

**Exhibit: 50**

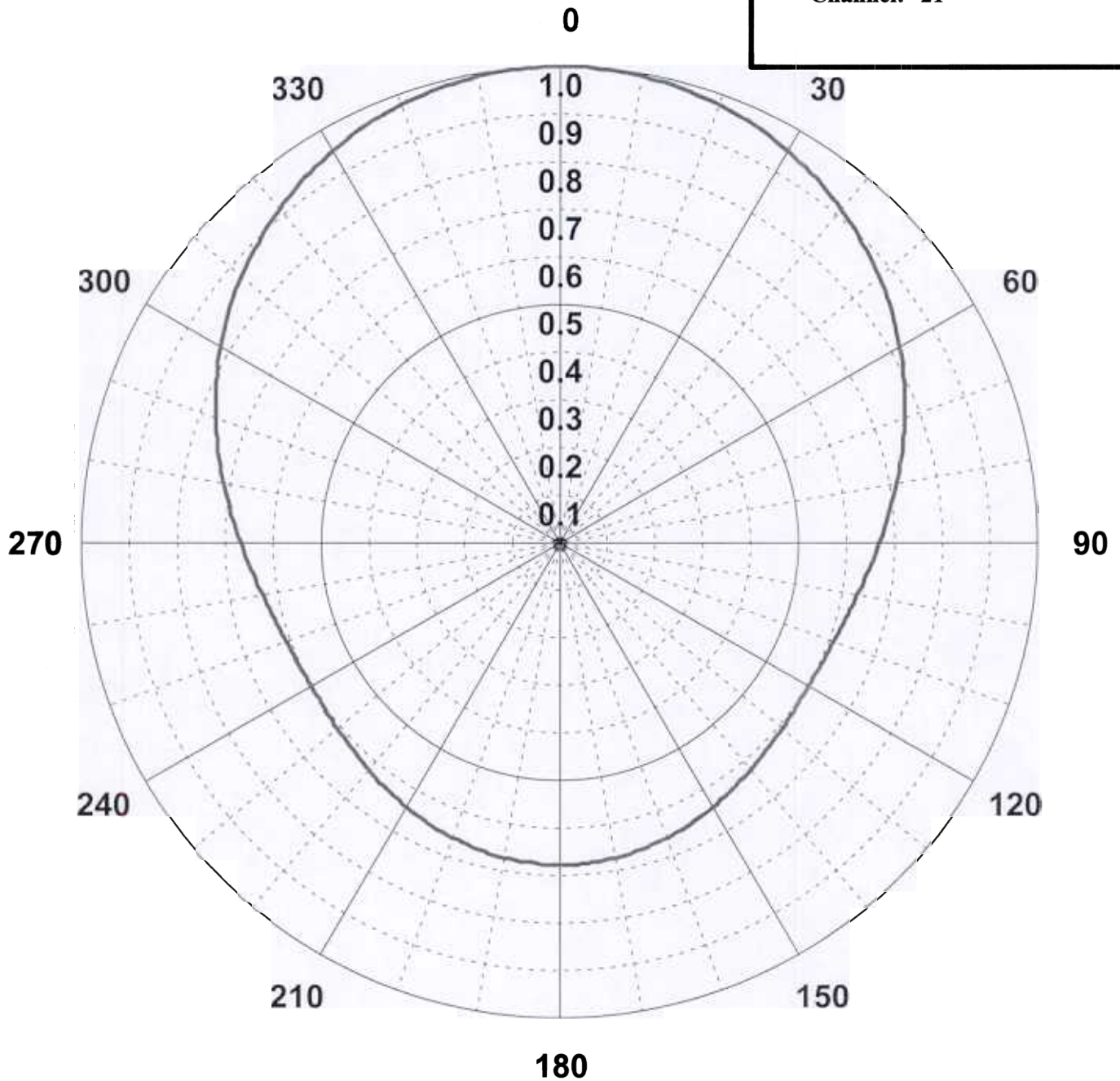


**Type: ALP-OC**

**Gain: 1.7 (2.3 dB)**

**Polarization: Horizontal**

**Channel: 21**



**ANDREW CORPORATION**  
10500 W. 153rd Street  
Orland Park, Illinois U.S.A. 60462

**Company: KHAS-DT**  
**Site: Hastings DTV**  
**Proposal Number: 3**

**Date: 2/7/02**  
**Author: Jeff Marousek**



Angle	Amp	dB	Angle	Amp	dB	Angle	Amp	dB	Angle	Amp	dB	Angle	Amp	dB
0	1.000	0.00	72	0.756	-2.43	144	0.630	-4.01	216	0.630	-4.01	288	0.756	-2.43
1	1.000	0.00	73	0.751	-2.49	145	0.632	-3.99	217	0.629	-4.03	289	0.761	-2.37
2	1.000	0.00	74	0.746	-2.53	146	0.634	-3.96	218	0.627	-4.05	290	0.767	-2.30
3	1.000	0.00	75	0.741	-2.60	147	0.636	-3.93	219	0.625	-4.08	291	0.773	-2.24
4	0.999	-0.01	76	0.735	-2.67	148	0.638	-3.90	220	0.623	-4.11	292	0.778	-2.18
5	0.998	-0.02	77	0.730	-2.73	149	0.640	-3.88	221	0.621	-4.14	293	0.783	-2.12
6	0.997	-0.03	78	0.725	-2.79	150	0.642	-3.85	222	0.619	-4.17	294	0.788	-2.07
7	0.996	-0.04	79	0.720	-2.85	151	0.644	-3.82	223	0.618	-4.18	295	0.794	-2.00
8	0.995	-0.05	80	0.715	-2.91	152	0.646	-3.80	224	0.616	-4.21	296	0.799	-1.95
9	0.994	-0.05	81	0.710	-2.97	153	0.648	-3.77	225	0.615	-4.22	297	0.805	-1.88
10	0.994	-0.05	82	0.705	-3.04	154	0.649	-3.76	226	0.613	-4.25	298	0.810	-1.83
11	0.993	-0.06	83	0.700	-3.10	155	0.651	-3.73	227	0.612	-4.26	299	0.815	-1.78
12	0.992	-0.07	84	0.695	-3.16	156	0.653	-3.70	228	0.610	-4.29	300	0.820	-1.72
13	0.991	-0.08	85	0.690	-3.22	157	0.654	-3.69	229	0.609	-4.31	301	0.826	-1.66
14	0.988	-0.10	86	0.686	-3.27	158	0.656	-3.66	230	0.608	-4.32	302	0.831	-1.61
15	0.986	-0.12	87	0.681	-3.34	159	0.658	-3.64	231	0.607	-4.34	303	0.836	-1.56
16	0.984	-0.14	88	0.677	-3.39	160	0.659	-3.62	232	0.606	-4.35	304	0.841	-1.50
17	0.982	-0.16	89	0.672	-3.45	161	0.661	-3.58	233	0.605	-4.36	305	0.846	-1.45
18	0.980	-0.18	90	0.668	-3.50	162	0.662	-3.56	234	0.604	-4.38	306	0.851	-1.40
19	0.978	-0.19	91	0.664	-3.56	163	0.664	-3.54	235	0.603	-4.39	307	0.856	-1.35
20	0.976	-0.21	92	0.660	-3.61	164	0.665	-3.52	236	0.602	-4.41	308	0.861	-1.30
21	0.974	-0.23	93	0.656	-3.66	165	0.667	-3.50	237	0.602	-4.41	309	0.866	-1.25
22	0.972	-0.25	94	0.652	-3.72	166	0.668	-3.48	238	0.602	-4.41	310	0.871	-1.20
23	0.969	-0.27	95	0.648	-3.77	167	0.669	-3.47	239	0.602	-4.41	311	0.875	-1.16
24	0.966	-0.30	96	0.644	-3.82	168	0.670	-3.45	240	0.602	-4.41	312	0.880	-1.11
25	0.963	-0.33	97	0.641	-3.86	169	0.671	-3.44	241	0.602	-4.41	313	0.884	-1.07
26	0.960	-0.35	98	0.638	-3.90	170	0.672	-3.44	242	0.603	-4.41	314	0.889	-1.02
27	0.957	-0.38	99	0.635	-3.94	171	0.673	-3.44	243	0.603	-4.41	315	0.893	-0.98
28	0.954	-0.41	100	0.631	-4.00	172	0.673	-3.44	244	0.604	-4.39	316	0.898	-0.93
29	0.951	-0.44	101	0.626	-4.07	173	0.674	-3.43	245	0.604	-4.38	317	0.902	-0.90
30	0.948	-0.46	102	0.623	-4.11	174	0.675	-3.43	246	0.605	-4.36	318	0.907	-0.85
31	0.945	-0.49	103	0.621	-4.14	175	0.675	-3.41	247	0.605	-4.36	319	0.911	-0.81
32	0.942	-0.52	104	0.618	-4.18	176	0.675	-3.40	248	0.606	-4.35	320	0.915	-0.77
33	0.938	-0.56	105	0.616	-4.21	177	0.676	-3.40	249	0.607	-4.34	321	0.919	-0.73
34	0.935	-0.58	106	0.614	-4.24	178	0.676	-3.40	250	0.609	-4.31	322	0.923	-0.70
35	0.931	-0.62	107	0.612	-4.26	179	0.676	-3.40	251	0.610	-4.29	323	0.927	-0.66
36	0.927	-0.66	108	0.611	-4.28	180	0.676	-3.40	252	0.612	-4.26	324	0.931	-0.62
37	0.923	-0.70	109	0.610	-4.31	181	0.676	-3.40	253	0.614	-4.24	325	0.935	-0.58
38	0.919	-0.73	110	0.607	-4.34	182	0.676	-3.40	254	0.616	-4.21	326	0.938	-0.56
39	0.915	-0.77	111	0.606	-4.35	183	0.675	-3.41	255	0.619	-4.17	327	0.941	-0.53
40	0.911	-0.81	112	0.605	-4.36	184	0.674	-3.43	256	0.621	-4.14	328	0.948	-0.49
41	0.907	-0.85	113	0.604	-4.38	185	0.674	-3.43	257	0.624	-4.10	329	0.951	-0.46
42	0.903	-0.89	114	0.603	-4.39	186	0.674	-3.43	258	0.626	-4.07	330	0.954	-0.44
43	0.898	-0.93	115	0.603	-4.38	187	0.673	-3.44	259	0.629	-4.03	331	0.954	-0.41
44	0.893	-0.98	116	0.603	-4.39	188	0.672	-3.45	260	0.631	-4.00	332	0.960	-0.38
45	0.889	-1.02	117	0.602	-4.41	189	0.672	-3.45	261	0.634	-3.96	333	0.963	-0.35
46	0.885	-1.06	118	0.602	-4.41	190	0.672	-3.45	262	0.638	-3.90	334	0.966	-0.33
47	0.880	-1.11	119	0.602	-4.41	191	0.670	-3.48	263	0.644	-3.86	335	0.969	-0.30
48	0.876	-1.15	120	0.602	-4.41	192	0.670	-3.47	264	0.644	-3.82	336	0.971	-0.27
49	0.871	-1.20	121	0.602	-4.41	193	0.669	-3.49	265	0.648	-3.77	337	0.974	-0.26
50	0.866	-1.25	122	0.602	-4.41	194	0.668	-3.50	266	0.652	-3.72	338	0.976	-0.23
51	0.861	-1.30	123	0.602	-4.41	195	0.666	-3.53	267	0.656	-3.66	339	0.978	-0.21
52	0.856	-1.35	124	0.603	-4.39	196	0.665	-3.54	268	0.660	-3.61	340	0.984	-0.19
53	0.851	-1.40	125	0.604	-4.38	197	0.663	-3.57	269	0.664	-3.56	341	0.988	-0.18
54	0.846	-1.45	126	0.604	-4.36	198	0.662	-3.58	270	0.668	-3.50	342	0.982	-0.16
55	0.841	-1.50	127	0.605	-4.35	199	0.660	-3.61	271	0.673	-3.44	343	0.984	-0.14
56	0.836	-1.56	128	0.606	-4.34	200	0.659	-3.62	272	0.677	-3.39	344	0.986	-0.12
57	0.831	-1.61	129	0.607	-4.32	201	0.658	-3.64	273	0.682	-3.32	345	0.988	-0.10
58	0.825	-1.67	130	0.608	-4.31	202	0.656	-3.66	274	0.686	-3.27	346	0.989	-0.10
59	0.820	-1.72	131	0.609	-4.29	203	0.654	-3.69	275	0.691	-3.21	347	0.992	-0.09
60	0.815	-1.78	132	0.610	-4.26	204	0.653	-3.70	276	0.695	-3.16	348	0.993	-0.07
61	0.810	-1.83	133	0.613	-4.25	205	0.651	-3.73	277	0.700	-3.10	349	0.994	-0.06
62	0.804	-1.89	134	0.615	-4.22	206	0.649	-3.76	278	0.705	-3.04	350	0.996	-0.04
63	0.799	-1.95	135	0.618	-4.21	207	0.648	-3.80	279	0.715	-2.97	351	0.997	-0.03
64	0.793	-2.01	136	0.621	-4.18	208	0.646	-3.82	280	0.720	-2.91	352	0.999	-0.02
65	0.788	-2.07	137	0.623	-4.17	209	0.644	-3.85	281	0.725	-2.85	353	0.998	-0.03
66	0.783	-2.12	138	0.621	-4.14	210	0.642	-3.88	282	0.730	-2.79	354	0.998	-0.02
67	0.778	-2.18	139	0.623	-4.11	211	0.640	-3.90	283	0.735	-2.73	355	0.999	-0.01
68	0.772	-2.25	140	0.625	-4.08	212	0.638	-3.93	284	0.741	-2.67	356	1.000	0.00
69	0.767	-2.30	141	0.627	-4.05	213	0.636	-3.96	285	0.746	-2.60	357	1.000	0.00
70	0.762	-2.36	142	0.628	-4.04	214	0.634	-3.99	286	0.751	-2.55	358	1.000	0.00
71			143			215	0.632	-3.99	287		-2.49	359		

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## Exhibit: 54



**ANDREW**

Type: ALP16M2

Directivity: Numeric dBd

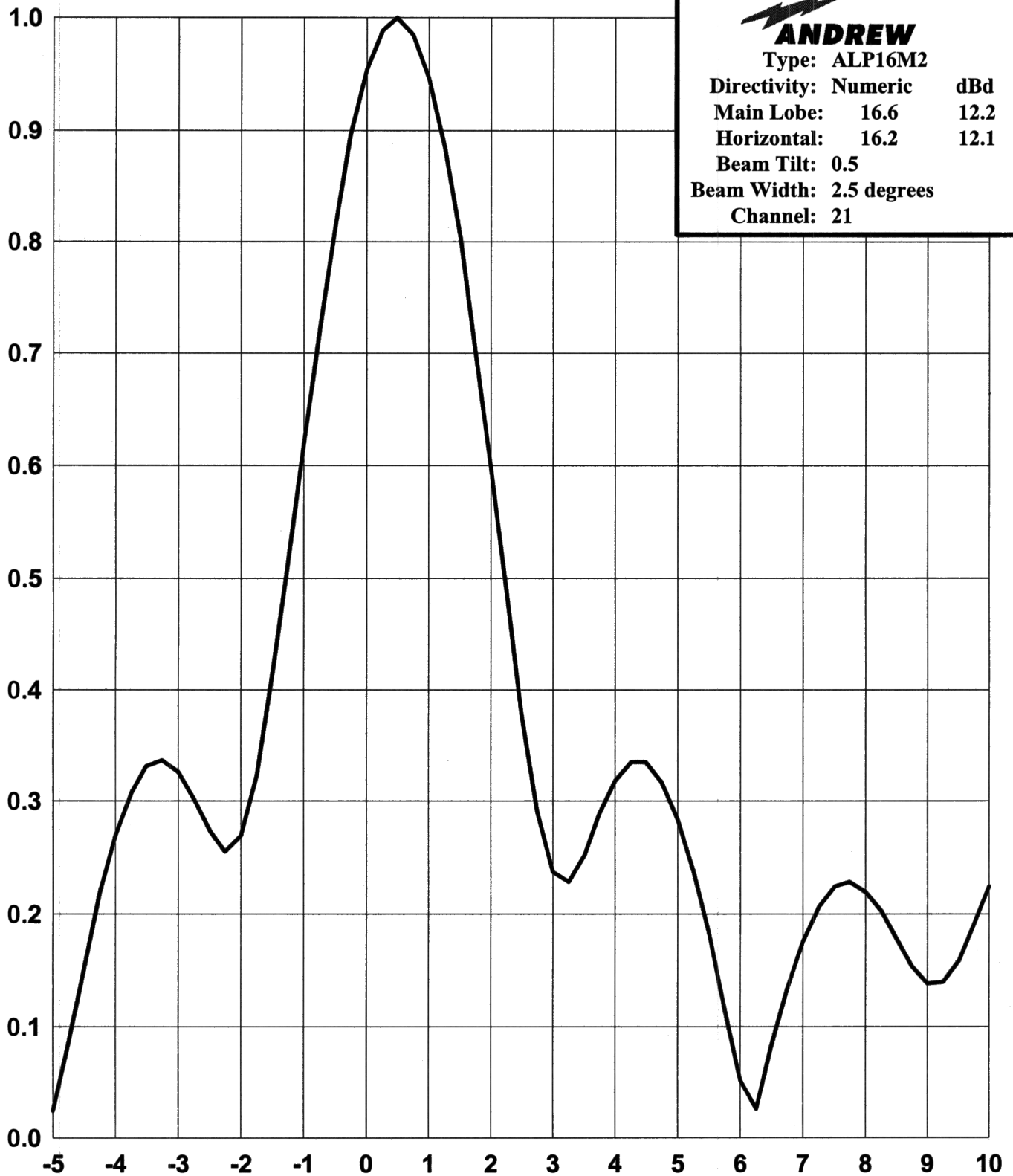
Main Lobe: 16.6 12.2

Horizontal: 16.2 12.1

Beam Tilt: 0.5

Beam Width: 2.5 degrees

Channel: 21



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Type:ALP16M2 Beam Tilt: 0.5 deg  
Directivity: 16.6 (12.2 dB) Chan: 21



Exhibit: 55

Angle	Amp	dB	Angle	Amp	dB	Angle	Amp	dB	Angle	Amp	dB
-5.00	0.024	-32.40	9.00	0.138	-17.20	36.00	0.123	-18.20	63.50	0.021	-33.56
-4.75	0.086	-21.31	9.25	0.139	-17.14	36.50	0.138	-17.20	64.00	0.035	-29.12
-4.50	0.155	-16.19	9.50	0.159	-15.97	37.00	0.144	-16.83	64.50	0.047	-26.56
-4.25	0.218	-13.23	9.75	0.190	-14.42	37.50	0.138	-17.20	65.00	0.058	-24.73
-4.00	0.270	-11.37	10.00	0.224	-13.00	38.00	0.123	-18.20	65.50	0.066	-23.61
-3.75	0.309	-10.20	10.50	0.280	-11.06	38.50	0.100	-20.00	66.00	0.072	-22.85
-3.50	0.331	-9.60	11.00	0.306	-10.29	39.00	0.073	-22.73	66.50	0.075	-22.50
-3.25	0.337	-9.45	11.50	0.295	-10.60	39.50	0.050	-26.02	67.00	0.075	-22.50
-3.00	0.326	-9.74	12.00	0.253	-11.94	40.00	0.044	-27.13	67.50	0.073	-22.73
-2.75	0.302	-10.40	12.50	0.193	-14.29	40.50	0.054	-25.35	68.00	0.070	-23.10
-2.50	0.273	-11.28	13.00	0.127	-17.92	41.00	0.066	-23.61	68.50	0.064	-23.88
-2.25	0.256	-11.84	13.50	0.070	-23.10	41.50	0.071	-22.97	69.00	0.059	-24.58
-2.00	0.270	-11.37	14.00	0.031	-30.17	42.00	0.068	-23.35	69.50	0.055	-25.19
-1.75	0.324	-9.79	14.50	0.013	-37.72	42.50	0.057	-24.88	70.00	0.054	-25.35
-1.50	0.410	-7.74	15.00	0.005	-46.02	43.00	0.040	-27.96	70.50	0.056	-25.04
-1.25	0.512	-5.81	15.50	0.006	-44.44	43.50	0.020	-33.98	71.00	0.062	-24.15
-1.00	0.619	-4.17	16.00	0.018	-34.89	44.00	0.005	-46.02	71.50	0.071	-22.97
-0.75	0.723	-2.82	16.50	0.025	-32.04	44.50	0.021	-33.56	72.00	0.080	-21.94
-0.50	0.817	-1.76	17.00	0.022	-33.15	45.00	0.036	-28.87	72.50	0.091	-20.82
-0.25	0.895	-0.96	17.50	0.007	-43.10	45.50	0.045	-26.94	73.00	0.101	-19.91
0.00	0.954	-0.41	18.00	0.018	-34.89	46.00	0.048	-26.38	73.50	0.110	-19.17
0.25	0.989	-0.10	18.50	0.044	-27.13	46.50	0.046	-26.74	74.00	0.119	-18.49
0.50	1.000	0.00	19.00	0.065	-23.74	47.00	0.040	-27.96	74.50	0.126	-17.99
0.75	0.985	-0.13	19.50	0.074	-22.62	47.50	0.031	-30.17	75.00	0.132	-17.59
1.00	0.946	-0.48	20.00	0.071	-22.97	48.00	0.026	-31.70	75.50	0.137	-17.27
1.25	0.884	-1.07	20.50	0.061	-24.29	48.50	0.025	-32.04	76.00	0.140	-17.08
1.50	0.802	-1.92	21.00	0.071	-22.97	49.00	0.029	-30.75	76.50	0.142	-16.95
1.75	0.705	-3.04	21.50	0.109	-19.25	49.50	0.033	-29.63	77.00	0.142	-16.95
2.00	0.598	-4.47	22.00	0.157	-16.08	50.00	0.034	-29.37	77.50	0.142	-16.95
2.25	0.487	-6.25	22.50	0.201	-13.94	50.50	0.031	-30.17	78.00	0.140	-17.08
2.50	0.381	-8.38	23.00	0.229	-12.80	51.00	0.024	-32.40	78.50	0.137	-17.27
2.75	0.292	-10.69	23.50	0.238	-12.47	51.50	0.015	-36.48	79.00	0.133	-17.52
3.00	0.237	-12.51	24.00	0.225	-12.96	52.00	0.003	-50.46	79.50	0.129	-17.79
3.25	0.228	-12.84	24.50	0.194	-14.24	52.50	0.009	-40.92	80.00	0.124	-18.13
3.50	0.253	-11.94	25.00	0.150	-16.48	53.00	0.020	-33.98	80.50	0.118	-18.56
3.75	0.289	-10.78	25.50	0.102	-19.83	53.50	0.029	-30.75	81.00	0.112	-19.02
4.00	0.319	-9.92	26.00	0.062	-24.15	54.00	0.035	-29.12	81.50	0.106	-19.49
4.25	0.336	-9.47	26.50	0.044	-27.13	54.50	0.038	-28.40	82.00	0.100	-20.00
4.50	0.335	-9.50	27.00	0.049	-26.20	55.00	0.037	-28.64	82.50	0.093	-20.63
4.75	0.317	-9.98	27.50	0.055	-25.19	55.50	0.033	-29.63	83.00	0.086	-21.31
5.00	0.284	-10.93	28.00	0.052	-25.68	56.00	0.028	-31.06	83.50	0.080	-21.94
5.25	0.237	-12.51	28.50	0.041	-27.74	56.50	0.025	-32.04	84.00	0.073	-22.73
5.50	0.180	-14.89	29.00	0.025	-32.04	57.00	0.026	-31.70	84.50	0.066	-23.61
5.75	0.116	-18.71	29.50	0.010	-40.00	57.50	0.033	-29.63	85.00	0.060	-24.44
6.00	0.052	-25.68	30.00	0.002	-53.98	58.00	0.041	-27.74	85.50	0.053	-25.51
6.25	0.026	-31.70	30.50	0.008	-41.94	58.50	0.049	-26.20	86.00	0.047	-26.56
6.50	0.081	-21.83	31.00	0.008	-41.94	59.00	0.055	-25.19	86.50	0.041	-27.74
6.75	0.133	-17.52	31.50	0.003	-50.46	59.50	0.058	-24.73	87.00	0.035	-29.12
7.00	0.176	-15.09	32.00	0.003	-50.46	60.00	0.057	-24.88	87.50	0.029	-30.75
7.25	0.206	-13.72	32.50	0.008	-41.94	60.50	0.054	-25.35	88.00	0.023	-32.77
7.50	0.224	-13.00	33.00	0.012	-38.42	61.00	0.046	-26.74	88.50	0.017	-35.39
7.75	0.228	-12.84	33.50	0.017	-35.39	61.50	0.036	-28.87	89.00	0.011	-39.17
8.00	0.220	-13.15	34.00	0.029	-30.75	62.00	0.024	-32.40	89.50	0.006	-44.44
8.25	0.203	-13.85	34.50	0.050	-26.02	62.50	0.011	-39.17	90.00	0.000	---
8.50	0.179	-14.94	35.00	0.075	-22.50	63.00	0.007	-43.10			
8.75	0.154	-16.25	35.50	0.101	-19.91	63.50	0.021	-33.56			

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