

ENGINEERING EXHIBIT  
APPLICATION FOR MODIFICATION OF  
CONSTRUCTION PERMIT  
TELEVISION STATION WTVC-DT  
CHATTANOOGA, TENNESSEE

April 10, 2001

CHANNEL 35 200 KW (MAX-DA) 305 M

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CHANNEL 35 200 KW (MAX-DA) 305 M

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Engineering Statement

This Engineering Exhibit was prepared on behalf of digital television broadcast station WTVC-DT, Chattanooga, Tennessee; in support of an application for modification of construction permit (see FCC File No. BPCDT-19991026ACM). The purpose of this application is to change from a non-directional to a directional transmitting antenna and to increase the antenna HAAT to 305 m, a 2-m increase. The proposed maximum effective radiated power (ERP) remains at 200 kW (23.0 dBk) such that the proposal is categorized as a “checklist” filing. No other changes are proposed. The proposal complies with the DTV application “checklist” filing requirements.\*

The proposal meets the maximum permissible ERP requirement pursuant to Section 73.622(f)(2) of the FCC Rules. Figure 3 is a relative field polar graph of the WTVC-DT allotment pattern. The minimum at any point on the pattern is 0.659 relative field, which equates to an ERP 434 kW, given a maximum allotment ERP of 1000 kW. Therefore, the proposed maximum directional ERP of 200 kW will be within the WTVC-DT pattern envelope at all azimuths.†

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\* See FCC *Public Notice*, “Commission Details Application Filing Procedures Digital Television (DTV)”, Released: October 16, 1997; and, FCC *Public Notice*, “Additional Application Processing Guidelines for Digital Television (DTV)”, Released: August 10, 1998.

† The proposed WTVC-DT antenna height above average terrain (HAAT) is 305 m. The HAAT specified in Appendix B of the FCC Digital Sixth Report and Order is 317 m.

### Predicted Coverage Contours

The predicted f(50,90) coverage contours for the proposed facility were calculated in accordance with the FCC Rules. The 3-16 km terrain data were obtained through use of the U.S.G.S. 3-second computer database. Figure 1 is a tabulation of the 3-16-km terrain averages and the distances to the predicted coverage contours. The predicted coverage contours are projected on a map included herein as Figure 2. As indicated, the predicted 48 dBu f(50,90) contour encompasses the entire community of Chattanooga in compliance with Section 73.625(a) of the FCC Rules.

### Allocation Considerations

The proposed WTVC-DT facility meets the criteria of Section 73.622(f) of the FCC Rules. Therefore, pursuant to that section, the application shall not be subject to further consideration of electromagnetic interference to other DTV or analog TV broadcast stations.

### Environmental Considerations

With respect to the potential for human exposure to radio frequency (RF) radiation, the applicant shall conduct RF measurements at the WTVC-DT transmitter site to demonstrate compliance with the FCC's guidelines for human exposure to RF radiation. Furthermore, the applicant, in coordination with other users of the

transmission facility, shall reduce power or cease operation as necessary to protect persons having access to the WTVC-DT tower or antenna from radio frequency radiation in excess of the FCC guidelines.

Louis Robert du Treil, Jr.

du Treil, Lundin & Rackley, Inc.  
201 Fletcher Ave.  
Sarasota, FL 34237-6019

941-329-6000

April 10, 2001

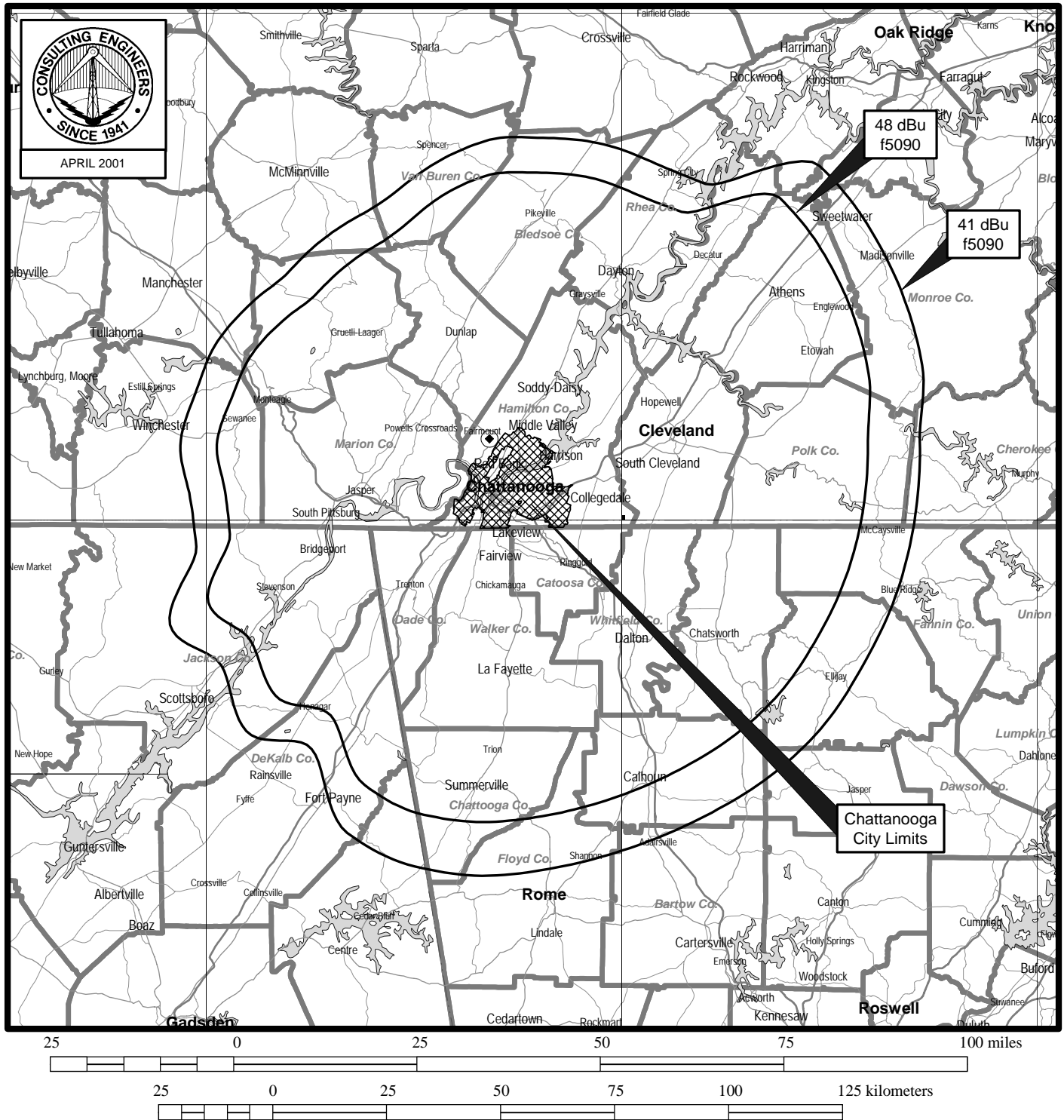
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Tabulation of Average Elevations and  
Distances to Predicted Coverage Contours

Azimuth (deg.T)	3-16 km Average Terrain (m)	Antenna HAAT (m)	ERP (kW)	48 dBu f(50,90) Contour (km)	41 dBu f(50,90) Contour (km)
0	540	152	73.2	57.8	65.5
15	526	166	102.8	60.4	68.2
30	521	171	142.8	62.4	70.3
45	412	280	181.3	71.1	80.0
60	245	447	198.8	83.6	95.0
75	224	468	190.5	84.3	96.2
90	241	451	172.6	82.8	94.2
105	230	462	174.8	83.4	95.0
120	231	461	194.0	84.1	95.8
135	223	469	198.4	84.6	96.6
150	230	462	180.9	83.7	95.3
165	226	466	170.4	83.5	95.1
180	227	465	183.9	83.9	95.7
195	266	426	198.8	82.6	93.8
210	430	262	190.1	70.1	78.6
225	442	250	157.0	68.3	76.6
240	376	316	114.9	71.2	80.9
255	518	174	82.7	59.9	67.8
270	489	203	52.0	59.5	67.5
285	458	234	23.7	57.6	65.8
300	499	193	12.8	52.1	59.9
315	523	169	11.9	50.3	58.0
330	571	121	18.2	49.1	56.6
345	575	117	41.0	52.7	60.0

Note: The 3-16-km average terrain is 387 m based on the eight conventional radials (0°, 45°, 90°, etc.) as derived from the U.S.G.S. 3-second terrain database. The overall antenna radiation center height above average terrain is 305 m based on the eight conventional radials. Terrain data based on U.S.G.S. 3-second linearly interpolated terrain database.

Figure 2

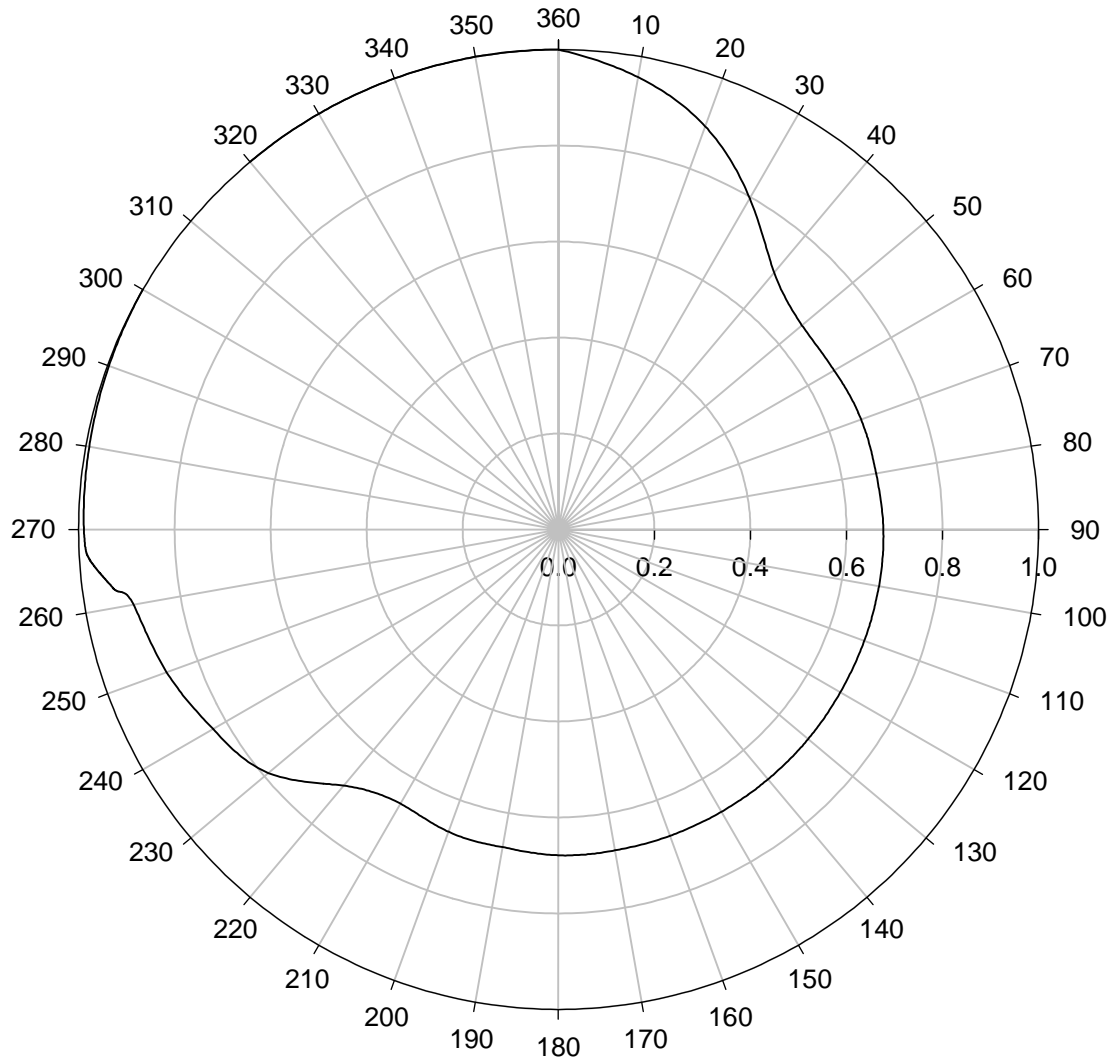


## PREDICTED COVERAGE CONTOURS

TELEVISION STATION WTVC-DT  
CHATTANOOGA, TENNESSEE  
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du Treil, Lundin & Rackley, Inc. Sarasota, Florida

Figure 3



**FCC DTV ALLOTMENT PATTERN ENVELOPE FOR WTVC-DT  
(GRAPH - RELATIVE FIELD)**

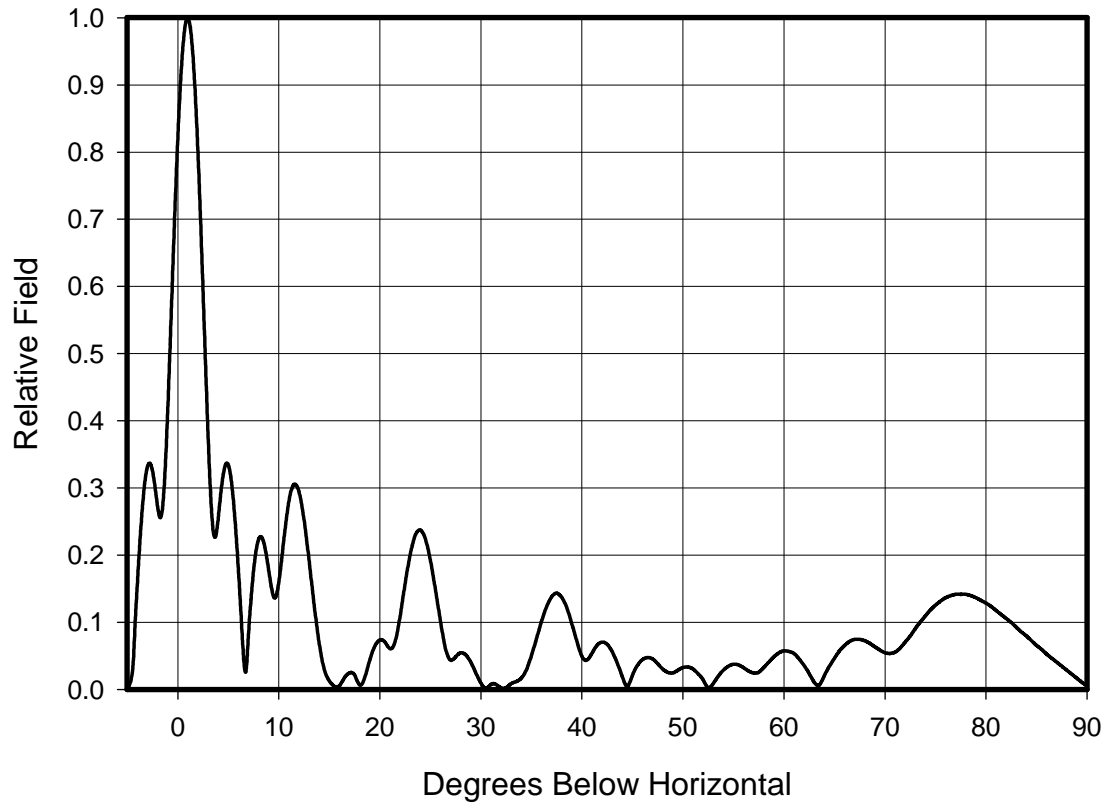
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du Treil, Lundin & Rackley, Inc. Sarasota, Florida





Andrew, Model ALP16M4  
Antenna elevation gain: 16.6 (12.2 dBd)  
Antenna downward electrical beam tilt: 1.00°  
(Pattern based on manufacturer supplied data.)

## **PROPOSED VERTICAL PLANE PATTERN (Relative Field)**

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du Treil, Lundin & Rackley, Inc. Sarasota, Florida

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Transmitting Antenna Manufacturer's Pattern Data

(two pages follow)



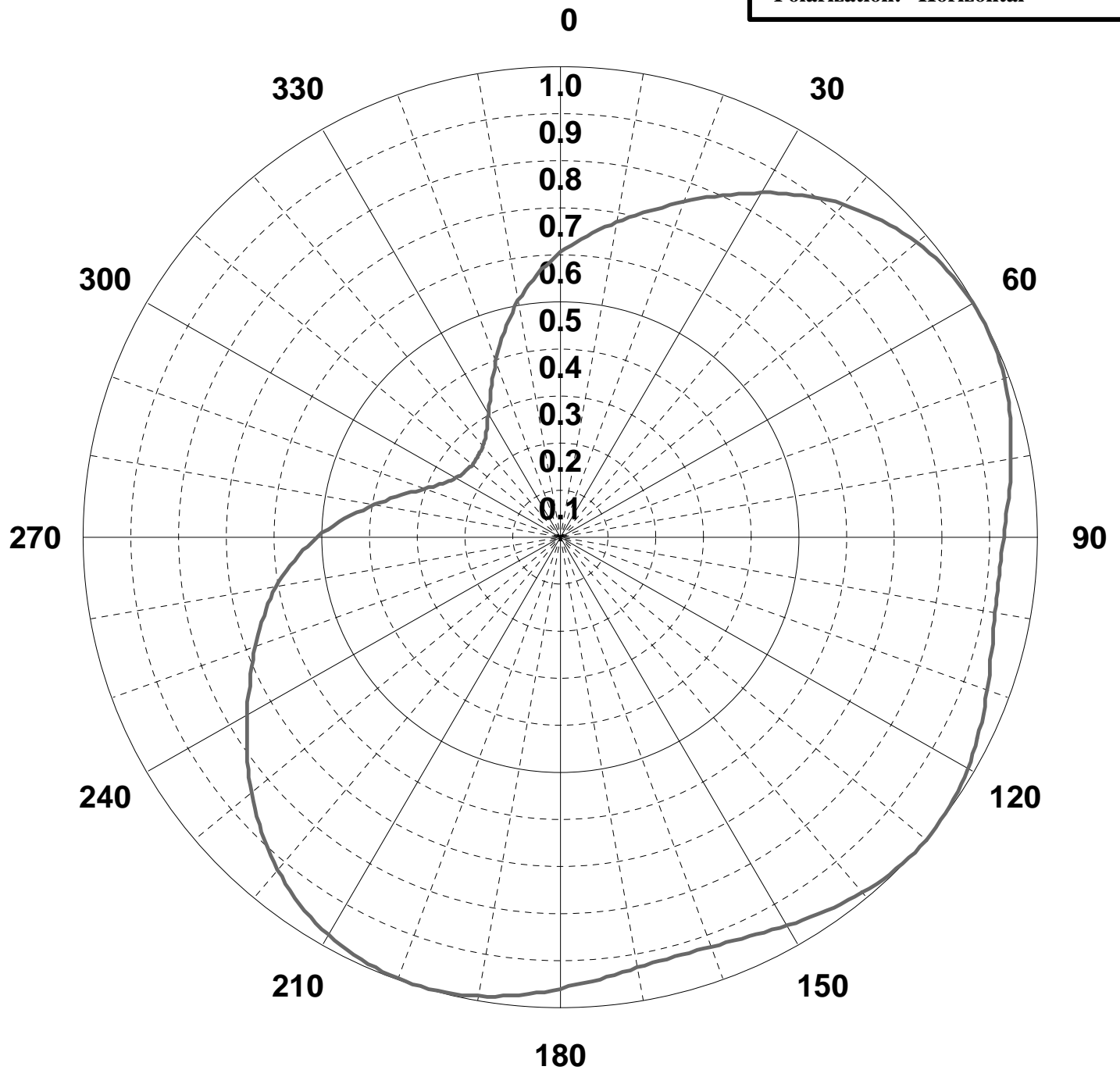
**ANDREW**

Channel: 35

Type: ALP-W

Gain: 1.56 (1.93 dB)

Polarization: Horizontal



ANDREW CORPORATION  
10500 W. 153rd Street  
Orland Park, Illinois U.S.A. 60462

Company:  
Site:  
Proposal Number:

Date: 4/10/01  
Author:



Angle	Amp	dB	Angle	Amp	dB	Angle	Amp	dB	Angle	Amp	dB	Angle	Amp	dB
0	0.605	-4.36	72	0.985	-0.13	144	0.973	-0.24	216	0.947	-0.47	288	0.318	-9.95
1	0.613	-4.25	73	0.982	-0.16	145	0.970	-0.26	217	0.941	-0.53	289	0.310	-10.17
2	0.621	-4.14	74	0.979	-0.18	146	0.966	-0.30	218	0.935	-0.58	290	0.302	-10.40
3	0.628	-4.04	75	0.976	-0.21	147	0.963	-0.33	219	0.928	-0.65	291	0.295	-10.60
4	0.636	-3.93	76	0.973	-0.24	148	0.959	-0.36	220	0.922	-0.71	292	0.288	-10.81
5	0.644	-3.82	77	0.969	-0.27	149	0.955	-0.40	221	0.915	-0.77	293	0.283	-10.96
6	0.651	-3.73	78	0.966	-0.30	150	0.951	-0.44	222	0.909	-0.83	294	0.277	-11.15
7	0.659	-3.62	79	0.962	-0.34	151	0.948	-0.46	223	0.901	-0.91	295	0.272	-11.31
8	0.666	-3.53	80	0.959	-0.36	152	0.945	-0.49	224	0.894	-0.97	296	0.267	-11.47
9	0.673	-3.44	81	0.956	-0.39	153	0.942	-0.52	225	0.886	-1.05	297	0.263	-11.60
10	0.680	-3.35	82	0.952	-0.43	154	0.938	-0.56	226	0.878	-1.13	298	0.259	-11.73
11	0.687	-3.26	83	0.949	-0.45	155	0.936	-0.57	227	0.870	-1.21	299	0.256	-11.84
12	0.695	-3.16	84	0.945	-0.49	156	0.933	-0.60	228	0.862	-1.29	300	0.253	-11.94
13	0.703	-3.06	85	0.942	-0.52	157	0.930	-0.63	229	0.853	-1.38	301	0.250	-12.04
14	0.710	-2.97	86	0.939	-0.55	158	0.928	-0.65	230	0.845	-1.46	302	0.248	-12.11
15	0.717	-2.89	87	0.936	-0.57	159	0.927	-0.66	231	0.836	-1.56	303	0.247	-12.15
16	0.725	-2.79	88	0.933	-0.60	160	0.925	-0.68	232	0.828	-1.64	304	0.245	-12.22
17	0.733	-2.70	89	0.931	-0.62	161	0.924	-0.69	233	0.819	-1.73	305	0.244	-12.25
18	0.742	-2.59	90	0.929	-0.64	162	0.923	-0.70	234	0.810	-1.83	306	0.243	-12.29
19	0.750	-2.50	91	0.927	-0.66	163	0.923	-0.70	235	0.801	-1.93	307	0.242	-12.32
20	0.758	-2.41	92	0.925	-0.68	164	0.922	-0.71	236	0.793	-2.01	308	0.241	-12.36
21	0.766	-2.32	93	0.924	-0.69	165	0.923	-0.70	237	0.784	-2.11	309	0.241	-12.36
22	0.775	-2.21	94	0.923	-0.70	166	0.923	-0.70	238	0.775	-2.21	310	0.241	-12.36
23	0.784	-2.11	95	0.922	-0.71	167	0.924	-0.69	239	0.767	-2.30	311	0.241	-12.36
24	0.793	-2.01	96	0.922	-0.71	168	0.925	-0.68	240	0.758	-2.41	312	0.241	-12.36
25	0.801	-1.93	97	0.923	-0.70	169	0.927	-0.66	241	0.750	-2.50	313	0.242	-12.32
26	0.810	-1.83	98	0.923	-0.70	170	0.929	-0.64	242	0.742	-2.59	314	0.243	-12.29
27	0.819	-1.73	99	0.924	-0.69	171	0.931	-0.62	243	0.733	-2.70	315	0.244	-12.25
28	0.828	-1.64	100	0.925	-0.68	172	0.933	-0.60	244	0.725	-2.79	316	0.245	-12.22
29	0.836	-1.56	101	0.927	-0.66	173	0.936	-0.57	245	0.718	-2.88	317	0.247	-12.15
30	0.845	-1.46	102	0.928	-0.65	174	0.939	-0.55	246	0.710	-2.97	318	0.248	-12.11
31	0.854	-1.37	103	0.931	-0.62	175	0.942	-0.52	247	0.702	-3.07	319	0.250	-12.04
32	0.862	-1.29	104	0.933	-0.60	176	0.945	-0.49	248	0.695	-3.16	320	0.253	-11.94
33	0.870	-1.21	105	0.935	-0.58	177	0.949	-0.45	249	0.688	-3.25	321	0.256	-11.84
34	0.878	-1.13	106	0.938	-0.56	178	0.952	-0.43	250	0.680	-3.35	322	0.259	-11.73
35	0.886	-1.05	107	0.942	-0.52	179	0.955	-0.40	251	0.673	-3.44	323	0.263	-11.60
36	0.894	-0.97	108	0.945	-0.49	180	0.959	-0.36	252	0.666	-3.53	324	0.267	-11.47
37	0.902	-0.90	109	0.948	-0.46	181	0.963	-0.33	253	0.658	-3.64	325	0.272	-11.31
38	0.909	-0.83	110	0.951	-0.44	182	0.966	-0.30	254	0.651	-3.73	326	0.277	-11.15
39	0.916	-0.76	111	0.955	-0.40	183	0.969	-0.27	255	0.643	-3.84	327	0.282	-11.00
40	0.922	-0.71	112	0.959	-0.36	184	0.973	-0.24	256	0.636	-3.93	328	0.288	-10.81
41	0.929	-0.64	113	0.962	-0.34	185	0.976	-0.21	257	0.628	-4.04	329	0.295	-10.60
42	0.935	-0.58	114	0.966	-0.30	186	0.979	-0.18	258	0.621	-4.14	330	0.302	-10.40
43	0.941	-0.53	115	0.969	-0.27	187	0.982	-0.16	259	0.613	-4.25	331	0.310	-10.17
44	0.947	-0.47	116	0.973	-0.24	188	0.985	-0.13	260	0.605	-4.36	332	0.318	-9.95
45	0.952	-0.43	117	0.976	-0.21	189	0.988	-0.10	261	0.596	-4.50	333	0.326	-9.74
46	0.957	-0.38	118	0.979	-0.18	190	0.990	-0.09	262	0.588	-4.61	334	0.335	-9.50
47	0.961	-0.35	119	0.982	-0.16	191	0.992	-0.07	263	0.579	-4.75	335	0.344	-9.27
48	0.966	-0.30	120	0.985	-0.13	192	0.994	-0.05	264	0.570	-4.88	336	0.354	-9.02
49	0.970	-0.26	121	0.987	-0.11	193	0.995	-0.04	265	0.560	-5.04	337	0.365	-8.75
50	0.975	-0.22	122	0.990	-0.09	194	0.996	-0.03	266	0.551	-5.18	338	0.375	-8.52
51	0.978	-0.19	123	0.992	-0.07	195	0.997	-0.03	267	0.541	-5.34	339	0.386	-8.27
52	0.981	-0.17	124	0.994	-0.05	196	0.998	-0.02	268	0.531	-5.50	340	0.397	-8.02
53	0.984	-0.14	125	0.996	-0.03	197	0.998	-0.02	269	0.521	-5.66	341	0.408	-7.79
54	0.987	-0.11	126	0.997	-0.03	198	0.998	-0.02	270	0.510	-5.85	342	0.419	-7.56
55	0.989	-0.10	127	0.998	-0.02	199	0.997	-0.03	271	0.499	-6.04	343	0.430	-7.33
56	0.992	-0.07	128	0.999	-0.01	200	0.997	-0.03	272	0.488	-6.23	344	0.442	-7.09
57	0.993	-0.06	129	1.000	0.00	201	0.996	-0.03	273	0.477	-6.43	345	0.453	-6.88
58	0.995	-0.04	130	1.000	0.00	202	0.995	-0.04	274	0.465	-6.65	346	0.465	-6.65
59	0.996	-0.03	131	1.000	0.00	203	0.993	-0.06	275	0.454	-6.86	347	0.476	-6.45
60	0.997	-0.03	132	0.999	-0.01	204	0.992	-0.07	276	0.442	-7.09	348	0.488	-6.23
61	0.997	-0.03	133	0.998	-0.02	205	0.989	-0.10	277	0.431	-7.31	349	0.499	-6.04
62	0.998	-0.02	134	0.997	-0.03	206	0.987	-0.11	278	0.419	-7.56	350	0.510	-5.85
63	0.998	-0.02	135	0.996	-0.03	207	0.984	-0.14	279	0.408	-7.79	351	0.520	-5.68
64	0.998	-0.02	136	0.994	-0.05	208	0.981	-0.17	280	0.397	-8.02	352	0.531	-5.50
65	0.997	-0.03	137	0.992	-0.07	209	0.978	-0.19	281	0.386	-8.27	353	0.541	-5.34
66	0.996	-0.03	138	0.990	-0.09	210	0.975	-0.22	282	0.375	-8.52	354	0.551	-5.18
67	0.995	-0.04	139	0.988	-0.10	211	0.971	-0.26	283	0.365	-8.75	355	0.560	-5.04
68	0.994	-0.05	140	0.985	-0.13	212	0.966	-0.30	284	0.354	-9.02	356	0.570	-4.88
69	0.992	-0.07	141	0.982	-0.16	213	0.962	-0.34	285	0.344	-9.27	357	0.579	-4.75
70	0.990	-0.09	142	0.979	-0.18	214	0.957	-0.38	286	0.335	-9.50	358	0.588	-4.61
71	0.988	-0.10	143	0.976	-0.21	215	0.952	-0.43	287	0.326	-9.74	359	0.597	-4.48

ANDREW CORPORATION  
10500 W. 153rd Street  
Orland Park, Illinois U.S.A. 60462

Company:  
Site:  
Proposal Number:

Author:

Date: 4/10/01