

Exhibit 13.1 - Copy of Existing Antenna Structure Registration



Registration Detail

Reg Number	1275320	Status	Constructed
File Number	A0734962	Constructed	04/30/2011
EMI	No	Dismantled	
NEPA	No		

Antenna Structure

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

Location (in NAD83 Coordinates)

Lat/Long	42-42-45.7 N 084-36-49.4 W	Address	4518 W. Mt. Hope Hwy
City, State	Lansing , MI		
Zip	48917	County	EATON
Center of AM Array		Position of Tower in Array	

Heights (meters)

Elevation of Site Above Mean Sea Level	Overall Height Above Ground (AGL)
264.6	60.6
Overall Height Above Mean Sea Level	Overall Height Above Ground w/o Appurtenances
325.2	54.8

Painting and Lighting Specifications

None

FAA Notification

FAA Study	2010-AGL-3518-OE	FAA Issue Date	08/03/2010
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Owner & Contact Information

FRN	0002730505	Owner Entity Type	
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Owner

Eaton County Central Dispatch
Attention To: Steve Leese, Director
911 Courthouse Drive
Charlotte , MI 48813

P: (517)543-4921
F:
E: sleese@eatoncounty.org

Contact

Johnson , Jim
511 E. 8th Street
Holland , MI 49423

P: (616)396-3541
F:
E: jim_johnson@tele-rad.com

Last Action Status

Status	Constructed	Received	08/19/2011
Purpose	Notification	Entered	08/19/2011
Mode	Interactive		

Related Applications

08/19/2011	A0734962 - Notification (NT)
08/04/2010	A0692303 - New (NE)

Comments

Comments

None

History

Date

08/19/2011
08/09/2011
08/05/2010
All History (4)

Event

Construction Notification Received
Construction Reminder Letter Sent
Registration Printed

Automated Letters

08/09/2011	Construction Reminder, Reference 693954
08/05/2010	Authorization, Reference

Exhibit 13.2

Vertical Plan of Antenna System

The site is located at 4518 West Mt. Hope Highway;
the city of Lansing, Eaton County, Michigan.

Site Location (NAD 27)

NL: 42° 42' 46"

WL: 84° 36' 49"

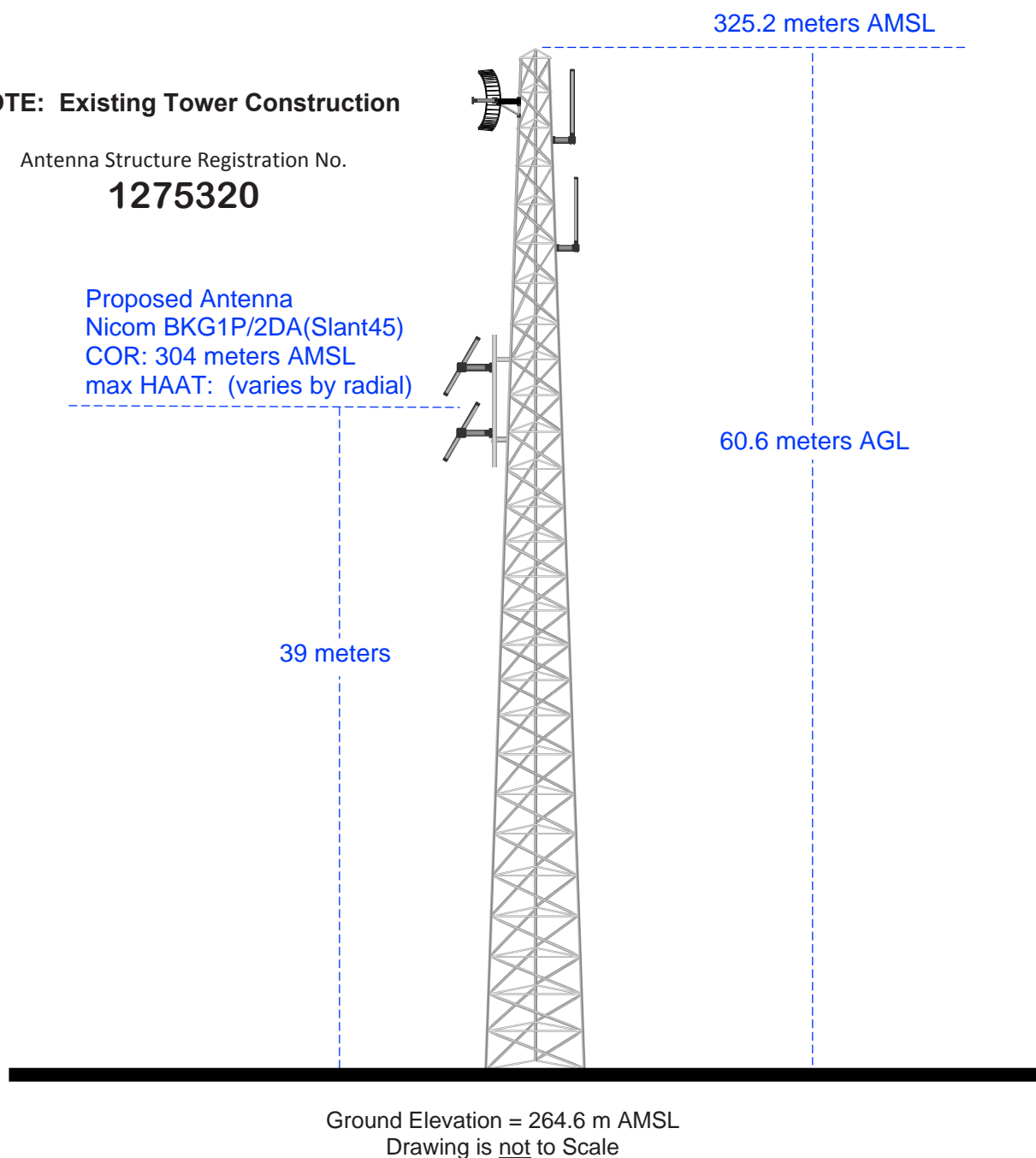
(42-42-45.7NL; 84-36-49.4WL NAD1983)

NOTE: Existing Tower Construction

Antenna Structure Registration No.

1275320

Proposed Antenna
Nicom BKG1P/2DA(Slant45)
COR: 304 meters AMSL
max HAAT: (varies by radial)



MUNN-REESE, INC.

Broadcast Engineering Consultants
Coldwater, MI 49036

Terrain
222 313 m

USGS 03 SEC Terrain Database
U.S. Census 2010 PL Database

Exhibit 13.3 Present vs. Proposed Service Contour Study

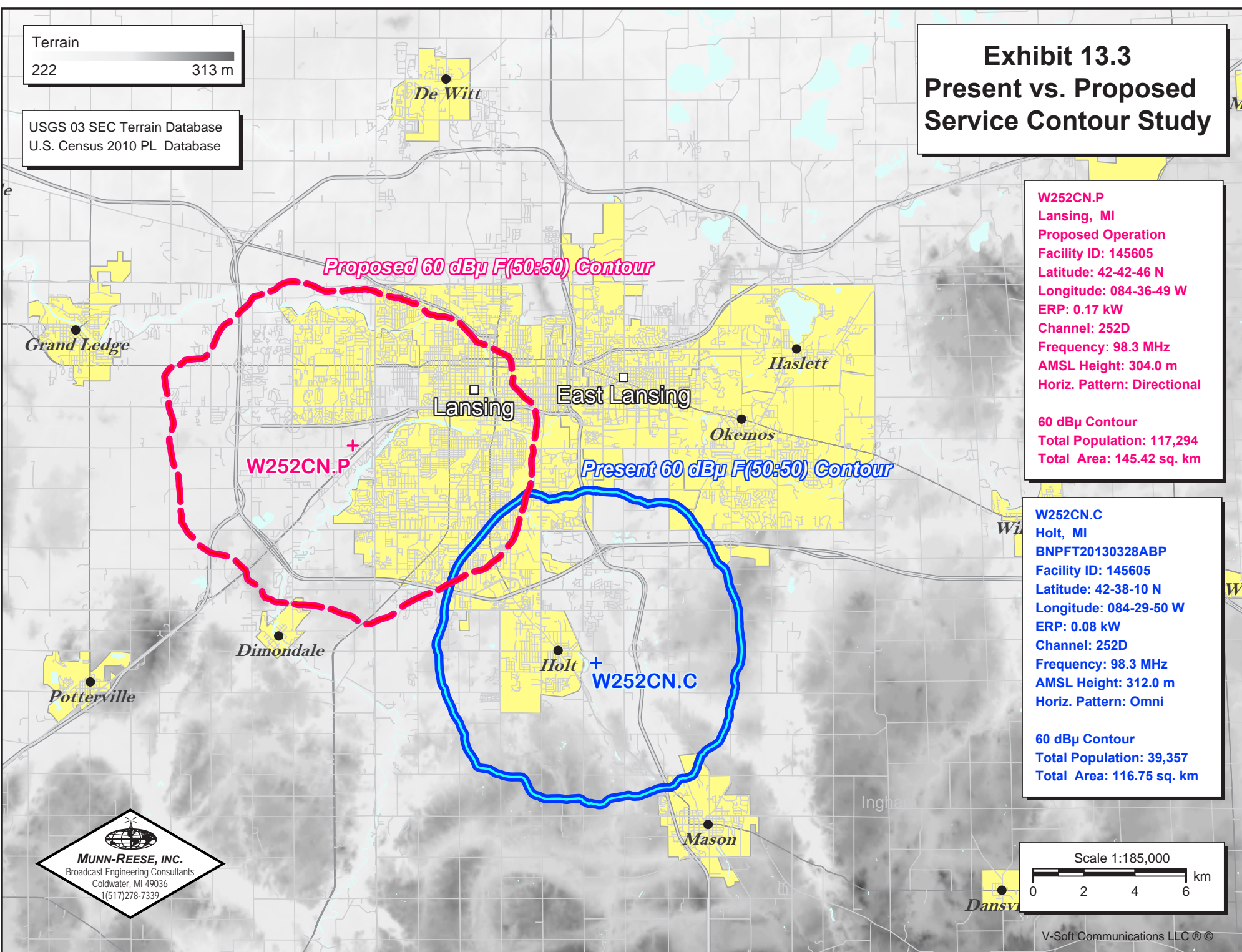


Exhibit 13.4 Proposed vs. Primary Service Contour Study

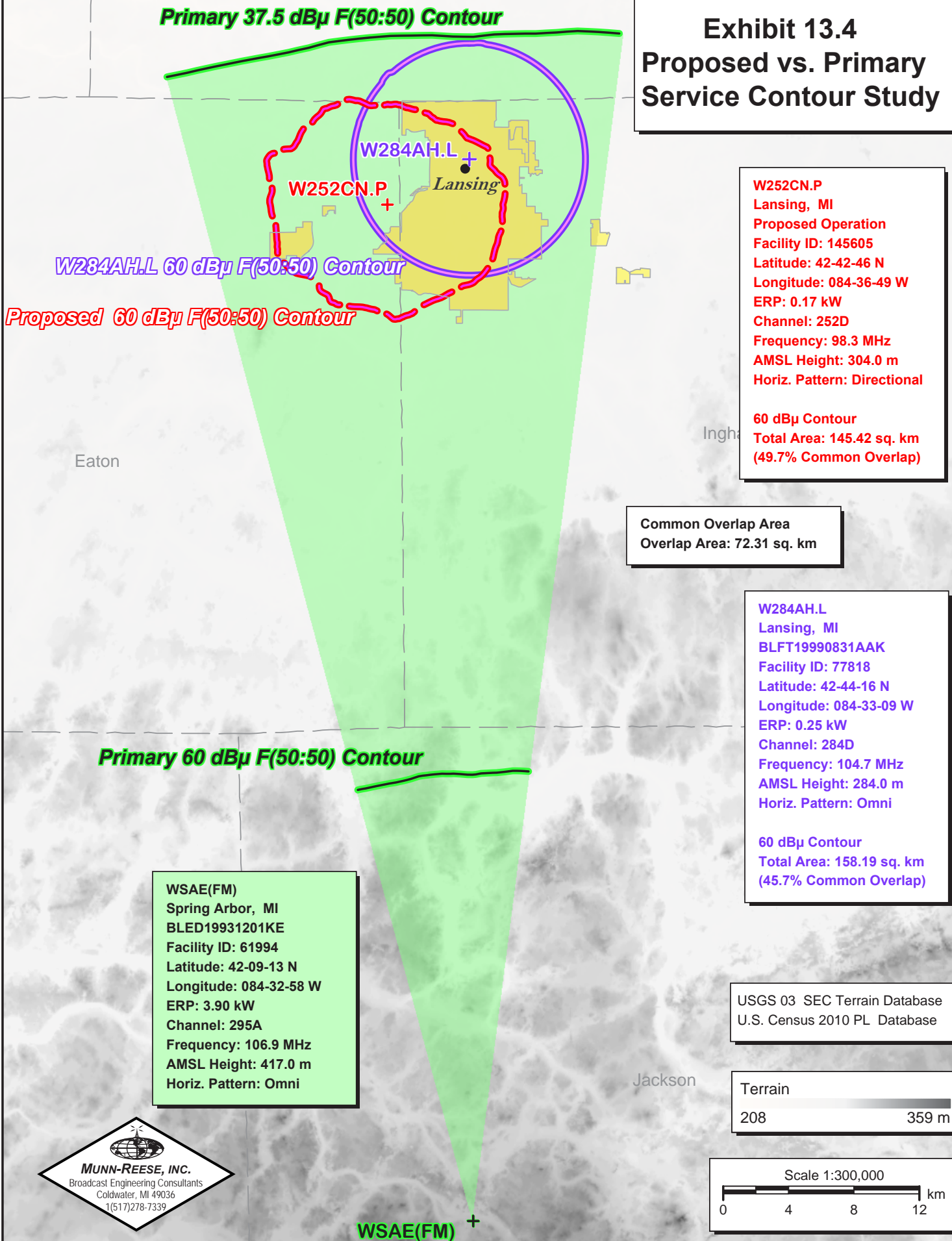


Exhibit 13.5

Tabulation of Proposed Allocation

REFERENCE 42 42 46.0 N. 84 36 49.0 W.												CH# 252D - 98.3 MHz, Pwr= 0.17 kW DA, HAAT= 41.3 M, COR= 304 M Average Protected F(50-50)= 7.49 km Standard Directional												DI SPLAY DATES DATA 07-22-14 SEARCH 07-24-14											
CH CITY		CALL		TYPE ANT STATE		AZI ---		DIST FILE #		LAT LNG		PWR(kW) HAAT(M)		INT(km) COR(M)		PRO(km) LICENSEE		*IN* (Overlap in km)		*OUT*															
252D Holt		W252CN		CP _C_ MI		131.8 311.9		12.77 BNPFT20130328ABP		42 38 10.0 84 29 50.0		0.080 43		22.3 312		6.7 Spring Arbor University		-16.7*		-17.7															
253B Coldwater		WNWN-FM		LIC _CN MI		203.5 23.3		79.35 BLH19790601AC		42 03 28.0 84 59 51.0		50.000 143		76.5 436		63.6 Midwest Communications, Inc.		-3.9<		2.3															
251B Saginaw		WKQC		LIC _CX MI		35.5 216.0		96.60 BMLH20100823ABD		43 25 04.0 83 55 06.0		50.000 150		78.1 332		65.1 The Macdonald Broadcasting		12.2		19.0															
250B Grand Rapids		WGRD-FM		LIC _CN MI		276.6 95.9		85.06 BLH19880321KE		42 47 46.0 85 38 58.0		13.000 180		4.3 407		54.5 Townsquare Media Of Grand		73.7		29.0															
252D Chel sea		W252BA		LIC _C_ MI		136.8 317.1		63.30 BLFT20070309ADV		42 17 48.0 84 05 11.0		0.250 17		23.8 309		7.1 Spring Arbor University		32.8		33.5															
252D Chel sea		W252BA		CP _C_ MI		128.8 309.2		68.39 BPFT20130924AGX		42 19 32.0 83 57 54.0		0.170 28		21.5 310		6.4 Spring Arbor University		39.8		38.0															
252D Holly		W252CP		CP _C_ MI		91.8 272.5		86.72 BMPFT20131206AAR		42 40 59.0 83 33 11.0		0.013		21.2 426		6.4 Educational Media Foundati		58.4		56.6															
254B Detroit		WDZH		LIC _CN MI		105.9 286.9		125.00 BLH19890928KF		42 23 42.0 83 08 58.0		50.000 141		5.7 332		63.3 Cbs Radio East Inc.		112.2		60.1															
252A Luna Pier		WMIM		LIC ZCX MI		140.2 320.9		150.43 BLH20070301ABH		41 40 05.0 83 27 11.0		3.400 135		83.5 316		28.3 Cumulus Licensing Lic		60.2		99.7															
4/20/2012: Accepted on Channel 252A by Canada by letter dated March 27, 2003. No limitations and not sp ecially negotiated.																																			
252A North Muskegon		WLCS		LIC _CX MI		298.6 117.6		141.99 BLH20030210AAM		43 18 50.0 86 09 17.0		1.600 139		73.6 341		24.4 Radio License Holding Cbc,		61.3		93.8															
252A Hartford		WCXT		LIC _CX MI		250.7 69.6		150.13 BLH20080211ABT		42 15 14.0 86 20 09.0		3.700 130		81.1 320		26.7 Wsjm Inc		61.9		99.6															
250B Detroit		WJLB		LIC _CN MI		105.0 286.0		127.59 BLH19810811A0		42 24 22.0 83 06 44.0		50.000 149		5.8 339		64.0 Amfm Radio Licenses, L.L.C		114.7		62.0															
253C1 Harrison		WUPS		LIC _CX MI		356.7 176.6		175.56 BLH20080924AKU		44 17 21.0 84 44 32.0		100.000 299		105.7 648		72.9 Col trace Communications, I		63.8		94.0															
254A Grand Rapids		WFRG		LIC _CX MI		292.3 111.6		95.11 BMLH20050714ABA		43 01 57.0 85 41 47.0		2.750 150		2.6 378		29.3 Townsquare Media Of Grand		84.7		65.0															
251B Defiance		WDFM		LIC _CN OH		177.7 357.8		158.18 BLH19850701KJ		41 17 28.0 84 32 17.0		50.000 152		78.8 371		65.7 Citi casters Licenses, Inc.		72.4		78.6															
GRANDFATHERED AT 50KW @ 152M HAAT																																			

Terrain database is USGS 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.
 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.
 < = Contour Overlap

Green Text denotes the W252CN (Facility ID: 145605) facility to be modified by this Form 349 filing.
 This facility need not be protected.

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

Exhibit 13.6
Contour Protection Studies Toward WNWN-FM.L - Coldwater, MI

Spring Arbor University

FMCommander Single Allocation Study - 07-24-2014 - USGS 03 SEC
W252CN.P's Overlaps (In= -3.89 km, Out= 2.34 km)

W252CN.P CH 252 D DA
Lat= 42 42 46.0, Lng= 84 36 49.0
0.17 kW 41.3 M HAAT, 304 M COR
Prot.= 60 dBu, Intef.= 48 dBu

WNWN-FM CH 253 B BLH19790601AC
Lat= 42 03 28.0, Lng= 84 59 51.0
50.0 kW 143 M HAAT, 436 M COR
Prot.= 54 dBu, Intef.= 54 dBu

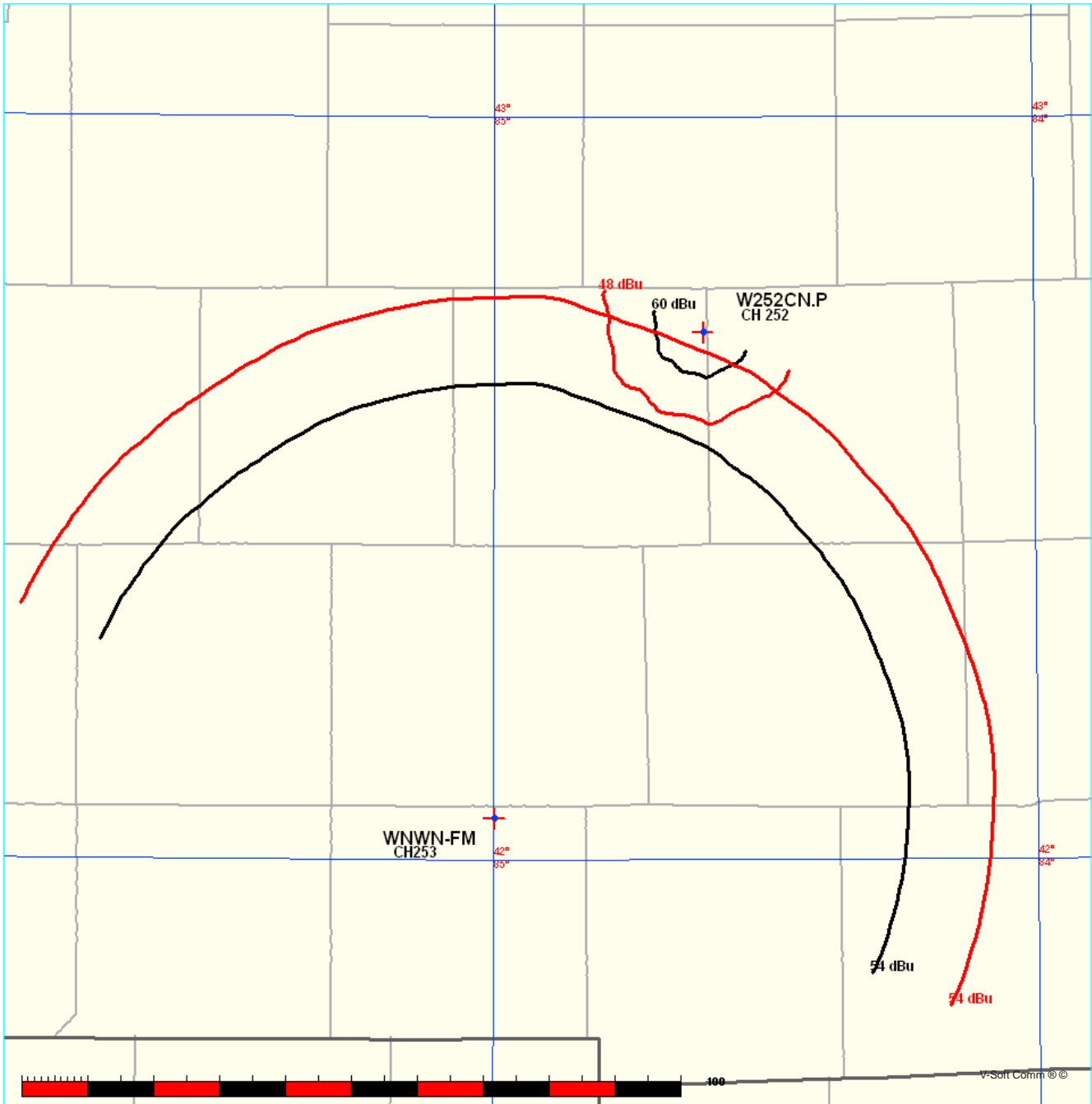


Exhibit 13.6

Contour Protection Studies Toward WNWN-FM.L - Coldwater, MI

07-24-2014

Terrain Data: USGS 03 SEC

FMOver Analysis

W252CN.P

WNWN-FM BLH19790601AC

Channel = 252D

Max ERP = 0.17 kW

RCAMSL = 304 M

N. Lat. 42 42 46.0

W. Lng. 84 36 49.0

Protected
60 dBu

Channel = 253B

Max ERP = 50 kW

RCAMSL = 436 M

N. Lat. 42 03 28.0

W. Lng. 84 59 51.0

Interfering
54 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
160.0	000.1700	0030.9	006.5	026.7	050.0000	0141.3	074.8	54.62*	2.01
161.0	000.1700	0031.1	006.5	026.7	050.0000	0141.2	074.7	54.65*	2.11
162.0	000.1700	0031.4	006.6	026.6	050.0000	0141.2	074.6	54.68*	2.21
163.0	000.1700	0031.8	006.6	026.6	050.0000	0141.2	074.5	54.71*	2.32
164.0	000.1700	0032.2	006.6	026.5	050.0000	0141.2	074.4	54.75*	2.42
165.0	000.1700	0032.7	006.7	026.5	050.0000	0141.2	074.2	54.78*	2.53
166.0	000.1700	0033.5	006.8	026.5	050.0000	0141.2	074.1	54.82*	2.66
167.0	000.1700	0034.1	006.8	026.4	050.0000	0141.2	074.0	54.86*	2.78
168.0	000.1700	0034.4	006.8	026.4	050.0000	0141.1	073.9	54.89*	2.87
169.0	000.1700	0034.7	006.9	026.3	050.0000	0141.1	073.8	54.91*	2.95
170.0	000.1700	0034.7	006.9	026.2	050.0000	0141.0	073.7	54.93*	3.02
171.0	000.1700	0034.9	006.9	026.2	050.0000	0141.0	073.6	54.96*	3.10
172.0	000.1700	0035.3	006.9	026.1	050.0000	0140.9	073.5	54.99*	3.19
173.0	000.1700	0035.7	007.0	026.0	050.0000	0140.9	073.4	55.01*	3.28
174.0	000.1700	0036.2	007.0	026.0	050.0000	0140.9	073.3	55.05*	3.38
175.0	000.1700	0036.2	007.0	025.9	050.0000	0140.8	073.3	55.06*	3.44
176.0	000.1700	0036.3	007.0	025.8	050.0000	0140.8	073.2	55.09*	3.51
177.0	000.1700	0036.1	007.0	025.7	050.0000	0140.8	073.2	55.10*	3.55
178.0	000.1700	0035.0	006.9	025.6	050.0000	0140.7	073.2	55.08*	3.51
179.0	000.1700	0033.8	006.8	025.5	050.0000	0140.6	073.2	55.07*	3.46
180.0	000.1700	0032.8	006.7	025.4	050.0000	0140.6	073.3	55.06*	3.42
181.0	000.1700	0032.3	006.7	025.3	050.0000	0140.5	073.3	55.05*	3.42
182.0	000.1700	0032.1	006.6	025.2	050.0000	0140.5	073.2	55.06*	3.44
183.0	000.1700	0031.9	006.6	025.1	050.0000	0140.4	073.2	55.07*	3.45
184.0	000.1700	0031.5	006.6	025.0	050.0000	0140.4	073.2	55.07*	3.46
185.0	000.1700	0031.1	006.5	024.9	050.0000	0140.3	073.2	55.06*	3.45
186.0	000.1700	0030.7	006.5	024.8	050.0000	0140.2	073.2	55.06*	3.44
187.0	000.1700	0030.3	006.5	024.7	050.0000	0140.2	073.2	55.06*	3.44
188.0	000.1700	0030.2	006.5	024.6	050.0000	0140.2	073.2	55.07*	3.46
189.0	000.1700	0030.2	006.5	024.5	050.0000	0140.2	073.1	55.08*	3.49
190.0	000.1700	0030.1	006.4	024.5	050.0000	0140.1	073.1	55.08*	3.50
191.0	000.1700	0029.9	006.4	024.4	050.0000	0140.1	073.1	55.09*	3.52
192.0	000.1700	0030.0	006.4	024.3	050.0000	0140.1	073.1	55.09*	3.54
193.0	000.1700	0029.9	006.4	024.2	050.0000	0140.0	073.0	55.10*	3.55
194.0	000.1700	0030.1	006.4	024.1	050.0000	0140.0	073.0	55.10*	3.58

MUNN-REESE, INC.

Broadcast Engineering Consultants
COLDWATER, MI 49036

Exhibit 13.6**Contour Protection Studies Toward WNWN-FM.L - Coldwater, MI**

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
195.0	000.1700	0030.4	006.5	024.0	050.0000	0139.9	073.0	55.11* 3.61
196.0	000.1700	0030.7	006.5	023.9	050.0000	0139.9	072.9	55.13* 3.65
197.0	000.1700	0030.9	006.5	023.9	050.0000	0139.8	072.9	55.14* 3.68
198.0	000.1700	0031.3	006.6	023.8	050.0000	0139.8	072.8	55.15* 3.73
199.0	000.1700	0031.7	006.6	023.7	050.0000	0139.7	072.8	55.16* 3.76
200.0	000.1700	0031.9	006.6	023.6	050.0000	0139.7	072.8	55.17* 3.78
201.0	000.1700	0032.2	006.6	023.5	050.0000	0139.6	072.7	55.17* 3.80
202.0	000.1700	0032.4	006.7	023.4	050.0000	0139.6	072.7	55.18* 3.83
203.0	000.1700	0032.9	006.7	023.3	050.0000	0139.6	072.7	55.20* 3.87
204.0	000.1700	0033.2	006.7	023.2	050.0000	0139.6	072.6	55.21* 3.90
205.0	000.1700	0033.5	006.8	023.1	050.0000	0139.6	072.6	55.21* 3.92
206.0	000.1700	0034.2	006.8	023.0	050.0000	0139.6	072.5	55.23* 3.98
207.0	000.1700	0034.4	006.8	023.0	050.0000	0139.5	072.5	55.23* 3.99
208.0	000.1700	0034.2	006.8	022.9	050.0000	0139.5	072.6	55.22* 3.96
209.0	000.1700	0034.5	006.8	022.8	050.0000	0139.5	072.5	55.23* 3.97
210.0	000.1700	0034.7	006.9	022.7	050.0000	0139.5	072.5	55.23* 3.98
211.0	000.1700	0034.2	006.8	022.6	050.0000	0139.5	072.6	55.21* 3.92
212.0	000.1700	0032.9	006.7	022.5	050.0000	0139.5	072.7	55.17* 3.78
213.0	000.1700	0032.1	006.6	022.4	050.0000	0139.5	072.8	55.14* 3.69
214.0	000.1700	0032.0	006.6	022.3	050.0000	0139.5	072.9	55.13* 3.65
215.0	000.1700	0032.3	006.6	022.2	050.0000	0139.5	072.8	55.13* 3.66
216.0	000.1700	0032.4	006.7	022.1	050.0000	0139.5	072.9	55.13* 3.65
217.0	000.1700	0032.5	006.7	022.1	050.0000	0139.6	072.9	55.12* 3.63
218.0	000.1700	0032.5	006.7	022.0	050.0000	0139.6	072.9	55.11* 3.61
219.0	000.1700	0031.7	006.6	021.9	050.0000	0139.6	073.0	55.08* 3.51
220.0	000.1700	0030.5	006.5	021.8	050.0000	0139.6	073.2	55.04* 3.36
221.0	000.1700	0029.8	006.4	021.8	050.0000	0139.6	073.2	55.01* 3.29
222.0	000.1700	0029.1	006.4	021.7	050.0000	0139.6	073.3	55.00* 3.25
223.0	000.1700	0028.3	006.4	021.6	050.0000	0139.7	073.3	54.99* 3.22
224.0	000.1700	0028.3	006.4	021.5	050.0000	0139.7	073.4	54.98* 3.18
225.0	000.1700	0028.5	006.4	021.4	050.0000	0139.7	073.4	54.97* 3.14
226.0	000.1700	0028.9	006.4	021.4	050.0000	0139.7	073.4	54.95* 3.09
227.0	000.1700	0029.6	006.4	021.3	050.0000	0139.7	073.5	54.94* 3.05
228.0	000.1700	0030.6	006.5	021.2	050.0000	0139.8	073.5	54.94* 3.06
229.0	000.1700	0031.7	006.6	021.1	050.0000	0139.8	073.5	54.96* 3.10
230.0	000.1700	0032.6	006.7	021.0	050.0000	0139.8	073.4	54.96* 3.12
231.0	000.1700	0033.6	006.8	020.8	050.0000	0139.9	073.4	54.97* 3.15
232.0	000.1700	0034.9	006.9	020.7	050.0000	0139.9	073.4	54.99* 3.20
233.0	000.1700	0035.8	007.0	020.6	050.0000	0139.9	073.4	54.99* 3.20
234.0	000.1700	0036.4	007.0	020.5	050.0000	0139.9	073.4	54.98* 3.18
235.0	000.1700	0036.9	007.1	020.4	050.0000	0139.9	073.4	54.98* 3.16
236.0	000.1700	0037.4	007.1	020.3	050.0000	0139.9	073.4	54.97* 3.13
237.0	000.1700	0038.0	007.2	020.2	050.0000	0140.0	073.5	54.96* 3.11
238.0	000.1700	0038.3	007.2	020.1	050.0000	0140.0	073.5	54.94* 3.05
239.0	000.1700	0038.2	007.2	020.0	050.0000	0140.0	073.6	54.92* 2.97
240.0	000.1700	0038.4	007.2	019.9	050.0000	0140.0	073.7	54.90* 2.91

Exhibit 13.6

Contour Protection Studies Toward WNWN-FM.L - Coldwater, MI

07-24-2014 Terrain Data: USGS 03 SEC FMOver Analysis

WNWN-FM BLH19790601AC

W252CN.P

Channel = 253B

Max ERP = 50 kW

RCAMSL = 436 M

N. Lat. 42 03 28.0

W. Lng. 84 59 51.0

Protected

54 dBu

Channel = 252D

Max ERP = 0.17 kW

RCAMSL = 304 M

N. Lat. 42 42 46.0

W. Lng. 84 36 49.0

Interfering

48 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
338.0	050.0000	0147.7	064.7	257.2	000.1700	0035.9	057.1	27.54	
339.0	050.0000	0147.8	064.8	257.4	000.1700	0035.8	056.0	27.80	
340.0	050.0000	0147.8	064.8	257.6	000.1700	0035.8	054.8	28.07	
341.0	050.0000	0147.8	064.8	257.7	000.1700	0035.7	053.7	28.33	
342.0	050.0000	0147.6	064.7	257.8	000.1700	0035.7	052.6	28.59	
343.0	050.0000	0147.4	064.7	257.9	000.1700	0035.7	051.5	28.86	
344.0	050.0000	0147.3	064.7	258.0	000.1700	0035.7	050.3	29.13	
345.0	050.0000	0146.9	064.6	258.0	000.1700	0035.7	049.2	29.40	
346.0	050.0000	0146.8	064.6	258.0	000.1700	0035.7	048.1	29.66	
347.0	050.0000	0146.8	064.6	258.1	000.1700	0035.7	047.0	29.94	
348.0	050.0000	0146.8	064.6	258.1	000.1700	0035.6	045.8	30.24	
349.0	050.0000	0147.1	064.7	258.1	000.1700	0035.6	044.7	30.54	
350.0	050.0000	0147.3	064.7	258.1	000.1700	0035.6	043.6	30.87	
351.0	050.0000	0147.4	064.7	258.0	000.1700	0035.7	042.4	31.21	
352.0	050.0000	0147.6	064.7	258.0	000.1700	0035.7	041.3	31.56	
353.0	050.0000	0148.0	064.8	257.9	000.1700	0035.7	040.2	31.93	
354.0	050.0000	0148.3	064.8	257.8	000.1700	0035.7	039.1	32.31	
355.0	050.0000	0148.5	064.9	257.6	000.1700	0035.8	037.9	32.71	
356.0	050.0000	0148.2	064.8	257.3	000.1700	0035.9	036.8	33.13	
357.0	050.0000	0147.8	064.8	256.9	000.1700	0035.9	035.7	33.55	
358.0	050.0000	0147.6	064.7	256.6	000.1700	0036.0	034.6	33.98	
359.0	050.0000	0147.6	064.7	256.1	000.1700	0036.1	033.5	34.41	
000.0	050.0000	0147.9	064.8	255.8	000.1700	0036.1	032.4	34.85	
001.0	050.0000	0148.3	064.8	255.3	000.1700	0036.2	031.3	35.34	
002.0	050.0000	0149.0	064.9	254.9	000.1700	0036.2	030.2	35.88	
003.0	050.0000	0149.8	065.0	254.4	000.1700	0036.4	029.1	36.48	
004.0	050.0000	0150.5	065.1	253.8	000.1700	0036.6	028.0	37.15	
005.0	050.0000	0150.7	065.2	253.0	000.1700	0036.9	026.9	37.87	
006.0	050.0000	0150.8	065.2	252.0	000.1700	0037.2	025.8	38.59	

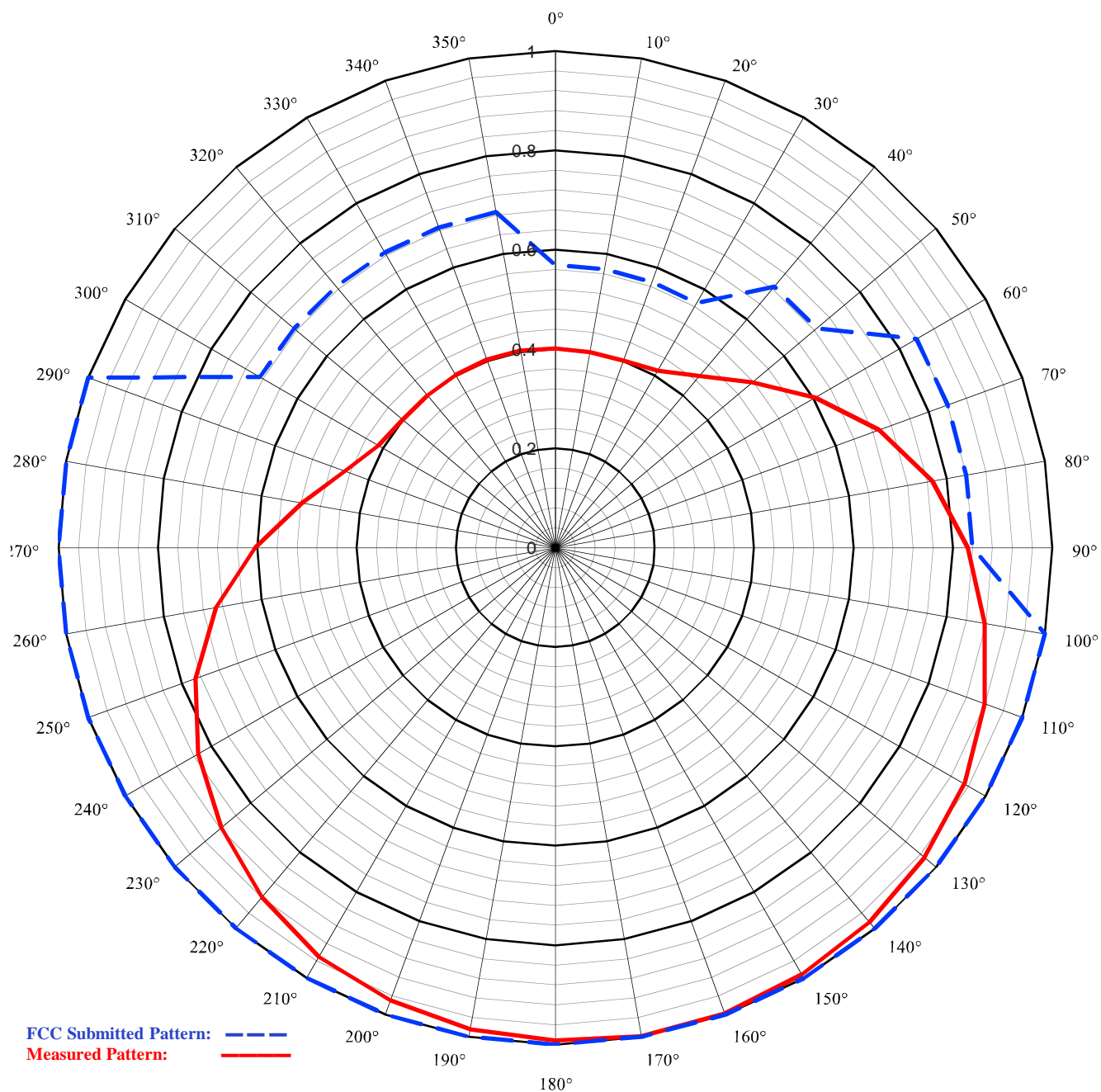
Exhibit 13.6**Contour Protection Studies Toward WNWN-FM.L - Coldwater, MI**

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
007.0	050.0000	0150.1	065.1	250.7	000.1700	0037.4	024.9	39.31
008.0	050.0000	0149.3	065.0	249.3	000.1700	0038.2	023.9	40.17
009.0	050.0000	0147.5	064.7	247.3	000.1700	0038.9	023.1	40.94
010.0	050.0000	0145.3	064.4	245.1	000.1700	0039.7	022.3	41.70
011.0	050.0000	0144.0	064.2	243.0	000.1700	0039.5	021.5	42.26
012.0	050.0000	0143.2	064.1	240.8	000.1700	0038.8	020.7	42.73
013.0	050.0000	0142.7	064.0	238.5	000.1700	0038.2	019.9	43.20
014.0	050.0000	0141.5	063.9	235.8	000.1700	0037.3	019.3	43.50
015.0	050.0000	0140.4	063.7	232.9	000.1700	0035.7	018.7	43.61
016.0	050.0000	0140.0	063.7	230.0	000.1700	0032.6	018.1	43.34
017.0	050.0000	0140.1	063.7	227.0	000.1700	0029.6	017.5	43.19
018.0	050.0000	0140.2	063.7	223.7	000.1700	0028.3	017.0	43.63
019.0	050.0000	0140.2	063.7	220.2	000.1700	0030.2	016.5	44.06
020.0	050.0000	0140.0	063.7	216.5	000.1700	0032.4	016.2	44.90
021.0	050.0000	0139.8	063.6	212.6	000.1700	0032.3	016.0	45.06
022.0	050.0000	0139.6	063.6	208.7	000.1700	0034.4	015.8	45.70
023.0	050.0000	0139.6	063.6	204.7	000.1700	0033.5	015.8	45.55
024.0	050.0000	0139.9	063.6	200.6	000.1700	0032.0	015.7	45.21
025.0	050.0000	0140.4	063.7	196.6	000.1700	0030.8	015.8	44.85
026.0	050.0000	0140.9	063.8	192.6	000.1700	0029.9	015.9	44.52
027.0	050.0000	0141.4	063.9	188.7	000.1700	0030.2	016.2	44.37
028.0	050.0000	0141.8	063.9	185.0	000.1700	0031.1	016.5	44.30
029.0	050.0000	0142.4	064.0	181.4	000.1700	0032.2	016.9	44.25
030.0	050.0000	0142.9	064.1	178.0	000.1700	0035.0	017.4	44.52
031.0	050.0000	0143.0	064.1	175.0	000.1700	0036.2	018.0	44.28
032.0	050.0000	0142.3	064.0	172.5	000.1700	0035.6	018.8	43.51
033.0	050.0000	0141.2	063.8	170.3	000.1700	0034.8	019.7	42.60
034.0	050.0000	0140.4	063.7	168.3	000.1700	0034.5	020.5	41.85
035.0	050.0000	0140.2	063.7	166.2	000.1700	0033.7	021.4	41.01
036.0	050.0000	0140.4	063.7	164.3	000.1700	0032.4	022.2	40.05
037.0	050.0000	0140.7	063.8	162.6	000.1700	0031.6	023.1	39.22
038.0	050.0000	0141.2	063.8	160.9	000.1700	0031.1	024.0	38.46
039.0	050.0000	0141.3	063.8	159.5	000.1700	0030.8	024.9	37.73
040.0	050.0000	0141.3	063.8	158.3	000.1700	0030.6	025.9	37.06
041.0	050.0000	0141.3	063.8	157.2	000.1700	0030.5	026.9	36.41
042.0	050.0000	0141.1	063.8	156.2	000.1700	0030.5	027.9	35.80
043.0	050.0000	0140.5	063.7	155.5	000.1700	0030.6	028.9	35.23
044.0	050.0000	0139.3	063.6	155.1	000.1700	0030.5	030.0	34.66
045.0	050.0000	0138.2	063.4	154.6	000.1700	0030.5	031.1	34.15
046.0	050.0000	0137.5	063.3	154.2	000.1700	0030.5	032.2	33.70
047.0	050.0000	0137.2	063.2	153.7	000.1700	0030.5	033.3	33.30
048.0	050.0000	0137.2	063.2	153.2	000.1700	0030.7	034.3	32.92
049.0	050.0000	0137.4	063.3	152.7	000.1700	0030.8	035.4	32.57
050.0	050.0000	0138.0	063.4	152.2	000.1700	0031.0	036.5	32.22
051.0	050.0000	0137.9	063.4	151.8	000.1700	0031.0	037.5	31.86
052.0	050.0000	0137.8	063.3	151.6	000.1700	0031.1	038.6	31.50
053.0	050.0000	0137.7	063.3	151.4	000.1700	0031.1	039.7	31.15

Exhibit 13.7

Directional Antenna Documentation

Measured Composite Pattern in Relative Field



Call Sign: W252CN.P

Channel: 252D

Max ERP: 0.170 kW (V)
0.170 kW (H)

Antenna Make: Nicom USA Inc.

Model: BKG1/P-2DA(Slant45) (165°T)

Licensee: Spring Arbor University

Munn-Reese, Inc.

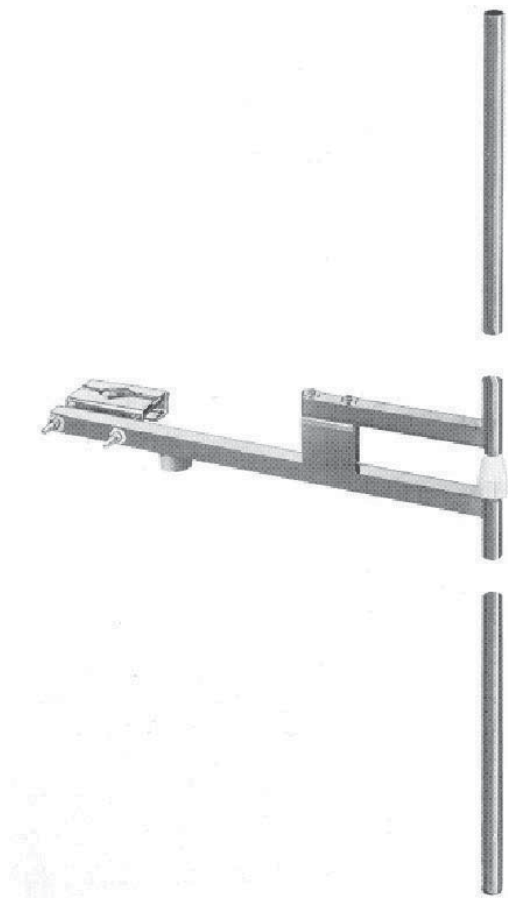
Broadcast Engineering Consultants
Coldwater, MI 49036

Exhibit 13.7

Directional Antenna Documentation

MEASURED PATTERN (from manufacturer)								SUBMITTED PATTERN (to FCC)							
Enter		Measured	Calculated			Measured	Relative	Enter		Submitted	Calculated			Submitted	Relative
Max ERP		Relative	dB		Equiv	Relative	Field	Max ERP		Relative	dB		Equiv	Relative	Field
(kW)	° True	Field	Change	Suppression	Power	Field ²	RMS	(kW)	° True	Field	Change	Suppression	Power	Field ²	RMS
0.17	0°	0.401	-0.04	-7.94	0.027	0.16	0.739	0.170	0°	0.569	-1.62	-4.90	0.055	0.32	0.880
	10°	0.4	-0.02	-7.96	0.027	0.16			10°	0.569	0.00	-4.90	0.055	0.32	
	20°	0.401	0.02	-7.94	0.027	0.16			20°	0.569	0.00	-4.90	0.055	0.32	
	30°	0.411	0.21	-7.72	0.029	0.17			30°	0.569	0.00	-4.90	0.055	0.32	
	40°	0.451	0.81	-6.92	0.035	0.20			40°	0.686	1.62	-3.27	0.080	0.47	
	50°	0.518	1.20	-5.71	0.046	0.27			50°	0.686	0.00	-3.27	0.080	0.47	
	60°	0.604	1.33	-4.38	0.062	0.36			60°	0.840	1.76	-1.51	0.120	0.71	
	70°	0.693	1.19	-3.19	0.082	0.48			70°	0.840	0.00	-1.51	0.120	0.71	
	80°	0.771	0.93	-2.26	0.101	0.59			80°	0.840	0.00	-1.51	0.120	0.71	
	90°	0.83	0.64	-1.62	0.117	0.69			90°	0.840	0.00	-1.51	0.120	0.71	
	100°	0.877	0.48	-1.14	0.131	0.77			100°	1	1.51	0.00	0.170	1.00	
	110°	0.919	0.41	-0.73	0.144	0.84			110°	1	0.00	0.00	0.170	1.00	
	120°	0.951	0.30	-0.44	0.154	0.90			120°	1	0.00	0.00	0.170	1.00	
	130°	0.97	0.17	-0.26	0.160	0.94			130°	1	0.00	0.00	0.170	1.00	
	140°	0.984	0.12	-0.14	0.165	0.97			140°	1	0.00	0.00	0.170	1.00	
	150°	0.992	0.07	-0.07	0.167	0.98			150°	1	0.00	0.00	0.170	1.00	
	160°	0.998	0.05	-0.02	0.169	1.00			160°	1	0.00	0.00	0.170	1.00	
	170°	0.998	0.00	-0.02	0.169	1.00			170°	1	0.00	0.00	0.170	1.00	
	180°	0.992	-0.05	-0.07	0.167	0.98			180°	1	0.00	0.00	0.170	1.00	
	190°	0.984	-0.07	-0.14	0.165	0.97			190°	1	0.00	0.00	0.170	1.00	
	200°	0.97	-0.12	-0.26	0.160	0.94			200°	1	0.00	0.00	0.170	1.00	
	210°	0.951	-0.17	-0.44	0.154	0.90			210°	1	0.00	0.00	0.170	1.00	
	220°	0.919	-0.30	-0.73	0.144	0.84			220°	1	0.00	0.00	0.170	1.00	
	230°	0.877	-0.41	-1.14	0.131	0.77			230°	1	0.00	0.00	0.170	1.00	
	240°	0.83	-0.48	-1.62	0.117	0.69			240°	1	0.00	0.00	0.170	1.00	
	250°	0.771	-0.64	-2.26	0.101	0.59			250°	1	0.00	0.00	0.170	1.00	
	260°	0.693	-0.93	-3.19	0.082	0.48			260°	1	0.00	0.00	0.170	1.00	
	270°	0.604	-1.19	-4.38	0.062	0.36			270°	1	0.00	0.00	0.170	1.00	
	280°	0.518	-1.33	-5.71	0.046	0.27			280°	1	0.00	0.00	0.170	1.00	
	290°	0.451	-1.20	-6.92	0.035	0.20			290°	1	0.00	0.00	0.170	1.00	
	300°	0.411	-0.81	-7.72	0.029	0.17			300°	0.686	-3.27	-3.27	0.080	0.47	
	310°	0.401	-0.21	-7.94	0.027	0.16			310°	0.686	0.00	-3.27	0.080	0.47	
	320°	0.4	-0.02	-7.96	0.027	0.16			320°	0.686	0.00	-3.27	0.080	0.47	
	330°	0.401	0.02	-7.94	0.027	0.16			330°	0.686	0.00	-3.27	0.080	0.47	
	340°	0.403	0.04	-7.89	0.028	0.16			340°	0.686	0.00	-3.27	0.080	0.47	
	350°	0.403	0.00	-7.89	0.028	0.16			350°	0.686	0.00	-3.27	0.080	0.47	

Exhibit 13.7 - Manufacturer's Directional Antenna Pattern Data (Actual Pattern Rotated to 165.0°T)



NICOM **BKG1/P** **Low Power** **Broadband** **FM Dipole** **Dipolo de FM** **Banda Ancha**

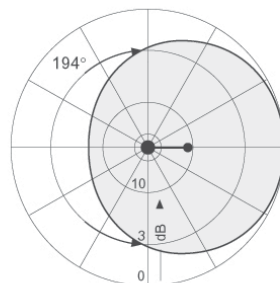
This antenna can be easily installed because of its lightness. Electrically grounded it gives excellent protection against lightning. Combined in arrays of more elements this dipole offers high gain over a wide angle.

Esta antena puede ser facilmente armada debido a su ligereza. Es conectada por tierra lo cual ofrece óptima protección contra relámpagos. Combinada de arrays de varios elementos este dipolo puede ofrecer buena ganancia a través de un amplio ángulo.

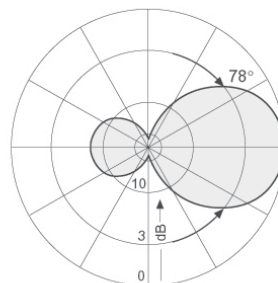
TECHNICAL SPECIFICATIONS

Antenna type	dipole	Front-to-back ratio	7 dB
Frequency range	87.5 - 108 MHz	Lightning protection	all parts grounded
Bandwidth	20 MHz	Max wind velocity	119 mph (190 km/h)
Impedance	50 Ohms	Wind load	39.6 Lbs (18 kg)
Connectors	N type	Wind surface	1.2 ft ² (0.11 m ²)
Power rating	500 Watts max.	Materials (external)	anti-corrosive aluminum
VSWR	< 1.3	Mounting	from 2" to 4"
Polarization	vertical	Weight	8.8 Lbs (4 kg)
Gain	0 dBd (unity gain)	Dimensions	55"×33"×2" (1400×850×60 mm)
H plane	194 degrees	Packing	59"×36"×4" (1500×900×100 mm)
V plane	78 degrees		

Radiation Patterns (at mid-band)



in H-plane
Horizontal Radiation Pattern



in E-plane
Vertical Radiation Pattern

Exhibit 13.7 - Manufacturer's Directional Antenna Pattern Data (Actual Pattern Rotated to 165.0°T)



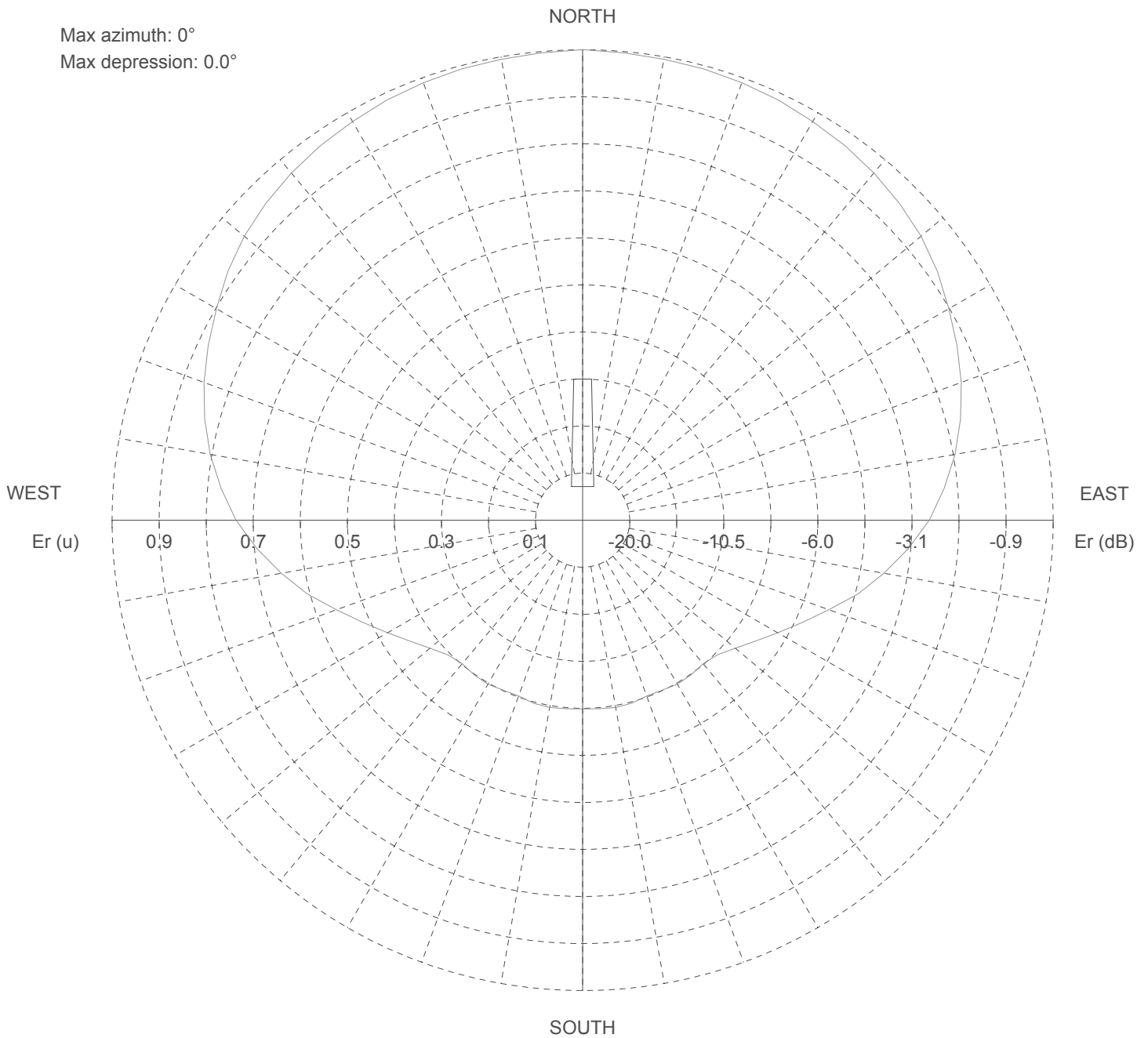
TX station: BKG1/P-2DA(Slant45)

Site name:

Frequency: 100.00 MHz

Horizontal diagram of Maxima

Max azimuth: 0°
Max depression: 0.0°



—— 0.0° depres. (Total antenna), Gain (dBd): 0.00 ERP T.max (KW): 1.

ERP E.max (KW): 0.776

Exhibit 13.7 - Manufacturer's Directional Antenna Pattern Data (Actual Pattern Rotated to 165.0°T)



TX station: BKG1/P-2DA(Slant45)

Site name:

Frequency: 100.00 MHz

Horizontal diagram of Maxima

Az (°)	Dep (°)	Er (%)	ERP (W)	Az (°)	Dep (°)	Er (%)	ERP (W)	Az (°)	Dep (°)	Er (%)	ERP (W)
0.0	0.0	100.0	776.2	120.0	0.0	47.9	178.0	240.0	0.0	47.9	178.0
5.0	0.0	99.7	772.1	125.0	0.0	44.8	156.0	245.0	0.0	51.5	205.9
10.0	0.0	99.5	768.1	130.0	0.0	42.3	139.1	250.0	0.0	55.7	240.8
15.0	0.0	99.3	765.7	135.0	0.0	40.5	127.4	255.0	0.0	60.6	285.0
20.0	0.0	98.9	759.7	140.0	0.0	39.9	123.3	260.0	0.0	65.0	328.3
25.0	0.0	98.5	753.4	145.0	0.0	40.1	125.1	265.0	0.0	69.5	374.7
30.0	0.0	97.8	743.2	150.0	0.0	40.3	126.0	270.0	0.0	73.7	421.3
35.0	0.0	97.2	733.2	155.0	0.0	39.9	123.5	275.0	0.0	77.1	461.6
40.0	0.0	96.3	720.1	160.0	0.0	39.8	122.8	280.0	0.0	80.4	501.4
45.0	0.0	95.2	703.9	165.0	0.0	40.3	126.1	285.0	0.0	83.2	536.8
50.0	0.0	93.9	684.4	170.0	0.0	40.4	126.9	290.0	0.0	85.6	569.2
55.0	0.0	92.1	658.3	175.0	0.0	40.3	125.8	295.0	0.0	87.8	598.3
60.0	0.0	89.9	627.1	180.0	0.0	40.1	125.0	300.0	0.0	89.9	627.1
65.0	0.0	87.8	598.3	185.0	0.0	40.3	125.8	305.0	0.0	92.1	658.3
70.0	0.0	85.6	569.2	190.0	0.0	40.4	126.9	310.0	0.0	93.9	684.4
75.0	0.0	83.2	536.8	195.0	0.0	40.3	126.1	315.0	0.0	95.2	703.9
80.0	0.0	80.4	501.4	200.0	0.0	39.8	122.8	320.0	0.0	96.3	720.1
85.0	0.0	77.1	461.6	205.0	0.0	39.9	123.5	325.0	0.0	97.2	733.2
90.0	0.0	73.7	421.3	210.0	0.0	40.3	126.0	330.0	0.0	97.8	743.2
95.0	0.0	69.5	374.7	215.0	0.0	40.1	125.1	335.0	0.0	98.5	753.4
100.0	0.0	65.0	328.3	220.0	0.0	39.9	123.3	340.0	0.0	98.9	759.7
105.0	0.0	60.6	285.0	225.0	0.0	40.5	127.4	345.0	0.0	99.3	765.7
110.0	0.0	55.7	240.8	230.0	0.0	42.3	139.1	350.0	0.0	99.5	768.1
115.0	0.0	51.5	205.9	235.0	0.0	44.8	156.0	355.0	0.0	99.7	772.1

**Exhibit 13.7 - Manufacturer's Directional
Antenna Pattern Data**
(Actual Pattern Rotated to 165.0°T)



Plot of Vertical Radiation Pattern

Manufacturer:	NicomUSA, Inc.	Frequency:	87.5 MHz - 108.0 MHz
Make/Model:	BKG1/P-2DA(Slant45)	Weight:	8 kg
Polarization:	Circular	Max Power:	1.0 kW
Inter Bay Spacing:	1.0 λ (Wavelength)	Antenna Gain:	0.000 dB

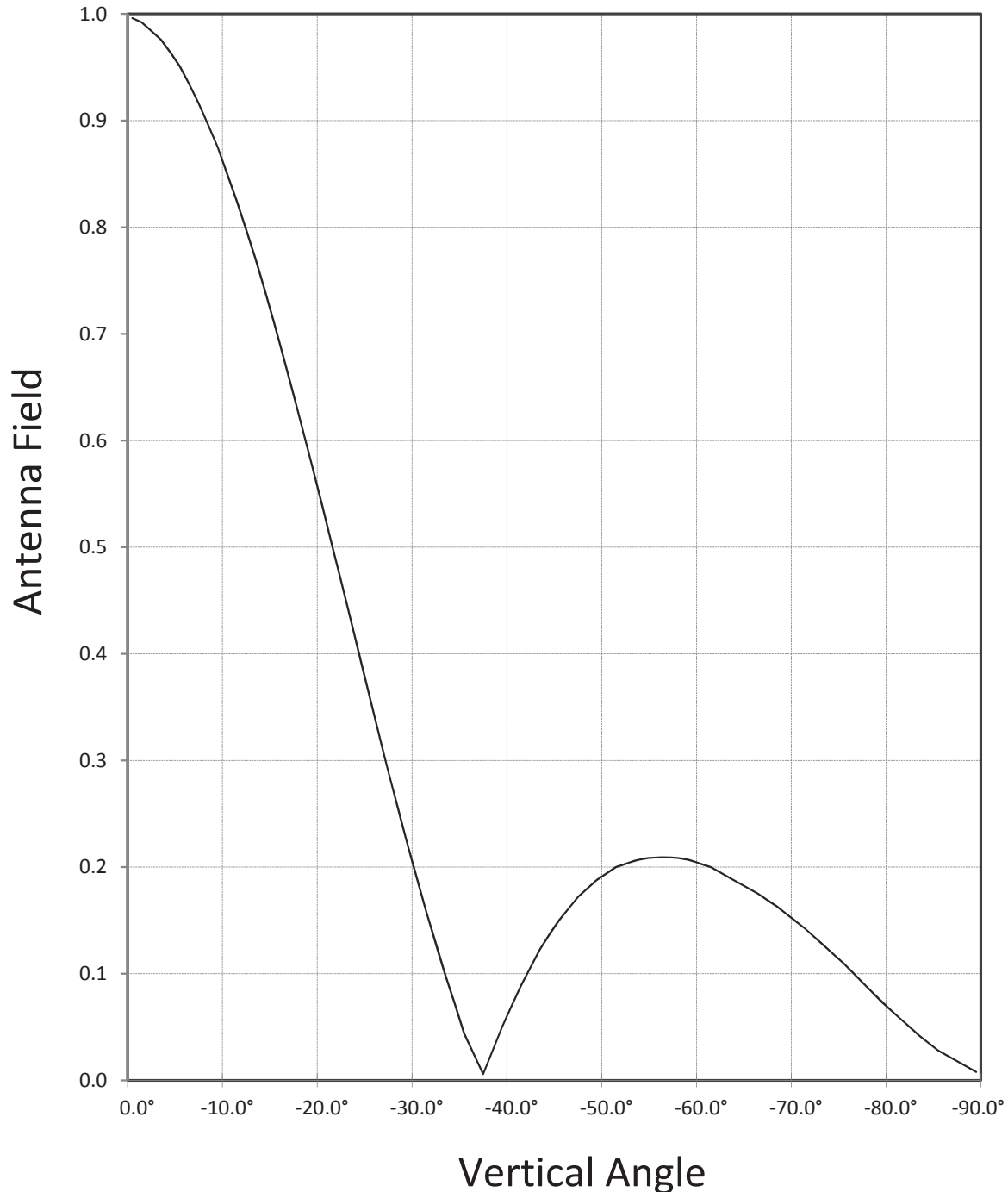


Exhibit 13.7 - Manufacturer's Directional Antenna Pattern Data (Actual Pattern Rotated to 165.0°T)



Tabulation of Vertical Radiation Pattern

Manufacturer: NicomUSA, Inc. **Frequency:** 87.5 MHz - 108.0 MHz
Make/Model: BKG1/P-2DA(Slant45) **Weight:** 8 kg
Polarization: Circular **Max Power:** 1.0 kW
Inter Bay Spacing: 1.0 λ (Wavelength) **Antenna Gain:** 0.000 dB

Vertical Azimuth	Field (%)	dB	Vertical Azimuth	Field (%)	dB	Vertical Azimuth	Field (%)	dB
0.0°	1.000	0.00	-30.0°	0.222	-6.54	-60.0°	0.206	-6.86
-1.0°	0.996	-0.02	-31.0°	0.190	-7.21	-61.0°	0.203	-6.93
-2.0°	0.992	-0.03	-32.0°	0.158	-8.01	-62.0°	0.200	-6.99
-3.0°	0.984	-0.07	-33.0°	0.129	-8.89	-63.0°	0.195	-7.10
-4.0°	0.976	-0.11	-34.0°	0.099	-10.04	-64.0°	0.190	-7.21
-5.0°	0.964	-0.16	-35.0°	0.072	-11.43	-65.0°	0.185	-7.33
-6.0°	0.951	-0.22	-36.0°	0.044	-13.57	-66.0°	0.180	-7.45
-7.0°	0.934	-0.30	-37.0°	0.025	-16.02	-67.0°	0.175	-7.57
-8.0°	0.916	-0.38	-38.0°	0.006	-22.22	-68.0°	0.169	-7.72
-9.0°	0.896	-0.48	-39.0°	0.028	-15.53	-69.0°	0.163	-7.88
-10.0°	0.875	-0.58	-40.0°	0.050	-13.01	-70.0°	0.156	-8.07
-11.0°	0.850	-0.71	-41.0°	0.070	-11.55	-71.0°	0.149	-8.27
-12.0°	0.825	-0.84	-42.0°	0.089	-10.51	-72.0°	0.142	-8.48
-13.0°	0.798	-0.98	-43.0°	0.106	-9.75	-73.0°	0.134	-8.73
-14.0°	0.770	-1.14	-44.0°	0.123	-9.10	-74.0°	0.126	-9.00
-15.0°	0.740	-1.31	-45.0°	0.137	-8.63	-75.0°	0.118	-9.28
-16.0°	0.709	-1.49	-46.0°	0.150	-8.24	-76.0°	0.110	-9.59
-17.0°	0.676	-1.70	-47.0°	0.161	-7.93	-77.0°	0.101	-9.96
-18.0°	0.643	-1.92	-48.0°	0.172	-7.64	-78.0°	0.092	-10.36
-19.0°	0.609	-2.15	-49.0°	0.180	-7.45	-79.0°	0.083	-10.81
-20.0°	0.575	-2.40	-50.0°	0.188	-7.26	-80.0°	0.074	-11.31
-21.0°	0.540	-2.68	-51.0°	0.194	-7.12	-81.0°	0.066	-11.80
-22.0°	0.504	-2.98	-52.0°	0.200	-6.99	-82.0°	0.058	-12.37
-23.0°	0.469	-3.29	-53.0°	0.203	-6.93	-83.0°	0.050	-13.01
-24.0°	0.433	-3.64	-54.0°	0.206	-6.86	-84.0°	0.042	-13.77
-25.0°	0.397	-4.01	-55.0°	0.208	-6.82	-85.0°	0.035	-14.56
-26.0°	0.361	-4.42	-56.0°	0.209	-6.80	-86.0°	0.028	-15.53
-27.0°	0.325	-4.88	-57.0°	0.209	-6.80	-87.0°	0.023	-16.38
-28.0°	0.289	-5.39	-58.0°	0.209	-6.80	-88.0°	0.018	-17.45
-29.0°	0.256	-5.92	-59.0°	0.208	-6.82	-89.0°	0.013	-18.86
						-90.0°	0.008	-20.97