

***PRELIMINARY SPECIFICATION FOR
ERI CARINA™ HORIZONTALLY POLARIZED
COAXIAL SLOTTED ARRAY ANTENNA***

Prepared For

April 13, 2007

ANTENNA TYPE:
ALP24L3-HSBR-21

SPECIFICATION NO:



Electronics Research, Inc.
7777 Gardner Road
Chandler, Indiana U.S.A 47610

PRELIMINARY SPECIFICATION FOR ERI CARINA™ HORIZONTALLY POLARIZED COAXIAL SLOTTED ARRAY ANTENNA

ELECTRICAL CHARACTERISTICS:

CHANNEL:	21
FREQUENCY RANGE:	512.00 - 518.00 MHz
AZIMUTH PATTERN NUMBER:	Hor Pol: ALP-BR
ELEVATION PATTERN NUMBER:	Hor Pol: ALP24L3
AZIMUTH DIRECTIVITY:	Hor Pol: 2.75 (4.39 dB)
ELEVATION DIRECTIVITY:	Hor Pol: 25.21 (14.02 dBd)
PEAK POWER GAIN:	Hor Pol: 69.33 (18.41 dBd)
GAIN AT HORIZONTAL:	Hor Pol: 36.54 (15.63 dBd)
ELECTRICAL BEAM TILT:	-0.75 Degrees
INPUT POWER REQUIRED:	3.463 kW Average Power, 8VSB Digital
MAXIMUM INPUT POWER:	6.00 kW Average Power
INPUT TYPE:	1-5/8" EIA
ANTENNA VSWR (MAXIMUM):	DTV: 1.10 Over 6 MHz of Channel



PRELIMINARY SPECIFICATION FOR ERI CARINA™ HORIZONTALLY POLARIZED COAXIAL SLOTTED ARRAY ANTENNA

MECHANICAL CHARACTERISTICS:

MOUNTING CONFIGURATION: <i>*(Tower Interface supplied and installed by others.)</i>	Side Mount
HEIGHT OF ANTENNA:	60.8 feet
HEIGHT OF CENTER OF RADIATION:	30.4 feet
OVERALL HEIGHT (A):	60.8 feet
DEICING:	Unpressurized Slot Cover Radome Enclosure
RADOME DIAMETER (C):	CONTACT ERI
RADOME COLOR:	GRAY
CLIMBING DEVICE:	NOT APPLICABLE
CALCULATED WEIGHT ¹ :	368 lbs.
ANTENNA AREA ³ :	FRONT AREA: C _A A _C : 70.3 square feet A _C : 58.6 square feet SIDE AREA: C _A A _C : 41.4 square feet A _C : 34.5 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 $\pm 10\%$ 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

Type: ALP24L3-HSBR-21

Transmission Line:

Type:

LDF12-50

2-1/4" Foam HELIAX

Vert. Length: 300 ft.

Horz. Length: 50 ft.

Attenuation:

0.456 dB/100 ft.

Efficiency: 69.25 %



ERP: Hor Pol:

kW: 240.05

dBk: 23.80

Power Gain:

Ratio: 69.33

dBd: 18.41

Antenna Input:

kW: 3.46

dBk: 5.39

Line Loss:

kW: 1.54

dB: 1.60

Transmitter Power

kW: 5.00

dBk: 6.99



AZIMUTH PATTERN

Type: ALP-BR

Directivity: Numeric 2.75 dBd 4.39

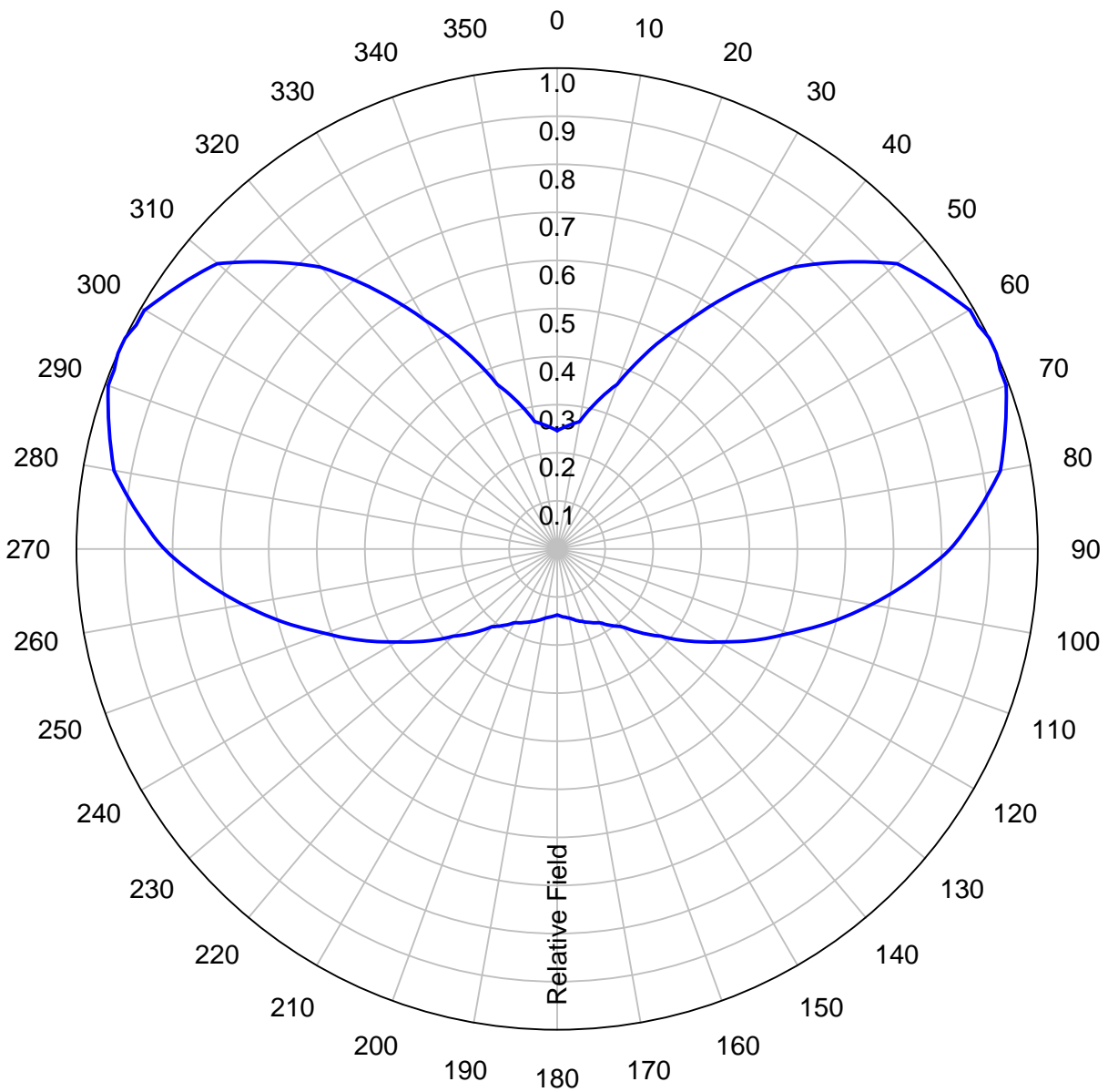
Peak(s) at: _____

Polarization: Horizontal

Channel: 21

Location: _____

Note: _____



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AZIMUTH TABULATED DATA

Type: ALP-BR

Polarization: Horizontal

Angle	Field	dB	Angle	Field	dB	Angle	Field	dB	Angle	Field	dB
0	0.246	-12.18	92	0.787	-2.08	184	0.141	-17.02	276	0.889	-1.02
2	0.251	-12.01	94	0.756	-2.43	186	0.142	-16.95	278	0.912	-0.80
4	0.255	-11.87	96	0.726	-2.78	188	0.144	-16.83	280	0.936	-0.57
6	0.260	-11.70	98	0.695	-3.16	190	0.146	-16.71	282	0.948	-0.46
8	0.264	-11.57	100	0.664	-3.56	192	0.149	-16.54	284	0.959	-0.36
10	0.269	-11.40	102	0.634	-3.96	194	0.152	-16.36	286	0.971	-0.26
12	0.288	-10.81	104	0.604	-4.38	196	0.155	-16.19	288	0.982	-0.16
14	0.307	-10.26	106	0.573	-4.84	198	0.158	-16.03	290	0.994	-0.05
16	0.326	-9.74	108	0.543	-5.30	200	0.161	-15.86	292	0.994	-0.05
18	0.345	-9.24	110	0.513	-5.80	202	0.164	-15.70	294	1.000	0.00
20	0.364	-8.78	112	0.488	-6.23	204	0.167	-15.55	296	1.000	0.00
22	0.401	-7.94	114	0.462	-6.71	206	0.171	-15.34	298	0.992	-0.07
24	0.438	-7.17	116	0.437	-7.19	208	0.174	-15.19	300	0.992	-0.07
26	0.475	-6.47	118	0.411	-7.72	210	0.177	-15.04	302	0.978	-0.19
28	0.512	-5.81	120	0.386	-8.27	212	0.184	-14.70	304	0.964	-0.32
30	0.549	-5.21	122	0.365	-8.75	214	0.191	-14.38	306	0.951	-0.44
32	0.592	-4.55	124	0.344	-9.27	216	0.197	-14.11	308	0.937	-0.57
34	0.635	-3.94	126	0.324	-9.79	218	0.204	-13.81	310	0.923	-0.70
36	0.679	-3.36	128	0.303	-10.37	220	0.211	-13.51	312	0.891	-1.00
38	0.722	-2.83	130	0.282	-11.00	222	0.225	-12.96	314	0.860	-1.31
40	0.765	-2.33	132	0.268	-11.44	224	0.239	-12.43	316	0.828	-1.64
42	0.797	-1.97	134	0.254	-11.90	226	0.254	-11.90	318	0.797	-1.97
44	0.828	-1.64	136	0.239	-12.43	228	0.268	-11.44	320	0.765	-2.33
46	0.860	-1.31	138	0.225	-12.96	230	0.282	-11.00	322	0.722	-2.83
48	0.891	-1.00	140	0.211	-13.51	232	0.303	-10.37	324	0.679	-3.36
50	0.923	-0.70	142	0.204	-13.81	234	0.324	-9.79	326	0.635	-3.94
52	0.937	-0.57	144	0.197	-14.11	236	0.344	-9.27	328	0.592	-4.55
54	0.951	-0.44	146	0.191	-14.38	238	0.365	-8.75	330	0.549	-5.21
56	0.964	-0.32	148	0.184	-14.70	240	0.386	-8.27	332	0.512	-5.81
58	0.978	-0.19	150	0.177	-15.04	242	0.411	-7.72	334	0.475	-6.47
60	0.992	-0.07	152	0.174	-15.19	244	0.437	-7.19	336	0.438	-7.17
62	0.992	-0.07	154	0.171	-15.34	246	0.462	-6.71	338	0.401	-7.94
64	1.000	0.00	156	0.167	-15.55	248	0.488	-6.23	340	0.364	-8.78
66	1.000	0.00	158	0.164	-15.70	250	0.513	-5.80	342	0.345	-9.24
68	0.994	-0.05	160	0.161	-15.86	252	0.543	-5.30	344	0.326	-9.74
70	0.994	-0.05	162	0.158	-16.03	254	0.573	-4.84	346	0.307	-10.26
72	0.982	-0.16	164	0.155	-16.19	256	0.604	-4.38	348	0.288	-10.81
74	0.971	-0.26	166	0.152	-16.36	258	0.634	-3.96	350	0.269	-11.40
76	0.959	-0.36	168	0.149	-16.54	260	0.664	-3.56	352	0.264	-11.57
78	0.948	-0.46	170	0.146	-16.71	262	0.695	-3.16	354	0.260	-11.70
80	0.936	-0.57	172	0.144	-16.83	264	0.726	-2.78	356	0.255	-11.87
82	0.912	-0.80	174	0.142	-16.95	266	0.756	-2.43	358	0.251	-12.01
84	0.889	-1.02	176	0.141	-17.02	268	0.787	-2.08	360	0.246	-12.18
86	0.865	-1.26	178	0.139	-17.14	270	0.818	-1.74			
88	0.842	-1.49	180	0.137	-17.27	272	0.842	-1.49			
90	0.818	-1.74	182	0.139	-17.14	274	0.865	-1.26			



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**AZIMUTH PATTERN
FCC FILING FORMAT**

Type: ALP-BR

Polarization: Horizontal

<i>Angle</i>	<i>Field</i>	<i>ERP (kW)</i>	<i>ERP (dBk)</i>
0	0.246	14.527	11.622
10	0.269	17.370	12.398
20	0.364	31.806	15.025
30	0.549	72.351	18.594
40	0.765	140.483	21.476
50	0.923	204.505	23.107
60	0.992	236.224	23.733
70	0.994	237.178	23.751
80	0.936	210.307	23.229
90	0.818	160.623	22.058
100	0.664	105.837	20.246
110	0.513	63.174	18.005
120	0.386	35.766	15.535
130	0.282	19.090	12.808
140	0.211	10.687	10.289
150	0.177	7.521	8.762
160	0.161	6.222	7.940
170	0.146	5.117	7.090
180	0.137	4.505	6.537
190	0.146	5.117	7.090
200	0.161	6.222	7.940
210	0.177	7.521	8.762
220	0.211	10.687	10.289
230	0.282	19.090	12.808
240	0.386	35.766	15.535
250	0.513	63.174	18.005
260	0.664	105.837	20.246
270	0.818	160.623	22.058
280	0.936	210.307	23.229
290	0.994	237.178	23.751
300	0.992	236.224	23.733
310	0.923	204.505	23.107
320	0.765	140.483	21.476
330	0.549	72.351	18.594
340	0.364	31.806	15.025
350	0.269	17.370	12.398



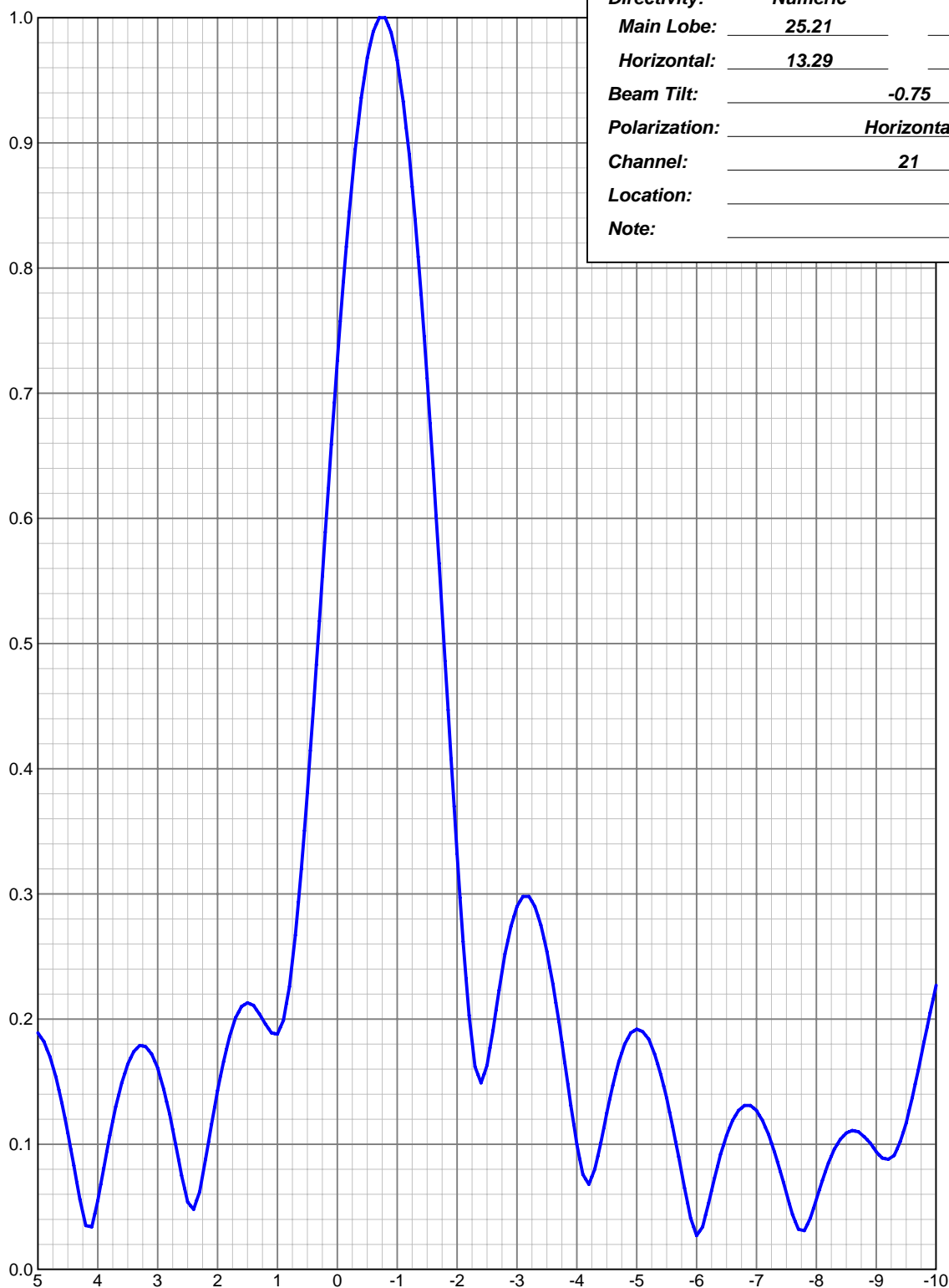
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ELEVATION PATTERN

Type:	ALP24L3	
Directivity:	Numeric	dBd
Main Lobe:	25.21	14.02
Horizontal:	13.29	11.23
Beam Tilt:	-0.75	
Polarization:	Horizontal	
Channel:	21	
Location:		
Note:		

Relative Field



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ELEVATION TABULATED DATA

Type: ALP24L3

Polarization: Horizontal

Angle	Field	dB	Angle	Field	dB	Angle	Field	dB	Angle	Field	dB
5.00	0.189	-14.47	-6.50	0.107	-19.41	-42.00	0.012	-38.42	-88.00	0.004	-47.96
4.75	0.162	-15.81	-6.75	0.129	-17.79	-43.00	0.032	-29.90	-89.00	0.002	-53.98
4.50	0.109	-19.25	-7.00	0.127	-17.92	-44.00	0.029	-30.75	-90.00	0.000	-40.00
4.25	0.045	-26.84	-7.25	0.101	-19.91	-45.00	0.068	-23.35			
4.00	0.055	-25.19	-7.50	0.061	-24.29	-46.00	0.074	-22.62			
3.75	0.118	-18.53	-7.75	0.032	-30.03	-47.00	0.040	-27.96			
3.50	0.164	-15.70	-8.00	0.056	-25.04	-48.00	0.006	-44.44			
3.25	0.178	-14.97	-8.25	0.090	-20.87	-49.00	0.003	-50.46			
3.00	0.161	-15.86	-8.50	0.109	-19.25	-50.00	0.013	-37.72			
2.75	0.112	-19.02	-8.75	0.108	-19.33	-51.00	0.010	-40.00			
2.50	0.054	-25.35	-9.00	0.094	-20.54	-52.00	0.016	-35.92			
2.25	0.075	-22.50	-9.25	0.089	-20.96	-53.00	0.029	-30.75			
2.00	0.143	-16.89	-9.50	0.117	-18.64	-54.00	0.015	-36.48			
1.75	0.194	-14.27	-9.75	0.170	-15.37	-55.00	0.020	-33.98			
1.50	0.213	-13.43	-10.00	0.227	-12.88	-56.00	0.038	-28.40			
1.25	0.200	-13.98	-11.00	0.294	-10.63	-57.00	0.022	-33.15			
1.00	0.188	-14.52	-12.00	0.106	-19.49	-58.00	0.024	-32.40			
0.75	0.246	-12.16	-13.00	0.029	-30.75	-59.00	0.051	-25.85			
0.50	0.381	-8.38	-14.00	0.008	-41.94	-60.00	0.049	-26.20			
0.25	0.553	-5.14	-15.00	0.007	-43.10	-61.00	0.079	-22.05			
0.00	0.726	-2.78	-16.00	0.013	-37.72	-62.00	0.166	-15.60			
-0.25	0.870	-1.21	-17.00	0.026	-31.70	-63.00	0.245	-12.22			
-0.50	0.968	-0.28	-18.00	0.015	-36.48	-64.00	0.278	-11.12			
-0.75	1.000	0.00	-19.00	0.046	-26.74	-65.00	0.251	-12.01			
-1.00	0.966	-0.30	-20.00	0.063	-24.01	-66.00	0.181	-14.85			
-1.25	0.865	-1.26	-21.00	0.212	-13.47	-67.00	0.094	-20.54			
-1.50	0.712	-2.95	-22.00	0.223	-13.03	-68.00	0.041	-27.74			
-1.75	0.525	-5.60	-23.00	0.065	-23.74	-69.00	0.065	-23.74			
-2.00	0.332	-9.58	-24.00	0.066	-23.61	-70.00	0.081	-21.83			
-2.25	0.182	-14.77	-25.00	0.026	-31.70	-71.00	0.072	-22.85			
-2.50	0.163	-15.76	-26.00	0.034	-29.37	-72.00	0.048	-26.38			
-2.75	0.237	-12.49	-27.00	0.013	-37.72	-73.00	0.022	-33.15			
-3.00	0.290	-10.75	-28.00	0.014	-37.08	-74.00	0.021	-33.56			
-3.25	0.294	-10.63	-29.00	0.004	-47.96	-75.00	0.035	-29.12			
-3.50	0.254	-11.90	-30.00	0.000	-40.00	-76.00	0.042	-27.54			
-3.75	0.181	-14.82	-31.00	0.007	-43.10	-77.00	0.041	-27.74			
-4.00	0.100	-20.00	-32.00	0.049	-26.20	-78.00	0.035	-29.12			
-4.25	0.074	-22.62	-33.00	0.106	-19.49	-79.00	0.026	-31.70			
-4.50	0.125	-18.06	-34.00	0.088	-21.11	-80.00	0.017	-35.39			
-4.75	0.173	-15.24	-35.00	0.024	-32.40	-81.00	0.009	-40.92			
-5.00	0.192	-14.33	-36.00	0.056	-25.04	-82.00	0.004	-47.96			
-5.25	0.178	-14.99	-37.00	0.019	-34.42	-83.00	0.005	-46.02			
-5.50	0.137	-17.27	-38.00	0.042	-27.54	-84.00	0.007	-43.10			
-5.75	0.077	-22.21	-39.00	0.027	-31.37	-85.00	0.008	-41.94			
-6.00	0.027	-31.37	-40.00	0.024	-32.40	-86.00	0.007	-43.10			
-6.25	0.063	-24.01	-41.00	0.031	-30.17	-87.00	0.006	-44.44			



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