ASR Registration Search
Registration 1015345

Map Registration

Exhibit 13.1 - Copy of Existing Antenna Structure Registration

MUNN-REESE, INC.
Broadcast Engineering Consultants
Coldwater, MI 49036
1(517)278-7339

Registration Detail

Reg Number	1015345	Status	Constructed
File Number	A0941549	Constructed	06/01/1992
EMI	No	Dismantled	
NEPA	No		

Antenna Structure

Structure Type: TOWER - Free standing or Guyed Structure used for Commu

Location (in NAD83 Coordinates)

Lat/Long	40-45-26.0 N 082-47-23.0 W	Address	1458 N MARKET ST
City, State	GALION , OH		
Zip	44833	County	CRAWFORD
Center of AM Array		Position of Tower in Array	

Heights (meters)

Elevation of Site Above Mean Sea Level	Overall Height Above Ground (AGL)
349.0	138.6
Overall Height Above Mean Sea Level	Overall Height Above Ground w/o Appurtenances
487.6	138.6

Painting and Lighting Specifications

FAA Chapters 3, 4, 5, 13
Paint and Light in Accordance with FAA Circular Number 70/7460-1H

FAA Notification

FAA Study	91-AGL-1779-OE	FAA Issue Date	01/24/1992

Owner & Contact Information

FRN	0023451453	Owner Entity Type	Limited Liability Company

Owner

Vertical Bridge Towers, LLC
Attention To: FCC Contact
750 Park of Commerce Drive
Suite 200
Boca Raton , FL 33487

P: (561)221-0987
F:
E: FCC-FAA@verticalbridge.com

Contact

Lindeman , Leslie N
Attention To: FCC Contact
750 Park of Commerce Drive
Suite 200
Boca Raton , FL 33487

P: (561)221-0987
F:
E: FCC-FAA@verticalbridge.com

Last Action Status

Status	Constructed	Received	04/21/2015
Purpose	Admin Update	Entered	04/21/2015
Mode	Interactive		

Related Applications

04/21/2015	A0941549	- Admin Update (AU)
04/06/2015	A0940293	- Change Owner (OC)
04/26/2002	A0259087	- Admin Update (AU)

Related applications (4)

Comments

Comments

None

History

Date	Event
04/22/2015	Registration Printed
04/21/2015	ASR Application receipt email sent: Tower email
04/21/2015	Administrative Update Received

All History (8)

Automated Letters

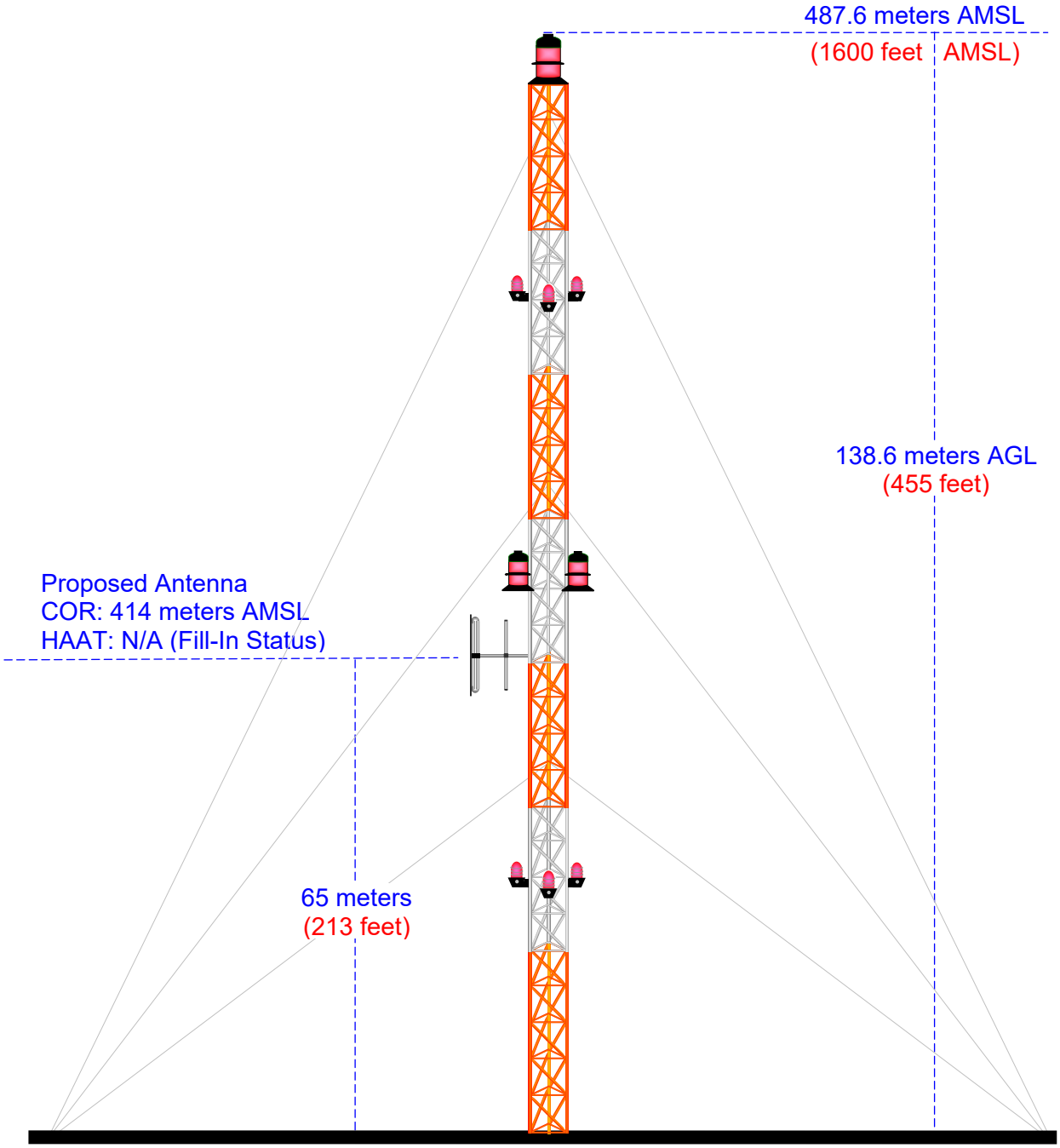
04/22/2015	Authorization, Reference
04/07/2015	Authorization, Reference
04/07/2015	Ownership Change, Reference 856247

All letters (4)

Exhibit 13.2
Vertical Plan of Antenna System

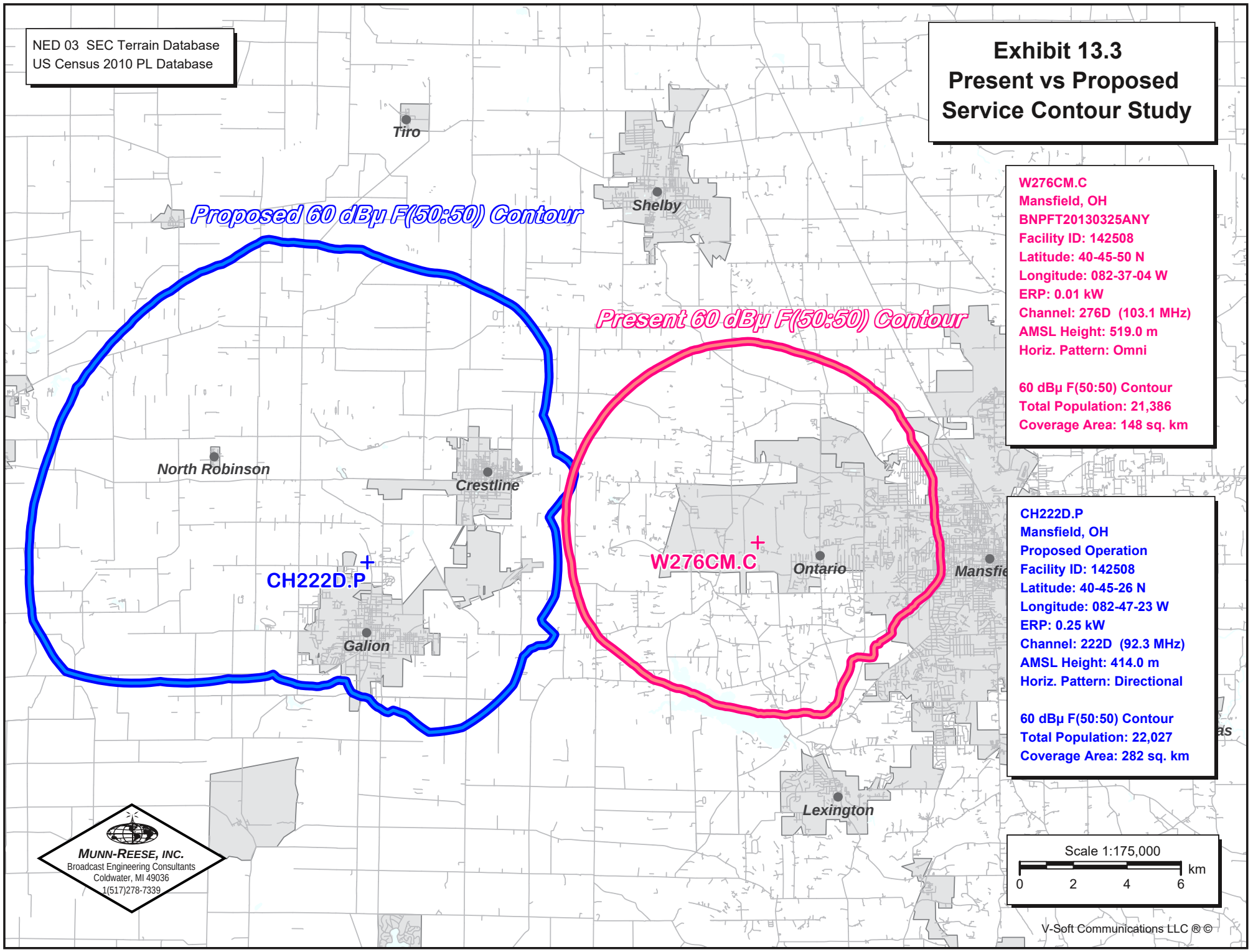
The site is located at 1458 N Market Street;
the city of Galion; Crawford County; Ohio.

Antenna Structure Registration No.		Latitude (D M S)	Longitude (D M S)
1015345	NAD 27 datum values:	40 45 25.79300	82 47 23.34982
	NAD 83 datum values:	40 45 26.00000	82 47 23.00000



Ground Elevation = 349.0 m AMSL (1145 feet)
Drawing is not to Scale

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


NED 03 SEC Terrain Database
US Census 2010 PL Database
Exhibit 13.3
Present vs Proposed
Service Contour Study
Proposed 60 dBµ F(50:50) Contour
Present 60 dBµ F(50:50) Contour
W276CM.C
Mansfield, OH
BNPFT20130325ANY
Facility ID: 142508
Latitude: 40-45-50 N
Longitude: 082-37-04 W
ERP: 0.01 kW
Channel: 276D (103.1 MHz)
AMSL Height: 519.0 m
Horiz. Pattern: Omni
60 dBµ F(50:50) Contour
Total Population: 21,386
Coverage Area: 148 sq. km
CH222D.P
Mansfield, OH
Proposed Operation
Facility ID: 142508
Latitude: 40-45-26 N
Longitude: 082-47-23 W
ERP: 0.25 kW
Channel: 222D (92.3 MHz)
AMSL Height: 414.0 m
Horiz. Pattern: Directional
60 dBµ F(50:50) Contour
Total Population: 22,027
Coverage Area: 282 sq. km
Tiro
Shelby
North Robinson
Crestline
CH222D.P
Galion
W276CM.C
Ontario
Lexington
MUNN-REESE, INC.
Broadcast Engineering Consultants
Coldwater, MI 49036
1(517)278-7339
Scale 1:175,000
0 2 4 6 km
V-Soft Communications LLC ® ©

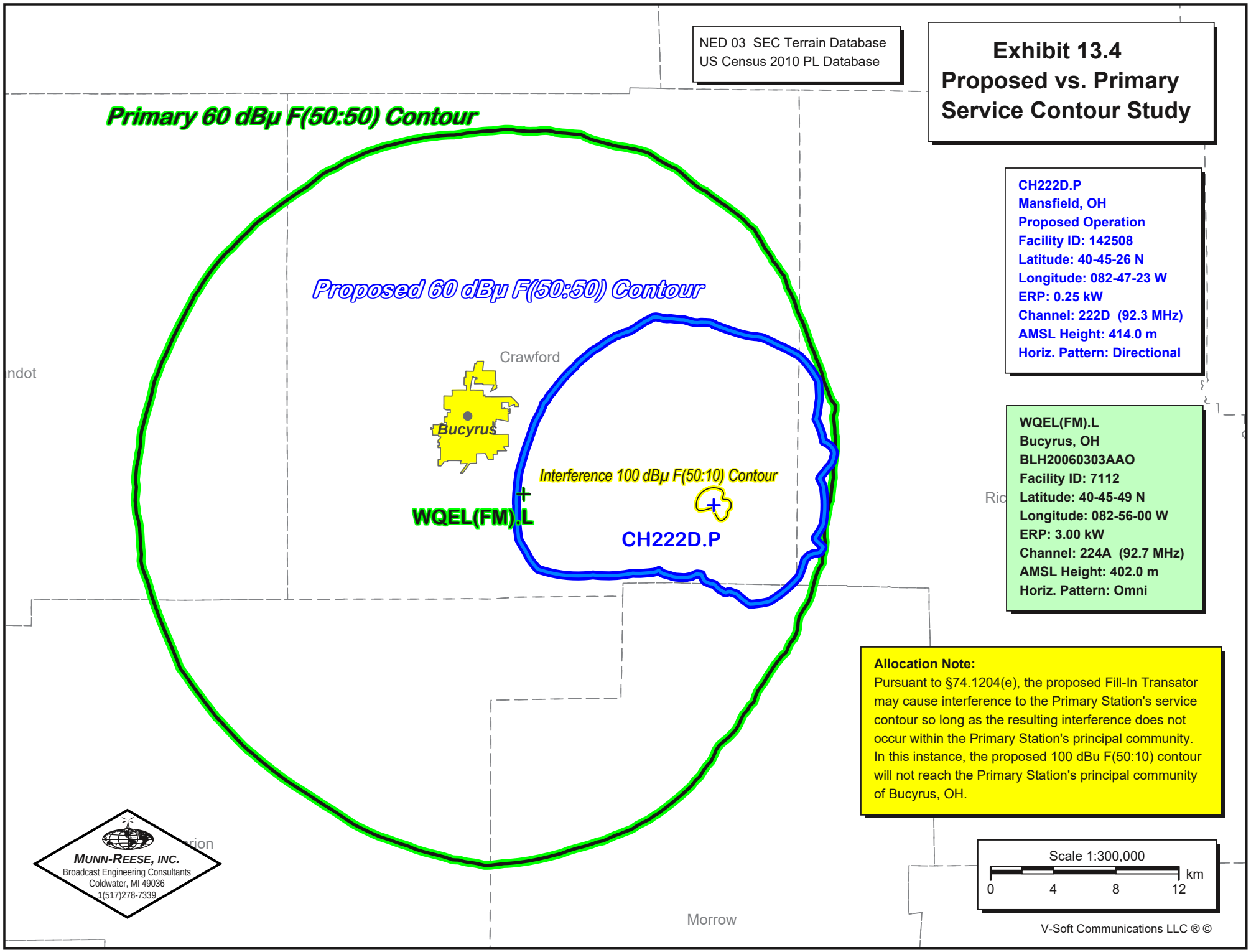

NED 03 SEC Terrain Database
US Census 2010 PL Database
Exhibit 13.4
Proposed vs. Primary
Service Contour Study
Primary 60 dBµ F(50:50) Contour
Proposed 60 dBµ F(50:50) Contour
CH222D.P
Mansfield, OH
Proposed Operation
Facility ID: 142508
Latitude: 40-45-26 N
Longitude: 082-47-23 W
ERP: 0.25 kW
Channel: 222D (92.3 MHz)
AMSL Height: 414.0 m
Horiz. Pattern: Directional
Crawford
Bucyrus
Interference 100 dBµ F(50:10) Contour
WQEL(FM).L
CH222D.P
WQEL(FM).L
Bucyrus, OH
BLH20060303AAO
Facility ID: 7112
Latitude: 40-45-49 N
Longitude: 082-56-00 W
ERP: 3.00 kW
Channel: 224A (92.7 MHz)
AMSL Height: 402.0 m
Horiz. Pattern: Omni
Allocation Note:
Pursuant to §74.1204(e), the proposed Fill-In Transator may cause interference to the Primary Station's service contour so long as the resulting interference does not occur within the Primary Station's principal community. In this instance, the proposed 100 dBu F(50:10) contour will not reach the Primary Station's principal community of Bucyrus, OH.
Morrow
MUNN-REESE, INC.
Broadcast Engineering Consultants
Coldwater, MI 49036
1(517)278-7339
Scale 1:300,000
0 4 8 12 km
V-Soft Communications LLC ® ©

Exhibit 13.5
Tabulation of Proposed Allocation

American Family Association

REFERENCE CH# 222D - 92.3 MHz, Pwr= 0.25 kW DA, HAAT= 68.0 M, COR= 414 M DISPLAY DATES
40 45 26.0 N. Average Protected F(50-50)= 10.75 km DATA 09-11-15
82 47 23.0 W. Standard Directional SEARCH 09-15-15

CH CITY	CALL STATE	TYPE	ANT	AZI <--	DIST FILE #	LAT LNG	PWR(kW) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
222B Columbus	WCOL-FM OH	LIC	_CN	193.1 12.9	89.69 BLH19890808KA	39 58 16.0 83 01 40.0	22.000 230	127.5 475	63.9 Citicasters Licenses, Inc.	-42.3*<	4.7
224A Bucyrus	WQEL OH	LIC	_CX	273.4 93.3	12.11 BLH20060303AAO	40 45 49.0 82 56 00.0	3.000 93	1.9 402	19.4 Franklin Communications, I	-2.4*<	-8.4*<
221A Bellevue	WOHF OH	LIC	NCX	355.7 175.7	53.67 BLH20120913AAR	41 14 19.0 82 50 16.0	5.800 103	38.3 337	25.0 Bas Broadcasting, Inc.	3.7	11.7
223D Mansfield	W223CF OH	CP	_C_	100.1 280.3	22.13 BMPFT20141210ABV	40 43 19.0 82 31 52.0	0.038	6.9 442	4.9 Spirit Communications, Inc	8.2	7.1
219A Mansfield	WOSV« OH	LIC	_CN	101.7 281.9	26.17 BLED19900116KA	40 42 33.0 82 29 11.0	0.750 137	1.6 514	16.8 The Ohio State University	25.5R	0.7M
222B Cleveland Heights	WKRK-FM OH	LIC	DEN	54.6 235.4	132.80 BLH19891128KA	41 26 32.0 81 29 28.0	40.000 167	115.5 465	58.1 Cbs Radio Stations Inc.	8.9	33.7
223B Toledo	WVKS OH	LIC	_CN	322.3 141.7	109.31 BMLH19961008KA	41 31 55.0 83 35 37.0	50.000 146	76.8 340	63.8 Citicasters Licenses, Inc.	20.0	18.9
220A Marion	WXMF« OH	LIC	DCX	246.2 66.0	39.34 BLED20091007ACC	40 36 51.0 83 12 56.0	6.000 93	1.6 367	14.4 Kayser Broadcast Ministrie	25.5R	13.8M
225D Ashland	W225BZ OH	CP	_C_	74.8 255.1	44.43 BNPFT20130828ADF	40 51 39.0 82 16 47.0	0.080 24	0.6 369	5.3 Kent State University	36.7	38.1
220A Gambier	WKCO« OH	LIC	_H_	141.9 322.2	54.10 BMLED20060202ADC	40 22 25.0 82 23 45.0	0.265 58	1.1 379	7.2 Kenyon College	25.5R	28.6M
222B Detroit	WMXD MI	LIC	ZCN	353.2 173.0	176.36 BLH19970303KA	42 19 55.0 83 02 42.0	45.000 146	114.5 331	55.4 Amfm Radio Licenses, L.l.c	50.1	64.2
276A Johnstown	WVKO-FM OH	LIC	_C_	169.4 349.5	59.75 BLH20070606AAJ	40 13 44.0 82 39 35.8	1.600 135	127.7 483	85.7 Tsj Radio, Llc	9.5R	50.3M
220B1 Brunswick	WKJA« OH	LIC	ZCX	76.0 256.6	74.43 BLED20110228AAD	40 54 56.0 81 55 56.0	25.000 97	1.8 424	18.9 Penfold Communications, In	40.5R	33.9M
223B Alliance	WDJQ OH	LIC	DEX	88.0 269.1	141.70 BMLH20021205ABW	40 47 25.0 81 06 26.0	50.000 152	75.3 518	63.2 D. A. Peterson, Inc.	59.4	64.4

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= East Zone, Co to 3rd adjacent.
All separation margins (if shown) include rounding. Call signs with strikeout need not be protected.
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 restricted contour.
< = Contour Overlap

Blue Highlighted Text denotes supplemental contour protection studies toward select facilities as included in ***Exhibit(s) 13.6*** to ***13.7***.

Yellow Highlighted Text denotes given second adjacent interference caused to Primary Station WQEL(FM) - Bucyrus, OH. Interference to the Primary Station is allowable under §74.1204(e) so long as the area of interference does not occur over the primary city of license. In this instance, the area of interference will not enter the primary city of license of Bucyrus, OH as noted in ***Exhibit 13.4.***

Exhibit 13.6
Contour Protection Studies Toward WCOL-FM

FMCommander Single Allocation Study - 09-15-2015 - NED 03 SEC
CH222D.P's Overlaps (In= -42.34 km, Out= 4.71 km)

CH222D.P CH 222 D DA
Lat= 40 45 26.0, Lng= 82 47 23.0
0.25 kW 68 M HAAT, 414 M COR
Prot.= 60 dBu, Intef.= 34 dBu

WCOL-FM CH 222 B BLH19890808KA
Lat= 39 58 16.0, Lng= 83 01 40.0
22.0 kW 230 M HAAT, 475 M COR
Prot.= 54 dBu, Intef.= 40 dBu

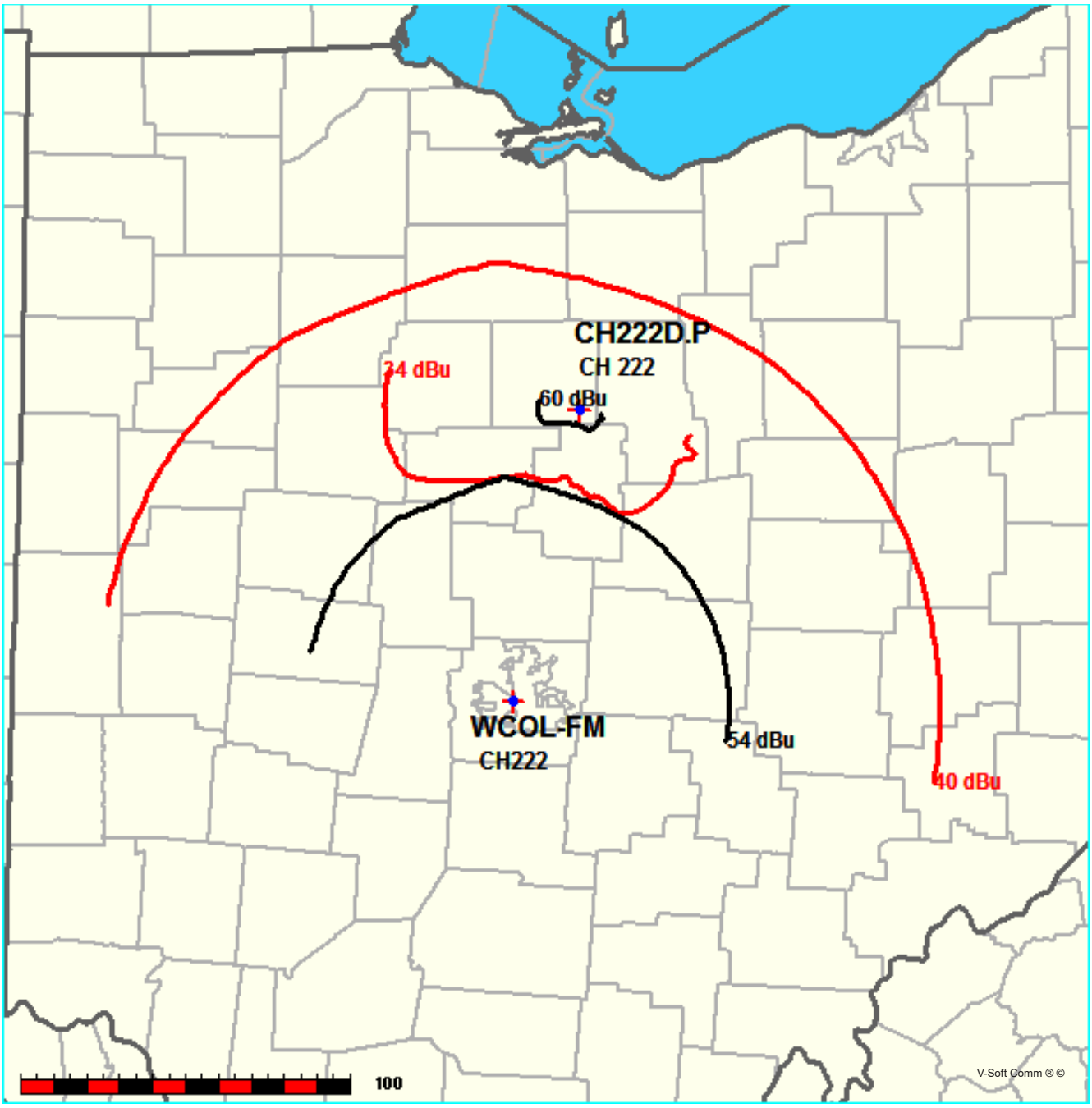


Exhibit 13.6
Contour Protection Studies Toward WCOL-FM

09-15-2015 Terrain Data: NED 03 SEC FMOver Analysis

CH222D.P

Channel = 222D
Max ERP = 0.25 kW
RCAMSL = 414 M
N. Lat. 40 45 26.0
W. Lng. 82 47 23.0
Protected
60 dBu

WCOL-FM BLH19890808KA

Channel = 222B
Max ERP = 22 kW
RCAMSL = 475 M
N. Lat. 39 58 16.0
W. Lng. 83 01 40.0
Interfering
40 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
148.0	000.2500	0022.4	007.1	016.3	022.0000	0211.9	084.8	50.88*	42.33
149.0	000.2500	0021.0	007.1	016.3	022.0000	0211.9	084.7	50.91*	42.42
150.0	000.2500	0019.6	007.1	016.2	022.0000	0211.9	084.7	50.94*	42.52
151.0	000.2450	0018.6	007.1	016.1	022.0000	0212.0	084.6	50.96*	42.59
152.0	000.2401	0018.6	007.0	016.0	022.0000	0212.1	084.5	50.99*	42.65
153.0	000.2352	0018.8	007.0	016.0	022.0000	0212.1	084.5	51.01*	42.72
154.0	000.2304	0018.6	006.9	015.9	022.0000	0212.1	084.4	51.03*	42.77
155.0	000.2256	0018.7	006.9	015.8	022.0000	0212.1	084.4	51.04*	42.83
156.0	000.2209	0019.7	006.9	015.7	022.0000	0212.1	084.3	51.06*	42.87
157.0	000.2162	0020.8	006.8	015.7	022.0000	0212.0	084.3	51.07*	42.92
158.0	000.2116	0022.0	006.8	015.6	022.0000	0212.1	084.2	51.09*	42.96
159.0	000.2070	0022.7	006.8	015.5	022.0000	0212.1	084.2	51.10*	43.01
160.0	000.2025	0023.3	006.7	015.4	022.0000	0212.1	084.1	51.11*	43.05
161.0	000.1849	0024.7	006.6	015.3	022.0000	0212.1	084.2	51.09*	42.99
162.0	000.1681	0026.3	006.4	015.2	022.0000	0212.1	084.3	51.07*	42.93
163.0	000.1521	0027.0	006.3	015.0	022.0000	0212.1	084.3	51.05*	42.86
164.0	000.1369	0028.2	006.1	014.9	022.0000	0212.2	084.4	51.03*	42.78
165.0	000.1225	0029.3	005.9	014.8	022.0000	0212.2	084.5	51.00*	42.69
166.0	000.1089	0030.7	005.8	014.7	022.0000	0212.3	084.6	50.99*	42.65
167.0	000.0961	0032.2	005.8	014.6	022.0000	0212.4	084.6	50.99*	42.66
168.0	000.0841	0033.7	005.7	014.6	022.0000	0212.5	084.6	50.99*	42.66
169.0	000.0729	0035.5	005.6	014.5	022.0000	0212.6	084.6	50.99*	42.66
170.0	000.0625	0037.6	005.6	014.4	022.0000	0212.7	084.6	50.99*	42.67
171.0	000.0576	0039.6	005.6	014.3	022.0000	0212.8	084.5	51.02*	42.75
172.0	000.0529	0041.7	005.6	014.3	022.0000	0212.9	084.4	51.04*	42.83
173.0	000.0484	0043.0	005.6	014.2	022.0000	0213.0	084.4	51.05*	42.85
174.0	000.0441	0043.6	005.5	014.1	022.0000	0213.1	084.5	51.04*	42.82
175.0	000.0400	0044.3	005.4	014.1	022.0000	0213.2	084.5	51.03*	42.78
176.0	000.0361	0045.7	005.4	014.0	022.0000	0213.3	084.6	51.03*	42.78
177.0	000.0324	0046.6	005.3	013.9	022.0000	0213.5	084.6	51.02*	42.75
178.0	000.0289	0047.2	005.2	013.8	022.0000	0213.6	084.7	51.00*	42.68
179.0	000.0256	0047.7	005.1	013.8	022.0000	0213.7	084.8	50.97*	42.60
180.0	000.0225	0049.8	005.0	013.7	022.0000	0213.8	084.8	50.97*	42.60
181.0	000.0210	0050.9	005.0	013.6	022.0000	0213.9	084.8	50.97*	42.60
182.0	000.0196	0052.6	005.0	013.6	022.0000	0214.0	084.8	50.98*	42.63
183.0	000.0182	0053.9	005.0	013.5	022.0000	0214.1	084.8	50.98*	42.63

Exhibit 13.6
Contour Protection Studies Toward WCOL-FM

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	
184.0	000.0169	0055.3	005.0	013.4	022.0000	0214.2	084.8	50.98*	42.63
185.0	000.0156	0056.6	004.9	013.4	022.0000	0214.3	084.8	50.98*	42.62
186.0	000.0144	0058.7	004.9	013.3	022.0000	0214.4	084.8	50.98*	42.63
187.0	000.0132	0059.9	004.9	013.3	022.0000	0214.5	084.9	50.97*	42.60
188.0	000.0121	0060.0	004.7	013.2	022.0000	0214.6	085.0	50.94*	42.52
189.0	000.0110	0059.7	004.6	013.1	022.0000	0214.7	085.1	50.91*	42.41
190.0	000.0100	0058.8	004.5	013.1	022.0000	0214.8	085.2	50.87*	42.28
191.0	000.0100	0058.8	004.5	013.0	022.0000	0214.9	085.2	50.88*	42.30
192.0	000.0100	0059.2	004.5	013.0	022.0000	0215.0	085.2	50.88*	42.32
193.0	000.0100	0059.3	004.5	012.9	022.0000	0215.1	085.2	50.89*	42.34
194.0	000.0100	0059.8	004.5	012.9	022.0000	0215.2	085.2	50.90*	42.37
195.0	000.0100	0061.5	004.6	012.8	022.0000	0215.3	085.1	50.92*	42.44
196.0	000.0100	0063.8	004.7	012.8	022.0000	0215.4	085.0	50.95*	42.52
197.0	000.0100	0066.5	004.7	012.7	022.0000	0215.5	085.0	50.98*	42.62
198.0	000.0100	0068.0	004.8	012.6	022.0000	0215.5	084.9	51.00*	42.68
199.0	000.0100	0069.1	004.8	012.6	022.0000	0215.6	084.9	51.01*	42.71
200.0	000.0100	0070.4	004.9	012.5	022.0000	0215.7	084.9	51.02*	42.76
201.0	000.0100	0072.4	004.9	012.5	022.0000	0215.8	084.8	51.04*	42.82
202.0	000.0100	0073.6	005.0	012.4	022.0000	0215.8	084.8	51.05*	42.85
203.0	000.0100	0074.3	005.0	012.3	022.0000	0215.9	084.8	51.06*	42.86
204.0	000.0100	0075.1	005.0	012.3	022.0000	0215.9	084.8	51.06*	42.88
205.0	000.0100	0076.2	005.1	012.2	022.0000	0216.0	084.7	51.07*	42.91
206.0	000.0100	0077.3	005.1	012.1	022.0000	0216.0	084.7	51.08*	42.93
207.0	000.0100	0078.4	005.2	012.1	022.0000	0216.1	084.7	51.08*	42.95
208.0	000.0100	0079.6	005.2	012.0	022.0000	0216.1	084.7	51.09*	42.97
209.0	000.0100	0080.4	005.2	011.9	022.0000	0216.2	084.7	51.09*	42.98
210.0	000.0100	0081.3	005.2	011.9	022.0000	0216.2	084.7	51.09*	42.99
211.0	000.0100	0081.8	005.3	011.8	022.0000	0216.3	084.7	51.09*	42.98
212.0	000.0100	0082.4	005.3	011.8	022.0000	0216.4	084.7	51.09*	42.98
213.0	000.0100	0083.1	005.3	011.7	022.0000	0216.5	084.7	51.09*	42.98
214.0	000.0100	0084.0	005.3	011.6	022.0000	0216.6	084.7	51.09*	42.98
215.0	000.0100	0085.0	005.4	011.6	022.0000	0216.6	084.7	51.09*	42.98
216.0	000.0100	0086.2	005.4	011.5	022.0000	0216.7	084.7	51.10*	42.99
217.0	000.0100	0086.9	005.4	011.4	022.0000	0216.8	084.8	51.09*	42.98
218.0	000.0100	0087.4	005.4	011.4	022.0000	0216.8	084.8	51.09*	42.96
219.0	000.0100	0086.8	005.4	011.3	022.0000	0216.9	084.8	51.07*	42.90
220.0	000.0100	0086.9	005.4	011.3	022.0000	0216.9	084.9	51.06*	42.87
221.0	000.0110	0088.3	005.6	011.1	022.0000	0217.0	084.8	51.10*	42.99
222.0	000.0121	0088.5	005.8	011.0	022.0000	0217.1	084.7	51.12*	43.07
223.0	000.0132	0088.2	005.9	010.9	022.0000	0217.3	084.7	51.14*	43.13
224.0	000.0144	0088.2	006.0	010.8	022.0000	0217.4	084.6	51.16*	43.19
225.0	000.0156	0088.5	006.1	010.7	022.0000	0217.5	084.6	51.18*	43.26
226.0	000.0169	0088.8	006.2	010.6	022.0000	0217.7	084.5	51.20*	43.32
227.0	000.0182	0089.1	006.4	010.5	022.0000	0217.9	084.5	51.22*	43.38
228.0	000.0196	0089.4	006.5	010.4	022.0000	0218.1	084.5	51.24*	43.44
229.0	000.0210	0089.9	006.6	010.3	022.0000	0218.3	084.4	51.26*	43.50
230.0	000.0225	0090.0	006.7	010.2	022.0000	0218.5	084.4	51.27*	43.53
231.0	000.0256	0090.3	007.0	010.0	022.0000	0218.7	084.3	51.31*	43.65
232.0	000.0289	0090.6	007.2	009.8	022.0000	0219.0	084.2	51.34*	43.76
233.0	000.0324	0091.1	007.4	009.7	022.0000	0219.2	084.2	51.37*	43.87
234.0	000.0361	0091.4	007.6	009.5	022.0000	0219.6	084.1	51.41*	43.97

Exhibit 13.6
Contour Protection Studies Toward WCOL-FM

09-15-2015 Terrain Data: NED 03 SEC FMOver Analysis

WCOL-FM BLH19890808KA	CH222D.P
Channel = 222B	Channel = 222D
Max ERP = 22 kW	Max ERP = 0.25 kW
RCAMSL = 475 M	RCAMSL = 414 M
N. Lat. 39 58 16.0	N. Lat. 40 45 26.0
W. Lng. 83 01 40.0	W. Lng. 82 47 23.0
Protected	Interfering
54 dBu	34 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
328.0	022.0000	0221.4	064.5	239.1	000.0579	0093.2	063.3	26.15	
329.0	022.0000	0219.7	064.4	238.9	000.0572	0093.2	062.2	26.46	
330.0	022.0000	0218.0	064.2	238.8	000.0565	0093.1	061.1	26.77	
331.0	022.0000	0215.9	064.0	238.5	000.0554	0093.0	060.0	27.06	
332.0	022.0000	0215.2	063.9	238.4	000.0548	0092.9	058.9	27.39	
333.0	022.0000	0214.8	063.9	238.3	000.0543	0092.9	057.8	27.74	
334.0	022.0000	0212.7	063.7	238.0	000.0529	0092.7	056.7	28.01	
335.0	022.0000	0210.9	063.6	237.7	000.0516	0092.5	055.6	28.28	
336.0	022.0000	0210.0	063.5	237.5	000.0504	0092.5	054.5	28.58	
337.0	022.0000	0209.5	063.4	237.2	000.0494	0092.5	053.4	28.90	
338.0	022.0000	0209.2	063.4	237.0	000.0482	0092.5	052.3	29.20	
339.0	022.0000	0209.5	063.4	236.7	000.0473	0092.4	051.2	29.51	
340.0	022.0000	0210.1	063.5	236.5	000.0463	0092.5	050.2	29.83	
341.0	022.0000	0210.7	063.5	236.3	000.0452	0092.4	049.1	30.12	
342.0	022.0000	0211.5	063.6	236.0	000.0441	0092.3	048.0	30.41	
343.0	022.0000	0212.5	063.7	235.7	000.0430	0092.3	046.9	30.69	
344.0	022.0000	0214.0	063.8	235.5	000.0418	0092.2	045.8	30.98	
345.0	022.0000	0215.3	064.0	235.1	000.0405	0092.0	044.7	31.24	
346.0	022.0000	0216.7	064.1	234.8	000.0391	0091.6	043.6	31.48	
347.0	022.0000	0218.2	064.2	234.4	000.0376	0091.5	042.5	31.72	
348.0	022.0000	0220.5	064.4	234.0	000.0363	0091.4	041.4	32.01	
349.0	022.0000	0222.9	064.6	233.7	000.0348	0091.3	040.3	32.28	
350.0	022.0000	0225.8	064.9	233.3	000.0334	0091.2	039.2	32.56	
351.0	022.0000	0228.3	065.1	232.8	000.0316	0090.9	038.1	32.77	
352.0	022.0000	0230.7	065.3	232.2	000.0296	0090.6	037.0	32.93	
353.0	022.0000	0233.5	065.6	231.6	000.0276	0090.4	035.9	33.10	
354.0	022.0000	0235.4	065.7	230.8	000.0251	0090.2	034.8	33.14	
355.0	022.0000	0237.6	065.9	230.0	000.0225	0090.0	033.7	33.13	
356.0	022.0000	0241.2	066.2	229.3	000.0214	0089.9	032.6	33.42	

Exhibit 13.6
Contour Protection Studies Toward WCOL-FM

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
357.0	022.0000	0247.2	066.7	228.7	000.0206	0089.8	031.4	33.81
358.0	022.0000	0248.2	066.8	227.4	000.0188	0089.2	030.5	33.86
359.0	022.0000	0245.6	066.6	225.6	000.0164	0088.7	029.7	33.62
000.0	022.0000	0241.1	066.2	223.5	000.0139	0088.1	029.2	33.13
001.0	022.0000	0237.6	065.9	221.5	000.0115	0088.6	028.6	32.71
002.0	022.0000	0233.8	065.6	219.2	000.0100	0086.8	028.2	32.19
003.0	022.0000	0230.8	065.4	217.0	000.0100	0086.9	027.7	32.48
004.0	022.0000	0228.7	065.2	214.8	000.0100	0084.8	027.3	32.53
005.0	022.0000	0227.3	065.0	212.6	000.0100	0082.8	026.8	32.60
006.0	022.0000	0226.2	064.9	210.3	000.0100	0081.4	026.4	32.70
007.0	022.0000	0223.7	064.7	207.8	000.0100	0079.3	026.2	32.62
008.0	022.0000	0221.5	064.5	205.3	000.0100	0076.6	026.0	32.43
009.0	022.0000	0220.7	064.5	202.9	000.0100	0074.2	025.8	32.31
010.0	022.0000	0218.8	064.3	200.4	000.0100	0071.1	025.7	31.98
011.0	022.0000	0217.2	064.1	197.9	000.0100	0067.9	025.7	31.60
012.0	022.0000	0216.1	064.0	195.4	000.0100	0062.3	025.7	30.89
013.0	022.0000	0215.0	063.9	192.9	000.0100	0059.4	025.8	30.46
014.0	022.0000	0213.3	063.8	190.4	000.0100	0058.5	026.0	30.21
015.0	022.0000	0212.2	063.7	188.0	000.0121	0060.0	026.2	31.09
016.0	022.0000	0212.1	063.7	185.6	000.0149	0057.7	026.4	31.56
017.0	022.0000	0211.8	063.6	183.3	000.0179	0054.2	026.6	31.65
018.0	022.0000	0211.1	063.6	181.0	000.0210	0050.9	027.0	31.55
019.0	022.0000	0210.8	063.5	178.8	000.0262	0047.3	027.4	31.60
020.0	022.0000	0210.7	063.5	176.7	000.0335	0046.0	027.8	32.17
021.0	022.0000	0210.5	063.5	174.6	000.0414	0044.1	028.3	32.43
022.0	022.0000	0210.6	063.5	172.7	000.0499	0042.7	028.8	32.66
023.0	022.0000	0211.2	063.6	170.7	000.0588	0039.4	029.3	32.40
024.0	022.0000	0210.8	063.5	169.0	000.0730	0035.5	029.9	32.15
025.0	022.0000	0211.1	063.6	167.3	000.0927	0032.5	030.6	32.23
026.0	022.0000	0211.3	063.6	165.7	000.1135	0030.1	031.3	32.25
027.0	022.0000	0211.8	063.6	164.1	000.1354	0028.4	032.0	32.69
028.0	022.0000	0212.5	063.7	162.6	000.1581	0026.7	032.7	33.08
029.0	022.0000	0213.0	063.7	161.2	000.1809	0025.0	033.5	33.37
030.0	022.0000	0214.1	063.8	159.9	000.2030	0023.1	034.3	33.58
031.0	022.0000	0214.8	063.9	158.6	000.2087	0022.7	035.1	33.40
032.0	022.0000	0215.5	064.0	157.5	000.2139	0021.4	036.0	33.19
033.0	022.0000	0216.1	064.0	156.4	000.2189	0020.2	036.8	32.98
034.0	022.0000	0216.8	064.1	155.4	000.2236	0019.1	037.8	32.76
035.0	022.0000	0217.5	064.2	154.5	000.2280	0018.6	038.7	32.54
036.0	022.0000	0218.3	064.2	153.6	000.2322	0018.6	039.6	32.30
037.0	022.0000	0219.5	064.3	152.8	000.2364	0018.8	040.6	32.08
038.0	022.0000	0219.8	064.4	152.1	000.2397	0018.6	041.6	31.84
039.0	022.0000	0219.9	064.4	151.5	000.2427	0018.4	042.6	31.59
040.0	022.0000	0220.2	064.4	150.9	000.2456	0018.7	043.7	31.35
041.0	022.0000	0220.8	064.5	150.3	000.2484	0019.3	044.7	31.12
042.0	022.0000	0221.0	064.5	149.8	000.2500	0019.8	045.8	30.88
043.0	022.0000	0220.8	064.5	149.5	000.2500	0020.4	046.8	30.62
044.0	022.0000	0221.1	064.5	149.1	000.2500	0020.9	047.9	30.37
045.0	022.0000	0221.9	064.6	148.7	000.2500	0021.6	049.0	30.14
046.0	022.0000	0221.5	064.5	148.4	000.2500	0022.0	050.1	29.90
047.0	022.0000	0221.5	064.5	148.1	000.2500	0022.3	051.2	29.66

Exhibit 13.7
Contour Protection Studies Toward WOHF(FM)

FMCommander Single Allocation Study - 09-15-2015 - NED 03 SEC
CH222D.P's Overlaps (In= 3.72 km, Out= 11.71 km)

CH222D.P CH 222 D DA
Lat= 40 45 26.0, Lng= 82 47 23.0
0.25 kW 68 M HAAT, 414 M COR
Prot.= 60 dBu, Intef.= 54 dBu

WOHF CH 221 A 73.215 N BLH20120913AAR
Lat= 41 14 19.0, Lng= 82 50 16.0
5.8 kW 103 M HAAT, 337.4 M COR
Prot.= 60 dBu, Intef.= 54 dBu

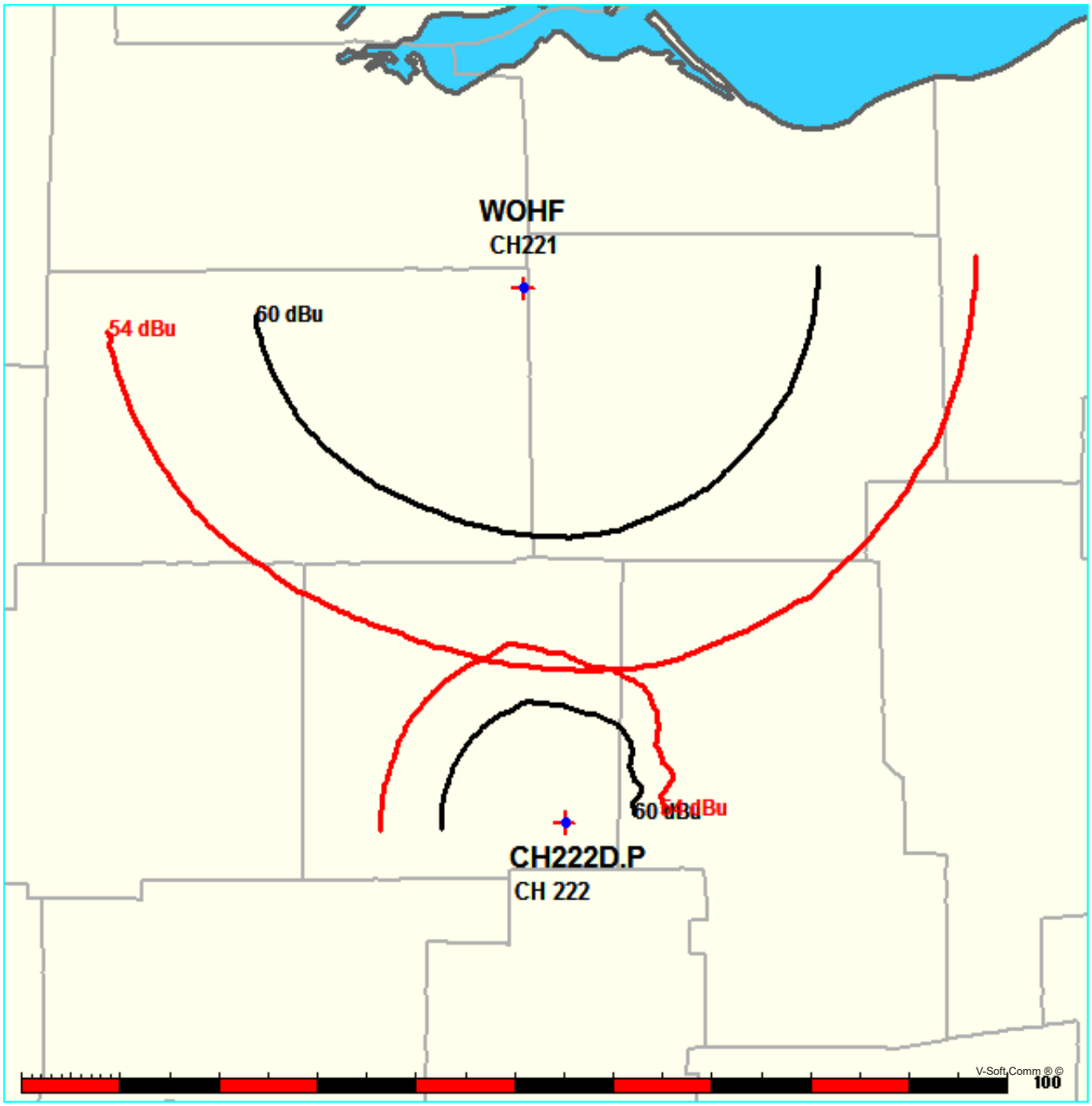


Exhibit 13.7
Contour Protection Studies Toward WOHF(FM)

09-15-2015 Terrain Data: NED 03 SEC FMOver Analysis

CH222D.P	WOHF BLH20120913AAR
Channel = 222D	Channel = 221A
Max ERP = 0.25 kW	Max ERP = 5.8 kW
RCAMSL = 414 M	RCAMSL = 337.4 M
N. Lat. 40 45 26.0	N. Lat. 41 14 19.0
W. Lng. 82 47 23.0	W. Lng. 82 50 16.0
Protected	Interfering
60 dBu	54 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
311.0	000.2500	0094.9	012.5	186.8	005.8000	0074.6	045.6	50.82	
312.0	000.2500	0094.6	012.5	186.6	005.8000	0074.7	045.5	50.89	
313.0	000.2500	0094.7	012.5	186.5	005.8000	0074.8	045.3	50.96	
314.0	000.2500	0094.4	012.5	186.3	005.8000	0074.9	045.1	51.03	
315.0	000.2500	0094.2	012.5	186.1	005.8000	0074.9	044.9	51.10	
316.0	000.2500	0094.7	012.5	186.0	005.8000	0075.0	044.8	51.17	
317.0	000.2500	0094.7	012.5	185.8	005.8000	0075.0	044.6	51.23	
318.0	000.2500	0094.7	012.5	185.6	005.8000	0075.1	044.4	51.30	
319.0	000.2500	0094.6	012.5	185.4	005.8000	0075.3	044.3	51.37	
320.0	000.2500	0094.3	012.5	185.2	005.8000	0075.4	044.1	51.44	
321.0	000.2500	0094.5	012.5	185.0	005.8000	0075.4	044.0	51.50	
322.0	000.2500	0094.5	012.5	184.8	005.8000	0075.5	043.8	51.56	
323.0	000.2500	0094.2	012.5	184.6	005.8000	0075.6	043.7	51.62	
324.0	000.2500	0093.5	012.5	184.3	005.8000	0075.6	043.6	51.67	
325.0	000.2500	0093.6	012.5	184.1	005.8000	0075.6	043.4	51.72	
326.0	000.2500	0093.8	012.5	183.9	005.8000	0075.6	043.3	51.78	
327.0	000.2500	0093.8	012.5	183.7	005.8000	0075.7	043.2	51.83	
328.0	000.2500	0093.6	012.5	183.4	005.8000	0075.7	043.0	51.88	
329.0	000.2500	0093.5	012.5	183.2	005.8000	0075.8	042.9	51.93	
330.0	000.2500	0093.6	012.5	182.9	005.8000	0075.8	042.8	51.99	
331.0	000.2500	0092.9	012.4	182.7	005.8000	0076.0	042.7	52.03	
332.0	000.2500	0092.5	012.4	182.4	005.8000	0076.1	042.6	52.08	
333.0	000.2500	0092.3	012.4	182.1	005.8000	0076.2	042.5	52.13	
334.0	000.2500	0091.5	012.3	181.8	005.8000	0076.3	042.5	52.15	
335.0	000.2500	0091.7	012.3	181.6	005.8000	0076.2	042.4	52.19	
336.0	000.2500	0091.9	012.4	181.3	005.8000	0076.2	042.3	52.23	
337.0	000.2500	0092.7	012.4	181.1	005.8000	0076.4	042.1	52.30	
338.0	000.2500	0093.2	012.4	180.8	005.8000	0076.6	042.0	52.37	
339.0	000.2500	0094.0	012.5	180.6	005.8000	0076.7	041.9	52.43	
340.0	000.2500	0094.5	012.5	180.3	005.8000	0076.6	041.8	52.46	
341.0	000.2500	0094.9	012.5	180.1	005.8000	0076.6	041.7	52.49	
342.0	000.2500	0095.7	012.6	179.8	005.8000	0076.6	041.5	52.54	
343.0	000.2500	0095.2	012.6	179.5	005.8000	0076.7	041.5	52.57	
344.0	000.2500	0093.5	012.5	179.2	005.8000	0076.9	041.6	52.57	
345.0	000.2500	0091.6	012.3	178.8	005.8000	0077.1	041.6	52.57	
346.0	000.2500	0090.4	012.3	178.5	005.8000	0077.2	041.6	52.57	

Exhibit 13.7
Contour Protection Studies Toward WOHF(FM)

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
347.0	000.2500	0089.8	012.2	178.2	005.8000	0077.3	041.6	52.59
348.0	000.2500	0088.6	012.1	177.9	005.8000	0077.6	041.7	52.59
349.0	000.2500	0087.5	012.1	177.6	005.8000	0077.7	041.7	52.60
350.0	000.2500	0086.7	012.0	177.3	005.8000	0077.9	041.7	52.61
351.0	000.2500	0086.0	012.0	177.0	005.8000	0077.9	041.8	52.59
352.0	000.2500	0084.5	011.9	176.7	005.8000	0077.8	041.8	52.56
353.0	000.2500	0083.2	011.8	176.4	005.8000	0077.9	041.9	52.54
354.0	000.2500	0082.2	011.7	176.2	005.8000	0077.9	042.0	52.51
355.0	000.2500	0081.7	011.7	175.9	005.8000	0077.9	042.0	52.50
356.0	000.2500	0081.8	011.7	175.6	005.8000	0077.9	042.0	52.50
357.0	000.2500	0081.5	011.7	175.3	005.8000	0078.0	042.0	52.51
358.0	000.2500	0081.3	011.7	175.0	005.8000	0078.1	042.0	52.52
359.0	000.2500	0081.0	011.6	174.8	005.8000	0078.3	042.1	52.52
000.0	000.2500	0079.5	011.5	174.5	005.8000	0078.4	042.2	52.49
001.0	000.2500	0078.0	011.4	174.2	005.8000	0078.6	042.3	52.46
002.0	000.2500	0077.3	011.4	174.0	005.8000	0078.7	042.4	52.44
003.0	000.2500	0076.2	011.3	173.7	005.8000	0078.8	042.5	52.41
004.0	000.2500	0075.3	011.3	173.5	005.8000	0079.0	042.6	52.40
005.0	000.2500	0074.5	011.2	173.2	005.8000	0079.2	042.7	52.38
006.0	000.2500	0073.8	011.2	173.0	005.8000	0079.3	042.7	52.36
007.0	000.2500	0073.4	011.1	172.8	005.8000	0079.4	042.8	52.34
008.0	000.2500	0072.8	011.1	172.5	005.8000	0079.5	042.9	52.31
009.0	000.2500	0072.5	011.1	172.3	005.8000	0079.6	043.0	52.30
010.0	000.2500	0072.1	011.0	172.0	005.8000	0079.8	043.1	52.28
011.0	000.2500	0071.9	011.0	171.8	005.8000	0079.9	043.1	52.27
012.0	000.2500	0072.0	011.0	171.6	005.8000	0079.9	043.2	52.24
013.0	000.2500	0072.3	011.0	171.3	005.8000	0080.0	043.2	52.23
014.0	000.2500	0072.8	011.1	171.1	005.8000	0080.2	043.3	52.23
015.0	000.2500	0073.0	011.1	170.8	005.8000	0080.4	043.4	52.23
016.0	000.2500	0073.4	011.1	170.6	005.8000	0080.6	043.4	52.23
017.0	000.2500	0073.2	011.1	170.4	005.8000	0080.9	043.5	52.22
018.0	000.2500	0072.8	011.1	170.1	005.8000	0081.0	043.6	52.19
019.0	000.2500	0072.5	011.1	169.9	005.8000	0081.1	043.7	52.16
020.0	000.2500	0072.2	011.0	169.7	005.8000	0081.1	043.8	52.12
021.0	000.2500	0071.8	011.0	169.5	005.8000	0081.2	044.0	52.07
022.0	000.2500	0071.6	011.0	169.3	005.8000	0081.2	044.1	52.04
023.0	000.2500	0071.6	011.0	169.1	005.8000	0081.4	044.2	52.01
024.0	000.2500	0071.5	011.0	168.9	005.8000	0081.4	044.3	51.98
025.0	000.2500	0071.6	011.0	168.7	005.8000	0081.4	044.4	51.93
026.0	000.2500	0071.5	011.0	168.5	005.8000	0081.4	044.5	51.88
027.0	000.2500	0071.4	011.0	168.3	005.8000	0081.4	044.7	51.84
028.0	000.2500	0071.3	011.0	168.1	005.8000	0081.3	044.8	51.79
029.0	000.2500	0071.3	011.0	168.0	005.8000	0081.4	044.9	51.74
030.0	000.2500	0071.2	011.0	167.8	005.8000	0081.4	045.0	51.70
031.0	000.2500	0071.3	011.0	167.6	005.8000	0081.5	045.2	51.66
032.0	000.2500	0071.5	011.0	167.4	005.8000	0081.6	045.3	51.62
033.0	000.2500	0071.4	011.0	167.2	005.8000	0081.7	045.4	51.58
034.0	000.2500	0071.3	011.0	167.1	005.8000	0081.8	045.6	51.54
035.0	000.2500	0071.2	011.0	166.9	005.8000	0081.9	045.7	51.50
036.0	000.2500	0071.0	011.0	166.8	005.8000	0082.1	045.9	51.46
037.0	000.2500	0070.8	010.9	166.6	005.8000	0082.2	046.0	51.41

Exhibit 13.7
Contour Protection Studies Toward WOHF(FM)

09-15-2015 Terrain Data: NED 03 SEC FMOver Analysis

WOHF BLH20120913AAR	CH222D.P
Channel = 221A	Channel = 222D
Max ERP = 5.8 kW	Max ERP = 0.25 kW
RCAMSL = 337.4 M	RCAMSL = 414 M
N. Lat. 41 14 19.0	N. Lat. 40 45 26.0
W. Lng. 82 50 16.0	W. Lng. 82 47 23.0
Protected	Interfering
60 dBu	54 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
131.0	005.8000	0095.9	027.5	025.3	000.2500	0071.6	039.2	39.28	
132.0	005.8000	0095.4	027.5	025.0	000.2500	0071.6	038.8	39.46	
133.0	005.8000	0094.8	027.4	024.7	000.2500	0071.5	038.3	39.62	
134.0	005.8000	0095.7	027.5	024.6	000.2500	0071.5	037.8	39.83	
135.0	005.8000	0095.7	027.5	024.4	000.2500	0071.5	037.4	40.01	
136.0	005.8000	0095.2	027.4	024.0	000.2500	0071.5	037.0	40.19	
137.0	005.8000	0095.3	027.4	023.7	000.2500	0071.6	036.5	40.38	
138.0	005.8000	0094.2	027.3	023.2	000.2500	0071.6	036.1	40.55	
139.0	005.8000	0092.8	027.1	022.6	000.2500	0071.5	035.8	40.68	
140.0	005.8000	0092.4	027.1	022.2	000.2500	0071.6	035.4	40.86	
141.0	005.8000	0092.1	027.0	021.7	000.2500	0071.7	035.0	41.04	
142.0	005.8000	0091.6	026.9	021.2	000.2500	0071.7	034.6	41.21	
143.0	005.8000	0091.0	026.9	020.7	000.2500	0071.9	034.3	41.38	
144.0	005.8000	0090.8	026.8	020.2	000.2500	0072.1	033.9	41.57	
145.0	005.8000	0090.2	026.7	019.7	000.2500	0072.3	033.6	41.75	
146.0	005.8000	0089.7	026.7	019.1	000.2500	0072.5	033.2	41.91	
147.0	005.8000	0089.1	026.6	018.5	000.2500	0072.5	032.9	42.06	
148.0	005.8000	0088.6	026.5	017.9	000.2500	0072.8	032.6	42.24	
149.0	005.8000	0088.3	026.5	017.3	000.2500	0073.1	032.3	42.41	
150.0	005.8000	0087.7	026.4	016.7	000.2500	0073.3	032.0	42.57	
151.0	005.8000	0087.7	026.4	016.1	000.2500	0073.4	031.7	42.73	
152.0	005.8000	0087.1	026.3	015.4	000.2500	0073.2	031.4	42.83	
153.0	005.8000	0086.8	026.3	014.7	000.2500	0073.0	031.1	42.94	
154.0	005.8000	0086.5	026.2	014.0	000.2500	0072.8	030.9	43.05	
155.0	005.8000	0086.4	026.2	013.3	000.2500	0072.5	030.6	43.17	
156.0	005.8000	0086.5	026.2	012.6	000.2500	0072.1	030.3	43.27	
157.0	005.8000	0086.4	026.2	011.9	000.2500	0071.9	030.0	43.38	
158.0	005.8000	0086.4	026.2	011.2	000.2500	0071.9	029.8	43.52	
159.0	005.8000	0085.7	026.1	010.4	000.2500	0071.9	029.6	43.61	
160.0	005.8000	0085.0	026.0	009.5	000.2500	0072.6	029.5	43.77	
161.0	005.8000	0084.8	026.0	008.7	000.2500	0072.6	029.3	43.88	
162.0	005.8000	0084.4	025.9	007.8	000.2500	0072.8	029.1	44.00	
163.0	005.8000	0083.9	025.9	007.0	000.2500	0073.4	029.0	44.14	

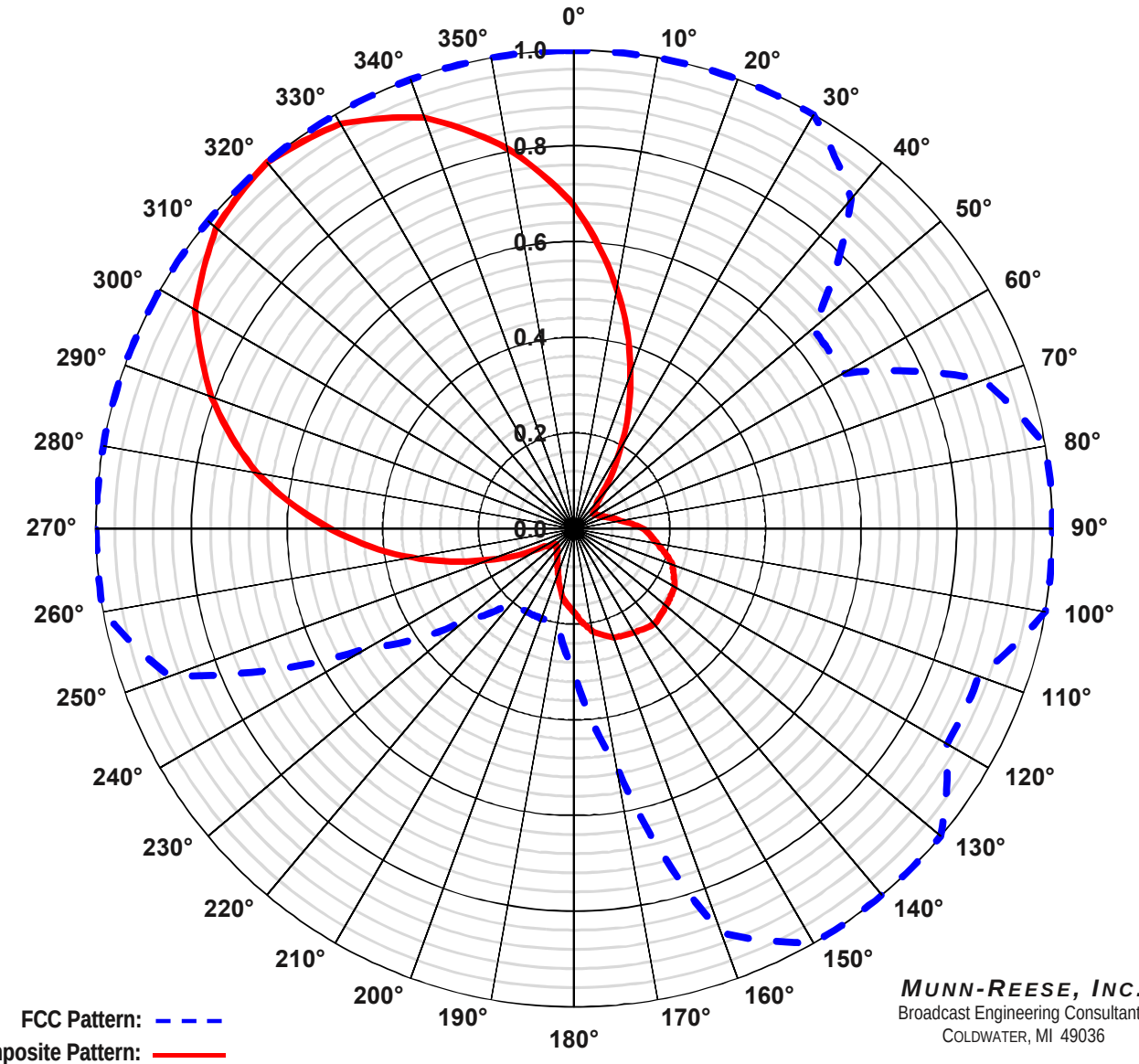
Exhibit 13.7
Contour Protection Studies Toward WOHF(FM)

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
164.0	005.8000	0083.7	025.8	006.1	000.2500	0073.7	028.9	44.27
165.0	005.8000	0082.9	025.7	005.2	000.2500	0074.3	028.8	44.36
166.0	005.8000	0082.2	025.6	004.3	000.2500	0075.0	028.8	44.48
167.0	005.8000	0081.9	025.6	003.4	000.2500	0075.7	028.7	44.62
168.0	005.8000	0081.3	025.5	002.5	000.2500	0076.5	028.6	44.74
169.0	005.8000	0081.4	025.5	001.7	000.2500	0077.6	028.5	44.92
170.0	005.8000	0081.1	025.4	000.8	000.2500	0078.2	028.5	45.02
171.0	005.8000	0080.2	025.3	359.9	000.2500	0079.7	028.5	45.16
172.0	005.8000	0079.8	025.3	359.0	000.2500	0081.1	028.5	45.32
173.0	005.8000	0079.3	025.2	358.1	000.2500	0081.3	028.5	45.33
174.0	005.8000	0078.7	025.1	357.2	000.2500	0081.5	028.6	45.32
175.0	005.8000	0078.2	025.0	356.3	000.2500	0081.8	028.7	45.32
176.0	005.8000	0077.9	025.0	355.4	000.2500	0081.6	028.7	45.27
177.0	005.8000	0077.9	025.0	354.6	000.2500	0081.9	028.7	45.30
178.0	005.8000	0077.5	024.9	353.7	000.2500	0082.4	028.8	45.30
179.0	005.8000	0077.0	024.8	352.9	000.2500	0083.3	028.9	45.34
180.0	005.8000	0076.6	024.8	352.0	000.2500	0084.5	029.0	45.40
181.0	005.8000	0076.5	024.8	351.2	000.2500	0085.8	029.1	45.49
182.0	005.8000	0076.3	024.7	350.4	000.2500	0086.4	029.2	45.49
183.0	005.8000	0075.8	024.7	349.6	000.2500	0087.1	029.4	45.47
184.0	005.8000	0075.6	024.6	348.8	000.2500	0087.7	029.5	45.46
185.0	005.8000	0075.4	024.6	348.0	000.2500	0088.6	029.7	45.48
186.0	005.8000	0075.0	024.5	347.2	000.2500	0089.5	029.9	45.46
187.0	005.8000	0074.5	024.5	346.5	000.2500	0090.1	030.1	45.40
188.0	005.8000	0074.3	024.4	345.8	000.2500	0090.5	030.2	45.35
189.0	005.8000	0074.0	024.4	345.1	000.2500	0091.5	030.5	45.33
190.0	005.8000	0073.8	024.4	344.4	000.2500	0092.8	030.7	45.35
191.0	005.8000	0073.7	024.3	343.7	000.2500	0094.0	030.9	45.37
192.0	005.8000	0073.7	024.3	343.0	000.2500	0095.2	031.1	45.38
193.0	005.8000	0073.5	024.3	342.3	000.2500	0095.9	031.3	45.33
194.0	005.8000	0073.9	024.4	341.6	000.2500	0095.3	031.5	45.18
195.0	005.8000	0073.9	024.4	341.0	000.2500	0094.8	031.7	45.02
196.0	005.8000	0073.3	024.3	340.4	000.2500	0094.5	032.0	44.83
197.0	005.8000	0073.4	024.3	339.8	000.2500	0094.5	032.3	44.71
198.0	005.8000	0073.3	024.3	339.2	000.2500	0094.2	032.5	44.56
199.0	005.8000	0073.0	024.2	338.7	000.2500	0093.7	032.8	44.37
200.0	005.8000	0072.7	024.2	338.2	000.2500	0093.3	033.1	44.18
201.0	005.8000	0072.7	024.2	337.7	000.2500	0093.1	033.4	44.03
202.0	005.8000	0072.9	024.2	337.1	000.2500	0092.8	033.7	43.87
203.0	005.8000	0073.1	024.3	336.6	000.2500	0092.4	034.0	43.70
204.0	005.8000	0073.6	024.3	336.0	000.2500	0091.9	034.3	43.54
205.0	005.8000	0074.2	024.4	335.4	000.2500	0091.8	034.5	43.40
206.0	005.8000	0074.0	024.4	335.0	000.2500	0091.7	034.9	43.24
207.0	005.8000	0074.4	024.5	334.5	000.2500	0091.6	035.2	43.09
208.0	005.8000	0074.5	024.5	334.1	000.2500	0091.5	035.5	42.93
209.0	005.8000	0074.8	024.5	333.6	000.2500	0091.8	035.8	42.81
210.0	005.8000	0075.0	024.5	333.2	000.2500	0092.2	036.2	42.71
211.0	005.8000	0075.2	024.6	332.8	000.2500	0092.4	036.5	42.57
212.0	005.8000	0075.4	024.6	332.4	000.2500	0092.5	036.9	42.42
213.0	005.8000	0075.7	024.6	332.0	000.2500	0092.5	037.2	42.27
214.0	005.8000	0076.1	024.7	331.6	000.2500	0092.5	037.6	42.12

Exhibit 13.8
Directional Antenna Documentation

Azimuth	FCC	Composite
° True	Pattern	Pattern
0°	1.000	0.675
10°	1.000	0.510
20°	1.000	0.345
30°	1.000	0.190
40°	0.900	0.075
50°	0.650	0.050
60°	0.650	0.055
70°	0.910	0.070
80°	1.000	0.097
90°	1.000	0.145
100°	1.000	0.175
110°	0.900	0.218
120°	0.900	0.242
130°	1.000	0.250
140°	1.000	0.260
150°	1.000	0.250
160°	0.900	0.242
170°	0.500	0.218
180°	0.300	0.175
190°	0.200	0.145
200°	0.200	0.097
210°	0.200	0.070
220°	0.200	0.055
230°	0.300	0.050
240°	0.500	0.075
250°	0.900	0.190
260°	1.000	0.345
270°	1.000	0.510
280°	1.000	0.675
290°	1.000	0.808
300°	1.000	0.915
310°	1.000	0.978
320°	1.000	1.000
330°	1.000	0.978
340°	1.000	0.915
350°	1.000	0.808

	Antenna 1	Antenna 2	Antenna 3	Antenna 4	
Model:	CA2-FM(V)				Composite
Orientation	320° True				Power
Power:	100.0%				**100%**



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

Exhibit 13.8 - Copy of Manufacturer's Directional Antenna Pattern Data
(Actual Pattern Rotated to 320.0°T)

MUNN-REESE, INC.
Broadcast Engineering Consultants
Coldwater, MI 49036
1(517)278-7339

KATHREIN
SCALA DIVISION

CA2-FM

FM DIPOLE REFLECTOR ANTENNA
4 dBd gain
88 to 108 MHz

The Scala CA2-FM is a ruggedly built dipole reflector antenna, designed for professional FM transmit and receive applications.

Like all Scala antennas, the CA2-FM is made of the finest materials resulting in superior performance and long service life.

The CA2-FM may be used stand-alone or in stacked arrays for higher gain, increased side-lobe suppression, or custom azimuth patterns.

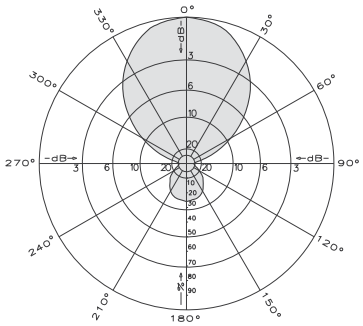
Specifications:

Frequency range	Any specified FM channel 88 to 108 MHz
Gain	4 dBd
Impedance	50 or 75 ohms
VSWR	< 1.5:1
Polarization	Horizontal or Vertical
Front-to-back ratio	>11 dB
Maximum input power	250 watts
Azimuth pattern	72 degrees (half-power)
Elevation pattern	80 degrees (half-power)
Connector	50Ω or 75Ω N female
Weight	5.7 lb (2.6 kg)
Dimensions	35.3 x 68.9 inches maximum (897 x 1750 mm)
Equivalent flat plate area	1.19 ft^2 (0.11 m^2) maximum
Wind survival rating*	120 mph (194 kph)
Shipping dimensions	70 x 6 x 5 inches maximum (1778 x 152 x 127mm)
Shipping weight	10 lb (4.5 kg) maximum
Mounting	For masts of 2.375 inches (60 mm) OD.

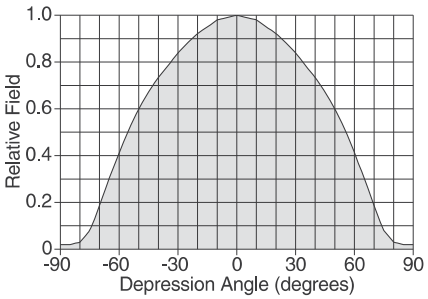
* Mechanical design is based on environmental conditions as stipulated in EIA-222-F (June 1996) and/or ETS 300 019-1-4 which include the static mechanical load imposed on an antenna by wind at maximum velocity. See the Engineering Section of the catalog for further details.

Order Information:

Contact Scala Customer Service for detailed order information.



Azimuth pattern (E-plane - typical)



Elevation pattern (H-plane)

TÜV ISO 9001

10747-A

Exhibit 13.8 - Copy of Manufacturer's Directional Antenna Pattern Data (Actual Pattern Rotated to 320.0°T)

MUNN-REESE, INC.
Broadcast Engineering Consultants
Coldwater, MI 49036
1(517)278-7339

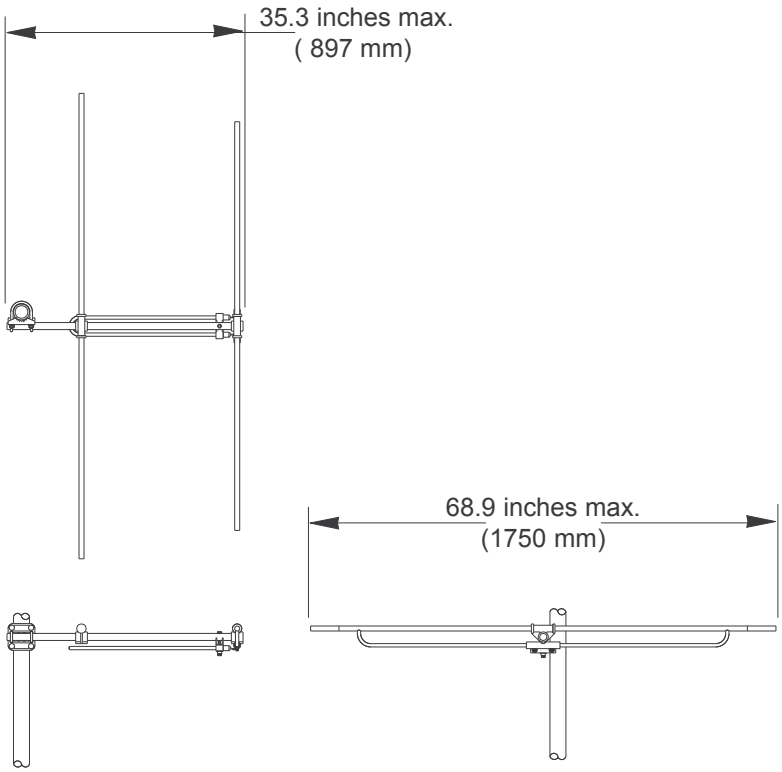
KATHREIN
SCALA DIVISION

CA2-FM

FM DIPOLE REFLECTOR ANTENNA

4 dBd gain

88 to 108 MHz

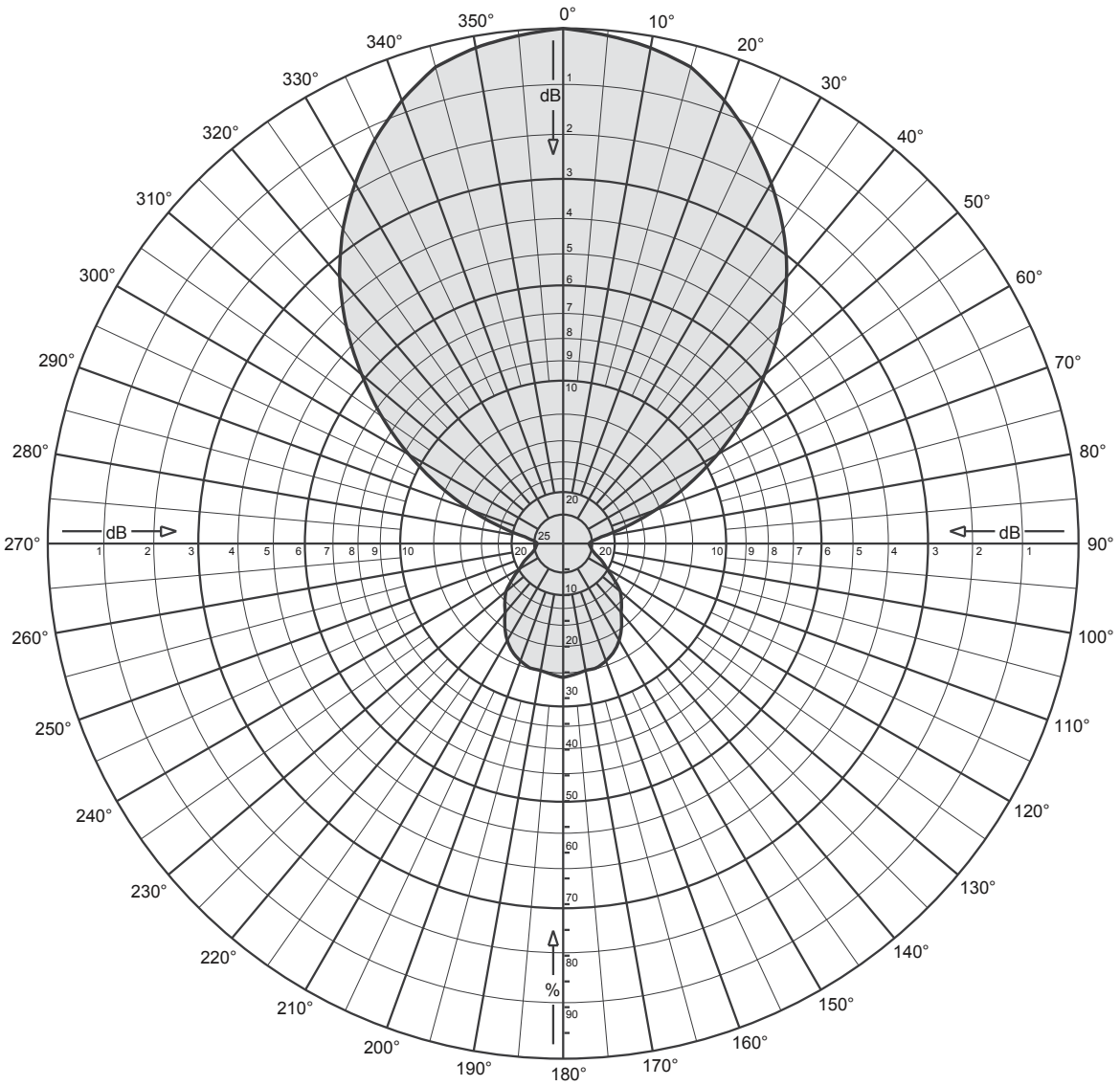


Order Information:

Contact Scala Customer Service for detailed order information.

Exhibit 13.8 - Copy of Manufacturer's Directional Antenna Pattern Data (Actual Pattern Rotated to 320.0°T)

MUNN-REESE, INC.
Broadcast Engineering Consultants
Coldwater, MI 49036
1(517)278-7339



CA2-FM Dipole/Reflector
FM
Maximum gain: 4.0 dBd
Horizontal or Vertical Polarization
Horizontal radiation pattern
0 degree electrical downtilt

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

18-Sep-2008

Exhibit 13.8 - Copy of Manufacturer's Directional Antenna Pattern Data (Actual Pattern Rotated to 320.0°T)

MUNN-REESE, INC.
Broadcast Engineering Consultants
Coldwater, MI 49036
1(517)278-7339

KATHREIN
SCALA DIVISION

CA2-FM Dipole/Reflector
FM
Maximum gain: 4.0 dBd
Horizontal or Vertical Polarization

radiation pattern
0 degree electrical downtilt

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
0	1.000	0.00	4.00	2.51	45	0.595	-4.51	-0.51	0.89
1	0.998	-0.02	3.98	2.50	46	0.578	-4.76	-0.76	0.84
2	0.996	-0.03	3.97	2.49	47	0.561	-5.02	-1.02	0.79
3	0.994	-0.05	3.95	2.48	48	0.544	-5.29	-1.29	0.74
4	0.992	-0.07	3.93	2.47	49	0.527	-5.56	-1.56	0.70
5	0.990	-0.09	3.91	2.46	50	0.510	-5.85	-1.85	0.65
6	0.988	-0.11	3.89	2.45	51	0.494	-6.13	-2.13	0.61
7	0.985	-0.13	3.87	2.44	52	0.478	-6.41	-2.41	0.57
8	0.982	-0.15	3.85	2.42	53	0.462	-6.71	-2.71	0.54
9	0.980	-0.18	3.82	2.41	54	0.446	-7.01	-3.01	0.50
10	0.978	-0.20	3.80	2.40	55	0.430	-7.33	-3.33	0.46
11	0.974	-0.23	3.77	2.38	56	0.413	-7.68	-3.68	0.43
12	0.970	-0.27	3.73	2.36	57	0.396	-8.05	-4.05	0.39
13	0.965	-0.30	3.70	2.34	58	0.379	-8.43	-4.43	0.36
14	0.961	-0.34	3.66	2.32	59	0.362	-8.83	-4.83	0.33
15	0.957	-0.38	3.62	2.30	60	0.345	-9.24	-5.24	0.30
16	0.949	-0.45	3.55	2.26	61	0.329	-9.66	-5.66	0.27
17	0.940	-0.53	3.47	2.22	62	0.313	-10.09	-6.09	0.25
18	0.932	-0.61	3.39	2.18	63	0.297	-10.54	-6.54	0.22
19	0.924	-0.69	3.31	2.14	64	0.281	-11.03	-7.03	0.20
20	0.915	-0.77	3.23	2.10	65	0.265	-11.54	-7.54	0.18
21	0.905	-0.87	3.13	2.06	66	0.250	-12.04	-8.04	0.16
22	0.895	-0.96	3.04	2.01	67	0.235	-12.58	-8.58	0.14
23	0.885	-1.06	2.94	1.97	68	0.220	-13.15	-9.15	0.12
24	0.875	-1.16	2.84	1.92	69	0.205	-13.76	-9.76	0.11
25	0.865	-1.26	2.74	1.88	70	0.190	-14.42	-10.42	0.09
26	0.854	-1.38	2.62	1.83	71	0.177	-15.04	-11.04	0.08
27	0.842	-1.49	2.51	1.78	72	0.164	-15.70	-11.70	0.07
28	0.831	-1.61	2.39	1.73	73	0.151	-16.42	-12.42	0.06
29	0.819	-1.73	2.27	1.68	74	0.138	-17.20	-13.20	0.05
30	0.808	-1.86	2.14	1.64	75	0.125	-18.06	-14.06	0.04
31	0.795	-1.99	2.01	1.59	76	0.115	-18.79	-14.79	0.03
32	0.783	-2.13	1.87	1.54	77	0.105	-19.58	-15.58	0.03
33	0.770	-2.27	1.73	1.49	78	0.095	-20.45	-16.45	0.02
34	0.757	-2.41	1.59	1.44	79	0.085	-21.41	-17.41	0.02
35	0.745	-2.56	1.44	1.39	80	0.075	-22.50	-18.50	0.01
36	0.731	-2.72	1.28	1.34	81	0.071	-22.97	-18.97	0.01
37	0.717	-2.89	1.11	1.29	82	0.067	-23.48	-19.48	0.01
38	0.703	-3.06	0.94	1.24	83	0.063	-24.01	-20.01	0.01
39	0.689	-3.24	0.76	1.19	84	0.059	-24.58	-20.58	0.01
40	0.675	-3.41	0.59	1.14	85	0.055	-25.19	-21.19	0.01
41	0.659	-3.62	0.38	1.09	86	0.054	-25.35	-21.35	0.01
42	0.643	-3.84	0.16	1.04	87	0.053	-25.51	-21.51	0.01
43	0.627	-4.05	-0.05	0.99	88	0.052	-25.68	-21.68	0.01
44	0.611	-4.28	-0.28	0.94	89	0.051	-25.85	-21.85	0.01

18-Sep-2008

Exhibit 13.8 - Copy of Manufacturer's Directional Antenna Pattern Data (Actual Pattern Rotated to 320.0°T)

MUNN-REESE, INC.
Broadcast Engineering Consultants
Coldwater, MI 49036
1(517)278-7339

KATHREIN
SCALA DIVISION

CA2-FM Dipole/Reflector
FM
Maximum gain: 4.0 dBd
Horizontal or Vertical Polarization

radiation pattern
0 degree electrical downtilt

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
90	0.050	-26.02	-22.02	0.01	135	0.160	-15.92	-11.92	0.06
91	0.051	-25.93	-21.93	0.01	136	0.163	-15.76	-11.76	0.07
92	0.051	-25.85	-21.85	0.01	137	0.166	-15.60	-11.60	0.07
93	0.052	-25.76	-21.76	0.01	138	0.169	-15.44	-11.44	0.07
94	0.052	-25.68	-21.68	0.01	139	0.172	-15.29	-11.29	0.07
95	0.053	-25.60	-21.60	0.01	140	0.175	-15.14	-11.14	0.08
96	0.053	-25.51	-21.51	0.01	141	0.179	-14.92	-10.92	0.08
97	0.054	-25.43	-21.43	0.01	142	0.184	-14.70	-10.70	0.09
98	0.054	-25.35	-21.35	0.01	143	0.188	-14.49	-10.49	0.09
99	0.055	-25.27	-21.27	0.01	144	0.193	-14.29	-10.29	0.09
100	0.055	-25.19	-21.19	0.01	145	0.197	-14.09	-10.09	0.10
101	0.056	-25.04	-21.04	0.01	146	0.201	-13.91	-9.91	0.10
102	0.057	-24.88	-20.88	0.01	147	0.205	-13.74	-9.74	0.11
103	0.058	-24.73	-20.73	0.01	148	0.209	-13.58	-9.58	0.11
104	0.059	-24.58	-20.58	0.01	149	0.213	-13.41	-9.41	0.11
105	0.060	-24.44	-20.44	0.01	150	0.218	-13.25	-9.25	0.12
106	0.062	-24.15	-20.15	0.01	151	0.220	-13.13	-9.13	0.12
107	0.064	-23.88	-19.88	0.01	152	0.224	-13.01	-9.01	0.13
108	0.066	-23.61	-19.61	0.01	153	0.226	-12.90	-8.90	0.13
109	0.068	-23.35	-19.35	0.01	154	0.230	-12.78	-8.78	0.13
110	0.070	-23.10	-19.10	0.01	155	0.233	-12.67	-8.67	0.14
111	0.073	-22.73	-18.73	0.01	156	0.235	-12.60	-8.60	0.14
112	0.076	-22.38	-18.38	0.01	157	0.236	-12.52	-8.52	0.14
113	0.079	-22.05	-18.05	0.02	158	0.238	-12.45	-8.45	0.14
114	0.082	-21.72	-17.72	0.02	159	0.241	-12.38	-8.38	0.15
115	0.085	-21.41	-17.41	0.02	160	0.242	-12.31	-8.31	0.15
116	0.087	-21.16	-17.16	0.02	161	0.244	-12.25	-8.25	0.15
117	0.090	-20.92	-16.92	0.02	162	0.246	-12.20	-8.20	0.15
118	0.093	-20.68	-16.68	0.02	163	0.247	-12.15	-8.15	0.15
119	0.095	-20.45	-16.45	0.02	164	0.248	-12.09	-8.09	0.16
120	0.097	-20.22	-16.22	0.02	165	0.250	-12.04	-8.04	0.16
121	0.102	-19.83	-15.83	0.03	166	0.250	-12.04	-8.04	0.16
122	0.107	-19.45	-15.45	0.03	167	0.250	-12.04	-8.04	0.16
123	0.111	-19.09	-15.09	0.03	168	0.250	-12.04	-8.04	0.16
124	0.115	-18.75	-14.75	0.03	169	0.250	-12.04	-8.04	0.16
125	0.120	-18.42	-14.42	0.04	170	0.250	-12.04	-8.04	0.16
126	0.125	-18.06	-14.06	0.04	171	0.251	-12.01	-8.01	0.16
127	0.130	-17.72	-13.72	0.04	172	0.252	-11.97	-7.97	0.16
128	0.135	-17.39	-13.39	0.05	173	0.253	-11.94	-7.94	0.16
129	0.140	-17.08	-13.08	0.05	174	0.254	-11.90	-7.90	0.16
130	0.145	-16.77	-12.77	0.05	175	0.255	-11.87	-7.87	0.16
131	0.148	-16.59	-12.59	0.06	176	0.256	-11.84	-7.84	0.16
132	0.151	-16.42	-12.42	0.06	177	0.257	-11.80	-7.80	0.17
133	0.154	-16.25	-12.25	0.06	178	0.258	-11.77	-7.77	0.17
134	0.157	-16.08	-12.08	0.06	179	0.259	-11.73	-7.73	0.17

Exhibit 13.8 - Copy of Manufacturer's Directional Antenna Pattern Data (Actual Pattern Rotated to 320.0°T)

MUNN-REESE, INC.
Broadcast Engineering Consultants
Coldwater, MI 49036
1(517)278-7339

KATHREIN
SCALA DIVISION

CA2-FM Dipole/Reflector
FM
Maximum gain: 4.0 dBd
Horizontal or Vertical Polarization

radiation pattern
0 degree electrical downtilt

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
180	0.260	-11.70	-7.70	0.17	225	0.160	-15.92	-11.92	0.06
181	0.259	-11.73	-7.73	0.17	226	0.157	-16.08	-12.08	0.06
182	0.258	-11.77	-7.77	0.17	227	0.154	-16.25	-12.25	0.06
183	0.257	-11.80	-7.80	0.17	228	0.151	-16.42	-12.42	0.06
184	0.256	-11.84	-7.84	0.16	229	0.148	-16.59	-12.59	0.06
185	0.255	-11.87	-7.87	0.16	230	0.145	-16.77	-12.77	0.05
186	0.254	-11.90	-7.90	0.16	231	0.140	-17.08	-13.08	0.05
187	0.253	-11.94	-7.94	0.16	232	0.135	-17.39	-13.39	0.05
188	0.252	-11.97	-7.97	0.16	233	0.130	-17.72	-13.72	0.04
189	0.251	-12.01	-8.01	0.16	234	0.125	-18.06	-14.06	0.04
190	0.250	-12.04	-8.04	0.16	235	0.120	-18.42	-14.42	0.04
191	0.250	-12.04	-8.04	0.16	236	0.115	-18.75	-14.75	0.03
192	0.250	-12.04	-8.04	0.16	237	0.111	-19.09	-15.09	0.03
193	0.250	-12.04	-8.04	0.16	238	0.107	-19.45	-15.45	0.03
194	0.250	-12.04	-8.04	0.16	239	0.102	-19.83	-15.83	0.03
195	0.250	-12.04	-8.04	0.16	240	0.097	-20.22	-16.22	0.02
196	0.248	-12.09	-8.09	0.16	241	0.095	-20.45	-16.45	0.02
197	0.247	-12.15	-8.15	0.15	242	0.093	-20.68	-16.68	0.02
198	0.246	-12.20	-8.20	0.15	243	0.090	-20.92	-16.92	0.02
199	0.244	-12.25	-8.25	0.15	244	0.087	-21.16	-17.16	0.02
200	0.242	-12.31	-8.31	0.15	245	0.085	-21.41	-17.41	0.02
201	0.241	-12.38	-8.38	0.15	246	0.082	-21.72	-17.72	0.02
202	0.238	-12.45	-8.45	0.14	247	0.079	-22.05	-18.05	0.02
203	0.236	-12.52	-8.52	0.14	248	0.076	-22.38	-18.38	0.01
204	0.235	-12.60	-8.60	0.14	249	0.073	-22.73	-18.73	0.01
205	0.233	-12.67	-8.67	0.14	250	0.070	-23.10	-19.10	0.01
206	0.230	-12.78	-8.78	0.13	251	0.068	-23.35	-19.35	0.01
207	0.226	-12.90	-8.90	0.13	252	0.066	-23.61	-19.61	0.01
208	0.224	-13.01	-9.01	0.13	253	0.064	-23.88	-19.88	0.01
209	0.220	-13.13	-9.13	0.12	254	0.062	-24.15	-20.15	0.01
210	0.218	-13.25	-9.25	0.12	255	0.060	-24.44	-20.44	0.01
211	0.213	-13.41	-9.41	0.11	256	0.059	-24.58	-20.58	0.01
212	0.209	-13.58	-9.58	0.11	257	0.058	-24.73	-20.73	0.01
213	0.205	-13.74	-9.74	0.11	258	0.057	-24.88	-20.88	0.01
214	0.201	-13.91	-9.91	0.10	259	0.056	-25.04	-21.04	0.01
215	0.197	-14.09	-10.09	0.10	260	0.055	-25.19	-21.19	0.01
216	0.193	-14.29	-10.29	0.09	261	0.055	-25.27	-21.27	0.01
217	0.188	-14.49	-10.49	0.09	262	0.054	-25.35	-21.35	0.01
218	0.184	-14.70	-10.70	0.09	263	0.054	-25.43	-21.43	0.01
219	0.179	-14.92	-10.92	0.08	264	0.053	-25.51	-21.51	0.01
220	0.175	-15.14	-11.14	0.08	265	0.053	-25.60	-21.60	0.01
221	0.172	-15.29	-11.29	0.07	266	0.052	-25.68	-21.68	0.01
222	0.169	-15.44	-11.44	0.07	267	0.052	-25.76	-21.76	0.01
223	0.166	-15.60	-11.60	0.07	268	0.051	-25.85	-21.85	0.01
224	0.163	-15.76	-11.76	0.07	269	0.051	-25.93	-21.93	0.01

Exhibit 13.8 - Copy of Manufacturer's Directional Antenna Pattern Data (Actual Pattern Rotated to 320.0°T)

MUNN-REESE, INC.
Broadcast Engineering Consultants
Coldwater, MI 49036
1(517)278-7339

KATHREIN
SCALA DIVISION

CA2-FM Dipole/Reflector
FM
Maximum gain: 4.0 dBd
Horizontal or Vertical Polarization

radiation pattern
0 degree electrical downtilt

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
270	0.050	-26.02	-22.02	0.01	315	0.595	-4.51	-0.51	0.89
271	0.051	-25.85	-21.85	0.01	316	0.611	-4.28	-0.28	0.94
272	0.052	-25.68	-21.68	0.01	317	0.627	-4.05	-0.05	0.99
273	0.053	-25.51	-21.51	0.01	318	0.643	-3.84	0.16	1.04
274	0.054	-25.35	-21.35	0.01	319	0.659	-3.62	0.38	1.09
275	0.055	-25.19	-21.19	0.01	320	0.675	-3.41	0.59	1.14
276	0.059	-24.58	-20.58	0.01	321	0.689	-3.24	0.76	1.19
277	0.063	-24.01	-20.01	0.01	322	0.703	-3.06	0.94	1.24
278	0.067	-23.48	-19.48	0.01	323	0.717	-2.89	1.11	1.29
279	0.071	-22.97	-18.97	0.01	324	0.731	-2.72	1.28	1.34
280	0.075	-22.50	-18.50	0.01	325	0.745	-2.56	1.44	1.39
281	0.085	-21.41	-17.41	0.02	326	0.757	-2.41	1.59	1.44
282	0.095	-20.45	-16.45	0.02	327	0.770	-2.27	1.73	1.49
283	0.105	-19.58	-15.58	0.03	328	0.783	-2.13	1.87	1.54
284	0.115	-18.79	-14.79	0.03	329	0.795	-1.99	2.01	1.59
285	0.125	-18.06	-14.06	0.04	330	0.808	-1.86	2.14	1.64
286	0.138	-17.20	-13.20	0.05	331	0.819	-1.73	2.27	1.68
287	0.151	-16.42	-12.42	0.06	332	0.831	-1.61	2.39	1.73
288	0.164	-15.70	-11.70	0.07	333	0.842	-1.49	2.51	1.78
289	0.177	-15.04	-11.04	0.08	334	0.854	-1.38	2.62	1.83
290	0.190	-14.42	-10.42	0.09	335	0.865	-1.26	2.74	1.88
291	0.205	-13.76	-9.76	0.11	336	0.875	-1.16	2.84	1.92
292	0.220	-13.15	-9.15	0.12	337	0.885	-1.06	2.94	1.97
293	0.235	-12.58	-8.58	0.14	338	0.895	-0.96	3.04	2.01
294	0.250	-12.04	-8.04	0.16	339	0.905	-0.87	3.13	2.06
295	0.265	-11.54	-7.54	0.18	340	0.915	-0.77	3.23	2.10
296	0.281	-11.03	-7.03	0.20	341	0.924	-0.69	3.31	2.14
297	0.297	-10.54	-6.54	0.22	342	0.932	-0.61	3.39	2.18
298	0.313	-10.09	-6.09	0.25	343	0.940	-0.53	3.47	2.22
299	0.329	-9.66	-5.66	0.27	344	0.949	-0.45	3.55	2.26
300	0.345	-9.24	-5.24	0.30	345	0.957	-0.38	3.62	2.30
301	0.362	-8.83	-4.83	0.33	346	0.961	-0.34	3.66	2.32
302	0.379	-8.43	-4.43	0.36	347	0.965	-0.30	3.70	2.34
303	0.396	-8.05	-4.05	0.39	348	0.970	-0.27	3.73	2.36
304	0.413	-7.68	-3.68	0.43	349	0.974	-0.23	3.77	2.38
305	0.430	-7.33	-3.33	0.46	350	0.978	-0.20	3.80	2.40
306	0.446	-7.01	-3.01	0.50	351	0.980	-0.18	3.82	2.41
307	0.462	-6.71	-2.71	0.54	352	0.982	-0.15	3.85	2.42
308	0.478	-6.41	-2.41	0.57	353	0.985	-0.13	3.87	2.44
309	0.494	-6.13	-2.13	0.61	354	0.988	-0.11	3.89	2.45
310	0.510	-5.85	-1.85	0.65	355	0.990	-0.09	3.91	2.46
311	0.527	-5.56	-1.56	0.70	356	0.992	-0.07	3.93	2.47
312	0.544	-5.29	-1.29	0.74	357	0.994	-0.05	3.95	2.48
313	0.561	-5.02	-1.02	0.79	358	0.996	-0.03	3.97	2.49
314	0.578	-4.76	-0.76	0.84	359	0.998	-0.02	3.98	2.50