

TECHNICAL EXHIBIT
AMENDMENT OF APPLICATION FOR
CONSTRUCTION PERMIT
TELEVISION STATION WJAL-DT
HAGERSTOWN, MARYLAND

November 2, 2004

CHANNEL 16 50 KW (MAX-DA) 380 M

TECHNICAL EXHIBIT
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TELEVISION STATION WJAL-DT
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Technical Statement

This Technical Statement was prepared on behalf of digital television broadcast station WJAL-DT, Hagerstown, Maryland, in support of an amendment to its pending application for construction permit (See FCC File No. BPCDT-19991101ADQ). WJAL-DT was allotted Channel 16 for its DTV transition channel. The WJAL-DT allotment facility was specified with a maximum effective radiated power (ERP) of 50 kW and antenna height above average terrain (HAAT) of 394 m. The purpose of this amendment is to change the directional antenna pattern and reduce the proposed ERP for WJAL-DT to conform to the “checklist” filing requirements for the WJAL-DT allotment facility.

The proposed facility will not result in any extension of the predicted 41 dBu noise-limited contour relative to the WJAL-DT allotment facility. (See Figure 1 herein.) Therefore, the proposal meets the terms of the FCC Filing Freeze for television stations.*

* See August 2004 Filing Freeze PN, DA 04-2446 (MB rel. Aug. 3, 2004).

Proposed Facilities

The proposed transmitting facility will employ a Dielectric, model TFU-16DSB-E antenna, which will be side-mounted on the existing WJAL(TV) tower structure. The transmitter site elevation is 613 m AMSL. The antenna center of radiation will be located at 66 m above ground level and 679 m AMSL. The proposed WJAL-DT facility will operate on Channel 16 with a maximum directional average ERP of 17.0 dBk (50 kW) and antenna radiation center HAAT of 380 m.

The proposed facility provides minimum 48 dBu, f(50,90), coverage of Hagerstown in compliance with Section 73.625(a)(1) of the FCC Rules. Figure 1 herein is a map depicting the predicted coverage contours of the proposed facility.

The proposed antenna structure has been registered with the FCC. The FCC antenna structure registration number is 1044944. There will be no change in the overall height of the antenna structure as a result of the instant proposal.

Environmental Considerations

An evaluation was conducted for the proposed facility concerning compliance with Section 1.1307(b) of the FCC Rules regarding human exposure to radio frequency (RF) energy.[†] 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:

[†] See FCC Office of Engineering and Technology Bulletin No. 56 for background information on non-ionizing RF energy of the type discussed here. Internet web reference:

http://www.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet56/oet56e4.pdf

[‡] The antenna radiation center height above ground is 66 m.

Call Sign	Channel	Total Average ERP (kW)	Relative Field Factor [§]	FCC Limit ^{**} (mW/cm ²)	Percentage of Limit
WJAL-DT	16	50	0.12	0.323	1.8%

As indicated above, the total exposure to RF radiation at 2-m above ground level will not exceed 1.8% of the FCC limit for general population / uncontrolled exposure. Therefore, the proposal complies with the FCC limits for human exposure to RF energy and it is categorically excluded from environmental processing. 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 WJAL-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

November 2, 2004

[§] This is a conservative estimate of the relative field factor in the downward direction.
^{**} for general population/uncontrolled environments

The map displays the Hagerstown, Maryland area, showing proposed digital television (DTV) service contours for WJAL-TV. The map includes county boundaries (Altoona, Huntingdon, Juniata, Perry, Franklin, Adams, Morgan, Hampshire, Frederick, Carroll, and Northampton), city limits (Hagerstown, Altoona, Harrisburg, Frederick, Gaithersburg, Aspen Hill, and North Bethesda), and proposed DTV service contours for WJAL-TV at 41 dBu and 48 dBu. A legend indicates that the red line represents the 41 dBu contour and the black dashed line represents the 48 dBu contour. A scale bar at the bottom shows distances in miles (0 to 90) and kilometers (0 to 130). A logo for "CONSULTING ENGINEERS SINCE 1941" is in the top left corner.

TELEVISION STATION WJAL-DT
HAGERSTOWN, MARYLAND
CHANNEL 16 50 KW (MAX-DA) 380 M

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

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HAGERSTOWN, MARYLAND
CHANNEL 16 50 KW (MAX-DA) 380 M

Transmitting Antenna
Manufacturer's Pattern Data

(four pages follow)



Date

01 Nov 2004

Call Letters

Channel 16

Location

Hagerstown

Customer

Antenna Type

TFU-16DSB-E

AZIMUTH PATTERN

Gain

3.90 (5.91 dB)

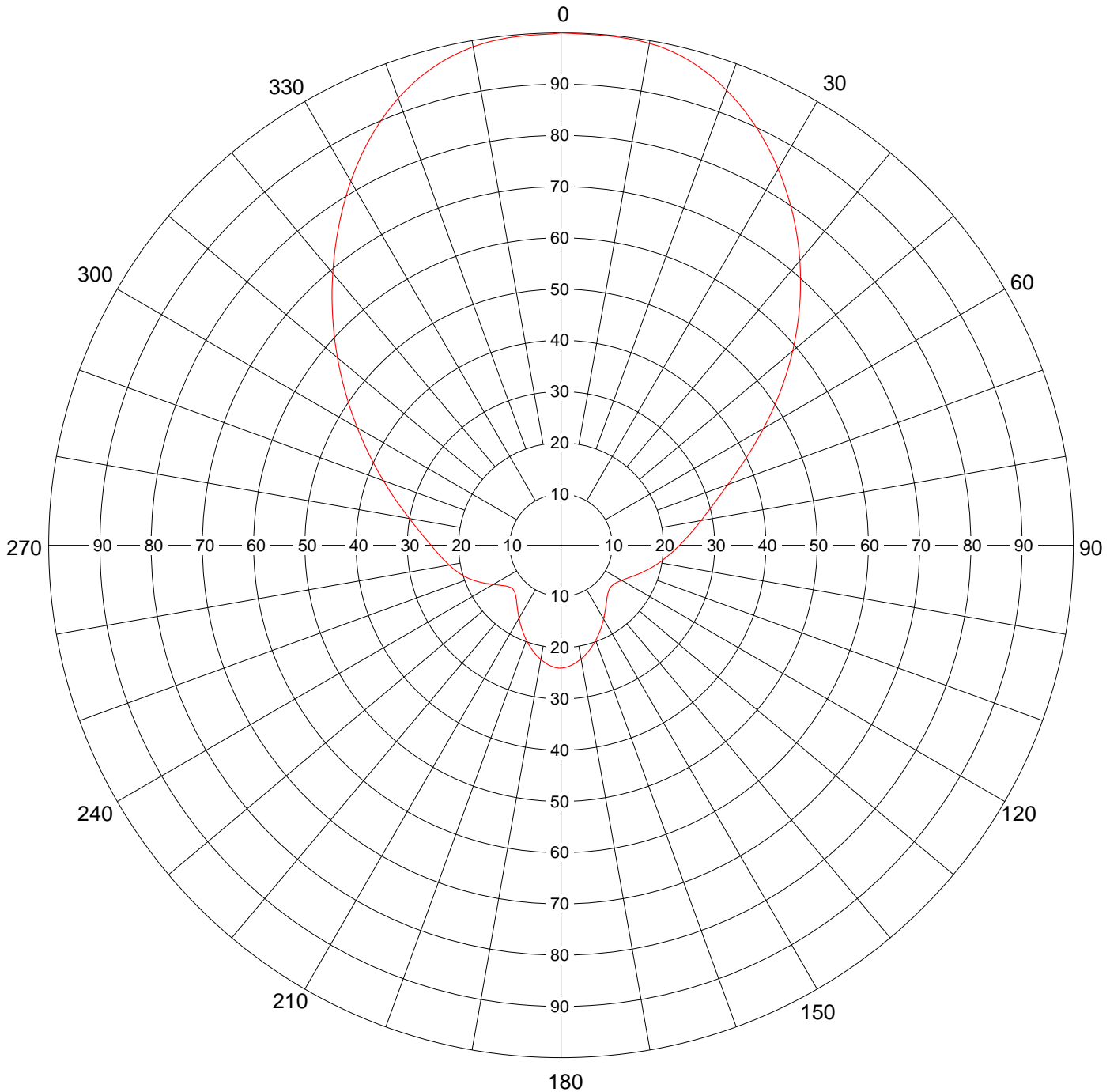
Frequency

485 MHz

Calculated / Measured

Calculated

Drawing #

DSB-E

Remarks:



Date

01 Nov 2004

Call Letters

Channel 16

Location

Hagerstown

Customer

Antenna Type

TFU-16DSB-E

TABULATION OF AZIMUTH PATTERN

Azimuth Pattern Drawing #

DSB-E

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
0	1.000	45	0.659	90	0.231	135	0.130	180	0.240	225	0.128	270	0.254	315	0.630
1	0.999	46	0.645	91	0.227	136	0.131	181	0.240	226	0.128	271	0.258	316	0.643
2	0.999	47	0.631	92	0.223	137	0.133	182	0.239	227	0.127	272	0.262	317	0.655
3	0.999	48	0.618	93	0.220	138	0.135	183	0.239	228	0.127	273	0.266	318	0.668
4	0.999	49	0.604	94	0.216	139	0.137	184	0.238	229	0.127	274	0.270	319	0.680
5	0.998	50	0.590	95	0.212	140	0.139	185	0.236	230	0.128	275	0.275	320	0.693
6	0.998	51	0.577	96	0.209	141	0.141	186	0.235	231	0.129	276	0.279	321	0.706
7	0.998	52	0.563	97	0.205	142	0.143	187	0.233	232	0.131	277	0.284	322	0.719
8	0.997	53	0.549	98	0.202	143	0.146	188	0.231	233	0.133	278	0.289	323	0.731
9	0.996	54	0.536	99	0.198	144	0.149	189	0.229	234	0.135	279	0.295	324	0.744
10	0.995	55	0.522	100	0.195	145	0.151	190	0.226	235	0.137	280	0.301	325	0.757
11	0.993	56	0.509	101	0.191	146	0.154	191	0.224	236	0.140	281	0.306	326	0.770
12	0.990	57	0.495	102	0.188	147	0.157	192	0.221	237	0.143	282	0.312	327	0.783
13	0.986	58	0.482	103	0.185	148	0.160	193	0.219	238	0.146	283	0.319	328	0.795
14	0.982	59	0.469	104	0.181	149	0.163	194	0.216	239	0.149	284	0.325	329	0.808
15	0.978	60	0.457	105	0.178	150	0.166	195	0.213	240	0.153	285	0.332	330	0.820
16	0.972	61	0.444	106	0.175	151	0.169	196	0.210	241	0.156	286	0.339	331	0.833
17	0.966	62	0.432	107	0.172	152	0.172	197	0.207	242	0.160	287	0.346	332	0.845
18	0.960	63	0.420	108	0.168	153	0.175	198	0.204	243	0.164	288	0.354	333	0.856
19	0.953	64	0.408	109	0.165	154	0.179	199	0.200	244	0.168	289	0.361	334	0.868
20	0.945	65	0.397	110	0.162	155	0.182	200	0.197	245	0.172	290	0.369	335	0.879
21	0.937	66	0.386	111	0.159	156	0.185	201	0.194	246	0.175	291	0.377	336	0.890
22	0.929	67	0.375	112	0.156	157	0.188	202	0.191	247	0.179	292	0.385	337	0.900
23	0.920	68	0.365	113	0.153	158	0.191	203	0.187	248	0.183	293	0.394	338	0.910
24	0.910	69	0.356	114	0.151	159	0.194	204	0.184	249	0.187	294	0.402	339	0.919
25	0.901	70	0.346	115	0.148	160	0.198	205	0.181	250	0.190	295	0.411	340	0.928
26	0.891	71	0.338	116	0.146	161	0.201	206	0.177	251	0.194	296	0.420	341	0.937
27	0.880	72	0.330	117	0.143	162	0.204	207	0.174	252	0.197	297	0.430	342	0.945
28	0.870	73	0.322	118	0.141	163	0.207	208	0.171	253	0.201	298	0.439	343	0.952
29	0.859	74	0.315	119	0.139	164	0.210	209	0.167	254	0.204	299	0.449	344	0.959
30	0.848	75	0.308	120	0.137	165	0.212	210	0.164	255	0.207	300	0.459	345	0.965
31	0.836	76	0.301	121	0.135	166	0.215	211	0.161	256	0.210	301	0.469	346	0.971
32	0.825	77	0.295	122	0.133	167	0.218	212	0.158	257	0.213	302	0.480	347	0.976
33	0.813	78	0.289	123	0.132	168	0.220	213	0.155	258	0.216	303	0.490	348	0.980
34	0.801	79	0.283	124	0.130	169	0.223	214	0.152	259	0.219	304	0.501	349	0.984
35	0.789	80	0.277	125	0.129	170	0.225	215	0.149	260	0.222	305	0.512	350	0.988
36	0.776	81	0.272	126	0.128	171	0.227	216	0.146	261	0.225	306	0.523	351	0.991
37	0.764	82	0.267	127	0.128	172	0.229	217	0.143	262	0.228	307	0.535	352	0.993
38	0.751	83	0.262	128	0.127	173	0.231	218	0.141	263	0.231	308	0.546	353	0.995
39	0.738	84	0.257	129	0.127	174	0.233	219	0.138	264	0.234	309	0.558	354	0.996
40	0.725	85	0.253	130	0.127	175	0.235	220	0.136	265	0.237	310	0.570	355	0.996
41	0.712	86	0.248	131	0.127	176	0.236	221	0.134	266	0.240	311	0.581	356	0.997
42	0.699	87	0.244	132	0.127	177	0.238	222	0.132	267	0.243	312	0.593	357	0.997
43	0.685	88	0.240	133	0.128	178	0.239	223	0.131	268	0.247	313	0.606	358	0.998
44	0.672	89	0.235	134	0.129	179	0.239	224	0.129	269	0.250	314	0.618	359	0.998

Remarks:



Date

01 Nov 2004

Call Letters

Channel 16

Location

Hagerstown

Customer

Antenna Type

TFU-16DSB-E

ELEVATION PATTERN

RMS Gain at Main Lobe

16.0 (12.04 dB)

Beam Tilt

1.00 Degrees

RMS Gain at Horizontal

11.8 (10.72 dB)

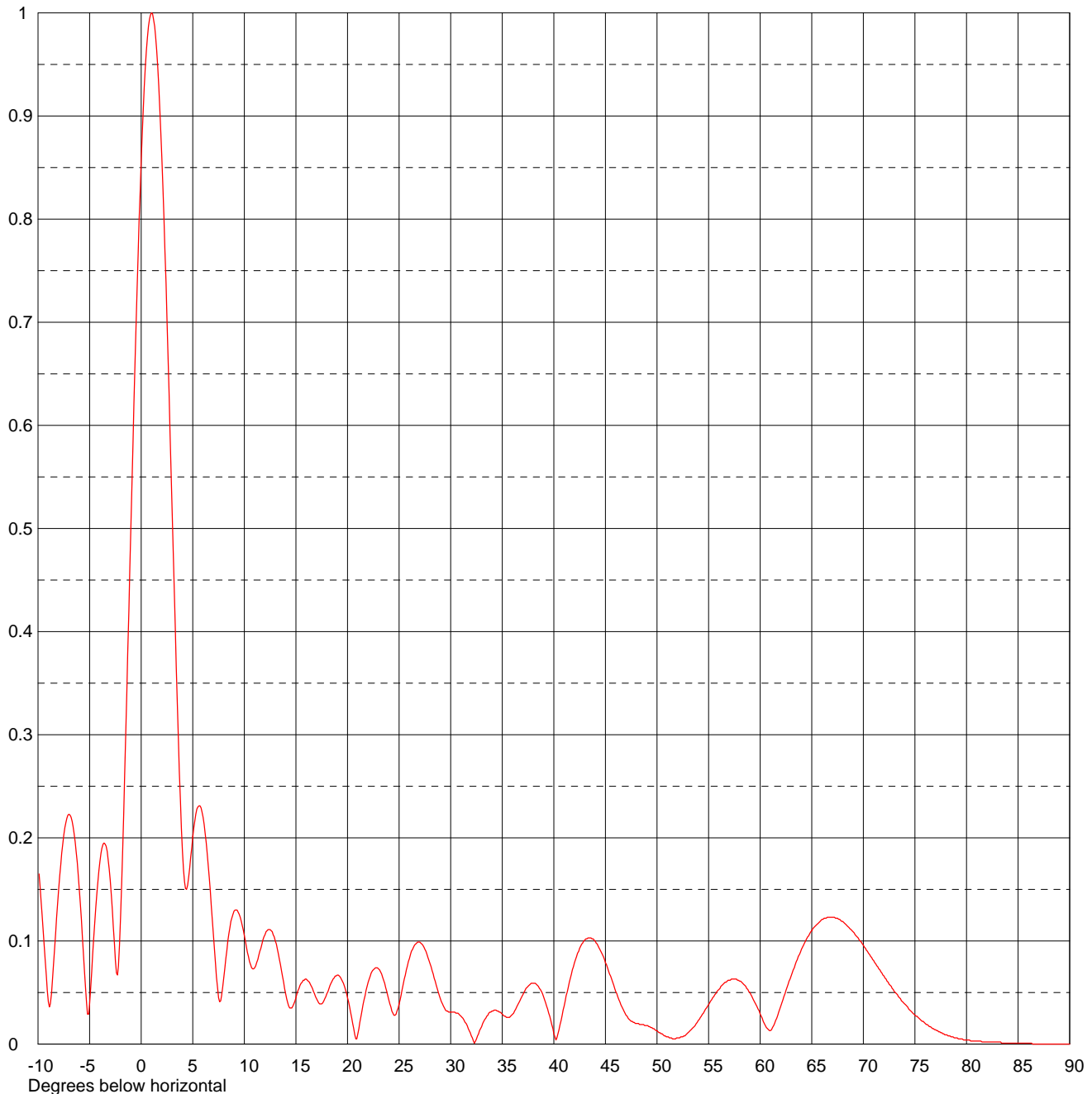
Frequency

485.00 MHz

Calculated / Measured

Calculated

Drawing #

16B160100-90

Remarks:



Date **01 Nov 2004**
Call Letters
Location **Hagerstown**
Customer
Antenna Type **TFU-16DSB-E**

Channel **16**

TABULATION OF ELEVATION PATTERN

Elevation Pattern Drawing # **16B160100-90**

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.177	2.4	0.738	10.6	0.077	30.5	0.030	51.0	0.007	71.5	0.073
-9.5	0.110	2.6	0.667	10.8	0.073	31.0	0.027	51.5	0.005	72.0	0.066
-9.0	0.041	2.8	0.593	11.0	0.074	31.5	0.020	52.0	0.006	72.5	0.058
-8.5	0.077	3.0	0.517	11.5	0.090	32.0	0.008	52.5	0.007	73.0	0.051
-8.0	0.150	3.2	0.441	12.0	0.106	32.5	0.005	53.0	0.011	73.5	0.045
-7.5	0.203	3.4	0.366	12.5	0.111	33.0	0.017	53.5	0.016	74.0	0.039
-7.0	0.223	3.6	0.297	13.0	0.100	33.5	0.027	54.0	0.023	74.5	0.033
-6.5	0.204	3.8	0.235	13.5	0.077	34.0	0.032	54.5	0.030	75.0	0.028
-6.0	0.150	4.0	0.187	14.0	0.049	34.5	0.032	55.0	0.038	75.5	0.024
-5.5	0.071	4.2	0.157	14.5	0.035	35.0	0.029	55.5	0.046	76.0	0.020
-5.0	0.039	4.4	0.150	15.0	0.045	35.5	0.026	56.0	0.053	76.5	0.017
-4.5	0.118	4.6	0.162	15.5	0.059	36.0	0.029	56.5	0.059	77.0	0.014
-4.0	0.177	4.8	0.181	16.0	0.063	36.5	0.038	57.0	0.062	77.5	0.011
-3.5	0.194	5.0	0.201	16.5	0.056	37.0	0.048	57.5	0.063	78.0	0.009
-3.0	0.159	5.2	0.217	17.0	0.044	37.5	0.056	58.0	0.061	78.5	0.007
-2.8	0.130	5.4	0.228	17.5	0.039	38.0	0.059	58.5	0.057	79.0	0.006
-2.6	0.097	5.6	0.231	18.0	0.049	38.5	0.056	59.0	0.050	79.5	0.005
-2.4	0.069	5.8	0.229	18.5	0.061	39.0	0.046	59.5	0.040	80.0	0.004
-2.2	0.076	6.0	0.220	19.0	0.067	39.5	0.030	60.0	0.029	80.5	0.003
-2.0	0.123	6.2	0.205	19.5	0.061	40.0	0.010	60.5	0.018	81.0	0.003
-1.8	0.188	6.4	0.185	20.0	0.045	40.5	0.014	61.0	0.013	81.5	0.002
-1.6	0.261	6.6	0.161	20.5	0.020	41.0	0.037	61.5	0.023	82.0	0.002
-1.4	0.339	6.8	0.134	21.0	0.010	41.5	0.060	62.0	0.037	82.5	0.002
-1.2	0.420	7.0	0.106	21.5	0.038	42.0	0.079	62.5	0.052	83.0	0.002
-1.0	0.501	7.2	0.078	22.0	0.060	42.5	0.093	63.0	0.066	83.5	0.001
-0.8	0.582	7.4	0.054	22.5	0.072	43.0	0.101	63.5	0.080	84.0	0.001
-0.6	0.659	7.6	0.041	23.0	0.073	43.5	0.103	64.0	0.092	84.5	0.001
-0.4	0.732	7.8	0.047	23.5	0.062	44.0	0.100	64.5	0.102	85.0	0.001
-0.2	0.798	8.0	0.064	24.0	0.043	44.5	0.091	65.0	0.110	85.5	0.001
0.0	0.857	8.2	0.083	24.5	0.028	45.0	0.079	65.5	0.116	86.0	0.001
0.2	0.907	8.4	0.100	25.0	0.039	45.5	0.066	66.0	0.121	86.5	0.000
0.4	0.947	8.6	0.113	25.5	0.063	46.0	0.051	66.5	0.123	87.0	0.000
0.6	0.976	8.8	0.123	26.0	0.083	46.5	0.038	67.0	0.123	87.5	0.000
0.8	0.994	9.0	0.129	26.5	0.096	47.0	0.028	67.5	0.122	88.0	0.000
1.0	1.000	9.2	0.130	27.0	0.099	47.5	0.022	68.0	0.119	88.5	0.000
1.2	0.994	9.4	0.128	27.5	0.092	48.0	0.020	68.5	0.114	89.0	0.000
1.4	0.977	9.6	0.123	28.0	0.078	48.5	0.019	69.0	0.109	89.5	0.000
1.6	0.948	9.8	0.115	28.5	0.061	49.0	0.018	69.5	0.103	90.0	0.000
1.8	0.909	10.0	0.105	29.0	0.044	49.5	0.016	70.0	0.096		
2.0	0.860	10.2	0.094	29.5	0.033	50.0	0.013	70.5	0.088		
2.2	0.802	10.4	0.085	30.0	0.031	50.5	0.010	71.0	0.081		

Remarks: