

TECHNICAL EXHIBIT
APPLICATION FOR MODIFICATION OF
CONSTRUCTION PERMIT
TELEVISION STATION WLAJ-DT
LANSING, MICHIGAN

April 18, 2003

CHANNEL 51 900 KW (MAX-DA) 300 M

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Technical Statement

This Technical Exhibit was prepared on behalf of digital television broadcast station WLAJ-DT, Lansing, Michigan, in support of an application for modification of its construction permit (See FCC File No. BPCDT-19991029ABU). The purpose of this modification application is to change the directional antenna pattern. The proposed antenna pattern is very similar to the authorized pattern and has greater suppression toward Canada than the authorized pattern. The maximum effective radiated power will remain unchanged at 900 kW and the antenna radiation center height above average terrain will increase by 1-m due the mechanical change in the antenna. As described in detail herein, the proposal meets all of the necessary interference protection requirements of the FCC Rules and Regulations and it does not exceed the authorized facility toward the pertinent Canadian allotment facilities.

Proposed Facilities

The proposed transmitting antenna will be top-mounted on the existing WLAJ-TV tower to be located near Rives Junction, Michigan. The antenna center of radiation will be located at 302 m above ground level (589 m AMSL). The transmitting antenna will be shared with WLAJ-TV (Channel 53).

The proposed facility provides minimum 48 dBu, f(50,90), coverage of Lansing in compliance with Section 73.625(a)(1) of the FCC Rules, as adopted by the FCC in MM Docket No. 00-39. Figure 1 herein is a tabulation of the calculated distances to the predicted WLAJ-DT coverage contours. Figure 2 herein is a map depicting the predicted coverage contours of the proposed facility.

Domestic Allocation Considerations

The proposed WLAJ-DT Channel 51 facility meets the requirements of Section 73.623 of the FCC Rules concerning predicted interference to other existing U.S. NTSC facilities and U.S. DTV allotments and assignments. Longley-Rice interference analyses were conducted pursuant to the requirements of the FCC Rules; OET Bulletin No. 69; and published FCC guidelines for preparation of such interference analyses. The Longley-Rice interference analyses were conducted using the software developed by du Treil, Lundin & Rackley, Inc. based on the FCC published software routines.* Stations selected for analysis were determined pursuant to the distance requirements outlined in the FCC DTV Processing Guidelines Public Notice. Accordingly, co-channel DTV and NTSC stations within 429 km and 407 km, respectively, were examined for potential interference; and first-adjacent DTV and NTSC stations within 229 km and 207 km, respectively, were examined for potential interference. Analog taboo-related NTSC stations within 142 km were examined for potential interference. The results of the interference analyses for the proposed WLAJ-DT facility are summarized herein at Figure 3. As indicated therein, the proposed facility will meet the 2%/10% criterion outlined in the FCC Rules and published guidelines with respect to all considered stations.†

* The duTreil, Lundin & Rackley, Inc. DTV interference analysis program is a precise implementation of the 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.

† Interference analysis results reflect the net change in interference to a given station considering the interference predicted to occur from all other stations (i.e. "masking") including the allotment facility for

With respect to Class A TV station protection, the proposal has been evaluated according to the requirements of Section 73.623(c)(5) of the FCC Rules. The analysis reveals no potentially affected Class A TV stations.

Canadian Allocation Considerations

According to the Canada/U.S. Letter of Understanding Concerning Digital Television (LOU)[‡], the proposed WLAJ-DT facility would be classified as a “Class VL” allotment for study purposes. A spacing analysis was conducted according to the separation requirements of Appendix 2 of LOU with WLAJ-DT assumed to be Class VL. The following table summarizes the spacing analysis for the pertinent Canadian allotments identified:

Channel	Type	Location	Class	Required Spacing (km)	Actual Spacing (km)	Result
51	TV	Alvinston-ON	C	259.0	223.6	35.4 km short
51	DT	Woodstock-ON	C	359.0	315.3	43.7 km short
51	TV	Windsor-ON	C	95.0	133.0	38.0 km clear

The Alvinston and Woodstock allotments do not meet the separation requirements, so a contour analysis was conducted pursuant to the principals outlined in Appendix 2 of the LOU. Accordingly, the 30.2 dBu, f(50,10), interfering contour was predicted to

WLAJ-DT. This properly reflects the net interference change for determining compliance with the FCC DTV2%/10% *de minimis* standard.

[‡]See Letter Of Understanding Between The Federal Communications Commission Of The United States Of America And Industry Canada Related To The Use Of The 54-72 MHz, 76-88 MHz, 174-216 MHz And 470-806 MHz Bands For The Digital Television Broadcasting Service Along The Common Border, September 22, 2000.

determine the interference potential of WLAJ-DT to the Alvinston TV allotment. Likewise, the 19.5 dBu, f(10,10), interfering contour was calculated with respect to the Woodstock DTV allotment. These contours are shown on Figure 4 herein. As indicated, there would be predicted proposed WLAJ-DT interfering contour overlap with the protected service areas of the Alvinston and Woodstock allotments. However, the proposed WLAJ-DT facility reduces the overlap to both the Alvinston and Woodstock allotments relative to the WLAJ-DT construction permit facility. Therefore, no further analysis with respect to the Alvinston and Woodstock allotment facilities is required.

Environmental Considerations

With respect to the potential for human exposure to radio frequency (RF) radiation, calculations prepared in accordance with FCC Bulletin OET-65 (Edition 97-01) indicate that the proposal will not result in human exposure to RF radiation at ground level in excess of FCC standards. Power density calculations were conducted at 2-m above ground[§] based on the following conservative assumptions, with the following results:

Call Sign	Channel	Peak Visual ERP or Average ERP (kW)	Aural ERP (kW)	Relative Field Factor **	FCC Limit ^{††} (mW/cm ²)	Percentage of Limit
WLAJ-DT	51	900	--	0.25	0.463	4.5%

As indicated above, the exposure to RF radiation at 2-m above ground level will not exceed 4.5% of the FCC limit for general population / uncontrolled exposure. Therefore, the proposal complies with the FCC limits for human exposure to RF radiation and it is categorically excluded from environmental processing. The applicant, in coordination

§ The radiation center height above ground is 302 m.

** This is a conservative estimate of the relative field factor in the downward direction.

†† for general population/uncontrolled environments

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

Louis Robert du Treil, Jr.

April 18, 2003

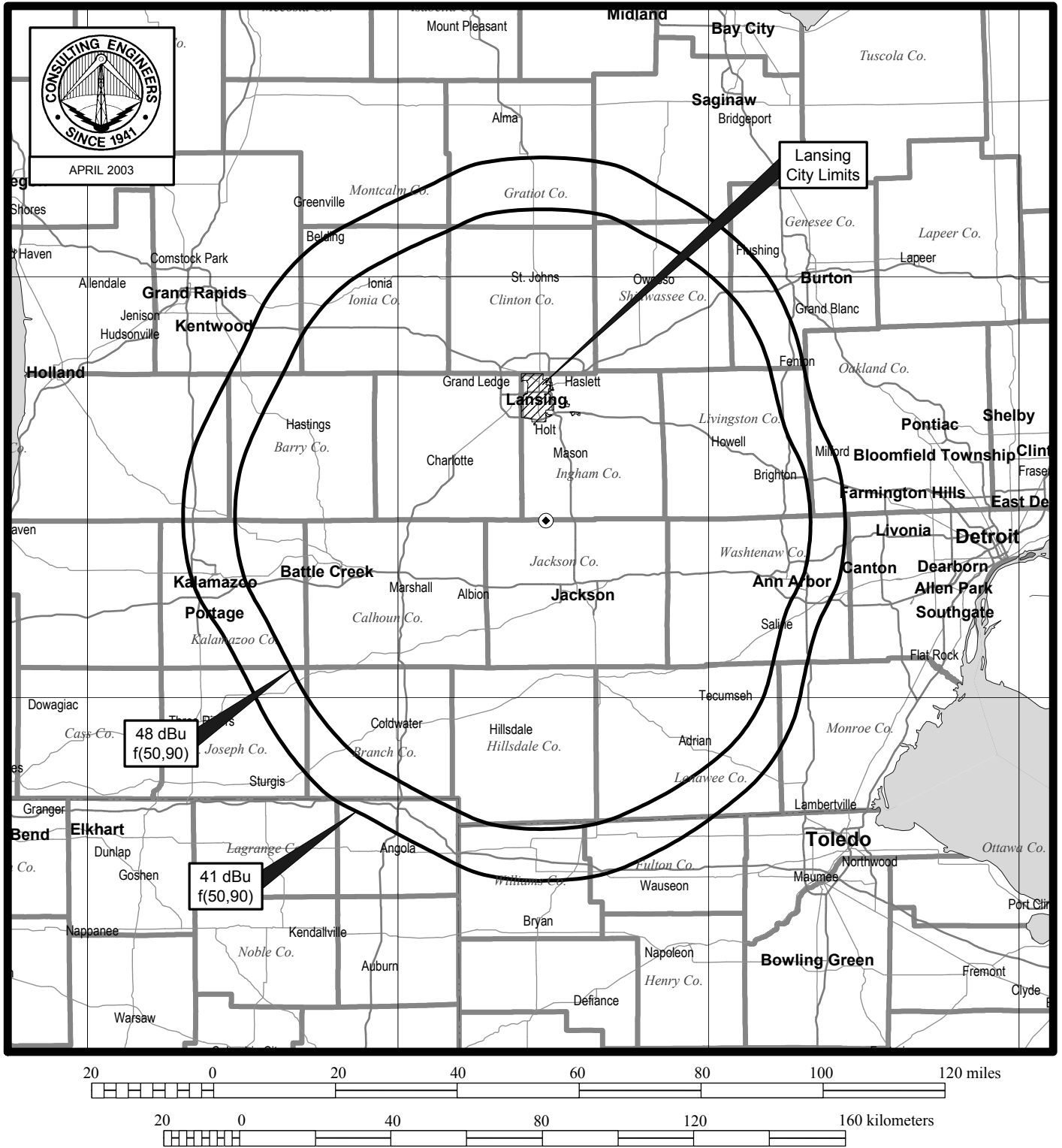
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Tabulation of Average Elevations and
Distances to Predicted Coverage Contours

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	287	302	878.5	82.2	95.9
15	287	302	737.1	81.0	94.2
30	293	296	522.6	78.3	90.3
45	295	294	321.8	75.3	85.7
60	291	298	107.1	69.5	78.6
75	290	299	91.0	68.7	77.7
90	291	298	114.7	69.9	79.1
105	281	308	85.4	69.0	78.2
120	287	302	116.0	70.2	79.5
135	286	303	329.4	76.2	87.2
150	295	294	514.4	78.0	89.9
165	296	293	758.5	80.3	93.4
180	294	295	882.1	81.5	95.1
195	283	306	727.4	81.3	94.6
210	297	292	629.0	79.0	91.4
225	294	295	676.5	79.8	92.6
240	293	296	504.9	78.1	89.9
255	296	293	706.5	79.8	92.6
270	289	300	900.0	82.1	95.9
285	285	304	692.2	80.9	94.0
300	281	308	525.3	79.4	91.8
315	276	313	695.4	81.9	95.1
330	279	310	606.6	80.6	93.5
345	284	305	733.9	81.3	94.6

Note: The 3-16-km average terrain is 289 m based on the eight conventional radials (0°, 45°, 90°, etc.). The overall antenna radiation center height above average terrain is 300 m based on the eight conventional radials.

Figure 2



PREDICTED COVERAGE CONTOURS

TELEVISION STATION WLAI-DT
LANSING, MICHIGAN
CHANNEL 51 900 KW (MAX-DA) 300 M

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

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Summary of Domestic Allocation Analysis

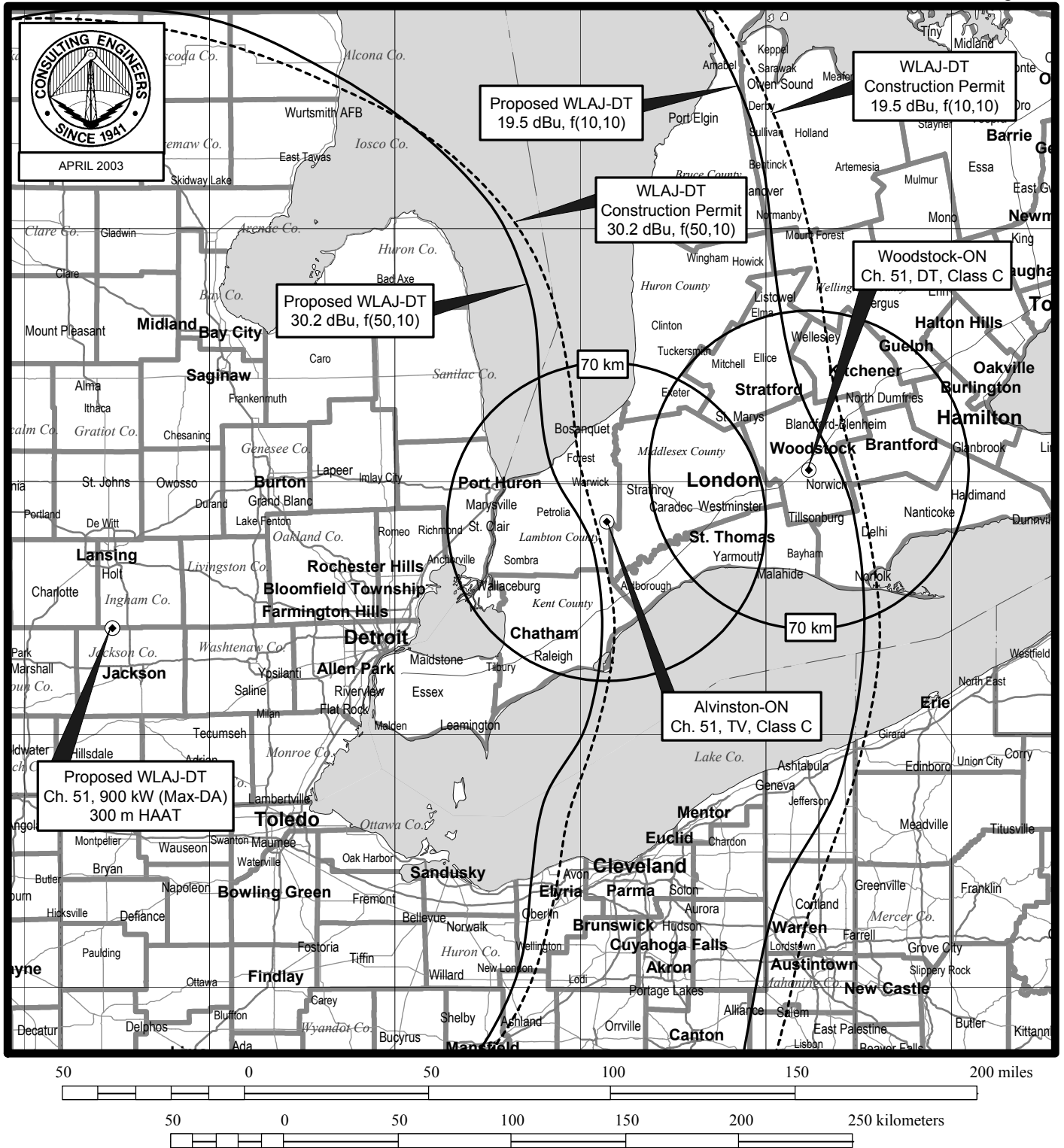
Stations Potentially Affected by Proposed Station							
Facility Number	Channel	Call	City State	Distance (km)	Status	Application Prefix	Application Reference Number
1	36	WUPW	TOLEDO OH	123.1	LIC	BLCT	19850930KG
2	43	WZPX	BATTLE CREEK MI	52.9	LIC	BLCT	19961017KE
3	47	WSYM-TV	LANSING MI	11.7	LIC	BLCT	19821210KE
4	49	WAQP	SAGINAW MI	97	LIC	BLCT	19850403KF
5	50	WKBD	DETROIT MI	99.6	CP	BPCT	19970106KE
6	50	WKBD	DETROIT MI	99.6	LIC	BLCT	2092
7	50	WPBN-DT	TRAVERSE CITY MI	227.6	PLN	DTVPLN	DTVP1449
8	51	WPWR-TV	GARY IN	263.4	CP	BPCDT	19991101ALA
9	51	WPWR-DT	GARY IN	263.4	PLN	DTVPLN	DTVP1478

Stations Potentially Affected by Proposed Station							
Facility Number	Channel	Call	City State	Distance (km)	Status	Application Prefix	Application Reference Number
10	51	WKEF-DT	DAYTON OH	300.8	PLN	DTVPLN	DTVP1488
11	51	WSFJ-TV	NEWARK OH	326.8	LIC	BLCT	19841029KF
12	51	WSFJ-TV	NEWARK OH	301.8	CP	BPCT	20010213ABM
13	51	WLUK-TV	GREEN BAY WI	351.1	CP MOD	BMPCDT	20020424AAU
14	51	WLUK-DT	GREEN BAY WI	356.6	PLN	DTVPLN	DTVP1497
15	52	WFUM	FLINT MI	101.8	CP	BPEDT	20000420ABD
16	52	WFUM-DT	FLINT MI	101.8	PLN	DTVPLN	DTVP1512
17	52	WGVK	KALAMAZOO MI	93.9	LIC	BLET	19841012KH
18	52	WGGN-TV	SANDUSKY OH	182.9	LIC	BLCT	19940310KE
19	53	WLAJ	LANSING MI	0	CP MOD	BMPCT	20010306AAW
20	53	WLAJ	LANSING MI	0.1	LIC	BLCT	19980729KF
21	54	WTLJ	MUSKEGON MI	127.4	LIC	BLCT	19861110KI
22	58	960920WC	ANN ARBOR MI	75.8	APP	BPET	19960920WC

Summary of Interference Analysis for Worst-Case Scenarios							
Facility Number	Interference Population Before Analysis	Interference Population After Analysis	Baseline Population	Net Change in Interference	Percent of Baseline	Permissible Percent of Baseline	Result
1	--	--	--	--	0.00	--	pass
2	--	--	--	--	0.00	--	pass
3	--	--	--	--	0.00	--	pass
4	--	--	--	--	0.00	--	pass
5	397012	398785	4958365	1773	0.036	2.0	pass
6	302941	303478	4794468	537	0.011	2.0	pass
7	--	--	--	--	0.00	--	pass
8	7688	9233	8326630	1545	0.019	2.0	pass
9	7313	7313	8326630	0	0.00	2.0	pass
10	49726	49726	2964401	0	0.00	2.0	pass
11	--	--	--	--	0.00	--	pass
12	--	--	--	--	0.00	--	pass
13	--	--	--	--	0.00	--	pass
14	--	--	--	--	0.00	--	pass
15	84558	91441	2661481	6883	0.259	2.0	pass
16	157799	163293	2661481	5494	0.206	2.0	pass
17	12570	12570	342532	0	0	--	pass

Summary of Interference Analysis for Worst-Case Scenarios							
Facility Number	Interference Population Before Analysis	Interference Population After Analysis	Baseline Population	Net Change in Interference	Percent of Baseline	Permissible Percent of Baseline	Result
18	--	--	--	--	0.00	--	pass
19	--	--	--	--	0.00	--	pass
21	--	--	--	--	0.00	--	pass
22	--	--	--	--	0.00	--	pass

Figure 4



CONTOUR ALLOCATION ANALYSIS TOWARD CANADIAN ALLOTMENT FACILITIES

TELEVISION STATION WLAI-DT
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du Treil, Lundin & Rackley, Inc. Sarasota, Florida

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Transmitting Antenna Manufacturer's
Azimuthal Plane and Vertical Plane Pattern Data

(four pages follow)

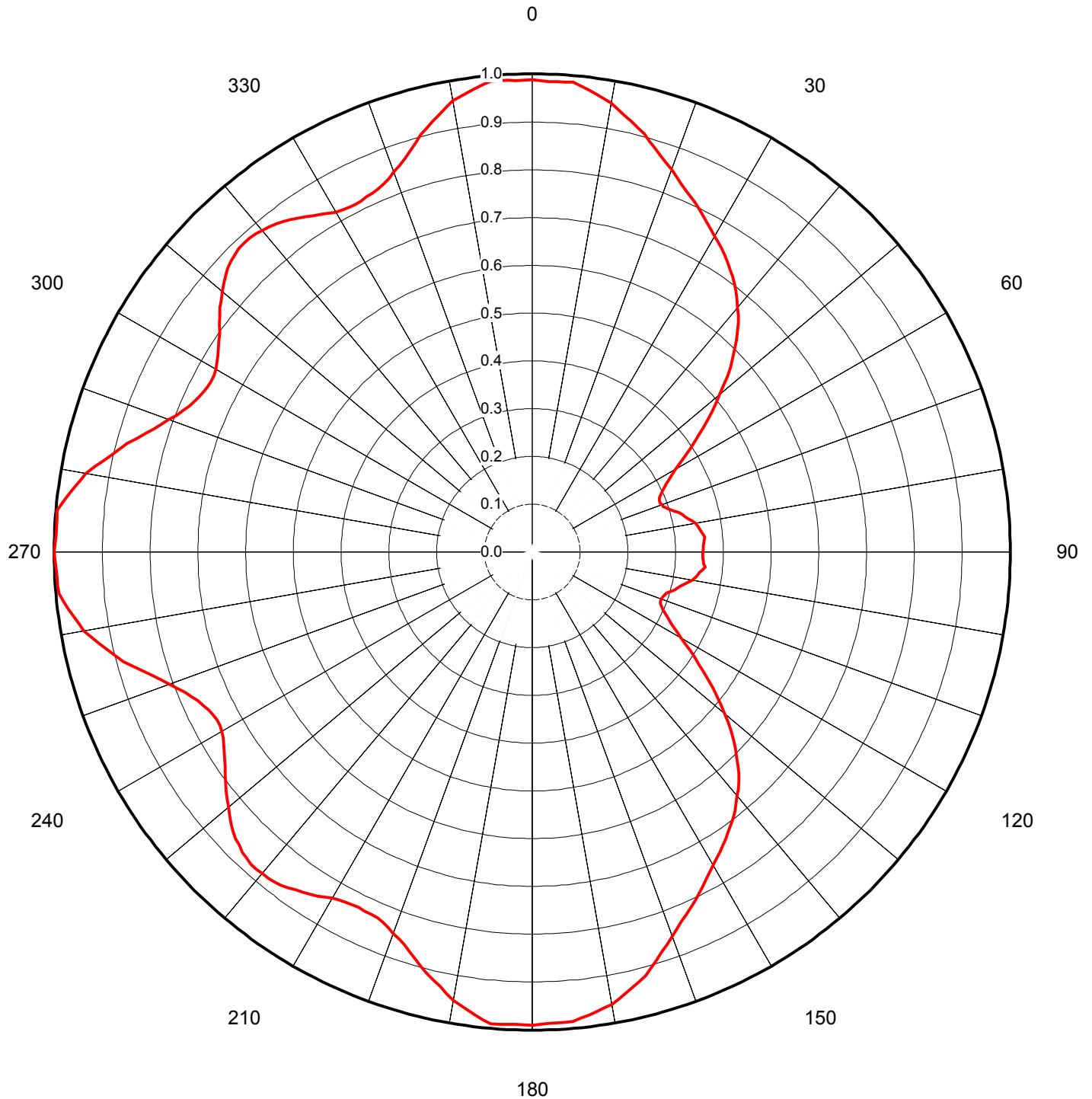


Proposal Number	DCA-10081	Revision:	1
Date	3-Mar-03		
Call Letters	WLAJ-DT	Channel	51
Location	Lansing, MI		
Customer			
Antenna Type	TUF-C4-10/40H-1-T		

AZIMUTH PATTERN

Gain	1.68	(2.25 dB)
Calculated / Measured	Calculated	

Frequency	695.00 MHz
Drawing #	TUF-C4SP-6950





Proposal Number **DCA-10081** Revision: **1**
Date **3-Mar-03**
Call Letters **WLAJ-DT** Channel **51**
Location **Lansing, MI**
Customer
Antenna Type **TUF-C4-10/40H-1-T**

TABULATION OF AZIMUTH PATTERN

Azimuth Pattern Drawing #: **TUF-C4SP-6950**

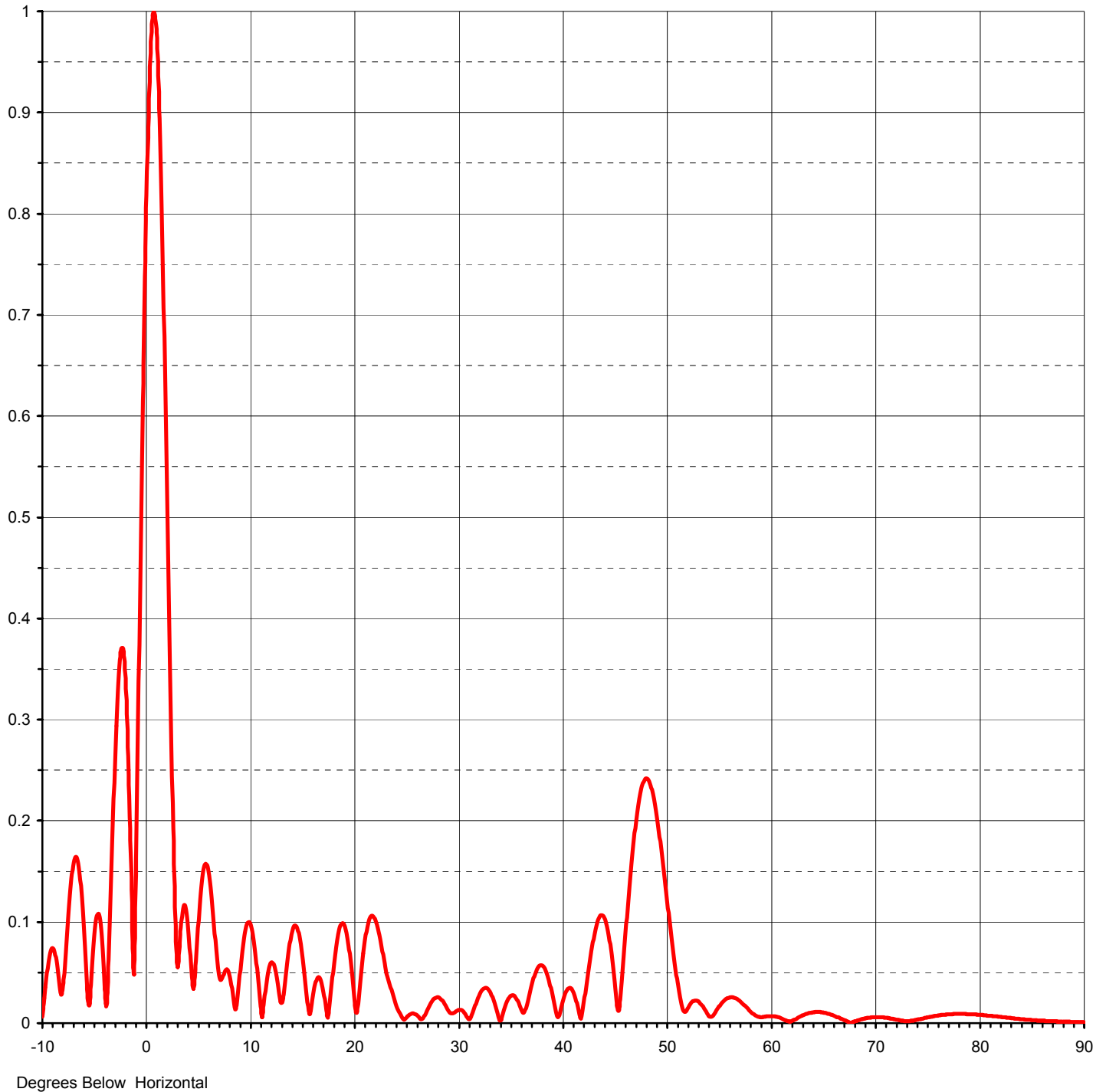
Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
0	0.988	45	0.598	90	0.357	135	0.605	180	0.990	225	0.867	270	1.000	315	0.879
1	0.986	46	0.583	91	0.357	136	0.620	181	0.989	226	0.862	271	0.998	316	0.883
2	0.985	47	0.567	92	0.357	137	0.634	182	0.989	227	0.856	272	0.997	317	0.884
3	0.984	48	0.549	93	0.358	138	0.646	183	0.989	228	0.849	273	0.996	318	0.884
4	0.985	49	0.530	94	0.360	139	0.657	184	0.990	229	0.839	274	0.996	319	0.881
5	0.987	50	0.510	95	0.363	140	0.666	185	0.991	230	0.829	275	0.998	320	0.877
6	0.980	51	0.494	96	0.358	141	0.678	186	0.983	231	0.821	276	0.988	321	0.874
7	0.973	52	0.477	97	0.353	142	0.688	187	0.976	232	0.812	277	0.978	322	0.870
8	0.967	53	0.460	98	0.349	143	0.698	188	0.968	233	0.803	278	0.968	323	0.865
9	0.960	54	0.443	99	0.344	144	0.707	189	0.960	234	0.794	279	0.958	324	0.859
10	0.953	55	0.425	100	0.340	145	0.715	190	0.952	235	0.784	280	0.948	325	0.852
11	0.943	56	0.409	101	0.332	146	0.724	191	0.940	236	0.776	281	0.932	326	0.846
12	0.933	57	0.392	102	0.325	147	0.732	192	0.929	237	0.768	282	0.917	327	0.839
13	0.923	58	0.376	103	0.318	148	0.740	193	0.918	238	0.761	283	0.903	328	0.833
14	0.914	59	0.361	104	0.313	149	0.748	194	0.908	239	0.754	284	0.890	329	0.826
15	0.905	60	0.345	105	0.308	150	0.756	195	0.899	240	0.749	285	0.877	330	0.821
16	0.893	61	0.334	106	0.301	151	0.765	196	0.886	241	0.748	286	0.861	331	0.818
17	0.882	62	0.324	107	0.295	152	0.775	197	0.875	242	0.748	287	0.846	332	0.816
18	0.871	63	0.315	108	0.291	153	0.785	198	0.865	243	0.750	288	0.832	333	0.816
19	0.861	64	0.307	109	0.289	154	0.795	199	0.856	244	0.754	289	0.820	334	0.817
20	0.851	65	0.301	110	0.288	155	0.806	200	0.849	245	0.760	290	0.809	335	0.819
21	0.841	66	0.295	111	0.288	156	0.814	201	0.841	246	0.766	291	0.798	336	0.821
22	0.831	67	0.290	112	0.290	157	0.823	202	0.835	247	0.774	292	0.788	337	0.824
23	0.822	68	0.287	113	0.294	158	0.833	203	0.831	248	0.783	293	0.780	338	0.830
24	0.814	69	0.286	114	0.300	159	0.844	204	0.829	249	0.795	294	0.773	339	0.837
25	0.806	70	0.288	115	0.308	160	0.856	205	0.828	250	0.808	295	0.769	340	0.846
26	0.797	71	0.291	116	0.316	161	0.867	206	0.827	251	0.821	296	0.764	341	0.855
27	0.788	72	0.295	117	0.325	162	0.879	207	0.828	252	0.835	297	0.762	342	0.865
28	0.779	73	0.301	118	0.336	163	0.891	208	0.829	253	0.851	298	0.761	343	0.876
29	0.771	74	0.309	119	0.347	164	0.904	209	0.832	254	0.868	299	0.762	344	0.889
30	0.762	75	0.318	120	0.359	165	0.918	210	0.836	255	0.886	300	0.764	345	0.903
31	0.755	76	0.323	121	0.375	166	0.926	211	0.842	256	0.898	301	0.769	346	0.914
32	0.748	77	0.328	122	0.390	167	0.934	212	0.848	257	0.911	302	0.776	347	0.924
33	0.740	78	0.334	123	0.406	168	0.943	213	0.853	258	0.924	303	0.783	348	0.935
34	0.731	79	0.340	124	0.421	169	0.952	214	0.859	259	0.938	304	0.791	349	0.947
35	0.721	80	0.347	125	0.437	170	0.961	215	0.863	260	0.952	305	0.798	350	0.958
36	0.712	81	0.349	126	0.455	171	0.965	216	0.868	261	0.960	306	0.809	351	0.964
37	0.703	82	0.352	127	0.473	172	0.970	217	0.873	262	0.969	307	0.819	352	0.970
38	0.692	83	0.356	128	0.490	173	0.975	218	0.876	263	0.977	308	0.828	353	0.976
39	0.681	84	0.359	129	0.507	174	0.980	219	0.877	264	0.986	309	0.837	354	0.982
40	0.668	85	0.362	130	0.524	175	0.985	220	0.878	265	0.994	310	0.846	355	0.989
41	0.657	86	0.360	131	0.543	176	0.985	221	0.879	266	0.995	311	0.855	356	0.988
42	0.644	87	0.359	132	0.560	177	0.986	222	0.878	267	0.995	312	0.864	357	0.987
43	0.630	88	0.358	133	0.576	178	0.987	223	0.876	268	0.996	313	0.870	358	0.987
44	0.615	89	0.357	134	0.591	179	0.988	224	0.872	269	0.998	314	0.876	359	0.987



Proposal Number	DCA-10081	Revision:	1
Date	3-Mar-03		
Call Letters	WLAJ-DT	Channel	51
Location	Lansing, MI		
Customer			
Antenna Type	TUF-C4-10/40H-1-T		

ELEVATION PATTERN

RMS Gain at Main Lobe	24.50 (13.89 dB)	Beam Tilt	0.67 deg
RMS Gain at Horizontal	16.50 (12.17 dB)	Frequency	695.00 MHz
Calculated / Measured	Calculated	Drawing #	10U245070-90





Proposal Number **DCA-10081** Revision: **1**
 Date **3-Mar-03**
 Call Letters **WLAJ-DT** Channel **51**
 Location **Lansing, MI**
 Customer
 Antenna Type **TUF-C4-10/40H-1-T**

TABULATION OF ELEVATION PATTERN

Elevation Pattern Drawing #: **10U245070-90**

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.022	2.4	0.289	10.6	0.079	30.5	0.012	51.0	0.143	71.5	0.004
-9.5	0.065	2.6	0.186	10.8	0.062	31.0	0.012	51.5	0.100	72.0	0.005
-9.0	0.072	2.8	0.102	11.0	0.042	31.5	0.005	52.0	0.060	72.5	0.005
-8.5	0.038	3.0	0.056	11.5	0.014	32.0	0.010	52.5	0.028	73.0	0.005
-8.0	0.054	3.2	0.072	12.0	0.052	32.5	0.024	53.0	0.011	73.5	0.005
-7.5	0.124	3.4	0.100	12.5	0.058	33.0	0.033	53.5	0.018	74.0	0.005
-7.0	0.162	3.6	0.116	13.0	0.033	33.5	0.033	54.0	0.023	74.5	0.004
-6.5	0.144	3.8	0.116	13.5	0.030	34.0	0.024	54.5	0.021	75.0	0.004
-6.0	0.073	4.0	0.101	14.0	0.073	34.5	0.008	55.0	0.014	75.5	0.003
-5.5	0.030	4.2	0.077	14.5	0.096	35.0	0.010	55.5	0.007	76.0	0.002
-5.0	0.097	4.4	0.048	15.0	0.087	35.5	0.023	56.0	0.009	76.5	0.002
-4.5	0.100	4.6	0.034	15.5	0.051	36.0	0.027	56.5	0.017	77.0	0.002
-4.0	0.021	4.8	0.056	16.0	0.008	36.5	0.020	57.0	0.022	77.5	0.002
-3.5	0.130	5.0	0.089	16.5	0.036	37.0	0.010	57.5	0.025	78.0	0.003
-3.0	0.281	5.2	0.118	17.0	0.045	37.5	0.024	58.0	0.025	78.5	0.004
-2.8	0.327	5.4	0.140	17.5	0.024	38.0	0.043	58.5	0.022	79.0	0.004
-2.6	0.358	5.6	0.154	18.0	0.021	38.5	0.055	59.0	0.018	79.5	0.005
-2.4	0.370	5.8	0.157	18.5	0.066	39.0	0.055	59.5	0.013	80.0	0.005
-2.2	0.359	6.0	0.152	19.0	0.095	39.5	0.042	60.0	0.009	80.5	0.006
-2.0	0.326	6.2	0.138	19.5	0.095	40.0	0.020	60.5	0.006	81.0	0.006
-1.8	0.268	6.4	0.119	20.0	0.064	40.5	0.007	61.0	0.006	81.5	0.006
-1.6	0.188	6.6	0.095	20.5	0.015	41.0	0.025	61.5	0.007	82.0	0.007
-1.4	0.091	6.8	0.071	21.0	0.044	41.5	0.034	62.0	0.007	82.5	0.007
-1.2	0.059	7.0	0.052	21.5	0.087	42.0	0.029	62.5	0.006	83.0	0.007
-1.0	0.179	7.2	0.043	22.0	0.107	42.5	0.009	63.0	0.004	83.5	0.007
-0.8	0.317	7.4	0.044	22.5	0.104	43.0	0.023	63.5	0.002	84.0	0.007
-0.6	0.457	7.6	0.050	23.0	0.082	43.5	0.057	64.0	0.002	84.5	0.006
-0.4	0.592	7.8	0.053	23.5	0.060	44.0	0.086	64.5	0.005	85.0	0.006
-0.2	0.715	8.0	0.051	24.0	0.038	44.5	0.104	65.0	0.008	85.5	0.006
0.0	0.821	8.2	0.043	24.5	0.020	45.0	0.103	65.5	0.009	86.0	0.006
0.2	0.906	8.4	0.030	25.0	0.007	45.5	0.082	66.0	0.010	86.5	0.006
0.4	0.965	8.6	0.015	25.5	0.005	46.0	0.043	66.5	0.011	87.0	0.006
0.6	0.995	8.8	0.018	26.0	0.009	46.5	0.018	67.0	0.011	87.5	0.006
0.8	0.997	9.0	0.037	26.5	0.007	47.0	0.076	67.5	0.010	88.0	0.006
1.0	0.971	9.2	0.057	27.0	0.004	47.5	0.136	68.0	0.008	88.5	0.006
1.2	0.917	9.4	0.075	27.5	0.011	48.0	0.187	68.5	0.006	89.0	0.005
1.4	0.840	9.6	0.089	28.0	0.021	48.5	0.223	69.0	0.004	89.5	0.005
1.6	0.745	9.8	0.094	28.5	0.025	49.0	0.239	69.5	0.002	90.0	0.005
1.8	0.636	10.0	0.099	29.0	0.022	49.5	0.236	70.0	0.001		
2.0	0.520	10.2	0.099	29.5	0.014	50.0	0.216	70.5	0.001		
2.2	0.402	10.4	0.092	30.0	0.009	50.5	0.183	71.0	0.003		