

BERNARD R. SEGAL, P. E.
CONSULTING ENGINEER
KENSINGTON, MARYLAND

ENGINEERING EXHIBIT
APPLICATION FOR CONSTRUCTION PERMIT
AND REQUEST FOR STA
REPLACEMENT DIGITAL TELEVISION TRANSLATOR
WTAE HEARST-ARGYLE TV, INC. (CA CORP.)
PITTSBURGH, PENNSYLVANIA

The instant Engineering Exhibit has been prepared on behalf of WTAE Hearst-Argyle TV, Inc. (CA Corp.), (hereafter, Hearst-Argyle), and seeks a construction permit for a replacement digital translator (hereafter, RDT) pursuant to the Notice of Proposed Rule Making, MB Docket No. 08-253. In the Notice, the FCC proposed to adopt Rules that would permit RDT's to provide fill-in coverage for stations that would otherwise lose viewers upon cessation of analog transmissions. Pending adoption of the new RDT Rules, the FCC set forth interim filing procedures for temporary STA RDT operation. This Engineering Exhibit is designed to provide the requisite information for both the CP application and the STA Request. The proposed RDT for WTAE-TV is for operation on Channel 22, with maximum effective radiated power of 9.25 kW.

ELIGIBILITY

. Hearst-Argyle is the licensee of analog television service Station WTAE-TV and digital television service Station WTAE-DT, both, Pittsburgh, Pennsylvania. The former station operates on Channel 4 and the latter station operates on Channel 51. Upon the cessation of WTAE-TV, analog, transmissions, certain densely populated areas in the northern portion of Allegheny County; northwestern portion of Westmoreland County; southern portion of Armstrong County and southern portion of Butler County, all in, or close to Pittsburgh are predicted to lose analog service that would not be recovered by the WTAE-DT digital operation.

The basis for this determination is the recently released compendium of maps by the FCC (Map Book of All Full-Power Digital Television Stations Authorized by the FCC). The map for WTAE-TV shows, by means of red triangles, the coverage lost and no other service by the same network, and, by means of yellow diamonds, the coverage

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lost but still served by the same network. The map is copyrighted, so it has not been reproduced here.

The accompanying Figure 1 shows the WTAE, Ch. 4, Grade B service range and the WTAE-DT, Channel 51, 36 dBu, noise-limited service range. These contours agree with the contours depicted for WTAE-TV and WTAE-DT in the "Map Book". Also, shown on Figure 1 is the service range for the normally protected 51 dBu contour for the proposed Channel 22 replacement digital translator. The regions within the 51 dBu contour that would not be served due to terrain losses and interference are identified. The proposed translator would provide service to a substantial portion of the areas in, and close to Pittsburgh that would otherwise lose service. Actual operating experience supports the prediction. The proposed Channel 22 RDT would help fulfill the purpose set forth in the NPRM. The net service that would be provided by the proposed RDT is to 1,740,000 persons.

PROPOSED OPERATION

The proposed RDT, Channel 22, antenna will be side mounted on the tower that is employed by Station WQED. The ASRN is 1022324. The NAD '27 site coordinates are: 40° 26' 46" N. Latitude; 79° 57' 51" W. Longitude. The site elevation is 307 meters AMSL. The overall structure height is 183 meters AGL. The proposed translator antenna will be mounted with the radiation center at an elevation of 133 meters AGL; 440 meters AMSL.

An Electronics Research, Inc. (ERI) , Model ALP12L2-HSM-22 directional antenna will be employed with the pattern rotated 40° clockwise. Figure 2 is the horizontal plane relative field pattern for the antenna, without the pattern rotation, and

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Figure 3 is the tabulation of relative fields for the pattern of Figure 2. The antenna will have 0.5 ° electrical beam tilt. Figure 4 is the vertical plane relative field pattern for the antenna and Figure 5 is the tabulation of the relative field data for the pattern of Figure 4.

The maximum power gain for the antenna is 15.07 dBd. A translator with an average power output rating of 500 watts (-3.01 dBk) will supply energy to the antenna by means of a 151 meter length of Helix, type HJ7-50A, coaxial cable that will have a loss of 2.40 dB. After taking into account the transmission line loss and the antenna's power gain, the maximum effective radiated power will be 9.25 kW. The maximum ERP will occur at a bearing of 40° True at a depression angle of 0.5° below the horizontal plane.

ALLOCATION CONSIDERATIONS

The undersigned has conducted studies using the TV Interference and Spacing Analysis Program as implemented by Mr. William Meintel. A Sunblade processor was used. The short-cut title for the program that was used was "tv_process_dlptv_pt" and was set to use the 2000 Census. No changes were made to any of the FCC default settings. Only the record for the Pittsburgh, PA, Channel 21, application in BSFDTL-20060630DBY was expunged since the application was dismissed on May 11, 2007, according to CDBS. In any event the instant replacement application would have processing priority over the BSFDTL-20060630DBY application according to paragraph 5 in the NPRM .

The study that was conducted reviewed the possible impact of the proposed facility on 34 other post transition facilities, including licensed stations, authorized construction permits, and pending applications for full service digital, Class A, digital

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and analog LPTV and translators. Only the construction permit, BMPCDT-20070404ACJ, for Station WFXP-DT, Erie, PA, Channel 22, was predicted to receive interference from the proposed operation. The interference was to the extent of 0.0522 %, which rounds to 0.0 %, and is, therefore, in compliance with the Rules regarding interference caused.

Insofar as interference received is concerned, only the Station WFXP-DT construction permit facilities would cause interference to the proposed RDT. As a secondary service relative to the primary status of WFXP-DT, Hearst-Argyle agrees to accept this interference to its proposal.

ENVIRONMENTAL IMPACT CONSIDERATIONS

The tower that will support the proposed antenna is already employed for broadcasting purposes, so only the environmental concerns relating to human exposure to radiofrequency radiation (rfr) are germane. The following discussion first addresses exposure levels from the proposed operation at uncontrolled locations, which is then followed by a discussion relative to controlled location exposure situations.

The proposed antenna will be mounted with the radiation center 131 meters above ground level. In the interest of conservatism, all radiation from the antenna is considered to emanate from the bottom of the antenna, which will be 128 meters above ground level. Again, in the interest of using conservative assumptions, a target located 2 meters above ground level at the tower base has been selected for determining the maximum power density level that could be anticipated from the proposed operation. The 2-meter above ground level target represents the approximate head-height of a standing individual. A

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spot at the tower base is the closest that a person on the ground could approach the antenna.

From the vertical plane relative field pattern of Figure 4 and the tabulation of Figure 5, the maximum relative field for the antenna throughout the depression angle range from 3.1° - 90° below the horizontal plane is 0.325. The power density level at the target using the formula given in OET Bulletin 65, Edition 97-01 and assuming a ground reflection coefficient of 1.6 and maximum average power radiation of 9.25 kW, yields a power density level of 0.0021 mW/cm^2 .

The maximum permissible exposure (MPE) at Channel 22 (518-524 MHz) is 0.35 mW/cm^2 . Hence, the maximum possible exposure within the range from the tower base (90° depression angle) to a target touchdown distance of 2,327 meters (corresponding to a depression angle of 3.1° below the horizontal plane) is 0.6 % of the MPE. At distances beyond 2,327 meters, the contribution to the MPE is too small, to be of concern, even assuming maximum radiation from the antenna. The foregoing assumes flat earth in the vicinity of the tower

Turning now to controlled location concerns, the WQED tower is girded by a fence that is kept locked at all times. Access within the fenced area is available only to authorized personnel. A radiation hazard warning sign is posted at the base of the tower. The area within the fence, including the tower, qualifies as a controlled location area. When work must be performed on the tower in a region where excessive exposure to rfr may occur, arrangements must be made ahead of time so that appropriate coordination can be achieved to assure that a worker will not become overexposed to rfr. In this manner workers are protected from overexposure to rfr.

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The proposed RDT facility operation for Hearst-Argyle does not require an
Environmental Assessment.

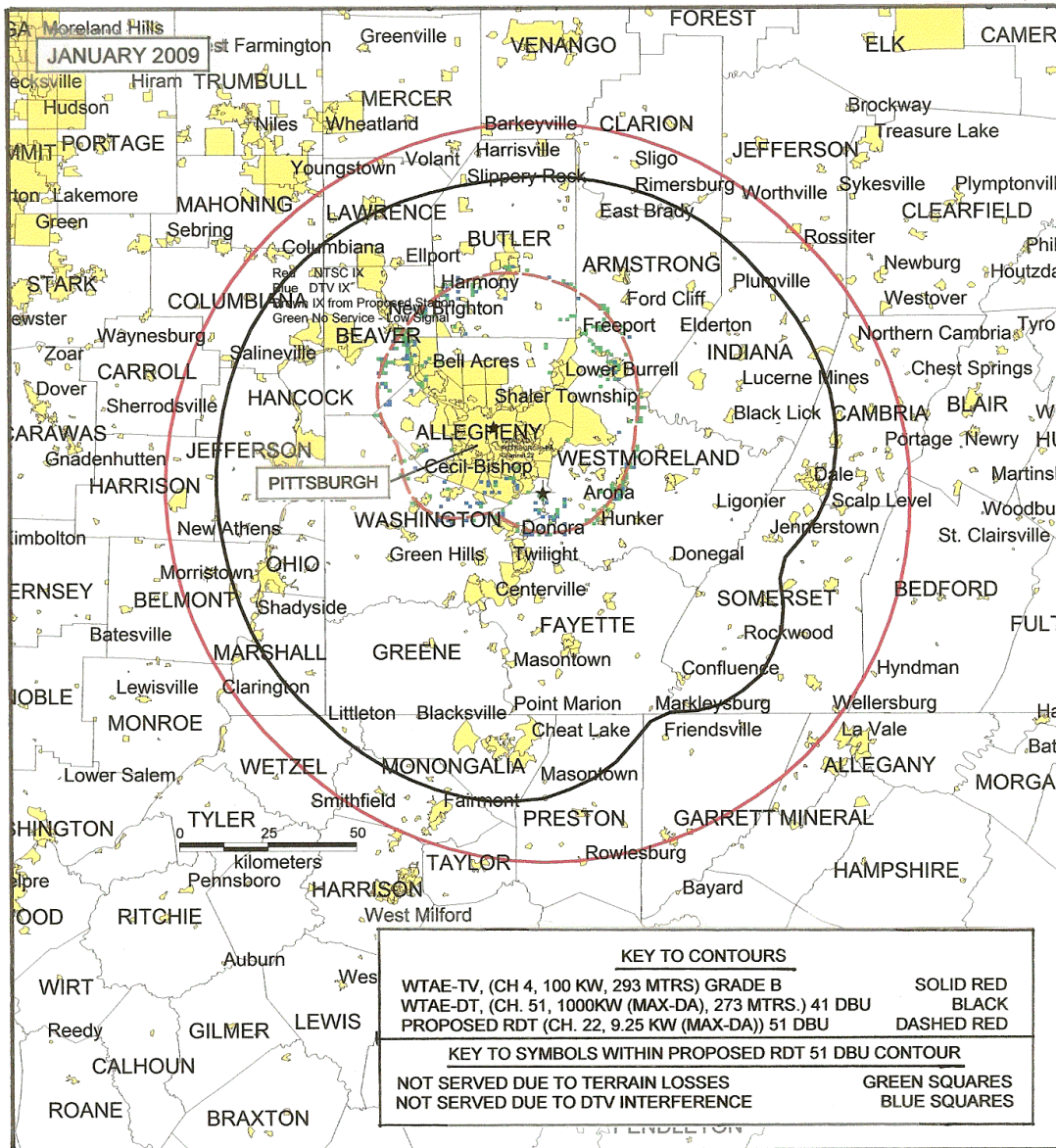
I declare under penalty of perjury that the foregoing is true and correct. Executed
on February 2, 2009

Bernard R. Segal, P.E.

Bernard R. Segal, P. E.

Maryland Registration No. 25811

FIGURE 1



WTAE-TV ANALOG AND DTV CONTOURS AND PROPOSED RDT SERVICE

WTAE HEARST-ARGYLE TV, INC. (CA CORP.)
PROPOSED RDT: CH 22 9.25 KW (MAX-DA)
PITTSBURGH, PENNSYLVANIA

Bernard R. Segal, P. E. Consulting Engineer

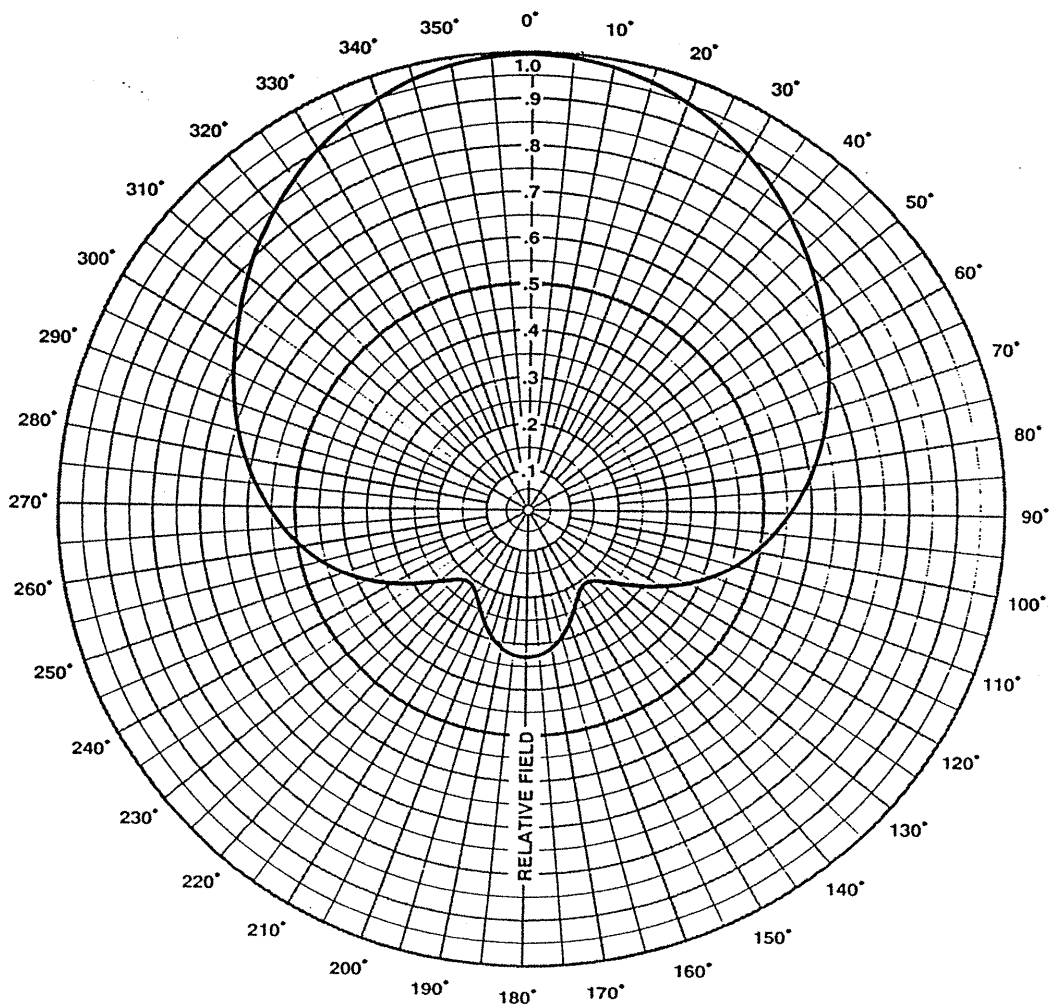
FIGURE 2

**ANDREW
AZIMUTH PATTERN**

Type: ALP-M

	Numeric	dB
Directivity:	<u>2.54</u>	<u>4.05</u>
Peak(s) At:	<u></u>	<u></u>
Polarization:	<u></u>	<u></u>
Channel:	<u></u>	<u></u>
Location:	<u></u>	<u></u>

Note: Pattern shape and directivity may vary with channel and mounting configuration.



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

Form 5279B (8/90)



FIGURE 3

TABULATED DATA FOR AZIMUTH PATTERN TYPE ALP-M

ANGLE	RELATIVE FIELD	dB	ANGLE	RELATIVE FIELD	dB	ANGLE	RELATIVE FIELD	dB
0	1.000	0.00	120	0.327	-9.71	240	0.327	-9.71
2	0.999	-0.01	122	0.310	-10.17	242	0.345	-9.24
4	0.998	-0.02	124	0.293	-10.66	244	0.363	-8.80
6	0.995	-0.04	126	0.276	-11.18	246	0.380	-8.40
8	0.992	-0.07	128	0.261	-11.67	248	0.397	-8.02
10	0.988	-0.10	130	0.246	-12.18	250	0.414	-7.66
12	0.982	-0.16	132	0.234	-12.62	252	0.430	-7.33
14	0.976	-0.21	134	0.223	-13.03	254	0.445	-7.03
16	0.970	-0.26	136	0.214	-13.39	256	0.460	-6.74
18	0.962	-0.34	138	0.207	-13.68	258	0.474	-6.48
20	0.954	-0.41	140	0.203	-13.85	260	0.488	-6.23
22	0.946	-0.48	142	0.201	-13.94	262	0.502	-5.99
24	0.937	-0.56	144	0.201	-13.94	264	0.515	-5.76
26	0.927	-0.66	146	0.204	-13.81	266	0.528	-5.55
28	0.917	-0.75	148	0.208	-13.64	268	0.540	-5.35
30	0.907	-0.85	150	0.215	-13.35	270	0.553	-5.14
32	0.896	-0.95	152	0.222	-13.07	272	0.565	-4.96
34	0.884	-1.07	154	0.231	-12.73	274	0.577	-4.78
36	0.872	-1.19	156	0.241	-12.36	276	0.589	-4.60
38	0.860	-1.31	158	0.251	-12.01	278	0.601	-4.42
40	0.848	-1.43	160	0.261	-11.67	280	0.612	-4.26
42	0.835	-1.57	162	0.271	-11.34	282	0.624	-4.10
44	0.822	-1.70	164	0.281	-11.03	284	0.635	-3.94
46	0.810	-1.83	166	0.290	-10.75	286	0.646	-3.80
48	0.797	-1.97	168	0.298	-10.52	288	0.657	-3.65
50	0.784	-2.11	170	0.305	-10.31	290	0.667	-3.52
52	0.771	-2.26	172	0.311	-10.15	292	0.678	-3.38
54	0.759	-2.39	174	0.316	-10.01	294	0.689	-3.24
56	0.746	-2.55	176	0.319	-9.92	296	0.700	-3.10
58	0.734	-2.69	178	0.321	-9.87	298	0.711	-2.96
60	0.723	-2.82	180	0.322	-9.84	300	0.723	-2.82
62	0.711	-2.96	182	0.321	-9.87	302	0.734	-2.69
64	0.700	-3.10	184	0.319	-9.92	304	0.746	-2.55
66	0.689	-3.24	186	0.316	-10.01	306	0.759	-2.39
68	0.678	-3.38	188	0.311	-10.15	308	0.771	-2.26
70	0.667	-3.52	190	0.305	-10.31	310	0.784	-2.11
72	0.657	-3.65	192	0.298	-10.52	312	0.797	-1.97
74	0.646	-3.80	194	0.290	-10.75	314	0.810	-1.83
76	0.635	-3.94	196	0.281	-11.03	316	0.822	-1.70
78	0.624	-4.10	198	0.271	-11.34	318	0.835	-1.57
80	0.612	-4.26	200	0.261	-11.67	320	0.848	-1.43
82	0.601	-4.42	202	0.251	-12.01	322	0.860	-1.31
84	0.589	-4.60	204	0.241	-12.36	324	0.872	-1.19
86	0.577	-4.78	206	0.231	-12.73	326	0.884	-1.07
88	0.565	-4.96	208	0.222	-13.07	328	0.896	-0.95
90	0.553	-5.14	210	0.215	-13.35	330	0.907	-0.85
92	0.540	-5.35	212	0.208	-13.64	332	0.917	-0.75
94	0.528	-5.55	214	0.204	-13.81	334	0.927	-0.66
96	0.515	-5.76	216	0.201	-13.94	336	0.937	-0.56
98	0.502	-5.99	218	0.201	-13.94	338	0.946	-0.48
100	0.488	-6.23	220	0.203	-13.85	340	0.954	-0.41
102	0.474	-6.48	222	0.207	-13.68	342	0.962	-0.34
104	0.460	-6.74	224	0.214	-13.39	344	0.970	-0.26
106	0.445	-7.03	226	0.223	-13.03	346	0.976	-0.21
108	0.430	-7.33	228	0.234	-12.62	348	0.982	-0.16
110	0.414	-7.66	230	0.246	-12.18	350	0.988	-0.10
112	0.397	-8.02	232	0.261	-11.67	352	0.992	-0.07
114	0.380	-8.40	234	0.276	-11.18	354	0.995	-0.04
116	0.363	-8.80	236	0.293	-10.66	356	0.998	-0.02
118	0.345	-9.24	238	0.310	-10.17	358	0.999	-0.01

RELATIVE FIELD dB AZIMUTH DEGREES
 MAXIMUM 1.00 0.00 0
 MINIMUM 201 -13.94 143 217

FIGURE 4

ANDREW **ELEVATION PATTERN**

Type: ALP12L2

Directivity:

Numeric

dBd

Main Lobe

12.64

11.02

Horizontal

11.84

10.73

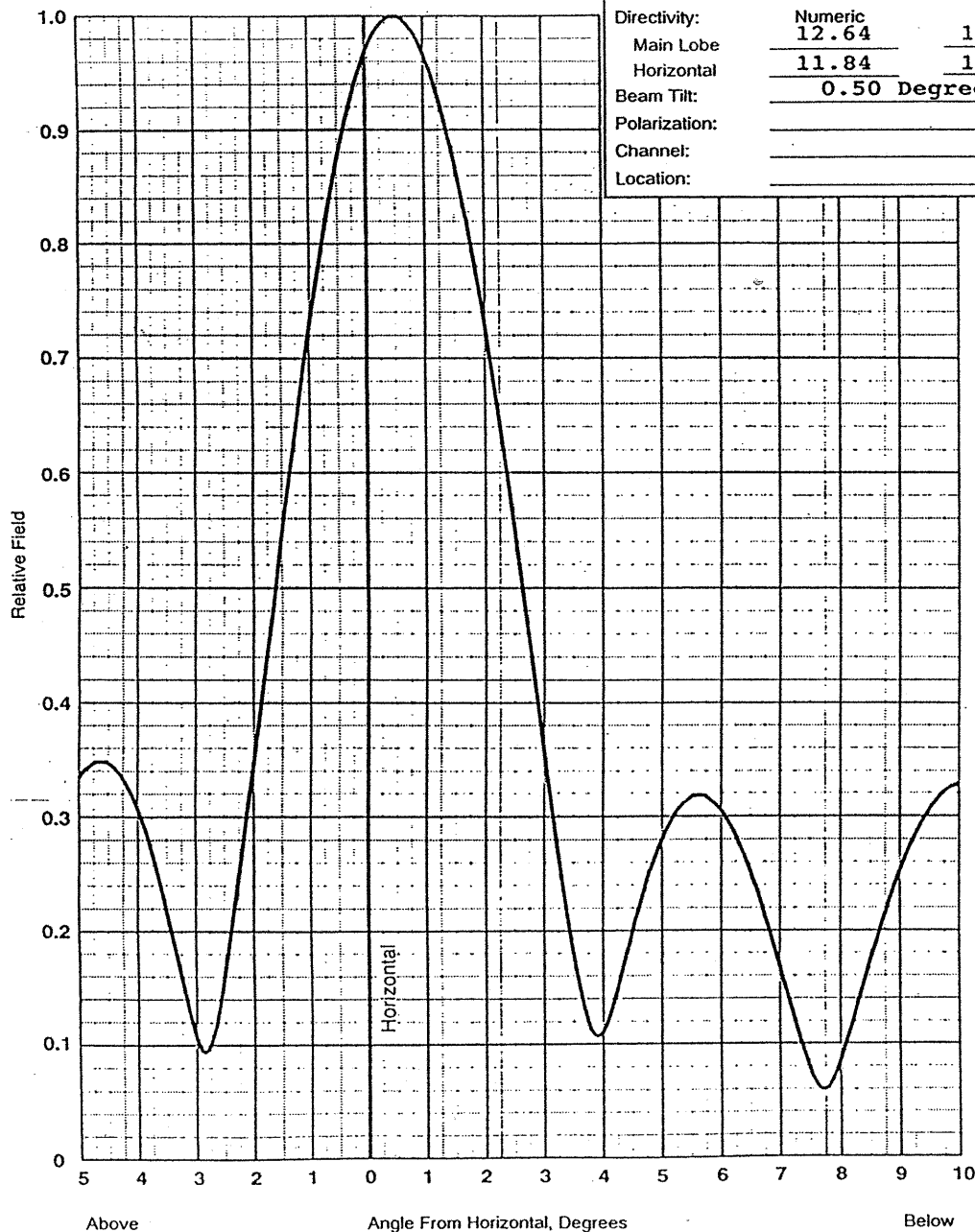
Beam Tilt:

0.50 Degrees

Polarization:

Channel:

Location:



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

Form 5278B (8/90)

FIGURE 5



TABULATED DATA FOR ELEVATION PATTERN TYPE ALP12L2

ANGLE	RELATIVE FIELD	dB	ANGLE	RELATIVE FIELD	dB	ANGLE	RELATIVE FIELD	dB	ANGLE	RELATIVE FIELD	dB
-5° TO 10° IN 0.25° INCREMENTS			10° TO 90° IN 0.5° INCREMENTS								
-5.00	0.334	-9.52	10.00	0.329	-9.65	40.00	0.071	-22.99	70.00	0.241	-12.36
-4.75	0.347	-9.20	10.50	0.323	-9.81	40.50	0.076	-22.43	70.50	0.230	-12.77
-4.50	0.347	-9.20	11.00	0.292	-10.70	41.00	0.073	-22.68	71.00	0.218	-13.25
-4.25	0.333	-9.54	11.50	0.242	-12.31	41.50	0.065	-23.74	71.50	0.204	-13.80
-4.00	0.307	-10.26	12.00	0.184	-14.72	42.00	0.052	-25.73	72.00	0.190	-14.42
-3.75	0.267	-11.45	12.50	0.124	-18.10	42.50	0.035	-29.06	72.50	0.176	-15.10
-3.50	0.217	-13.27	13.00	0.072	-22.80	43.00	0.019	-34.34	73.00	0.161	-15.86
-3.25	0.159	-15.97	13.50	0.033	-29.62	43.50	0.015	-36.26	73.50	0.146	-16.69
-3.00	0.106	-19.46	14.00	0.009	-40.79	44.00	0.028	-31.14	74.00	0.132	-17.59
-2.75	0.101	-19.94	14.50	0.000	-79.49	44.50	0.041	-27.76	74.50	0.118	-18.57
-2.50	0.162	-15.83	15.00	0.007	-43.60	45.00	0.051	-25.89	75.00	0.105	-19.62
-2.25	0.250	-12.04	15.50	0.021	-33.76	45.50	0.056	-25.04	75.50	0.092	-20.75
-2.00	0.347	-9.19	16.00	0.038	-28.50	46.00	0.056	-24.99	76.00	0.080	-21.97
-1.75	0.447	-6.99	16.50	0.052	-25.67	46.50	0.052	-25.70	76.50	0.069	-23.28
-1.50	0.546	-5.25	17.00	0.059	-24.59	47.00	0.043	-27.28	77.00	0.058	-24.69
-1.25	0.641	-3.86	17.50	0.055	-25.21	47.50	0.031	-30.06	77.50	0.049	-26.20
-1.00	0.729	-2.75	18.00	0.039	-28.14	48.00	0.017	-35.18	78.00	0.041	-27.80
-0.75	0.807	-1.86	18.50	0.021	-33.59	48.50	0.003	-51.71	78.50	0.034	-29.50
-0.50	0.875	-1.16	19.00	0.043	-27.33	49.00	0.012	-38.57	79.00	0.027	-31.25
-0.25	0.929	-0.64	19.50	0.087	-21.21	49.50	0.025	-32.20	79.50	0.022	-32.99
0.00	0.968	-0.28	20.00	0.134	-17.46	50.00	0.035	-29.20	80.00	0.019	-34.57
0.25	0.992	-0.07	20.50	0.178	-15.01	50.50	0.041	-27.66	80.50	0.016	-35.81
0.50	1.000	0.00	21.00	0.212	-13.45	51.00	0.044	-27.09	81.00	0.015	-36.56
0.75	0.991	-0.07	21.50	0.235	-12.58	51.50	0.043	-27.33	81.50	0.014	-36.84
1.00	0.967	-0.29	22.00	0.243	-12.30	52.00	0.038	-28.39	82.00	0.014	-36.80
1.25	0.927	-0.66	22.50	0.235	-12.56	52.50	0.030	-30.45	82.50	0.015	-36.64
1.50	0.873	-1.18	23.00	0.214	-13.38	53.00	0.021	-33.60	83.00	0.015	-36.50
1.75	0.806	-1.87	23.50	0.182	-14.79	53.50	0.017	-35.57	83.50	0.015	-36.43
2.00	0.729	-2.75	24.00	0.143	-16.90	54.00	0.024	-32.30	84.00	0.015	-36.48
2.25	0.642	-3.84	24.50	0.101	-19.92	54.50	0.038	-28.46	84.50	0.015	-36.67
2.50	0.550	-5.19	25.00	0.061	-24.30	55.00	0.052	-25.66	85.00	0.014	-37.00
2.75	0.454	-6.86	25.50	0.029	-30.76	55.50	0.065	-23.69	85.50	0.013	-37.49
3.00	0.357	-8.94	26.00	0.020	-33.91	56.00	0.076	-22.35	86.00	0.012	-38.15
3.25	0.264	-11.56	26.50	0.032	-30.03	56.50	0.084	-21.51	86.50	0.011	-39.00
3.50	0.180	-14.88	27.00	0.039	-28.20	57.00	0.088	-21.10	87.00	0.010	-40.08
3.75	0.120	-18.42	27.50	0.039	-28.21	57.50	0.088	-21.11	87.50	0.008	-41.45
4.00	0.111	-19.08	28.00	0.033	-29.71	58.00	0.084	-21.54	88.00	0.007	-43.23
4.25	0.149	-16.51	28.50	0.023	-32.80	58.50	0.075	-22.46	88.50	0.005	-45.60
4.50	0.199	-14.01	29.00	0.012	-38.08	59.00	0.063	-23.99	89.00	0.004	-49.03
4.75	0.245	-12.23	29.50	0.004	-47.58	59.50	0.048	-26.34	89.50	0.002	-55.00
5.00	0.280	-11.05	30.00	0.000	-85.31	60.00	0.033	-29.66	90.00	0.000	-99.99
5.25	0.305	-10.33	30.50	0.003	-50.43	60.50	0.026	-31.70			
5.50	0.317	-9.99	31.00	0.012	-38.43	61.00	0.038	-28.42			
5.75	0.317	-9.99	31.50	0.027	-31.30	61.50	0.060	-24.43			
6.00	0.305	-10.31	32.00	0.047	-26.48	62.00	0.085	-21.38			
6.25	0.283	-10.97	32.50	0.071	-23.02	62.50	0.111	-19.07			
6.50	0.251	-11.99	33.00	0.094	-20.51	63.00	0.137	-17.27			
6.75	0.212	-13.46	33.50	0.116	-18.72	63.50	0.161	-15.84			
7.00	0.168	-15.51	34.00	0.133	-17.54	64.00	0.184	-14.69			
7.25	0.121	-18.36	34.50	0.143	-16.88	64.50	0.205	-13.78			
7.50	0.078	-22.15	35.00	0.146	-16.72	65.00	0.223	-13.05			
7.75	0.060	-24.41	35.50	0.140	-17.06	65.50	0.238	-12.48			
8.00	0.086	-21.35	36.00	0.127	-17.95	66.00	0.250	-12.06			
8.25	0.129	-17.79	36.50	0.106	-19.49	66.50	0.258	-11.76			
8.50	0.174	-15.19	37.00	0.081	-21.87	67.00	0.264	-11.57			
8.75	0.216	-13.31	37.50	0.053	-25.50	67.50	0.267	-11.48			
9.00	0.253	-11.94	38.00	0.029	-30.71	68.00	0.266	-11.49			
9.25	0.283	-10.96	38.50	0.026	-31.82	68.50	0.263	-11.59			
9.50	0.306	-10.28	39.00	0.042	-27.44	69.00	0.258	-11.77			
9.75	0.322	-9.86	39.50	0.059	-24.53	69.50	0.250	-12.02			