

WWCU

Western Carolina University

Cullowhee, North Carolina

Engineering Exhibit

September 2004

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Timothy L. Warner, Inc.
Post Office Box 8045
Asheville, North Carolina 28814-8045
(828) 258-1238
twarner@tlwinc.net

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Western Carolina University
Cullowhee, North Carolina
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Declaration

I declare, under penalty of perjury, that I am a technical consultant to broadcasting and other communications systems, that I have over twenty-five years of experience in the engineering of broadcast and other communications systems, that I am familiar with the Federal Communications Commission's Rules found in the Code of Federal Regulations Title 47, that I am a Professional Engineer registered in North Carolina, that I have prepared or supervised the preparation of the attached Engineering Exhibit for the Western Carolina University, and that all of the facts therein, except for facts of which the Federal Communications Commission may take official notice, are true to the best of my knowledge and belief.



Timothy L. Warner, P.E.
Post Office Box 8045
Asheville, North Carolina 28814-8045
(828) 258-1238
10 September 2004

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Narrative

This exhibit supports the attached application of Western Carolina University for a minor change to the construction permit, file number BPED-20010509AAU, for non-commercial educational FM station WWCU at Cullowhee, North Carolina. The application is a minor change under §73.3573(a)(1).

The purpose of this application is to modify the directional antenna pattern. The relative field is increased at each of the tabulated 10° increment bearings from 180° through 250°, effecting all bearings between 171° and 259°. There are no other changes proposed. The revised pattern is designed to encompass the actual composite antenna pattern as filed in BLED-20040819AAB, comply with 47 C.F.R §73.509, prohibited contour overlap, and §73.316(b)(1)-(2) FM antenna systems.

Figure 1 shows the relationship between the authorized and proposed service contours. As shown, the proposed 60 dBu contour serves all of the area of the authorized 60 dBu contour. The proposed 60 dBu contour provides service to the entire Cullowhee community.

Allocations

An allocation table is included on page 20 of this exhibit. The allocations table separations are based on contours on the direct bearing between WWCU and the stations studied. Figure 2 shows the relationship between the proposed WWCU facilities and each facility where the separation is less than 50 kilometers. Detail studies are provided as Figures 3 through 6.

All contours for existing and proposed facilities are calculated using height above average terrain calculated at one degree horizontal increments with terrain data extracted from the V-Soft Communications NED 03 terrain database. The NED 03 database is derived from the USGS National Elevation Data 30 meter terrain database. The USGS National Elevation Dataset has been developed by merging the highest-resolution, best-quality elevation data available across the United States into a seamless raster format. NED is the result of the maturation of the USGS effort to provide 1:24,000-scale Digital Elevation Model (DEM) data for the conterminous US and 1:63,360-scale DEM data for Alaska. Contours are calculated by Probe 3™ from V-Soft Communications, Inc.

There are three facilities or proposals where the lack of overlap is less than 10 kilometers. Those facilities are WSMC-FM, Collegedale, Tennessee, WVMH-FM, Mars Hill, North Carolina, and a proposed new facility for Newport, Tennessee, file number BPED-19961203ME. Detailed tabulation of the relevant contours toward and from WSMC-FM are provided on pages 10 and 11. Detailed tabulation of the contours toward and from WVMH-FM are provided on pages 12 and 13. Detailed tabulation of the contours toward and from Newport are provided on page 14 and 15.

Figure 3 shows the relevant contours with respect to WSMC-FM, Collegedale, Tennessee. Figure 4 shows the relevant contours with respect to WVMH-FM, Mars Hill, North Carolina. Figure 5 shows the relevant contours with respect to the Newport proposal. Figure 6 shows expanded detail toward Newport.

Channel 6 Television

One TV Channel 6 station is affected, as defined in §73.525, WATE, Knoxville, Tennessee. The relevant interference contour for operation on Channel 213 is the 69.5 dBu F(50,10) contour, without the allowable directional antenna adjustment. The effective radiated power for the proposed facilities are adjusted for the mixed polarization and

tabulated on page 15. Figure 7 shows the relationship of the licensed and proposed interference contours and Channel 6 Television.

The only network affiliation of WATE is ABC. The entire interference contours for the licensed and proposed WWCU facilities lie within the city grade contour of WLOS, Asheville, North Carolina, whose only network affiliation is ABC. The entire potential interference area is outside the WATE Grade A contour and outside the Knoxville ADI boundary.

This proposal therefore is in compliance with §73.525.

Proposed Site

The proposed site is an existing electronic site. The proposed antennas will be mounted to an existing tower. The proposed equipment will be installed within the existing enclosure. There are no predicted negative impacts from the proposed changes.

Should any problems develop, Western Carolina University will promptly discharge its obligation under §73.318. Western Carolina University will take any steps necessary to eliminate the problem. Possible solutions to blanketing interference might include, but not be limited to, the installation of a filter in the antenna input of the offending receiver, additional filtering in the output of the proposed transmitter, and the installation of RF chokes in the speaker and power cables of the offending receiver. In addition, Western Carolina University will treat any reports which may be receiver-induced intermodulation interference as though they were blanketing interference reports and address them accordingly.

RFR Evaluation under OET-65

The only change proposed in this application is a modification of the directional pattern. There is no increase in the maximum Effective Radiated Power.

The proposed facilities, when evaluated under worst case methods in OET-65 would create 0.071 mW/cm² at ground level, which is 36% of the allowable exposure for uncontrolled areas. A multi-element antenna array is proposed. The antenna will have reduced downward radiation compared to the worst case. The other facilities authorized for the site are microwave facilities with high gain antennas operating at frequencies greater than 6 GHz. The microwave antennas have negligible power flux density at ground level. Western Carolina University will remove power from antenna when personnel are on the tower avoid exposing workers to non-ionizing radiation.

Directional Antenna

The only change proposed in this application is a modification of the directional pattern over a limited range of azimuths. The antenna pattern as verified in the proof of performance exceeds 86% of the pattern proposed herein.

This application proposes a SCALA CL-FM log periodic directional antenna array. The maximum relative field, encompassing both horizontal and vertical polarizations, is plotted as Figure 8 and tabulated as Figure 9.

The tower design was incorporated by the antenna manufacturer in the design of the directional antenna array. Each metallic portion of the tower will be included in the model, including any microwave antennas and transmission lines. No other antennas of any type will be mounted in the vertical aperture of the antenna. The antenna will be mounted so that all horizontal and vertical separations required by the antenna manufacturer are maintained free and clear of all obstructions. The antenna will not be mounted on a standard broadcast antenna.

WWCU, Cullowhee, North Carolina Contour Tabulation

page 1 of 8

Bearing (degrees)	Relative Field	ERP (kW)	HAAT (meters)	60 dBu F(50,50) (km)	40 dBu F(50,10) (km)	54 dBu F(50,10) (km)	100 dBu F(50,10) (km)
* 0	0.310	0.0231	134.1	8.3	27.7	11.6	0.34
1	0.313	0.0235	129.7	8.2	27.3	11.5	0.34
2	0.316	0.0240	135.1	8.4	28.0	11.8	0.34
3	0.319	0.0244	150.8	8.9	29.8	12.5	0.35
4	0.322	0.0249	170.6	9.6	31.9	13.4	0.35
5	0.325	0.0254	177.2	9.9	32.7	13.8	0.35
6	0.328	0.0258	183.5	10.1	33.4	14.1	0.36
7	0.331	0.0263	183.1	10.1	33.5	14.1	0.36
8	0.334	0.0268	172.8	9.9	32.8	13.8	0.36
9	0.337	0.0273	150.2	9.2	30.6	12.8	0.37
10	0.340	0.0277	130.1	8.5	28.5	12.0	0.37
11	0.347	0.0289	131.0	8.6	28.9	12.1	0.38
12	0.354	0.0301	144.3	9.2	30.7	12.9	0.38
13	0.361	0.0313	164.1	10.0	33.2	13.9	0.39
14	0.368	0.0325	161.8	10.0	33.3	14.0	0.40
15	0.375	0.0338	159.5	10.0	33.3	14.0	0.41
16	0.382	0.0350	159.4	10.1	33.6	14.1	0.42
17	0.389	0.0363	167.8	10.5	34.8	14.6	0.42
18	0.396	0.0376	168.8	10.6	35.2	14.8	0.43
19	0.403	0.0390	168.1	10.7	35.4	15.1	0.44
20	0.410	0.0403	165.5	10.7	35.5	15.1	0.45
21	0.420	0.0423	160.2	10.6	35.3	14.9	0.46
22	0.430	0.0444	161.7	10.8	35.9	15.3	0.47
23	0.440	0.0465	158.0	10.7	35.9	15.3	0.48
24	0.450	0.0486	173.0	11.4	37.8	16.5	0.49
25	0.460	0.0508	192.3	12.1	40.1	17.9	0.50
26	0.470	0.0530	208.6	12.7	42.2	19.0	0.51
27	0.480	0.0553	223.4	13.3	44.2	20.0	0.52
28	0.490	0.0576	238.1	13.8	46.1	20.9	0.53
29	0.500	0.0600	250.9	14.3	47.6	21.6	0.54
30	0.510	0.0624	266.5	14.9	49.4	22.5	0.55
31	0.510	0.0624	278.4	15.3	50.3	22.9	0.55
32	0.510	0.0624	278.9	15.3	50.4	23.0	0.55
33	0.510	0.0624	274.9	15.2	50.1	22.8	0.55
34	0.510	0.0624	272.1	15.1	49.8	22.7	0.55
35	0.510	0.0624	275.9	15.2	50.1	22.8	0.55
36	0.510	0.0624	277.9	15.3	50.3	22.9	0.55
37	0.510	0.0624	281.4	15.4	50.6	23.1	0.55
38	0.510	0.0624	276.7	15.2	50.2	22.9	0.55
39	0.510	0.0624	271.4	15.1	49.8	22.7	0.55
40	0.510	0.0624	266.7	14.9	49.4	22.5	0.55
41	0.501	0.0602	258.3	14.5	48.3	21.9	0.54
42	0.492	0.0581	248.1	14.1	47.0	21.3	0.53
43	0.483	0.0560	237.8	13.7	45.7	20.7	0.52
44	0.474	0.0539	240.1	13.7	45.6	20.6	0.52

*Radial included in average HAAT.

WWCU, Cullowhee, North Carolina Contour Tabulation

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Bearing (degrees)	Relative Field	ERP (kW)	HAAT (meters)	60 dBu F(50,50) (km)	40 dBu F(50,10) (km)	54 dBu F(50,10) (km)	100 dBu F(50,10) (km)
* 45	0.465	0.0519	255.7	13.9	46.5	21.0	0.51
46	0.456	0.0499	259.7	13.9	46.4	20.9	0.50
47	0.447	0.0480	245.0	13.4	44.8	20.1	0.49
48	0.438	0.0460	255.9	13.6	45.3	20.3	0.48
49	0.429	0.0442	277.9	14.0	46.6	21.0	0.47
50	0.420	0.0423	292.7	14.2	47.3	21.3	0.46
51	0.417	0.0417	302.4	14.4	47.9	21.6	0.45
52	0.414	0.0411	321.3	14.8	49.2	22.1	0.45
53	0.411	0.0405	322.6	14.8	49.1	22.1	0.45
54	0.408	0.0400	332.0	15.0	49.7	22.3	0.44
55	0.405	0.0394	362.6	15.6	52.0	23.3	0.44
56	0.402	0.0388	387.4	16.0	53.7	24.1	0.44
57	0.399	0.0382	405.3	16.3	54.8	24.6	0.43
58	0.396	0.0376	427.6	16.7	56.0	25.3	0.43
59	0.393	0.0371	448.9	17.0	57.3	25.9	0.43
60	0.390	0.0365	468.9	17.4	58.5	26.3	0.42
61	0.400	0.0384	484.7	17.9	60.2	27.1	0.43
62	0.410	0.0403	495.9	18.4	61.7	27.7	0.45
63	0.420	0.0423	509.0	18.9	63.3	28.4	0.46
64	0.430	0.0444	518.5	19.4	64.6	29.1	0.47
65	0.440	0.0465	520.6	19.7	65.4	29.5	0.48
66	0.450	0.0486	519.4	19.9	65.8	29.8	0.49
67	0.460	0.0508	517.9	20.1	66.3	30.1	0.50
68	0.470	0.0530	520.1	20.3	67.0	30.6	0.51
69	0.480	0.0553	521.8	20.6	67.7	31.0	0.52
70	0.490	0.0576	519.0	20.8	68.0	31.2	0.53
71	0.502	0.0605	515.0	20.9	68.3	31.5	0.55
72	0.514	0.0634	516.0	21.2	69.0	32.0	0.56
73	0.526	0.0664	510.1	21.3	69.1	32.2	0.57
74	0.538	0.0695	508.6	21.5	69.6	32.5	0.58
75	0.550	0.0726	513.9	21.9	70.6	33.2	0.60
76	0.562	0.0758	517.2	22.2	71.4	33.7	0.61
77	0.574	0.0791	508.1	22.2	71.2	33.7	0.62
78	0.586	0.0824	488.8	21.9	70.3	33.3	0.64
79	0.598	0.0858	463.6	21.4	68.9	32.7	0.65
80	0.610	0.0893	433.8	20.9	67.0	31.8	0.66
81	0.625	0.0938	404.6	20.5	65.4	30.9	0.68
82	0.640	0.0983	386.3	20.3	64.6	30.4	0.70
83	0.655	0.1030	369.1	20.1	63.8	29.9	0.71
84	0.670	0.1077	353.0	19.9	63.0	29.5	0.73
85	0.685	0.1126	335.8	19.6	61.9	29.1	0.74
86	0.700	0.1176	327.8	19.6	61.6	29.0	0.76
87	0.715	0.1227	322.4	19.7	61.6	29.1	0.78
88	0.730	0.1279	318.6	19.8	61.8	29.2	0.79
89	0.745	0.1332	313.9	19.8	61.8	29.3	0.81

*Radial included in average HAAT.

WWCU, Cullowhee, North Carolina Contour Tabulation

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Bearing (degrees)	Relative Field	ERP (kW)	HAAT (meters)	60 dBu F(50,50) (km)	40 dBu F(50,10) (km)	54 dBu F(50,10) (km)	100 dBu F(50,10) (km)
* 90	0.760	0.1386	303.4	19.7	61.3	29.1	0.83
91	0.779	0.1456	293.8	19.6	61.0	29.0	0.85
92	0.798	0.1528	275.1	19.2	59.9	28.4	0.87
93	0.817	0.1602	250.3	18.5	58.1	27.5	0.89
94	0.836	0.1677	225.9	17.8	56.3	26.5	0.91
95	0.855	0.1754	207.1	17.2	54.8	25.7	0.93
96	0.874	0.1833	196.4	16.9	54.1	25.3	0.95
97	0.893	0.1914	180.4	16.4	52.7	24.6	0.97
98	0.912	0.1996	164.6	15.8	51.2	23.7	0.99
99	0.931	0.2080	153.2	15.3	50.2	23.1	1.01
100	0.950	0.2166	141.5	14.8	49.1	22.3	1.03
101	0.955	0.2189	132.0	14.3	47.9	21.5	1.04
102	0.960	0.2212	146.3	15.1	49.9	22.8	1.04
103	0.965	0.2235	173.2	16.8	53.6	25.1	1.05
104	0.970	0.2258	196.2	17.9	56.4	26.6	1.05
105	0.975	0.2282	189.9	17.7	55.8	26.3	1.06
106	0.980	0.2305	167.7	16.6	53.2	24.8	1.06
107	0.985	0.2329	153.2	15.8	51.4	23.7	1.07
108	0.990	0.2352	151.6	15.7	51.3	23.6	1.08
109	0.995	0.2376	142.1	15.2	50.2	22.9	1.08
110	1.000	0.2400	123.3	14.1	47.7	21.3	1.09
111	1.000	0.2400	93.6	12.3	42.4	18.2	1.09
112	1.000	0.2400	77.4	11.3	38.5	16.2	1.09
113	1.000	0.2400	69.9	10.8	36.6	15.3	1.09
114	1.000	0.2400	72.5	11.0	37.3	15.6	1.09
115	1.000	0.2400	65.5	10.5	35.3	14.6	1.09
116	1.000	0.2400	50.5	9.2	30.6	12.9	1.09
117	1.000	0.2400	46.5	8.8	29.2	12.4	1.09
118	1.000	0.2400	33.1	7.3	24.6	10.5	1.09
119	1.000	0.2400	19.7	7.0	23.5	10.0	1.09
120	1.000	0.2400	7.1	7.0	23.5	10.0	1.09
121	1.000	0.2400	-5.3	7.0	23.5	10.0	1.09
122	1.000	0.2400	-21.9	7.0	23.5	10.0	1.09
123	1.000	0.2400	-35.1	7.0	23.5	10.0	1.09
124	1.000	0.2400	-58.5	7.0	23.5	10.0	1.09
125	1.000	0.2400	-80.7	7.0	23.5	10.0	1.09
126	1.000	0.2400	-86.7	7.0	23.5	10.0	1.09
127	1.000	0.2400	-74.4	7.0	23.5	10.0	1.09
128	1.000	0.2400	-55.3	7.0	23.5	10.0	1.09
129	1.000	0.2400	-30.2	7.0	23.5	10.0	1.09
130	1.000	0.2400	2.5	7.0	23.5	10.0	1.09
131	1.000	0.2400	30.3	7.0	23.6	10.1	1.09
132	1.000	0.2400	51.5	9.3	30.9	13.0	1.09
133	1.000	0.2400	67.5	10.6	35.9	14.8	1.09
134	1.000	0.2400	83.4	11.7	40.1	17.0	1.09

*Radial included in average HAAT.

WWCU, Cullowhee, North Carolina Contour Tabulation

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Bearing (degrees)	Relative Field	ERP (kW)	HAAT (meters)	60 dBu F(50,50) (km)	40 dBu F(50,10) (km)	54 dBu F(50,10) (km)	100 dBu F(50,10) (km)
* 135	1.000	0.2400	98.3	12.6	43.4	18.8	1.09
136	1.000	0.2400	115.3	13.7	46.5	20.6	1.09
137	1.000	0.2400	129.3	14.5	48.5	21.8	1.09
138	1.000	0.2400	143.5	15.3	50.5	23.1	1.09
139	1.000	0.2400	168.9	16.9	53.8	25.2	1.09
140	1.000	0.2400	185.0	17.7	55.8	26.3	1.09
141	1.000	0.2400	194.5	18.1	56.9	26.9	1.09
142	1.000	0.2400	205.1	18.6	58.1	27.6	1.09
143	1.000	0.2400	218.7	19.2	59.6	28.5	1.09
144	1.000	0.2400	213.0	18.9	59.0	28.1	1.09
145	1.000	0.2400	219.1	19.2	59.6	28.5	1.09
146	1.000	0.2400	237.6	20.0	61.5	29.6	1.09
147	1.000	0.2400	243.9	20.2	62.1	30.0	1.09
148	1.000	0.2400	242.4	20.2	62.0	29.9	1.09
149	1.000	0.2400	243.0	20.2	62.1	29.9	1.09
150	1.000	0.2400	257.8	20.8	63.5	30.8	1.09
151	1.000	0.2400	268.3	21.2	64.5	31.4	1.09
152	1.000	0.2400	288.2	21.9	66.4	32.6	1.09
153	1.000	0.2400	293.8	22.1	67.0	33.0	1.09
154	1.000	0.2400	286.0	21.8	66.2	32.5	1.09
155	1.000	0.2400	283.4	21.7	66.0	32.3	1.09
156	1.000	0.2400	282.3	21.7	65.9	32.3	1.09
157	1.000	0.2400	264.1	21.0	64.1	31.2	1.09
158	1.000	0.2400	255.0	20.7	63.2	30.6	1.09
159	1.000	0.2400	247.1	20.4	62.5	30.2	1.09
160	1.000	0.2400	252.8	20.6	63.0	30.5	1.09
161	1.000	0.2400	271.2	21.3	64.8	31.6	1.09
162	1.000	0.2400	296.7	22.2	67.2	33.1	1.09
163	1.000	0.2400	318.4	23.0	69.3	34.4	1.09
164	1.000	0.2400	328.6	23.3	70.3	35.0	1.09
165	1.000	0.2400	332.5	23.5	70.7	35.3	1.09
166	1.000	0.2400	327.3	23.3	70.2	34.9	1.09
167	1.000	0.2400	328.4	23.3	70.3	35.0	1.09
168	1.000	0.2400	338.2	23.7	71.2	35.6	1.09
169	1.000	0.2400	360.6	24.4	73.4	37.0	1.09
170	1.000	0.2400	378.8	25.0	75.0	38.0	1.09
171	1.000	0.2400	389.0	25.3	75.9	38.7	1.09
172	1.000	0.2400	390.4	25.3	76.1	38.7	1.09
173	1.000	0.2400	388.4	25.2	75.9	38.6	1.09
174	1.000	0.2400	379.6	25.0	75.1	38.1	1.09
175	1.000	0.2400	372.6	24.8	74.5	37.7	1.09
176	1.000	0.2400	389.5	25.3	76.0	38.7	1.09
177	1.000	0.2400	410.2	25.9	77.9	39.9	1.09
178	1.000	0.2400	428.8	26.4	79.5	40.9	1.09
179	1.000	0.2400	440.2	26.8	80.5	41.6	1.09

*Radial included in average HAAT.

WWCU, Cullowhee, North Carolina Contour Tabulation

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Bearing (degrees)	Relative Field	ERP (kW)	HAAT (meters)	60 dBu F(50,50) (km)	40 dBu F(50,10) (km)	54 dBu F(50,10) (km)	100 dBu F(50,10) (km)
* 180	1.000	0.2400	449.2	27.0	81.3	42.0	1.09
181	0.981	0.2310	449.9	26.8	80.9	41.7	1.07
182	0.962	0.2221	460.7	26.9	81.3	41.8	1.05
183	0.943	0.2134	474.7	27.1	81.9	42.1	1.02
184	0.924	0.2049	485.6	27.2	82.1	42.3	1.00
185	0.905	0.1966	498.6	27.3	82.5	42.5	0.98
186	0.886	0.1884	509.7	27.4	82.7	42.6	0.96
187	0.867	0.1804	511.8	27.2	82.2	42.2	0.94
188	0.848	0.1726	520.6	27.2	82.2	42.2	0.92
189	0.829	0.1649	526.6	27.1	82.0	42.0	0.90
190	0.801	0.1575	528.3	26.8	81.5	41.6	0.88
191	0.794	0.1513	528.2	26.5	81.0	41.1	0.86
192	0.778	0.1453	512.1	25.8	79.4	39.9	0.85
193	0.762	0.1394	523.7	25.9	79.7	40.1	0.83
194	0.746	0.1336	543.2	26.2	80.4	40.5	0.81
195	0.730	0.1279	555.2	26.2	80.6	40.6	0.79
196	0.714	0.1224	568.3	26.3	80.8	40.7	0.78
197	0.698	0.1169	567.4	26.0	80.2	40.2	0.76
198	0.682	0.1116	568.2	25.7	79.6	39.8	0.74
199	0.666	0.1065	574.4	25.6	79.3	39.5	0.72
200	0.650	0.1014	584.6	25.5	79.3	39.5	0.71
201	0.637	0.0974	590.9	25.4	79.1	39.3	0.69
202	0.624	0.0935	599.2	25.4	79.0	39.2	0.68
203	0.611	0.0896	603.8	25.2	78.7	39.0	0.66
204	0.598	0.0858	607.8	25.0	78.3	38.7	0.65
205	0.585	0.0821	607.0	24.7	77.7	38.2	0.64
206	0.572	0.0785	607.8	24.5	77.1	37.8	0.62
207	0.559	0.0750	603.7	24.1	76.3	37.2	0.61
208	0.546	0.0715	611.8	24.0	76.0	37.0	0.59
209	0.533	0.0682	624.7	24.0	76.0	37.0	0.58
210	0.520	0.0649	631.3	23.9	75.6	36.8	0.57
211	0.510	0.0624	640.8	23.8	75.6	36.8	0.55
212	0.500	0.0600	645.2	23.7	75.2	36.5	0.54
213	0.490	0.0576	655.3	23.6	75.2	36.5	0.53
214	0.480	0.0553	666.1	23.6	75.1	36.4	0.52
215	0.470	0.0530	675.0	23.5	74.9	36.3	0.51
216	0.460	0.0508	681.1	23.3	74.6	36.1	0.50
217	0.450	0.0486	689.2	23.2	74.4	35.9	0.49
218	0.440	0.0465	697.7	23.1	74.1	35.7	0.48
219	0.430	0.0444	705.0	22.9	73.8	35.5	0.47
220	0.420	0.0423	710.1	22.8	73.4	35.2	0.46
221	0.412	0.0407	714.6	22.6	73.0	35.0	0.45
222	0.404	0.0392	721.1	22.5	72.7	34.8	0.44
223	0.396	0.0376	718.9	22.2	72.1	34.3	0.43
224	0.388	0.0361	713.9	21.9	71.3	33.8	0.42

*Radial included in average HAAT.

WWCU, Cullowhee, North Carolina Contour Tabulation

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Bearing (degrees)	Relative Field	ERP (kW)	HAAT (meters)	60 dBu F(50,50) (km)	40 dBu F(50,10) (km)	54 dBu F(50,10) (km)	100 dBu F(50,10) (km)
* 225	0.380	0.0347	706.7	21.6	70.4	33.2	0.41
226	0.372	0.0332	697.0	21.2	69.3	32.6	0.40
227	0.364	0.0318	682.2	20.7	68.1	31.7	0.40
228	0.356	0.0304	676.3	20.4	67.2	31.2	0.39
229	0.348	0.0291	678.5	20.2	66.7	30.8	0.38
230	0.340	0.0277	682.0	20.0	66.2	30.5	0.37
231	0.339	0.0276	700.5	20.2	66.9	31.0	0.37
232	0.338	0.0274	709.1	20.3	67.2	31.2	0.37
233	0.337	0.0273	712.2	20.3	67.2	31.2	0.37
234	0.336	0.0271	707.9	20.2	67.0	31.0	0.37
235	0.335	0.0269	700.8	20.1	66.6	30.8	0.36
236	0.334	0.0268	702.6	20.1	66.6	30.8	0.36
237	0.333	0.0266	697.7	20.0	66.3	30.6	0.36
238	0.332	0.0265	683.4	19.8	65.6	30.2	0.36
239	0.331	0.0263	666.9	19.5	64.9	29.7	0.36
240	0.330	0.0261	647.0	19.2	64.0	29.1	0.36
241	0.332	0.0265	632.9	19.0	63.6	28.8	0.36
242	0.334	0.0268	620.3	18.8	63.2	28.5	0.36
243	0.336	0.0271	607.7	18.7	62.9	28.2	0.37
244	0.338	0.0274	598.8	18.6	62.7	28.0	0.37
245	0.340	0.0277	587.0	18.4	62.5	27.7	0.37
246	0.342	0.0281	563.8	18.0	61.7	27.1	0.37
247	0.344	0.0284	532.0	17.5	60.0	26.3	0.37
248	0.346	0.0287	511.2	17.1	58.6	25.8	0.38
249	0.348	0.0291	512.0	17.2	58.9	25.9	0.38
250	0.350	0.0294	496.1	16.9	57.8	25.6	0.38
251	0.350	0.0294	486.2	16.7	57.1	25.3	0.38
252	0.350	0.0294	473.6	16.5	56.2	25.0	0.38
253	0.350	0.0294	466.4	16.3	55.8	24.9	0.38
254	0.350	0.0294	453.4	16.1	54.9	24.5	0.38
255	0.350	0.0294	432.8	15.7	53.6	23.9	0.38
256	0.350	0.0294	405.8	15.3	51.8	23.1	0.38
257	0.350	0.0294	376.6	14.7	49.8	22.1	0.38
258	0.350	0.0294	344.9	14.1	47.3	21.0	0.38
259	0.350	0.0294	316.4	13.5	45.2	20.1	0.38
260	0.350	0.0294	294.8	13.1	43.6	19.4	0.38
261	0.343	0.0282	281.0	12.7	42.2	18.7	0.37
262	0.336	0.0271	267.7	12.2	40.8	18.0	0.37
263	0.329	0.0260	255.7	11.8	39.6	17.3	0.36
264	0.322	0.0249	246.4	11.5	38.5	16.7	0.35
265	0.315	0.0238	250.2	11.5	38.3	16.7	0.34
266	0.308	0.0228	243.7	11.2	37.5	16.2	0.33
267	0.301	0.0217	224.7	10.7	35.5	15.1	0.33
268	0.294	0.0207	205.5	10.1	33.5	14.0	0.32
269	0.287	0.0198	196.0	9.7	32.3	13.6	0.31

*Radial included in average HAAT.

WWCU, Cullowhee, North Carolina
Contour Tabulation

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Bearing (degrees)	Relative Field	ERP (kW)	HAAT (meters)	60 dBu F(50,50) (km)	40 dBu F(50,10) (km)	54 dBu F(50,10) (km)	100 dBu F(50,10) (km)
* 270	0.280	0.0188	197.5	9.6	32.0	13.5	0.30
271	0.275	0.0181	205.9	9.7	32.4	13.6	0.30
272	0.269	0.0174	211.1	9.8	32.5	13.6	0.29
273	0.264	0.0167	206.5	9.6	31.7	13.3	0.29
274	0.258	0.0160	217.1	9.7	32.2	13.5	0.28
275	0.253	0.0153	238.5	10.1	33.5	14.0	0.27
276	0.247	0.0146	256.6	10.3	34.4	14.4	0.27
277	0.242	0.0140	275.7	10.6	35.2	14.8	0.26
278	0.236	0.0134	280.6	10.6	35.1	14.7	0.26
279	0.231	0.0128	283.7	10.5	34.9	14.7	0.25
280	0.225	0.0122	311.5	10.8	36.2	15.3	0.24
281	0.221	0.0117	338.2	11.2	37.5	15.9	0.24
282	0.216	0.0112	357.3	11.3	38.3	16.2	0.23
283	0.212	0.0107	367.8	11.4	38.5	16.3	0.23
284	0.207	0.0103	366.5	11.2	38.0	16.1	0.22
285	0.203	0.0098	372.3	11.2	37.9	16.0	0.22
286	0.198	0.0094	373.6	11.1	37.6	15.8	0.22
287	0.194	0.0090	378.5	11.0	37.4	15.7	0.21
288	0.189	0.0086	375.5	10.8	36.8	15.4	0.21
289	0.185	0.0082	374.0	10.7	36.3	15.1	0.20
290	0.180	0.0078	377.8	10.6	36.0	15.0	0.20
291	0.180	0.0078	384.0	10.6	36.4	15.1	0.20
292	0.180	0.0077	385.4	10.6	36.4	15.1	0.20
293	0.179	0.0077	383.7	10.6	36.3	15.1	0.19
294	0.179	0.0077	369.0	10.4	35.4	14.8	0.19
295	0.179	0.0077	351.5	10.2	34.4	14.4	0.19
296	0.179	0.0077	341.3	10.0	33.8	14.2	0.19
297	0.179	0.0077	328.0	9.8	33.0	13.9	0.19
298	0.179	0.0076	315.2	9.7	32.2	13.6	0.19
299	0.178	0.0076	305.2	9.5	31.7	13.4	0.19
300	0.178	0.0076	293.0	9.3	31.0	13.1	0.19
301	0.178	0.0076	300.9	9.4	31.4	13.3	0.19
302	0.178	0.0076	312.8	9.6	32.1	13.6	0.19
303	0.179	0.0077	319.5	9.7	32.5	13.7	0.19
304	0.179	0.0077	316.9	9.7	32.4	13.7	0.19
305	0.179	0.0077	301.6	9.5	31.5	13.4	0.19
306	0.179	0.0077	283.3	9.2	30.5	13.0	0.19
307	0.179	0.0077	265.5	8.9	29.6	12.5	0.19
308	0.180	0.0077	243.5	8.5	28.4	12.0	0.20
309	0.180	0.0078	220.0	8.1	27.1	11.5	0.20
310	0.180	0.0078	198.7	7.7	25.9	10.9	0.20
311	0.184	0.0081	193.0	7.6	25.8	10.9	0.20
312	0.188	0.0085	186.4	7.6	25.7	10.8	0.20
313	0.192	0.0088	183.5	7.6	25.7	10.9	0.21
314	0.196	0.0092	167.1	7.3	24.8	10.5	0.21

*Radial included in average HAAT.

WWCU, Cullowhee, North Carolina Contour Tabulation

page 8 of 8

Bearing (degrees)	Relative Field	ERP (kW)	HAAT (meters)	60 dBu F(50,50) (km)	40 dBu F(50,10) (km)	54 dBu F(50,10) (km)	100 dBu F(50,10) (km)
* 315	0.200	0.0096	161.0	7.3	24.6	10.4	0.22
316	0.204	0.0100	152.2	7.1	24.1	10.1	0.22
317	0.208	0.0104	153.4	7.2	24.4	10.3	0.23
318	0.212	0.0108	158.7	7.4	25.1	10.6	0.23
319	0.216	0.0112	155.1	7.4	25.0	10.5	0.23
320	0.220	0.0116	146.8	7.3	24.5	10.3	0.24
321	0.222	0.0118	133.8	7.0	23.4	9.9	0.24
322	0.224	0.0120	135.7	7.1	23.7	10.0	0.24
323	0.226	0.0123	129.2	6.9	23.2	9.8	0.25
324	0.228	0.0125	122.8	6.8	22.8	9.6	0.25
325	0.230	0.0127	132.5	7.1	23.7	10.0	0.25
326	0.232	0.0129	125.8	6.9	23.2	9.8	0.25
327	0.234	0.0131	103.8	6.4	21.1	9.0	0.25
328	0.236	0.0134	85.8	5.8	19.0	8.1	0.26
329	0.238	0.0136	77.4	5.5	18.0	7.7	0.26
330	0.240	0.0138	57.1	4.8	15.3	6.7	0.26
331	0.240	0.0138	41.9	4.0	12.8	5.7	0.26
332	0.240	0.0138	37.1	3.8	12.1	5.4	0.26
333	0.240	0.0138	28.6	3.4	11.0	4.8	0.26
334	0.240	0.0138	18.4	3.4	11.0	4.8	0.26
335	0.240	0.0138	4.1	3.4	11.0	4.8	0.26
336	0.240	0.0138	-11.2	3.4	11.0	4.8	0.26
337	0.240	0.0138	-20.8	3.4	11.0	4.8	0.26
338	0.240	0.0138	-22.9	3.4	11.0	4.8	0.26
339	0.240	0.0138	-32.4	3.4	11.0	4.8	0.26
340	0.240	0.0138	-39.8	3.4	11.0	4.8	0.26
341	0.241	0.0139	-31.7	3.4	11.0	4.8	0.26
342	0.242	0.0141	-37.4	3.4	11.0	4.9	0.26
343	0.243	0.0142	-52.7	3.4	11.1	4.9	0.26
344	0.244	0.0143	-44.3	3.4	11.1	4.9	0.27
345	0.245	0.0144	-32.9	3.5	11.1	4.9	0.27
346	0.246	0.0145	-12.3	3.5	11.1	4.9	0.27
347	0.247	0.0146	8.0	3.5	11.1	4.9	0.27
348	0.248	0.0148	35.6	3.8	12.0	5.3	0.27
349	0.249	0.0149	63.0	5.1	16.5	7.1	0.27
350	0.250	0.0150	85.6	6.0	19.6	8.4	0.27
351	0.256	0.0157	98.8	6.5	21.6	9.1	0.28
352	0.262	0.0165	100.4	6.6	22.0	9.3	0.28
353	0.268	0.0172	105.0	6.8	22.8	9.6	0.29
354	0.274	0.0180	104.9	6.9	23.1	9.7	0.30
355	0.280	0.0188	109.5	7.1	23.9	10.0	0.30
356	0.286	0.0196	115.3	7.4	24.8	10.4	0.31
357	0.292	0.0205	128.6	7.8	26.3	11.0	0.32
358	0.298	0.0213	142.2	8.4	28.0	11.7	0.32
359	0.304	0.0222	140.2	8.4	28.0	11.8	0.33

*Radial included in average HAAT.

WWCU
Western Carolina University
Cullowhee, North Carolina
TV Channel 6 Interference Contour Tabulation

Bearing (degrees)	Relative Field	ERP (kW)	HAAT (meters)	69.5 dBu F(50,10) (km)		Bearing (degrees)	Relative Field	ERP (kW)	HAAT (meters)	69.5 dBu F(50,10) (km)
0	0.310	0.0236	134.1	4.7		180	1.000	0.2460	449.2	16.3
5	0.325	0.0260	177.2	5.6		185	0.905	0.2015	498.6	16.2
10	0.340	0.0284	130.1	4.9		190	0.810	0.1614	528.3	15.5
15	0.375	0.0346	159.5	5.8		195	0.730	0.1311	555.2	14.7
20	0.410	0.0414	165.5	6.1		200	0.650	0.1039	584.6	14.2
25	0.460	0.0521	192.3	7.0		205	0.585	0.0842	607.0	13.5
30	0.510	0.0640	266.5	8.7		210	0.520	0.0665	631.3	12.8
35	0.510	0.0640	275.9	8.9		215	0.470	0.0543	675.0	12.3
40	0.510	0.0640	266.7	8.7		220	0.420	0.0434	710.1	11.5
45	0.465	0.0532	255.7	8.1		225	0.380	0.0355	706.7	10.7
50	0.420	0.0434	292.7	8.2		230	0.340	0.0284	682.0	9.7
55	0.405	0.0404	362.6	8.9		235	0.335	0.0276	700.8	9.7
60	0.390	0.0374	468.9	9.5		240	0.330	0.0268	647.0	9.3
65	0.440	0.0476	520.6	10.6		245	0.340	0.0284	587.0	9.3
70	0.490	0.0591	519.0	11.3		250	0.350	0.0301	496.1	9.0
75	0.550	0.0744	513.9	12.0		255	0.350	0.0301	432.8	8.7
80	0.610	0.0915	433.8	12.1		260	0.350	0.0301	294.8	7.4
85	0.685	0.1154	335.8	11.4		265	0.315	0.0244	250.2	6.4
90	0.760	0.1421	303.4	11.4		270	0.280	0.0193	197.5	5.4
95	0.855	0.1798	207.1	10.0		275	0.253	0.0157	238.5	5.5
100	0.950	0.2220	141.5	8.7		280	0.225	0.0125	311.5	5.7
105	0.975	0.2339	189.9	10.3		285	0.203	0.0101	372.3	5.6
110	1.000	0.2460	123.3	8.3		290	0.180	0.0080	377.8	5.1
115	1.000	0.2460	65.5	6.0		295	0.179	0.0079	351.5	5.0
120	1.000	0.2460	7.1	4.1		300	0.178	0.0078	293.0	4.7
125	1.000	0.2460	-80.7	4.1		305	0.179	0.0079	301.6	4.8
130	1.000	0.2460	2.5	4.1		310	0.180	0.0080	198.7	4.1
135	1.000	0.2460	98.3	7.4		315	0.200	0.0098	161.0	4.0
140	1.000	0.2460	185.0	10.3		320	0.220	0.0119	146.8	4.1
145	1.000	0.2460	219.1	11.1		325	0.230	0.0130	132.5	4.0
150	1.000	0.2460	257.8	12.1		330	0.240	0.0142	57.1	2.8
155	1.000	0.2460	283.4	12.6		335	0.240	0.0142	4.1	2.1
160	1.000	0.2460	252.8	11.9		340	0.240	0.0142	-39.8	2.1
165	1.000	0.2460	332.5	13.7		345	0.245	0.0148	-32.9	2.1
170	1.000	0.2460	378.8	14.6		350	0.250	0.0154	85.6	3.4
175	1.000	0.2460	372.6	14.4		355	0.280	0.0193	109.5	4.1

WSMC-FM
Collegedale, Tennessee
Contour Tabulation Toward WVCU, Cullowhee, North Carolina

Bearing (degrees)	Relative Field	ERP (kW)	HAAT (meters)	60 dBu F(50,50) (km)	40 dBu F(50,10) (km)
80.0	0.674	45.43	465.8	76.3	171.0
81.0	0.685	46.92	465.3	76.7	171.6
82.0	0.696	48.44	464.7	77.0	172.2
83.0	0.707	49.98	465.0	77.3	172.8
84.0	0.718	51.55	464.6	77.6	173.4
85.0	0.729	53.14	464.8	78.0	174.0
86.0	0.740	54.76	462.9	78.2	174.5
87.0	0.751	56.40	463.4	78.5	175.1
88.0	0.762	58.06	464.2	78.9	175.8
89.0	0.773	59.75	463.7	79.2	176.4
90.0	0.784	61.47	466.5	79.7	177.2
91.0	0.793	62.92	464.8	79.8	177.6
92.0	0.802	64.38	464.8	80.0	178.1
93.0	0.812	65.87	466.3	80.4	178.7
94.0	0.821	67.37	465.3	80.5	179.1
95.0	0.830	68.89	462.5	80.6	179.4
96.0	0.839	70.43	460.0	80.6	179.7
97.0	0.848	71.98	459.4	80.8	180.1
98.0	0.858	73.55	459.8	81.1	180.6
99.0	0.867	75.13	461.2	81.4	181.2
100.0	0.876	76.74	462.0	81.7	181.8

WVMH-FM Licensed Facilities
Mars Hill, North Carolina
Contour Tabulation Toward WVCU, Cullowhee, North Carolina

Bearing (degrees)	HAAT (meters)	60 dBu F(50,50) (km)	40 dBu F(50,10) (km)		Bearing (degrees)	HAAT (meters)	60 dBu F(50,50) (km)	40 dBu F(50,10) (km)
191.0	89.0	12.2	41.8		231.0	117.0	13.9	47.3
192.0	86.7	12.0	41.3		232.0	122.2	14.2	48.0
193.0	89.2	12.2	41.9		233.0	121.9	14.2	48.0
194.0	90.6	12.3	42.2		234.0	118.1	14.0	47.4
195.0	92.1	12.4	42.5		235.0	115.4	13.8	47.0
196.0	91.6	12.3	42.4		236.0	109.3	13.4	46.0
197.0	93.5	12.5	42.8		237.0	115.2	13.8	47.0
198.0	98.0	12.7	43.8		238.0	124.4	14.3	48.3
199.0	98.9	12.8	44.0		239.0	112.8	13.7	46.6
200.0	100.1	12.9	44.2		240.0	92.7	12.4	42.7
201.0	98.1	12.7	43.8		241.0	88.5	12.1	41.7
202.0	101.8	13.0	44.6		242.0	88.3	12.1	41.7
203.0	99.8	12.9	44.2		243.0	87.7	12.1	41.5
204.0	98.8	12.8	44.0		244.0	90.6	12.3	42.2
205.0	102.4	13.0	44.7		245.0	89.0	12.2	41.8
206.0	103.6	13.1	44.9		246.0	90.6	12.3	42.2
207.0	109.6	13.5	46.0		247.0	94.1	12.5	43.0
208.0	107.9	13.4	45.7		248.0	94.0	12.5	43.0
209.0	110.5	13.5	46.2		249.0	95.7	12.6	43.3
210.0	106.3	13.3	45.5		250.0	98.0	12.7	43.8
211.0	103.8	13.1	45.0		251.0	101.0	12.9	44.4
212.0	102.0	13.0	44.6		252.0	104.1	13.1	45.0
213.0	101.8	13.0	44.6		253.0	110.7	13.5	46.2
214.0	102.7	13.0	44.8		254.0	114.1	13.7	46.8
215.0	102.8	13.0	44.8		255.0	109.7	13.5	46.1
216.0	99.4	12.8	44.1		256.0	110.1	13.5	46.1
217.0	94.7	12.5	43.1		257.0	113.6	13.7	46.7
218.0	100.0	12.9	44.2		258.0	109.9	13.5	46.1
219.0	104.4	13.1	45.1		259.0	98.0	12.7	43.8
220.0	102.6	13.0	44.7		260.0	85.2	11.9	40.9
221.0	98.9	12.8	44.0		261.0	77.9	11.4	39.1
222.0	98.9	12.8	44.0		262.0	75.9	11.3	38.6
223.0	101.2	12.9	44.5		263.0	80.6	11.6	39.8
224.0	103.7	13.1	45.0		264.0	84.2	11.9	40.7
225.0	109.6	13.5	46.1		265.0	88.5	12.1	41.7
226.0	111.1	13.5	46.3		266.0	86.8	12.0	41.3
227.0	112.5	13.6	46.5		267.0	79.9	11.6	39.6
228.0	113.9	13.7	46.8		268.0	69.4	10.9	36.8
229.0	115.1	13.8	47.0		269.0	61.5	10.3	34.6
230.0	114.8	13.8	46.9		270.0	54.4	9.7	32.3

WVMH-FM Construction Permit Facilities
Mars Hill, North Carolina
Contour Tabulation Toward WVCU, Cullowhee, North Carolina

Bearing (degrees)	HAAT (meters)	60 dBu F(50,50) (km)	40 dBu F(50,10) (km)		Bearing (degrees)	HAAT (meters)	60 dBu F(50,50) (km)	40 dBu F(50,10) (km)
191.0	69.7	11.4	38.9		231.0	106.2	13.9	47.5
192.0	71.0	11.5	39.2		232.0	102.6	13.6	46.8
193.0	72.8	11.6	39.7		233.0	101.4	13.5	46.5
194.0	74.9	11.7	40.3		234.0	94.3	13.1	45.0
195.0	75.3	11.8	40.4		235.0	99.5	13.4	46.2
196.0	76.6	11.9	40.7		236.0	105.7	13.8	47.4
197.0	79.5	12.1	41.5		237.0	99.8	13.4	46.2
198.0	79.6	12.1	41.5		238.0	79.7	12.1	41.5
199.0	80.9	12.1	41.8		239.0	68.3	11.3	38.5
200.0	82.5	12.3	42.2		240.0	69.9	11.4	38.9
201.0	87.5	12.6	43.5		241.0	71.2	11.5	39.3
202.0	85.6	12.5	43.0		242.0	73.2	11.6	39.8
203.0	84.8	12.4	42.8		243.0	77.0	11.9	40.8
204.0	86.5	12.5	43.3		244.0	72.4	11.6	39.6
205.0	88.4	12.7	43.7		245.0	75.9	11.8	40.6
206.0	92.5	12.9	44.6		246.0	77.3	11.9	40.9
207.0	92.5	12.9	44.6		247.0	76.5	11.8	40.7
208.0	92.6	13.0	44.7		248.0	77.4	11.9	40.9
209.0	89.1	12.7	43.9		249.0	79.6	12.1	41.5
210.0	82.7	12.3	42.3		250.0	85.4	12.5	43.0
211.0	82.9	12.3	42.4		251.0	90.1	12.8	44.1
212.0	84.0	12.4	42.6		252.0	94.4	13.1	45.1
213.0	86.7	12.5	43.3		253.0	92.9	13.0	44.7
214.0	85.4	12.5	43.0		254.0	92.3	12.9	44.6
215.0	79.0	12.0	41.4		255.0	99.3	13.4	46.1
216.0	80.2	12.1	41.7		256.0	99.4	13.4	46.1
217.0	86.8	12.6	43.3		257.0	90.3	12.8	44.1
218.0	90.1	12.8	44.1		258.0	74.4	11.7	40.1
219.0	84.7	12.4	42.8		259.0	62.3	10.8	36.8
220.0	84.0	12.4	42.6		260.0	59.5	10.6	35.9
221.0	86.4	12.5	43.2		261.0	59.3	10.6	35.9
222.0	87.4	12.6	43.5		262.0	65.7	11.1	37.7
223.0	90.2	12.8	44.1		263.0	73.4	11.6	39.9
224.0	95.9	13.2	45.4		264.0	75.0	11.7	40.3
225.0	97.7	13.3	45.8		265.0	67.5	11.2	38.3
226.0	97.7	13.3	45.8		266.0	62.3	10.8	36.7
227.0	98.5	13.4	45.9		267.0	55.3	10.2	34.5
228.0	99.2	13.4	46.1		268.0	46.1	9.3	30.9
229.0	99.8	13.4	46.2		269.0	36.4	8.2	27.2
230.0	100.8	13.5	46.4		270.0	31.9	7.6	25.6

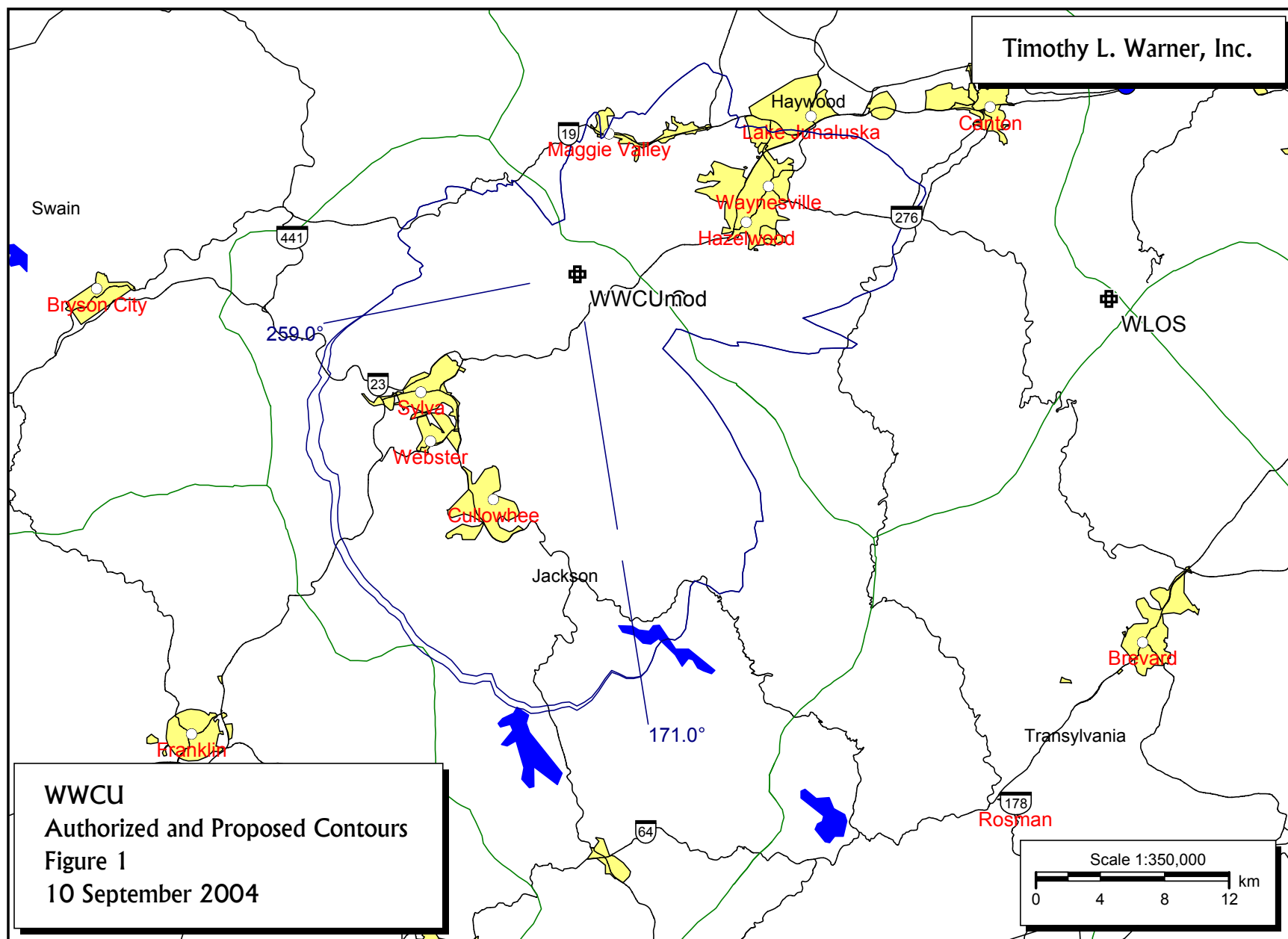
BPED-19961203ME
Newport, Tennessee
Contour Tabulation Toward WWCU, Cullowhee, North Carolina

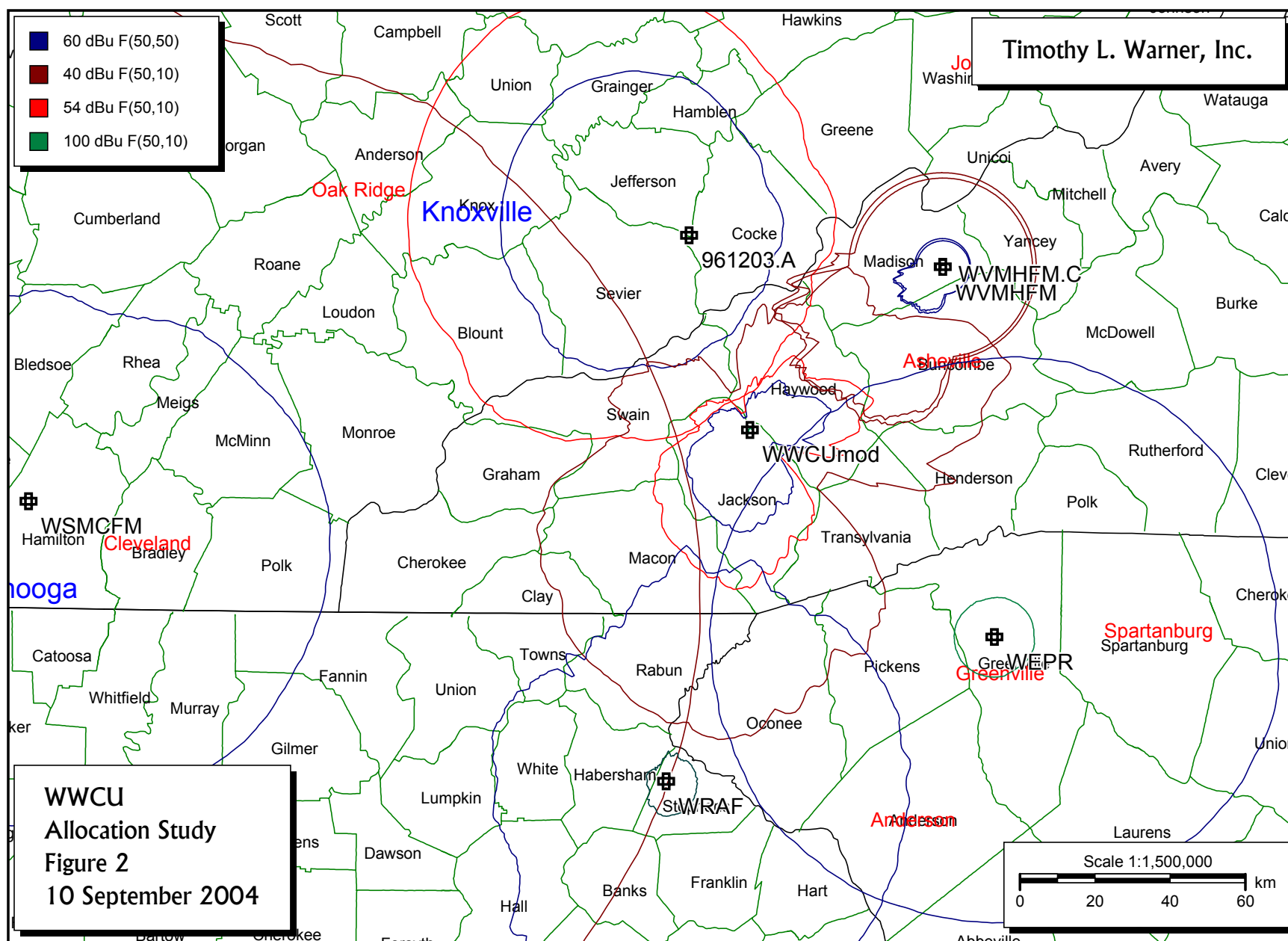
Bearing (degrees)	Relative Field	ERP (kW)	HAAT (meters)	60 dBu F(50,50) (km)	54 dBu F(50,10) (km)
150.0	0.325	0.106	635.0	26.9	41.8
151.0	0.330	0.109	632.8	27.0	42.1
152.0	0.335	0.112	633.8	27.2	42.4
153.0	0.340	0.116	640.6	27.6	43.0
154.0	0.345	0.119	647.9	27.9	43.6
155.0	0.350	0.122	653.0	28.2	44.0
156.0	0.355	0.126	655.7	28.5	44.4
157.0	0.360	0.130	655.1	28.6	44.7
158.0	0.365	0.133	650.4	28.7	44.9
159.0	0.370	0.137	638.7	28.7	44.8
160.0	0.375	0.141	635.4	28.8	44.9
161.0	0.380	0.144	633.2	28.9	45.1
162.0	0.384	0.147	629.3	29.0	45.2
163.0	0.389	0.151	628.9	29.1	45.5
164.0	0.393	0.154	621.5	29.1	45.5
165.0	0.398	0.158	615.3	29.1	45.5
166.0	0.402	0.162	611.4	29.2	45.6
167.0	0.407	0.165	610.3	29.3	45.8
168.0	0.411	0.169	606.5	29.4	45.9
169.0	0.416	0.173	609.1	29.6	46.3
170.0	0.420	0.176	615.1	29.9	46.8
171.0	0.430	0.185	613.9	30.2	47.3
172.0	0.440	0.194	605.0	30.3	47.5
173.0	0.450	0.203	603.3	30.6	47.9
174.0	0.460	0.212	610.4	31.2	48.7
175.0	0.470	0.221	616.2	31.7	49.5
176.0	0.480	0.230	616.8	32.1	50.0
177.0	0.490	0.240	620.9	32.5	50.7
178.0	0.500	0.250	618.8	32.8	51.1
179.0	0.510	0.260	622.1	33.3	51.6
180.0	0.520	0.270	618.7	33.5	52.0
181.0	0.531	0.281	615.8	33.8	52.4
182.0	0.541	0.293	618.6	34.2	52.9
183.0	0.552	0.304	616.1	34.4	53.3
184.0	0.562	0.316	611.5	34.6	53.6
185.0	0.573	0.328	607.2	34.8	53.9
186.0	0.583	0.340	599.6	34.9	54.0
187.0	0.594	0.352	597.7	35.1	54.4
188.0	0.604	0.365	592.6	35.3	54.6
189.0	0.615	0.378	590.0	35.5	54.9
190.0	0.625	0.391	587.6	35.7	55.3

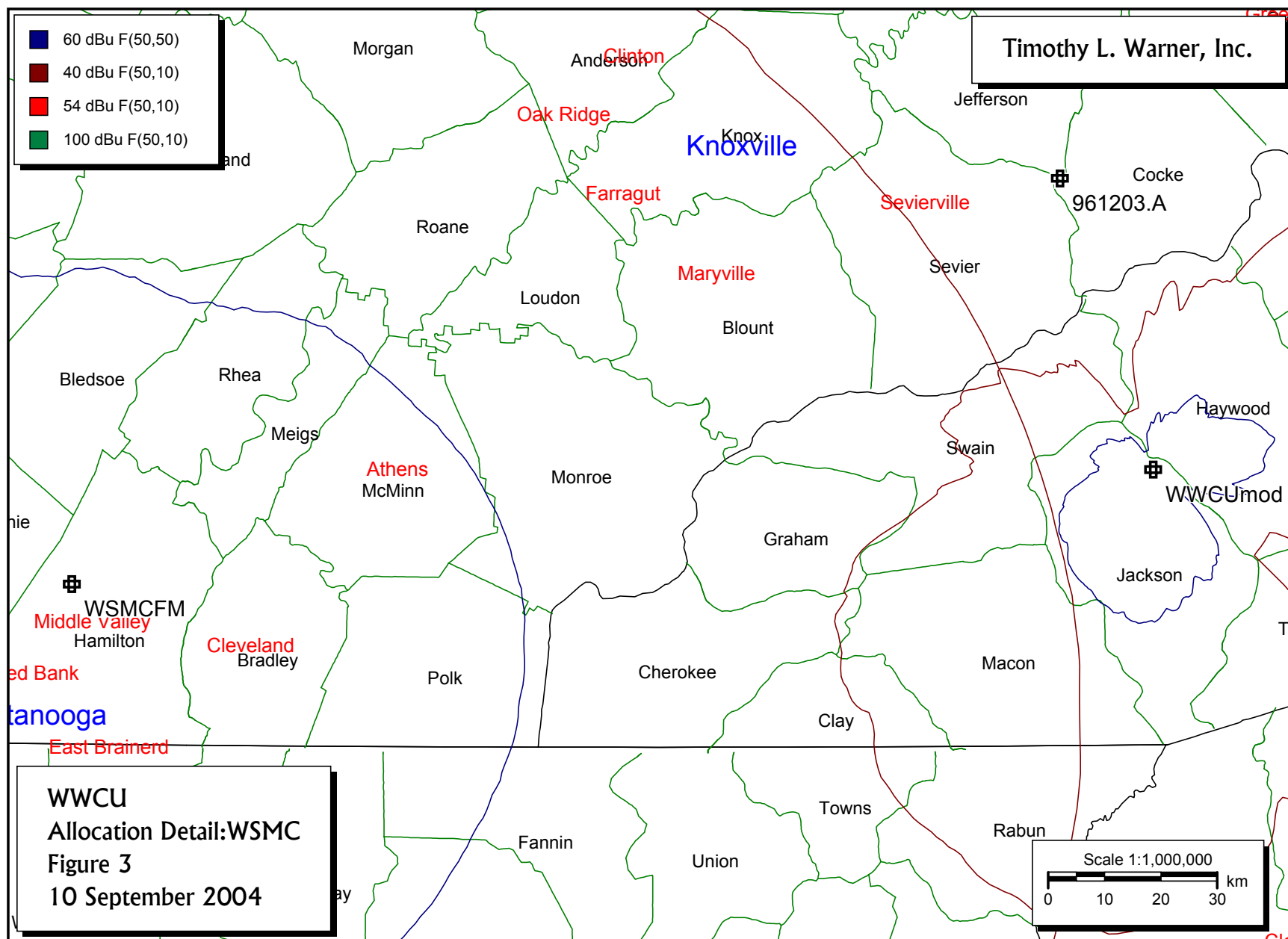
WWCU
Western Carolina University
Cullowhee, North Carolina
Allocation Table

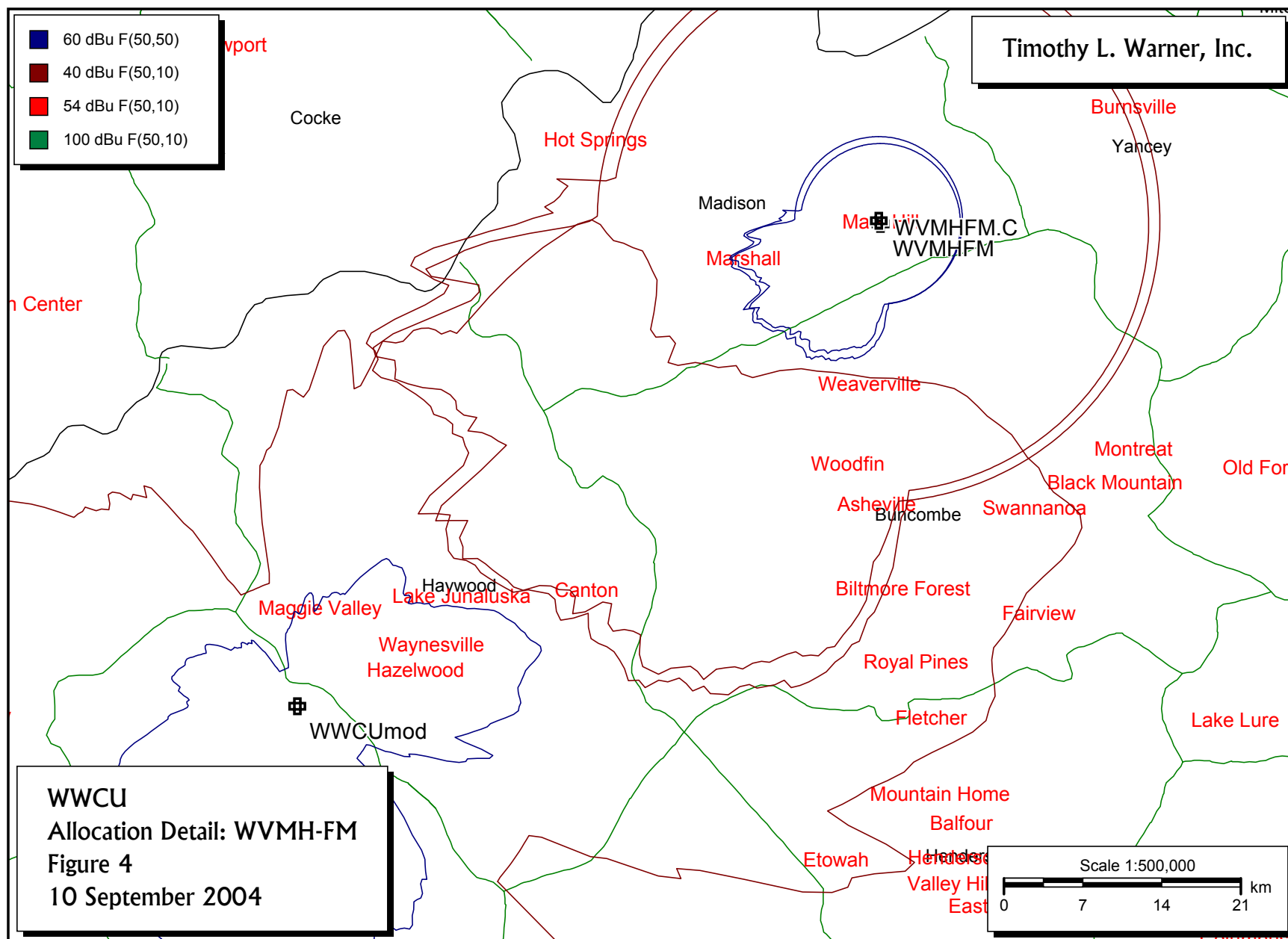
REFERENCE		CH# 213A - 90.5 MHz, Pwr= 0.24 kW, HAAT=289.0M, COR= 1432 M										DISPLAY DATES
35 26 23 N		Average Protected F(50-50)= 21.9 km										DATA 09-04-04
83 07 11 W		Ave. F(50-10) 40 dBu= 66.5 54 dBu= 32.7 80 dBu= 6.6 100 dBu= 1.1										SEARCH 09-09-04
CH	CALL	TYPE	AZI.	DIST	LAT.	Pwr(kW)	COR(M)	PRO(km)	*IN*	*OUT*		
CITY		STATE	<- -	FILE #	LNG.	HAAT(M)	INT(km)	LICENSEE	(Overlap	in km)		
213A	WWCU.C	CP DCX	0.0	0.00	35 26 23	0.23	1432	8.3	-89.01<	-54.43*<		
Cullowhee		NC	180.0	BPED20010509AAU	83 07 11	449	80.8	Western Carolina University				
213A	WWCU	LIC C	199.7	15.16	35 18 40	0.76	706	25.6	-42.90<	-73.81<		
Cullowhee		NC	19.7	BLED20000703ADC	83 10 34	-272	32.4	Western Carolina University				
213A	WVMHFM	LIC HN	50.1	67.01	35 49 30	0.25	725	14.2	5.86	6.00		
Mars Hill		NC	230.1	BLED19831017AI	82 33 00	115	46.9	Mars Hill College				
213A	WVMHFM	CP CX	49.8	67.07	35 49 39	0.3	709	14.3	6.37	6.23		
Mars Hill		NC	229.8	BPED20011126ABB	82 33 06	101	46.4	Mars Hill College				
214C3	961203	APP DVN	342.9	54.15	35 54 21	0.151	1116	3.4	5.22	20.17		
Newport		TN	162.9	BPED19961203ME	83 17 49	629	45.5	Bible Believers Network Inc				
Vertical Polarization Only												
213C	WSMCFM	LIC DCN	264.5	192.56	35 15 20	52.332	705	11.4	7.27	76.48		
Collegedale		TN	84.5	BLED19940222KF	85 13 34	465	173.9	Southern Adventist University				
211C	WEPR	LIC CN	130.5	85.08	34 56 26	85	669	7.0	67.68	10.01		
Greenville		SC	310.5	BLED19870508KA	82 24 38	344	10.4	South Carolina Educational				
213C2	WUOG	LIC DCN	188.3	167.04	33 56 59	8.507	276	27.1	56.74	62.28		
Athens		GA	8.3	BLED19940103KC	83 22 58	52	83.2	The University Of Georgia				
213A	WUMC	LIC DC	37.7	121.24	36 17 58	0.5	530	15.2	77.49	62.53		
Elizabethton		TN	217.7	BLED20000525AGV	82 17 28	-230	28.5	Milligan College				
212A	WUTKFM	LIC VN	308.3	92.54	35 57 09	0.8	316	8.5	70.62	70.90		
Knoxville		TN	128.3	BLED19950410KI	83 55 34	5	13.4	University Of Tennessee				
Vertical Polarization Only												
215C1	WRAF	LIC DEN	193.5	95.91	34 35 57	98.945	513	26.3	62.73	37.95		
Toccoa Falls		GA	13.5	BLED19860211KD	83 21 55	141	6.9	Toccoa Falls College				
06Z2C	WATETV	LI HY	310.4	97.28	36 00 13	100	858	110.8	To Grd B=	-29.52		
Knoxville		TN	130.4	BLCT20020726ABM	83 56 35	581		WATE, G.p.				

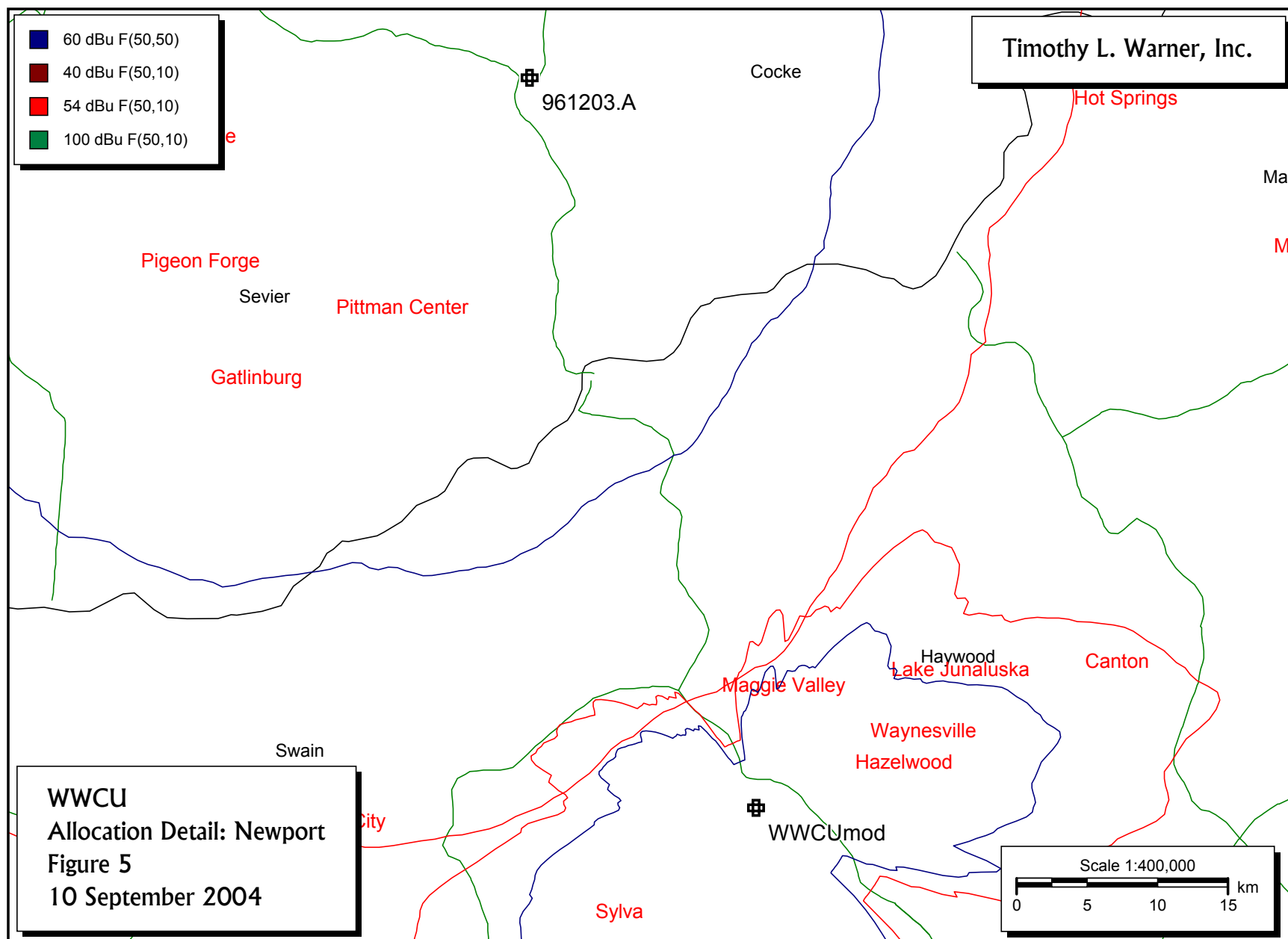
ERP and HAAT are on direct line to and from reference station.
 "*"Affixed to 'IN' or 'Out' values = site inside protected contour.
 "<" = Contour Overlap

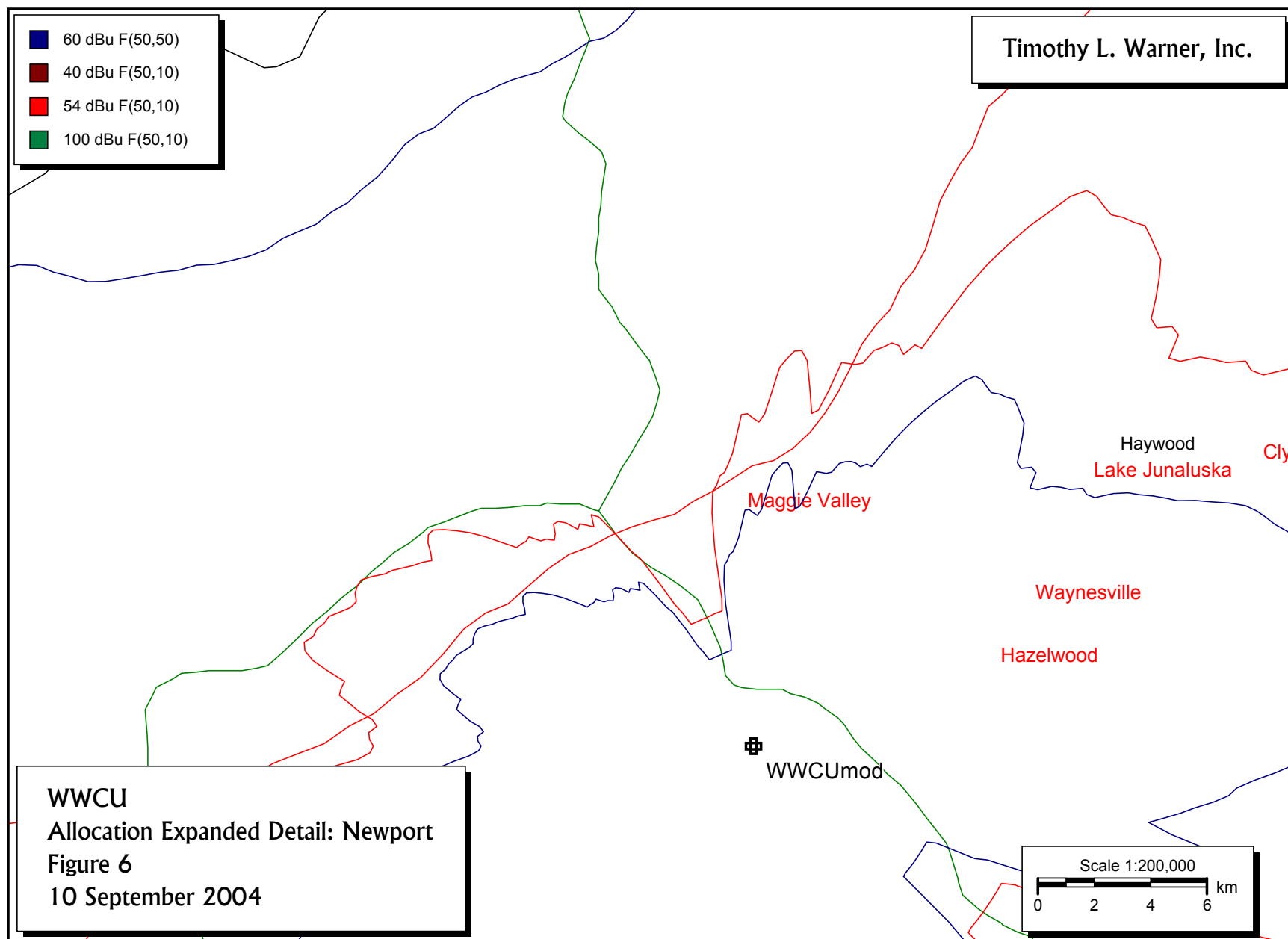


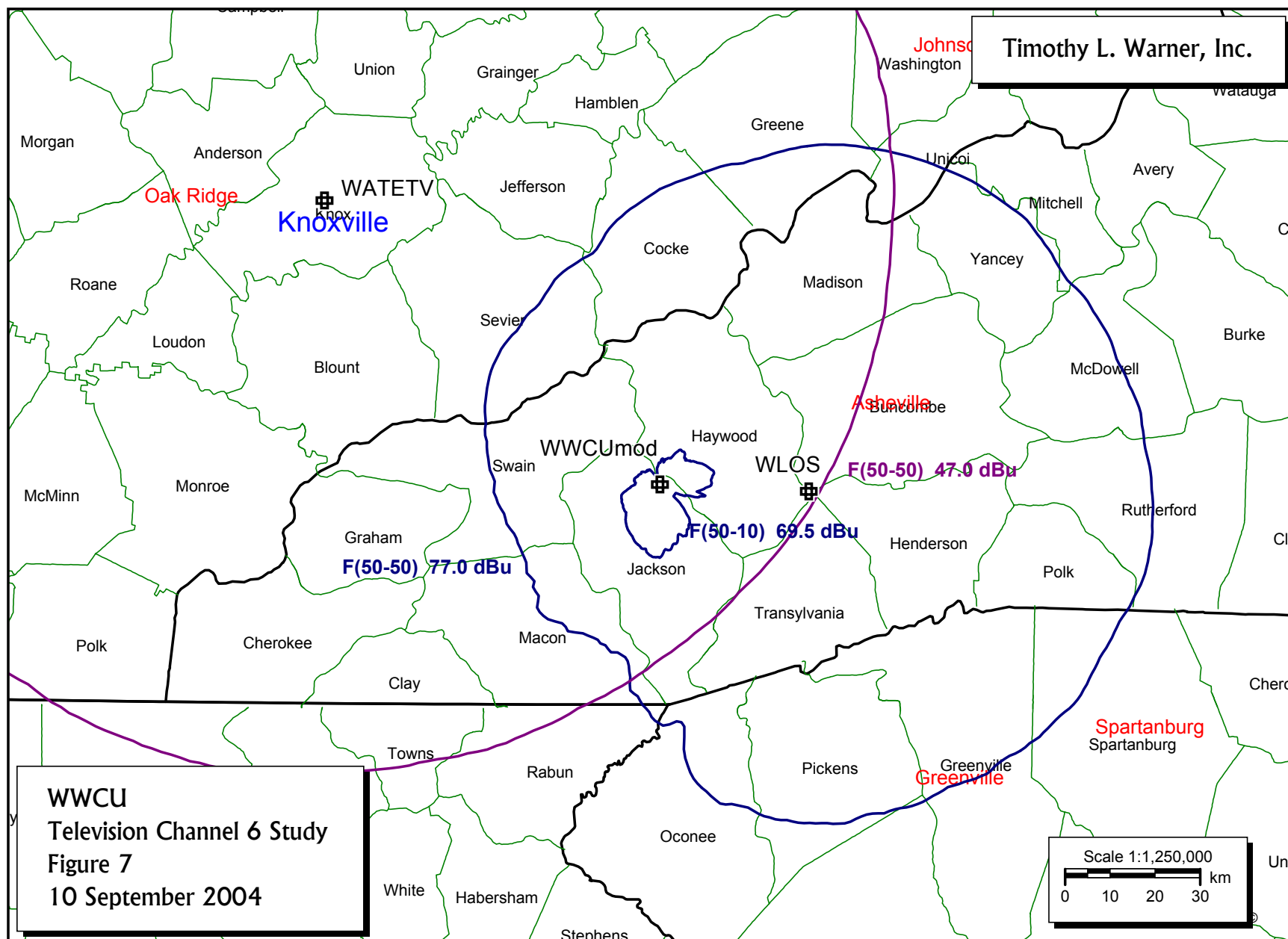




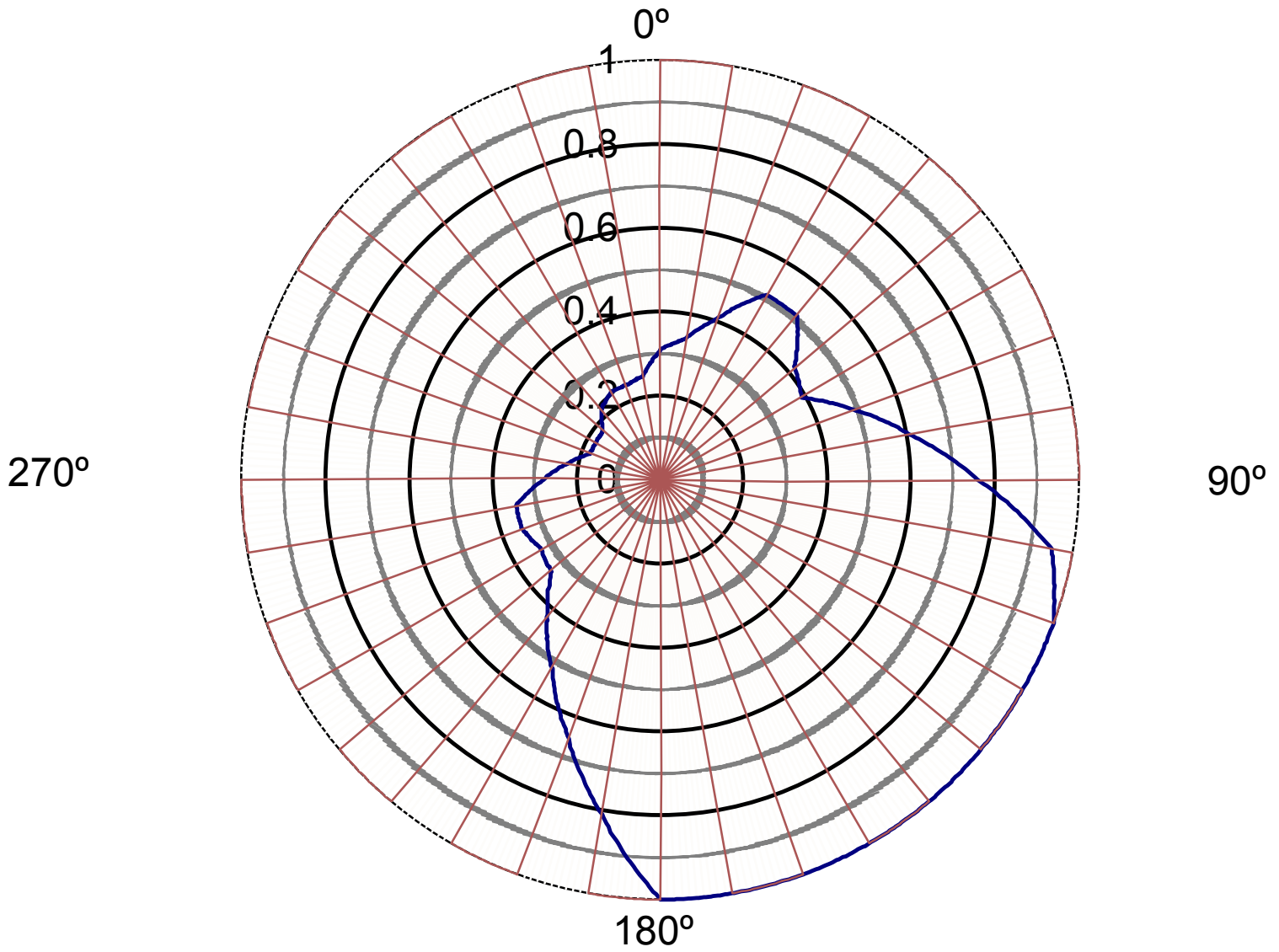








WWCU
Western Carolina University
Cullowhee, North Carolina
Directional Antenna Horizontal Plane Relative Field Plot



WWCU
Western Carolina University
Cullowhee, North Carolina
Directional Antenna Horizontal Plane Relative Field Tabulation

Bearing (degrees)	Relative Field		Bearing (degrees)	Relative Field
0	0.310		180	1.000
10	0.340		190	0.810
20	0.410		200	0.650
30	0.510		210	0.520
40	0.510		220	0.420
50	0.420		230	0.340
60	0.390		240	0.330
70	0.490		250	0.350
80	0.610		260	0.350
90	0.760		270	0.280
100	0.950		280	0.225
110	1.000		290	0.180
120	1.000		300	0.178
130	1.000		310	0.180
140	1.000		320	0.220
150	1.000		330	0.240
160	1.000		340	0.240
170	1.000		350	0.250