



SYSTEMS WITH RELIABILITY, INC.
Broadcast Antennas and Transmission Systems

619 Industrial Park Road PO Box 856 Ebensburg, PA 15931
Phone : 814.472.5436
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PATTERN CERTIFICATION

DIRECTIONAL FM ANTENNA WQRT-FM

October 11, 2001

Station	:	WQRT - FM
Location	:	Salamanca, NY
Frequency	:	98.3 MHz
Channel	:	252
Antenna Model	:	FMEC/5 DA
Maximum Antenna Gain	:	
Horizontal	:	3.6014 / 5.56 dB
Vertical	:	3.6014 / 5.56 dB

ANTENNA DESCRIPTION

A custom designed FMEC antenna was used to produce the required directional pattern. It is a circularly polarized radiating element and is comprised of a five bay-radiating element mounted to a tower leg oriented at 66 degrees true north.

DESCRIPTION OF TEST PROCEDURE

The test antenna is consisted of a one-third-model scale antenna and parasitic system. This antenna was mounted to a model tower of the actual structure where it's intended to be mounted. The tower was mounted 20 ft. on a platform. All feed cables are properly grounded during pattern testing. Horizontal and vertical parasitic elements were used to obtain the desired directional 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 294.9 MHz. The antenna under test was rotated in a clockwise direction. A gain reference was taken using a dipole tuned to 294.9 MHz. Nowhere does the received signal exceed a maximum to minimum of 15 dB.

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DOCUMENT EXHIBITS

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

Exhibit 1	Measured Azimuth Pattern (Composite)
Exhibit 1a	Measured Field Strength Tabulations (Composite)
Exhibit 2	Measured Horizontal Polarized Azimuth Pattern
Exhibit 2a	Measured Field Strength Tabulations (Horizontal)
Exhibit 3	Measured Vertical Polarized Azimuth Pattern
Exhibit 3a	Measure Field Strength Tabulation (Vertical)
Exhibit 4	Elevation Pattern
Exhibit 4a	Elevation Tabulations

TEST EQUIPMENT

Network Analyzer	:	Hewlett Packard Model # 8753C Serial Number : 08753 - 69138
Computer	:	White Mountain 366 Computer
Plotter	:	Hewlett-Packard 7550A
Positioner	:	Orbit Positioner

Prepared by:

KATHLEAH B. OBRERO
SWR, Inc.

TEST RESULTS

The attached calculations verify that the **RMS** value of this antenna is **97.33 %** of the **RMS** value of the pattern authorized in the related construction permit **BPH980817IH**. The vertical component **RMS** value is **0.78** and the horizontal component **RMS** value is also **0.87**.

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

Measured horizontal polarized directivity	:	1.31 / 1.17 dB
Measured vertical polarized directivity	:	1.651 / 2.18 dB
Measured composite azimuth pattern directivity	:	1.1821 / 0.7268 dB

Gain in each polarization was calculated using the following relation:

$$\text{GAIN} = \text{Azimuth Directivity} \times \text{Elevation Directivity} \times \text{Power Ratio Between Polarizations}$$

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

$$\text{H-Pol. Gain} = (1.310)(0.58)(5.19)(0.95) = 3.6014 / 5.56 \text{ dB}$$

$$\text{V-Pol. Gain} = (1.651)(0.44)(5.19)(0.95) = 3.6014 / 5.56 \text{ dB}$$

INSTALLATION AND MOUNTING

The antenna is to be mounted in accordance with the supplied drawings. The antenna center of radiation is to be **107 meters** above ground level. The antenna aperture is **480.28 inches**. The antenna is to be mounted on the **leg** pointing at **134 degrees** true north and oriented **194 degrees** true north.

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

DRAWING NO.

0359-C01

0359-C

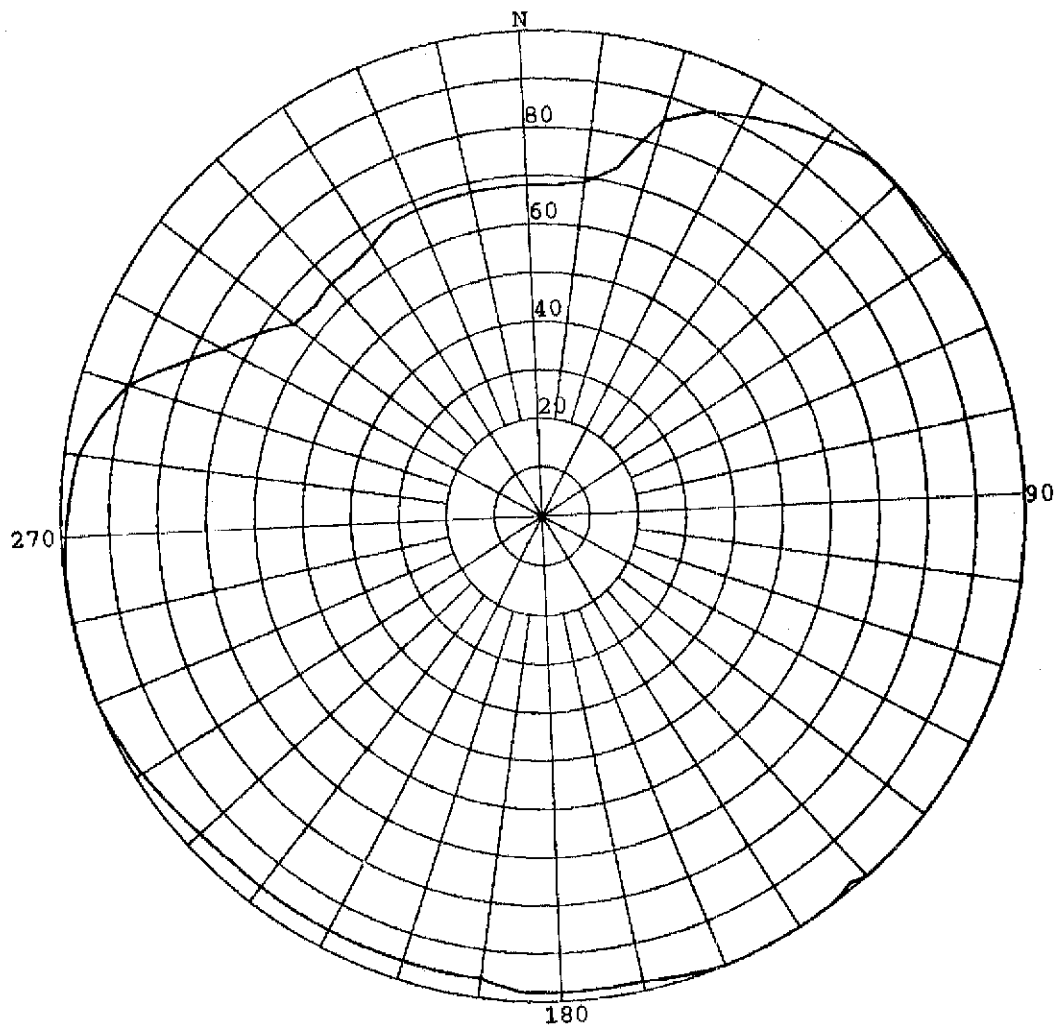
0359-A02

TITLE

ANTENNA ORIENTATION

ANTENNA ELEVATION

PARASITICS



Azimuth Pattern

Scale: Linear

Systems With Reliability L.L.P. Unit: Relative Field

Date: 10/11/01

CLIENT: CATT Communications

ANTENNA TYPE: FMEC/5 DA

FREQUENCY: 98.3

PATTERN POL.: Circular

AZ. DIRECTIVITY: 1.1821 / .7268dB

CIRCULARITY(+/-dB):

PATTERN RMS: 0.920

Micro-Tek Eng. Ver. 2.5

Relative Field Tabulation(Azimuth)

Azimuth Heading	Relative Field(dB)	Azimuth Heading	
0	.68 (-3.34)	180	.98 (-0.17)
5	.68 (-3.34)	185	.98 (-0.17)
10	.69 (-3.21)	190	.96 (-0.35)
15	.73 (-2.72)	195	.96 (-0.35)
20	.85 (-1.4)	200	.96 (-0.35)
25	.90 (-0.92)	205	.96 (-0.35)
30	.92 (-0.69)	210	.96 (-0.35)
35	.95 (-0.45)	215	.96 (-0.35)
40	.97 (-0.25)	220	.96 (-0.35)
45	1.00 (-0.03)	225	.97 (-0.3)
50	1.00 (-0.02)	230	.97 (-0.23)
55	.99 (-0.08)	235	.99 (-0.12)
60	.99 (-0.08)	240	.99 (-0.05)
65	1.00 (0.01)	245	1.00 (0.01)
70	1.00 (0.01)	250	1.00 (-0.02)
75	1.00 (0.01)	255	1.00 (-0.02)
80	1.00 (0.01)	260	1.00 (-0.02)
85	1.00 (0.01)	265	1.00 (-0.02)
90	1.00 (0.01)	270	.99 (-0.08)
95	1.00 (0.01)	275	.98 (-0.17)
100	1.00 (0.01)	280	.97 (-0.26)
105	1.00 (0.01)	285	.94 (-0.53)
110	1.00 (0.01)	290	.90 (-0.91)
115	1.00 (0.01)	295	.82 (-1.71)
120	1.00 (0.01)	300	.75 (-2.49)
125	1.00 (0.01)	305	.70 (-3.09)
130	1.00 (0.01)	310	.65 (-3.73)
135	1.00 (0.01)	315	.64 (-3.86)
140	1.00 (0.01)	320	.65 (-3.74)
145	1.00 (0.01)	325	.65 (-3.77)
150	1.00 (0.01)	330	.66 (-3.62)
155	1.00 (0.01)	335	.68 (-3.35)
160	1.00 (0.01)	340	.68 (-3.34)
165	.99 (-0.08)	345	.68 (-3.34)
170	.98 (-0.17)	350	.68 (-3.34)
175	.98 (-0.17)	355	.68 (-3.34)

Systems With Reliability L.L.P.

Date: 10/11/01

CLIENT: CATT Communications

ANTENNA TYPE: FMEC/5 DA

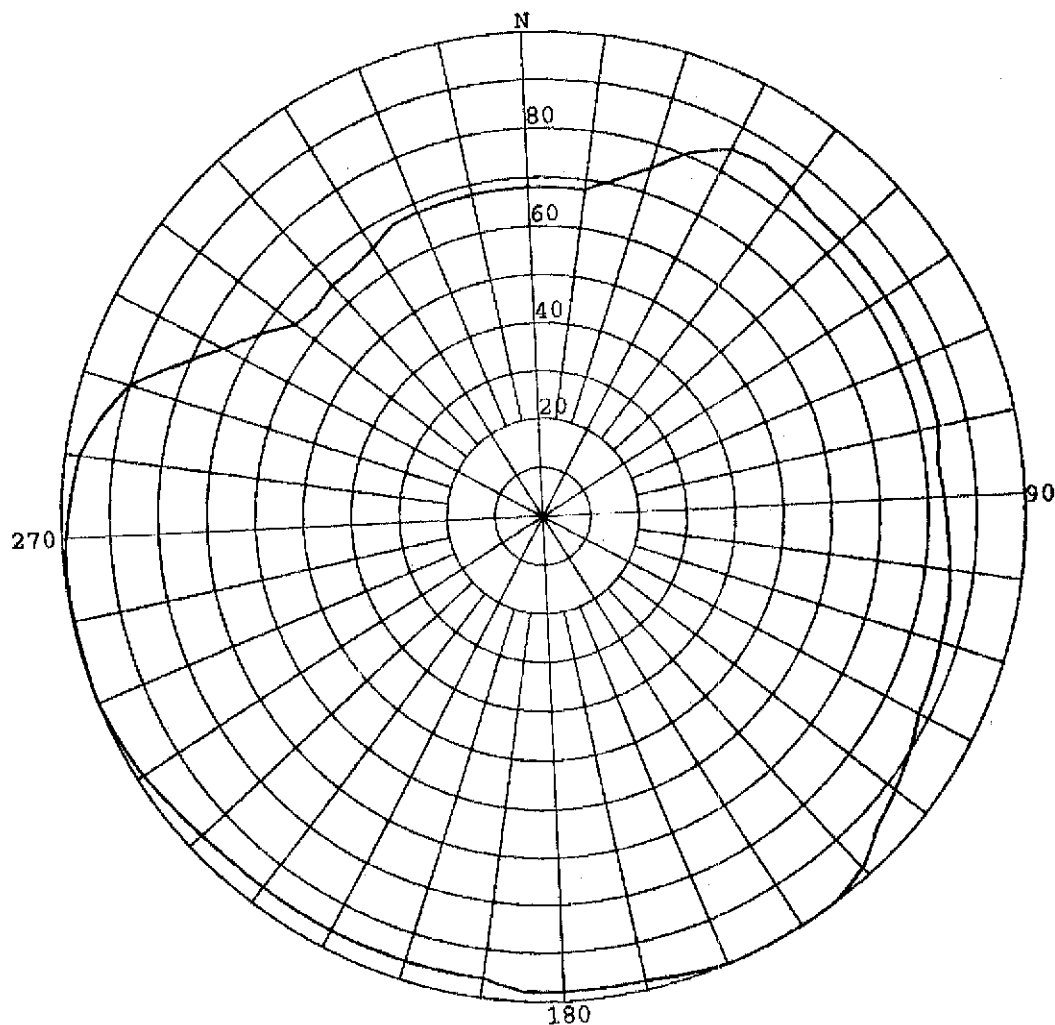
FREQUENCY: 98.3

PATTERN POL.: Circular

AZ. DIRECTIVITY: 1.1821 / .7268dB

CIRCULARITY(+/-dB):

PATTERN RMS: 0.920



Azimuth Pattern

Scale: Linear
 Systems With Reliability L.L.P. Unit: Relative Field
 Date: 10/11/01

CLIENT: CATT Communications
 ANTENNA TYPE: FMEC/5 DA
 FREQUENCY: 98.3
 PATTERN POL.: Horizontal
 AZ. DIRECTIVITY: 1.31 / 1.17dB

CIRCULARITY (+/-dB):
 PATTERN RMS: 0.874

Relative Field Tabulation(Azimuth)

Azimuth Heading	Relative Field(dB)	Azimuth Heading	Relative Field(dB)
0	.68 (-3.34)	180	.98 (-0.17)
5	.68 (-3.34)	185	.98 (-0.17)
10	.68 (-3.34)	190	.96 (-0.35)
15	.71 (-2.96)	195	.96 (-0.35)
20	.75 (-2.49)	200	.96 (-0.35)
25	.81 (-1.82)	205	.96 (-0.35)
30	.85 (-1.4)	210	.96 (-0.35)
35	.86 (-1.32)	215	.96 (-0.35)
40	.85 (-1.41)	220	.96 (-0.35)
45	.84 (-1.54)	225	.97 (-0.3)
50	.84 (-1.5)	230	.97 (-0.23)
55	.84 (-1.5)	235	.99 (-0.12)
60	.84 (-1.5)	240	.99 (-0.05)
65	.84 (-1.5)	245	1.00 (0.01)
70	.84 (-1.5)	250	1.00 (-0.02)
75	.84 (-1.5)	255	1.00 (-0.02)
80	.84 (-1.5)	260	1.00 (-0.02)
85	.83 (-1.65)	265	1.00 (-0.02)
90	.83 (-1.58)	270	.99 (-0.08)
95	.84 (-1.49)	275	.98 (-0.17)
100	.85 (-1.39)	280	.97 (-0.26)
105	.86 (-1.3)	285	.94 (-0.53)
110	.86 (-1.26)	290	.90 (-0.91)
115	.87 (-1.19)	295	.82 (-1.71)
120	.88 (-1.12)	300	.75 (-2.49)
125	.90 (-0.91)	305	.70 (-3.09)
130	.92 (-0.71)	310	.65 (-3.73)
135	.94 (-0.53)	315	.64 (-3.86)
140	.98 (-0.17)	320	.65 (-3.74)
145	1.00 (0.01)	325	.65 (-3.77)
150	1.00 (0.01)	330	.66 (-3.62)
155	1.00 (0.01)	335	.68 (-3.35)
160	1.00 (0.01)	340	.68 (-3.34)
165	.99 (-0.08)	345	.68 (-3.34)
170	.98 (-0.17)	350	.68 (-3.34)
175	.98 (-0.17)	355	.68 (-3.34)

Systems With Reliability L.L.P.

CLIENT: CATT Communications

ANTENNA TYPE: FMEC/5 DA

FREQUENCY: 98.3

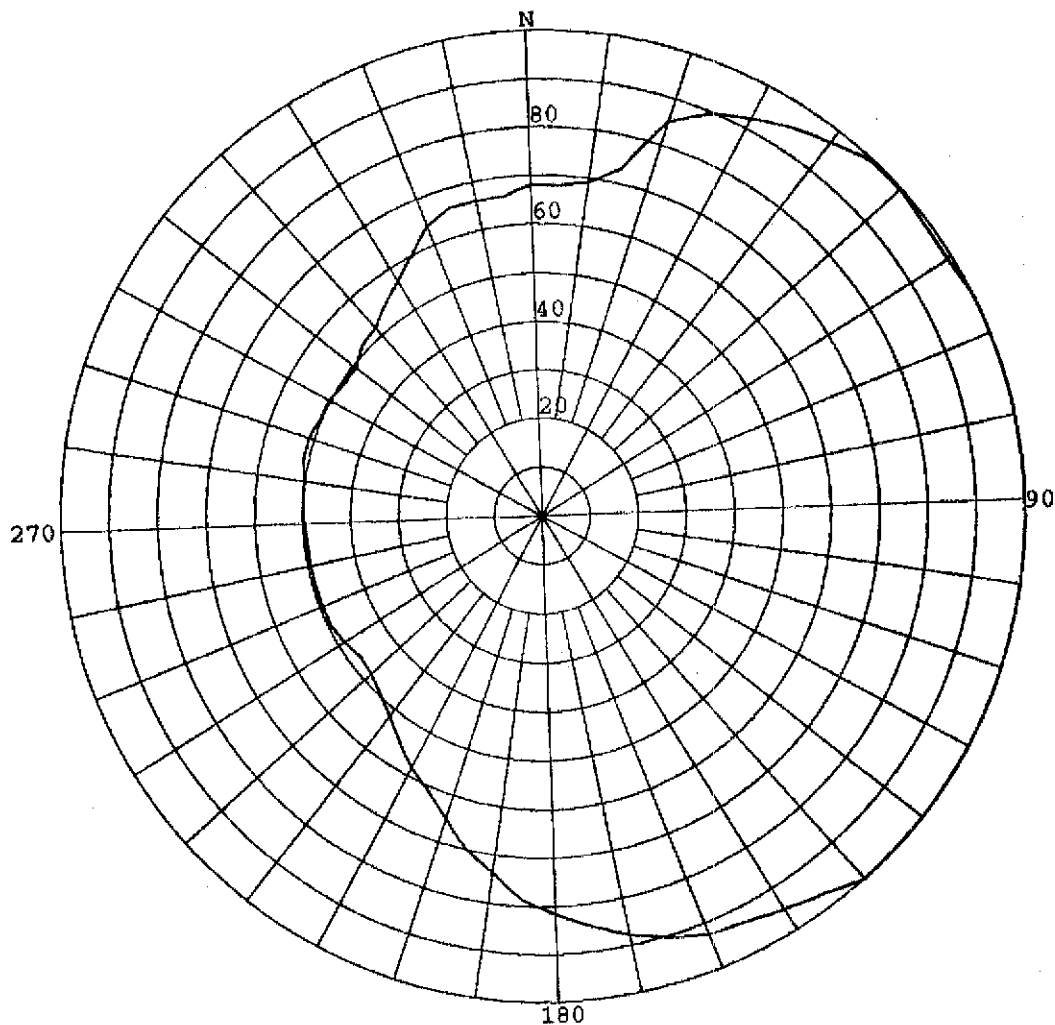
PATTERN POL.: Horizontal

AZ. DIRECTIVITY: 1.31 / 1.17dB

Date: 10/11/01

CIRCULARITY(+/-dB):

PATTERN RMS: 0.874



Azimuth Pattern

Scale: Linear

Systems With Reliability L.L.P. Unit: Relative Field

Date: 10/11/01

CLIENT: CATT Communications

ANTENNA TYPE: FMEC/5 DA

FREQUENCY: 98.3

PATTERN POL.: Vertical

AZ. DIRECTIVITY: 1.651 / 2.18dB

CIRCULARITY (+/-dB):

PATTERN RMS: 0.778

Micro-Tek Eng. Ver. 2.5

Relative Field Tabulation(Azimuth)

Azimuth Heading	Relative Field(dB)	Azimuth Heading	
0	.68 (-3.34)	180	.82 (-1.76)
5	.68 (-3.34)	185	.79 (-2.07)
10	.69 (-3.21)	190	.74 (-2.64)
15	.73 (-2.72)	195	.70 (-3.09)
20	.85 (-1.4)	200	.65 (-3.74)
25	.90 (-0.92)	205	.61 (-4.29)
30	.92 (-0.69)	210	.58 (-4.7)
35	.95 (-0.45)	215	.55 (-5.22)
40	.97 (-0.25)	220	.52 (-5.71)
45	1.00 (-0.03)	225	.50 (-6.09)
50	1.00 (-0.02)	230	.48 (-6.36)
55	.99 (-0.08)	235	.48 (-6.45)
60	.99 (-0.08)	240	.49 (-6.27)
65	1.00 (0.01)	245	.49 (-6.13)
70	1.00 (0.01)	250	.49 (-6.13)
75	1.00 (0.01)	255	.49 (-6.13)
80	1.00 (0.01)	260	.49 (-6.13)
85	1.00 (0.01)	265	.50 (-6.07)
90	1.00 (0.01)	270	.50 (-6.04)
95	1.00 (0.01)	275	.50 (-5.99)
100	1.00 (0.01)	280	.51 (-5.83)
105	1.00 (0.01)	285	.51 (-5.81)
110	1.00 (0.01)	290	.50 (-5.97)
115	1.00 (0.01)	295	.50 (-5.97)
120	1.00 (0.01)	300	.49 (-6.13)
125	1.00 (0.01)	305	.49 (-6.14)
130	1.00 (0.01)	310	.51 (-5.78)
135	1.00 (0.01)	315	.52 (-5.66)
140	1.00 (0.01)	320	.54 (-5.27)
145	.97 (-0.26)	325	.57 (-4.9)
150	.95 (-0.44)	330	.60 (-4.42)
155	.93 (-0.59)	335	.64 (-3.86)
160	.93 (-0.67)	340	.66 (-3.6)
165	.90 (-0.88)	345	.66 (-3.6)
170	.88 (-1.13)	350	.66 (-3.6)
175	.85 (-1.44)	355	

Systems With Reliability L.L.P.

Date: 10/11/01

CLIENT: CATT Communications

ANTENNA TYPE: FMEC/5 DA

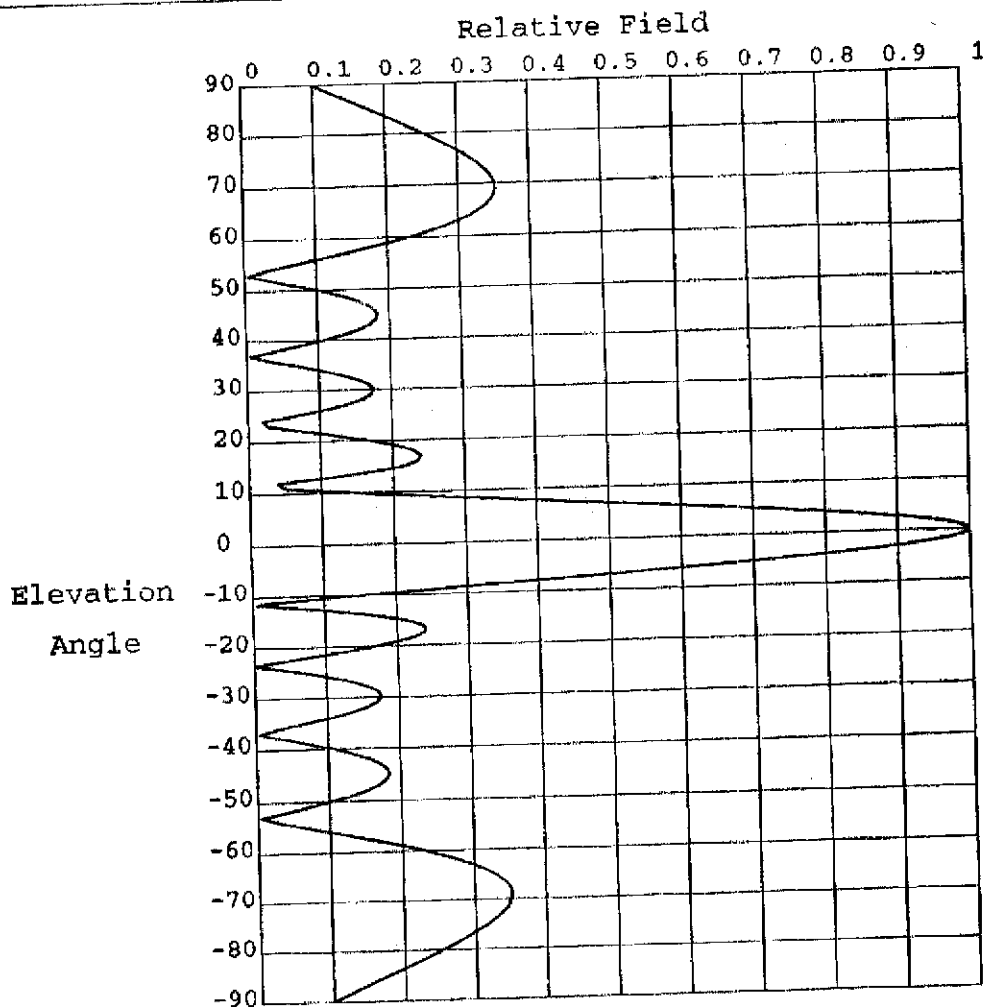
FREQUENCY: 98.3

PATTERN POL.: Vertical

AZ. DIRECTIVITY: 1.651 / 2.18dB

CIRCULARITY(+/-dB):

PATTERN RMS: 0.778



Elevation Pattern

Scale: Linear

Systems With Reliability L.L.P. Units: Field, Relative

Date: 10/11/01

CLIENT: CATT Communications

ANTENNA TYPE: FMEC/5 DA

FREQUENCY: 98.3

PATTERN POL.: Circular

DIRECTIVITY(Peak) 5.19/7.152 dBd

DIRECTIVITY(Horiz) 5.19/7.152 dBd

Beam Tilt (Deg.) : 0

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

Relative Field Tabulation

Elev.	Angle	Rel. Fld(dB)	Elev.	Angle	Rel. Fld(dB)	Elev.		
-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 L.L.P. Page 2 of 2

Date: 10/11/01

CLIENT: CATT Communications

ANTENNA TYPE: FMEC/5 DA

FREQUENCY: 98.3

PATTERN POL.: Circular

DIRECTIVITY(Peak) 5.19/7.152 dBd

DIRECTIVITY(Horiz) 5.19/7.152 dBd

Beam Tilt (Deg.) : 0

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

Relative Field Tabulation

Elev.	Angle	Rel. Fld(dB)	Elev.	Angle	Rel. Fld(dB)	Elev.		
-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 L.L.P. Page 2 of 2

Date: 10/11/01

CLIENT: CATT Communications

ANTENNA TYPE: FMEC/5 DA

FREQUENCY: 98.3

PATTERN POL.: Circular

DIRECTIVITY(Peak) 5.19/7.152 dBd

DIRECTIVITY(Horiz) 5.19/7.152 dBd

Beam Tilt (Deg.) : 0

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



SYSTEMS WITH RELIABILITY, INC.
Broadcast Antennas and Transmission Systems

WORT-FM Antenna RMS Comparison

PROPOSED ANTENNA

Azimuth Heading	Relative Field
0	0.710
5	0.710
10	0.710
15	0.790
20	0.890
25	1.000
30	1.000
35	1.000
40	1.000
45	1.000
50	1.000
55	1.000
60	1.000
65	1.000
70	1.000
75	1.000
80	1.000
85	1.000
90	1.000
95	1.000
100	1.000
105	1.000
110	1.000
115	1.000
120	1.000
125	1.000
130	1.000
135	1.000
140	1.000
145	1.000
150	1.000
155	1.000
160	1.000
165	1.000
170	1.000
175	1.000
180	1.000
185	1.000
190	1.000
195	1.000
200	1.000

DESIGNED ANTENNA

Azimuth Heading	Relative Field
0	0.680
5	0.680
10	0.690
15	0.730
20	0.850
25	0.900
30	0.920
35	0.950
40	0.970
45	1.000
50	1.000
55	0.990
60	0.990
65	1.000
70	1.000
75	1.000
80	1.000
85	1.000
90	1.000
95	1.000
100	1.000
105	1.000
110	1.000
115	1.000
120	1.000
125	1.000
130	1.000
135	1.000
140	1.000
145	1.000
150	1.000
155	1.000
160	1.000
165	0.990
170	0.980
175	0.980
180	0.980
185	0.980
190	0.960
195	0.960
200	0.960

PROPOSED ANTENNA

Azimuth Heading	Relative Field
205	1.000
210	1.000
215	1.000
220	1.000
225	1.000
230	1.000
235	1.000
240	1.000
245	1.000
250	1.000
255	1.000
260	1.000
265	1.000
270	1.000
275	1.000
280	1.000
285	1.000
290	1.000
295	1.000
300	0.890
305	0.710
310	0.710
315	0.710
320	0.710
325	0.710
330	0.710
335	0.710
340	0.710
345	0.710
350	0.710
355	0.710

Sum of Relative Field Squared : 64.266
Sum Divided by 72 (Readings) : 0.893
Square Root : 0.945

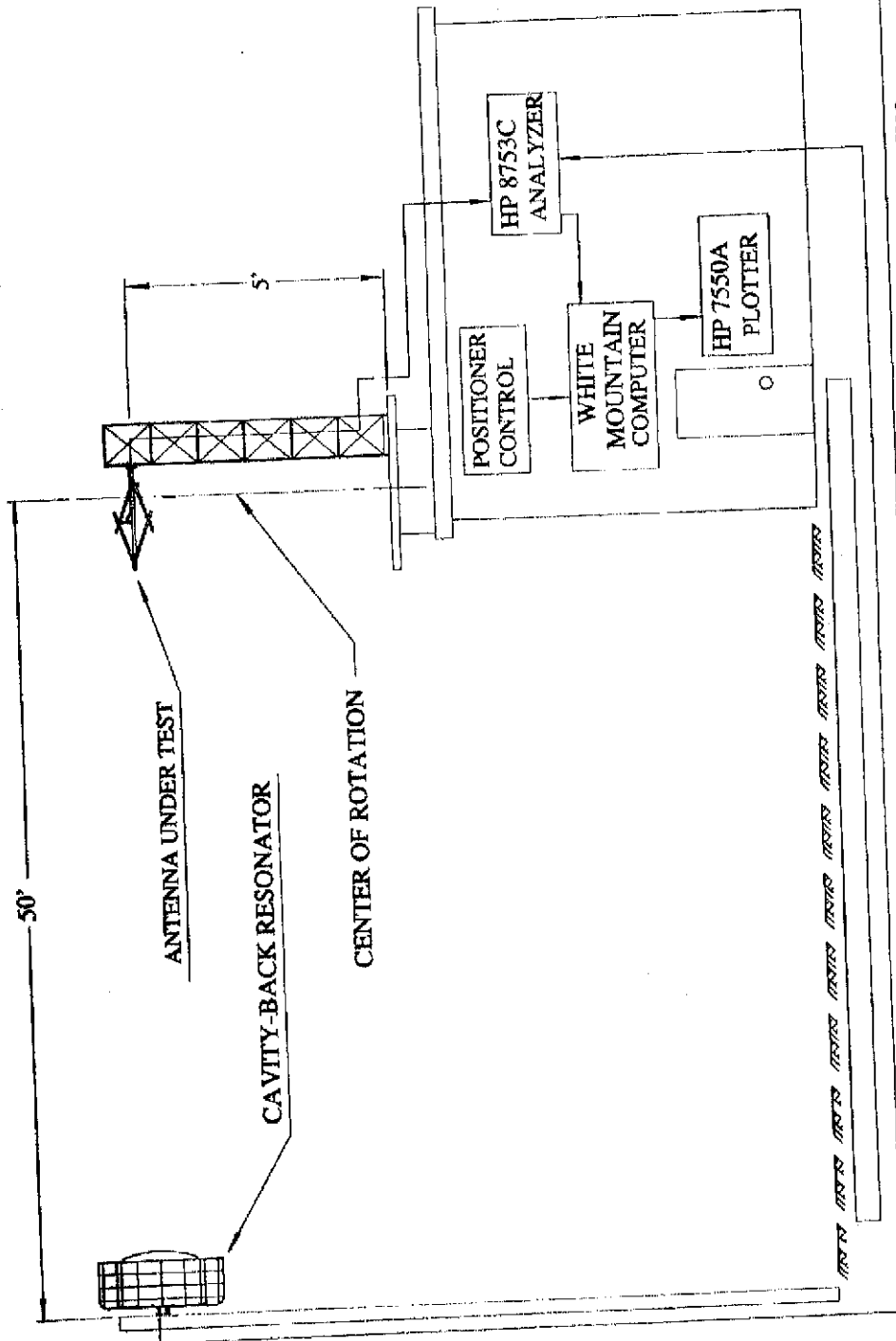
DESIGNED ANTENNA

Azimuth Heading	Relative Field
205	0.960
210	0.960
215	0.960
220	0.960
225	0.960
230	0.970
235	0.970
240	0.990
245	0.990
250	1.000
255	1.000
260	1.000
265	1.000
270	0.990
275	0.980
280	0.970
285	0.940
290	0.900
295	0.820
300	0.750
305	0.700
310	0.650
315	0.640
320	0.650
325	0.650
330	0.660
335	0.680
340	0.680
345	0.680
350	0.680
355	0.680

Sum of Relative Field Squared : 60.877
Sum Divided by 72 (Readings) : 0.846
Square Root : 0.920

97.33 %

Percentage of Construction Permit Antenna Filled :



REV.	S W R INC EBENSBURG, PA 15931				
TOLERANCES		TITLE: TEST SCHEMATIC			
.X	± .015	DATE:	SCALE:	DRAWN:	SHOP
XX	± .005		NTS	JRM	
XXX	± .002				
XX	± .032				
DEC	± 1/2				
UNLESS OTHERWISE SPECIFIED		MATERIAL:		DRAWING # 2112-A21	

SURVEYOR'S DECLARATION

I, MARK L. WELLES, subject to penalties of perjury, do declare the following:

1. I am a licensed surveyor in the state(s) of NEW YORK
_____ and _____.
2. I have provided professional services to CATT COMMUNICATIONS, INC.
(Permittee Name)
permittee of WQRT - FM SALAMANCA, N.Y., during the
(City of License) (State)
installation of the FMEC/5 - FM directional antenna.
3. I certify that the FMEC/5 - FM directional antenna has been oriented at the proper
azimuth as authorized in the construction Permit (FCC File Number
BPH9808171H).

Dated:

12 / 10 / 01
(Month) (Day) (Year)

Mark L. Welles

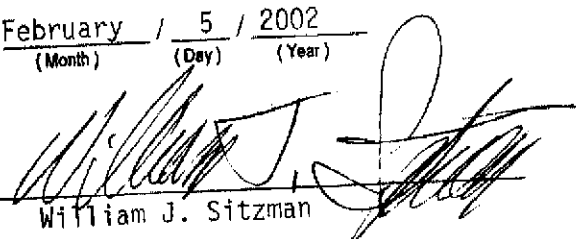


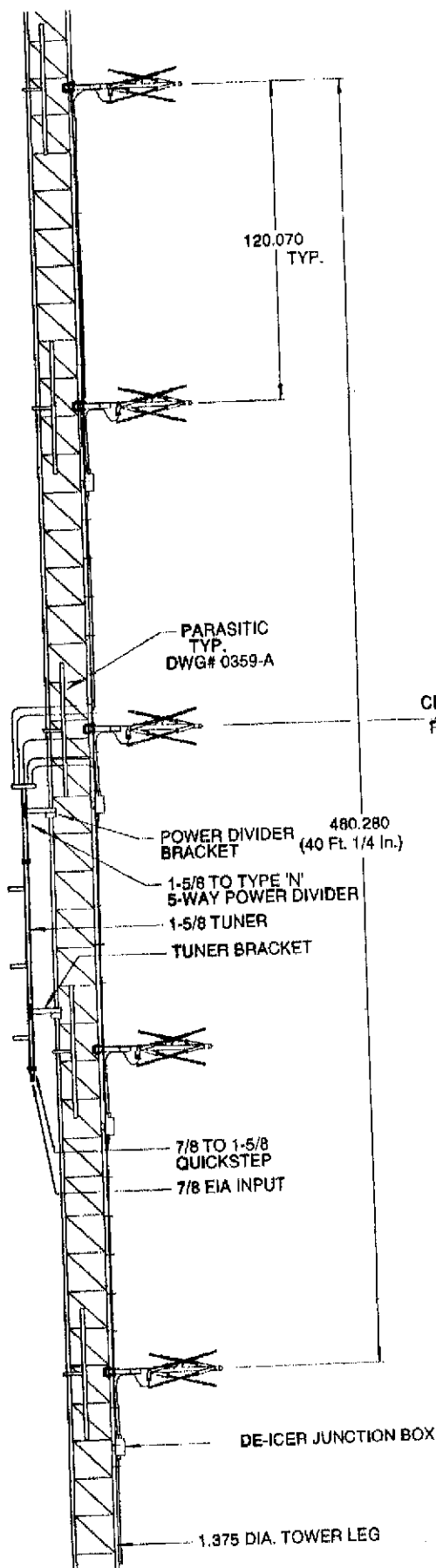
ENGINEER'S DECLARATION

I, William J. Sitzman, subject to penalties of perjury, do declare the following:

1. I am the holder of a valid General Radio Telephone Operator's License, Number PG-20-6398, issued for life.
(FCC License No.)
2. I have been a member of the Society of Broadcast Engineer's since 19____
I had been a member from 1969 to 1998.
3. That I have been employed as a technical consultant with the firm of:
Independent Broadcast Consultants, Inc. of Trumansburg
(Name of Firm) (City)
New York specializing in matters relating to the utilization of broadcast
(State)
radio frequency allocations and the associated radio frequency transmission systems.
4. That Independent Broadcast Consultants, Inc. was retained by
(Name of Firm)
Catt Communications, Inc. for the purpose of preparing
(Name of Permittee)
its application for the Construction Permit of WQRT - FM, Salamanca,
(City)
New York, from which the underlying Construction Permit (FCC File
(State)
Number BPH-199808171H) was granted by the Commission.
5. That I am familiar with the terms and conditions of the WQRT - FM Construction
Permit.
6. I hereby certify that I have overseen the installation of the WQRT - FM directional
antenna and that the installation was complete to the manufacturer's instructions.

Dated: February / 5 / 2002
(Month) (Day) (Year)

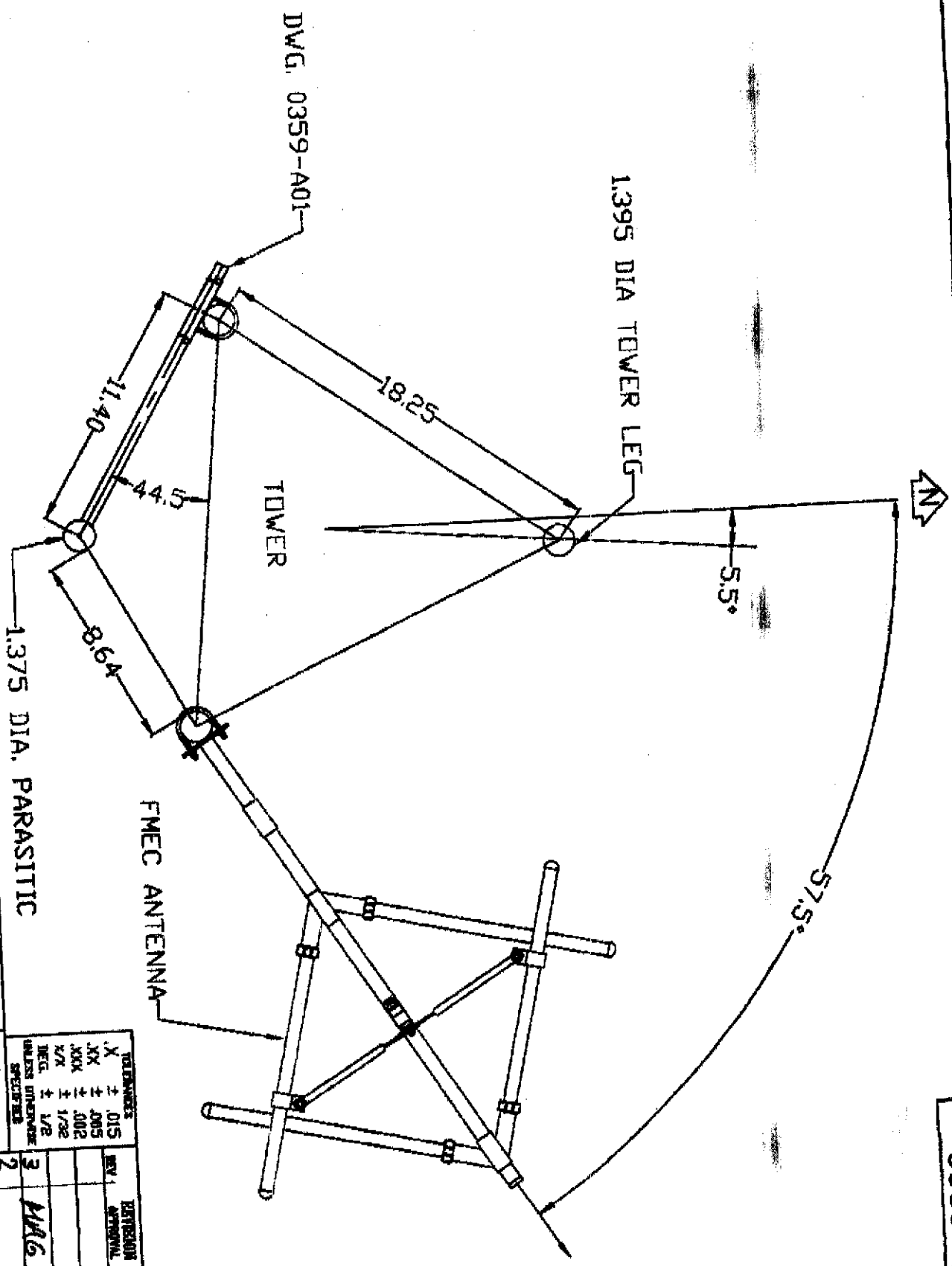

William J. Sitzman



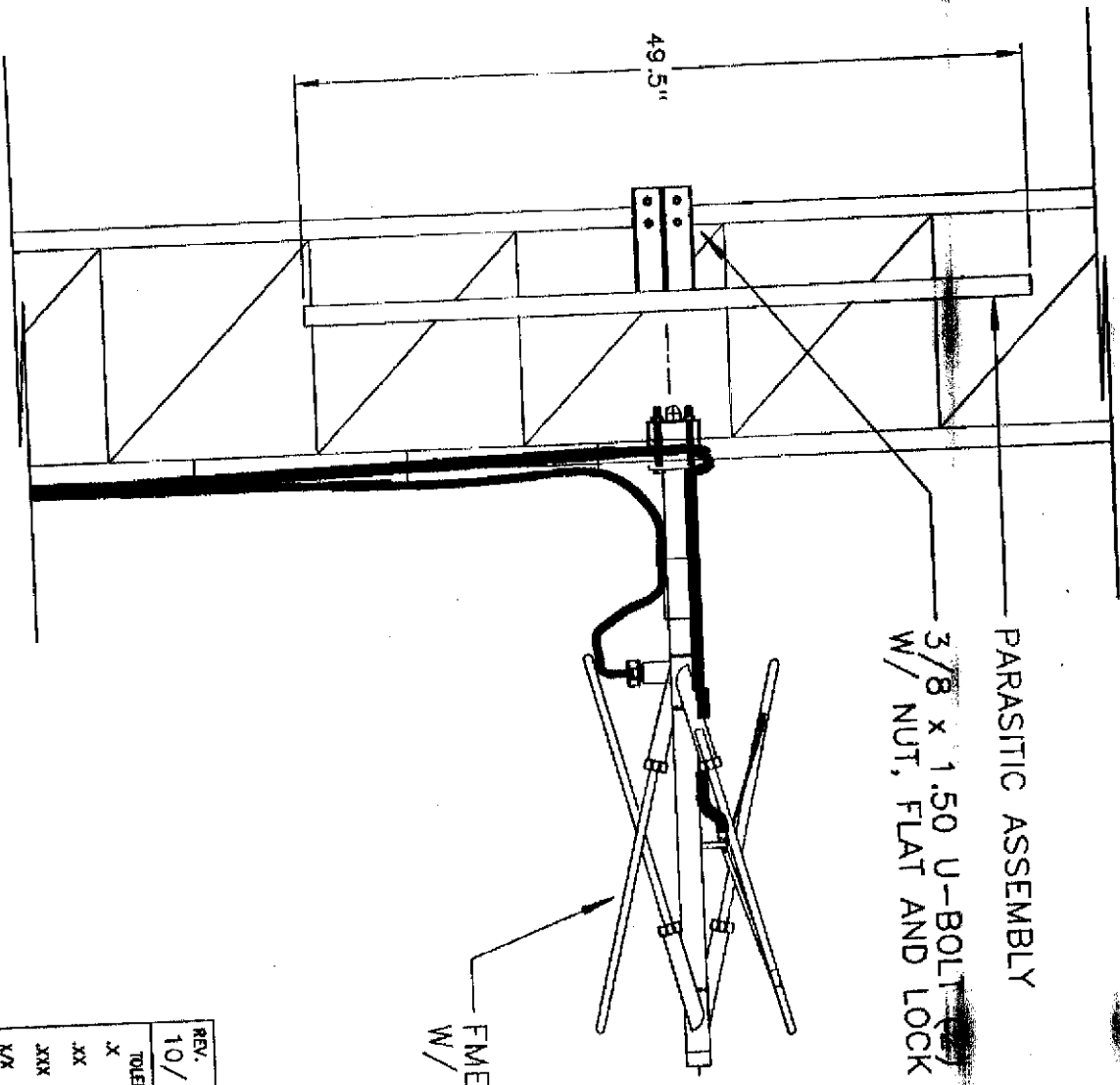
DATE	REVISION	INT

REV. 10/11/01	S.W.R. INC. EBensburg, PA 15931		
TOLERANCES X 1/16 XX 1/32 XXX 1/64	TITLE: FMCG-DA ANTENNA ELEVATION 88.3 MHz, WORT, SALAMANCA, N.Y.		
DATE: 9/21/01	SCALE: 1:30	DRAWN: T.A.M.	CHECKED: J.M.W.
UNLESS OTHERWISE SPECIFIED			0359-C

0359-C01



TOLERANCES		REVISION RECORD	
		REV.	DATE
X	± .015		
.XX	± .005		
.XXX	± .002		
X/4	± 1/32		
DEG.	± 1/2		
UNLESS OTHERWISE SPECIFIED			
3	VAR		2/5/02
2			12/17/01



FMEC ANTENNA
W/ DE-ICERS

PARASITIC ASSEMBLY
3/8 x 1.50 U-BOLT (S)
W/ NUT, FLAT AND LOCK WASHER

REV. 10/16/01		S.W.R. INC. EBENSBURG, PA. 15031			
TOLERANCES X ± .015 XX ± .005 XXX ± .002 X/X ± 1/64 DEC. ± 1/2		TITLE: FMEC/5-DA SINGLE BAY ILLUSTRATION WQRT, 98.3 MHZ., SALAMANCA, N.Y.			
DATE: 10/11/01		SCALE: 1:12		DRAWN: JSM	
MATERIAL:		SHOP		APPROVED: ENG.	
UNLESS OTHERWISE SPECIFIED		DRAWING #		0359-A02	