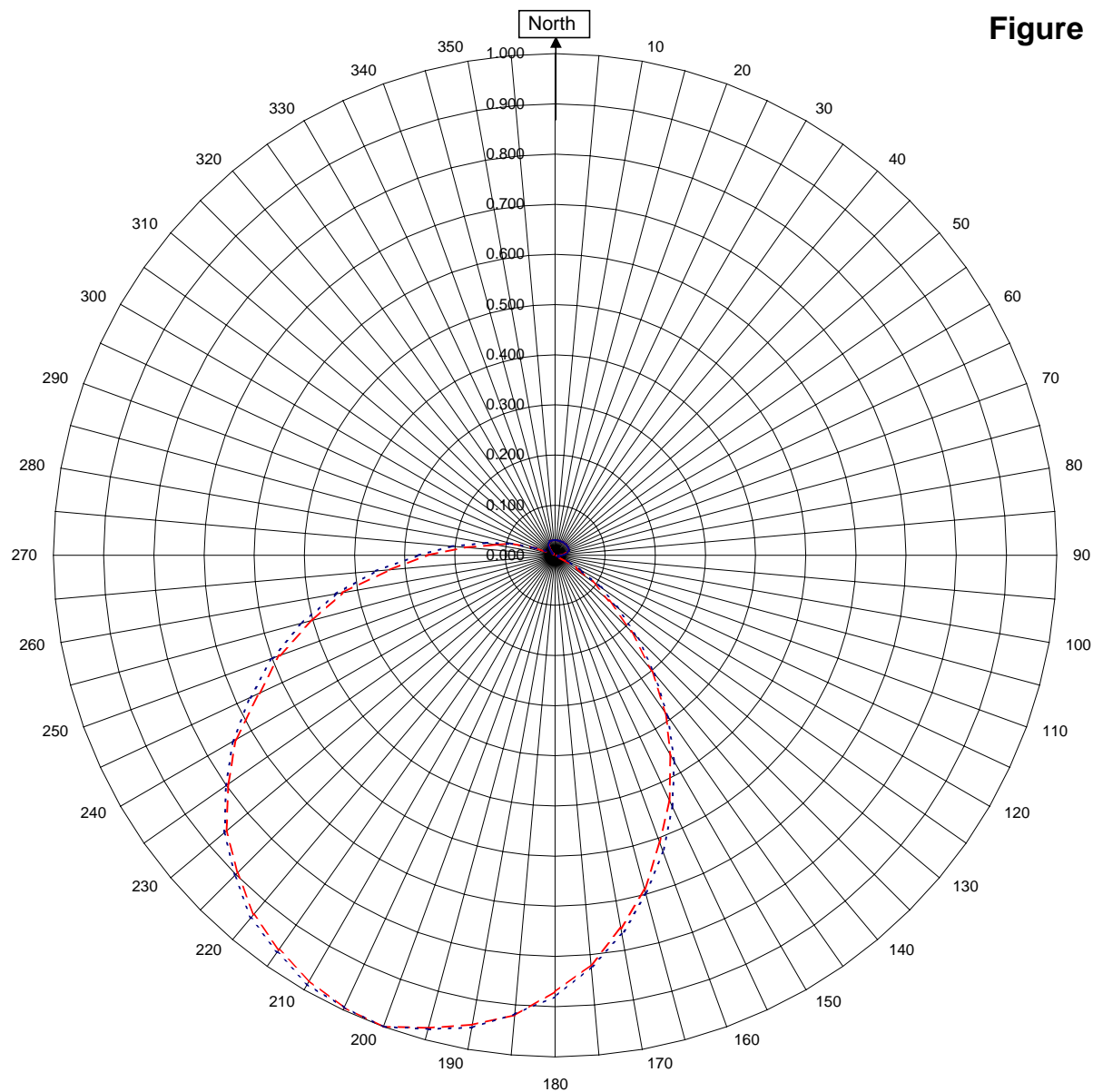


Shively Labs

Shively Labs, a division of Howell Laboratories, Inc. Bridgton, ME (207)647-3327

Figure 1a



KHOL Jackson, WY

KHOL
August 9, 2010

Horizontal RMS	0.000
Vertical RMS	0.460
H/V Composite RMS	0.461
FCC Composite RMS	0.467

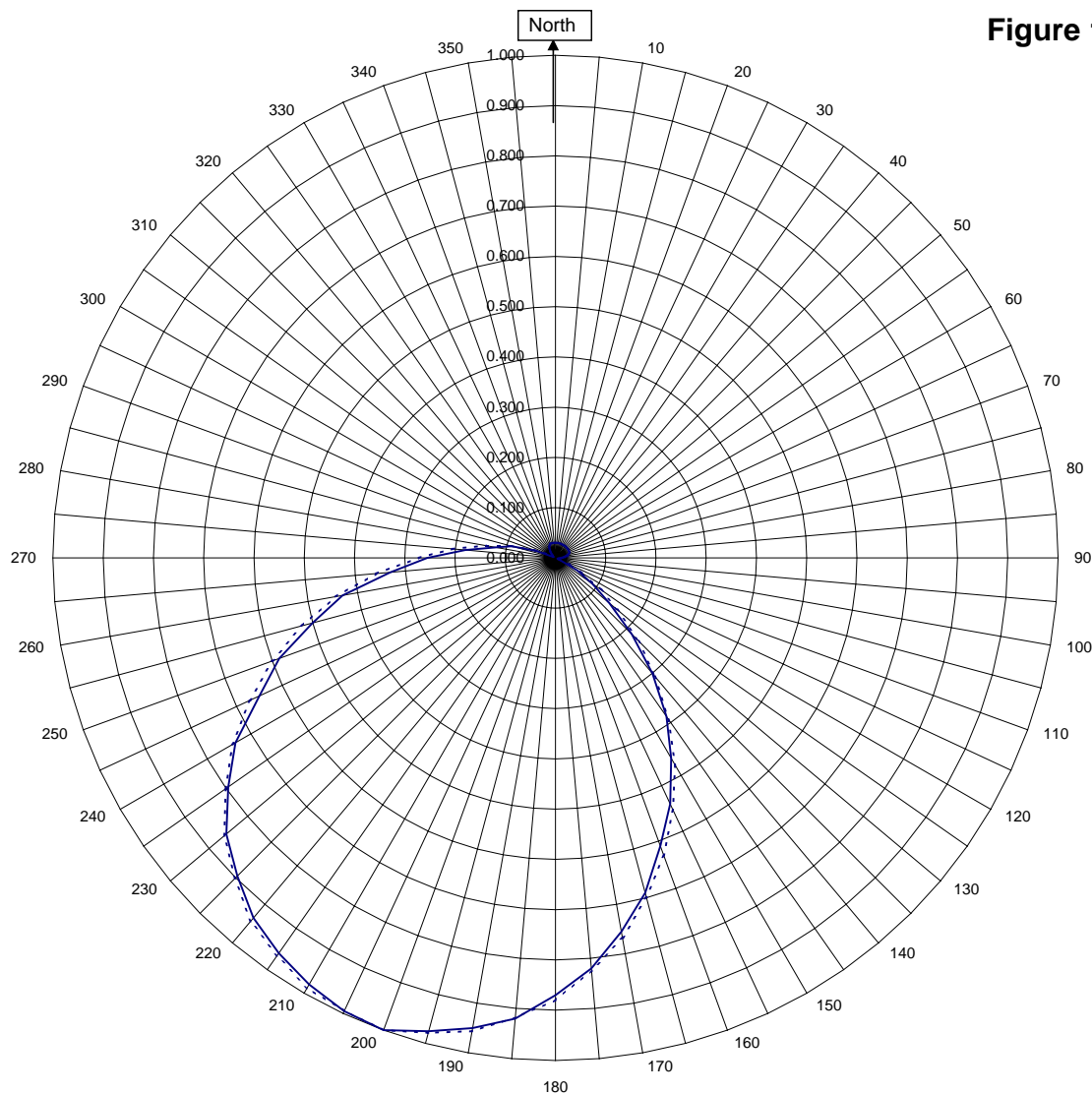
Frequency	89.1 / 400.95 mHz
Plot	Relative Field
Scale	4.5 : 1
See Figure 2 for Mechanical Details	

Antenna Model	Scala CLFM-8
Pattern Type	Directional Azimuth

Shively Labs

Shively Labs, a division of Howell Laboratories, Inc. Bridgton, ME (207)647-3327

Figure 1b



KHOL Jackson, WY

KHOL
August 9, 2010

 H/V Composite RMS	0.461
 FCC Composite RMS	0.467

Frequency	89.1 / 400.95 MHz
Plot	Relative Field
Scale	4.5 : 1
See Figure 2 for Mechanical Details	

Antenna Model	Scala CLFM-8
Pattern Type	Directional H/V Composite

Figure 1b

Tabulation of Vertical Azimuth Pattern
KHOL Jackson, WY

Azimuth	Rel Field	Azimuth	Rel Field
0	0.030	180	0.870
10	0.030	190	0.950
20	0.030	200	1.000
30	0.030	210	0.980
40	0.030	220	0.935
45	0.030	225	0.895
50	0.030	230	0.855
60	0.030	240	0.735
70	0.030	250	0.585
80	0.020	260	0.430
90	0.010	270	0.255
100	0.006	280	0.120
110	0.004	290	0.040
120	0.050	300	0.004
130	0.140	310	0.006
135	0.215	315	0.010
140	0.300	320	0.014
150	0.460	330	0.024
160	0.610	340	0.030
170	0.755	350	0.030

Figure 1c

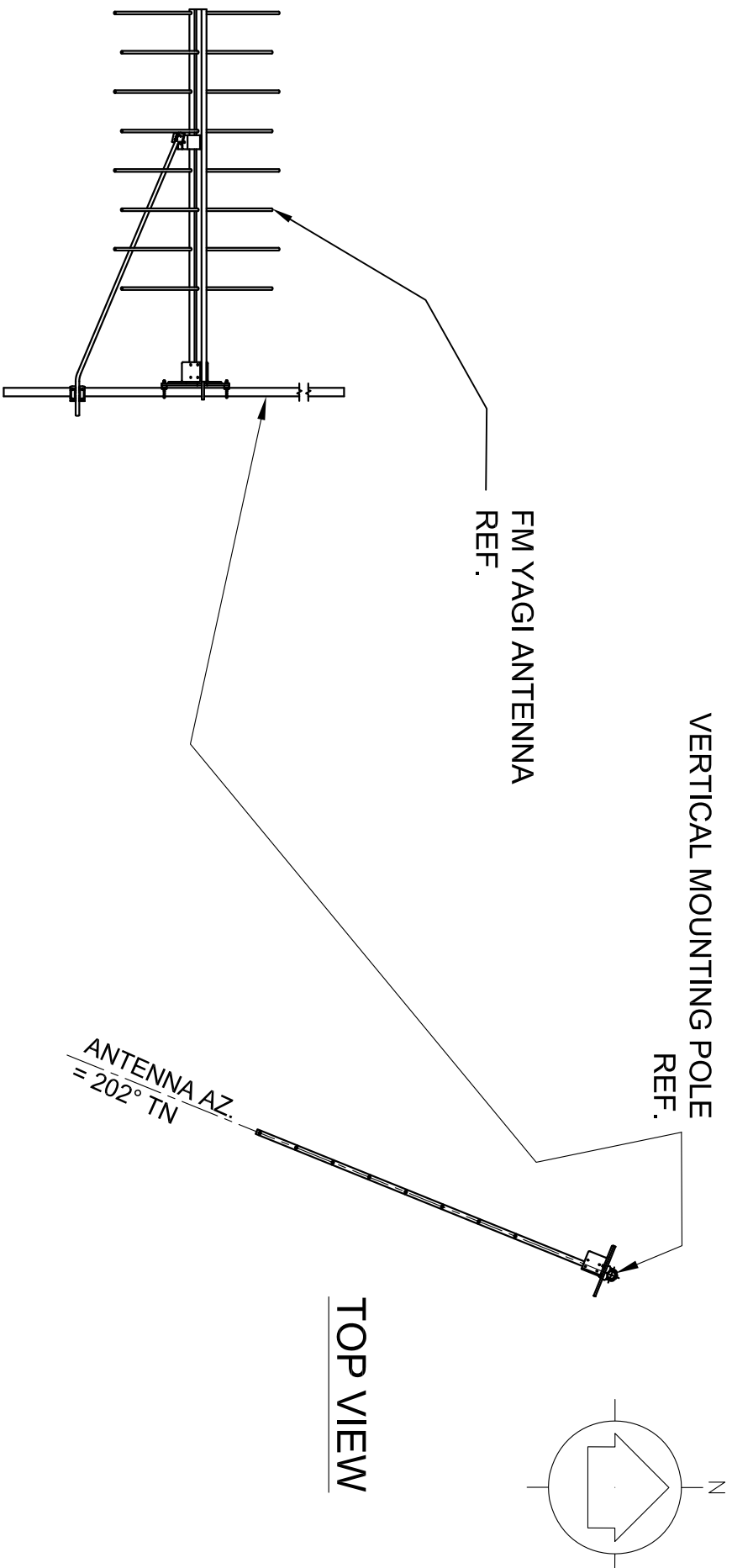
Tabulation of Composite Azimuth Pattern
KHOL Jackson, WY

Azimuth	Rel Field	Azimuth	Rel Field
0	0.030	180	0.870
10	0.030	190	0.950
20	0.030	200	1.000
30	0.030	210	0.980
40	0.030	220	0.935
45	0.030	225	0.895
50	0.030	230	0.855
60	0.030	240	0.735
70	0.030	250	0.585
80	0.020	260	0.430
90	0.010	270	0.255
100	0.006	280	0.120
110	0.004	290	0.040
120	0.050	300	0.004
130	0.140	310	0.006
135	0.215	315	0.010
140	0.300	320	0.014
150	0.460	330	0.024
160	0.610	340	0.030
170	0.755	350	0.030

Figure 1d

Tabulation of FCC Directional Composite
KHOL Jackson, WY

Azimuth	Rel Field	Azimuth	Rel Field
0	0.030	180	0.880
10	0.030	190	0.956
20	0.030	200	1.000
30	0.030	210	0.988
40	0.030	220	0.944
50	0.030	230	0.860
60	0.030	240	0.742
70	0.030	250	0.600
80	0.024	260	0.444
90	0.014	270	0.272
100	0.007	280	0.140
110	0.006	290	0.043
120	0.062	300	0.005
130	0.160	310	0.008
140	0.308	320	0.016
150	0.476	330	0.026
160	0.630	340	0.030
170	0.768	350	0.030



SIDE VIEW

TOP VIEW

SHIVELY LABS				
A DIVISION OF HOWELL LABORATORIES INC., BRIDGTON, MAINE				
SHOP ORDER:	FREQUENCY:	SCALE:	DRAWN BY:	DAB
N/A	89.1 MHz	N.T.S.	APPROVED BY:	
TITLE: KHOL SCALA YAGI ANTENNA SYSTEM				
DATE: 8/13/10		FIGURE 2		

S.O. KHOL

VALIDATION OF TOTAL POWER GAIN CALCULATION

KHOL Jackson, WY

Scala CLFM-8

Elevation Gain of Antenna 1.2

V RMS 0.461

Vertical Azimuth Gain equals $1/(\text{RMS})^2$ 4.705

***Total Vertical Power Gain is the Elevation Gain Times the Azimuth Gain**

Total Vertical Power Gain 5.647

=====

ERP divided by Vertical Power Gain equals Antenna Input Power

0.6 kW ERP Divided by V Gain 5.647 Equals 0.106 kW Antenna Input Pow

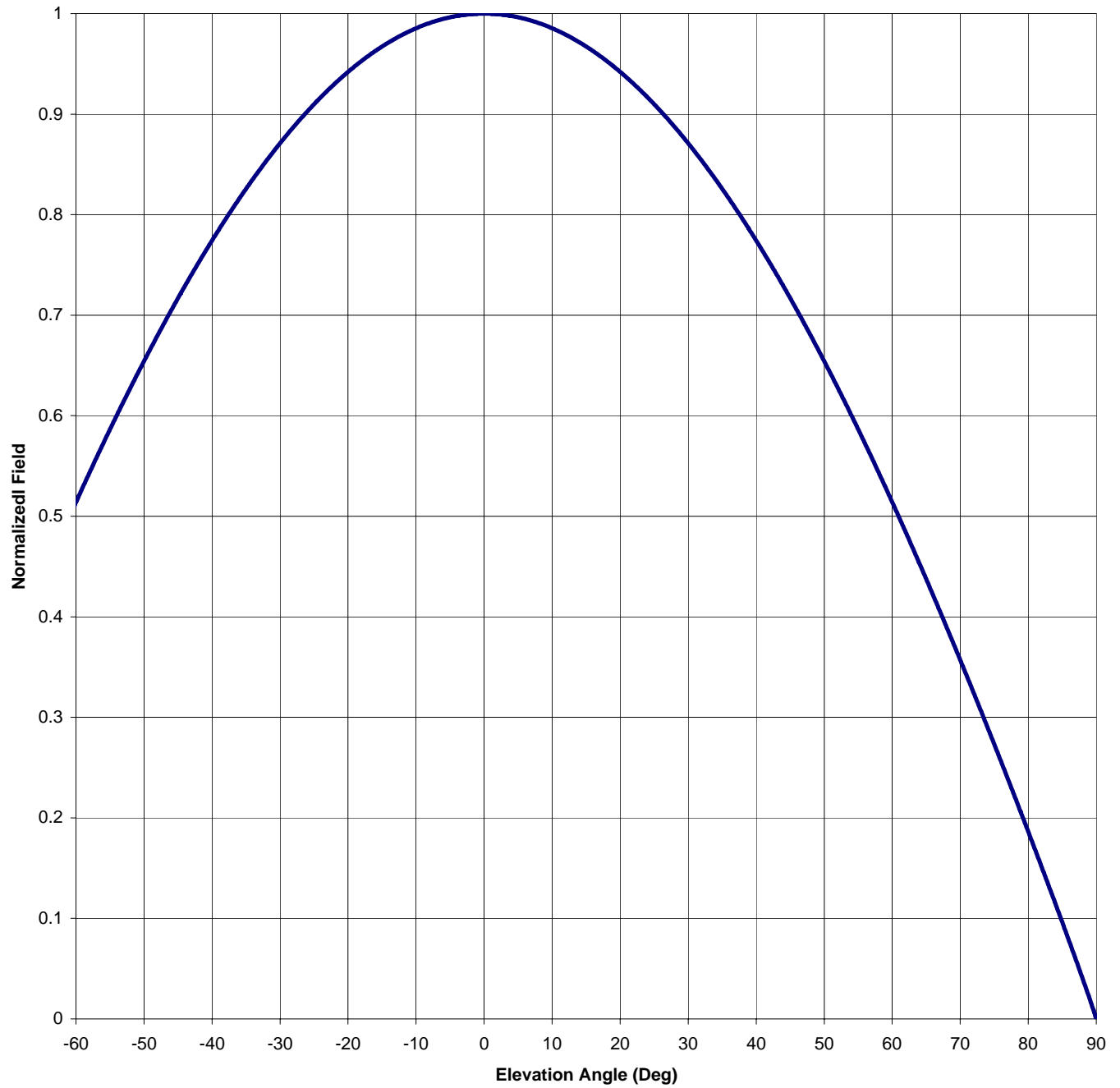
Antenna Mfg.: Shively Labs
Antenna Type: Scala CLFM-8

Date: 8/9/2010

Station: KHOL
Frequency: 89.1
Channel #: 206

Beam Tilt	0	
Gain (Max)	5.647	7.518 dB
Gain (Horizon)	5.647	7.518 dB

Figure: Figure 3



Antenna Mfg.: Shively Labs
 Antenna Type: Scala CLFM-8
 Station: KHOL
 Frequency: 89.1
 Channel #: 206

Date: 8/9/2010

Beam Tilt 0
 Gain (Max) 5.647 7.518 dB
 Gain (Horizon) 5.647 7.518 dB

Figure: Figure 3

Angle of Depression (Deg)	Relative Field	Angle of Depression (Deg)	Relative Field	Angle of Depression (Deg)	Relative Field	Angle of Depression (Deg)	Relative Field
-90	0.000	-44	0.729	0	1.000	46	0.705
-89	0.021	-43	0.741	1	1.000	47	0.693
-88	0.040	-42	0.752	2	0.999	48	0.680
-87	0.059	-41	0.763	3	0.999	49	0.667
-86	0.078	-40	0.774	4	0.998	50	0.654
-85	0.096	-39	0.785	5	0.996	51	0.641
-84	0.114	-38	0.796	6	0.995	52	0.628
-83	0.133	-37	0.806	7	0.993	53	0.614
-82	0.151	-36	0.816	8	0.991	54	0.600
-81	0.168	-35	0.826	9	0.988	55	0.586
-80	0.186	-34	0.835	10	0.985	56	0.572
-79	0.204	-33	0.845	11	0.982	57	0.558
-78	0.221	-32	0.854	12	0.979	58	0.544
-77	0.239	-31	0.862	13	0.975	59	0.529
-76	0.256	-30	0.871	14	0.971	60	0.514
-75	0.273	-29	0.879	15	0.967	61	0.499
-74	0.290	-28	0.887	16	0.963	62	0.484
-73	0.307	-27	0.895	17	0.958	63	0.469
-72	0.324	-26	0.903	18	0.953	64	0.453
-71	0.341	-25	0.910	19	0.948	65	0.437
-70	0.357	-24	0.917	20	0.942	66	0.422
-69	0.373	-23	0.924	21	0.936	67	0.406
-68	0.390	-22	0.930	22	0.930	68	0.390
-67	0.406	-21	0.936	23	0.924	69	0.373
-66	0.422	-20	0.942	24	0.917	70	0.357
-65	0.437	-19	0.948	25	0.910	71	0.341
-64	0.453	-18	0.953	26	0.903	72	0.324
-63	0.469	-17	0.958	27	0.895	73	0.307
-62	0.484	-16	0.963	28	0.887	74	0.290
-61	0.499	-15	0.967	29	0.879	75	0.273
-60	0.514	-14	0.971	30	0.871	76	0.256
-59	0.529	-13	0.975	31	0.862	77	0.239
-58	0.544	-12	0.979	32	0.854	78	0.221
-57	0.558	-11	0.982	33	0.845	79	0.204
-56	0.572	-10	0.985	34	0.835	80	0.186
-55	0.586	-9	0.988	35	0.826	81	0.168
-54	0.600	-8	0.991	36	0.816	82	0.151
-53	0.614	-7	0.993	37	0.806	83	0.133
-52	0.628	-6	0.995	38	0.796	84	0.114
-51	0.641	-5	0.996	39	0.785	85	0.096
-50	0.654	-4	0.998	40	0.774	86	0.078
-49	0.667	-3	0.999	41	0.763	87	0.059
-48	0.680	-2	0.999	42	0.752	88	0.040
-47	0.693	-1	1.000	43	0.741	89	0.021
-46	0.705	0	1.000	44	0.729	90	0.000
-45	0.717			45	0.717		