SYSTEMS WITH RELIABILITY, LTD.
Broadcast Antenna and Transmission Systems

PATTERN CERTIFICATION

DIRECTIONAL FM ANTENNA
WYFV
August 12, 2005

Call Sign	:	WYFV
Location	:	Cayce, SC
Frequency	:	88.5 MHz
Channel	:	203
Antenna Model	:	FM10/5 -DA
Maximum Antenna Gain		
Horizontal	:	2.0812 / 3.18dB
Vertical	:	3.21257 / 5.07dB

ANTENNA DESCRIPTION

A custom designed **FM10/5 DA** antenna was used to produce the required directional azimuth pattern. Each antenna bay consists of a circularly polarized dipole-radiating element and horizontal and vertical parasitic elements. The array is comprised of **five** bays, that are spaced a **full** wavelength apart, mounted to a tower orientated at **50** degrees from true north.

DESCRIPTION OF TEST PROCEDURE

The test antenna consists of a third-scale antenna. This antenna was mounted to an 12 -inch third-scale model tower with the use of mounting brackets supplied with the finalized antenna. The tower was 20 ft. on a platform. All feed cables are properly grounded during pattern testing.

The source antenna, a vertical/horizontal 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 source antenna was operated in the transmit mode at a frequency of 265.5 MHz. The antenna under test was rotated in a clockwise direction. A gain reference was taken using a dipole tuned to 265.5 MHz. Nowhere does the received signal exceed a maximum to minimum ratio of 15 dB.

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

TEST EQUIPMENT

Network Analyzer	:	Hewlett Packard Model # 8753C Serial Number : 08753 – 69138 Calibrated 4/26/05, SWR, Inc.
Computer	:	450 MHz Intel PIII
Plotter	:	Hewlett-Packard Laser Jet 6L
Positioner	:	Antenna Positioner Orbit AL-860-1 Position Controller Orbit AL-4901-3A Calibrated 1/06/05, SWR, Inc.

Prepared by:

Jagannath G Shanbhag
Electrical Engineer
Department of Engineering
SWR Inc.

TEST RESULTS

The attached calculation verifies that the percentage of the designed antenna pattern filled to the proposed pattern authorized in the related construction permit **BPED-20050225AAW** is **88.85%.**
The vertical component **RMS** value is **0.558**
The horizontal component **RMS** value is **0.693**.
The circular component **RMS** value is **0.714**

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

Measured horizontal polarized directivity	**:**	**2.0812/ 3.18 dB**
Measured vertical polarized directivity	**:**	**3.21257/5.07 dB**
Measured composite azimuth pattern directivity	**:**	**1.96523/2.93 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:
H-Pol. Gain = (2.0812)(5.190)(0.606859) = **6.555/ 8.166 dB**
V-Pol. Gain = (3.2157)(5.190)(0.393141) = **6.555/ 8.166 dB**

INSTALLATION AND MOUNTING

The antenna is to be mounted in accordance with the supplied drawings. The antenna center of radiation is to be **37.85 *meters*** above ground level. The antenna aperture (Parasitic System included) is **44.456 *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 **50 *degrees*** true North.

The 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**
0545D00	ANTENNA ASSEMBLY
0545D01	ANTENNA ORIENTATION
0545D02	PARASITIC PLACEMENT
2105A10	TEST RANGE SCHEMATIC

The array shall be mounted according to **DWG. 0545D00.** The antenna elements shall be aligned at the same heading as in **DWG. 0482D01**. The Parasitic Assembly is shown in **DWG. 0545D02**. This will ensure that the antenna is oriented properly at **50** degrees true north.

SYSTEMS WITH RELIABILITY, INC.
Broadcast Antennas and Transmission Systems

WYFV Antenna RMS Comparison

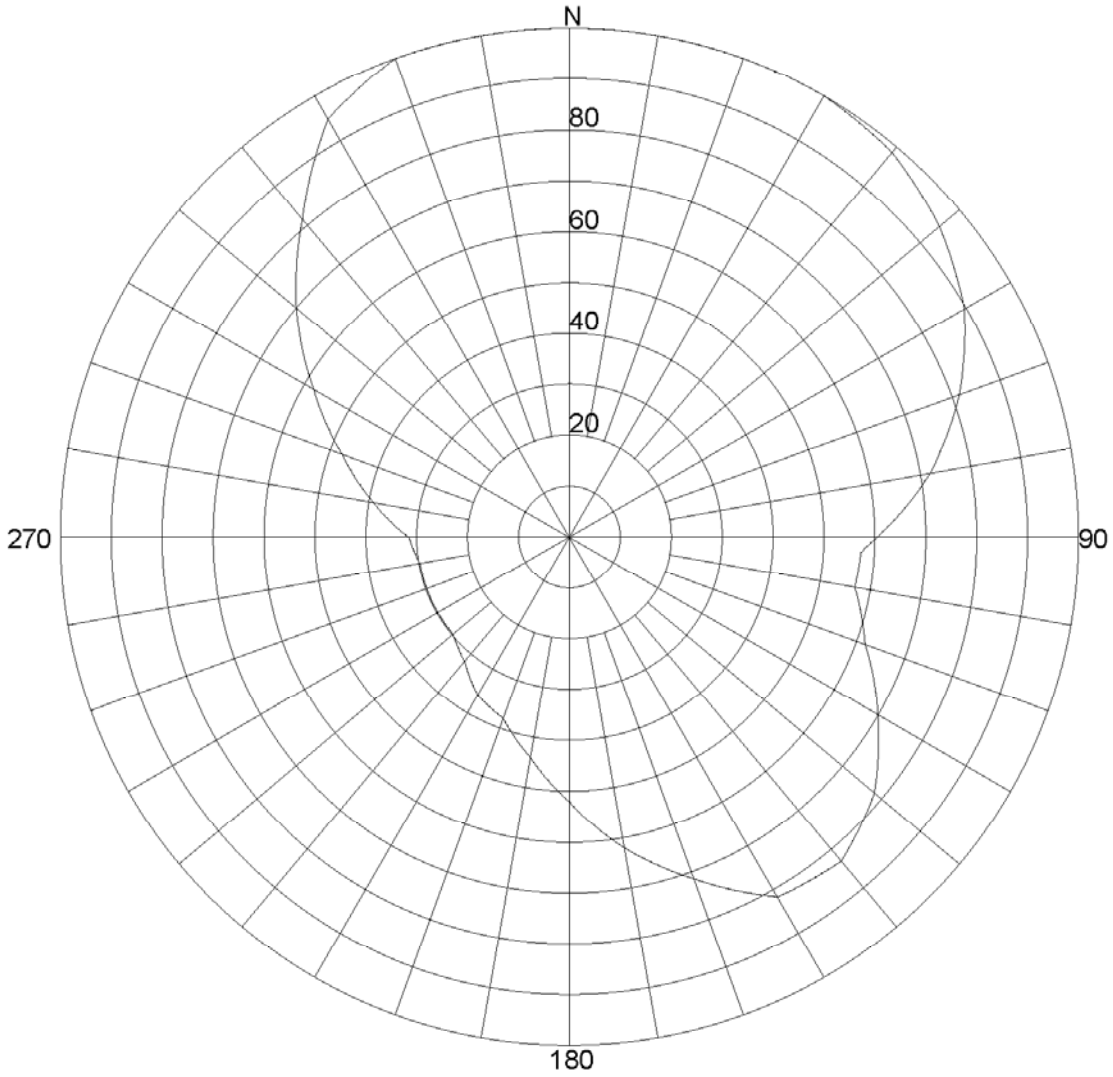
PROPOSED ANTENNA	
Azimuth Heading	Relative Field
0	1.000
10	1.000
20	1.000
30	1.000
40	1.000
50	1.000
60	1.000
70	0.862
80	0.725
90	0.646
100	0.669
110	0.709
120	0.842
130	1.000
140	1.000
150	1.000
160	1.000
170	0.967
180	0.777
190	0.624
200	0.502
210	0.422
220	0.366
230	0.355
240	0.317
250	0.299
260	0.299

DESIGNED ANTENNA	
Azimuth Heading	Relative Field
0	1.000
10	1.000
20	1.000
30	1.000
40	0.986
50	0.949
60	0.896
70	0.815
80	0.719
90	0.604
100	0.569
110	0.618
120	0.700
130	0.782
140	0.831
150	0.817
160	0.715
170	0.620
180	0.520
190	0.440
200	0.380
210	0.360
220	0.320
230	0.298
240	0.298
250	0.298
260	0.298

PROPOSED ANTENNA	
Azimuth Heading	**Relative Field**
270	0.372
280	0.463
290	0.576
300	0.717
310	0.892
320	1.000
330	1.000
340	1.000
350	1.000
Sum of Relative Field Squared :	23.237
Sum Divided by 36 (Readings) :	0.645
Square Root :	0.803

DESIGNED ANTENNA	
Azimuth Heading	**Relative Field**
270	0.315
280	0.390
290	0.475
300	0.580
310	0.700
320	0.816
330	0.948
340	1.000
350	1.000
Sum of Relative Field Squared :	18.346
Sum Divided by 36 (Readings) :	0.510
Square Root :	0.714

Percentage of Construction Permit Antenna Filled : 88.85%



Azimuth Pattern

Scale: Linear

Unit: Relative Field

Systems With Reliability

CLIENT: *Bible Broadcasting Network, WYFV*

Date: 8/13/2005

ANTENNA TYPE: FM10/5 DA

FREQUENCY: 88.5 MHz

PATTERN POL.: Circular

CIRCULARITY(+/-dB):

AZ. DIRECTIVITY: 1.96523 / 2.93 dB

PATTERN RMS: *0.714*

Micro-Tek Eng. Ver. 2000

Relative Field Tabulation(Azimuth)

Azimuth Heading	Relative Field(dB)	Azimuth Heading	Relatve Field(dB)
0	1.0000 (0.01)	180	.5200 (-5.66)
5	1.0000 (0.01)	185	.4800 (-6.36)
10	1.0000 (0.01)	190	.4400 (-7.11)
15	1.0000 (0.01)	195	.4100 (-7.72)
20	1.0000 (0.01)	200	.3800 (-8.38)
25	1.0000 (0.01)	205	.3700 (-8.61)
30	1.0000 (0.01)	210	.3600 (-8.85)
35	.9930 (-0.05)	215	.3400 (-9.34)
40	.9860 (-0.11)	220	.3200 (-9.87)
45	.9675 (-0.28)	225	.3090 (-10.17)
50	.9490 (-0.45)	230	.2980 (-10.49)
55	.9225 (-0.69)	235	.2980 (-10.49)
60	.8960 (-0.94)	240	.2980 (-10.49)
65	.8555 (-1.35)	245	.2980 (-10.49)
70	.8150 (-1.77)	250	.2980 (-10.49)
75	.7670 (-2.29)	255	.2980 (-10.49)
80	.7190 (-2.85)	260	.2980 (-10.49)
85	.6615 (-3.58)	265	.3065 (-10.24)
90	.6040 (-4.36)	270	.3150 (-10.01)
95	.5720 (-4.84)	275	.3525 (-9.03)
100	.5690 (-4.88)	280	.3900 (-8.16)
105	.5935 (-4.52)	285	.4325 (-7.26)
110	.6180 (-4.17)	290	.4750 (-6.45)
115	.6590 (-3.61)	295	.5275 (-5.54)
120	.7000 (-3.09)	300	.5800 (-4.72)
125	.7410 (-2.59)	305	.6400 (-3.86)
130	.7820 (-2.12)	310	.7000 (-3.09)
135	.8065 (-1.86)	315	.7580 (-2.4)
140	.8310 (-1.6)	320	.8160 (-1.76)
145	.8240 (-1.67)	325	.8820 (-1.08)
150	.8170 (-1.74)	330	.9480 (-0.45)
155	.7660 (-2.3)	335	.9740 (-0.22)
160	.7150 (-2.9)	340	1.0000 (0.01)
165	.6675 (-3.5)	345	1.0000 (0.01)
170	.6200 (-4.14)	350	1.0000 (0.01)
175	.5700 (-4.87)	355	1.0000 (0.01)

Systems With Reliability

CLIENT: *Bible Broadcasting Network, WYFV*

Date: 8/13/2005

ANTENNA TYPE: FM10/5 DA

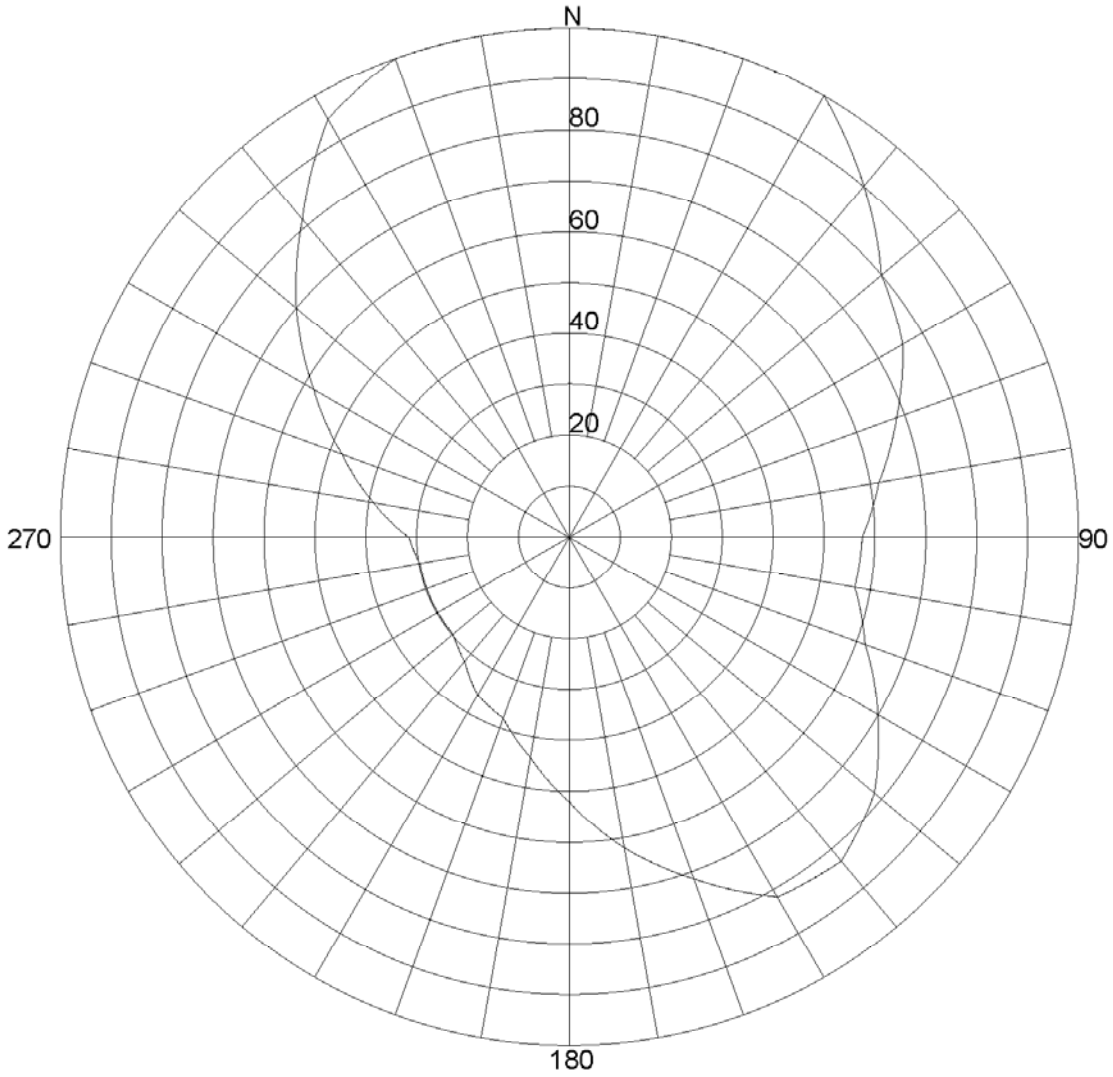
FREQUENCY: 88.5 MHz

PATTERN POL.: Circular

CIRCULARITY(+/-dB):

AZ. DIRECTIVITY: 1.96523 / 2.93 dB

PATTERN RMS: *0.713*



Azimuth Pattern

Scale: Linear

Unit: Relative Field

Systems With Reliability

CLIENT: *Bible Broadcasting Network, WYFV*

Date: 8/13/2005

ANTENNA TYPE: FM10/5 DA

FREQUENCY: 88.5 MHz

PATTERN POL.: Horizontal

CIRCULARITY(+/-dB):

AZ. DIRECTIVITY: 2.0812 / 3.18dB

PATTERN RMS: *0.693*

Micro-Tek Eng. Ver. 2000

Relative Field Tabulation(Azimuth)

Azimuth Heading	Relative Field(dB)	Azimuth Heading	Relatve Field(dB)
0	1.0000 (0.01)	180	.5200 (-5.66)
5	1.0000 (0.01)	185	.4800 (-6.36)
10	1.0000 (0.01)	190	.4400 (-7.11)
15	1.0000 (0.01)	195	.4100 (-7.72)
20	1.0000 (0.01)	200	.3800 (-8.38)
25	1.0000 (0.01)	205	.3700 (-8.61)
30	1.0000 (0.01)	210	.3600 (-8.85)
35	.9500 (-0.44)	215	.3400 (-9.34)
40	.9000 (-0.91)	220	.3200 (-9.87)
45	.8500 (-1.4)	225	.3090 (-10.17)
50	.8000 (-1.93)	230	.2980 (-10.49)
55	.7780 (-2.17)	235	.2980 (-10.49)
60	.7560 (-2.42)	240	.2980 (-10.49)
65	.7200 (-2.84)	245	.2980 (-10.49)
70	.6840 (-3.29)	250	.2980 (-10.49)
75	.6505 (-3.72)	255	.2980 (-10.49)
80	.6170 (-4.18)	260	.2980 (-10.49)
85	.5960 (-4.48)	265	.3065 (-10.24)
90	.5750 (-4.79)	270	.3150 (-10.01)
95	.5720 (-4.84)	275	.3525 (-9.03)
100	.5690 (-4.88)	280	.3900 (-8.16)
105	.5935 (-4.52)	285	.4325 (-7.26)
110	.6180 (-4.17)	290	.4750 (-6.45)
115	.6590 (-3.61)	295	.5275 (-5.54)
120	.7000 (-3.09)	300	.5800 (-4.72)
125	.7410 (-2.59)	305	.6400 (-3.86)
130	.7820 (-2.12)	310	.7000 (-3.09)
135	.8065 (-1.86)	315	.7580 (-2.4)
140	.8310 (-1.6)	320	.8160 (-1.76)
145	.8240 (-1.67)	325	.8820 (-1.08)
150	.8170 (-1.74)	330	.9480 (-0.45)
155	.7660 (-2.3)	335	.9740 (-0.22)
160	.7150 (-2.9)	340	1.0000 (0.01)
165	.6675 (-3.5)	345	1.0000 (0.01)
170	.6200 (-4.14)	350	1.0000 (0.01)
175	.5700 (-4.87)	355	1.0000 (0.01)

Systems With Reliability

CLIENT: *Bible Broadcasting Network, WYFV*

Date: 8/13/2005

ANTENNA TYPE: FM10/5 DA

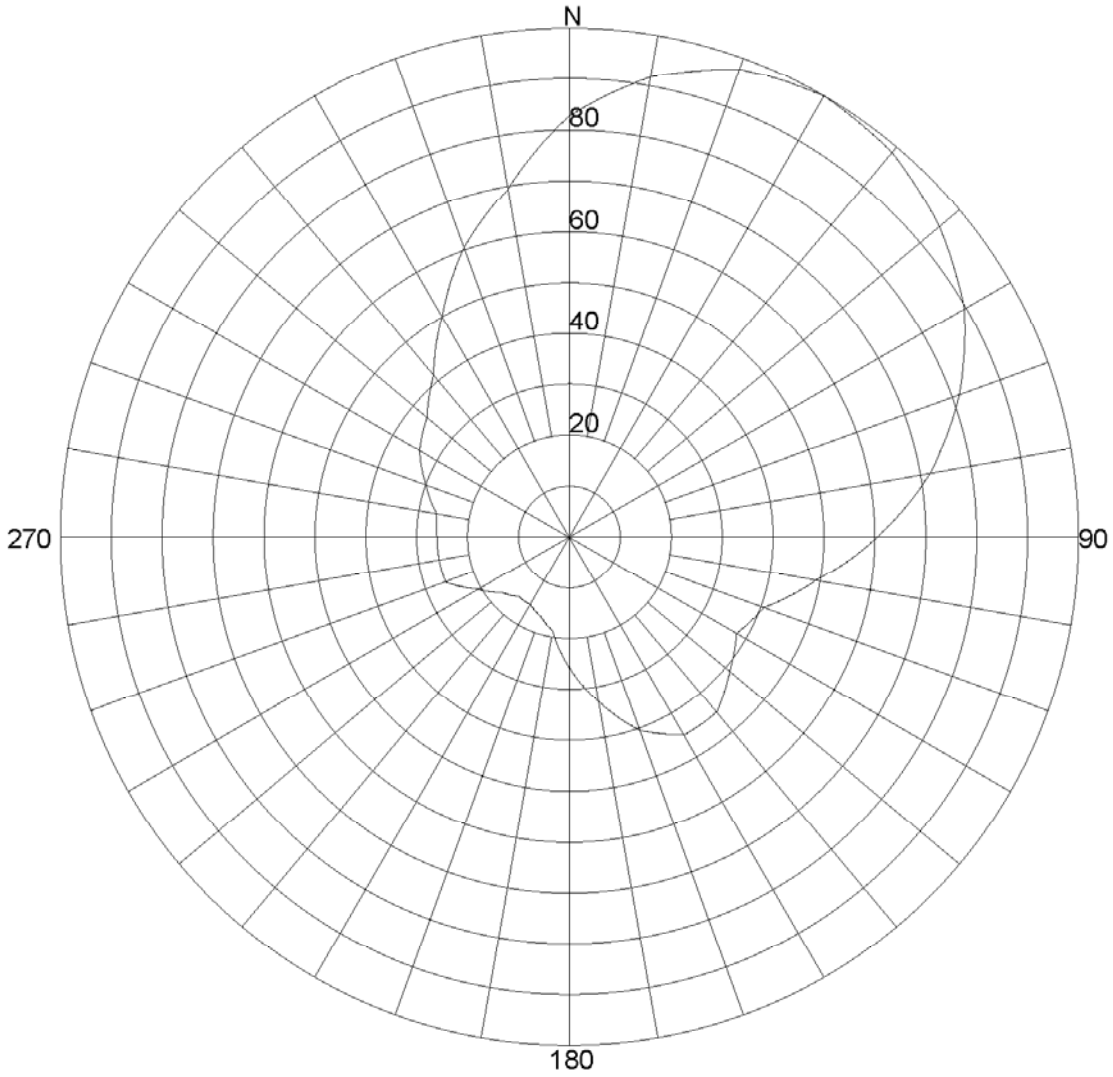
FREQUENCY: 88.5 MHz

PATTERN POL.: Horizontal

CIRCULARITY(+/-dB):

AZ. DIRECTIVITY: 2.0812 / 3.18dB

PATTERN RMS: *0.693*



Azimuth Pattern

Scale: Linear

Unit: Relative Field

Systems With Reliability

CLIENT: *Bible Broadcasting Network, WYFV*

Date: 8/13/2005

ANTENNA TYPE: FM10/5 DA

FREQUENCY: 88.5 MHz

PATTERN POL.: Vertical

CIRCULARITY(+/-dB):

AZ. DIRECTIVITY: 3.21257 / 5.07dB

PATTERN RMS: *0.558*

Micro-Tek Eng. Ver. 2000

Relative Field Tabulation(Azimuth)

Azimuth Heading	Relative Field(dB)	Azimuth Heading	Relatve Field(dB)
0	.8270 (-1.64)	180	.2570 (-11.77)
5	.8720 (-1.18)	185	.2225 (-13.01)
10	.9170 (-0.74)	190	.1880 (-14.47)
15	.9475 (-0.46)	195	.1770 (-14.99)
20	.9780 (-0.18)	200	.1660 (-15.55)
25	.9890 (-0.09)	205	.1600 (-15.86)
30	1.0000 (0.01)	210	.1540 (-16.19)
35	.9930 (-0.05)	215	.1540 (-16.19)
40	.9860 (-0.11)	220	.1540 (-16.19)
45	.9675 (-0.28)	225	.1625 (-15.73)
50	.9490 (-0.45)	230	.1710 (-15.29)
55	.9225 (-0.69)	235	.1885 (-14.45)
60	.8960 (-0.94)	240	.2060 (-13.68)
65	.8555 (-1.35)	245	.2325 (-12.63)
70	.8150 (-1.77)	250	.2590 (-11.7)
75	.7670 (-2.29)	255	.2595 (-11.68)
80	.7190 (-2.85)	260	.2600 (-11.67)
85	.6615 (-3.58)	265	.2600 (-11.67)
90	.6040 (-4.36)	270	.2600 (-11.67)
95	.5475 (-5.22)	275	.2625 (-11.58)
100	.4910 (-6.16)	280	.2650 (-11.5)
105	.4485 (-6.95)	285	.2825 (-10.95)
110	.4060 (-7.81)	290	.3000 (-10.43)
115	.3925 (-8.1)	295	.3200 (-9.87)
120	.3790 (-8.4)	300	.3400 (-9.34)
125	.3950 (-8.05)	305	.3525 (-9.03)
130	.4110 (-7.7)	310	.3650 (-8.73)
135	.4305 (-7.3)	315	.3900 (-8.16)
140	.4500 (-6.92)	320	.4150 (-7.62)
145	.4500 (-6.92)	325	.4575 (-6.77)
150	.4500 (-6.92)	330	.5000 (-6)
155	.4275 (-7.36)	335	.5525 (-5.14)
160	.4050 (-7.83)	340	.6050 (-4.35)
165	.3670 (-8.68)	345	.6500 (-3.73)
170	.3290 (-9.63)	350	.6950 (-3.15)
175	.2930 (-10.63)	355	.7610 (-2.36)

Systems With Reliability

CLIENT: *Bible Broadcasting Network, WYFV*

Date: 8/13/2005

ANTENNA TYPE: FM10/5 DA

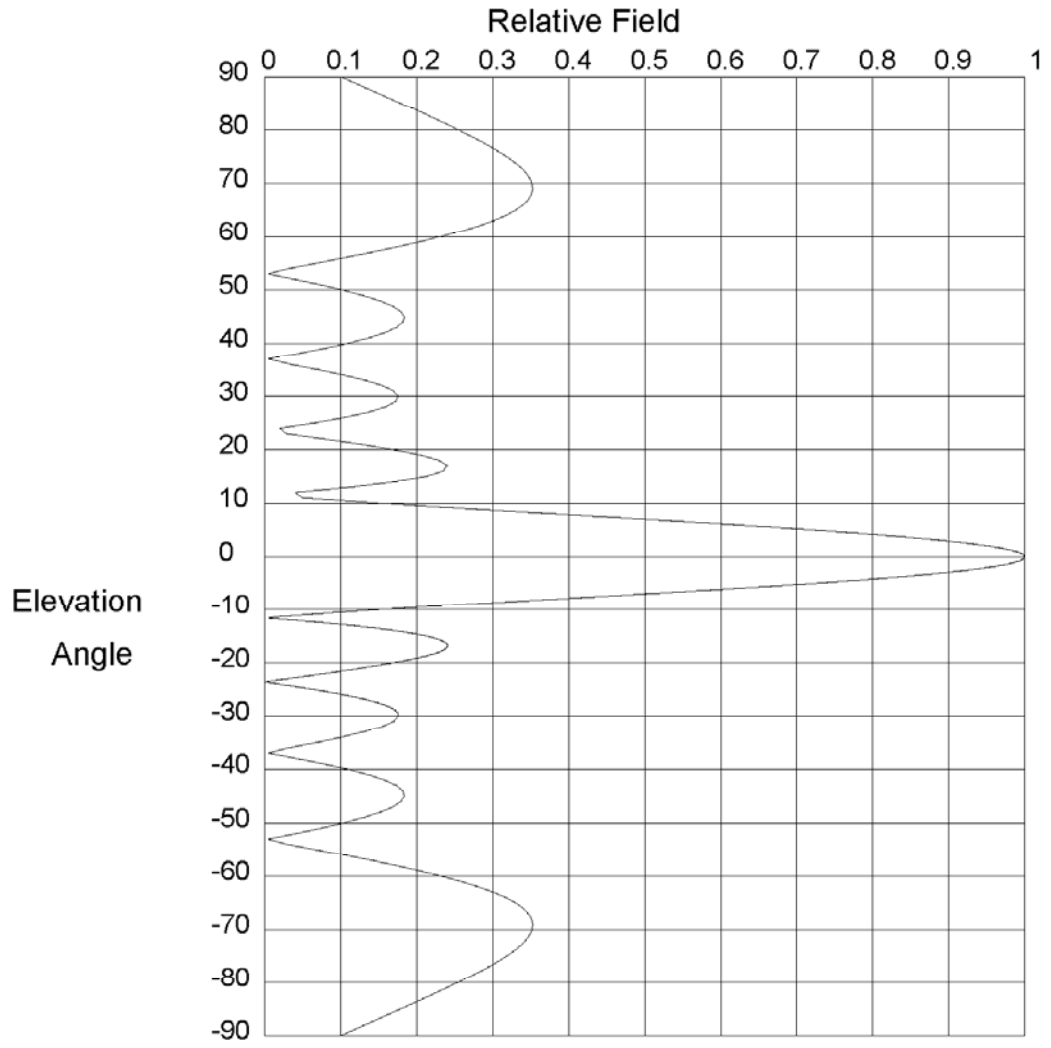
FREQUENCY: 88.5 MHz

PATTERN POL.: Vertical

CIRCULARITY(+/-dB):

AZ. DIRECTIVITY: 3.21257 / 5.07dB

PATTERN RMS: *0.558*



Elevation Pattern

Scale: Linear

Units: Field, Relative

Systems With Reliability

CLIENT: *Bible Broadcasting Network, WYFV*

Date: 6/3/2005

ANTENNA TYPE: FM10/5 DA

FREQUENCY: 88.5

PATTERN POL.: Circular

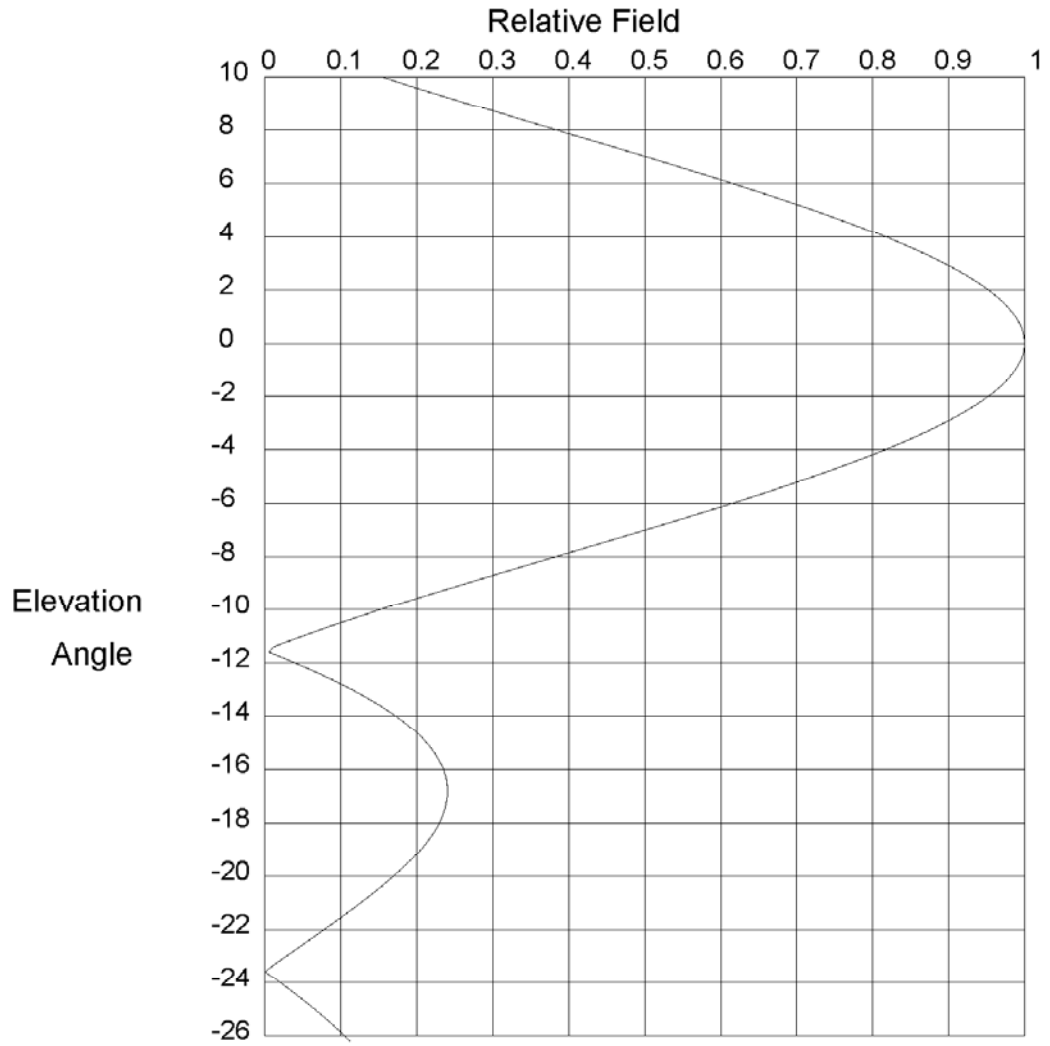
DIRECTIVITY(Peak): 5.19/7.152 dBd

Beam Tilt (Deg.) : *0*

DIRECTIVITY(Horiz): 5.19/7.152 dBd

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

Micro-Tek Eng. Ver. 2000



Elevation Pattern

Scale: Linear

Units: Field, Relative

Systems With Reliability

CLIENT: *Bible Broadcasting Network, WYFV*

Date: 6/3/2005

ANTENNA TYPE: FM10/5 DA

FREQUENCY: 88.5

PATTERN POL.: Circular

DIRECTIVITY(Peak): 5.19/7.152 dBd

Beam Tilt (Deg.) : *0*

DIRECTIVITY(Horiz): 5.19/7.152 dBd

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

Micro-Tek Eng. Ver. 2000

Relative Field Tabulation

Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)
3.2	.88 (-1.111)	-4.4	.78 (-2.154)	-12.0	.04 (-27.96)
3.0	.894 (-0.973)	-4.6	.762 (-2.366)	-12.2	.056 (-24.995)
2.8	.907 (-0.845)	-4.8	.742 (-2.59)	-12.4	.072 (-22.864)
2.6	.92 (-0.727)	-5.0	.722 (-2.827)	-12.6	.087 (-21.218)
2.4	.931 (-0.617)	-5.2	.702 (-3.077)	-12.8	.101 (-19.891)
2.2	.942 (-0.518)	-5.4	.681 (-3.34)	-13.0	.115 (-18.791)
2.0	.952 (-0.427)	-5.6	.659 (-3.617)	-13.2	.128 (-17.861)
1.8	.961 (-0.345)	-5.8	.638 (-3.909)	-13.4	.14 (-17.063)
1.6	.969 (-0.272)	-6.0	.616 (-4.215)	-13.6	.152 (-16.373)
1.4	.976 (-0.208)	-6.2	.593 (-4.538)	-13.8	.163 (-15.771)
1.2	.983 (-0.153)	-6.4	.57 (-4.878)	-14.0	.173 (-15.244)
1.0	.988 (-0.106)	-6.6	.547 (-5.235)	-14.2	.182 (-14.782)
.8	.992 (-0.068)	-6.8	.524 (-5.612)	-14.4	.191 (-14.375)
.6	.996 (-0.038)	-7.0	.501 (-6.008)	-14.6	.199 (-14.018)
.4	.998 (-0.017)	-7.2	.477 (-6.427)	-14.8	.206 (-13.706)
.2	1.00 (-0.004)	-7.4	.454 (-6.868)	-15.0	.213 (-13.434)
.0	1.00 (0)	-7.6	.43 (-7.335)	-15.2	.219 (-13.199)
-.2	1.00 (-0.004)	-7.8	.406 (-7.828)	-15.4	.224 (-12.997)
-.4	.998 (-0.017)	-8.0	.382 (-8.351)	-15.6	.228 (-12.828)
-.6	.996 (-0.038)	-8.2	.359 (-8.907)	-15.8	.232 (-12.688)
-.8	.992 (-0.068)	-8.4	.335 (-9.499)	-16.0	.235 (-12.576)
-1.0	.988 (-0.106)	-8.6	.311 (-10.131)	-16.2	.237 (-12.49)
-1.2	.983 (-0.153)	-8.8	.288 (-10.808)	-16.4	.239 (-12.43)
-1.4	.976 (-0.208)	-9.0	.265 (-11.537)	-16.6	.24 (-12.395)
-1.6	.969 (-0.272)	-9.2	.242 (-12.325)	-16.8	.24 (-12.383)
-1.8	.961 (-0.345)	-9.4	.219 (-13.181)	-17.0	.24 (-12.394)
-2.0	.952 (-0.427)	-9.6	.197 (-14.119)	-17.2	.239 (-12.429)
-2.2	.942 (-0.518)	-9.8	.175 (-15.154)	-17.4	.238 (-12.486)
-2.4	.931 (-0.617)	-10.0	.153 (-16.311)	-17.6	.235 (-12.565)
-2.6	.92 (-0.727)	-10.2	.132 (-17.621)	-17.8	.233 (-12.667)
-2.8	.907 (-0.845)	-10.4	.11 (-19.133)	-18.0	.229 (-12.791)
-3.0	.894 (-0.973)	-10.6	.09 (-20.923)	-18.2	.225 (-12.938)
-3.2	.88 (-1.111)	-10.8	.07 (-23.123)	-18.4	.221 (-13.107)
-3.4	.865 (-1.258)	-11.0	.05 (-25.993)	-18.6	.216 (-13.301)
-3.6	.85 (-1.416)	-11.2	.031 (-30.166)	-18.8	.211 (-13.518)
-3.8	.833 (-1.584)	-11.4	.012 (-38.116)	-19.0	.205 (-13.761)
-4.0	.816 (-1.763)	-11.6	.006 (-44.992)	-19.2	.199 (-14.03)
-4.2	.799 (-1.953)	-11.8	.023 (-32.725)	-19.4	.192 (-14.326)

Systems With Reliability

CLIENT: *Bible Broadcasting Network, WYFV*

Date: 6/3/2005

ANTENNA TYPE: FM10/5 DA

FREQUENCY: 88.5

PATTERN POL.: Circular

DIRECTIVITY(Peak): 5.19/7.152 dBd

Beam Tilt (Deg.) : *0*

DIRECTIVITY(Horiz): 5.19/7.152 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	.185 (-14.651)	-27.2	.142 (-16.953)	-54.0	.031 (-30.047)
-19.8	.178 (-15.007)	-27.4	.147 (-16.657)	-55.0	.068 (-23.366)
-20.0	.17 (-15.395)	-27.6	.152 (-16.392)	-56.0	.104 (-19.67)
-20.2	.162 (-15.819)	-27.8	.156 (-16.155)	-57.0	.139 (-17.153)
-20.4	.153 (-16.282)	-28.0	.159 (-15.946)	-58.0	.172 (-15.287)
-20.6	.145 (-16.786)	-28.2	.163 (-15.762)	-59.0	.203 (-13.842)
-20.8	.136 (-17.338)	-28.4	.166 (-15.603)	-60.0	.232 (-12.698)
-21.0	.127 (-17.942)	-28.6	.169 (-15.466)	-61.0	.258 (-11.782)
-21.2	.117 (-18.606)	-28.8	.171 (-15.352)	-62.0	.28 (-11.047)
-21.4	.108 (-19.339)	-29.0	.173 (-15.259)	-63.0	.30 (-10.46)
-21.6	.098 (-20.153)	-29.2	.174 (-15.187)	-64.0	.316 (-9.997)
-21.8	.088 (-21.063)	-29.4	.175 (-15.135)	-65.0	.33 (-9.642)
-22.0	.079 (-22.091)	-29.6	.176 (-15.102)	-66.0	.34 (-9.38)
-22.2	.069 (-23.266)	-29.8	.176 (-15.089)	-67.0	.347 (-9.201)
-22.4	.059 (-24.632)	-30.0	.176 (-15.095)	-68.0	.351 (-9.096)
-22.6	.049 (-26.26)	-31.0	.17 (-15.409)	-69.0	.352 (-9.057)
-22.8	.039 (-28.265)	-32.0	.155 (-16.215)	-70.0	.352 (-9.079)
-23.0	.029 (-30.87)	-33.0	.132 (-17.594)	-71.0	.348 (-9.157)
-23.2	.019 (-34.588)	-34.0	.103 (-19.746)	-72.0	.343 (-9.286)
-23.4	.009 (-41.163)	-35.0	.069 (-23.177)	-73.0	.336 (-9.464)
-23.6	.001 (-59.447)	-36.0	.033 (-29.676)	-74.0	.328 (-9.688)
-23.8	.011 (-39.355)	-37.0	.005 (-46.165)	-75.0	.318 (-9.955)
-24.0	.02 (-33.83)	-38.0	.042 (-27.5)	-76.0	.307 (-10.264)
-24.2	.03 (-30.522)	-39.0	.077 (-22.23)	-77.0	.295 (-10.613)
-24.4	.039 (-28.17)	-40.0	.109 (-19.243)	-78.0	.282 (-11.003)
-24.6	.048 (-26.355)	-41.0	.136 (-17.315)	-79.0	.268 (-11.433)
-24.8	.057 (-24.885)	-42.0	.158 (-16.038)	-80.0	.254 (-11.905)
-25.0	.066 (-23.657)	-43.0	.173 (-15.231)	-81.0	.239 (-12.419)
-25.2	.074 (-22.61)	-44.0	.182 (-14.802)	-82.0	.224 (-12.979)
-25.4	.082 (-21.702)	-45.0	.184 (-14.706)	-83.0	.209 (-13.588)
-25.6	.09 (-20.906)	-46.0	.179 (-14.928)	-84.0	.194 (-14.251)
-25.8	.098 (-20.202)	-47.0	.168 (-15.477)	-85.0	.178 (-14.975)
-26.0	.105 (-19.575)	-48.0	.151 (-16.392)	-86.0	.163 (-15.77)
-26.2	.112 (-19.014)	-49.0	.129 (-17.759)	-87.0	.147 (-16.648)
-26.4	.119 (-18.511)	-50.0	.103 (-19.753)	-88.0	.131 (-17.628)
-26.6	.125 (-18.059)	-51.0	.073 (-22.772)	-89.0	.116 (-18.733)
-26.8	.131 (-17.651)	-52.0	.04 (-28.037)	-90.0	.10 (-20)
-27.0	.137 (-17.284)	-53.0	.005 (-46.648)	90.0	.00 (-50)

Systems With Reliability

CLIENT: *Bible Broadcasting Network, WYFV*

Date: 6/3/2005

ANTENNA TYPE: FM10/5 DA

FREQUENCY: 88.5

PATTERN POL.: Circular

DIRECTIVITY(Peak): 5.19/7.152 dBd

Beam Tilt (Deg.) : *0*

DIRECTIVITY(Horiz): 5.19/7.152 dBd

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

(800) 762-7743 (814)472-5436 Fax: (814) 472-5552

SYSTEMS WITH RELIABILITY, Inc.

Broadcast Antenna & Transmission Systems

SYSTEM DATA SHEET

Customer	Bible Broadcasting Network, WYFV
Contact	Michael Raley
Location	Cayce, SC
Antenna Model	FM10/5 DA
Channel / Frequency	88.5 MHz

ELECTRICAL SPECIFICATION

Polarization Type	Circular	
Polarization Ratio		
H-Pol. (PRH)	60.6859	%
V-Pol. (PRV)	39.3141	%
Elevation Directivity (ED)	5.190	
Azimuth Directivity (AD) H-Pol.	2.081	
Azimuth Directivity (AD) V-Pol.	3.213	
Antenna Gain (GH)		
H-Pol. (GH)	6.555	
V-Pol. (GV)	6.555	
dB Gain (AG)		
H-Pol (AGH)	8.166	
V-Pol (AGV)	8.166	
ERP		
H-Pol. (ERPH)	50.000	kW
V-Pol. (ERPV)	50.000	kW
Line Type	3"-50 OHM AIR	**HJ8-50B**
Attenuation per 100 ft.	0.135	**dB/100ft**
Line Length (LL)	141.00	**ft.**
Total Line Attenuation	0.19	**dB**
Line Efficiency (LE)	95.71	**%**
Line Loss (LPL)	0.34	**kW**
Antenna Input Power (AIP)	7.63	**kW**
Req'd. Transmitter Output Power	7.97	**kW**

MECHANICAL SPECIFICATION

No. Of Bays	5			
Antenna Aperture	**44.456**	**ft.**	**13.55**	**m**
Center of Radiation AGL	**124.19**	**ft.**	**37.85**	**m**
Antenna Weight	440.00	**lbs.**	200.00	**kg**
Windload (50/33)	605.00	**lbs.**	275.00	**kg**

Prepared by:

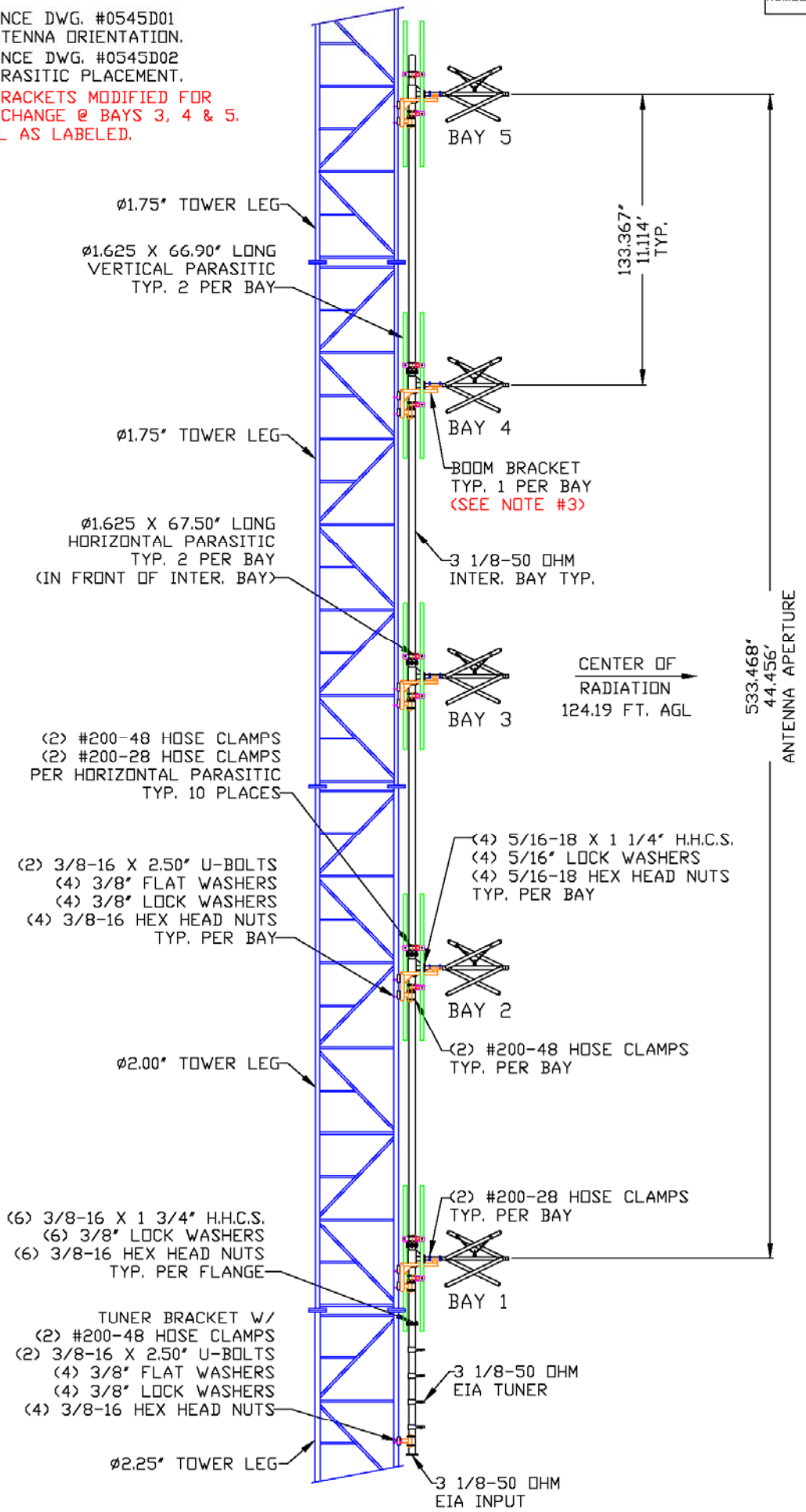
Jagannath G Shanbhag
Electrical Engineer
Department of Engineering
SWR,Inc

8/15/2005

DRAWING NUMBER: 0545D00

NOTES:

1. REFERENCE DWG. #0545D01 FOR ANTENNA ORIENTATION.
2. REFERENCE DWG. #0545D02 FOR PARASITIC PLACEMENT.
3. BOOM BRACKETS MODIFIED FOR LEG ø CHANGE @ BAYS 3, 4 & 5. INSTALL AS LABELED.

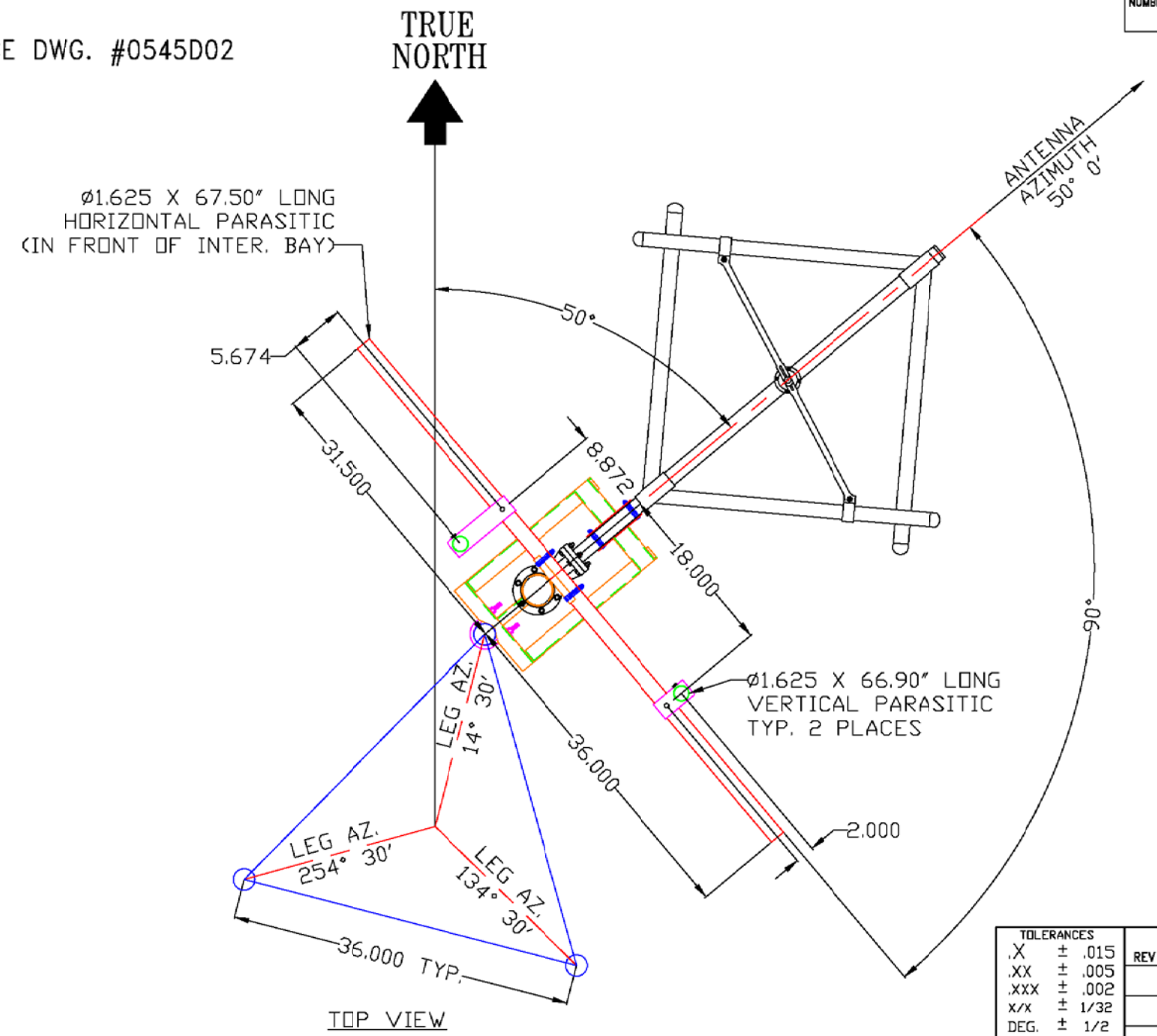


SYSTEMS WITH RELIABILITY, INC 619 INDUSTRIAL PARK ROAD EBENSBURG, PENNSYLVANIA 15931	PROJECT: FM10/5-DA, FREQ. 88.5 WYFV, CAYCE, SC TITLE: ANTENNA ELEVATION	SIZE C	REV	APPR.	DATE	ENGINEER:	DRAWING NUMBER: 0545D00	
			1			SCALE: NTS	NAME: RAC	DATE: 8/25/05 SHEET 1 OF 1
			2					
			3					

NOTE:

REFERENCE DWG. #0545D02

DRAWING NUMBER: 0545D01



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: FM10/5-DA, FREQ. 88.5
WYFV, CAYCE, SC

MATERIAL: ANTENNA ORIENTATION
TOP VIEW

SIZE A

PARTS MADE BY THIS DRAWING

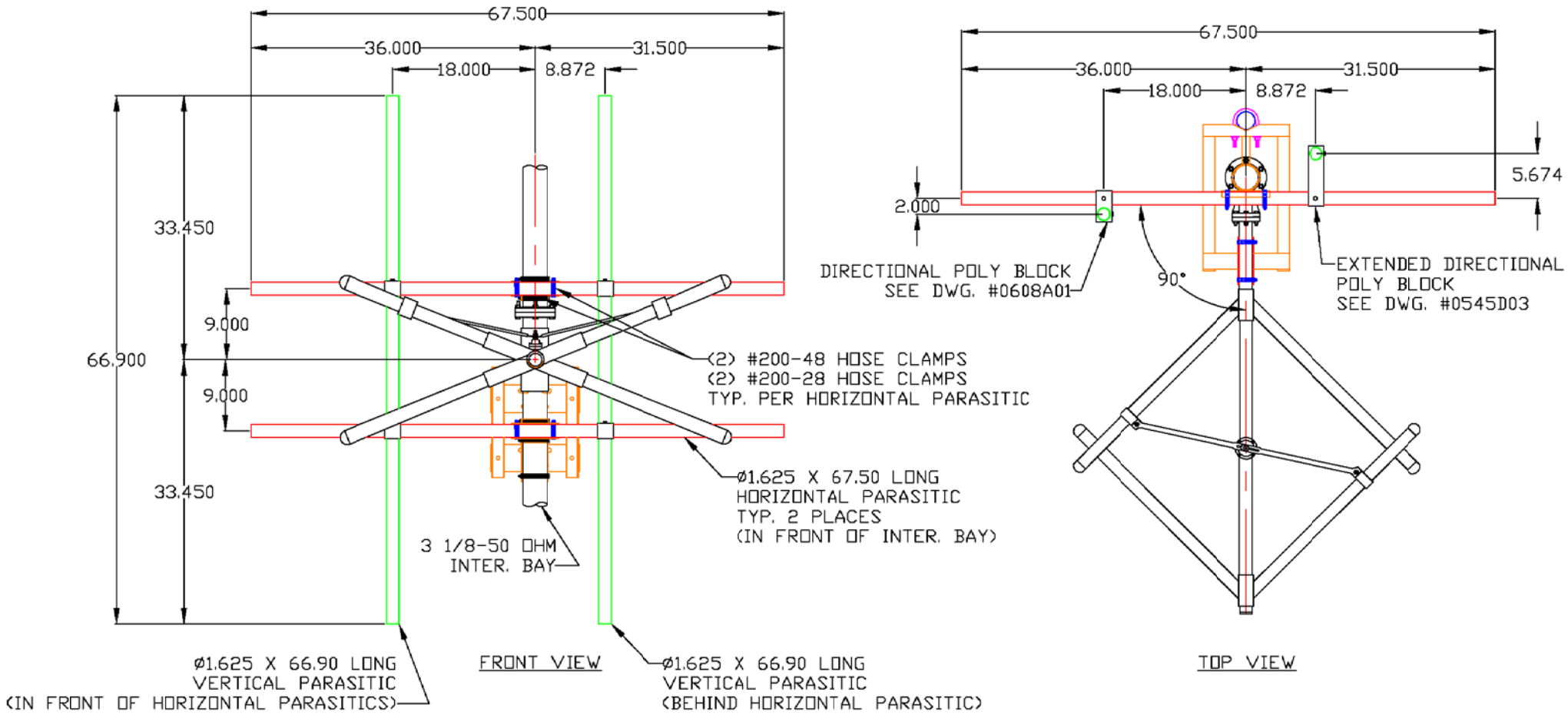
DRAWING NUMBER: 0545D01

SCALE: NTS | NAME: RAC | DATE: 8/25/05 | SHEET 1 OF 1

NOTE:

REFERENCE DWG. #0545D01

DRAWING NUMBER: 0545D02



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: FM10/5-DA, FREQ. 88.5 WYFV, CAYCE, SC

MATERIAL: PARASITIC PLACEMENT TOP & FRONT VIEW

SIZE: A

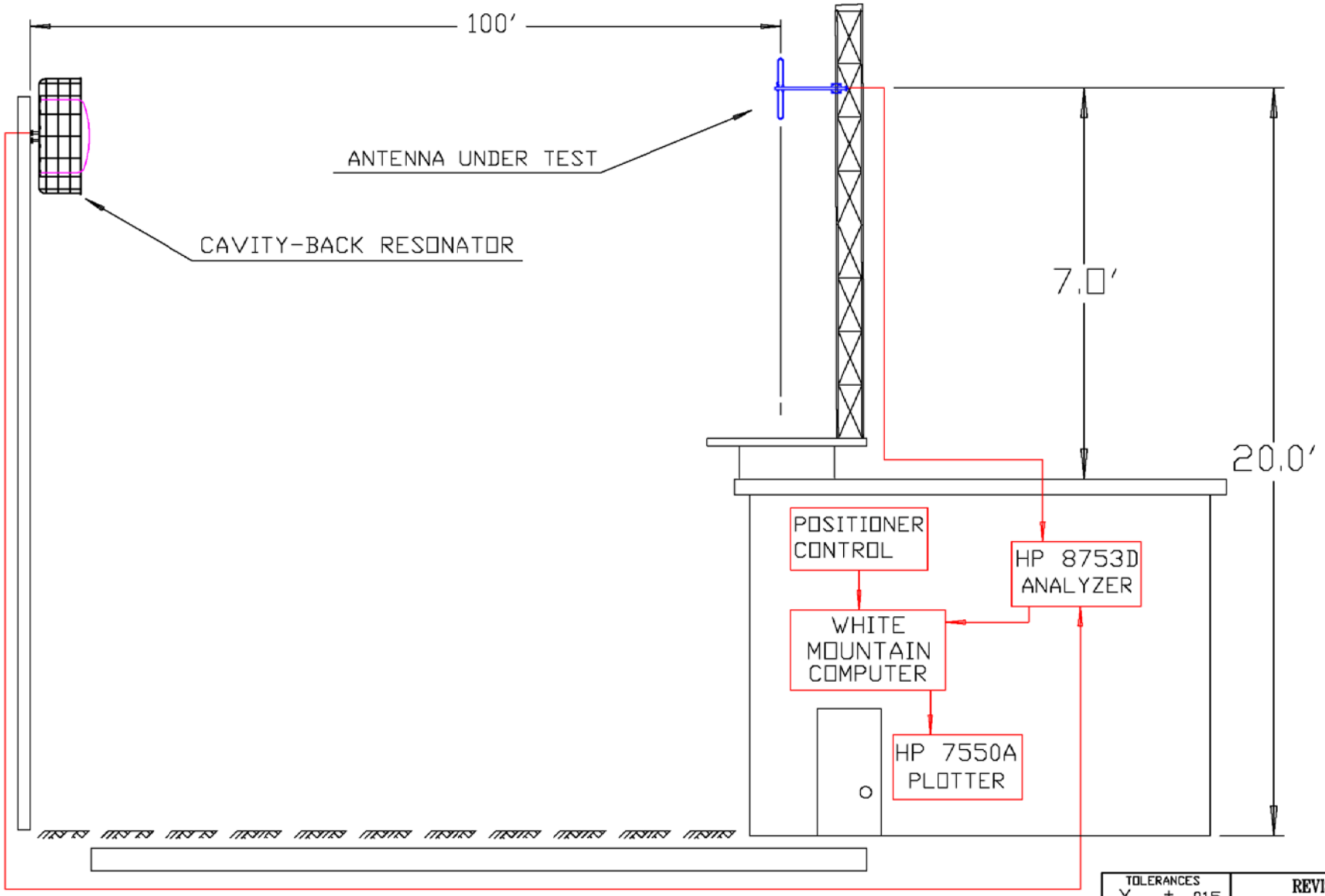
PARTS MADE BY THIS DRAWING

DRAWING NUMBER: 0545D02

SCALE: NTS | NAME: RAC | DATE: 8/25/05 | SHEET 1 OF 1

NOTE:

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
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