

TECHNICAL EXHIBIT  
APPLICATION FOR MODIFICATION OF  
DTV CONSTRUCTION PERMIT  
DTV STATION WRNN-DT  
FACILITY ID: 74156  
KINGSTON, NEW YORK

October 8, 2003

CH 48      950 KW (MAX-DA)      378 M

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Technical Narrative

This Technical Exhibit supports an application for modification of construction permit for the digital operation of station WRNN-DT, on analog channel 62 at Kingston, New York. Specifically, this application will modify the WRNN-DT authorized construction permit (BPCDT-20020130AAQ) by changing the directional antenna system. No other changes are proposed.

Station WRNN-DT is currently authorized for operation on channel 48 with a directional antenna maximum ERP of 950 kilowatts and an HAAT of 378 meters. It is proposed to operate with the same maximum ERP and HAAT, but to employ an Andrew ATW24H3-HTCX-48H directional antenna, instead of the currently authorized antenna.

A sketch of antenna and pertinent elevations are included as Figure 1. The FCC antenna registration number for the existing tower is 1064695.

Figure 2 is data for the proposed Andrew ATW-24H3-HTCX-48H directional antenna. A graph and tabulation of both the horizontal and vertical antenna patterns are included.

AM station WBNR on 1260 kHz at Beacon, New York is the only known authorized full service AM station within 5 kilometers (3 miles) of the WRNN-DT transmitter site. The following is a list of those authorized FM and full service TV stations within 16 kilometers (10 miles) of the proposed DTV site. Although no adverse electromagnetic impact is expected, the applicant recognizes its responsibility to correct problems, which are a result of its proposed DTV operation.

<u>Station</u>	<u>Channel</u>	<u>Bearing(°True)</u>	<u>Distance(km)</u>
WGNV-FM, Newburgh, NY	276A	264	16.0
WSPK(FM), Poughkeepsie, NY	284B	72	0.1
WTBY-DT, Poughkeepsie, NY	27	45	0.1

The proposed transmitter site is located 334 kilometers from the Canadian border. The proposed WRNN-DT operation (950 kW/378 m) qualifies as a Class VL operation towards Canada as defined in the Letter of Understanding (LOU). The proposed WRNN-DT Class VL operation is believed to be in compliance with the LOU as it meets the minimum separation requirements to all Canadian stations. Therefore, it is not believed that Canadian coordination is required; however, if the FCC differs, coordination is respectfully requested.

The proposed DTV site is more than 2,500 kilometers from the closest point of the Mexican border. The closest FCC monitoring station is at Canandaigua, New York, approximately 316 kilometers to the northwest. The proposed DTV site is outside the National Radio Quiet Zone (VA/WVA), the closest point being more than 450 kilometers to the southwest. The closest point of the Table Mountain Radio Quiet Zone (CO) is more than 2,600 kilometers to the west. The closest radio astronomy site operating on TV

channel 37 is at Hancock, New Hampshire, over 225 kilometers to the northeast. These separations are sufficient to not be a concern for coordination purposes.

Figure 3 is a map showing the DTV predicted coverage contours. The map provides the predicted 41 dBu f(50,90) noise-limited contour and 48 dBu f(50,90) city grade contour. The extent of the contours has been calculated using the normal FCC prediction method, except the proposed HAAT was calculated based on 36 evenly spaced radials rather than eight. The Kingston city limits were derived from information contained in the 2000 U.S. Census for New York. As shown, the 48 dBu contour encompasses the entire city limits of Kingston.

Figure 4 is a DTV channel 48 separation study toward other NTSC and DTV allotments based on a 50 kilometer "buffer". Although the separation requirements are only applicable to new DTV allotments, they can be used as an indication of which stations have the potential of receiving interference from the proposed channel 48 DTV operation.

An interference analysis has been conducted using the procedures outlined in the FCC's OET-69 bulletin, which demonstrates that the proposal complies with the interference protection provisions of Section 73.623(c)(2).<sup>1</sup> Interference calculations for the proposed WRNN-DT

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<sup>1</sup> The du Treil, Lundin & Rackley, Inc. DTV interference analysis program is based on the program and procedures outlined by the FCC in the Sixth Report and Order; subsequent Memorandum Opinion and Order; and FCC OET Bulletin No. 69. A nominal grid size resolution of 2 km was employed. An Alpha based processor computer system was employed. The results have been found to be in very close agreement with the results of the FCC implementation of OET Bulletin No. 69.

operation are summarized below with respect to all authorized NTSC, DTV, and Class A facilities.

Protected Station	Facility	Ch.	City	State	FCC Service Population	Proposed Interference Population	
WGGB-TV	LIC	40	SPRINGFIELD	MA	--	None	--
WXTV	CP	41	PATERSON	NJ	16,839,622	49	0.00%
WXTV	LIC	41	PATERSON	NJ	--	None	--
WRDM-LP	CP	44	HARTFORD	CT	--	None	--
WEWB-TV	CP	45	SCHENECTADY	NY	--	None	--
WEWB-TV	LIC	45	SCHENECTADY	NY	--	None	--
WLBX-LP	CP	46	MANHATTAN	NY	--	None	--
WRNN-LP	CP	46	NYACK	NY	--	None	--
WRNN-LP	CP	46	NYACK	NY	--	None	--
WYDN-DT	PLN	47	WORCESTER	MA	3,875,127	0	0.00%
WNJU	CP	47	LINDEN	NJ	17,622,974	9,963	0.06%
WNJU	APP	47	LINDEN	NJ	17,624,403	9,963	0.06%
WNJU	APP	47	LINDEN	NJ	17,108,503	2,510	0.02%
WNJU	LIC	47	LINDEN	NJ	17,049,621	15,709	0.09%
WRC-TV	LIC	48	WASHINGTON	DC	--	None	--
WRC-DT	PLN	48	WASHINGTON	DC	6,541,255	0	0.00%
WYDN	LIC	48	WORCESTER	MA	4,940,921	1,349	0.03%
WLED-DT	PLN	48	LITTLETON	NH	--	None	--
WGTW	LIC	48	BURLINGTON	NJ	7,010,431	26,992	0.39%
WYDC	CP	48	CORNING	NY	264,772	611	0.23%
WYDC	LIC	48	CORNING	NY	144,781	24	0.02%
WEDW	LIC	49	BRIDGEPORT	CT	3,822,554	16,933	0.44%
WLNE-TV	CP	49	NEW BEDFORD	MA	--	None	--
WEKW-DT	PLN	49	KEENE	NH	--	None	--
WWSI	LIC	49	ATLANTIC CITY	NJ	--	None	--
WACI-DT	PLN	49	ATLANTIC CITY	NJ	--	None	--
WNEP-TV	LIC	49	SCRANTON	PA	--	None	--
WNEP-DT	PLN	49	SCRANTON	PA	--	None	--
WNEP-TV	CP	49	SCRANTON	PA	--	None	--
WRDM-LP	APP	50	HARTFORD	CT	--	None	--
WNJN	CP	50	MONTCLAIR	NJ	16,018,357	1,972	0.01%
WNJN	LIC	50	MONTCLAIR	NJ	15,353,734	518	0.00%
WNYA	CP	51	PITTSFIELD	MA	--	None	--
960724LI	APP	51	PITTSFIELD	MA	--	None	--
WLNY	LIC	55	RIVERHEAD	NY	--	None	--

The study above indicated that the WRNN-DT operation does not cause any prohibited contour overlap to

any Class A stations. It is also apparent that the proposed WRNN-DT operation on channel 48 complies with the FCC's interference standards towards all authorized NTSC and DTV assignments.

The proposed facility has been evaluated in terms of potential radiofrequency electromagnetic field exposure at ground level in accordance with OET Bulletin No. 65, Evaluating Compliance with FCC Specified Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields<sup>2</sup>. The power density at the base of the tower was calculated using the appropriate procedures contained in the Bulletin.

The proposed WRNN-DT antenna will be top-mounted on the existing WRNN tower. The antenna center of radiation is located 92.7 meters above ground level. The calculated power density at 2 meters above ground level (AGL) was calculated using the appropriate equation contained in the Bulletin. The vertical relative field pattern and tabulation for the proposed antenna are shown in Figure 2. The maximum vertical relative field value towards the tower base (-60 to -90 elevation) is less than 0.07. Therefore, using a "worst-case" vertical relative field value of 0.07, the calculated power density at 2 meters above the ground is 0.0189 milliwatts per square centimeter (mW/cm<sup>2</sup>), which is less than 5% of the Commission's recommended limit of 0.45 mW/cm<sup>2</sup> for channel 48, applicable to uncontrolled exposure areas. Therefore, the proposed WRNN-DT facility will comply with the FCC's RF emission rules.

Access to the tower site will be restricted and appropriately marked with warning signs. When it becomes

necessary for workers to ascend the tower, appropriate measures, such as reduction or shut down of power if necessary, shall be taken to ensure that the human exposure to radiofrequency electromagnetic fields will not exceed the FCC guidelines.

It is noted that this technical exhibit only addresses the potential for radiofrequency electromagnetic field exposure. All other aspects of the environmental processing analysis will be provided to the FCC by the tower owner as part of the tower registration process.

If there are questions concerning the technical portion of this application, please contact the office of the undersigned.



Jerome J. Manarchuck

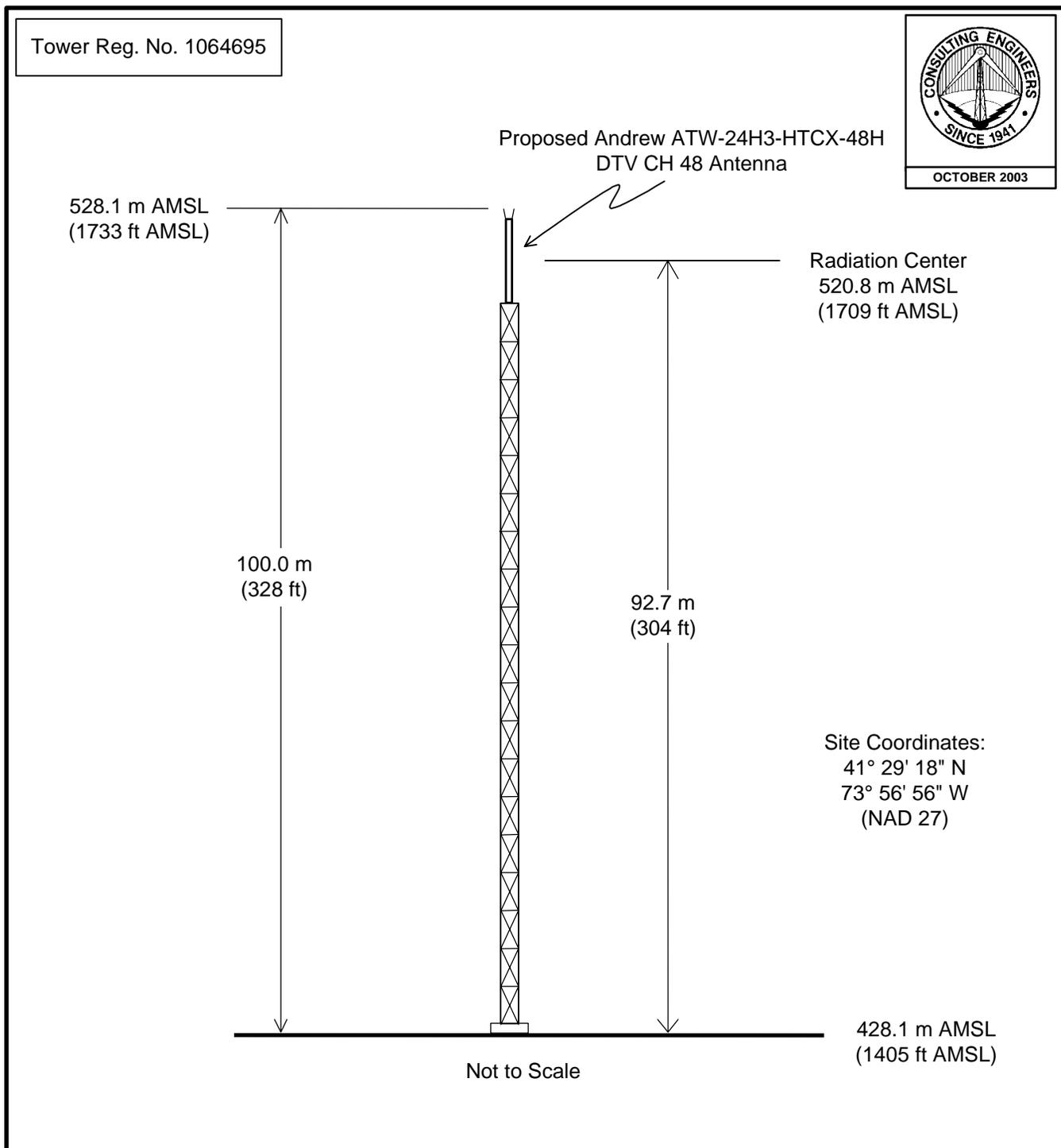
du Treil, Lundin & Rackley, Inc.  
201 Fletcher Ave.  
Sarasota, Florida 34237

October 8, 2003

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<sup>2</sup> OET Bulletin 65, Second Edition 97-01, August, 1997.

Figure 1



**PROPOSED ANTENNA AND SUPPORTING STRUCTURE**

DTV STATION WRNN-DT

KINGSTON, NEW YORK

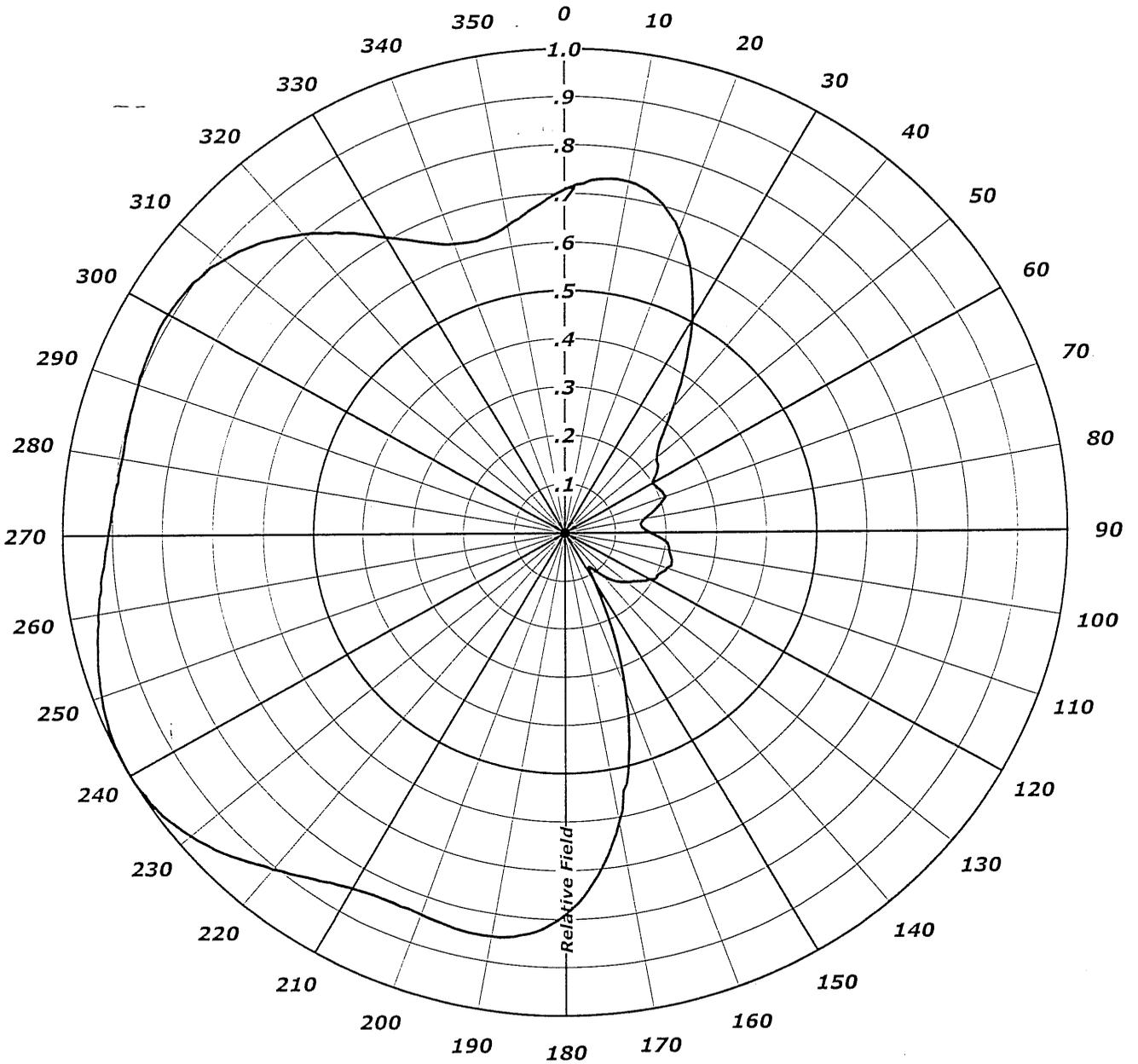
CH 48 950 KW (MAX-DA) 378 M

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

**ANDREW**  
**AZIMUTH PATTERN**

Type: CH48AZ-H-MODEL

	Numeric	dBd
Directivity:	<u>2.23</u>	<u>( 3.48)</u>
Peak(s) At:	<u></u>	<u></u>
Polarization:	<u>Horizontal</u>	
Channel:	<u>48</u>	
Location:	<u>Kingston, NY</u>	



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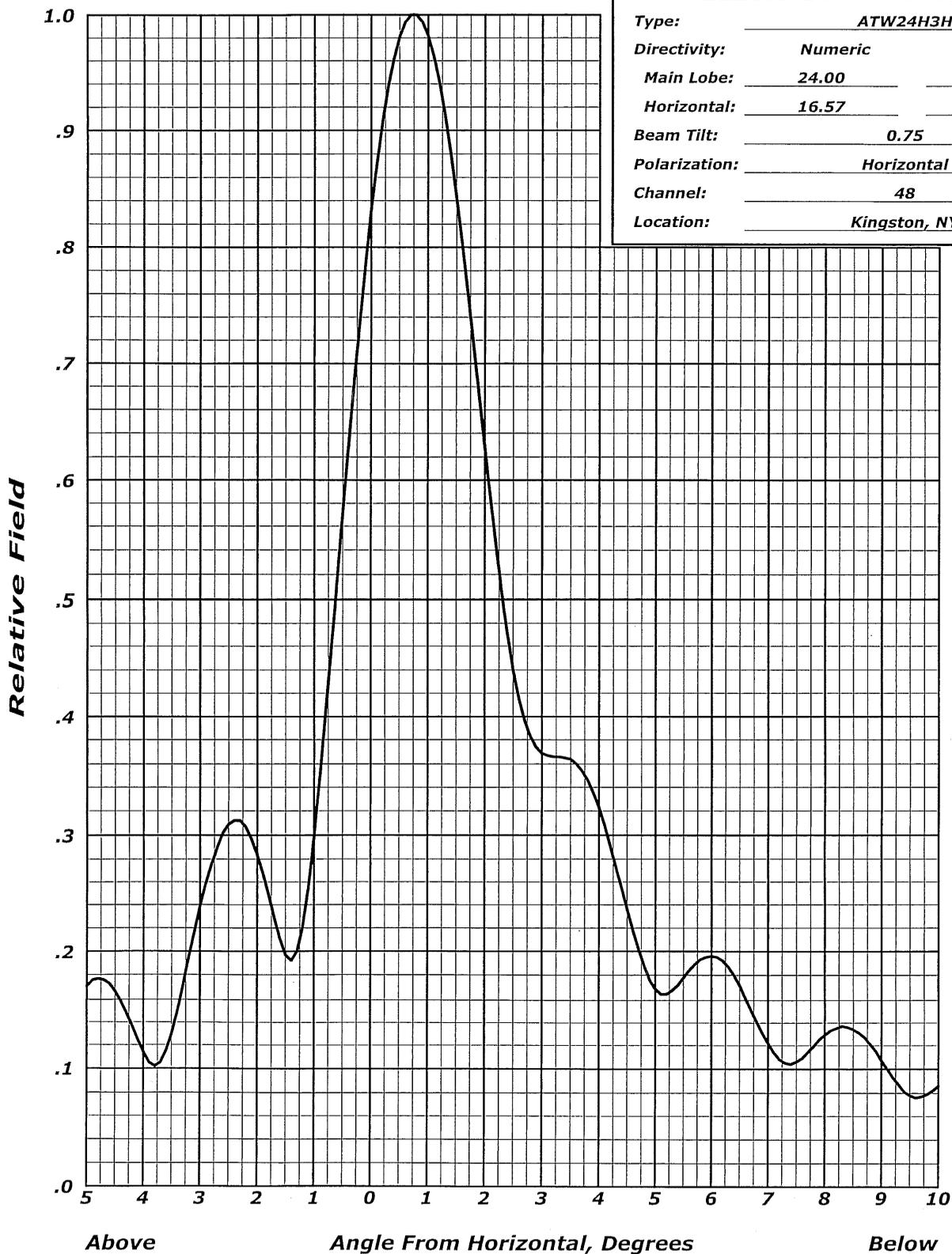
Tabulation of Directional Antenna Pattern

<u>Azimuth</u> <u>(deg. true)</u>	<u>Relative</u> <u>Field</u>	<u>Effective</u> <u>Radiated Power(kw)</u>	<u>Azimuth</u> <u>(deg true)</u>	<u>Relative</u> <u>Field</u>	<u>Effective</u> <u>Radiated Power(kw)</u>
0	0.708	476.20	180	0.789	591.39
10	0.734	511.82	190	0.847	681.54
20	0.662	416.33	200	0.838	667.13
30	0.506	243.23	210	0.847	681.54
40	0.331	104.08	220	0.906	779.79
50	0.237	53.36	230	0.973	899.39
60	0.200	38.00	240	1.000	950.00
70	0.211	42.29	250	0.982	916.11
80	0.159	24.02	260	0.944	846.58
90	0.168	26.81	270	0.909	784.97
100	0.209	41.50	280	0.894	759.27
110	0.214	43.51	290	0.902	772.92
120	0.192	35.02	300	0.910	786.70
130	0.158	23.72	310	0.883	740.70
140	0.115	12.56	320	0.809	621.76
150	0.116	12.78	330	0.707	474.86
160	0.345	113.07	340	0.636	384.27
170	0.608	351.18	350	0.645	395.22



## ANDREW ELEVATION PATTERN

Type:	ATW24H3H	
Directivity:	Numeric	dBd
Main Lobe:	24.00	(13.80)
Horizontal:	16.57	(12.19)
Beam Tilt:	0.75	
Polarization:	Horizontal	
Channel:	48	
Location:	Kingston, NY	





**TABULATED DATA FOR ELEVATION PATTERN**  
**TYPE : ATW24H3H**

Angle Field dB -5 To 10 In 0.25 Increments		Angle Field dB 10 To 90 In 0.5 Increments		Angle Field dB		Angle Field dB	
-5.00	0.171 -15.34	8.75	0.124 -18.13	35.00	0.041 -27.74	62.50	0.051 -25.85
-4.75	0.176 -15.07	9.00	0.107 -19.41	35.50	0.038 -28.40	63.00	0.050 -26.02
-4.50	0.167 -15.55	9.25	0.090 -20.92	36.00	0.028 -31.06	63.50	0.045 -26.94
-4.25	0.143 -16.89	9.50	0.078 -22.16	36.50	0.023 -32.77	64.00	0.037 -28.64
-4.00	0.114 -18.86	9.75	0.078 -22.16	37.00	0.030 -30.46	64.50	0.027 -31.37
-3.75	0.104 -19.70	10.00	0.086 -21.31	37.50	0.039 -28.18	65.00	0.019 -34.42
-3.50	0.130 -17.72	10.50	0.104 -19.66	38.00	0.041 -27.74	65.50	0.018 -34.89
-3.25	0.183 -14.73	11.00	0.097 -20.26	38.50	0.034 -29.37	66.00	0.027 -31.37
-3.00	0.239 -12.43	11.50	0.071 -22.97	39.00	0.024 -32.40	66.50	0.037 -28.64
-2.75	0.283 -10.96	12.00	0.061 -24.29	39.50	0.023 -32.77	67.00	0.046 -26.74
-2.50	0.309 -10.20	12.50	0.078 -22.16	40.00	0.033 -29.63	67.50	0.052 -25.68
-2.25	0.309 -10.19	13.00	0.085 -21.41	40.50	0.040 -27.96	68.00	0.055 -25.19
-2.00	0.284 -10.93	13.50	0.072 -22.85	41.00	0.040 -27.96	68.50	0.055 -25.19
-1.75	0.239 -12.43	14.00	0.052 -25.68	41.50	0.032 -29.90	69.00	0.052 -25.68
-1.50	0.197 -14.11	14.50	0.056 -25.04	42.00	0.023 -32.77	69.50	0.046 -26.74
-1.25	0.210 -13.53	15.00	0.071 -22.97	42.50	0.023 -32.77	70.00	0.038 -28.40
-1.00	0.298 -10.52	15.50	0.070 -23.10	43.00	0.033 -29.63	70.50	0.028 -31.06
-0.75	0.429 -7.35	16.00	0.054 -25.35	43.50	0.040 -27.96	71.00	0.019 -34.42
-0.50	0.572 -4.85	16.50	0.043 -27.33	44.00	0.040 -27.96	71.50	0.013 -37.72
-0.25	0.710 -2.97	17.00	0.054 -25.35	44.50	0.034 -29.37	72.00	0.016 -35.92
0.00	0.831 -1.61	17.50	0.064 -23.88	45.00	0.023 -32.77	72.50	0.025 -32.04
0.25	0.922 -0.70	18.00	0.058 -24.73	45.50	0.021 -33.56	73.00	0.034 -29.37
0.50	0.981 -0.17	18.50	0.043 -27.33	46.00	0.030 -30.46	73.50	0.042 -27.54
0.75	1.000 0.00	19.00	0.040 -27.96	46.50	0.039 -28.18	74.00	0.049 -26.20
1.00	0.982 -0.16	19.50	0.052 -25.68	47.00	0.042 -27.54	74.50	0.054 -25.35
1.25	0.927 -0.66	20.00	0.057 -24.88	47.50	0.038 -28.40	75.00	0.058 -24.73
1.50	0.843 -1.48	20.50	0.048 -26.38	48.00	0.029 -30.75	75.50	0.059 -24.58
1.75	0.740 -2.62	21.00	0.036 -28.87	48.50	0.020 -33.98	76.00	0.060 -24.44
2.00	0.629 -4.03	21.50	0.039 -28.18	49.00	0.023 -32.77	76.50	0.058 -24.73
2.25	0.524 -5.61	22.00	0.050 -26.02	49.50	0.033 -29.63	77.00	0.056 -25.04
2.50	0.440 -7.13	22.50	0.052 -25.68	50.00	0.041 -27.74	77.50	0.052 -25.68
2.75	0.390 -8.18	23.00	0.042 -27.54	50.50	0.043 -27.33	78.00	0.048 -26.38
3.00	0.369 -8.66	23.50	0.032 -29.90	51.00	0.038 -28.40	78.50	0.043 -27.33
3.25	0.366 -8.73	24.00	0.038 -28.40	51.50	0.028 -31.06	79.00	0.037 -28.64
3.50	0.364 -8.78	24.50	0.047 -26.56	52.00	0.020 -33.98	79.50	0.032 -29.90
3.75	0.350 -9.12	25.00	0.047 -26.56	52.50	0.022 -33.15	80.00	0.026 -31.70
4.00	0.323 -9.82	25.50	0.037 -28.64	53.00	0.032 -29.90	80.50	0.021 -33.56
4.25	0.282 -11.00	26.00	0.029 -30.75	53.50	0.041 -27.74	81.00	0.016 -35.92
4.50	0.236 -12.54	26.50	0.036 -28.87	54.00	0.045 -26.94	81.50	0.012 -38.42
4.75	0.195 -14.20	27.00	0.045 -26.94	54.50	0.042 -27.54	82.00	0.009 -40.92
5.00	0.169 -15.44	27.50	0.044 -27.13	55.00	0.035 -29.12	82.50	0.007 -43.10
5.25	0.167 -15.57	28.00	0.035 -29.12	55.50	0.024 -32.40	83.00	0.007 -43.10
5.50	0.178 -14.99	28.50	0.027 -31.37	56.00	0.019 -34.42	83.50	0.008 -41.94
5.75	0.191 -14.38	29.00	0.034 -29.37	56.50	0.025 -32.04	84.00	0.009 -40.92
6.00	0.196 -14.15	29.50	0.043 -27.33	57.00	0.035 -29.12	84.50	0.010 -40.00
6.25	0.190 -14.45	30.00	0.043 -27.33	57.50	0.043 -27.33	85.00	0.011 -39.17
6.50	0.172 -15.29	30.50	0.034 -29.37	58.00	0.047 -26.56	85.50	0.011 -39.17
6.75	0.147 -16.68	31.00	0.025 -32.04	58.50	0.045 -26.94	86.00	0.011 -39.17
7.00	0.122 -18.27	31.50	0.030 -30.46	59.00	0.039 -28.18	86.50	0.011 -39.17
7.25	0.106 -19.45	32.00	0.040 -27.96	59.50	0.029 -30.75	87.00	0.010 -40.00
7.50	0.106 -19.49	32.50	0.042 -27.54	60.00	0.020 -33.98	87.50	0.009 -40.92
7.75	0.117 -18.67	33.00	0.036 -28.87	60.50	0.019 -34.42	88.00	0.007 -43.10
8.00	0.129 -17.79	33.50	0.025 -32.04	61.00	0.028 -31.06	88.50	0.006 -44.44
8.25	0.136 -17.33	34.00	0.026 -31.70	61.50	0.039 -28.18	89.00	0.004 -47.96
8.50	0.134 -17.46	34.50	0.036 -28.87	62.00	0.047 -26.56	89.50	0.002 -53.98

Figure 3



## PREDICTED FCC COVERAGE CONTOURS

DTV STATION WRNN-DT  
KINGSTON, NEW YORK

CH 48 950 KW (MAX-DA) 378 M

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

du Treil,Lundin, and Rackley  
Sarasota, FL

CDBS TV/DTV SEPARATION STUDY

Job Title: WRNN-DT

Separation Buffer: 50 km

Channel: 48 (674-680 MHz)

Coordinates: 41-29-18 073-56-56

Class: VL

Zone: I

Type: DT

Call Id	City St	File Status	Channel Zone	ERP HAAT	DA Id	Latitude Longitude	Bear	Dist. (km)	Required min	max
WXTV 74215	PATERSON NJ LIC	BLCT C 19920218KE	41(-) I	2340 421	D 17280	40-44-54 073-59-10	182.2	82.2 1.74	24.1 Close	80.5
WXTV 74215	PATERSON NJ CP	BPCT C 20000202AA	41(-) I	2340 421	D 31174	40-44-54 073-59-10	182.2	82.2 1.74	24.1 Close	80.5
WEWB-T 73264	SCHENECTADY NY CP	BPCT C 20020213AA	45(Z) I	2950 413	D 42525	42-37-31 074-00-38	357.7	126.4 45.89	24.1 Clear	80.5
WEWB-T 73264	SCHENECTADY NY LIC	BLCT C 19850114KJ	45(Z) I	2950 338	D 20514	42-37-37 074-00-38	357.7	126.6 46.07	24.1 Clear	80.5
WNJU 73333	LINDEN NJ APP	BMPCT C 20001121AH	47(+) I	3330 408	D 37604	40-44-54 073-59-10	182.2	82.2 <b>23.76</b>	12.0 <b>Short</b>	106.0
WNJU 73333	LINDEN NJ CP	BPCT C 19991028AA	47(+) I	4000 458	D 32770	40-42-43 074-00-49	183.6	86.4 <b>19.61</b>	12.0 <b>Short</b>	106.0
WNJU 73333	LINDEN NJ LIC	BLCT C 19800423KE	47(+) I	4570 460	D 33736	40-42-43 074-00-49	183.6	86.4 <b>19.61</b>	12.0 <b>Short</b>	106.0
WNJU 73333	LINDEN NJ APP	BPCT C 20030721AG	47(+) I	4000 458	D 60191	40-42-43 074-00-49	183.6	86.4 <b>19.61</b>	12.0 <b>Short</b>	106.0
WRNN-T 74156	KINGSTON NY CP	BPCDT C 20020130AA	48( ) I	950 378	D 42415	41-29-18 073-56-56	100.5	0.0	196.3	196.3
WYDN 18783	WORCESTER MA LIC	BLET C 20001226AA	48(+) I	2290 246	D 40666	42-18-14 071-53-51	61.2	192.8 <b>24.46</b>	217.3 <b>Short</b>	217.3
WGTW 7623	BURLINGTON NJ LIC	BLCT C 19920821KF	48(-) I	2340 335	N 28532	40-02-36 075-14-33	214.6	194.1 <b>23.19</b>	217.3 <b>Short</b>	217.3
WYDC 62219	CORNING NY LIC	BLCT C 19940920KE	48(+) I	12 166	D 24057	42-09-43 077-02-15	287.3	267.3 49.98	217.3 Clear	217.3
	KINGSTON ON CAN		48( ) I			44-14-00 076-30-00	326.6	369.4 2.40	367.0 Close	367.0
WEDW 13594	BRIDGEPORT CT LIC	BLET C 19870908KE	49(-) I	1950 222	D 20548	41-16-43 073-11-08	109.9	68.0 <b>38.03</b>	12.0 <b>Short</b>	106.0
WNJN 48477	MONTCLAIR NJ CP	BPET C 19891219KE	50(+) I	5000 242.3		40-51-53 074-12-03	197.0	72.4 <b>8.09</b>	24.1 <b>Short</b>	80.5

WNJN	MONTCLAIR	BLET	50(+)	2090		40-51-53	197.0	72.4	24.1	80.5
48477	NJ LIC C	19860805KG	I	243		074-12-03		<b>8.09</b>	<b>Short</b>	
WNYA	PITTSFIELD	BNPCT	51(+)	1580	D	42-30-09	24.7	124.2	24.1	80.5
136751	MA CP C	20020320AB	I	305	42928	073-18-58		43.75	Clear	
960724	PITTSFIELD	BPCT	51(+)	5000	D	42-32-42	24.8	129.6	24.1	80.5
83166	MA APP C	19960724LI	I	345	33841	073-17-09		49.08	Clear	
WLNY	RIVERHEAD	BLCT	55(+)	5000	D	40-53-50	126.9	108.7	24.1	80.5
73206	NY LIC C	19850429KJ	I	194	18225	072-54-56		28.24	Clear	