WNJU Application for Construction Permit at WTC

Antenna Technical Data specified in 47 C.F.R. Section 73.625(c)

The tabulations and drawings in Exhibit 1 (attached) provide the information required under 47 C.F.R Section 73.625(c). The antenna proposed in this application is a Dielectric model TFU-20GTH-O6SP-A slot antenna with 1.0 degrees of electrical beam tilt and no mechanical beam tilt. The main beam axis of symmetry of the antenna azimuth pattern is 15 degrees true.

This application does not propose use of elliptical or circular polarization.

Prepared by Doug Lung

TABULATION OF AZIMUTH PATTERN: Dielectric TFU-20GTH-O6SP-A
Main beam axis of symmetry: 15° true
Electrical Beam Tilt: **1.0º**
Main Beam Calculated Max. H-pol Azimuth Pattern Gain (peak):   1.30   1.14 dBd
Maximum Main Beam H-Pol. Effective Radiated Power (ERP):   530.0 kW 27.24 dBk

Angle	RF	dBk	ERP kW
0	0.931	26.6	459.4
10	0.940	26.7	468.7
20	0.940	26.7	468.7
30	0.931	26.6	459.4
40	0.897	26.3	426.6
50	0.837	25.7	370.9
60	0.789	25.2	329.8
70	0.811	25.4	348.5
80	0.898	26.3	426.9
90	0.978	27.1	507.0
100	0.998	27.2	527.7
110	0.950	26.8	478.2
120	0.870	26.0	401.0
130	0.820	25.5	356.2
140	0.837	25.7	371.1
150	0.882	26.1	412.0
160	0.894	26.3	423.2
170	0.860	25.9	391.9
180	0.811	25.4	348.9
190	0.781	25.1	323.1
200	0.781	25.1	323.1
210	0.811	25.4	348.9
220	0.860	25.9	391.9
230	0.894	26.3	423.2
240	0.882	26.1	412.0
250	0.837	25.7	371.1
260	0.820	25.5	356.2
270	0.870	26.0	401.0
280	0.950	26.8	478.2
290	0.998	27.2	527.7
300	0.978	27.1	507.0
310	0.898	26.3	426.9
320	0.811	25.4	348.5
330	0.789	25.2	329.8
340	0.837	25.7	370.9
350	0.897	26.3	426.6

Maximum

Angle	RF	dBk	ERP kW
15	0.941	26.7	469.3
98	1.000	27.2	530.0
157	0.896	26.3	425.2
233	0.896	26.3	425.2
292	1.000	27.2	530.0

Minimum

| Angle	RF	dBk	ERP kW
62	0.786	25.2	327.8
132	0.818	25.5	354.6
195	0.777	25.0	319.6
258	0.818	25.5	354.6
328	0.786	25.2	327.8

PLOT OF AZIMUTH PATTERN (Relative field): Dielectric TFU-20GTH-O6SP-A
Main beam axis of symmetry: 15° true
Electrical Beam Tilt: 1.0º
Main Beam Calculated Max. H-pol Azimuth Pattern Gain (peak):   1.30   1.14 dBd
Maximum Main Beam H-Pol. Effective Radiated Power (ERP):   530.0 kW 27.24 dBk
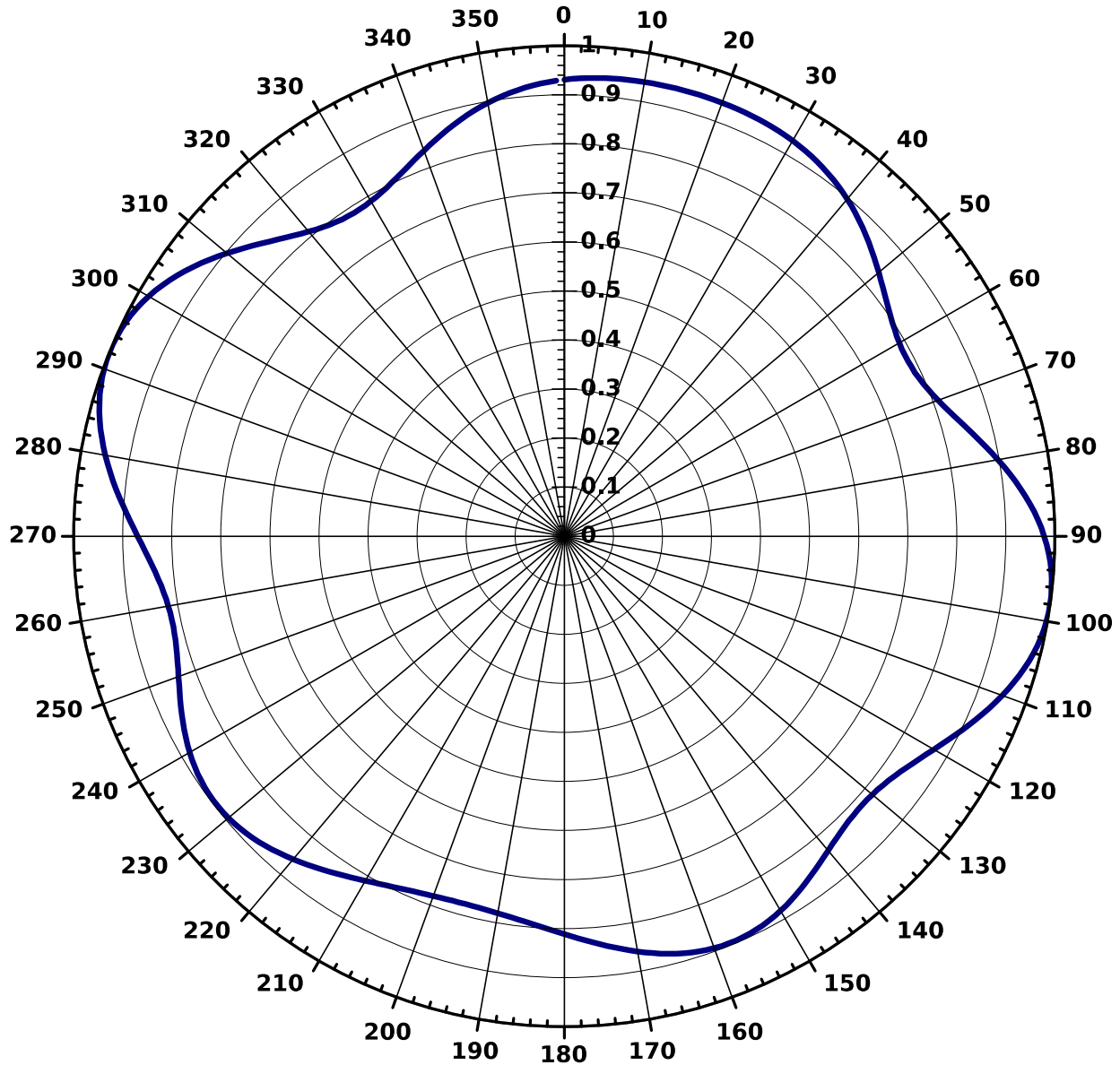
Blue plot shows azimuth pattern relative field for horizontal polarization
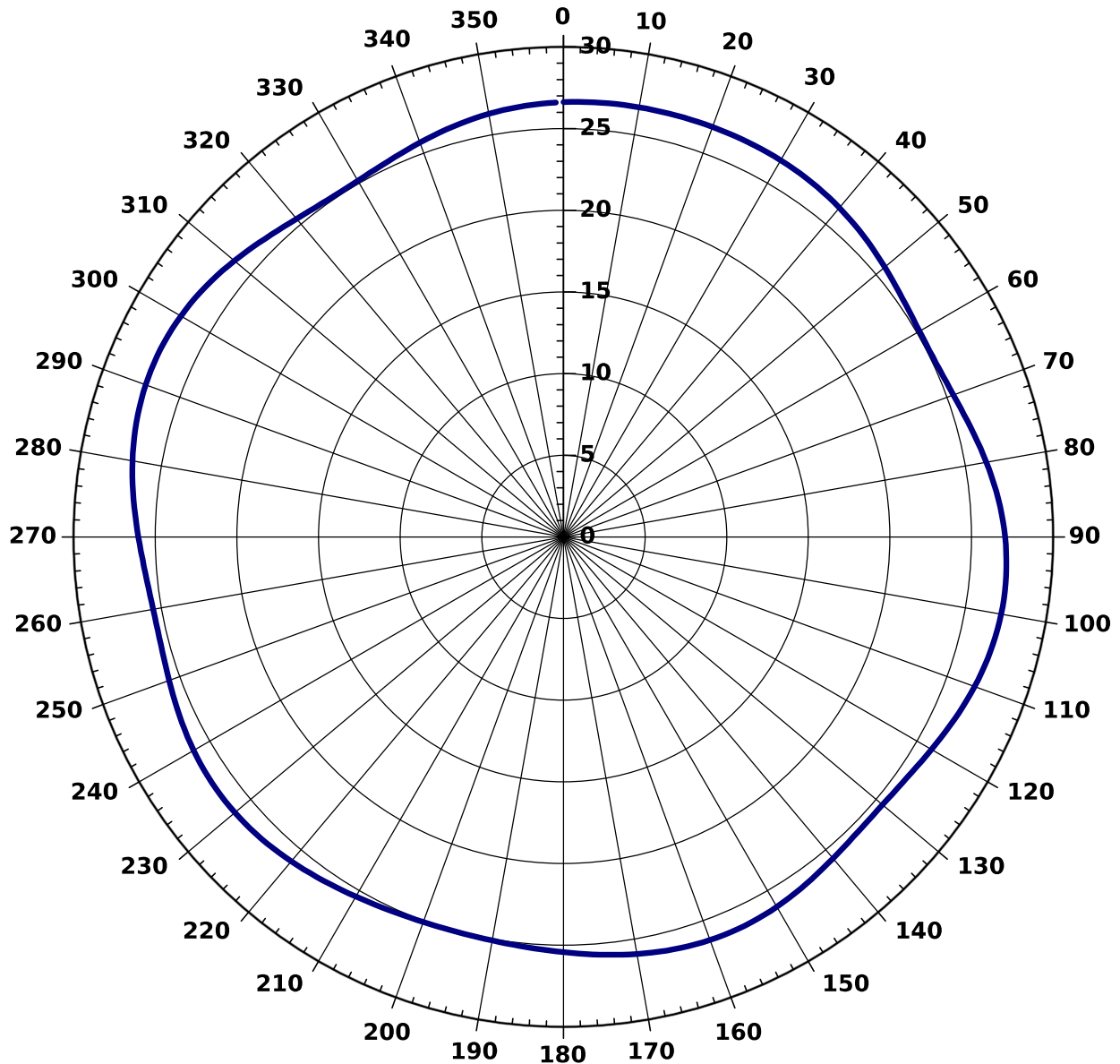
PLOT OF AZIMUTH PATTERN ERP (dBk): Dielectric TFU-20GTH-O6SP-A
Main beam axis of symmetry: 15° true
Electrical Beam Tilt: 1.0º
Main Beam Calculated Max. H-pol Azimuth Pattern Gain (peak):   1.30   1.14 dBd
Maximum Main Beam H-Pol. Effective Radiated Power (ERP):   530.0 kW 27.24 dBk

Blue plot shows effective radiated power (dBk) for horizontal polarization

ELEVATION PATTERN (Relative Field): Dielectric TFU-20GTH-O6SP-A
Electrical Beam Tilt: 1.0°

Calculated Maximum Elevation Gain:	17.50	12.43 dBd
RMS Gain at Horizontal:	13.50	11.30 dBd
Maximum Effective Radiated Power:	530.0 kW	27.24 dBk

Depression Angle (-5 to 10 degrees)

Depression Angle (-10 to 90 degrees)
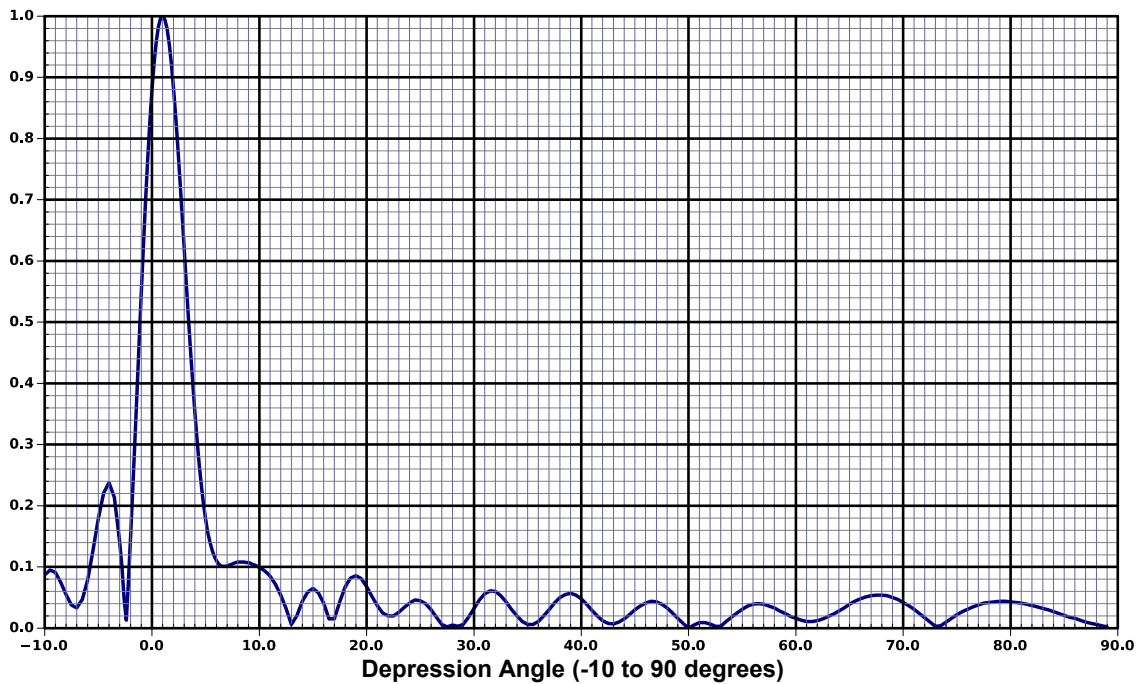
ELEVATION PATTERN: Dielectric TFU-20GTH-O6SP-A
Electrical Beam Tilt: 1.0°

Calculated Maximum Elevation Gain:	17.50	12.43 dBd
RMS Gain at Horizontal:	13.50	11.30 dBd
Maximum Effective Radiated Power:	530.0 kW	27.24 dBk

Depression Angle (-5 to 10 degrees)

Depression Angle (-10 to 90 degrees)

Tabulated Elevation Pattern (Relative Field): Dielectric TFU-20GTH-O6SP-A
Electrical Beam Tilt: 1.0°
Calculated Maximum Elevation Gain: 17.50   12.43 dBd
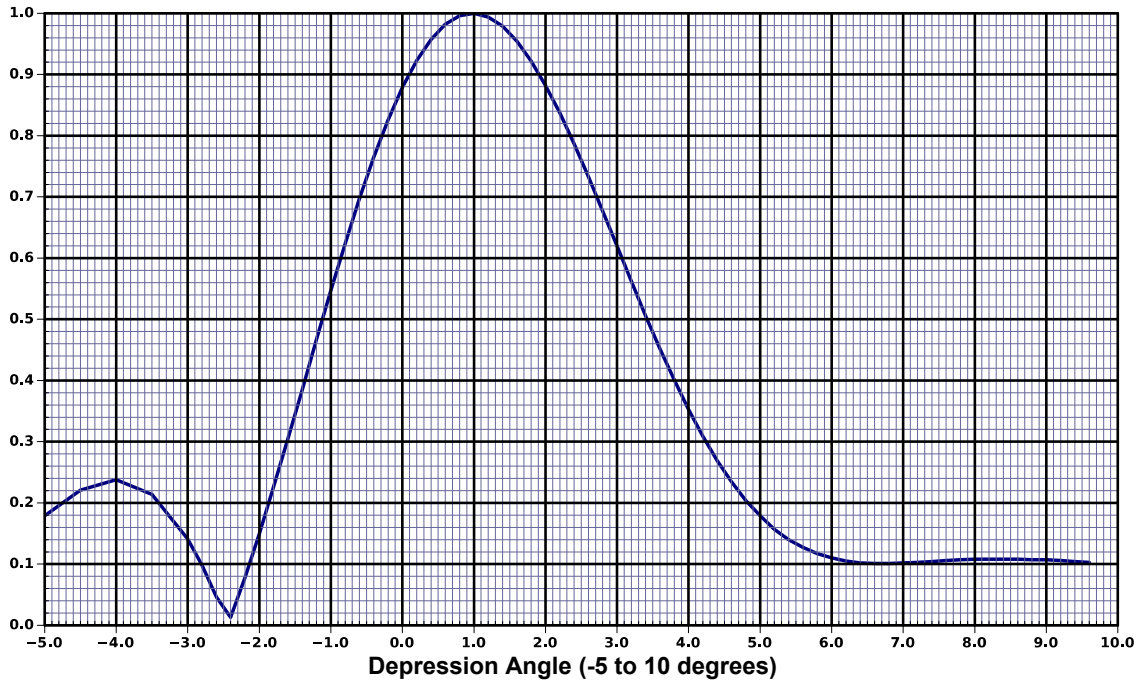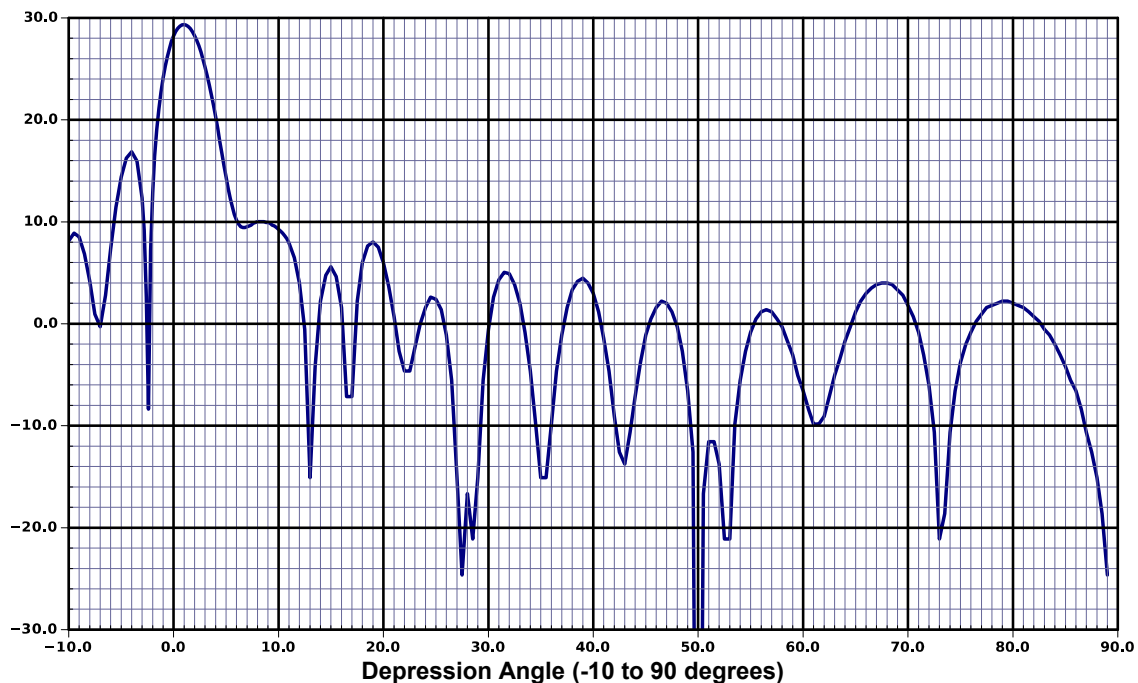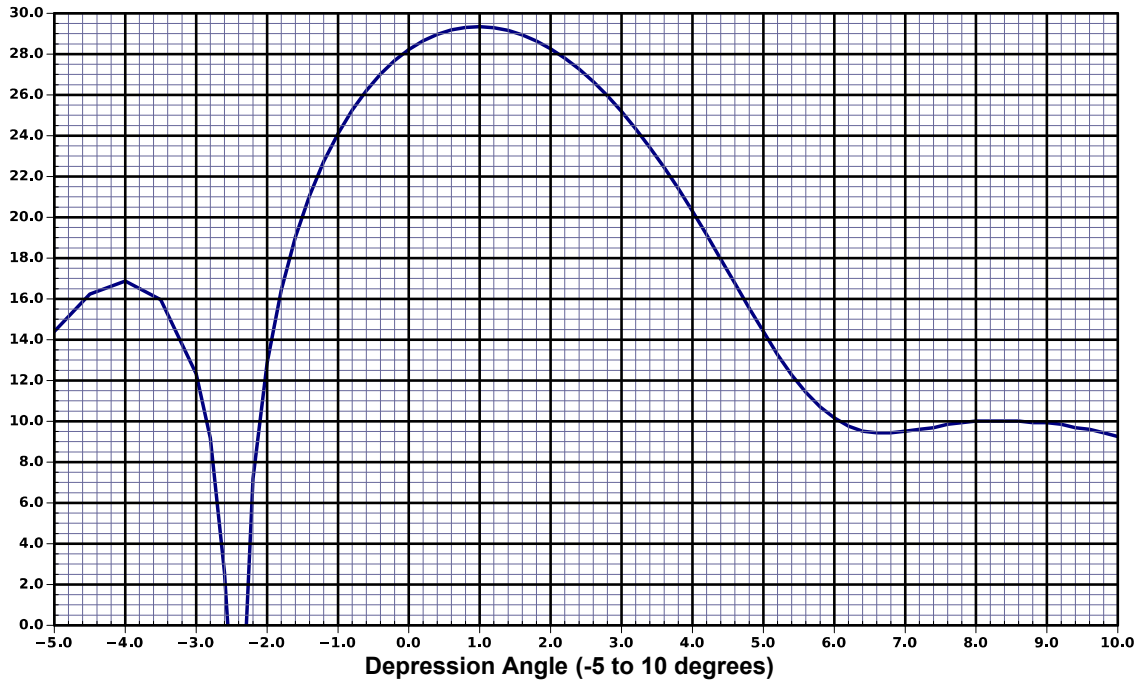**RMS Gain at Horizontal:**   13.50   11.30 dBd
Maximum Effective Radiated Power: 530.0 kW   27.24 dBk

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
−10.0	0.087	1.2	0.994	8.2	0.108	21.5	0.025	39.0	0.057	56.5	0.040	74.0	0.010
−9.5	0.095	1.4	0.979	8.4	0.108	22.0	0.020	39.5	0.054	57.0	0.039	74.5	0.016
−9.0	0.091	1.6	0.954	8.6	0.108	22.5	0.020	40.0	0.048	57.5	0.036	75.0	0.022
−8.5	0.075	1.8	0.922	8.8	0.107	23.0	0.026	40.5	0.039	58.0	0.033	75.5	0.027
−8.0	0.055	2.0	0.882	9.0	0.107	23.5	0.034	41.0	0.029	58.5	0.028	76.0	0.031
−7.5	0.038	2.2	0.837	9.2	0.106	24.0	0.041	41.5	0.020	59.0	0.024	76.5	0.035
−7.0	0.033	2.4	0.787	9.4	0.104	24.5	0.046	42.0	0.012	59.5	0.019	77.0	0.038
−6.5	0.047	2.6	0.733	9.6	0.103	25.0	0.045	42.5	0.008	60.0	0.016	77.5	0.041
−6.0	0.079	2.8	0.677	9.8	0.101	25.5	0.040	43.0	0.007	60.5	0.013	78.0	0.042
−5.5	0.127	3.0	0.620	10.0	0.099	26.0	0.030	43.5	0.010	61.0	0.011	78.5	0.043
−5.0	0.179	3.2	0.562	10.2	0.097	26.5	0.018	44.0	0.015	61.5	0.011	79.0	0.044
−4.5	0.221	3.4	0.506	10.4	0.095	27.0	0.006	44.5	0.022	62.0	0.012	79.5	0.044
−4.0	0.238	3.6	0.452	10.6	0.092	27.5	0.002	45.0	0.030	62.5	0.015	80.0	0.043
−3.5	0.214	3.8	0.401	10.8	0.089	28.0	0.005	45.5	0.036	63.0	0.019	80.5	0.042
−3.0	0.141	4.0	0.353	11.0	0.085	28.5	0.003	46.0	0.041	63.5	0.023	81.0	0.041
−2.8	0.098	4.2	0.309	11.5	0.072	29.0	0.006	46.5	0.044	64.0	0.028	81.5	0.039
−2.6	0.046	4.4	0.269	12.0	0.054	29.5	0.018	47.0	0.043	64.5	0.033	82.0	0.037
−2.4	0.013	4.6	0.235	12.5	0.032	30.0	0.032	47.5	0.039	65.0	0.039	82.5	0.035
−2.2	0.078	4.8	0.204	13.0	0.006	30.5	0.046	48.0	0.033	65.5	0.044	83.0	0.032
−2.0	0.150	5.0	0.179	13.5	0.021	31.0	0.056	48.5	0.025	66.0	0.048	83.5	0.030
−1.8	0.226	5.2	0.157	14.0	0.044	31.5	0.061	49.0	0.016	66.5	0.051	84.0	0.027
−1.6	0.305	5.4	0.140	14.5	0.059	32.0	0.060	49.5	0.008	67.0	0.053	84.5	0.024
−1.4	0.385	5.6	0.127	15.0	0.065	32.5	0.053	50.0	0.000	67.5	0.054	85.0	0.021
−1.2	0.467	5.8	0.117	15.5	0.058	33.0	0.043	50.5	0.005	68.0	0.054	85.5	0.018
−1.0	0.547	6.0	0.110	16.0	0.041	33.5	0.031	51.0	0.009	68.5	0.053	86.0	0.016
−0.8	0.624	6.2	0.105	16.5	0.015	34.0	0.020	51.5	0.009	69.0	0.050	86.5	0.013
−0.6	0.697	6.4	0.102	17.0	0.015	34.5	0.011	52.0	0.007	69.5	0.047	87.0	0.010
−0.4	0.765	6.6	0.101	17.5	0.044	35.0	0.006	52.5	0.003	70.0	0.042	87.5	0.008
−0.2	0.826	6.8	0.101	18.0	0.068	35.5	0.006	53.0	0.003	70.5	0.037	88.0	0.006
0.0	0.879	7.0	0.102	18.5	0.082	36.0	0.011	53.5	0.011	71.0	0.031	88.5	0.004
0.2	0.923	7.2	0.103	19.0	0.086	36.5	0.020	54.0	0.018	71.5	0.024	89.0	0.002
0.4	0.957	7.4	0.104	19.5	0.081	37.0	0.030	54.5	0.025	72.0	0.017	89.5	0.001
0.6	0.982	7.6	0.106	20.0	0.068	37.5	0.041	55.0	0.031	72.5	0.010	90.0	0.000
0.8	0.996	7.8	0.107	20.5	0.052	38.0	0.050	55.5	0.036	73.0	0.003		
1.0	1.000	8.0	0.108	21.0	0.037	38.5	0.055	56.0	0.039	73.5	0.004		