

Exhibit 12.1 - Copy of Existing Antenna Structure Registration

Registration Detail

Reg Number	1055490	Status	Constructed
File Number	A0538802	Constructed	04/14/2004
FAA Study	2004-AEA-915-OE	EMI	No
FAA Issue Date	04/12/2004	NEPA	No

Antenna Structure

Structure Type TOWER - Free standing or Guyed Structure used for Communications Purposes

Location (in NAD83 Coordinates)

Lat/Long 38-21-16.4 N 077-30-46.1 W 56 MCWHIRT LOOP

City, State FALMOUTH , VA

Center of
AM Array

Heights (meters)

Elevation of Site Above Mean Sea Level	Overall Height Above Ground (AGL)
94.2	61.0
Overall Height Above Mean Sea Level	Overall Height Above Ground w/o Appurtenances
155.2	59.4

Painting and Lighting Specifications

None

Owner & Contact Information

FRN 0006156111

Licensee ID L00132131

Owner

Pinnacle Towers LLC
Attention To: Regulatory Department
2000 Corporate Drive
Canonsburg , PA 15317

P: (724)416-2000
E: Regulatory.Department@Crowncastle.com

Contact

Verre , Christine A
2000 Corporate Drive
Canonsburg , PA 15317

P: (336)643-2524
E: Christine.Verre@Crowncastle.com

Last Action Status

Status	Constructed	Received	01/30/2007
Purpose	Admin Update	Entered	01/30/2007
Mode	Interactive		

Related Applications

01/30/2007 A0538802 - Admin Update (AU)
04/16/2004 A0372615 - Admin Update (AU)
04/15/2004 A0371071 - Modification (MD)
Related applications (11)

Comments

Comments



Exhibit 12.2

Vertical Plan of Antenna System

The site is located at 56 McWhirt Loop,
the city of Falmouth, Stafford County, Virginia.

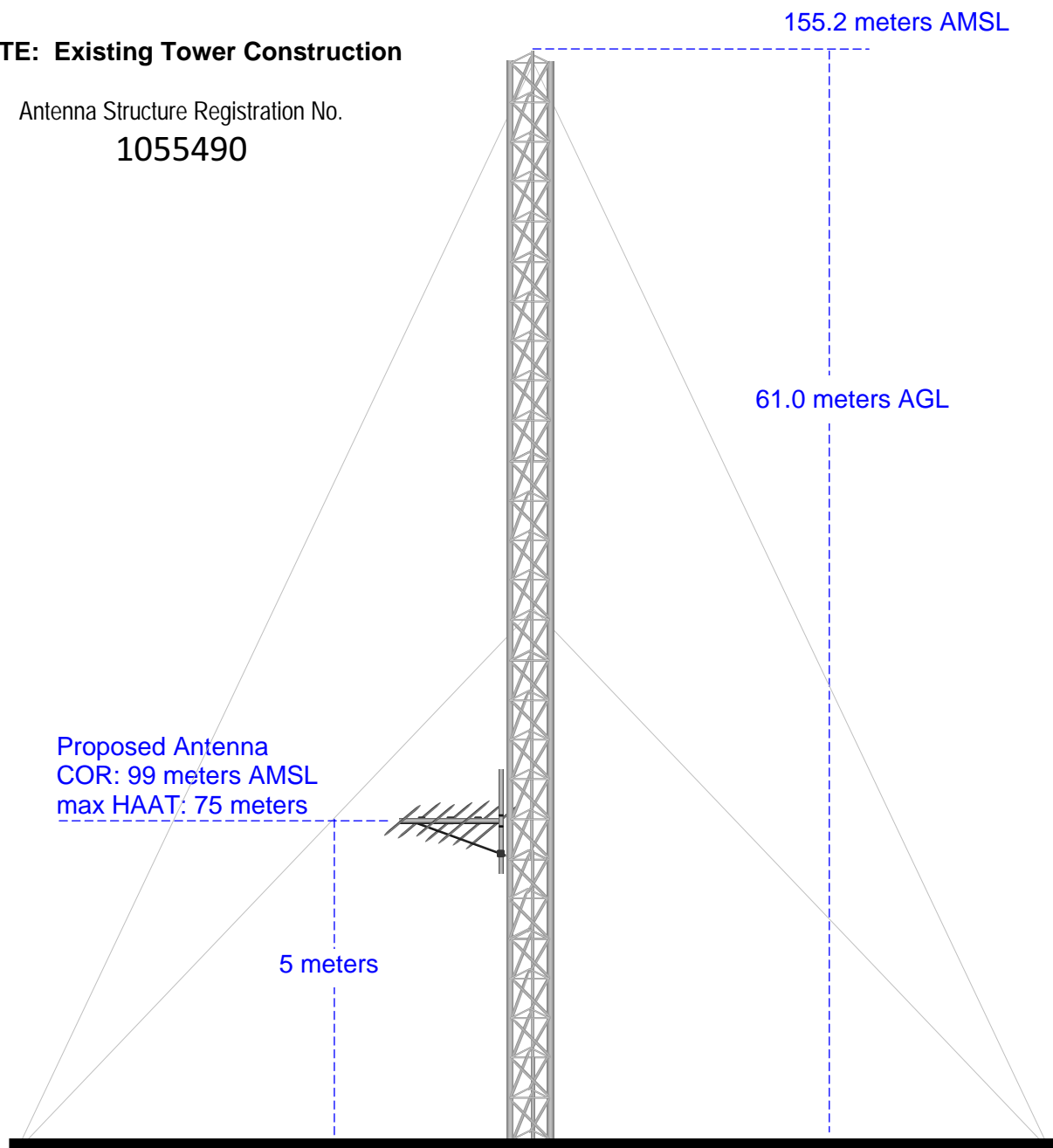
Site Location (NAD 27)

NL: 38° 21' 16"

WL: 77° 30' 47"

NOTE: Existing Tower Construction

Antenna Structure Registration No.
1055490



Ground Elevation = 94.2 m AMSL
Drawing is not to Scale

MUNN-REESE, INC.
Broadcast Engineering Consultants
Coldwater, MI 49036

Exhibit 12.3 Present vs. Proposed Service Contour Study

W255CE.L
BLFT-20090605ABW
Latitude: 38-21-16 N
Longitude: 077-30-47 W
ERP: 0.003 kW
Channel: 255
Frequency: 98.9 MHz
AMSL Height: 99.0 m
Horiz. Pattern: Directional
Vert. Pattern: No
Prop Model:

60 dBu Contour
Total Population: 14
Total Area: 4.30 sq. km

CH258D.P
Proposed Operation
Latitude: 38-21-16 N
Longitude: 077-30-47 W
ERP: 0.003 kW
Channel: 258
Frequency: 99.5 MHz
AMSL Height: 99.0 m
Horiz. Pattern: Directional
Vert. Pattern: No
Prop Model:

60 dBu Contour
Total Population: 14
Total Area: 4.30 sq. km

Present 60 dBu f(50:50)
Proposed 60 dBu f(50:50)

W255CE.L
CH258D.P



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1(517)278-7339

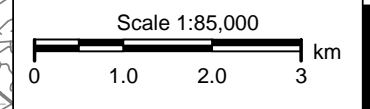


Exhibit 12.4 Proposed vs. Primary Service Contour Study

Primary 38 dBu f(50:50)

Stafford

Proposed 60 dBu f(50:50)

CH258D.P

Fredericksburg ci

Spotsylvania

CH258D.P
Proposed Operation
Latitude: 38-21-16 N
Longitude: 077-30-47 W
ERP: 0.003 kW
Channel: 258
Frequency: 99.5 MHz
AMSL Height: 99.0 m
Horiz. Pattern: Directional
Vert. Pattern: No
Prop Model:

Primary 60 dBu f(50:50)

WYFJ.L
BLED19940404KB
Facility ID No. 5096
Latitude: 37-44-46 N
Longitude: 077-29-44 W
ERP: 6.00 kW
Channel: 261
Frequency: 100.1 MHz
AMSL Height: 154.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model:

WYFJ.L

Manover

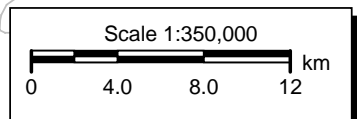


Exhibit 12.5

Tabulation of Proposed Allocation

Bible Broadcasting Network, Inc.

REFERENCE		CH# 258D - 99.5 MHz, Pwr= 0.003 kW, HAAT= 33.1 M, COR= 99 M								DISPLAY DATES	
38 21 16.0 N.		Average Protected F(50-50)= 2.57 km								DATA 05-30-09	
77 30 47.0 W.		Standard Directional								SEARCH 06-08-09	
CH	CALL	TYPE	ANT	AZI	DIST	LAT	PWR(kW)	INT(km)	PRO(km)	*IN*	*OUT*
CITY		STATE		<--	FILE #	LNG	HAAT(M)	COR(M)	LICENSEE	(Overlap in km)	
258B	WIHT	LIC	_CN	27.5	76.4	38 57 49.0	22.000	128.0	64.3	-51.8*<	10.5
Washington		DC		207.7	BLH19931215KE	77 06 18.0	229	306	Amfm Radio Licenses, L.l.c		
257A	WWVB-FM	LIC	_CN	213.8	28.4	38 08 31.0	3.000	37.6	24.8	-9.7*<	2.5
Spotsylvania		VA		33.7	BLH19970307KH	77 41 38.0	100	190	The Free Lance-star Publis		
259B	WCYK-FM	LIC	_CN	254.5	117.6	38 03 52.0	3.300	85.3	71.9	30.3	41.8
Staunton		VA		73.7	BLH19891222KD	78 48 18.0	516	914	Monticello Media Llc		
256B	WLZL	LIC	NCX	41.5	100.7	39 01 48.0	45.000	5.8	64.3	94.7	36.4
Annapolis		MD		222.0	BLH20081118ADS	76 44 25.0	157	198	Cbs Radio East Inc.		
261A	WYFJ	LIC	_CN	178.7	67.5	37 44 46.0	6.000	2.8	28.9	64.6	38.6
Ashland		VA		358.7	BLED19940404KB	77 29 44.0	98	154	Bible Broadcasting Network		
Commercial Channel Operating Educational											
255B1	WWLB	LIC	ZCX	180.2	82.1	37 36 52.0	4.800	3.2	42.1	78.8	40.0
Midlothian		VA		0.2	BLH20050308ABO	77 30 56.0	227	285	Mlb-richmond Iv, Llc		
255B1	AL3579	RSV	___	193.6	87.3	37 35 23.0	25.000	3.8	42.8	83.4	44.5
Midlothian		VA		13.5	RM10592	77 44 49.0	100	176			
257A	WFQX	LIC	_CX	316.6	109.3	39 03 56.0	6.000	61.7	41.6	45.9	65.2
Front Royal		VA		136.1	BLH20031209AAM	78 22 58.0	100	437	Capstar Tx Limited Partner		
260A	WYFJ	APP	_CX	176.8	87.9	37 33 50.0	6.000	2.7	27.7	85.1	60.2
Ashland		VA		356.9	BPED20090403ABL	77 27 29.0	100	148	Bible Broadcasting Network		
260B	WFRE	LIC	NCX	0.5	127.2	39 30 00.0	7.600	4.6	62.9	122.4	64.3
Frederick		MD		180.5	BLH20070612AAN	77 29 58.0	355	586	Aloha Station Trust, Llc		
256D	640954	APP	DC_	182.2	76.6	37 39 54.0	0.250	0.0	1.1	76.4	75.5
Glen Allen		VA		2.2	BNPFT20030317APH	77 32 46.0		152	Clear Channel Broadcasting		
257A	WKJM	LIC	DCN	174.5	125.0	37 14 01.0	6.000	47.0	30.6	77.9	94.2
Petersburg		VA		354.5	BLH19940531KZ	77 22 36.0	100	139	Radio One Licenses, Llc		

Terrain database is NED 03 SEC , R= 73.215 qualifying spacings or FCC minimum Spacings in KM, M= Margin in KM
 Contour distances are on direct line to and from reference station. Reference zone = 1, Co to 3rd adjacent.
 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.

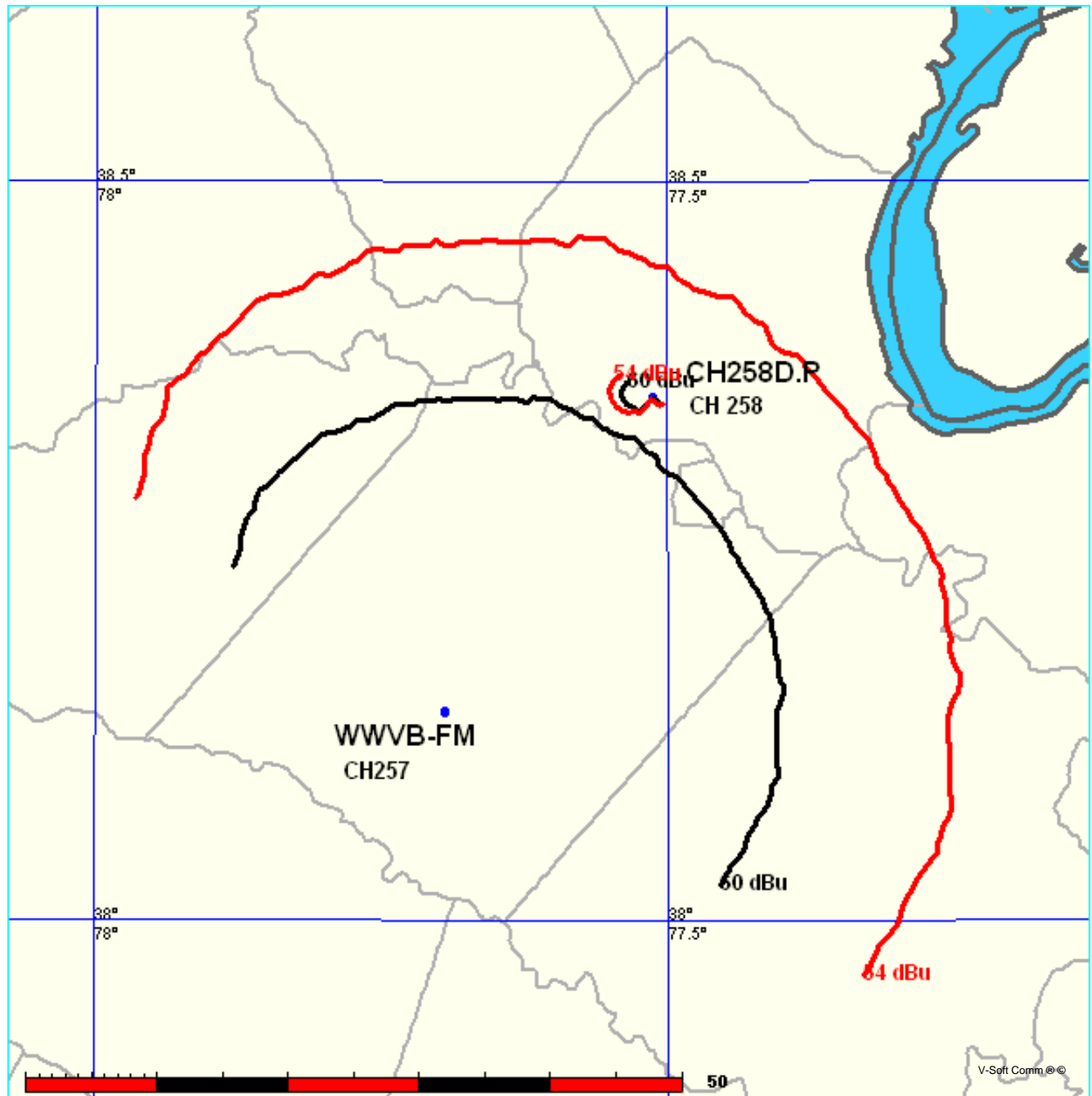
Yellow highlighted text denotes contour protection studies toward WWVB-FM, Spotsylvania, VA as supplied in **Exhibit 12.6**. Contour protection studies toward additional stations will be supplied upon request.

Exhibit 12.6 - Contour Protection Studies Toward Select Station(s)

FMCommander Single Allocation Study - 06-08-2009 - NED 03 SEC
CH258D.P's Overlaps (In= -9.7 km, Out= 2.54 km)

CH258D.P CH 258 D DA
Lat= 38 21 16.0, Lng= 77 30 47.0
0.003 kW 33.1 M HAAT, 99 M COR
Prot.= 60 dBu, Intef.= 54 dBu

WWVB-FM CH 257 A BLH19970307KH
Lat= 38 08 31.0, Lng= 77 41 38.0
3.0 kW 100 M HAAT, 190 M COR
Prot.= 60 dBu, Intef.= 54 dBu



Munn-Reese, Inc.

Broadcast Engineering Consultants
Coldwater, MI 49036

Exhibit 12.6

Contour Protection Studies Toward Select Stations

06-08-2009

NED 03 SEC Terrain Data

FMOVER Analysis

CH258D.P

Channel = 258D

Max ERP = 0.003 kW

RCAMSL = 99 M

N. Lat. 38 21 16.0

W. Lng. 77 30 47.0

Protected

60 dBu

WWVB-FM BLH19970307KH

Channel = 257A

Max ERP = 3 kW

RCAMSL = 190 M

N. Lat. 38 08 31.0

W. Lng. 77 41 38.0

Interfering

54 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
175.0	000.0000	0032.5	000.1	033.9	003.0000	0105.0	028.3	58.64**	9.25
176.0	000.0000	0033.0	000.1	033.9	003.0000	0105.0	028.3	58.64**	9.25
177.0	000.0000	0032.8	000.1	033.8	003.0000	0105.0	028.3	58.64**	9.25
178.0	000.0000	0032.7	000.1	033.8	003.0000	0105.0	028.3	58.64**	9.25
179.0	000.0000	0033.1	000.1	033.8	003.0000	0105.0	028.3	58.64**	9.26
180.0	000.0000	0031.6	000.1	033.8	003.0000	0105.0	028.3	58.64**	9.26
181.0	000.0000	0029.5	000.1	033.8	003.0000	0105.0	028.3	58.64**	9.26
182.0	000.0000	0029.9	000.1	033.8	003.0000	0105.0	028.3	58.64**	9.26
183.0	000.0000	0028.7	000.1	033.8	003.0000	0105.0	028.3	58.64**	9.26
184.0	000.0000	0028.1	000.1	033.8	003.0000	0105.0	028.3	58.64**	9.26
185.0	000.0000	0028.2	000.1	033.8	003.0000	0105.0	028.3	58.64**	9.26
186.0	000.0000	0026.2	000.1	033.8	003.0000	0105.0	028.3	58.64**	9.26
187.0	000.0000	0025.2	000.1	033.8	003.0000	0105.0	028.3	58.64**	9.26
188.0	000.0000	0024.2	000.1	033.8	003.0000	0105.0	028.3	58.64**	9.26
189.0	000.0000	0023.6	000.1	033.8	003.0000	0105.0	028.3	58.64**	9.26
190.0	000.0000	0022.5	000.1	033.8	003.0000	0105.0	028.3	58.64**	9.26
191.0	000.0000	0021.2	000.1	033.8	003.0000	0105.0	028.3	58.64**	9.26
192.0	000.0000	0020.4	000.1	033.8	003.0000	0105.0	028.3	58.64**	9.26
193.0	000.0000	0020.1	000.1	033.8	003.0000	0105.0	028.3	58.64**	9.26
194.0	000.0000	0022.3	000.1	033.8	003.0000	0105.0	028.3	58.64**	9.26
195.0	000.0000	0025.0	000.1	033.8	003.0000	0105.0	028.3	58.65**	9.26
196.0	000.0000	0026.0	000.1	033.8	003.0000	0105.0	028.3	58.65**	9.26
197.0	000.0000	0025.9	000.1	033.8	003.0000	0105.0	028.3	58.65**	9.26
198.0	000.0000	0023.6	000.1	033.8	003.0000	0105.0	028.3	58.65**	9.26
199.0	000.0000	0023.7	000.1	033.8	003.0000	0105.0	028.3	58.65**	9.26
200.0	000.0000	0022.9	000.1	033.8	003.0000	0105.0	028.3	58.65**	9.26
201.0	000.0000	0023.8	000.1	033.8	003.0000	0105.0	028.3	58.65**	9.28
202.0	000.0000	0022.7	000.1	033.8	003.0000	0105.0	028.3	58.66**	9.29
203.0	000.0000	0021.8	000.2	033.8	003.0000	0105.0	028.3	58.67**	9.30
204.0	000.0000	0021.0	000.2	033.8	003.0000	0105.0	028.2	58.68**	9.31
205.0	000.0000	0018.4	000.2	033.8	003.0000	0105.0	028.2	58.68**	9.33
206.0	000.0000	0017.1	000.2	033.8	003.0000	0105.0	028.2	58.69**	9.34
207.0	000.0000	0016.6	000.2	033.8	003.0000	0105.0	028.2	58.70**	9.35
208.0	000.0000	0016.1	000.2	033.7	003.0000	0105.0	028.2	58.71**	9.36
209.0	000.0000	0016.2	000.2	033.7	003.0000	0104.9	028.2	58.71**	9.38
210.0	000.0000	0016.7	000.2	033.7	003.0000	0104.9	028.2	58.72**	9.39
211.0	000.0000	0016.3	000.3	033.7	003.0000	0104.9	028.1	58.77**	9.47
212.0	000.0000	0017.0	000.4	033.7	003.0000	0104.9	028.0	58.82**	9.55
213.0	000.0000	0018.7	000.5	033.7	003.0000	0104.9	027.9	58.87**	9.62
214.0	000.0000	0019.0	000.6	033.7	003.0000	0104.9	027.9	58.92**	9.70
215.0	000.0000	0018.4	000.6	033.7	003.0000	0105.0	027.8	58.97**	9.78

MUNN-REESE, INC.

Broadcast Engineering Consultants
Coldwater, MI 49036

Exhibit 12.6

Contour Protection Studies Toward Select Stations

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
216.0	000.0000	0018.7	000.7	033.6	003.0000	0105.0	027.7	59.02**	9.87
217.0	000.0000	0017.1	000.8	033.6	003.0000	0105.0	027.6	59.07**	9.95
218.0	000.0000	0016.5	000.9	033.6	003.0000	0105.0	027.5	59.12**	10.02
219.0	000.0000	0016.7	001.0	033.5	003.0000	0105.0	027.5	59.17**	10.10
220.0	000.0000	0017.7	001.0	033.5	003.0000	0105.0	027.4	59.22**	10.18
221.0	000.0000	0016.4	001.2	033.4	003.0000	0105.0	027.2	59.35**	10.38
222.0	000.0000	0015.2	001.4	033.3	003.0000	0104.9	027.0	59.47**	10.56
223.0	000.0001	0016.1	001.6	033.2	003.0000	0104.6	026.8	59.54**	10.66
224.0	000.0001	0017.9	001.6	033.1	003.0000	0104.3	026.8	59.52**	10.61
225.0	000.0001	0019.1	001.6	033.0	003.0000	0104.0	026.8	59.49**	10.56
226.0	000.0001	0020.3	001.6	033.0	003.0000	0103.8	026.8	59.47**	10.50
227.0	000.0001	0018.0	001.6	032.9	003.0000	0103.6	026.9	59.44**	10.46
228.0	000.0001	0018.2	001.6	032.9	003.0000	0103.5	026.9	59.43**	10.44
229.0	000.0002	0018.3	001.6	032.8	003.0000	0103.4	026.9	59.42**	10.42
230.0	000.0002	0017.5	001.6	032.8	003.0000	0103.4	026.9	59.41**	10.40
231.0	000.0002	0018.8	001.6	032.7	003.0000	0103.3	026.9	59.40**	10.38
232.0	000.0003	0020.5	001.6	032.6	003.0000	0103.3	026.9	59.39**	10.36
233.0	000.0003	0021.1	001.6	032.6	003.0000	0103.2	026.9	59.37**	10.33
234.0	000.0003	0019.6	001.6	032.5	003.0000	0103.1	026.9	59.36**	10.30
235.0	000.0004	0019.0	001.6	032.5	003.0000	0103.0	026.9	59.34**	10.28
236.0	000.0004	0018.8	001.6	032.4	003.0000	0102.9	026.9	59.33**	10.25
237.0	000.0005	0019.4	001.6	032.4	003.0000	0102.9	026.9	59.32**	10.23
238.0	000.0005	0019.9	001.5	032.4	003.0000	0102.9	027.0	59.26**	10.15
239.0	000.0006	0018.3	001.6	032.3	003.0000	0102.9	027.0	59.28**	10.18
240.0	000.0007	0019.0	001.6	032.2	003.0000	0102.9	027.0	59.30**	10.20
241.0	000.0007	0016.3	001.7	032.1	003.0000	0102.8	027.0	59.30**	10.21
242.0	000.0008	0013.7	001.7	032.0	003.0000	0102.7	026.9	59.31**	10.21
243.0	000.0008	0013.3	001.7	031.9	003.0000	0102.7	026.9	59.31**	10.22
244.0	000.0009	0014.8	001.8	031.8	003.0000	0102.7	026.9	59.32**	10.22
245.0	000.0009	0014.8	001.8	031.7	003.0000	0102.6	026.9	59.31**	10.21
246.0	000.0010	0013.9	001.8	031.7	003.0000	0102.4	026.9	59.31**	10.19
247.0	000.0011	0013.5	001.8	031.6	003.0000	0102.3	026.9	59.30**	10.17
248.0	000.0011	0013.0	001.9	031.5	003.0000	0102.2	026.9	59.29**	10.16
249.0	000.0012	0012.6	001.9	031.4	003.0000	0102.1	026.9	59.29**	10.15
250.0	000.0012	0014.3	001.9	031.3	003.0000	0102.1	026.9	59.28**	10.14
251.0	000.0013	0016.3	001.9	031.2	003.0000	0102.1	026.9	59.28**	10.13
252.0	000.0014	0018.0	002.0	031.1	003.0000	0102.0	026.9	59.27**	10.12
253.0	000.0015	0019.9	002.0	031.0	003.0000	0102.0	026.9	59.27**	10.11
254.0	000.0015	0021.3	002.0	030.9	003.0000	0101.9	026.9	59.25**	10.08
255.0	000.0016	0022.3	002.1	030.8	003.0000	0101.7	026.9	59.24**	10.05
256.0	000.0017	0022.1	002.1	030.7	003.0000	0101.6	026.9	59.22**	10.03
257.0	000.0018	0022.7	002.1	030.7	003.0000	0101.6	026.9	59.21**	10.01
258.0	000.0018	0024.5	002.1	030.6	003.0000	0101.6	026.9	59.21**	10.00
259.0	000.0019	0019.0	002.1	030.5	003.0000	0101.6	026.9	59.20**	9.98

Exhibit 12.6

Contour Protection Studies Toward Select Stations

06-08-2009 NED 03 SEC Terrain Data

WWVB-FM BLH19970307KH

Channel = 257A

Max ERP = 3 kW

RCAMSL = 190 M

N. Lat. 38 08 31.0

W. Lng. 77 41 38.0

Protected

60 dBu

CH258D.P

Channel = 258D

Max ERP = 0.003 kW

RCAMSL = 99 M

N. Lat. 38 21 16.0

W. Lng. 77 30 47.0

Interfering

54 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
350.0	003.0000	0092.2	023.3	268.2	000.0026	0021.0	019.8	23.11	
351.0	003.0000	0092.9	023.4	268.6	000.0026	0021.4	019.4	23.47	
352.0	003.0000	0092.3	023.3	268.5	000.0026	0021.4	019.0	23.80	
353.0	003.0000	0091.3	023.2	268.3	000.0026	0021.0	018.6	24.11	
354.0	003.0000	0091.1	023.2	268.3	000.0026	0021.0	018.2	24.44	
355.0	003.0000	0092.5	023.3	269.0	000.0026	0021.2	017.8	24.84	
356.0	003.0000	0092.6	023.3	269.1	000.0026	0021.2	017.4	25.19	
357.0	003.0000	0092.3	023.3	269.0	000.0026	0021.2	017.0	25.53	
358.0	003.0000	0092.1	023.3	269.0	000.0026	0021.2	016.6	25.86	
359.0	003.0000	0093.6	023.5	269.6	000.0027	0021.2	016.2	26.29	
000.0	003.0000	0091.9	023.3	268.9	000.0026	0021.3	015.8	26.54	
001.0	003.0000	0092.0	023.3	268.8	000.0026	0021.4	015.4	26.89	
002.0	003.0000	0093.1	023.4	269.3	000.0027	0021.1	015.0	27.30	
003.0	003.0000	0093.6	023.5	269.4	000.0027	0021.2	014.5	27.79	
004.0	003.0000	0093.7	023.5	269.4	000.0027	0021.2	014.1	28.28	
005.0	003.0000	0094.4	023.6	269.6	000.0027	0021.2	013.7	28.84	
006.0	003.0000	0094.6	023.6	269.5	000.0027	0021.2	013.3	29.37	
007.0	003.0000	0094.5	023.6	269.2	000.0026	0021.1	012.9	29.90	
008.0	003.0000	0095.0	023.6	269.2	000.0026	0021.1	012.5	30.49	
009.0	003.0000	0095.4	023.7	269.1	000.0026	0021.1	012.1	31.11	
010.0	003.0000	0095.6	023.7	268.8	000.0026	0021.3	011.7	31.70	
011.0	003.0000	0097.0	023.9	269.3	000.0027	0021.1	011.2	32.45	
012.0	003.0000	0098.0	024.0	269.4	000.0027	0021.2	010.8	33.18	
013.0	003.0000	0098.7	024.1	269.3	000.0027	0021.1	010.4	33.88	
014.0	003.0000	0097.8	024.0	268.1	000.0026	0021.0	010.0	34.39	
015.0	003.0000	0098.2	024.0	267.7	000.0025	0020.7	009.6	35.07	
016.0	003.0000	0102.1	024.5	269.6	000.0027	0021.2	009.0	36.27	
017.0	003.0000	0103.0	024.6	269.4	000.0027	0021.2	008.6	37.07	
018.0	003.0000	0103.5	024.6	268.8	000.0026	0021.4	008.2	37.81	
019.0	003.0000	0104.7	024.8	268.7	000.0026	0021.4	007.7	38.69	
020.0	003.0000	0103.5	024.6	266.5	000.0025	0018.9	007.4	39.22	
021.0	003.0000	0102.3	024.5	264.1	000.0023	0021.9	007.1	39.70	
022.0	003.0000	0102.9	024.5	262.9	000.0022	0024.0	006.6	40.57	
023.0	003.0000	0103.0	024.6	261.0	000.0021	0023.6	006.3	41.31	
024.0	003.0000	0103.0	024.6	258.8	000.0019	0024.0	005.9	41.98	
025.0	003.0000	0102.0	024.4	255.3	000.0016	0022.1	005.6	42.09	
026.0	003.0000	0102.5	024.5	252.8	000.0014	0019.6	005.3	42.68	
027.0	003.0000	0104.6	024.7	251.3	000.0013	0017.2	004.8	43.87	
028.0	003.0000	0102.7	024.5	245.7	000.0010	0014.1	004.7	42.92	

MUNN-REESE, INC.

Broadcast Engineering Consultants
Coldwater, MI 49036

Exhibit 12.6

Contour Protection Studies Toward Select Stations

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
029.0	003.0000	0101.7	024.4	240.6	000.0007	0017.5	004.5	41.97	
030.0	003.0000	0101.7	024.4	235.8	000.0004	0018.6	004.3	40.62	
031.0	003.0000	0102.0	024.4	230.6	000.0002	0018.0	004.2	38.30	
032.0	003.0000	0102.7	024.5	225.2	000.0001	0019.4	004.0	35.36	
033.0	003.0000	0103.9	024.7	219.2	000.0000	0016.6	003.8	29.70	
034.0	003.0000	0105.2	024.8	212.6	000.0000	0018.8	003.6	23.73	
035.0	003.0000	0107.7	025.1	205.0	000.0000	0018.4	003.4	17.08	
036.0	003.0000	0107.1	025.0	198.2	000.0000	0023.2	003.5	12.74	
037.0	003.0000	0105.8	024.9	192.7	000.0000	0020.1	003.8	11.35	
038.0	003.0000	0105.8	024.9	187.1	000.0000	0025.0	004.0	10.42	
039.0	003.0000	0105.5	024.8	182.4	000.0000	0030.1	004.3	09.32	
040.0	003.0000	0107.1	025.0	176.6	000.0000	0032.8	004.4	09.45	
041.0	003.0000	0104.7	024.7	175.1	000.0000	0032.5	004.9	07.65	
042.0	003.0000	0102.8	024.5	173.5	000.0000	0033.2	005.4	06.34	
043.0	003.0000	0102.9	024.6	170.6	000.0000	0033.9	005.7	05.48	
044.0	003.0000	0104.3	024.7	167.0	000.0000	0038.2	006.0	06.91	
045.0	003.0000	0106.6	025.0	162.9	000.0000	0045.0	006.2	09.09	
046.0	003.0000	0106.7	025.0	161.1	000.0000	0048.7	006.6	09.30	
047.0	003.0000	0105.7	024.9	160.4	000.0000	0050.8	007.1	08.78	
048.0	003.0000	0106.4	024.9	158.6	000.0000	0054.5	007.4	09.42	
049.0	003.0000	0106.1	024.9	157.7	000.0000	0058.5	007.8	09.60	
050.0	003.0000	0105.9	024.9	156.9	000.0000	0061.7	008.3	09.61	
051.0	003.0000	0105.9	024.9	156.1	000.0000	0064.5	008.7	09.56	
052.0	003.0000	0106.5	024.9	155.0	000.0000	0065.9	009.1	09.45	
053.0	003.0000	0107.0	025.0	154.2	000.0000	0068.3	009.5	09.36	
054.0	003.0000	0106.3	024.9	154.1	000.0000	0068.4	009.9	08.62	
055.0	003.0000	0107.1	025.0	153.3	000.0000	0069.5	010.4	08.37	
056.0	003.0000	0107.1	025.0	152.9	000.0000	0070.1	010.8	07.84	
057.0	003.0000	0108.0	025.1	152.2	000.0000	0071.9	011.2	07.62	
058.0	003.0000	0108.5	025.2	151.8	000.0000	0072.3	011.7	07.14	
059.0	003.0000	0107.5	025.1	152.1	000.0000	0072.0	012.1	06.28	
060.0	003.0000	0107.0	025.0	152.3	000.0000	0071.6	012.5	05.51	
061.0	003.0000	0106.2	024.9	152.6	000.0000	0070.7	013.0	04.66	
062.0	003.0000	0107.2	025.0	152.1	000.0000	0072.0	013.4	04.40	
063.0	003.0000	0107.1	025.0	152.2	000.0000	0071.9	013.8	03.79	
064.0	003.0000	0107.7	025.1	152.0	000.0000	0072.2	014.3	03.34	
065.0	003.0000	0107.7	025.1	152.1	000.0000	0072.1	014.7	02.77	
066.0	003.0000	0108.3	025.1	151.9	000.0000	0072.2	015.2	02.59	
067.0	003.0000	0109.4	025.3	151.6	000.0000	0072.5	015.6	02.34	
068.0	003.0000	0109.7	025.3	151.7	000.0000	0072.4	016.1	01.93	
069.0	003.0000	0111.3	025.4	151.3	000.0000	0072.9	016.5	01.72	
070.0	003.0000	0112.4	025.6	151.2	000.0000	0073.4	017.0	01.44	
071.0	003.0000	0112.8	025.6	151.3	000.0000	0073.1	017.4	00.98	
072.0	003.0000	0112.9	025.6	151.5	000.0000	0072.6	017.9	00.46	
073.0	003.0000	0113.4	025.7	151.6	000.0000	0072.5	018.3	00.04	

Exhibit 12.7 - Directional Antenna Information from Manufacturer

(Actual antenna will be oriented at 280.0°T)



CL-FM FM Log Periodic Antenna 88–108 MHz

The Kathrein Scala Division CL-FM is a ruggedly built log-periodic antenna, designed for professional FM transmit and receive applications.

Like all Kathrein Scala Division antennas, the CL-FM is made of the finest materials using state of the art electrical and mechanical designs, resulting in superior performance and long service life.

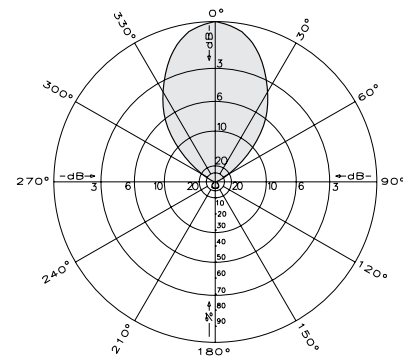
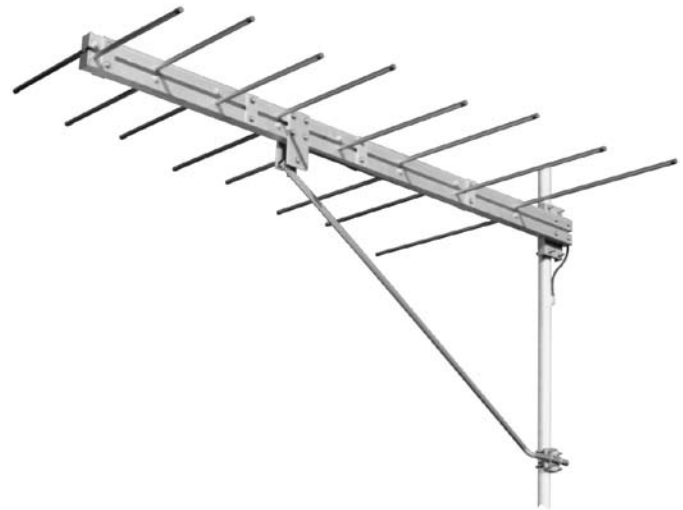
The CL-FM may be used stand-alone or in stacked arrays for higher gain, increased side-lobe suppression, or custom azimuth patterns.

Specifications:

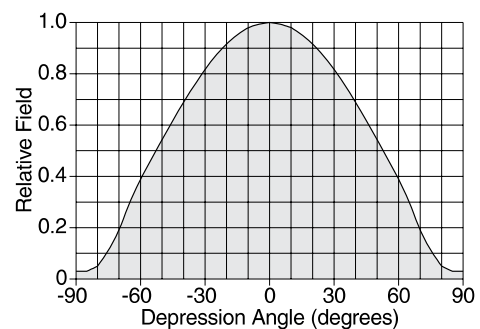
Frequency range	88–108 MHz (broadband)
Gain	7 dBd
Power gain	5.01
Impedance	50 or 75 ohms
VSWR	< 1.5:1
Polarization	Horizontal or vertical
Front-to-back ratio	>25 dB
Maximum input power	250 watts, type "N" 75 ohm connector 500 watts, type "N" 50 ohm connector
Azimuth pattern	52 degrees (half-power) horizontal polarization
Elevation pattern	78 degrees (half-power) horizontal polarization
Connector	Female 50Ω or 75Ω N
Weight	45 lb (20.4 kg)
Dimensions	104 x 67.9 inches (2642 x 1724 mm)
Equivalent flat plate area	
CL-FM/HCM	5.31 ft ² (0.494 m ²)
CL-FM/HRM	5.86 ft ² (0.544 m ²)
CL-FM/VRM	5.86 ft ² (0.544 m ²)
Wind survival rating*	120 mph (200 kph)
Shipping dimensions	116 x 14.5 x 6 inches (2946 x 369 x 153 mm)
Shipping weight	56 lb (25.4 kg)
Mounting	For masts of 2.375 inches (60 mm) OD.
CL-FM/HCM	Horizontal polarization center-mount
CL-FM/HRM	Horizontal polarization rear-mount
CL-FM/VRM	Vertical polarization rear-mount

See reverse for order information.

* Mechanical design is based on environmental conditions as stipulated in EIA-222-F (June 1996) and/or ETS 300 019-1-4 which include the static mechanical load imposed on an antenna by wind at maximum velocity. See the Engineering Section of the catalog for further details.



Azimuth pattern (E-plane)



Elevation pattern (H-plane)

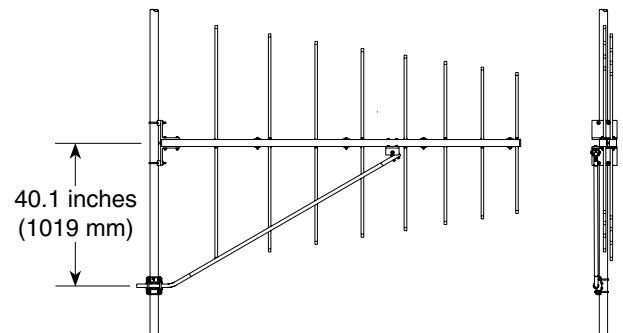
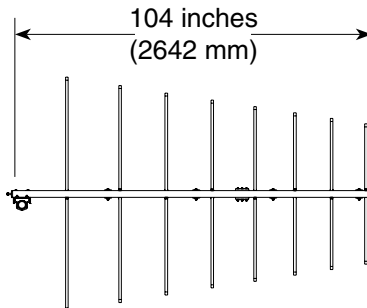
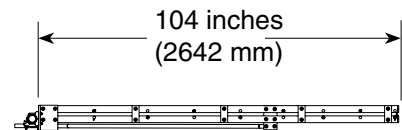
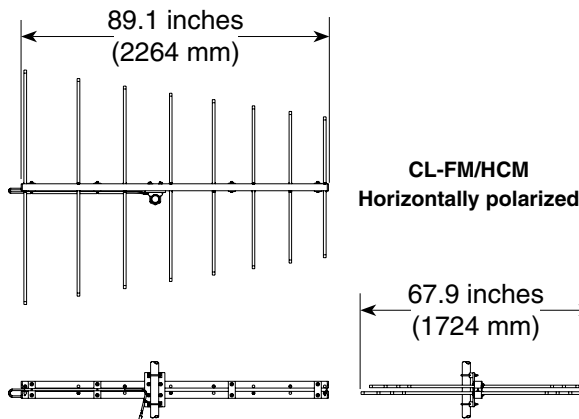


Exhibit 12.7 - Directional Antenna Information from Manufacturer

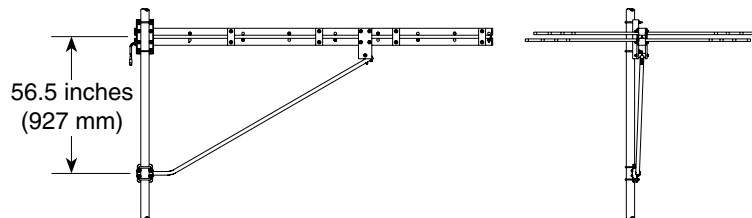
(Actual antenna will be oriented at 280.0°T)



CL-FM FM Log Periodic Antenna 88–108 MHz



Vertically polarized antennas require lateral stabilization (not supplied) to prevent the antenna from turning on the mounting pipe.



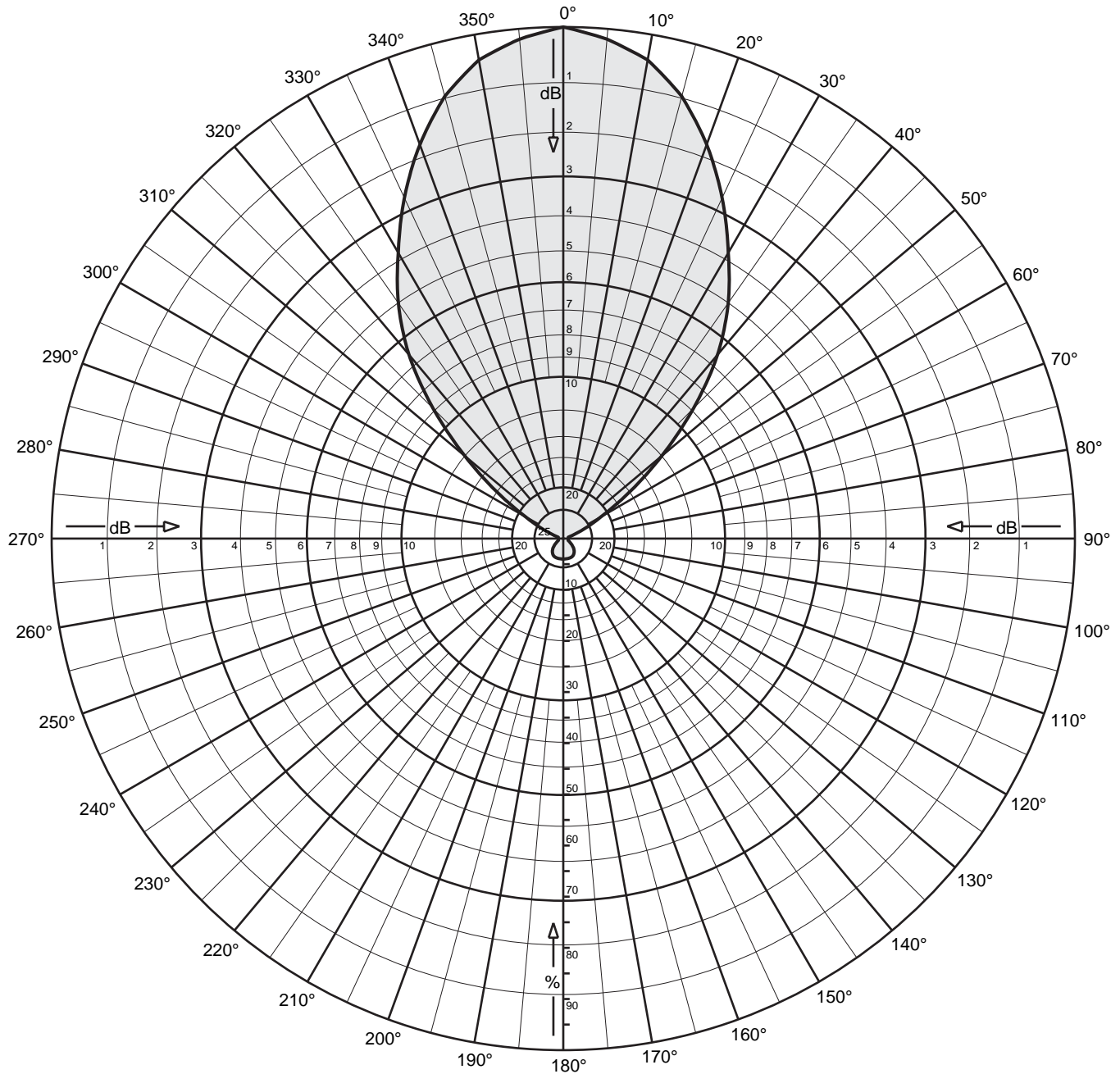
Order Information:

Model	Description
CL-FM/HCM/50N	Antenna with 50Ω N connector Horizontal polarization center-mount
CL-FM/HCM/75N	Antenna with 75Ω N connector Horizontal polarization center-mount
CL-FM/HRM/50N	Antenna with 50Ω N connector Horizontal polarization rear-mount

Order Information:

Model	Description
CL-FM/HRM/75N	Antenna with 75Ω N connector Horizontal polarization rear-mount
CL-FM/VRM/50N	Antenna with 50Ω N connector Vertical polarization rear-mount
CL-FM/VRM/75N	Antenna with 75Ω N connector Vertical polarization rear-mount

Exhibit 12.7 - Directional Antenna Information from Manufacturer
(Actual antenna will be oriented at 280.0°T)



CL-FM Log-periodic
FM
Maximum gain: 7.0 dBd
Horizontal polarization
Horizontal radiation pattern
0 degree electrical downtilt



Exhibit 12.7 - Directional Antenna Information from Manufacturer

(Actual antenna will be oriented at 280.0°T)



CL-FM Log-periodic
FM

Maximum gain: 7.0 dBd

Horizontal polarization

Horizontal radiation pattern
0 degree electrical downtilt

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

Exhibit 12.7 - Directional Antenna Information from Manufacturer

(Actual antenna will be oriented at 280.0°T)



CL-FM Log-periodic
FM

Maximum gain: 7.0 dBd
Horizontal polarization

Horizontal radiation pattern
0 degree electrical downtilt

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
90	0.010	-40.00	-33.00	0.00	135	0.029	-30.75	-23.75	0.00
91	0.010	-40.00	-33.00	0.00	136	0.030	-30.49	-23.49	0.00
92	0.010	-40.00	-33.00	0.00	137	0.031	-30.23	-23.23	0.00
93	0.010	-40.00	-33.00	0.00	138	0.032	-29.98	-22.98	0.01
94	0.010	-40.00	-33.00	0.00	139	0.033	-29.74	-22.74	0.01
95	0.010	-40.00	-33.00	0.00	140	0.034	-29.50	-22.50	0.01
96	0.010	-40.00	-33.00	0.00	141	0.034	-29.37	-22.37	0.01
97	0.010	-40.00	-33.00	0.00	142	0.034	-29.24	-22.24	0.01
98	0.010	-40.00	-33.00	0.00	143	0.035	-29.12	-22.12	0.01
99	0.010	-40.00	-33.00	0.00	144	0.036	-29.00	-22.00	0.01
100	0.010	-40.00	-33.00	0.00	145	0.036	-28.87	-21.87	0.01
101	0.010	-40.00	-33.00	0.00	146	0.036	-28.75	-21.75	0.01
102	0.010	-40.00	-33.00	0.00	147	0.037	-28.64	-21.64	0.01
103	0.010	-40.00	-33.00	0.00	148	0.038	-28.52	-21.52	0.01
104	0.010	-40.00	-33.00	0.00	149	0.038	-28.40	-21.40	0.01
105	0.010	-40.00	-33.00	0.00	150	0.038	-28.29	-21.29	0.01
106	0.010	-40.00	-33.00	0.00	151	0.039	-28.25	-21.25	0.01
107	0.010	-40.00	-33.00	0.00	152	0.039	-28.20	-21.20	0.01
108	0.010	-40.00	-33.00	0.00	153	0.039	-28.16	-21.16	0.01
109	0.010	-40.00	-33.00	0.00	154	0.039	-28.11	-21.11	0.01
110	0.010	-40.00	-33.00	0.00	155	0.039	-28.07	-21.07	0.01
111	0.010	-39.58	-32.58	0.00	156	0.040	-28.05	-21.05	0.01
112	0.011	-39.17	-32.17	0.00	157	0.040	-28.02	-21.02	0.01
113	0.012	-38.79	-31.79	0.00	158	0.040	-28.00	-21.00	0.01
114	0.012	-38.42	-31.42	0.00	159	0.040	-27.98	-20.98	0.01
115	0.012	-38.06	-31.06	0.00	160	0.040	-27.96	-20.96	0.01
116	0.013	-37.72	-30.72	0.00	161	0.040	-27.96	-20.96	0.01
117	0.013	-37.39	-30.39	0.00	162	0.040	-27.96	-20.96	0.01
118	0.014	-37.08	-30.08	0.00	163	0.040	-27.96	-20.96	0.01
119	0.014	-36.77	-29.77	0.00	164	0.040	-27.96	-20.96	0.01
120	0.015	-36.48	-29.48	0.00	165	0.040	-27.96	-20.96	0.01
121	0.016	-35.92	-28.92	0.00	166	0.040	-27.96	-20.96	0.01
122	0.017	-35.39	-28.39	0.00	167	0.040	-27.96	-20.96	0.01
123	0.018	-34.89	-27.89	0.00	168	0.040	-27.96	-20.96	0.01
124	0.019	-34.42	-27.42	0.00	169	0.040	-27.96	-20.96	0.01
125	0.020	-33.98	-26.98	0.00	170	0.040	-27.96	-20.96	0.01
126	0.021	-33.56	-26.56	0.00	171	0.040	-27.96	-20.96	0.01
127	0.022	-33.15	-26.15	0.00	172	0.040	-27.96	-20.96	0.01
128	0.023	-32.77	-25.77	0.00	173	0.040	-27.96	-20.96	0.01
129	0.024	-32.40	-25.40	0.00	174	0.040	-27.96	-20.96	0.01
130	0.025	-32.04	-25.04	0.00	175	0.040	-27.96	-20.96	0.01
131	0.026	-31.77	-24.77	0.00	176	0.040	-27.96	-20.96	0.01
132	0.027	-31.50	-24.50	0.00	177	0.040	-27.96	-20.96	0.01
133	0.027	-31.24	-24.24	0.00	178	0.040	-27.96	-20.96	0.01
134	0.028	-31.00	-24.00	0.00	179	0.040	-27.96	-20.96	0.01

Exhibit 12.7 - Directional Antenna Information from Manufacturer

(Actual antenna will be oriented at 280.0°T)



CL-FM Log-periodic
FM

Maximum gain: 7.0 dBd
Horizontal polarization

Horizontal radiation pattern
0 degree electrical downtilt

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
180	0.040	-27.96	-20.96	0.01	225	0.029	-30.75	-23.75	0.00
181	0.040	-27.96	-20.96	0.01	226	0.028	-31.00	-24.00	0.00
182	0.040	-27.96	-20.96	0.01	227	0.027	-31.24	-24.24	0.00
183	0.040	-27.96	-20.96	0.01	228	0.027	-31.50	-24.50	0.00
184	0.040	-27.96	-20.96	0.01	229	0.026	-31.77	-24.77	0.00
185	0.040	-27.96	-20.96	0.01	230	0.025	-32.04	-25.04	0.00
186	0.040	-27.96	-20.96	0.01	231	0.024	-32.40	-25.40	0.00
187	0.040	-27.96	-20.96	0.01	232	0.023	-32.77	-25.77	0.00
188	0.040	-27.96	-20.96	0.01	233	0.022	-33.15	-26.15	0.00
189	0.040	-27.96	-20.96	0.01	234	0.021	-33.56	-26.56	0.00
190	0.040	-27.96	-20.96	0.01	235	0.020	-33.98	-26.98	0.00
191	0.040	-27.96	-20.96	0.01	236	0.019	-34.42	-27.42	0.00
192	0.040	-27.96	-20.96	0.01	237	0.018	-34.89	-27.89	0.00
193	0.040	-27.96	-20.96	0.01	238	0.017	-35.39	-28.39	0.00
194	0.040	-27.96	-20.96	0.01	239	0.016	-35.92	-28.92	0.00
195	0.040	-27.96	-20.96	0.01	240	0.015	-36.48	-29.48	0.00
196	0.040	-27.96	-20.96	0.01	241	0.014	-36.77	-29.77	0.00
197	0.040	-27.96	-20.96	0.01	242	0.014	-37.08	-30.08	0.00
198	0.040	-27.96	-20.96	0.01	243	0.013	-37.39	-30.39	0.00
199	0.040	-27.96	-20.96	0.01	244	0.013	-37.72	-30.72	0.00
200	0.040	-27.96	-20.96	0.01	245	0.012	-38.06	-31.06	0.00
201	0.040	-27.98	-20.98	0.01	246	0.012	-38.42	-31.42	0.00
202	0.040	-28.00	-21.00	0.01	247	0.012	-38.79	-31.79	0.00
203	0.040	-28.02	-21.02	0.01	248	0.011	-39.17	-32.17	0.00
204	0.040	-28.05	-21.05	0.01	249	0.010	-39.58	-32.58	0.00
205	0.039	-28.07	-21.07	0.01	250	0.010	-40.00	-33.00	0.00
206	0.039	-28.11	-21.11	0.01	251	0.010	-40.00	-33.00	0.00
207	0.039	-28.16	-21.16	0.01	252	0.010	-40.00	-33.00	0.00
208	0.039	-28.20	-21.20	0.01	253	0.010	-40.00	-33.00	0.00
209	0.039	-28.25	-21.25	0.01	254	0.010	-40.00	-33.00	0.00
210	0.038	-28.29	-21.29	0.01	255	0.010	-40.00	-33.00	0.00
211	0.038	-28.40	-21.40	0.01	256	0.010	-40.00	-33.00	0.00
212	0.038	-28.52	-21.52	0.01	257	0.010	-40.00	-33.00	0.00
213	0.037	-28.64	-21.64	0.01	258	0.010	-40.00	-33.00	0.00
214	0.036	-28.75	-21.75	0.01	259	0.010	-40.00	-33.00	0.00
215	0.036	-28.87	-21.87	0.01	260	0.010	-40.00	-33.00	0.00
216	0.036	-29.00	-22.00	0.01	261	0.010	-40.00	-33.00	0.00
217	0.035	-29.12	-22.12	0.01	262	0.010	-40.00	-33.00	0.00
218	0.034	-29.24	-22.24	0.01	263	0.010	-40.00	-33.00	0.00
219	0.034	-29.37	-22.37	0.01	264	0.010	-40.00	-33.00	0.00
220	0.034	-29.50	-22.50	0.01	265	0.010	-40.00	-33.00	0.00
221	0.033	-29.74	-22.74	0.01	266	0.010	-40.00	-33.00	0.00
222	0.032	-29.98	-22.98	0.01	267	0.010	-40.00	-33.00	0.00
223	0.031	-30.23	-23.23	0.00	268	0.010	-40.00	-33.00	0.00
224	0.030	-30.49	-23.49	0.00	269	0.010	-40.00	-33.00	0.00

Exhibit 12.7 - Directional Antenna Information from Manufacturer

(Actual antenna will be oriented at 280.0°T)



CL-FM Log-periodic

FM

Maximum gain: 7.0 dBd

Horizontal polarization

Horizontal radiation pattern

0 degree electrical downtilt

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
270	0.010	-40.00	-33.00	0.00	315	0.360	-8.87	-1.87	0.65
271	0.010	-40.00	-33.00	0.00	316	0.382	-8.36	-1.36	0.73
272	0.010	-40.00	-33.00	0.00	317	0.404	-7.87	-0.87	0.82
273	0.010	-40.00	-33.00	0.00	318	0.426	-7.41	-0.41	0.91
274	0.010	-40.00	-33.00	0.00	319	0.448	-6.97	0.03	1.01
275	0.010	-40.00	-33.00	0.00	320	0.470	-6.56	0.44	1.11
276	0.010	-40.00	-33.00	0.00	321	0.488	-6.22	0.78	1.20
277	0.010	-40.00	-33.00	0.00	322	0.507	-5.90	1.10	1.29
278	0.010	-40.00	-33.00	0.00	323	0.525	-5.59	1.41	1.38
279	0.010	-40.00	-33.00	0.00	324	0.544	-5.29	1.71	1.48
280	0.010	-40.00	-33.00	0.00	325	0.562	-5.00	2.00	1.59
281	0.010	-40.00	-33.00	0.00	326	0.579	-4.75	2.25	1.68
282	0.010	-40.00	-33.00	0.00	327	0.595	-4.50	2.50	1.78
283	0.010	-40.00	-33.00	0.00	328	0.612	-4.26	2.74	1.88
284	0.010	-40.00	-33.00	0.00	329	0.628	-4.03	2.97	1.98
285	0.010	-40.00	-33.00	0.00	330	0.645	-3.81	3.19	2.09
286	0.012	-38.42	-31.42	0.00	331	0.663	-3.57	3.43	2.20
287	0.014	-37.08	-30.08	0.00	332	0.681	-3.34	3.66	2.32
288	0.016	-35.92	-28.92	0.00	333	0.699	-3.11	3.89	2.45
289	0.018	-34.89	-27.89	0.00	334	0.717	-2.89	4.11	2.58
290	0.020	-33.98	-26.98	0.00	335	0.735	-2.67	4.33	2.71
291	0.025	-32.04	-25.04	0.00	336	0.752	-2.48	4.52	2.83
292	0.030	-30.46	-23.46	0.00	337	0.769	-2.28	4.72	2.96
293	0.035	-29.12	-22.12	0.01	338	0.786	-2.09	4.91	3.10
294	0.040	-27.96	-20.96	0.01	339	0.803	-1.91	5.09	3.23
295	0.045	-26.94	-19.94	0.01	340	0.820	-1.72	5.28	3.37
296	0.053	-25.51	-18.51	0.01	341	0.835	-1.57	5.43	3.49
297	0.061	-24.29	-17.29	0.02	342	0.850	-1.41	5.59	3.62
298	0.069	-23.22	-16.22	0.02	343	0.865	-1.26	5.74	3.75
299	0.077	-22.27	-15.27	0.03	344	0.880	-1.11	5.89	3.88
300	0.085	-21.41	-14.41	0.04	345	0.895	-0.96	6.04	4.01
301	0.099	-20.09	-13.09	0.05	346	0.906	-0.86	6.14	4.11
302	0.113	-18.94	-11.94	0.06	347	0.917	-0.75	6.25	4.21
303	0.127	-17.92	-10.92	0.08	348	0.928	-0.65	6.35	4.32
304	0.141	-17.02	-10.02	0.10	349	0.939	-0.55	6.45	4.42
305	0.155	-16.19	-9.19	0.12	350	0.950	-0.45	6.55	4.52
306	0.174	-15.19	-8.19	0.15	351	0.956	-0.39	6.61	4.58
307	0.193	-14.29	-7.29	0.19	352	0.962	-0.34	6.66	4.64
308	0.212	-13.47	-6.47	0.23	353	0.968	-0.28	6.72	4.70
309	0.231	-12.73	-5.73	0.27	354	0.974	-0.23	6.77	4.75
310	0.250	-12.04	-5.04	0.31	355	0.980	-0.18	6.82	4.81
311	0.272	-11.31	-4.31	0.37	356	0.984	-0.14	6.86	4.85
312	0.294	-10.63	-3.63	0.43	357	0.988	-0.10	6.90	4.89
313	0.316	-10.01	-3.01	0.50	358	0.992	-0.07	6.93	4.93
314	0.338	-9.42	-2.42	0.57	359	0.996	-0.03	6.97	4.97