0.883	-0.540	**dB**
Azimuth Directivity		1.805		2.565	**dB**	1.889	2.763	**dB**
Composite Pattern		1.657		2.194	**dB**	1.657	2.194	**dB**
Polarization Ratio		0.511		-2.912	**dB**	0.489	-3.110	**dB**
RMS Comp./RMS Limit	95.90 **%**							
Antenna Efficiency %		100				100		
Power Ratio (Pol. Ratio X Efficiency)		0.5114				0.4886		
Antenna Gain		0.815		-0.888	**dB**	0.815	-0.888	**dB**
Antenna Input Power (KW)		0.196	**kW**	-7.071	**(dBK)**			

Feed Line Specifications:

Line Type	**1/2" Foam**	**50 Ω**	
Attenuation Per 100 ft (dB)	0.628	**dB**	
Line Length (ft) AGL + 45'	87.18	**ft.**	
Total Line Attenuation (dB)	0.5475	**dB**	
Line Efficiency	88.16	**%**	
Power Input to the Line (KW)	0.223	**kW**	-6.523 **(dBK)**

MECHANICAL SPECIFICATIONS

No. Of Bays	1					
Antenna Aperture	5.00	**ft.**		1.52	**meter**	
Center of Radiation AGL	72.18	**ft.**		22.01	**meter**	
Antenna Weight	55.00	**lbs.**		25.00	**kg**	
Windload (50/33)	85.00	**lbs.**	**Windload CaAc**	2.20	**ft^2**	

Prepared by:

David K. Edmiston Jr.
SWR, LLP

SYSTEMS WITH RELIABILITY, INC.
Broadcast Antennas and Transmission Systems

WXLQ Antenna RMS Comparison

PROPOSED ANTENNA		DESIGNED ANTENNA	
Azimuth Heading	Relative Field	Azimuth Heading	Relative Field
0	0.465	0	0.460
10	0.370	10	0.366
20	0.300	20	0.297
30	0.239	30	0.237
40	0.190	40	0.188
50	0.178	50	0.177
60	0.200	60	0.198
70	0.251	70	0.249
80	0.316	80	0.313
90	0.398	90	0.394
100	0.501	100	0.496
110	0.631	110	0.625
120	0.794	120	0.786
130	1.000	130	0.970
140	1.000	140	1.000
150	1.000	150	1.000
160	1.000	160	1.000
170	0.912	170	0.911
180	1.000	180	0.889
190	1.000	190	0.881
200	1.000	200	0.881
210	1.000	210	0.880
220	1.000	220	0.878
230	1.000	230	0.921
240	1.000	240	1.000
250	1.000	250	1.000
260	1.000	260	1.000
270	1.000	270	1.000
280	1.000	280	1.000
290	1.000	290	1.000
300	1.000	300	1.000
310	1.000	310	1.000
320	1.000	320	0.873
330	0.891	330	0.761
340	0.708	340	0.658
350	0.565	350	0.554

Sum of Relative Field Squared :	**23.655**	**Sum of Relative Field Squared :**	**21.754**
Sum Divided by 36 (Readings) :	**0.657**	**Sum Divided by 36 (Readings) :**	**0.604**
Square Root :	**0.811**	**Square Root :**	**0.777**

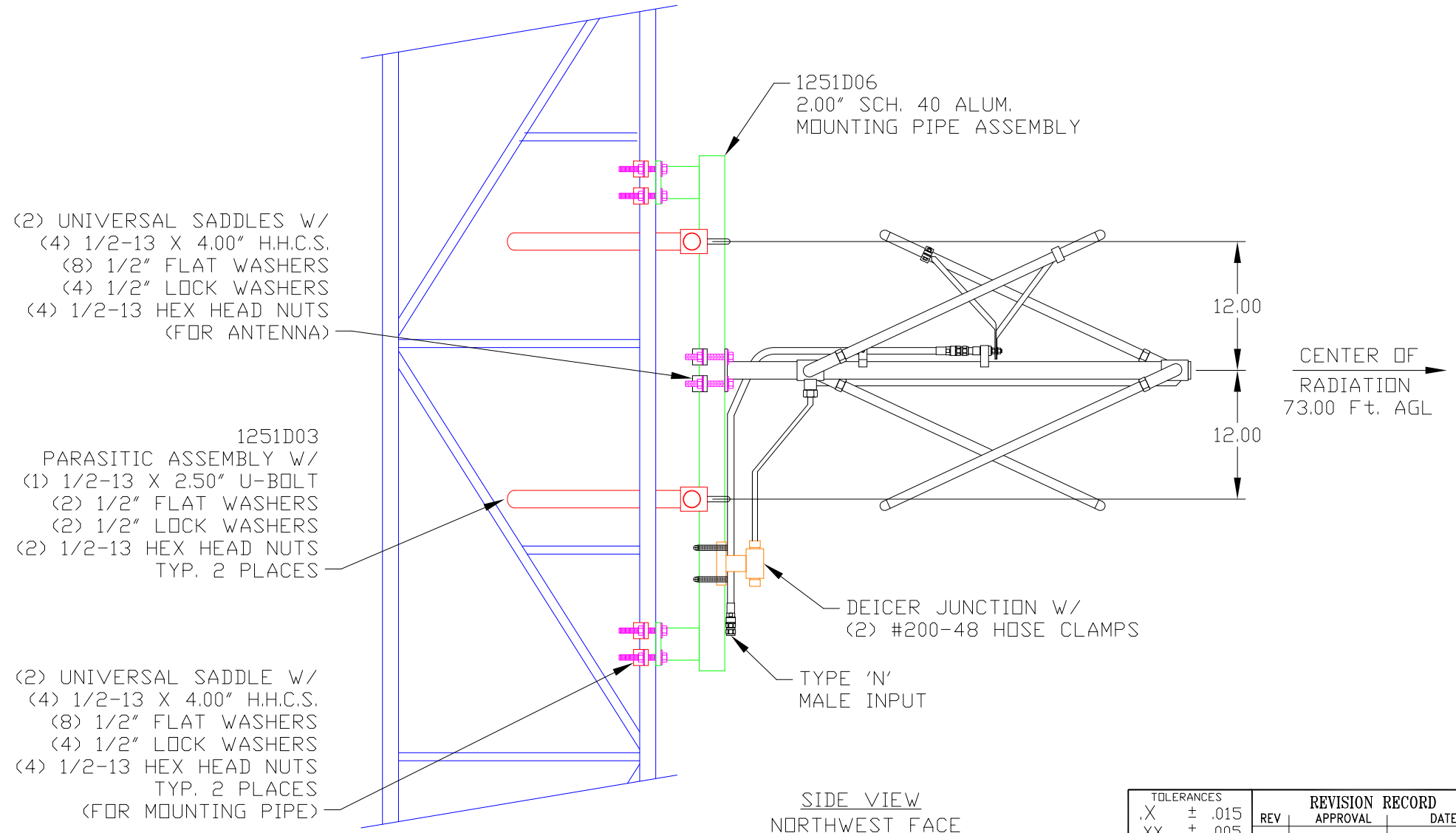
Percentage of Construction Permit Antenna Filled : **95.90%**

Exhibit 7: Elevation and Parasitic Drawing

DRAWING NUMBER: 1251D00

NOTE:

1. REFERENCE DWG. 1251D01 FOR ANTENNA ORIENTATION.



SIDE VIEW
NORTHWEST FACE

TOLERANCES		
.X	±	.015
.XX	±	.005
.XXX	±	.002
X/X	±	1/32
DEG.	±	1/2

UNLESS OTHERWISE SPECIFIED

REVISION RECORD

REV	APPROVAL	DATE

SYSTEMS WITH RELIABILITY, INC
619 INDUSTRIAL PARK ROAD
EBENSBURG, PENNSYLVANIA 15931

TITLE: FMECH/1-DA, FREQ. 90.5
WXLQ, BRISTOL, VT

MATERIAL:

SIZE A

PARTS MADE BY THIS DRAWING

DRAWING NUMBER: 1251D00

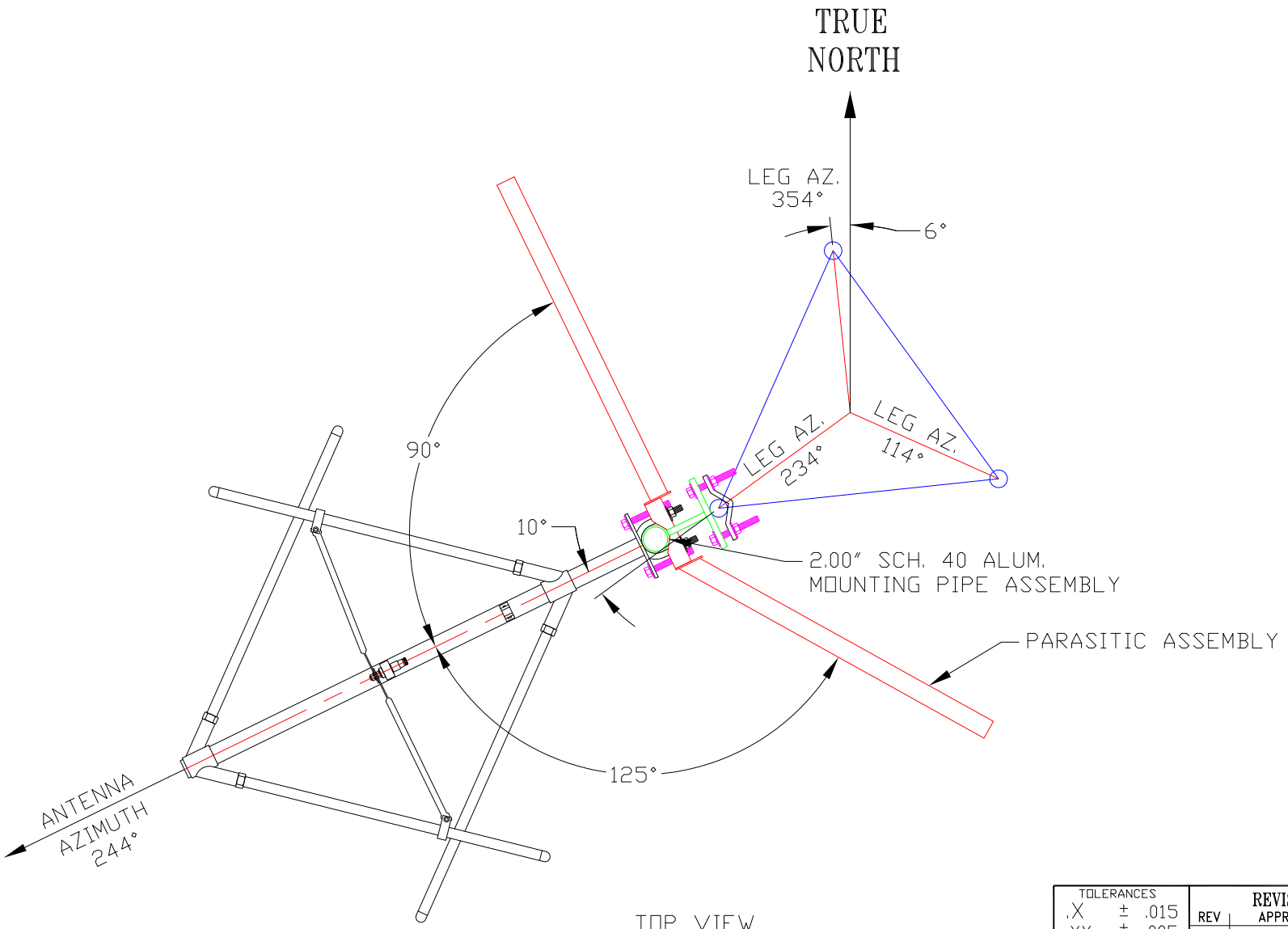
SCALE: NTS | NAME: RAC | DATE: 12/8/08 | SHEET 1 OF 1

Exhibit 7: Aerial Drawing

DRAWING NUMBER: 1251D01

NOTE:

1. REFERENCE DWG. 1251D00 FOR ANTENNA ELEVATION.



TOP VIEW

TOLERANCES	
.X	± .015
.XX	± .005
.XXX	± .002
X/X	± 1/32
DEG.	± 1/2

UNLESS OTHERWISE SPECIFIED

REVISION RECORD

REV	APPROVAL	DATE

SYSTEMS WITH RELIABILITY, INC
619 INDUSTRIAL PARK ROAD
EBENSBURG, PENNSYLVANIA 15931

TITLE: FMECH/1-DA, FREQ. 90.5 WXLQ, BRISTOL, VT

MATERIAL: ANTENNA ORIENTATION FROM TRUE NORTH

SIZE A

PARTS MADE BY THIS DRAWING

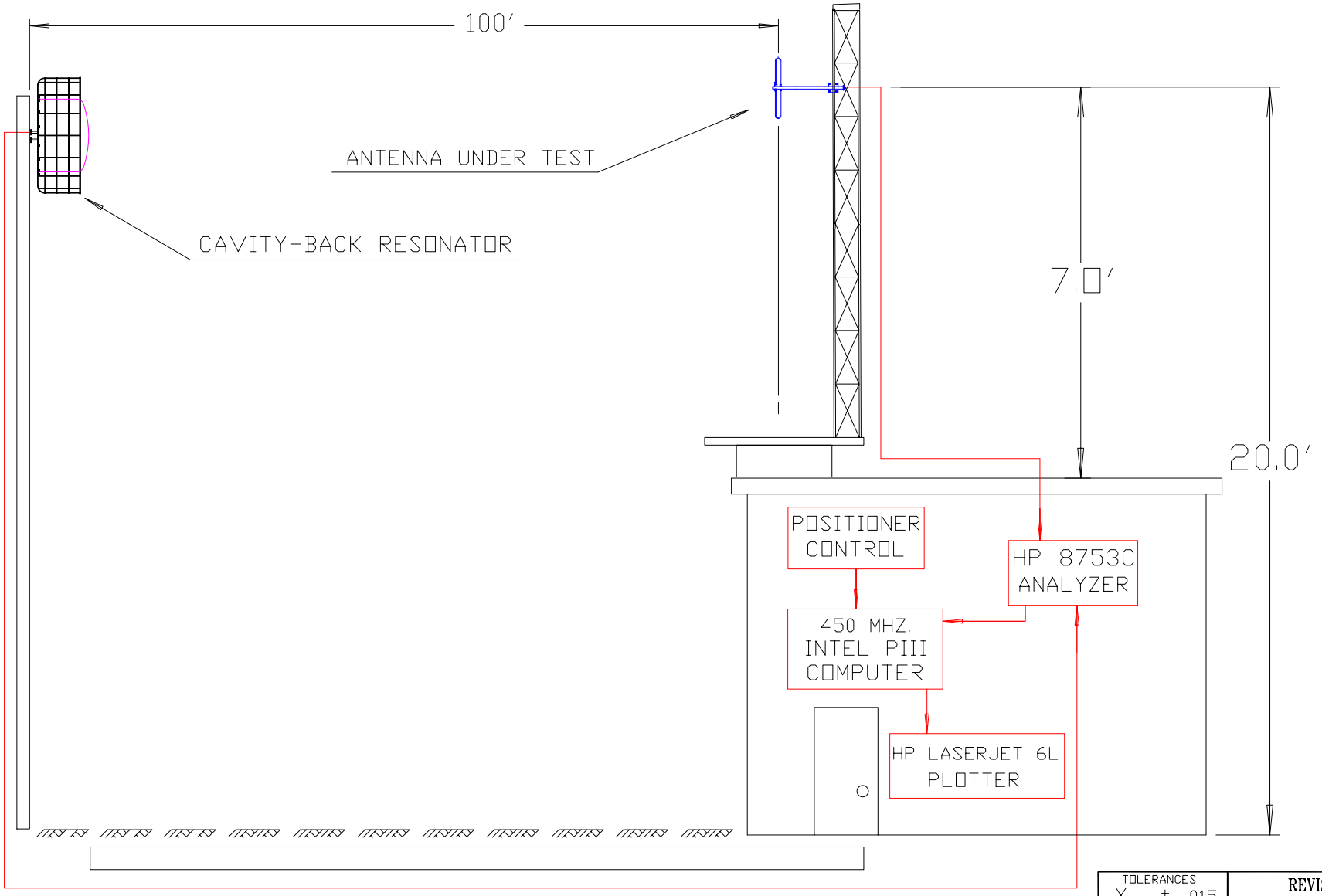
DRAWING NUMBER: 1251D01

SCALE: NTS | NAME: RAC | DATE: 12/8/08 | SHEET 1 OF 1

NOTE:

Exhibit 7: Test Range Schematic

DRAWING NUMBER: 2105A10



TOLERANCES	
.X	± .015
.XX	± .005
.XXX	± .002
X/X	± 1/32
DEG.	± 1/2

UNLESS OTHERWISE SPECIFIED

REVISION RECORD

REV	APPROVAL	DATE
2		10/7/05
1		4/30/02

DRAWING NUMBER: 2105A10

SYSTEMS WITH RELIABILITY, INC
619 INDUSTRIAL PARK ROAD
EBENSBURG, PENNSYLVANIA 15931

TITLE: TEST RANGE SCHEMATIC

MATERIAL:

SIZE A

PARTS MADE BY THIS DRAWING

SCALE: NTS | NAME: JRM | DATE: 11/1/98 | SHEET 1 OF 1