

**SANTA ROSA, CA
K262CG
CP MINOR MODIFICATON**

This application requests a minor modification of K262CG (BNPFT-20130815ACQ).

Allocation discussion:

All exhibits were developed utilizing the USGS 3 second terrain database.

- E1 Channel study
- E1A Interference plot to 2nd adjacent stations KSXY-FM and primary station KZST
- E1B Aerial view of interference contour to KSXY
- E1C DA pattern
- E2 Contours

A channel study is included as E1 and interference plots demonstrating compliance with 74.1204. E2 shows overlap between the proposed, CP and short form 60 dBu contours and containment of the proposed 60 dBu within the KZST 60 dBu.

The proposed facility will be located inside the protected contours of 2nd adjacent channel KSXY-FM on 265A and primary station KZST on 261A. Therefore, an interference analysis has been conducted based on the U/D ratio of +40 dB at the proposed site. The KSXY (50:50) contour at the proposed site is 72.5 67.73 dBu and the (50:10) interference contour is 107.73 dBu. That contour is plotted on exhibit E1A and an aerial photograph as E1B demonstrating that it does not encompass any populated area or major highway.

Primar station KZST's contour at the proposed site is 64.74 dBu and the interfering contour is 104.74. This contour clearly does not reach the KZST city of license , Santa Rosa, and is in compliance with §74.1204(e).

Based on the fact that there are no buildings or major within the contour as confirmed by a careful examination of the aerial photograph in exhibit E1C, it is clear that the interference contour will not reach any populated area or major highways. Based on this showing, a waiver of Section 74.1204 is requested in accordance with *Living Way Ministries, Inc.* (FCC 08-242).

RF Exposure Calculation:

The RF contribution of the proposed translator was calculated using an F factor of 0.360 at 45 degrees depression angle for the Scala CLFM vertical dipole antenna mounted at 23 meters AGL and the formula provided below to be 4.9 $\mu\text{Watts}/\text{cm}^2$ or 2.45% of the maximum permissible 200 $\mu\text{Watts}/\text{cm}^2$ exposure for general population/uncontrolled exposure. This is less than the 5% requiring consideration.

$$S \text{ (RF in } \mu\text{Watts}/\text{cm}^2) = \frac{33.4 (F^2 - \text{Vert Factor}) \times (\text{H ERP} + \text{V ERP in Watts})}{R^2 \text{ (distance to radiation center in meters} - 2 \text{ m)}}$$



Charles M. Anderson November 19, 2013

E1 CHANNEL STUDY

REFERENCE CH# 263D - 100.5 MHz, Pwr= 0.14 kw DA, HAAT= 193.2 M, COR= 363 M DISPLAY DATES
 38 29 20.0 N. Average Protected F(50-50)= 15.63 km DATA 11-18-13
 123 01 53.0 W. Standard Directional SEARCH 11-18-13

CH CITY	CALL	TYPE STATE	ANT AZI <--	DIST FILE #	LAT LNG	PWR(kw) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
263B1 Gualala	KTDE	LIC NCN CA	308.9 128.5	59.91 BLH19930816KA	38 49 33.0 123 34 12.0	6.000 204	107.0 380	48.7 The Tide Community Broadca	-48.8*	2.4
263B Sacramento	KZZO	LIC DCN CA	83.6 264.9	169.59 BLH19890807KA	38 38 30.0 121 05 25.0	115.000 100	168.1 285	81.1 Cbs Radio Stations Inc.	-18.4	10.7
265A Forestville	KSXY	LIC _CX CA	30.0 210.1	31.68 BLH20110527ACZ	38 44 08.0 122 50 55.0	2.500 156	3.2 581	46.4 Sinclair Telecable, Inc. D	15.0	-15.3* (1)
262D Santa Rosa	K262CG	CP DV_ CA	0.0 0.0	0.00 BNPFT20130815ACQ	38 29 20.0 123 01 53.0	0.050 195	9.2 363	6.6 Redwood Empire Stereocaste	-14.0*	-13.3*
261A Santa Rosa	KZST	LIC _C_ CA	104.1 284.3	31.92 BLH19991015ABU	38 25 07.0 122 40 33.0	6.000 75	3.8 255	40.6 Redwood Empire Stereocaste	10.8	-9.4* (2)
264A San Rafael	KVVZ	LIC _CN CA	142.0 322.3	71.65 BLH19980123KB	37 58 49.0 122 31 39.0	6.000 100	46.7 215	15.8 Univision Radio License Co	14.9	22.7
261D Rohnert Park Petalu	KZST-FM2	LIC DC_ CA	109.2 289.4	32.62 BLFTB20000215ABN	38 23 31.0 122 40 40.0	1.200 171	0.0 321	2.2 Redwood Empire Stereocaste	15.7	21.0
260D Calistoga	K260BV	CP DH_ CA	59.9 240.2	40.12 BNPFT20130805AAC	38 40 09.0 122 37 53.0	0.003 910	0.0 1314	0.1 Your Christian Companion N	21.5	37.4
261D Petaluma	KZST-FM1	LIC DHN CA	114.6 294.8	41.95 BLFTB1	38 19 52.0 122 35 38.0	0.046	0.0 573	0.5 Redwood Empire Stereocaste	25.6	36.7
210B Angwin	KDFC	LIC _CN CA	59.9 240.2	40.12 BLED19840711DA	38 40 09.0 122 37 53.0	0.800 925	3.8 1341	40.6 Classical Public Radio Net	14.5R	25.6M
262L1 Clearlake	KMOB-LP	LIC ____ CA	33.0 213.3	61.71 BLL20040831ABY	38 57 13.0 122 38 32.0	0.100	427	39.0 Minds Of Business Inc.		36.3

Terrain database is USGS 03 SEC , R= 73.215 qualifying spacings or FCC minimum spacings in KM, M= Margin in KM
 In & Out distances between contours are shown at closest points. Reference zone= East Zone 2A, Co to 3rd adjacent.
 All separation margins (if shown) include rounding
 Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)
 "*"affixed to 'IN' or 'OUT' values = site inside protected contour.

- (1) See Technical Report and E1A and E1B for disproof of interference.
- (2) Primary station KZST does not receive any interference in city of license Santa Rosa.

#147418

Latitude: 38-29-20 N
Longitude: 123-01-53 W
ERP: 0.14 kW
Channel: 262
Frequency: 100.3 MHz
AMSL Height: 363.0 m
Elevation: 340.0 m
Horiz. Pattern: Directional

EXHIBIT E1A

INTERFERENCE CONTOUR = 107.73 DBU (50:10)
DOES NOT ENCOMPASS ANY POPULATED AREAS
OR MAJOR ROADS (SE AERIAL VIEW IN E1B).

KSXY 67.73 DBU

#147418

INTERFERENCE CONTOUR TO KZST
IS 104.74 DBU AND DOES NOT
REACH THE CITY OF LICENSE
(SANTA ROSA, CA)

KZST CONTOUR = 64.74 DBU

Scale 1:10,000

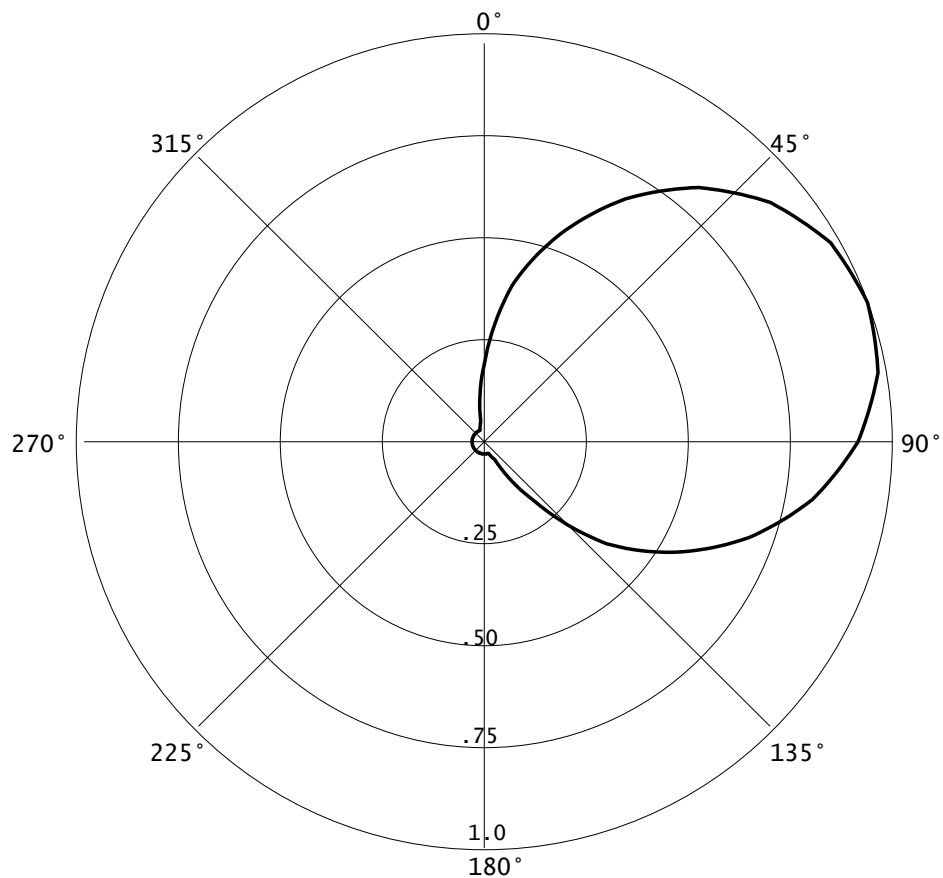
0 0.13 0.27 0.4 km

E1B
AERIAL PHOTOGRAPH OF PROPOSED 107.73 DBU (50:10)
INTERFERENCE CONTOUR TO KSXY



Graph is Relative Field

Azi	Field	dBk	kw
000	0.190	-22.964	0.005
010	0.390	-16.717	0.021
020	0.544	-13.827	0.041
030	0.690	-11.762	0.067
040	0.817	-10.294	0.093
050	0.916	-9.301	0.117
060	0.980	-8.714	0.134
070	1.000	-8.539	0.140
080	0.980	-8.714	0.134
090	0.916	-9.301	0.117
100	0.817	-10.294	0.093
110	0.690	-11.762	0.067
120	0.544	-13.827	0.041
130	0.390	-16.717	0.021
140	0.190	-22.964	0.005
150	0.050	-34.559	0.000
160	0.030	-38.996	0.000
170	0.030	-38.996	0.000
180	0.030	-38.996	0.000
190	0.030	-38.996	0.000
200	0.030	-38.996	0.000
210	0.030	-38.996	0.000
220	0.030	-38.996	0.000
230	0.030	-38.996	0.000
240	0.030	-38.996	0.000
250	0.030	-38.996	0.000
260	0.030	-38.996	0.000
270	0.030	-38.996	0.000
280	0.030	-38.996	0.000
290	0.030	-38.996	0.000
300	0.030	-38.996	0.000
310	0.030	-38.996	0.000
320	0.030	-38.996	0.000
330	0.030	-38.996	0.000
340	0.030	-38.996	0.000
350	0.050	-34.559	0.000



#147418

Latitude: 38-29-20 N
Longitude: 123-01-53 W
ERP: 0.14 kW
Channel: 263
Frequency: 100.5 MHz
AMSL Height: 363.0 m
Elevation: 340.0 m
Horiz. Pattern: Directional

PROPOSED 60 DBU

EXHIBIT E2

Hearldsbu

K262CG CP 60 DBU

Calisto

Windsor

Sonoma

Guerneville

K262CGC

Monte Rio

Forestville

Graton

Occidental

Sebastopol

Santa Rosa

KZST

640086.A

KZST 60 DBU

ORIGINAL SHORT FORM 60 DBU

Bodega Bay

Roma Park

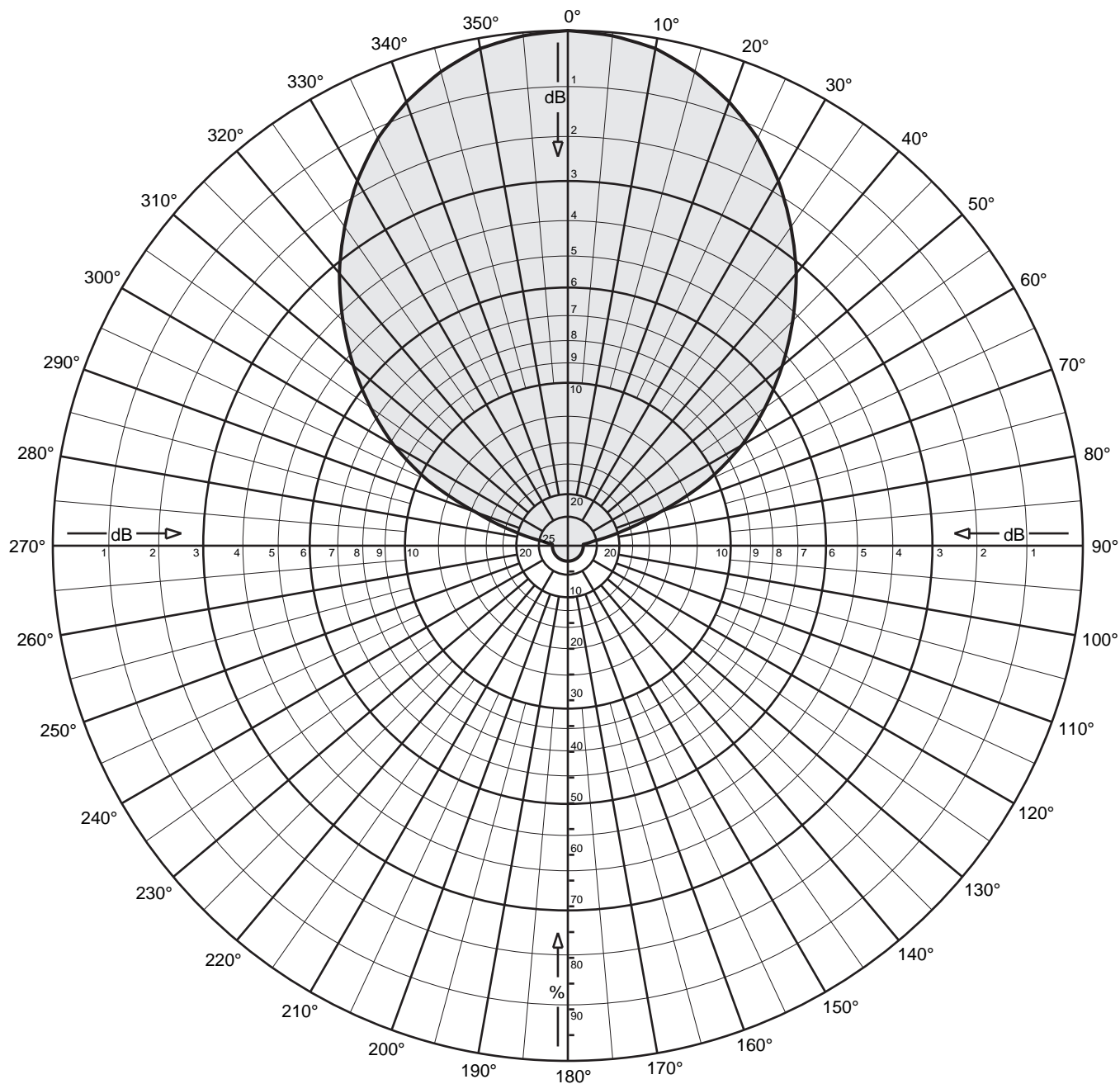
Cotati

Petaluma

Scale 1:300,000

0 4 8 12 km

V-Soft Communications LLC ©



CL-FM Log-periodic

FM

7.0 dBd (9.15 dBi)

Vertical polarization

Horizontal radiation pattern



CL-FM Log-periodic
FM

7.0 dBd (9.15 dBi)
Vertical polarization

Horizontal radiation pattern

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
0	1.000	0.00	7.00	5.01	45	0.618	-4.19	2.81	1.91
1	0.998	-0.01	6.99	5.00	46	0.602	-4.40	2.60	1.82
2	0.997	-0.02	6.98	4.99	47	0.588	-4.61	2.39	1.73
3	0.996	-0.03	6.97	4.97	48	0.573	-4.84	2.16	1.65
4	0.995	-0.04	6.96	4.96	49	0.558	-5.06	1.94	1.56
5	0.993	-0.06	6.94	4.95	50	0.544	-5.30	1.70	1.48
6	0.991	-0.08	6.92	4.92	51	0.528	-5.54	1.46	1.40
7	0.988	-0.10	6.90	4.89	52	0.513	-5.80	1.20	1.32
8	0.985	-0.13	6.87	4.87	53	0.498	-6.06	0.94	1.24
9	0.982	-0.15	6.85	4.84	54	0.483	-6.33	0.67	1.17
10	0.980	-0.18	6.82	4.81	55	0.467	-6.60	0.40	1.10
11	0.975	-0.22	6.78	4.76	56	0.452	-6.90	0.10	1.02
12	0.969	-0.27	6.73	4.71	57	0.436	-7.20	-0.20	0.95
13	0.964	-0.32	6.68	4.65	58	0.421	-7.51	-0.51	0.89
14	0.958	-0.37	6.63	4.60	59	0.405	-7.84	-0.84	0.82
15	0.952	-0.42	6.58	4.55	60	0.390	-8.18	-1.18	0.76
16	0.946	-0.49	6.51	4.48	61	0.372	-8.59	-1.59	0.69
17	0.938	-0.56	6.44	4.41	62	0.354	-9.02	-2.02	0.63
18	0.931	-0.62	6.38	4.34	63	0.336	-9.47	-2.47	0.57
19	0.923	-0.69	6.31	4.27	64	0.318	-9.95	-2.95	0.51
20	0.916	-0.76	6.24	4.21	65	0.300	-10.46	-3.46	0.45
21	0.908	-0.84	6.16	4.13	66	0.278	-11.12	-4.12	0.39
22	0.899	-0.92	6.08	4.05	67	0.256	-11.84	-4.84	0.33
23	0.890	-1.01	5.99	3.97	68	0.234	-12.62	-5.62	0.27
24	0.882	-1.10	5.90	3.89	69	0.212	-13.47	-6.47	0.23
25	0.873	-1.18	5.82	3.82	70	0.190	-14.42	-7.42	0.18
26	0.862	-1.29	5.71	3.72	71	0.174	-15.19	-8.19	0.15
27	0.851	-1.41	5.59	3.63	72	0.158	-16.03	-9.03	0.13
28	0.840	-1.52	5.48	3.53	73	0.142	-16.95	-9.95	0.10
29	0.829	-1.63	5.37	3.44	74	0.126	-17.99	-10.99	0.08
30	0.817	-1.75	5.25	3.35	75	0.110	-19.17	-12.17	0.06
31	0.806	-1.88	5.12	3.25	76	0.098	-20.18	-13.18	0.05
32	0.793	-2.02	4.98	3.15	77	0.086	-21.31	-14.31	0.04
33	0.781	-2.15	4.85	3.05	78	0.074	-22.62	-15.62	0.03
34	0.767	-2.30	4.70	2.95	79	0.062	-24.15	-17.15	0.02
35	0.756	-2.44	4.56	2.86	80	0.050	-26.02	-19.02	0.01
36	0.742	-2.59	4.41	2.76	81	0.046	-26.74	-19.74	0.01
37	0.729	-2.74	4.26	2.67	82	0.042	-27.54	-20.54	0.01
38	0.716	-2.90	4.10	2.57	83	0.038	-28.40	-21.40	0.01
39	0.704	-3.05	3.95	2.48	84	0.034	-29.37	-22.37	0.01
40	0.690	-3.22	3.78	2.39	85	0.030	-30.46	-23.46	0.00
41	0.675	-3.41	3.59	2.29	86	0.030	-30.46	-23.46	0.00
42	0.661	-3.60	3.40	2.19	87	0.030	-30.46	-23.46	0.00
43	0.646	-3.79	3.21	2.09	88	0.030	-30.46	-23.46	0.00
44	0.632	-3.99	3.01	2.00	89	0.030	-30.46	-23.46	0.00



CL-FM Log-periodic
FM

7.0 dBd (9.15 dBi)

Vertical polarization

Horizontal radiation pattern

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
90	0.030	-30.46	-23.46	0.00	135	0.030	-30.46	-23.46	0.00
91	0.030	-30.46	-23.46	0.00	136	0.030	-30.46	-23.46	0.00
92	0.030	-30.46	-23.46	0.00	137	0.030	-30.46	-23.46	0.00
93	0.030	-30.46	-23.46	0.00	138	0.030	-30.46	-23.46	0.00
94	0.030	-30.46	-23.46	0.00	139	0.030	-30.46	-23.46	0.00
95	0.030	-30.46	-23.46	0.00	140	0.030	-30.46	-23.46	0.00
96	0.030	-30.46	-23.46	0.00	141	0.030	-30.46	-23.46	0.00
97	0.030	-30.46	-23.46	0.00	142	0.030	-30.46	-23.46	0.00
98	0.030	-30.46	-23.46	0.00	143	0.030	-30.46	-23.46	0.00
99	0.030	-30.46	-23.46	0.00	144	0.030	-30.46	-23.46	0.00
100	0.030	-30.46	-23.46	0.00	145	0.030	-30.46	-23.46	0.00
101	0.030	-30.46	-23.46	0.00	146	0.030	-30.46	-23.46	0.00
102	0.030	-30.46	-23.46	0.00	147	0.030	-30.46	-23.46	0.00
103	0.030	-30.46	-23.46	0.00	148	0.030	-30.46	-23.46	0.00
104	0.030	-30.46	-23.46	0.00	149	0.030	-30.46	-23.46	0.00
105	0.030	-30.46	-23.46	0.00	150	0.030	-30.46	-23.46	0.00
106	0.030	-30.46	-23.46	0.00	151	0.030	-30.46	-23.46	0.00
107	0.030	-30.46	-23.46	0.00	152	0.030	-30.46	-23.46	0.00
108	0.030	-30.46	-23.46	0.00	153	0.030	-30.46	-23.46	0.00
109	0.030	-30.46	-23.46	0.00	154	0.030	-30.46	-23.46	0.00
110	0.030	-30.46	-23.46	0.00	155	0.030	-30.46	-23.46	0.00
111	0.030	-30.46	-23.46	0.00	156	0.030	-30.46	-23.46	0.00
112	0.030	-30.46	-23.46	0.00	157	0.030	-30.46	-23.46	0.00
113	0.030	-30.46	-23.46	0.00	158	0.030	-30.46	-23.46	0.00
114	0.030	-30.46	-23.46	0.00	159	0.030	-30.46	-23.46	0.00
115	0.030	-30.46	-23.46	0.00	160	0.030	-30.46	-23.46	0.00
116	0.030	-30.46	-23.46	0.00	161	0.030	-30.46	-23.46	0.00
117	0.030	-30.46	-23.46	0.00	162	0.030	-30.46	-23.46	0.00
118	0.030	-30.46	-23.46	0.00	163	0.030	-30.46	-23.46	0.00
119	0.030	-30.46	-23.46	0.00	164	0.030	-30.46	-23.46	0.00
120	0.030	-30.46	-23.46	0.00	165	0.030	-30.46	-23.46	0.00
121	0.030	-30.46	-23.46	0.00	166	0.030	-30.46	-23.46	0.00
122	0.030	-30.46	-23.46	0.00	167	0.030	-30.46	-23.46	0.00
123	0.030	-30.46	-23.46	0.00	168	0.030	-30.46	-23.46	0.00
124	0.030	-30.46	-23.46	0.00	169	0.030	-30.46	-23.46	0.00
125	0.030	-30.46	-23.46	0.00	170	0.030	-30.46	-23.46	0.00
126	0.030	-30.46	-23.46	0.00	171	0.030	-30.46	-23.46	0.00
127	0.030	-30.46	-23.46	0.00	172	0.030	-30.46	-23.46	0.00
128	0.030	-30.46	-23.46	0.00	173	0.030	-30.46	-23.46	0.00
129	0.030	-30.46	-23.46	0.00	174	0.030	-30.46	-23.46	0.00
130	0.030	-30.46	-23.46	0.00	175	0.030	-30.46	-23.46	0.00
131	0.030	-30.46	-23.46	0.00	176	0.030	-30.46	-23.46	0.00
132	0.030	-30.46	-23.46	0.00	177	0.030	-30.46	-23.46	0.00
133	0.030	-30.46	-23.46	0.00	178	0.030	-30.46	-23.46	0.00
134	0.030	-30.46	-23.46	0.00	179	0.030	-30.46	-23.46	0.00



CL-FM Log-periodic
FM

7.0 dBd (9.15 dBi)

Vertical polarization

Horizontal radiation pattern

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
180	0.030	-30.46	-23.46	0.00	225	0.030	-30.46	-23.46	0.00
181	0.030	-30.46	-23.46	0.00	226	0.030	-30.46	-23.46	0.00
182	0.030	-30.46	-23.46	0.00	227	0.030	-30.46	-23.46	0.00
183	0.030	-30.46	-23.46	0.00	228	0.030	-30.46	-23.46	0.00
184	0.030	-30.46	-23.46	0.00	229	0.030	-30.46	-23.46	0.00
185	0.030	-30.46	-23.46	0.00	230	0.030	-30.46	-23.46	0.00
186	0.030	-30.46	-23.46	0.00	231	0.030	-30.46	-23.46	0.00
187	0.030	-30.46	-23.46	0.00	232	0.030	-30.46	-23.46	0.00
188	0.030	-30.46	-23.46	0.00	233	0.030	-30.46	-23.46	0.00
189	0.030	-30.46	-23.46	0.00	234	0.030	-30.46	-23.46	0.00
190	0.030	-30.46	-23.46	0.00	235	0.030	-30.46	-23.46	0.00
191	0.030	-30.46	-23.46	0.00	236	0.030	-30.46	-23.46	0.00
192	0.030	-30.46	-23.46	0.00	237	0.030	-30.46	-23.46	0.00
193	0.030	-30.46	-23.46	0.00	238	0.030	-30.46	-23.46	0.00
194	0.030	-30.46	-23.46	0.00	239	0.030	-30.46	-23.46	0.00
195	0.030	-30.46	-23.46	0.00	240	0.030	-30.46	-23.46	0.00
196	0.030	-30.46	-23.46	0.00	241	0.030	-30.46	-23.46	0.00
197	0.030	-30.46	-23.46	0.00	242	0.030	-30.46	-23.46	0.00
198	0.030	-30.46	-23.46	0.00	243	0.030	-30.46	-23.46	0.00
199	0.030	-30.46	-23.46	0.00	244	0.030	-30.46	-23.46	0.00
200	0.030	-30.46	-23.46	0.00	245	0.030	-30.46	-23.46	0.00
201	0.030	-30.46	-23.46	0.00	246	0.030	-30.46	-23.46	0.00
202	0.030	-30.46	-23.46	0.00	247	0.030	-30.46	-23.46	0.00
203	0.030	-30.46	-23.46	0.00	248	0.030	-30.46	-23.46	0.00
204	0.030	-30.46	-23.46	0.00	249	0.030	-30.46	-23.46	0.00
205	0.030	-30.46	-23.46	0.00	250	0.030	-30.46	-23.46	0.00
206	0.030	-30.46	-23.46	0.00	251	0.030	-30.46	-23.46	0.00
207	0.030	-30.46	-23.46	0.00	252	0.030	-30.46	-23.46	0.00
208	0.030	-30.46	-23.46	0.00	253	0.030	-30.46	-23.46	0.00
209	0.030	-30.46	-23.46	0.00	254	0.030	-30.46	-23.46	0.00
210	0.030	-30.46	-23.46	0.00	255	0.030	-30.46	-23.46	0.00
211	0.030	-30.46	-23.46	0.00	256	0.030	-30.46	-23.46	0.00
212	0.030	-30.46	-23.46	0.00	257	0.030	-30.46	-23.46	0.00
213	0.030	-30.46	-23.46	0.00	258	0.030	-30.46	-23.46	0.00
214	0.030	-30.46	-23.46	0.00	259	0.030	-30.46	-23.46	0.00
215	0.030	-30.46	-23.46	0.00	260	0.030	-30.46	-23.46	0.00
216	0.030	-30.46	-23.46	0.00	261	0.030	-30.46	-23.46	0.00
217	0.030	-30.46	-23.46	0.00	262	0.030	-30.46	-23.46	0.00
218	0.030	-30.46	-23.46	0.00	263	0.030	-30.46	-23.46	0.00
219	0.030	-30.46	-23.46	0.00	264	0.030	-30.46	-23.46	0.00
220	0.030	-30.46	-23.46	0.00	265	0.030	-30.46	-23.46	0.00
221	0.030	-30.46	-23.46	0.00	266	0.030	-30.46	-23.46	0.00
222	0.030	-30.46	-23.46	0.00	267	0.030	-30.46	-23.46	0.00
223	0.030	-30.46	-23.46	0.00	268	0.030	-30.46	-23.46	0.00
224	0.030	-30.46	-23.46	0.00	269	0.030	-30.46	-23.46	0.00



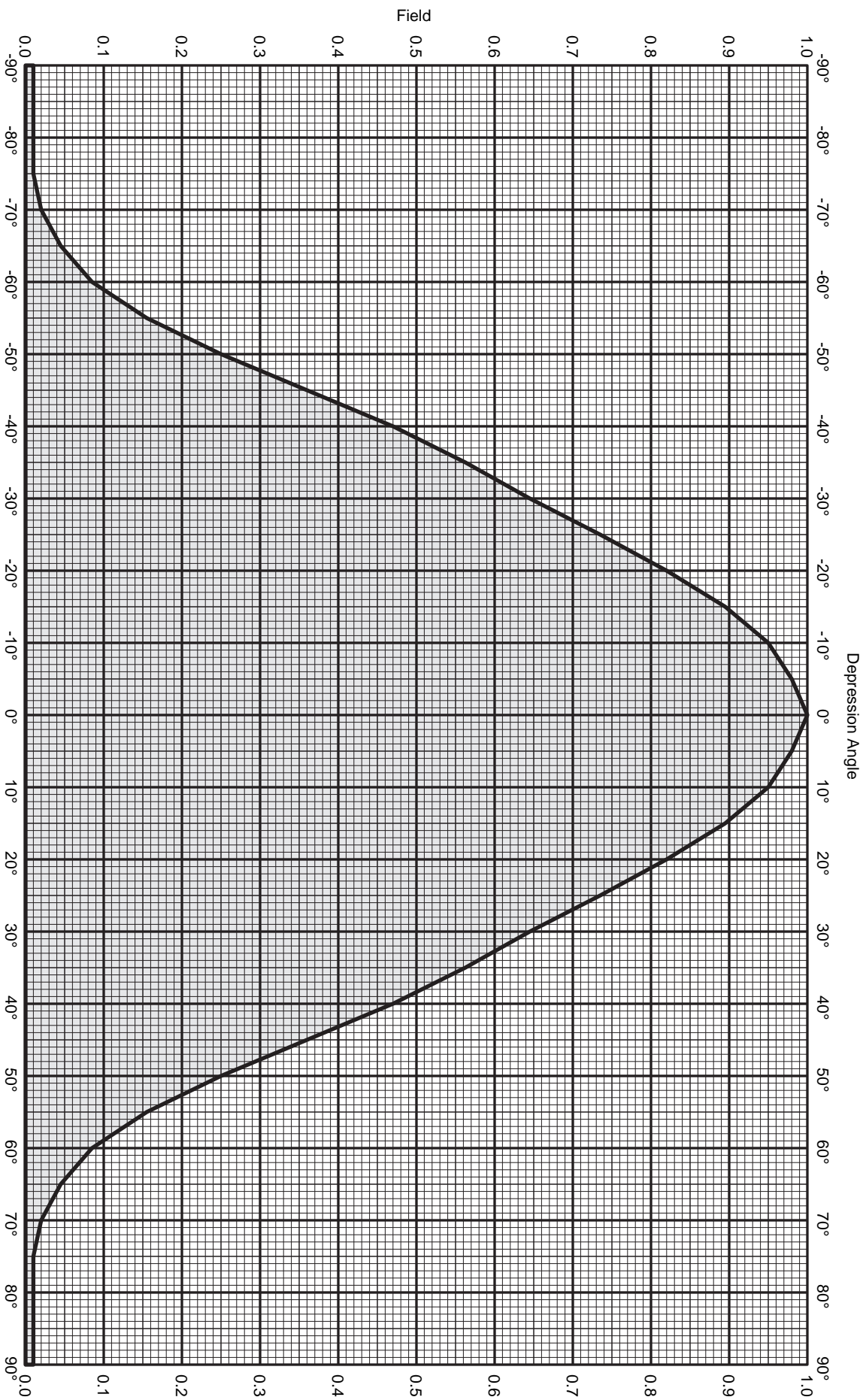
CL-FM Log-periodic
FM

7.0 dBd (9.15 dBi)

Vertical polarization

Horizontal radiation pattern

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
270	0.030	-30.46	-23.46	0.00	315	0.618	-4.19	2.81	1.91
271	0.030	-30.46	-23.46	0.00	316	0.632	-3.99	3.01	2.00
272	0.030	-30.46	-23.46	0.00	317	0.646	-3.79	3.21	2.09
273	0.030	-30.46	-23.46	0.00	318	0.661	-3.60	3.40	2.19
274	0.030	-30.46	-23.46	0.00	319	0.675	-3.41	3.59	2.29
275	0.030	-30.46	-23.46	0.00	320	0.690	-3.22	3.78	2.39
276	0.034	-29.37	-22.37	0.01	321	0.704	-3.05	3.95	2.48
277	0.038	-28.40	-21.40	0.01	322	0.716	-2.90	4.10	2.57
278	0.042	-27.54	-20.54	0.01	323	0.729	-2.74	4.26	2.67
279	0.046	-26.74	-19.74	0.01	324	0.742	-2.59	4.41	2.76
280	0.050	-26.02	-19.02	0.01	325	0.756	-2.44	4.56	2.86
281	0.062	-24.15	-17.15	0.02	326	0.767	-2.30	4.70	2.95
282	0.074	-22.62	-15.62	0.03	327	0.781	-2.15	4.85	3.05
283	0.086	-21.31	-14.31	0.04	328	0.793	-2.02	4.98	3.15
284	0.098	-20.18	-13.18	0.05	329	0.806	-1.88	5.12	3.25
285	0.110	-19.17	-12.17	0.06	330	0.817	-1.75	5.25	3.35
286	0.126	-17.99	-10.99	0.08	331	0.829	-1.63	5.37	3.44
287	0.142	-16.95	-9.95	0.10	332	0.840	-1.52	5.48	3.53
288	0.158	-16.03	-9.03	0.13	333	0.851	-1.41	5.59	3.63
289	0.174	-15.19	-8.19	0.15	334	0.862	-1.29	5.71	3.72
290	0.190	-14.42	-7.42	0.18	335	0.873	-1.18	5.82	3.82
291	0.212	-13.47	-6.47	0.23	336	0.882	-1.10	5.90	3.89
292	0.234	-12.62	-5.62	0.27	337	0.890	-1.01	5.99	3.97
293	0.256	-11.84	-4.84	0.33	338	0.899	-0.92	6.08	4.05
294	0.278	-11.12	-4.12	0.39	339	0.908	-0.84	6.16	4.13
295	0.300	-10.46	-3.46	0.45	340	0.916	-0.76	6.24	4.21
296	0.318	-9.95	-2.95	0.51	341	0.923	-0.69	6.31	4.27
297	0.336	-9.47	-2.47	0.57	342	0.931	-0.62	6.38	4.34
298	0.354	-9.02	-2.02	0.63	343	0.938	-0.56	6.44	4.41
299	0.372	-8.59	-1.59	0.69	344	0.946	-0.49	6.51	4.48
300	0.390	-8.18	-1.18	0.76	345	0.952	-0.42	6.58	4.55
301	0.405	-7.84	-0.84	0.82	346	0.958	-0.37	6.63	4.60
302	0.421	-7.51	-0.51	0.89	347	0.964	-0.32	6.68	4.65
303	0.436	-7.20	-0.20	0.95	348	0.969	-0.27	6.73	4.71
304	0.452	-6.90	0.10	1.02	349	0.975	-0.22	6.78	4.76
305	0.467	-6.60	0.40	1.10	350	0.980	-0.18	6.82	4.81
306	0.483	-6.33	0.67	1.17	351	0.982	-0.15	6.85	4.84
307	0.498	-6.06	0.94	1.24	352	0.985	-0.13	6.87	4.87
308	0.513	-5.80	1.20	1.32	353	0.988	-0.10	6.90	4.89
309	0.528	-5.54	1.46	1.40	354	0.991	-0.08	6.92	4.92
310	0.544	-5.30	1.70	1.48	355	0.993	-0.06	6.94	4.95
311	0.558	-5.06	1.94	1.56	356	0.995	-0.04	6.96	4.96
312	0.573	-4.84	2.16	1.65	357	0.996	-0.03	6.97	4.97
313	0.588	-4.61	2.39	1.73	358	0.997	-0.02	6.98	4.99
314	0.602	-4.40	2.60	1.82	359	0.998	-0.01	6.99	5.00



CL-FM Log-periodic

Vertical radiation pattern

FM

7.0 dBd (9.15 dBi)

Vertical polarization



KATHREIN
SCALA DIVISION

Post Office Box 4580
Medford, OR 97501 (USA)
Phone: (541) 779-6500
Fax: (541) 779-3991
<http://www.kathrein-scala.com>



CL-FM Log-periodic
FM

7.0 dBd (9.15 dBi)

Vertical polarization

Vertical radiation pattern

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
-90	0.010	-40.00	-33.00	0.00	-45	0.360	-8.87	-1.87	0.65
-89	0.010	-40.00	-33.00	0.00	-44	0.382	-8.36	-1.36	0.73
-88	0.010	-40.00	-33.00	0.00	-43	0.404	-7.87	-0.87	0.82
-87	0.010	-40.00	-33.00	0.00	-42	0.426	-7.41	-0.41	0.91
-86	0.010	-40.00	-33.00	0.00	-41	0.448	-6.97	0.03	1.01
-85	0.010	-40.00	-33.00	0.00	-40	0.470	-6.56	0.44	1.11
-84	0.010	-40.00	-33.00	0.00	-39	0.488	-6.22	0.78	1.20
-83	0.010	-40.00	-33.00	0.00	-38	0.507	-5.90	1.10	1.29
-82	0.010	-40.00	-33.00	0.00	-37	0.525	-5.59	1.41	1.38
-81	0.010	-40.00	-33.00	0.00	-36	0.544	-5.29	1.71	1.48
-80	0.010	-40.00	-33.00	0.00	-35	0.562	-5.00	2.00	1.59
-79	0.010	-40.00	-33.00	0.00	-34	0.579	-4.75	2.25	1.68
-78	0.010	-40.00	-33.00	0.00	-33	0.595	-4.50	2.50	1.78
-77	0.010	-40.00	-33.00	0.00	-32	0.612	-4.26	2.74	1.88
-76	0.010	-40.00	-33.00	0.00	-31	0.628	-4.03	2.97	1.98
-75	0.010	-40.00	-33.00	0.00	-30	0.645	-3.81	3.19	2.09
-74	0.012	-38.42	-31.42	0.00	-29	0.663	-3.57	3.43	2.20
-73	0.014	-37.08	-30.08	0.00	-28	0.681	-3.34	3.66	2.32
-72	0.016	-35.92	-28.92	0.00	-27	0.699	-3.11	3.89	2.45
-71	0.018	-34.89	-27.89	0.00	-26	0.717	-2.89	4.11	2.58
-70	0.020	-33.98	-26.98	0.00	-25	0.735	-2.67	4.33	2.71
-69	0.025	-32.04	-25.04	0.00	-24	0.752	-2.48	4.52	2.83
-68	0.030	-30.46	-23.46	0.00	-23	0.769	-2.28	4.72	2.96
-67	0.035	-29.12	-22.12	0.01	-22	0.786	-2.09	4.91	3.10
-66	0.040	-27.96	-20.96	0.01	-21	0.803	-1.91	5.09	3.23
-65	0.045	-26.94	-19.94	0.01	-20	0.820	-1.72	5.28	3.37
-64	0.053	-25.51	-18.51	0.01	-19	0.835	-1.57	5.43	3.49
-63	0.061	-24.29	-17.29	0.02	-18	0.850	-1.41	5.59	3.62
-62	0.069	-23.22	-16.22	0.02	-17	0.865	-1.26	5.74	3.75
-61	0.077	-22.27	-15.27	0.03	-16	0.880	-1.11	5.89	3.88
-60	0.085	-21.41	-14.41	0.04	-15	0.895	-0.96	6.04	4.01
-59	0.099	-20.09	-13.09	0.05	-14	0.906	-0.86	6.14	4.11
-58	0.113	-18.94	-11.94	0.06	-13	0.917	-0.75	6.25	4.21
-57	0.127	-17.92	-10.92	0.08	-12	0.928	-0.65	6.35	4.32
-56	0.141	-17.02	-10.02	0.10	-11	0.939	-0.55	6.45	4.42
-55	0.155	-16.19	-9.19	0.12	-10	0.950	-0.45	6.55	4.52
-54	0.174	-15.19	-8.19	0.15	-9	0.956	-0.39	6.61	4.58
-53	0.193	-14.29	-7.29	0.19	-8	0.962	-0.34	6.66	4.64
-52	0.212	-13.47	-6.47	0.23	-7	0.968	-0.28	6.72	4.70
-51	0.231	-12.73	-5.73	0.27	-6	0.974	-0.23	6.77	4.75
-50	0.250	-12.04	-5.04	0.31	-5	0.980	-0.18	6.82	4.81
-49	0.272	-11.31	-4.31	0.37	-4	0.984	-0.14	6.86	4.85
-48	0.294	-10.63	-3.63	0.43	-3	0.988	-0.10	6.90	4.89
-47	0.316	-10.01	-3.01	0.50	-2	0.992	-0.07	6.93	4.93
-46	0.338	-9.42	-2.42	0.57	-1	0.996	-0.03	6.97	4.97
					0	1.000	0.00	7.00	5.01



CL-FM Log-periodic
FM

7.0 dBd (9.15 dBi)

Vertical polarization

Vertical radiation pattern

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
0	1.000	0.00	7.00	5.01	45	0.360	-8.87	-1.87	0.65
1	0.996	-0.03	6.97	4.97	46	0.338	-9.42	-2.42	0.57
2	0.992	-0.07	6.93	4.93	47	0.316	-10.01	-3.01	0.50
3	0.988	-0.10	6.90	4.89	48	0.294	-10.63	-3.63	0.43
4	0.984	-0.14	6.86	4.85	49	0.272	-11.31	-4.31	0.37
5	0.980	-0.18	6.82	4.81	50	0.250	-12.04	-5.04	0.31
6	0.974	-0.23	6.77	4.75	51	0.231	-12.73	-5.73	0.27
7	0.968	-0.28	6.72	4.70	52	0.212	-13.47	-6.47	0.23
8	0.962	-0.34	6.66	4.64	53	0.193	-14.29	-7.29	0.19
9	0.956	-0.39	6.61	4.58	54	0.174	-15.19	-8.19	0.15
10	0.950	-0.45	6.55	4.52	55	0.155	-16.19	-9.19	0.12
11	0.939	-0.55	6.45	4.42	56	0.141	-17.02	-10.02	0.10
12	0.928	-0.65	6.35	4.32	57	0.127	-17.92	-10.92	0.08
13	0.917	-0.75	6.25	4.21	58	0.113	-18.94	-11.94	0.06
14	0.906	-0.86	6.14	4.11	59	0.099	-20.09	-13.09	0.05
15	0.895	-0.96	6.04	4.01	60	0.085	-21.41	-14.41	0.04
16	0.880	-1.11	5.89	3.88	61	0.077	-22.27	-15.27	0.03
17	0.865	-1.26	5.74	3.75	62	0.069	-23.22	-16.22	0.02
18	0.850	-1.41	5.59	3.62	63	0.061	-24.29	-17.29	0.02
19	0.835	-1.57	5.43	3.49	64	0.053	-25.51	-18.51	0.01
20	0.820	-1.72	5.28	3.37	65	0.045	-26.94	-19.94	0.01
21	0.803	-1.91	5.09	3.23	66	0.040	-27.96	-20.96	0.01
22	0.786	-2.09	4.91	3.10	67	0.035	-29.12	-22.12	0.01
23	0.769	-2.28	4.72	2.96	68	0.030	-30.46	-23.46	0.00
24	0.752	-2.48	4.52	2.83	69	0.025	-32.04	-25.04	0.00
25	0.735	-2.67	4.33	2.71	70	0.020	-33.98	-26.98	0.00
26	0.717	-2.89	4.11	2.58	71	0.018	-34.89	-27.89	0.00
27	0.699	-3.11	3.89	2.45	72	0.016	-35.92	-28.92	0.00
28	0.681	-3.34	3.66	2.32	73	0.014	-37.08	-30.08	0.00
29	0.663	-3.57	3.43	2.20	74	0.012	-38.42	-31.42	0.00
30	0.645	-3.81	3.19	2.09	75	0.010	-40.00	-33.00	0.00
31	0.628	-4.03	2.97	1.98	76	0.010	-40.00	-33.00	0.00
32	0.612	-4.26	2.74	1.88	77	0.010	-40.00	-33.00	0.00
33	0.595	-4.50	2.50	1.78	78	0.010	-40.00	-33.00	0.00
34	0.579	-4.75	2.25	1.68	79	0.010	-40.00	-33.00	0.00
35	0.562	-5.00	2.00	1.59	80	0.010	-40.00	-33.00	0.00
36	0.544	-5.29	1.71	1.48	81	0.010	-40.00	-33.00	0.00
37	0.525	-5.59	1.41	1.38	82	0.010	-40.00	-33.00	0.00
38	0.507	-5.90	1.10	1.29	83	0.010	-40.00	-33.00	0.00
39	0.488	-6.22	0.78	1.20	84	0.010	-40.00	-33.00	0.00
40	0.470	-6.56	0.44	1.11	85	0.010	-40.00	-33.00	0.00
41	0.448	-6.97	0.03	1.01	86	0.010	-40.00	-33.00	0.00
42	0.426	-7.41	-0.41	0.91	87	0.010	-40.00	-33.00	0.00
43	0.404	-7.87	-0.87	0.82	88	0.010	-40.00	-33.00	0.00
44	0.382	-8.36	-1.36	0.73	89	0.010	-40.00	-33.00	0.00
					90	0.010	-40.00	-33.00	0.00