

***PRELIMINARY SPECIFICATION FOR
ERI AL HORIZONTALLY POLARIZED
COAXIAL SLOTTED ARRAY ANTENNA***

*Prepared For Channel 31
PROWERS COUNTY
301 South Main Street, Suite 215, Lamar, CO
Lamar, Colorado
November 19, 2017*

**ANTENNA TYPE:
AL8OC-31-H**

**SPECIFICATION NO:
K41LM-D Displacement to CH31**



PRELIMINARY SPECIFICATION FOR ERIAL HORIZONTALLY POLARIZED COAXIAL SLOTTED ARRAY ANTENNA

ELECTRICAL CHARACTERISTICS:

CHANNEL:	DTV:	31
FREQUENCY RANGE:	DTV:	572.00 - 578.00 MHz
AZIMUTH PATTERN NUMBER:	Hor Pol:	AL-OC
ELEVATION PATTERN NUMBER:	Hor Pol:	AL8
AZIMUTH DIRECTIVITY:	Hor Pol:	1.62 (2.10 dB)
ELEVATION DIRECTIVITY:	Hor Pol:	8.68 (9.39 dBd)
PEAK POWER GAIN:	Hor Pol:	14.06 (11.48 dBd)
GAIN AT HORIZONTAL:	Hor Pol:	7.76 (8.90 dBd)
ELECTRICAL BEAM TILT:		-1.75 Degrees
INPUT POWER REQUIRED:		0.015 kW Average Power, 8VSB Digital
MAXIMUM INPUT POWER:		2.00 kW Average Power
INPUT TYPE:		7/8" EIA
ANTENNA VSWR (MAXIMUM):	DTV:	1.10 Over 6 MHz of Channel

Preliminary, subject to final design and review.

PRELIMINARY SPECIFICATION FOR ERIAL HORIZONTALLY POLARIZED COAXIAL SLOTTED ARRAY ANTENNA

MECHANICAL CHARACTERISTICS:

MOUNTING CONFIGURATION:

*(Tower Interface supplied and
installed by others.)

Side Mount

HEIGHT OF ANTENNA:

CONTACT ERI

HEIGHT OF CENTER OF
RADIATION:

CONTACT ERI

OVERALL HEIGHT (A):

CONTACT ERI

DEICING:

Radomes or deicing heaters not
normally required for radial
ice less than 1/2-inch

RADOME DIAMETER (C):

CONTACT ERI

RADOME COLOR:

GRAY

CLIMBING DEVICE:

NOT APPLICABLE

CALCULATED WEIGHT¹:

CONTACT ERI

ANTENNA AREA:

CONTACT ERI

This antenna is designed to be supported by a structure that can resist the antenna base reactions and which provides a support that is rigid in the three transitional and three rotational degrees of freedom.

¹ Calculated weight is based on the PRELIMINARY design of the antenna. The actual weight of the antenna will be within $\pm 10\%$ of the calculated weight. The actual weight will be given in the technical manual that accompanies the antenna. This figure is for the antenna only and does not include the antenna input section.

Note: Localized conditions may require higher wind speed specifications than TIA/EIA specifications. Check with local authorities to verify wind speed requirements.

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Broadcast Antenna System Power Analysis

PROWERS COUNTY Channel 31
Lamar, Colorado
AL8OC-31-H

ANTENNA PARAMETERS

Azimuth Directivity:

Hor. Pol: 1.62
dBd: 2.10

Elevation Directivity:

Hor. Pol: 8.68
dBd: 9.39

TRANSMISSION LINE:

VERTICAL RUN:

Type: AVA7-50
Length, ft: 397 ft.
Attenuation, dB/100 ft: 0.503 dB/100 ft.

HORIZONTAL RUN:

Type: AVA7-50
Length, ft: 30 ft.
Attenuation, dB/100 ft: 0.503 dB/100 ft.

Line Efficiency: 61.01 %

ERP:

kW: 0.20
dBk: -6.88

POWER GAIN:

Ratio: 14.06
dBd: 11.48

ANTENNA INPUT:

kW: 0.01
dBk: -18.36

LINE LOSS:

kW: 0.01
dB: 2.15

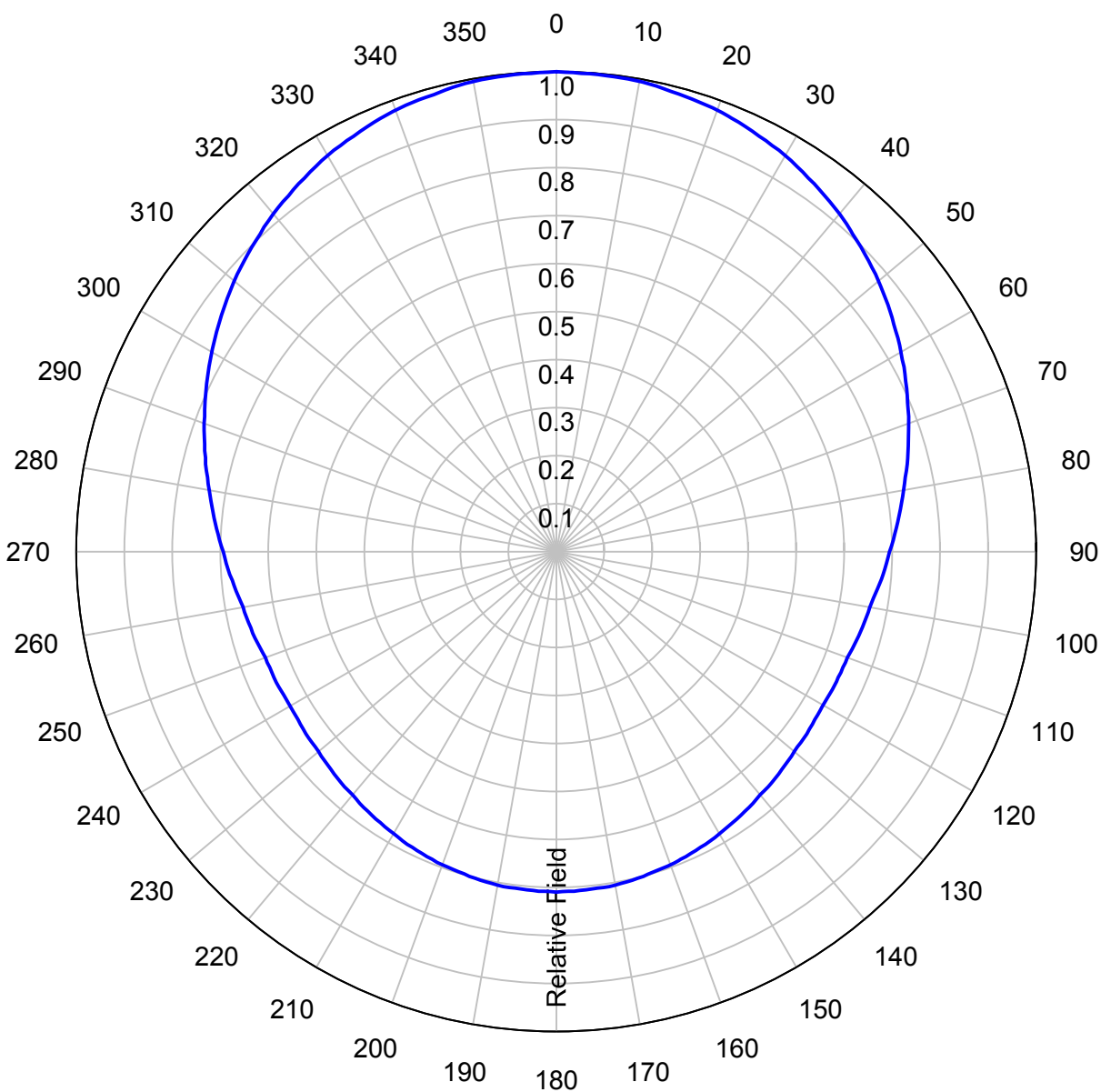
TRANSMITTER POWER:

kW: 0.02
dBk: -16.22

Preliminary, subject to final design and review.

AZIMUTH PATTERN**Type:****AL-OC****Channel:****31****Directivity:****Numeric****dBd****Location:****Lamar, Colorado****Peak(s) at:****1.62****2.10****Polarization:****Horizontal**

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



Preliminary, subject to final design and review.

TABULATED DATA FOR AZIMUTH PATTERN

Type: AL-OC

Polarization: Horizontal

ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB
0	1.000	0.00	92	0.688	-3.25	184	0.707	-3.01	276	0.718	-2.88
2	0.999	-0.01	94	0.682	-3.32	186	0.706	-3.02	278	0.726	-2.78
4	0.998	-0.02	96	0.675	-3.41	188	0.706	-3.02	280	0.734	-2.69
6	0.997	-0.03	98	0.669	-3.49	190	0.705	-3.04	282	0.743	-2.58
8	0.996	-0.03	100	0.663	-3.57	192	0.703	-3.06	284	0.753	-2.46
10	0.995	-0.04	102	0.660	-3.61	194	0.701	-3.09	286	0.762	-2.36
12	0.992	-0.07	104	0.656	-3.66	196	0.698	-3.12	288	0.771	-2.26
14	0.988	-0.10	106	0.653	-3.70	198	0.696	-3.15	290	0.781	-2.15
16	0.985	-0.13	108	0.649	-3.76	200	0.694	-3.17	292	0.790	-2.05
18	0.982	-0.16	110	0.645	-3.81	202	0.691	-3.21	294	0.800	-1.94
20	0.979	-0.18	112	0.644	-3.82	204	0.688	-3.25	296	0.810	-1.83
22	0.974	-0.23	114	0.643	-3.84	206	0.685	-3.29	298	0.820	-1.72
24	0.969	-0.27	116	0.643	-3.84	208	0.682	-3.32	300	0.829	-1.63
26	0.963	-0.33	118	0.642	-3.85	210	0.678	-3.38	302	0.839	-1.52
28	0.958	-0.37	120	0.641	-3.86	212	0.675	-3.41	304	0.848	-1.43
30	0.953	-0.42	122	0.642	-3.85	214	0.672	-3.45	306	0.858	-1.33
32	0.946	-0.48	124	0.643	-3.84	216	0.668	-3.50	308	0.867	-1.24
34	0.939	-0.55	126	0.645	-3.81	218	0.665	-3.54	310	0.876	-1.15
36	0.932	-0.61	128	0.646	-3.80	220	0.661	-3.60	312	0.885	-1.06
38	0.925	-0.68	130	0.647	-3.78	222	0.659	-3.62	314	0.893	-0.98
40	0.918	-0.74	132	0.650	-3.74	224	0.656	-3.66	316	0.901	-0.91
42	0.910	-0.82	134	0.653	-3.70	226	0.653	-3.70	318	0.910	-0.82
44	0.901	-0.91	136	0.656	-3.66	228	0.650	-3.74	320	0.918	-0.74
46	0.893	-0.98	138	0.659	-3.62	230	0.647	-3.78	322	0.925	-0.68
48	0.885	-1.06	140	0.661	-3.60	232	0.646	-3.80	324	0.932	-0.61
50	0.876	-1.15	142	0.665	-3.54	234	0.645	-3.81	326	0.939	-0.55
52	0.867	-1.24	144	0.668	-3.50	236	0.643	-3.84	328	0.946	-0.48
54	0.858	-1.33	146	0.672	-3.45	238	0.642	-3.85	330	0.953	-0.42
56	0.848	-1.43	148	0.675	-3.41	240	0.641	-3.86	332	0.958	-0.37
58	0.839	-1.52	150	0.679	-3.36	242	0.642	-3.85	334	0.963	-0.33
60	0.829	-1.63	152	0.682	-3.32	244	0.643	-3.84	336	0.969	-0.27
62	0.820	-1.72	154	0.685	-3.29	246	0.644	-3.82	338	0.974	-0.23
64	0.810	-1.83	156	0.688	-3.25	248	0.644	-3.82	340	0.979	-0.18
66	0.800	-1.94	158	0.691	-3.21	250	0.645	-3.81	342	0.982	-0.16
68	0.790	-2.05	160	0.694	-3.17	252	0.649	-3.76	344	0.985	-0.13
70	0.781	-2.15	162	0.696	-3.15	254	0.653	-3.70	346	0.988	-0.10
72	0.771	-2.26	164	0.698	-3.12	256	0.656	-3.66	348	0.992	-0.07
74	0.762	-2.36	166	0.701	-3.09	258	0.660	-3.61	350	0.995	-0.04
76	0.753	-2.46	168	0.703	-3.06	260	0.663	-3.57	352	0.996	-0.03
78	0.743	-2.58	170	0.705	-3.04	262	0.669	-3.49	354	0.997	-0.03
80	0.734	-2.69	172	0.706	-3.02	264	0.675	-3.41	356	0.998	-0.02
82	0.726	-2.78	174	0.706	-3.02	266	0.682	-3.32	358	0.999	-0.01
84	0.718	-2.88	176	0.707	-3.01	268	0.688	-3.25	360	1.000	0.00
86	0.710	-2.97	178	0.708	-3.00	270	0.694	-3.17			
88	0.702	-3.07	180	0.709	-2.99	272	0.702	-3.07			
90	0.694	-3.17	182	0.708	-3.00	274	0.710	-2.97			

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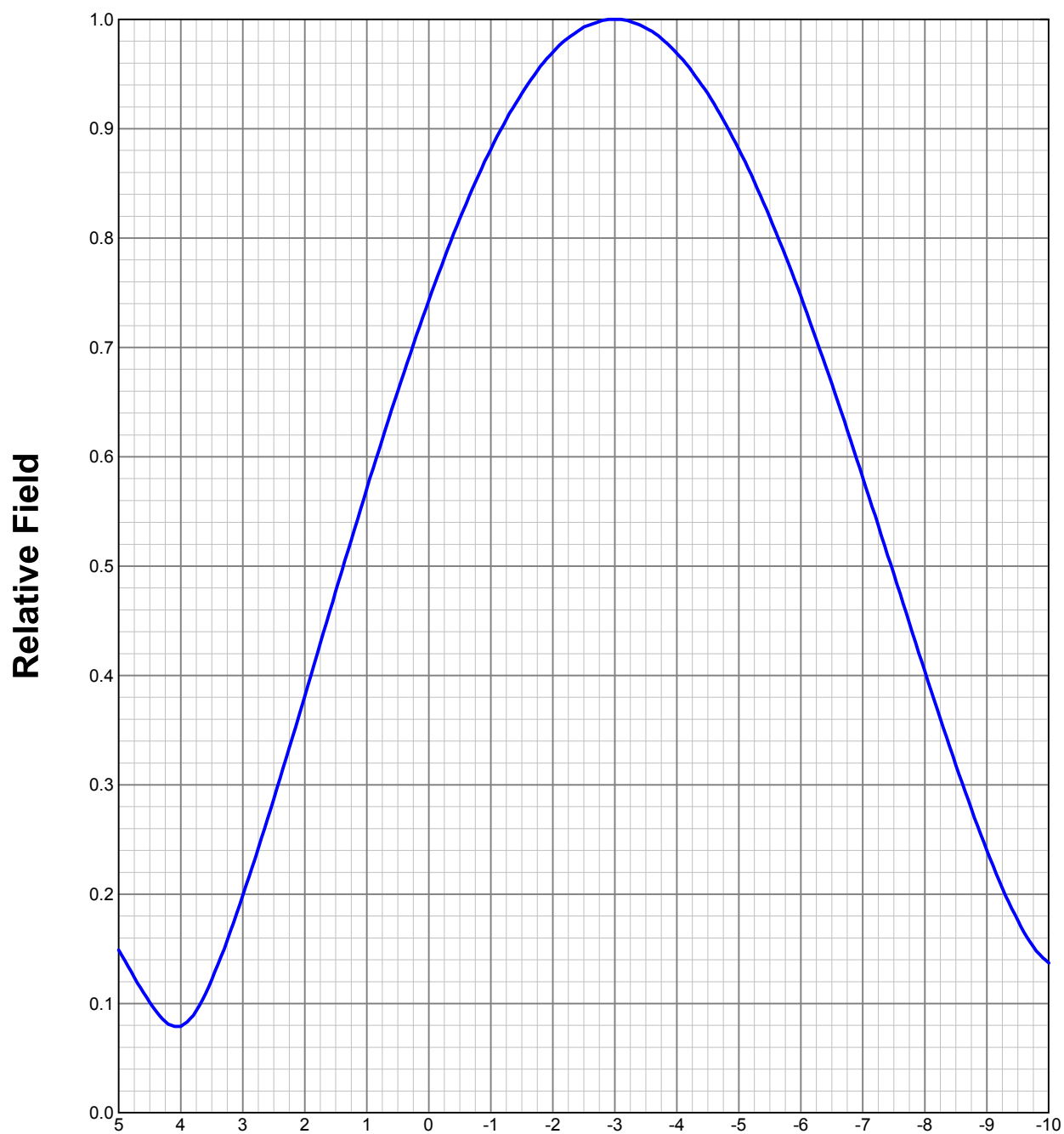
**TABULATED DATA FOR AZIMUTH PATTERN
FCC FILING FORMAT****Type: AL-OC****Polarization:Horizontal**

ANGLE	FIELD	ERP (kW)	ERP (dBk)
0	1.000	0.205	-6.882
10	0.995	0.203	-6.926
20	0.979	0.196	-7.067
30	0.953	0.186	-7.301
40	0.918	0.173	-7.626
50	0.876	0.157	-8.032
60	0.829	0.141	-8.511
70	0.781	0.125	-9.029
80	0.734	0.110	-9.569
90	0.694	0.099	-10.055
100	0.663	0.090	-10.452
110	0.645	0.085	-10.691
120	0.641	0.084	-10.745
130	0.647	0.086	-10.664
140	0.661	0.090	-10.478
150	0.679	0.095	-10.245
160	0.694	0.099	-10.055
170	0.705	0.102	-9.919
180	0.709	0.103	-9.870
190	0.705	0.102	-9.919
200	0.694	0.099	-10.055
210	0.678	0.094	-10.258
220	0.661	0.090	-10.478
230	0.647	0.086	-10.664
240	0.641	0.084	-10.745
250	0.645	0.085	-10.691
260	0.663	0.090	-10.452
270	0.694	0.099	-10.055
280	0.734	0.110	-9.569
290	0.781	0.125	-9.029
300	0.829	0.141	-8.511
310	0.876	0.157	-8.032
320	0.918	0.173	-7.626
330	0.953	0.186	-7.301
340	0.979	0.196	-7.067
350	0.995	0.203	-6.926

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ELEVATION PATTERN

Type:	AL8		Channel:	31
Directivity:	Numeric	dBd	Location:	Lamar, Colorado
Main Lobe:	8.68	9.39	Beam Tilt:	-1.75
Horizontal:	4.79	6.80	Polarization:	Horizontal



Preliminary, subject to final design and review.

TABULATED DATA FOR ELEVATION PATTERN

Type: AL8

Polarization: Horizontal

ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB
5.00	0.149	-16.54	-6.75	0.625	-4.09	-27.00	0.060	-24.44	-50.50	0.094	-20.54	-74.00	0.009	-40.92
4.75	0.124	-18.13	-7.00	0.581	-4.72	-27.50	0.075	-22.50	-51.00	0.090	-20.92	-74.50	0.006	-44.44
4.50	0.101	-19.91	-7.25	0.537	-5.40	-28.00	0.089	-21.01	-51.50	0.085	-21.41	-75.00	0.006	-44.44
4.25	0.083	-21.57	-7.50	0.493	-6.14	-28.50	0.101	-19.91	-52.00	0.079	-22.05	-75.50	0.008	-41.94
4.00	0.079	-22.05	-7.75	0.448	-6.97	-29.00	0.109	-19.25	-52.50	0.071	-22.97	-76.00	0.012	-38.42
3.75	0.093	-20.58	-8.00	0.404	-7.87	-29.50	0.114	-18.86	-53.00	0.062	-24.15	-76.50	0.015	-36.48
3.50	0.122	-18.27	-8.25	0.360	-8.86	-30.00	0.116	-18.71	-53.50	0.052	-25.68	-77.00	0.017	-35.39
3.25	0.158	-16.03	-8.50	0.318	-9.95	-30.50	0.114	-18.86	-54.00	0.041	-27.74	-77.50	0.020	-33.98
3.00	0.199	-14.02	-8.75	0.278	-11.12	-31.00	0.108	-19.33	-54.50	0.030	-30.46	-78.00	0.022	-33.15
2.75	0.242	-12.32	-9.00	0.240	-12.40	-31.50	0.099	-20.09	-55.00	0.019	-34.42	-78.50	0.024	-32.40
2.50	0.287	-10.84	-9.25	0.206	-13.74	-32.00	0.088	-21.11	-55.50	0.009	-40.92	-79.00	0.026	-31.70
2.25	0.334	-9.53	-9.50	0.176	-15.09	-32.50	0.074	-22.62	-56.00	0.007	-43.10	-79.50	0.027	-31.37
2.00	0.381	-8.38	-9.75	0.152	-16.36	-33.00	0.059	-24.58	-56.50	0.017	-35.39	-80.00	0.028	-31.06
1.75	0.429	-7.34	-10.00	0.137	-17.27	-33.50	0.044	-27.13	-57.00	0.028	-31.06	-80.50	0.028	-31.06
1.50	0.477	-6.43	-10.50	0.134	-17.46	-34.00	0.033	-29.63	-57.50	0.038	-28.40	-81.00	0.029	-30.75
1.25	0.524	-5.61	-11.00	0.157	-16.08	-34.50	0.030	-30.46	-58.00	0.048	-26.38	-81.50	0.029	-30.75
1.00	0.571	-4.87	-11.50	0.188	-14.52	-35.00	0.037	-28.64	-58.50	0.058	-24.73	-82.00	0.029	-30.75
0.75	0.616	-4.21	-12.00	0.216	-13.31	-35.50	0.050	-26.02	-59.00	0.066	-23.61	-82.50	0.028	-31.06
0.50	0.660	-3.61	-12.50	0.237	-12.51	-36.00	0.065	-23.74	-59.50	0.074	-22.62	-83.00	0.027	-31.37
0.25	0.702	-3.07	-13.00	0.249	-12.08	-36.50	0.078	-22.16	-60.00	0.081	-21.83	-83.50	0.026	-31.70
0.00	0.743	-2.58	-13.50	0.252	-11.97	-37.00	0.090	-20.92	-60.50	0.087	-21.21	-84.00	0.025	-32.04
-0.25	0.782	-2.14	-14.00	0.246	-12.18	-37.50	0.099	-20.09	-61.00	0.092	-20.72	-84.50	0.024	-32.40
-0.50	0.818	-1.74	-14.50	0.231	-12.73	-38.00	0.107	-19.41	-61.50	0.096	-20.35	-85.00	0.022	-33.15
-0.75	0.851	-1.40	-15.00	0.210	-13.56	-38.50	0.111	-19.09	-62.00	0.099	-20.09	-85.50	0.021	-33.56
-1.00	0.881	-1.10	-15.50	0.183	-14.75	-39.00	0.113	-18.94	-62.50	0.101	-19.91	-86.00	0.019	-34.42
-1.25	0.909	-0.83	-16.00	0.153	-16.31	-39.50	0.113	-18.94	-63.00	0.102	-19.83	-86.50	0.017	-35.39
-1.50	0.932	-0.61	-16.50	0.122	-18.27	-40.00	0.109	-19.25	-63.50	0.103	-19.74	-87.00	0.014	-37.08
-1.75	0.953	-0.42	-17.00	0.095	-20.45	-40.50	0.104	-19.66	-64.00	0.102	-19.83	-87.50	0.012	-38.42
-2.00	0.970	-0.26	-17.50	0.078	-22.16	-41.00	0.096	-20.35	-64.50	0.101	-19.91	-88.00	0.010	-40.00
-2.25	0.983	-0.15	-18.00	0.077	-22.27	-41.50	0.086	-21.31	-65.00	0.099	-20.09	-88.50	0.007	-43.10
-2.50	0.993	-0.06	-18.50	0.092	-20.72	-42.00	0.075	-22.50	-65.50	0.096	-20.35	-89.00	0.005	-46.02
-2.75	0.998	-0.02	-19.00	0.112	-19.02	-42.50	0.063	-24.01	-66.00	0.092	-20.72	-89.50	0.003	-50.46
-3.00	1.000	0.00	-19.50	0.133	-17.52	-43.00	0.050	-26.02	-66.50	0.088	-21.11	-90.00	0.000	-40.00
-3.25	0.998	-0.02	-20.00	0.151	-16.42	-43.50	0.039	-28.18	-67.00	0.084	-21.51			
-3.50	0.992	-0.07	-20.50	0.165	-15.65	-44.00	0.030	-30.46	-67.50	0.079	-22.05			
-3.75	0.982	-0.15	-21.00	0.173	-15.24	-44.50	0.027	-31.37	-68.00	0.074	-22.62			
-4.00	0.969	-0.27	-21.50	0.176	-15.09	-45.00	0.032	-29.90	-68.50	0.069	-23.22			
-4.25	0.952	-0.43	-22.00	0.173	-15.24	-45.50	0.041	-27.74	-69.00	0.063	-24.01			
-4.50	0.932	-0.61	-22.50	0.166	-15.60	-46.00	0.052	-25.68	-69.50	0.057	-24.88			
-4.75	0.908	-0.84	-23.00	0.153	-16.31	-46.50	0.062	-24.15	-70.00	0.051	-25.85			
-5.00	0.881	-1.10	-23.50	0.137	-17.27	-47.00	0.072	-22.85	-70.50	0.045	-26.94			
-5.25	0.851	-1.40	-24.00	0.118	-18.56	-47.50	0.080	-21.94	-71.00	0.039	-28.18			
-5.50	0.819	-1.73	-24.50	0.097	-20.26	-48.00	0.087	-21.21	-71.50	0.034	-29.37			
-5.75	0.784	-2.11	-25.00	0.076	-22.38	-48.50	0.092	-20.72	-72.00	0.028	-31.06			
-6.00	0.747	-2.53	-25.50	0.058	-24.73	-49.00	0.095	-20.45	-72.50	0.023	-32.77			
-6.25	0.707	-3.01	-26.00	0.047	-26.56	-49.50	0.097	-20.26	-73.00	0.017	-35.39			
-6.50	0.667	-3.52	-26.50	0.049	-26.20	-50.00	0.096	-20.35	-73.50	0.013	-37.72			

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