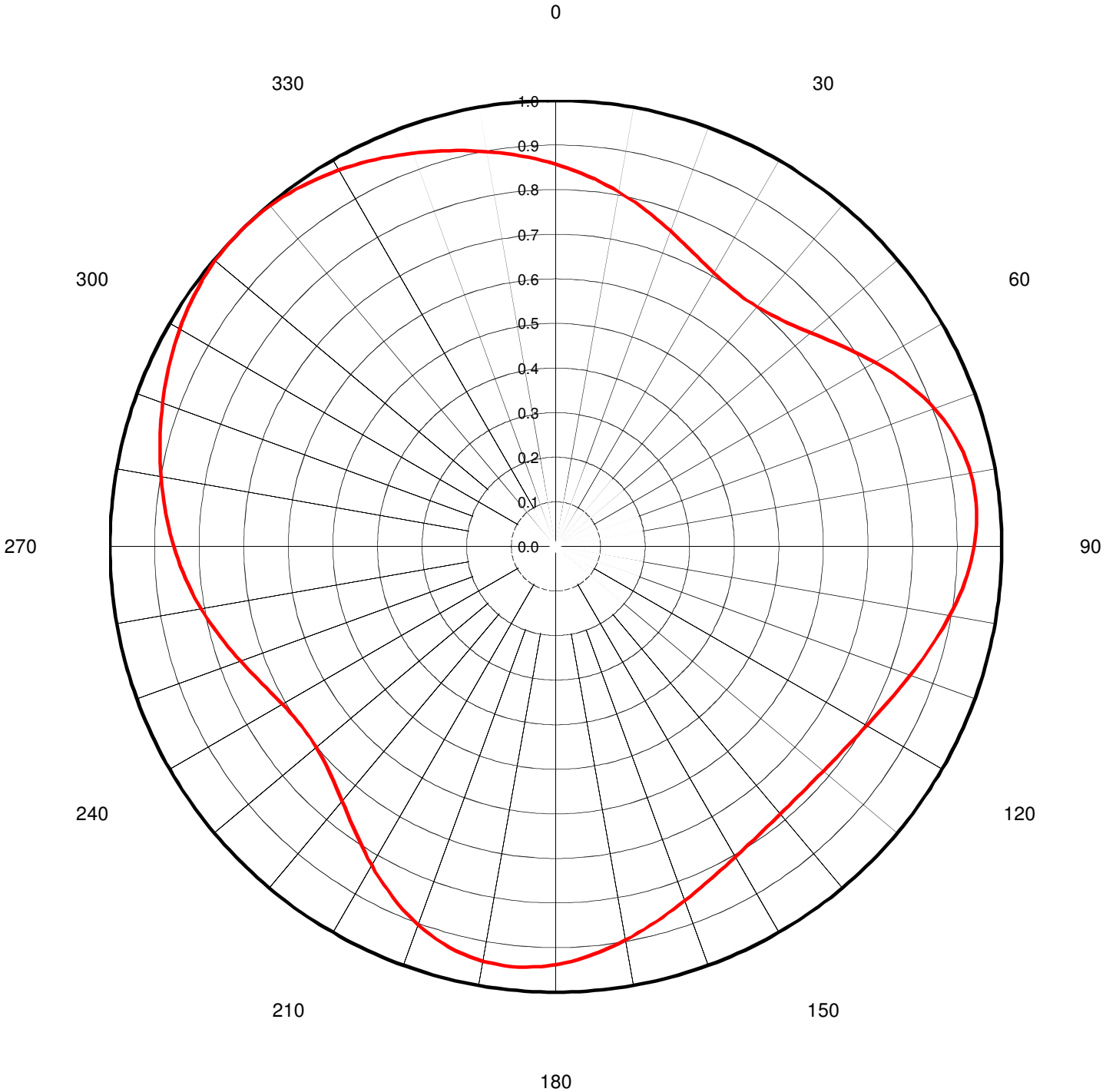
Dielectric

Proposal Number	**C-04033-2**	Revision:	**2**
Date	**10-Jun-10**		
Call Letters	**WLS**	Channel	**44**
Location	**Chicago, IL**		
Customer			
Antenna Type	**TFU-19ETT/VP-R S140**		

AZIMUTH PATTERN

Gain	**1.40**	**(1.46 dB)**	
Calculated / Measured	**Calculated**		
Frequency	**653.00 MHz**		
Drawing #	**S140H**		



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Call Letters	**WLS**	Channel	**44**
Location	**Chicago, IL**		
Customer			
Antenna Type	**TFU-19ETT/VP-R S140**		

TABULATION OF AZIMUTH PATTERN

Azimuth Pattern Drawing #: **S140H**

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
0	0.857	45	0.717	90	0.938	135	0.781	180	0.938	225	0.717	270	0.857	315	1.000
1	0.852	46	0.722	91	0.935	136	0.781	181	0.941	226	0.713	271	0.861	316	1.000
2	0.848	47	0.727	92	0.932	137	0.781	182	0.943	227	0.709	272	0.866	317	0.999
3	0.843	48	0.733	93	0.928	138	0.782	183	0.945	228	0.706	273	0.870	318	0.999
4	0.838	49	0.739	94	0.924	139	0.782	184	0.946	229	0.704	274	0.874	319	0.998
5	0.833	50	0.746	95	0.920	140	0.783	185	0.947	230	0.701	275	0.879	320	0.997
6	0.828	51	0.753	96	0.916	141	0.785	186	0.947	231	0.700	276	0.883	321	0.996
7	0.823	52	0.760	97	0.911	142	0.786	187	0.948	232	0.699	277	0.887	322	0.994
8	0.818	53	0.767	98	0.907	143	0.788	188	0.947	233	0.698	278	0.891	323	0.992
9	0.813	54	0.775	99	0.902	144	0.789	189	0.946	234	0.698	279	0.895	324	0.990
10	0.808	55	0.783	100	0.897	145	0.791	190	0.945	235	0.699	280	0.899	325	0.988
11	0.802	56	0.792	101	0.892	146	0.794	191	0.943	236	0.700	281	0.903	326	0.986
12	0.797	57	0.800	102	0.887	147	0.796	192	0.940	237	0.701	282	0.907	327	0.983
13	0.791	58	0.808	103	0.881	148	0.799	193	0.937	238	0.703	283	0.911	328	0.980
14	0.786	59	0.817	104	0.876	149	0.802	194	0.934	239	0.706	284	0.915	329	0.977
15	0.780	60	0.826	105	0.871	150	0.805	195	0.930	240	0.708	285	0.919	330	0.974
16	0.774	61	0.834	106	0.866	151	0.808	196	0.925	241	0.712	286	0.923	331	0.971
17	0.769	62	0.843	107	0.861	152	0.811	197	0.921	242	0.715	287	0.927	332	0.968
18	0.763	63	0.851	108	0.855	153	0.815	198	0.915	243	0.719	288	0.931	333	0.964
19	0.758	64	0.859	109	0.850	154	0.819	199	0.909	244	0.723	289	0.935	334	0.961
20	0.752	65	0.867	110	0.846	155	0.823	200	0.903	245	0.727	290	0.939	335	0.957
21	0.747	66	0.875	111	0.841	156	0.827	201	0.897	246	0.732	291	0.942	336	0.954
22	0.742	67	0.883	112	0.836	157	0.832	202	0.890	247	0.737	292	0.946	337	0.950
23	0.737	68	0.890	113	0.832	158	0.836	203	0.883	248	0.742	293	0.950	338	0.946
24	0.732	69	0.897	114	0.827	159	0.841	204	0.875	249	0.747	294	0.954	339	0.942
25	0.727	70	0.903	115	0.823	160	0.846	205	0.867	250	0.752	295	0.957	340	0.939
26	0.723	71	0.909	116	0.819	161	0.850	206	0.859	251	0.758	296	0.961	341	0.935
27	0.719	72	0.915	117	0.815	162	0.855	207	0.851	252	0.763	297	0.964	342	0.931
28	0.715	73	0.921	118	0.811	163	0.861	208	0.843	253	0.769	298	0.968	343	0.927
29	0.712	74	0.925	119	0.808	164	0.866	209	0.834	254	0.774	299	0.971	344	0.923
30	0.708	75	0.930	120	0.805	165	0.871	210	0.826	255	0.780	300	0.974	345	0.919
31	0.706	76	0.934	121	0.802	166	0.876	211	0.817	256	0.786	301	0.977	346	0.915
32	0.703	77	0.937	122	0.799	167	0.881	212	0.808	257	0.791	302	0.980	347	0.911
33	0.701	78	0.940	123	0.796	168	0.887	213	0.800	258	0.797	303	0.983	348	0.907
34	0.700	79	0.943	124	0.794	169	0.892	214	0.792	259	0.802	304	0.986	349	0.903
35	0.699	80	0.945	125	0.791	170	0.897	215	0.783	260	0.808	305	0.988	350	0.899
36	0.698	81	0.946	126	0.789	171	0.902	216	0.775	261	0.813	306	0.990	351	0.895
37	0.698	82	0.947	127	0.788	172	0.907	217	0.767	262	0.818	307	0.992	352	0.891
38	0.699	83	0.948	128	0.786	173	0.911	218	0.760	263	0.823	308	0.994	353	0.887
39	0.700	84	0.947	129	0.785	174	0.916	219	0.753	264	0.828	309	0.996	354	0.883
40	0.701	85	0.947	130	0.783	175	0.920	220	0.746	265	0.833	310	0.997	355	0.879
41	0.704	86	0.946	131	0.782	176	0.924	221	0.739	266	0.838	311	0.998	356	0.874
42	0.706	87	0.945	132	0.782	177	0.928	222	0.733	267	0.843	312	0.999	357	0.870
43	0.709	88	0.943	133	0.781	178	0.932	223	0.727	268	0.848	313	0.999	358	0.866
44	0.713	89	0.941	134	0.781	179	0.935	224	0.722	269	0.852	314	1.000	359	0.861

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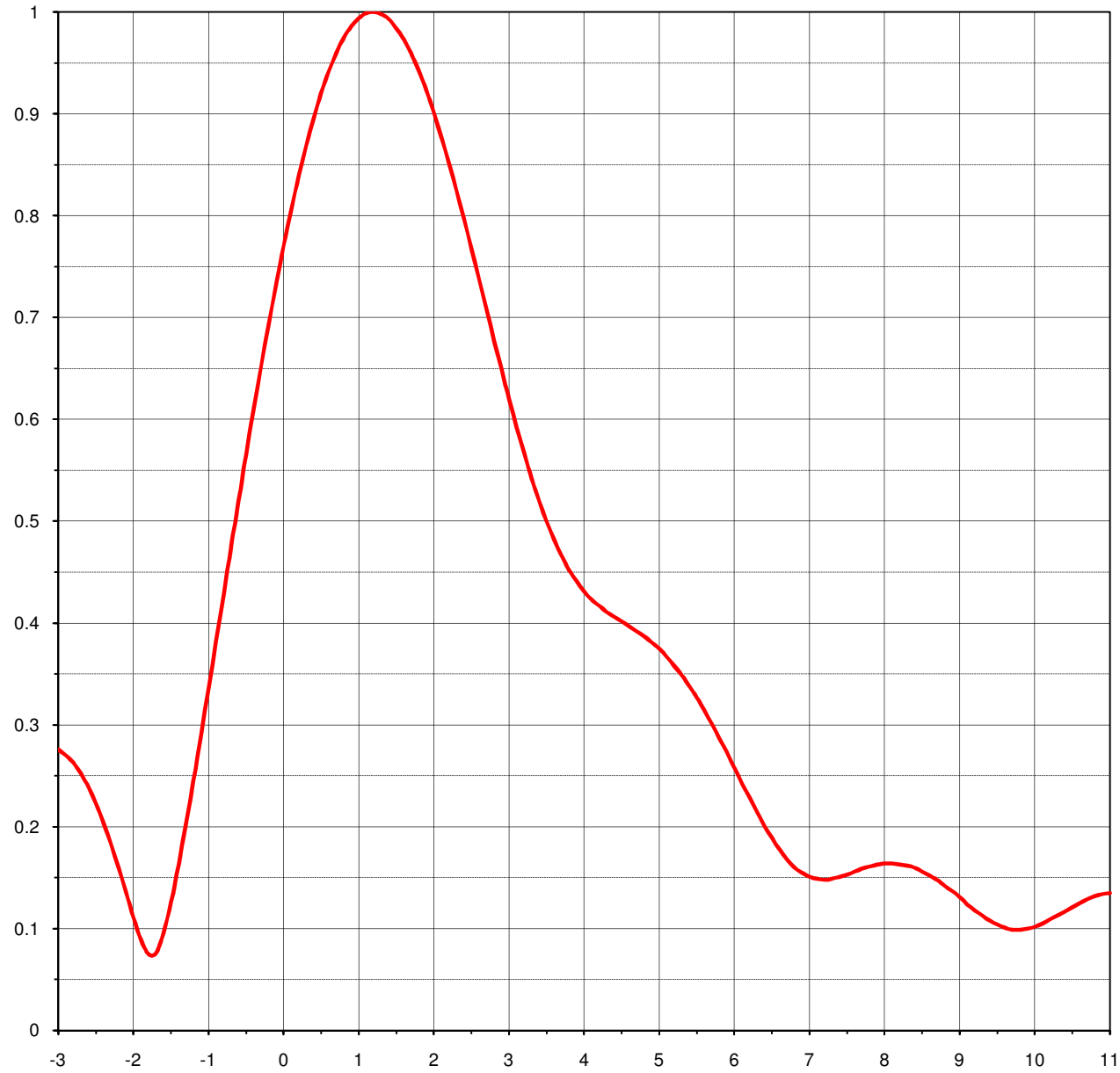
Customer			
Antenna Type	**TFU-19ETT/VP-R S140**		

ELEVATION PATTERN

RMS Gain at Main Lobe	**17.00 (12.30 dB)**	Beam Tilt	**1.20 deg**
RMS Gain at Horizontal	**10.10 (10.04 dB)**	Frequency	**653.00 MHz**
Calculated / Measured	**Calculated**	Drawing #	**19E170120**



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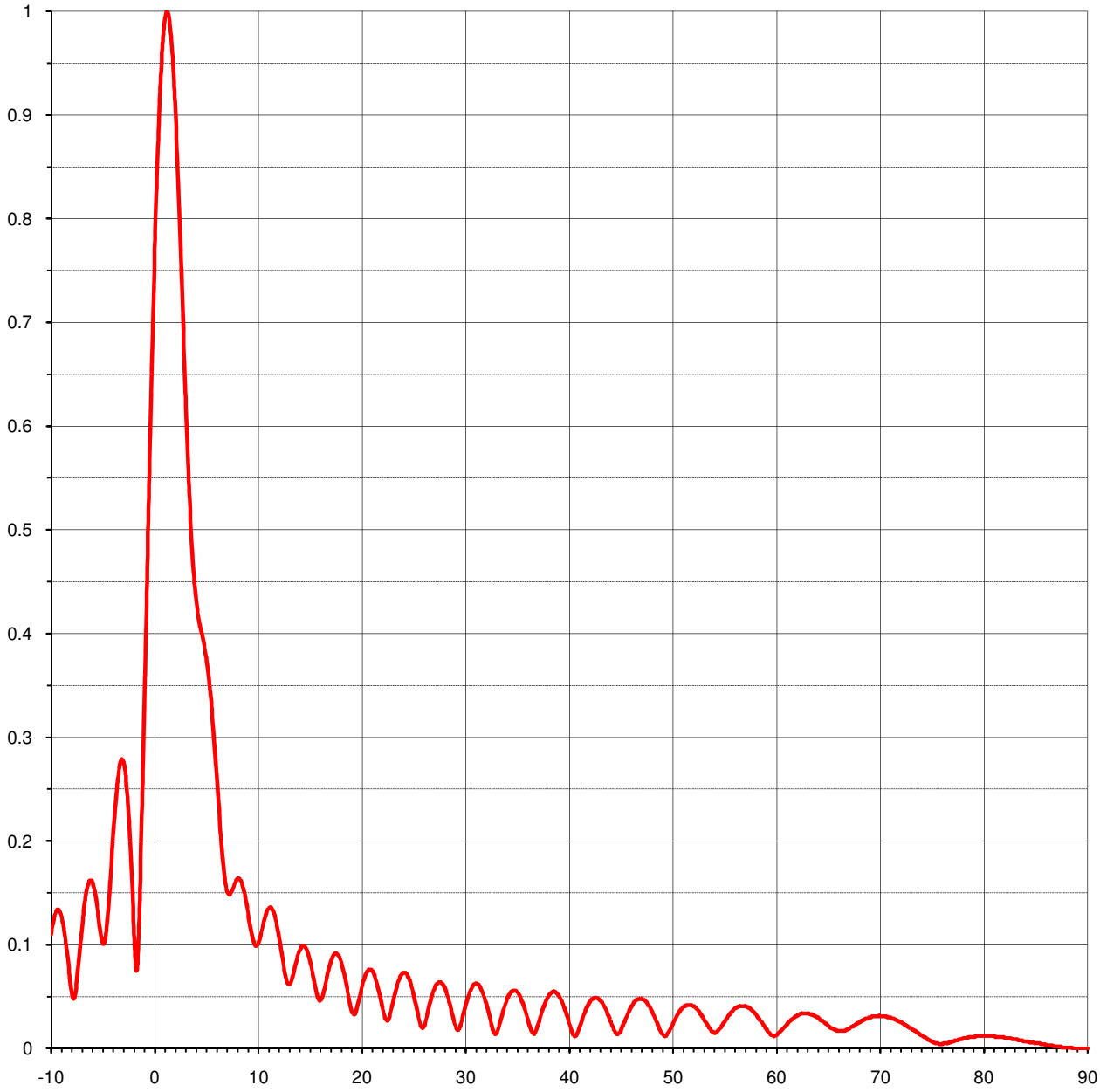
ELEVATION PATTERN

RMS Gain at Main Lobe	**17.00 (12.30 dB)**	Beam Tilt	**1.20 deg**
RMS Gain at Horizontal	**10.10 (10.04 dB)**	Frequency	**653.00 MHz**
Calculated / Measured	**Calculated**	Drawing #	**19E170120-90**



Dielectric

Proposal Number	**C-04033-2**	Revision:	**2**
Date	**10-Jun-10**		
Call Letters	**WLS**	Channel	**44**
Location	**Chicago, IL**		
Customer			
Antenna Type	**TFU-19ETT/VP-R S140**		

TABULATION OF ELEVATION PATTERN

Elevation Pattern Drawing #: **19E170120-90**

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.110	2.4	0.797	10.6	0.121	30.5	0.055	51.0	0.039	71.5	0.028
-9.5	0.133	2.6	0.738	10.8	0.129	31.0	0.062	51.5	0.042	72.0	0.025
-9.0	0.128	2.8	0.678	11.0	0.134	31.5	0.059	52.0	0.041	72.5	0.022
-8.5	0.095	3.0	0.620	11.5	0.133	32.0	0.046	52.5	0.037	73.0	0.019
-8.0	0.053	3.2	0.567	12.0	0.113	32.5	0.027	53.0	0.030	73.5	0.016
-7.5	0.067	3.4	0.520	12.5	0.082	33.0	0.014	53.5	0.021	74.0	0.013
-7.0	0.119	3.6	0.482	13.0	0.062	33.5	0.028	54.0	0.016	74.5	0.009
-6.5	0.156	3.8	0.452	13.5	0.073	34.0	0.045	54.5	0.018	75.0	0.007
-6.0	0.160	4.0	0.431	14.0	0.093	34.5	0.055	55.0	0.025	75.5	0.005
-5.5	0.132	4.2	0.417	14.5	0.099	35.0	0.055	55.5	0.032	76.0	0.004
-5.0	0.101	4.4	0.406	15.0	0.087	35.5	0.046	56.0	0.038	76.5	0.005
-4.5	0.133	4.6	0.397	15.5	0.063	36.0	0.031	56.5	0.041	77.0	0.007
-4.0	0.207	4.8	0.387	16.0	0.046	36.5	0.016	57.0	0.041	77.5	0.008
-3.5	0.265	5.0	0.375	16.5	0.059	37.0	0.021	57.5	0.039	78.0	0.010
-3.0	0.276	5.2	0.358	17.0	0.081	37.5	0.037	58.0	0.034	78.5	0.011
-2.8	0.263	5.4	0.338	17.5	0.092	38.0	0.049	58.5	0.027	79.0	0.011
-2.6	0.239	5.6	0.314	18.0	0.086	38.5	0.055	59.0	0.020	79.5	0.012
-2.4	0.204	5.8	0.287	18.5	0.066	39.0	0.052	59.5	0.014	80.0	0.012
-2.2	0.160	6.0	0.258	19.0	0.040	39.5	0.042	60.0	0.013	80.5	0.012
-2.0	0.111	6.2	0.229	19.5	0.035	40.0	0.027	60.5	0.017	81.0	0.012
-1.8	0.075	6.4	0.201	20.0	0.056	40.5	0.013	61.0	0.022	81.5	0.011
-1.6	0.096	6.6	0.178	20.5	0.073	41.0	0.018	61.5	0.028	82.0	0.010
-1.4	0.163	6.8	0.160	21.0	0.076	41.5	0.033	62.0	0.031	82.5	0.010
-1.2	0.246	7.0	0.151	21.5	0.064	42.0	0.044	62.5	0.034	83.0	0.009
-1.0	0.336	7.2	0.148	22.0	0.042	42.5	0.049	63.0	0.034	83.5	0.008
-0.8	0.428	7.4	0.151	22.5	0.027	43.0	0.047	63.5	0.033	84.0	0.007
-0.6	0.520	7.6	0.156	23.0	0.041	43.5	0.040	64.0	0.030	84.5	0.006
-0.4	0.610	7.8	0.161	23.5	0.062	44.0	0.028	64.5	0.026	85.0	0.005
-0.2	0.694	8.0	0.164	24.0	0.073	44.5	0.016	65.0	0.022	85.5	0.004
0.0	0.771	8.2	0.163	24.5	0.070	45.0	0.016	65.5	0.019	86.0	0.003
0.2	0.839	8.4	0.160	25.0	0.055	45.5	0.028	66.0	0.017	86.5	0.003
0.4	0.896	8.6	0.152	25.5	0.032	46.0	0.039	66.5	0.017	87.0	0.002
0.6	0.942	8.8	0.142	26.0	0.020	46.5	0.046	67.0	0.019	87.5	0.001
0.8	0.975	9.0	0.131	26.5	0.038	47.0	0.048	67.5	0.022	88.0	0.001
1.0	0.994	9.2	0.118	27.0	0.056	47.5	0.045	68.0	0.025	88.5	0.001
1.2	1.000	9.4	0.108	27.5	0.064	48.0	0.037	68.5	0.028	89.0	0.000
1.4	0.993	9.6	0.101	28.0	0.060	48.5	0.026	69.0	0.030	89.5	0.000
1.6	0.973	9.8	0.099	28.5	0.045	49.0	0.015	69.5	0.031	90.0	0.000
1.8	0.942	10.0	0.100	29.0	0.025	49.5	0.013	70.0	0.031		
2.0	0.901	10.2	0.105	29.5	0.020	50.0	0.022	70.5	0.031		
2.2	0.852	10.4	0.113	30.0	0.038	50.5	0.032	71.0	0.030		