

ENGINEERING EXHIBIT  
APPLICATION FOR MODIFICATION OF  
CONSTRUCTION PERMIT  
TELEVISION STATION KOAM-DT  
PITTSBURG, KANSAS

November 29, 2001

CHANNEL 13 4.2 KW 340 M

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Engineering Statement

This Engineering Exhibit was prepared on behalf of digital television broadcast station KOAM-DT, Pittsburg, Kansas, in support of an application for modification of construction permit. KOAM-DT is paired with analog NTSC TV station KOAM-TV, Channel 7. Pursuant to the recent *Report and Order* in MM Docket No. 01-127\*, KOAM-DT was allotted Channel 13, with a maximum effective radiated power (ERP) of 4.2 kW and antenna height above average terrain (HAAT) of 336 m, as its transitional DTV allotment channel using an allotment reference site located at the coordinates of 37-13-15 N and 94-42-23 W. The instant application proposes operation of the KOAM-DT facility using the existing KOAM-TV antenna supporting structure located at coordinates 37-13-15 N and 94-42-25 W. The proposal complies with the DTV application filing requirements and the *de minimis* interference protection requirements previously outlined by the Commission.†

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\* See *Report and Order*, MM Docket No. 01-127, RM-10132, In the Matter of Amendment of Section 73.622(b), Table of Allotments, Digital Television Broadcast Stations (Pittsburg, Kansas), Adopted: September 5, 2001, Released: September 7, 2001, DA 01-2081.

† 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.

Proposed Facilities

It is proposed to employ a Dielectric, TF-12HT superturnstile transmitting antenna. The antenna will replace the existing KOAM-TV antenna located in the present aperture on the top of the KOAM-TV tower. The antenna will be shared by both KOAM-TV and KOAM-DT.

The transmitter site elevation is 271.2 m AMSL (890 ft AMSL). The antenna center of radiation will be located at 340 m (1115 ft) above ground level (611 m AMSL). The proposed KOAM-DT facility will operate on Channel 13 with a nominal ERP of 6.2 dBk (4.2 kW) and antenna radiation center HAAT of 340 m. The proposed KOAM-DT ERP meets the requirements of Section 73.622(f) of the FCC Rules, which concerns the maximum permissible ERP for DTV stations.

The proposed facility provides minimum 43 dBu, f(50,90), coverage of Pittsburg in compliance with Section 73.625(a)(1) of the FCC Rules, as recently adopted by the FCC in MM Docket No. 00-39. Figure 1 herein is a tabulation of the calculated distances to the predicted KOAM-DT coverage contours. Figure 2 herein is a map depicting the predicted coverage contours of the proposed facility.

Tower Registration

The existing antenna structure has been registered with the FCC. The FCC antenna structure registration number is 1032005. The overall antenna structure height above ground as indicated in the FCC antenna structure registration database is 352.8 m. This overall structure height will not change as a result of the proposal.

Allocation Considerations

The proposed KOAM-DT Channel 13 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.<sup>‡</sup> 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 420 km, respectively, were examined for potential interference; and first-adjacent DTV and NTSC stations within 229 km and 220 km, respectively, were examined for potential interference. The results of the interference analyses for the proposed KOAM-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.<sup>§</sup>

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.

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<sup>‡</sup> 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.

<sup>§</sup> 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”).

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:

<b>Call Sign</b>	<b>Channel</b>	<b>Peak Visual ERP or Average ERP (kW)</b>	<b>Aural ERP (kW)</b>	<b>Relative Field Factor††</b>	<b>FCC Limit‡‡ (mW/cm<sup>2</sup>)</b>	<b>Percentage of Limit</b>
KOAM-DT	13	4.2	--	1.0	0.200	0.61%

As indicated above, the exposure to RF radiation at 2-m above ground level will not exceed 0.61% 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 with any other users of the transmission facility, shall reduce power or cease operation as necessary to protect persons having access to the KOAM-DT tower or antenna from radio frequency radiation in excess of the FCC guidelines.

Louis Robert du Treil, Jr.

November 29, 2001

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\*\* The radiation center height above ground is 340 m.

†† This is a worst-case estimate of the relative field factor in the downward direction.

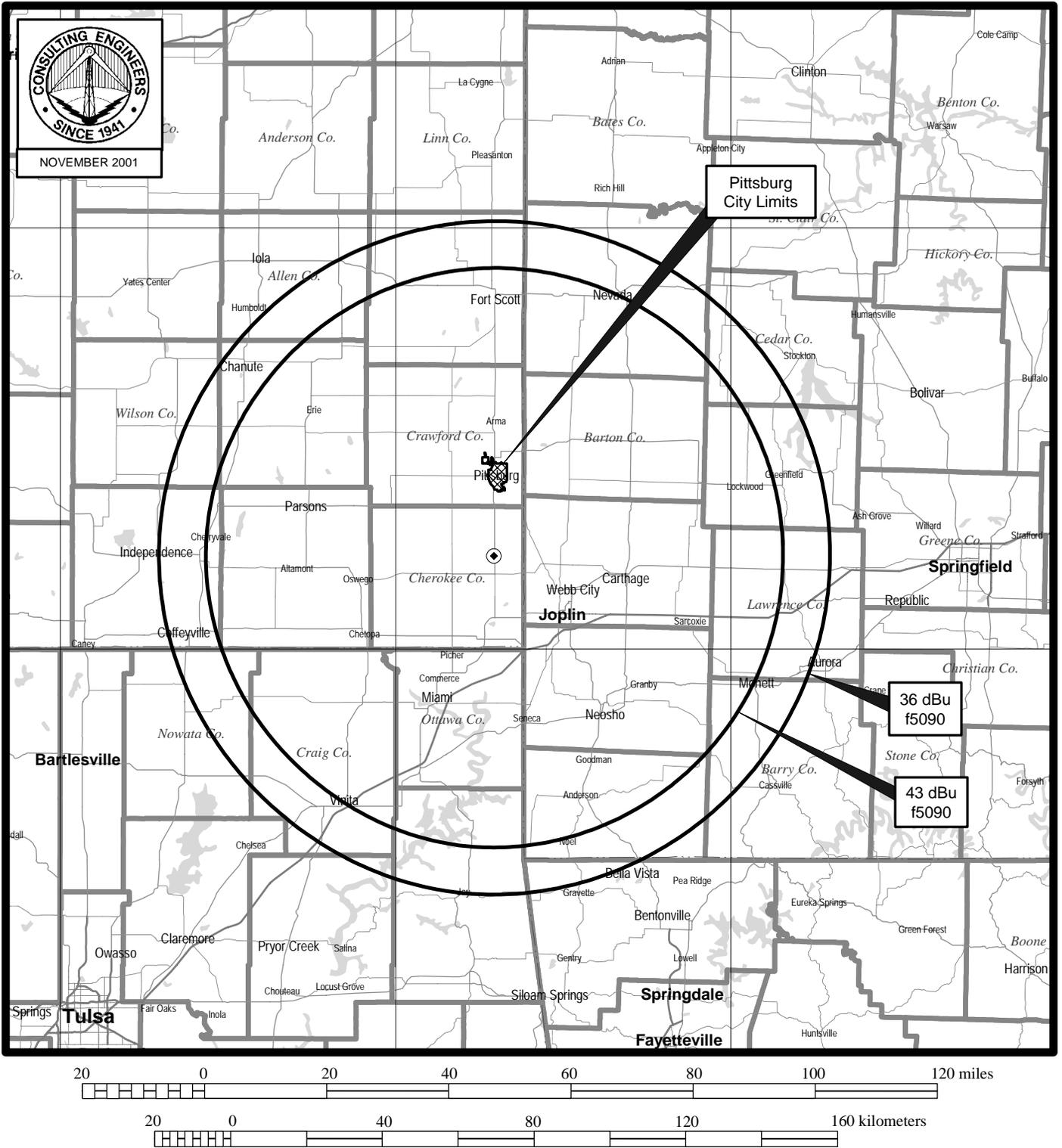
‡‡ for general population/uncontrolled environments

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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)	43 dBu f(50,90) Contour (km)	36 dBu f(50,90) Contour (km)
0	274	337	4.2	76.0	88.4
45	270	341	4.2	76.3	88.7
90	269	342	4.2	76.4	88.8
135	266	345	4.2	76.6	89.0
180	261	350	4.2	77.0	89.4
225	274	337	4.2	76.0	88.4
270	273	338	4.2	76.1	88.5
315	279	332	4.2	75.6	88.0

Note: The 3-16-km average terrain is 271 m based on the eight conventional radials (0°, 45°, 90°, etc.). The overall antenna radiation center height above average terrain is 340 m based on the eight conventional radials.



## PREDICTED COVERAGE CONTOURS

TELEVISION STATION KOAM-DT  
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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	13	KODE-TV	JOPLIN MO	21.9	LIC	BLCT	19990702LD
2	13	KEMV-TV	MOUNTAIN VIEW AK	266.6	APP	BPRM	20000801AAD
3	13	KETG-TV	ARKADELPHIA AR	395.5	APP	BPRM	20000803AAA
4	13	KETG	ARKADELPHIA AR	395.5	APP	BMPEDT	20010226AAV
5	13	KAFT	FAYETTEVILLE AR	167.6	LIC	BLET	413
6	13	KEMV	MOUNTAIN VIEW AR	266.6	APP	BMPEDT	20010807ACD
7	13	WIBW-TV	TOPEKA KS	230.5	LIC	BLCT	2399
8	13	KRCG	JEFFERSON CITY MO	281.2	LIC	BLCT	19821013KG
9	13	KETA-TV	OKLAHOMA CITY OK	311.2	LIC	BLET	19860929KE

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	103254	103260	462506	6	0.001	2.0	pass
3	--	--	--	--	0.00	--	pass
4	--	--	--	--	0.00	--	pass
5	49322	64104	751688	14782	1.967	2.0	pass
6	--	--	--	--	0.00	--	pass
7	56851	59125	663005	2274	0.343	2.0	pass
8	58333	58351	484970	18	0.004	2.0	pass
9	52164	52164	1399923	0	0.00	2.0	pass

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Transmitting Antenna  
Manufacturer's Vertical Plane Pattern Data

(two pages follow)

Date **28 Nov 2001**

Call Letters

Channel **13**

Location

Customer

Antenna Type **TF-12HT**

### ELEVATION PATTERN

RMS Gain at Main Lobe

**11.5 (10.61 dB)**

Beam Tilt

**0.75 Degrees**

RMS Gain at Horizontal

**10.3 (10.13 dB)**

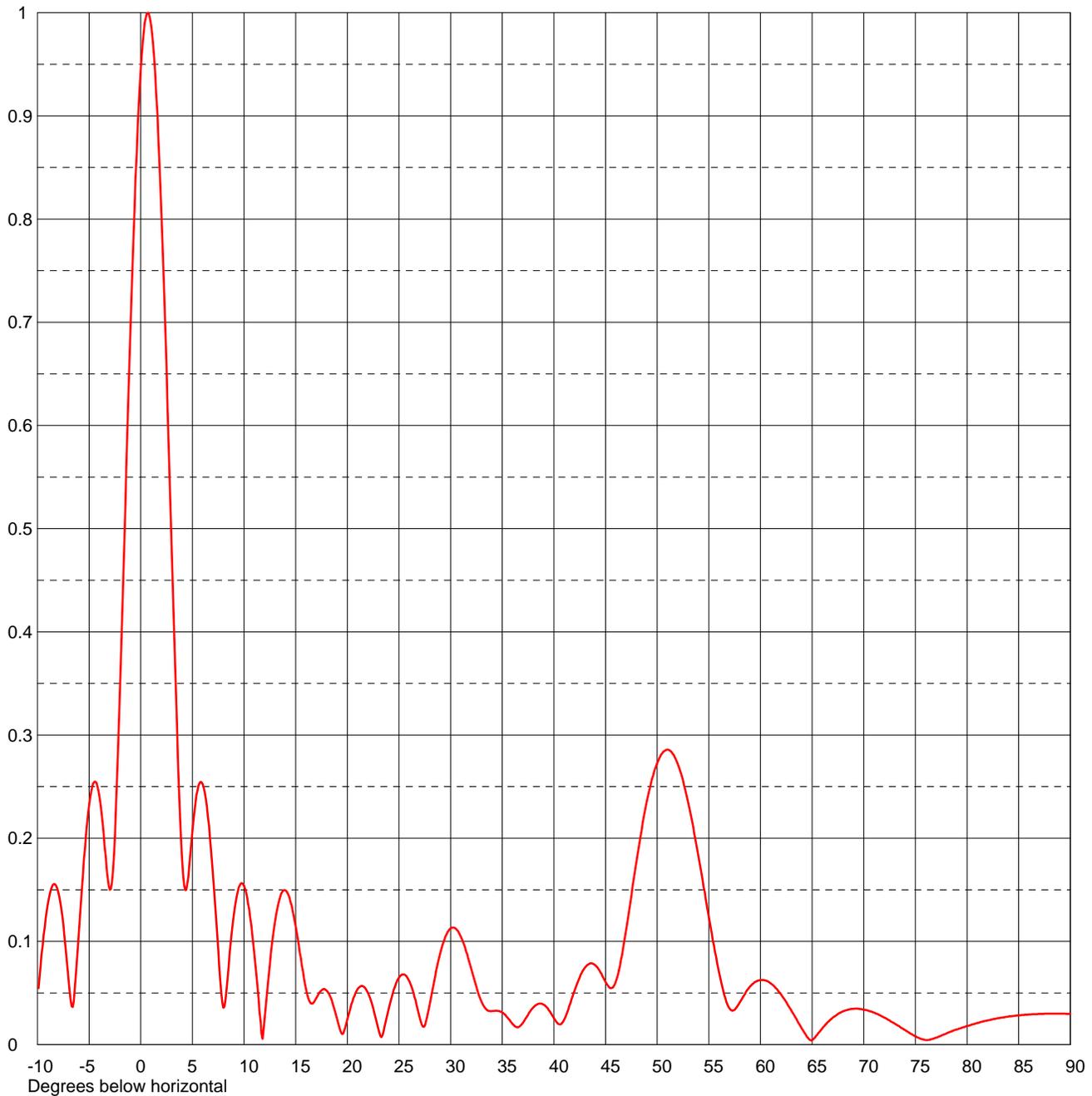
Frequency

**213.00 MHz**

Calculated / Measured

**Calculated**

Drawing #

**12S115075-90**

Remarks:



Exhibit No.

Date **28 Nov 2001**  
 Call Letters  
 Location  
 Customer  
 Antenna Type **TF-12HT**

Channel **13**

**TABULATION OF ELEVATION PATTERN**

Elevation Pattern Drawing # **12S115075-90**

Angle	Field										
-10.0	0.044	2.4	0.685	10.6	0.123	30.5	0.112	51.0	0.286	71.5	0.029
-9.5	0.097	2.6	0.618	10.8	0.106	31.0	0.104	51.5	0.282	72.0	0.026
-9.0	0.136	2.8	0.549	11.0	0.087	31.5	0.091	52.0	0.272	72.5	0.023
-8.5	0.155	3.0	0.479	11.5	0.033	32.0	0.073	52.5	0.256	73.0	0.020
-8.0	0.148	3.2	0.409	12.0	0.026	32.5	0.056	53.0	0.235	73.5	0.017
-7.5	0.116	3.4	0.342	12.5	0.079	33.0	0.041	53.5	0.210	74.0	0.014
-7.0	0.064	3.6	0.279	13.0	0.119	33.5	0.034	54.0	0.182	74.5	0.011
-6.5	0.042	3.8	0.223	13.5	0.144	34.0	0.033	54.5	0.153	75.0	0.008
-6.0	0.108	4.0	0.180	14.0	0.150	34.5	0.033	55.0	0.124	75.5	0.006
-5.5	0.179	4.2	0.154	14.5	0.139	35.0	0.031	55.5	0.095	76.0	0.005
-5.0	0.232	4.4	0.150	15.0	0.115	35.5	0.026	56.0	0.070	76.5	0.005
-4.5	0.255	4.6	0.163	15.5	0.083	36.0	0.020	56.5	0.048	77.0	0.007
-4.0	0.240	4.8	0.184	16.0	0.054	36.5	0.017	57.0	0.035	77.5	0.009
-3.5	0.193	5.0	0.206	16.5	0.040	37.0	0.021	57.5	0.034	78.0	0.011
-3.0	0.150	5.2	0.226	17.0	0.045	37.5	0.029	58.0	0.041	78.5	0.013
-2.8	0.157	5.4	0.242	17.5	0.053	38.0	0.036	58.5	0.049	79.0	0.015
-2.6	0.184	5.6	0.251	18.0	0.052	38.5	0.040	59.0	0.056	79.5	0.016
-2.4	0.229	5.8	0.255	18.5	0.043	39.0	0.039	59.5	0.061	80.0	0.018
-2.2	0.285	6.0	0.252	19.0	0.025	39.5	0.034	60.0	0.063	80.5	0.020
-2.0	0.349	6.2	0.244	19.5	0.010	40.0	0.026	60.5	0.062	81.0	0.021
-1.8	0.416	6.4	0.230	20.0	0.024	40.5	0.020	61.0	0.059	81.5	0.022
-1.6	0.486	6.6	0.212	20.5	0.042	41.0	0.024	61.5	0.055	82.0	0.024
-1.4	0.557	6.8	0.189	21.0	0.054	41.5	0.038	62.0	0.048	82.5	0.025
-1.2	0.626	7.0	0.164	21.5	0.057	42.0	0.052	62.5	0.041	83.0	0.026
-1.0	0.692	7.2	0.135	22.0	0.050	42.5	0.065	63.0	0.033	83.5	0.026
-0.8	0.755	7.4	0.106	22.5	0.035	43.0	0.075	63.5	0.024	84.0	0.027
-0.6	0.813	7.6	0.077	23.0	0.015	43.5	0.079	64.0	0.016	84.5	0.028
-0.4	0.864	7.8	0.050	23.5	0.013	44.0	0.077	64.5	0.008	85.0	0.028
-0.2	0.909	8.0	0.036	24.0	0.034	44.5	0.070	65.0	0.004	85.5	0.029
0.0	0.945	8.2	0.044	24.5	0.053	45.0	0.061	65.5	0.010	86.0	0.029
0.2	0.972	8.4	0.064	25.0	0.065	45.5	0.055	66.0	0.016	86.5	0.030
0.4	0.990	8.6	0.087	25.5	0.068	46.0	0.061	66.5	0.022	87.0	0.030
0.6	0.999	8.8	0.107	26.0	0.061	46.5	0.082	67.0	0.026	87.5	0.030
0.8	0.998	9.0	0.125	26.5	0.047	47.0	0.112	67.5	0.030	88.0	0.030
1.0	0.988	9.2	0.139	27.0	0.026	47.5	0.145	68.0	0.032	88.5	0.030
1.2	0.968	9.4	0.149	27.5	0.019	48.0	0.178	68.5	0.034	89.0	0.030
1.4	0.940	9.6	0.155	28.0	0.040	48.5	0.209	69.0	0.035	89.5	0.030
1.6	0.903	9.8	0.156	28.5	0.066	49.0	0.236	69.5	0.035	90.0	0.030
1.8	0.858	10.0	0.154	29.0	0.089	49.5	0.257	70.0	0.034		
2.0	0.806	10.2	0.147	29.5	0.105	50.0	0.273	70.5	0.033		
2.2	0.748	10.4	0.137	30.0	0.113	50.5	0.283	71.0	0.031		

Remarks: