ELECTRONICS RESEARCH, INC. ERI®

PRELIMINARY SPECIFICATION FOR ERI ALP HORIZONTALLY POLARIZED COAXIAL SLOTTED ARRAY ANTENNA

Prepared For Channel 33

June 1, 2018

ANTENNA TYPE:
ALP12L2-HSMR-33

SPECIFICATION NO:

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PRELIMINARY SPECIFICATION FOR ERI ALP HORIZONTALLY POLARIZED COAXIAL SLOTTED ARRAY ANTENNA

ELECTRICAL CHARACTERISTICS:

CHANNEL:	DTV:	33
FREQUENCY RANGE:	DTV:	584.00 - 590.00 MHz
AZIMUTH PATTERN NUMBER:	Hor Pol:	ALP-MR
ELEVATION PATTERN NUMBER:	Hor Pol:	ALP12L2
AZIMUTH DIRECTIVITY:	Hor Pol:	2.82 (4.50 dB)
ELEVATION DIRECTIVITY:	Hor Pol:	12.64 (11.02 dBd)
PEAK POWER GAIN:	Hor Pol:	35.64 (15.52 dBd)
GAIN AT HORIZONTAL:	Hor Pol:	33.88 (15.30 dBd)
ELECTRICAL BEAM TILT:		-0.50 Degrees
INPUT POWER REQUIRED:		0.421 kW Average Power, 8VSB Digital
MAXIMUM INPUT POWER:		3.00 kW Average Power
INPUT TYPE:		1-5/8" EIA
ANTENNA VSWR (MAXIMUM):	DTV:	1.10 Over 6 MHz of Channel

Preliminary, subject to final design and review.

PRELIMINARY SPECIFICATION FOR ERI ALP HORIZONTALLY POLARIZED COAXIAL SLOTTED ARRAY ANTENNA

MECHANICAL CHARACTERISTICS:

MOUNTING CONFIGURATION: **(Tower Interface supplied and installed by others.)*		*Side Mount*
HEIGHT OF ANTENNA:		*27.8 feet*
HEIGHT OF CENTER OF RADIATION:		*13.9 feet*
OVERALL HEIGHT (A):		*27.8 feet*
DEICING:		*Unpressurized Slot Cover Radome Enclosure*
RADOME DIAMETER (C):		*CONTACT ERI*
RADOME COLOR:		*GRAY*
CLIMBING DEVICE:		*NOT APPLICABLE*
CALCULATED WEIGHT[1]:		*179 lbs.*
ANTENNA AREA[3]:	*FRONT AREA:*	
	C_AA_C:	*33.1 square feet*
	A_C:	*27.6 square feet*
	SIDE AREA:	
	C_AA_C:	*18.8 square feet*
	A_C:	*15.7 square feet*

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 ± 10% of the calculated weight. The actual weight will be given in the technical manual that accompanies the antenna.

[3] Antenna Area is calculated per EIA/TIA-RS222-F.

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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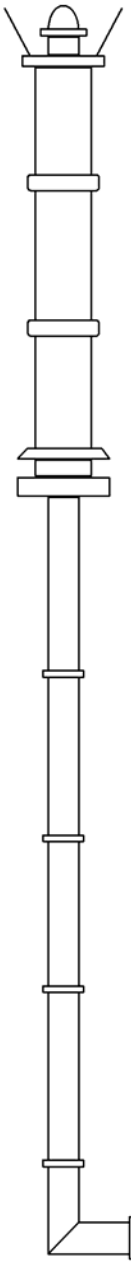
Broadcast Antenna System

Power Analysis

Channel 33

ALP12L2-HSMR-33



ANTENNA PARAMETERS

Azimuth Directivity:
Hor. Pol: 2.82
dBd: 4.50

Elevation Directivity:
Hor. Pol: 12.64
dBd: 11.02

TRANSMISSION LINE:

VERTICAL RUN:
Type: HJ7-50A
Length, ft: 100 ft.
Attenuation, dB/100 ft: 0.521 dB/100 ft.

HORIZONTAL RUN:
Type: HJ7-50A
Length, ft: 10 ft.
Attenuation, dB/100 ft: 0.521 dB/100 ft.

Line Efficiency: 87.65 %

ERP:
kW: 15.00
dBk: 11.76

POWER GAIN:
Ratio: 35.64
dBd: 15.52

ANTENNA INPUT:
kW: 0.42
dBk: -3.76

LINE LOSS:
kW: 0.06
dB: 0.57

TRANSMITTER POWER:
kW: 0.48
dBk: -3.19

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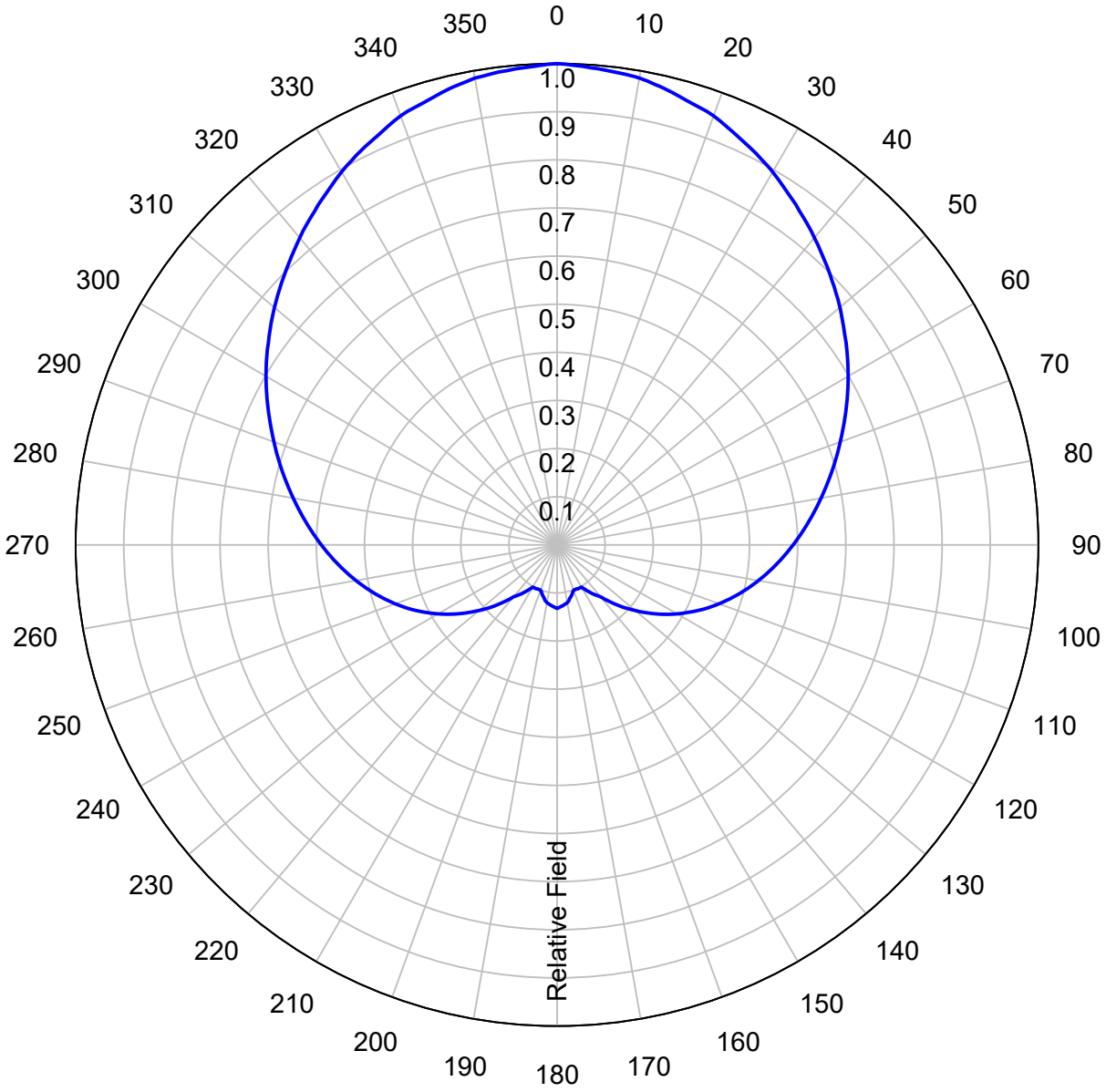
AZIMUTH PATTERN

Type:	**ALP-MR**		**Channel:**	**33**
	Numeric	**dBd**	**Location:**	
Directivity:	**2.82**	**4.50**	**Polarization:**	**Horizontal**
Peak(s) at:				

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



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TABULATED DATA FOR AZIMUTH PATTERN

Type: ALP-MR
PolarizationHorizontal

ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB
0	1.000	0.00	92	0.477	-6.43	184	0.128	-17.86	276	0.530	-5.51
2	0.997	-0.03	94	0.464	-6.67	186	0.126	-17.99	278	0.543	-5.30
4	0.994	-0.05	96	0.451	-6.92	188	0.124	-18.13	280	0.556	-5.10
6	0.991	-0.08	98	0.438	-7.17	190	0.122	-18.27	282	0.570	-4.88
8	0.988	-0.10	100	0.425	-7.43	192	0.118	-18.56	284	0.584	-4.67
10	0.985	-0.13	102	0.412	-7.70	194	0.113	-18.94	286	0.598	-4.47
12	0.978	-0.19	104	0.398	-8.00	196	0.109	-19.25	288	0.612	-4.26
14	0.971	-0.26	106	0.385	-8.29	198	0.104	-19.66	290	0.626	-4.07
16	0.963	-0.33	108	0.371	-8.61	200	0.100	-20.00	292	0.640	-3.88
18	0.956	-0.39	110	0.358	-8.92	202	0.100	-20.00	294	0.655	-3.68
20	0.949	-0.45	112	0.344	-9.27	204	0.100	-20.00	296	0.669	-3.49
22	0.938	-0.56	114	0.330	-9.63	206	0.101	-19.91	298	0.684	-3.30
24	0.927	-0.66	116	0.315	-10.03	208	0.101	-19.91	300	0.698	-3.12
26	0.917	-0.75	118	0.301	-10.43	210	0.101	-19.91	302	0.712	-2.95
28	0.906	-0.86	120	0.287	-10.84	212	0.109	-19.25	304	0.726	-2.78
30	0.895	-0.96	122	0.272	-11.31	214	0.117	-18.64	306	0.739	-2.63
32	0.882	-1.09	124	0.257	-11.80	216	0.125	-18.06	308	0.753	-2.46
34	0.870	-1.21	126	0.242	-12.32	218	0.133	-17.52	310	0.767	-2.30
36	0.857	-1.34	128	0.227	-12.88	220	0.141	-17.02	312	0.780	-2.16
38	0.845	-1.46	130	0.212	-13.47	222	0.155	-16.19	314	0.793	-2.01
40	0.832	-1.60	132	0.198	-14.07	224	0.169	-15.44	316	0.806	-1.87
42	0.819	-1.73	134	0.184	-14.70	226	0.184	-14.70	318	0.819	-1.73
44	0.806	-1.87	136	0.169	-15.44	228	0.198	-14.07	320	0.832	-1.60
46	0.793	-2.01	138	0.155	-16.19	230	0.212	-13.47	322	0.845	-1.46
48	0.780	-2.16	140	0.141	-17.02	232	0.227	-12.88	324	0.857	-1.34
50	0.767	-2.30	142	0.133	-17.52	234	0.242	-12.32	326	0.870	-1.21
52	0.753	-2.46	144	0.125	-18.06	236	0.257	-11.80	328	0.882	-1.09
54	0.739	-2.63	146	0.117	-18.64	238	0.272	-11.31	330	0.895	-0.96
56	0.726	-2.78	148	0.109	-19.25	240	0.287	-10.84	332	0.906	-0.86
58	0.712	-2.95	150	0.101	-19.91	242	0.301	-10.43	334	0.917	-0.75
60	0.698	-3.12	152	0.101	-19.91	244	0.315	-10.03	336	0.927	-0.66
62	0.684	-3.30	154	0.101	-19.91	246	0.330	-9.63	338	0.938	-0.56
64	0.669	-3.49	156	0.100	-20.00	248	0.344	-9.27	340	0.949	-0.45
66	0.655	-3.68	158	0.100	-20.00	250	0.358	-8.92	342	0.956	-0.39
68	0.640	-3.88	160	0.100	-20.00	252	0.371	-8.61	344	0.963	-0.33
70	0.626	-4.07	162	0.104	-19.66	254	0.385	-8.29	346	0.971	-0.26
72	0.612	-4.26	164	0.109	-19.25	256	0.398	-8.00	348	0.978	-0.19
74	0.598	-4.47	166	0.113	-18.94	258	0.412	-7.70	350	0.985	-0.13
76	0.584	-4.67	168	0.118	-18.56	260	0.425	-7.43	352	0.988	-0.10
78	0.570	-4.88	170	0.122	-18.27	262	0.438	-7.17	354	0.991	-0.08
80	0.556	-5.10	172	0.124	-18.13	264	0.451	-6.92	356	0.994	-0.05
82	0.543	-5.30	174	0.126	-17.99	266	0.464	-6.67	358	0.997	-0.03
84	0.530	-5.51	176	0.128	-17.86	268	0.477	-6.43	360	1.000	0.00
86	0.516	-5.75	178	0.130	-17.72	270	0.490	-6.20			
88	0.503	-5.97	180	0.132	-17.59	272	0.503	-5.97			
90	0.490	-6.20	182	0.130	-17.72	274	0.516	-5.75			

Preliminary, subject to final design and review.

TABULATED DATA FOR AZIMUTH PATTERN
FCC FILING FORMAT

Type: ALP-MR
PolarizationHorizontal

ANGLE	FIELD	ERP (kW)	ERP (dBk)
0	1.000	15.000	11.761
10	0.985	14.553	11.630
20	0.949	13.509	11.306
30	0.895	12.015	10.797
40	0.832	10.383	10.163
50	0.767	8.824	9.457
60	0.698	7.308	8.638
70	0.626	5.878	7.692
80	0.556	4.637	6.662
90	0.490	3.601	5.565
100	0.425	2.709	4.329
110	0.358	1.922	2.839
120	0.287	1.236	0.919
130	0.212	0.674	-1.712
140	0.141	0.298	-5.255
150	0.101	0.153	-8.153
160	0.100	0.150	-8.239
170	0.122	0.223	-6.512
180	0.132	0.261	-5.828
190	0.122	0.223	-6.512
200	0.100	0.150	-8.239
210	0.101	0.153	-8.153
220	0.141	0.298	-5.255
230	0.212	0.674	-1.712
240	0.287	1.236	0.919
250	0.358	1.922	2.839
260	0.425	2.709	4.329
270	0.490	3.601	5.565
280	0.556	4.637	6.662
290	0.626	5.878	7.692
300	0.698	7.308	8.638
310	0.767	8.824	9.457
320	0.832	10.383	10.163
330	0.895	12.015	10.797
340	0.949	13.509	11.306
350	0.985	14.553	11.630

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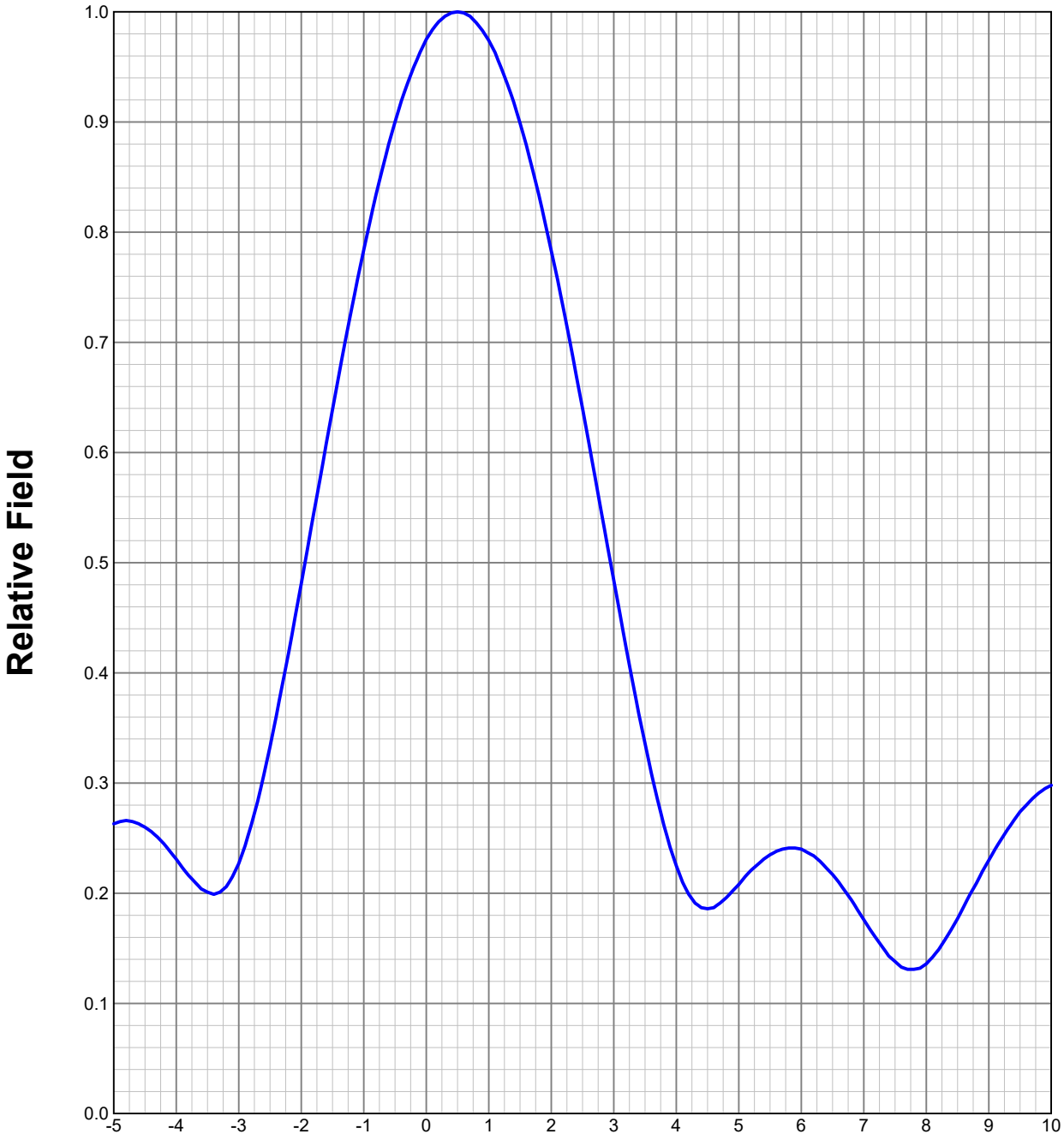
ELEVATION PATTERN

Type:	ALP12L2		Channel:	33
Directivity:	Numeric	dBd	Location:	
Main Lobe:	12.64	11.02	Beam Tilt:	-0.50
Horizontal:	12.02	10.80	Polarization:	Horizontal



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TABULATED DATA FOR ELEVATION PATTERN

Type: ALP12L2
PolarizationHorizontal

ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB
-5.00	0.263	-11.60	6.75	0.198	-14.07	27.00	0.030	-30.46	50.50	0.056	-25.04	74.00	0.207	-13.68
-4.75	0.266	-11.52	7.00	0.176	-15.09	27.50	0.021	-33.56	51.00	0.071	-22.97	74.50	0.204	-13.81
-4.50	0.260	-11.70	7.25	0.155	-16.19	28.00	0.019	-34.42	51.50	0.085	-21.41	75.00	0.200	-13.98
-4.25	0.248	-12.11	7.50	0.138	-17.20	28.50	0.017	-35.39	52.00	0.096	-20.35	75.50	0.195	-14.20
-4.00	0.231	-12.73	7.75	0.131	-17.65	29.00	0.012	-38.42	52.50	0.105	-19.58	76.00	0.189	-14.47
-3.75	0.213	-13.43	8.00	0.136	-17.33	29.50	0.006	-44.44	53.00	0.110	-19.17	76.50	0.183	-14.75
-3.50	0.201	-13.94	8.25	0.153	-16.28	30.00	0.000	-40.00	53.50	0.112	-19.02	77.00	0.176	-15.09
-3.25	0.204	-13.83	8.50	0.177	-15.04	30.50	0.005	-46.02	54.00	0.110	-19.17	77.50	0.168	-15.49
-3.00	0.227	-12.88	8.75	0.204	-13.81	31.00	0.008	-41.94	54.50	0.105	-19.58	78.00	0.161	-15.86
-2.75	0.272	-11.29	9.00	0.230	-12.77	31.50	0.013	-37.72	55.00	0.097	-20.26	78.50	0.153	-16.31
-2.50	0.333	-9.55	9.25	0.254	-11.92	32.00	0.022	-33.15	55.50	0.087	-21.21	79.00	0.145	-16.77
-2.25	0.404	-7.86	9.50	0.274	-11.24	32.50	0.037	-28.64	56.00	0.076	-22.38	79.50	0.137	-17.27
-2.00	0.481	-6.36	9.75	0.288	-10.80	33.00	0.057	-24.88	56.50	0.064	-23.88	80.00	0.129	-17.79
-1.75	0.560	-5.03	10.00	0.298	-10.52	33.50	0.080	-21.94	57.00	0.055	-25.19	80.50	0.121	-18.34
-1.50	0.639	-3.89	10.50	0.300	-10.46	34.00	0.104	-19.66	57.50	0.050	-26.02	81.00	0.113	-18.94
-1.25	0.714	-2.92	11.00	0.282	-11.00	34.50	0.128	-17.86	58.00	0.050	-26.02	81.50	0.105	-19.58
-1.00	0.784	-2.11	11.50	0.246	-12.18	35.00	0.148	-16.59	58.50	0.055	-25.19	82.00	0.097	-20.26
-0.75	0.847	-1.45	12.00	0.199	-14.02	35.50	0.164	-15.70	59.00	0.063	-24.01	82.50	0.090	-20.92
-0.50	0.900	-0.92	12.50	0.147	-16.65	36.00	0.173	-15.24	59.50	0.071	-22.97	83.00	0.083	-21.62
-0.25	0.943	-0.51	13.00	0.096	-20.35	36.50	0.176	-15.09	60.00	0.077	-22.27	83.50	0.075	-22.50
0.00	0.975	-0.22	13.50	0.053	-25.51	37.00	0.171	-15.34	60.50	0.082	-21.72	84.00	0.069	-23.22
0.25	0.994	-0.06	14.00	0.020	-33.98	37.50	0.160	-15.92	61.00	0.085	-21.41	84.50	0.062	-24.15
0.50	1.000	0.00	14.50	0.001	-60.00	38.00	0.144	-16.83	61.50	0.085	-21.41	85.00	0.056	-25.04
0.75	0.993	-0.06	15.00	0.011	-39.17	38.50	0.123	-18.20	62.00	0.083	-21.62	85.50	0.049	-26.20
1.00	0.974	-0.23	15.50	0.015	-36.48	39.00	0.100	-20.00	62.50	0.079	-22.05	86.00	0.043	-27.33
1.25	0.942	-0.52	16.00	0.023	-32.77	39.50	0.076	-22.38	63.00	0.073	-22.73	86.50	0.038	-28.40
1.50	0.899	-0.92	16.50	0.035	-29.12	40.00	0.056	-25.04	63.50	0.067	-23.48	87.00	0.032	-29.90
1.75	0.845	-1.46	17.00	0.047	-26.56	40.50	0.043	-27.33	64.00	0.062	-24.15	87.50	0.026	-31.70
2.00	0.783	-2.12	17.50	0.055	-25.19	41.00	0.039	-28.18	64.50	0.060	-24.44	88.00	0.021	-33.56
2.25	0.714	-2.92	18.00	0.056	-25.04	41.50	0.042	-27.54	65.00	0.062	-24.15	88.50	0.016	-35.92
2.50	0.640	-3.88	18.50	0.051	-25.85	42.00	0.047	-26.56	65.50	0.069	-23.22	89.00	0.010	-40.00
2.75	0.562	-5.01	19.00	0.048	-26.38	42.50	0.049	-26.20	66.00	0.079	-22.05	89.50	0.005	-46.02
3.00	0.484	-6.30	19.50	0.059	-24.58	43.00	0.047	-26.56	66.50	0.092	-20.72	90.00	0.000	-40.00
3.25	0.407	-7.81	20.00	0.087	-21.21	43.50	0.043	-27.33	67.00	0.106	-19.49			
3.50	0.336	-9.47	20.50	0.123	-18.20	44.00	0.036	-28.87	67.50	0.121	-18.34			
3.75	0.273	-11.26	21.00	0.159	-15.97	44.50	0.029	-30.75	68.00	0.135	-17.39			
4.00	0.225	-12.96	21.50	0.192	-14.33	45.00	0.023	-32.77	68.50	0.148	-16.59			
4.25	0.195	-14.20	22.00	0.216	-13.31	45.50	0.020	-33.98	69.00	0.161	-15.86			
4.50	0.186	-14.61	22.50	0.229	-12.80	46.00	0.020	-33.98	69.50	0.172	-15.29			
4.75	0.194	-14.27	23.00	0.231	-12.73	46.50	0.021	-33.56	70.00	0.182	-14.80			
5.00	0.208	-13.64	23.50	0.221	-13.11	47.00	0.021	-33.56	70.50	0.191	-14.38			
5.25	0.224	-13.01	24.00	0.201	-13.94	47.50	0.018	-34.89	71.00	0.198	-14.07			
5.50	0.235	-12.58	24.50	0.173	-15.24	48.00	0.011	-39.17	71.50	0.203	-13.85			
5.75	0.240	-12.38	25.00	0.141	-17.02	48.50	0.002	-53.98	72.00	0.207	-13.68			
6.00	0.240	-12.40	25.50	0.107	-19.41	49.00	0.010	-40.00	72.50	0.209	-13.60			
6.25	0.232	-12.71	26.00	0.076	-22.38	49.50	0.024	-32.40	73.00	0.209	-13.60			
6.50	0.217	-13.27	26.50	0.049	-26.20	50.00	0.040	-27.96	73.50	0.209	-13.60			

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