

# Exhibit 13.1 - Copy of Existing Antenna Structure Registration



## Registration Detail

Reg Number	1029963	Status	Constructed
File Number	A0887727	Constructed	01/01/1988
EMI	No	Dismantled	
NEPA	No		

## Antenna Structure

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

### Location (in NAD83 Coordinates)

Lat/Long	26-41-30.0 N 081-52-50.7 W	Address	2050 QUEEN ST
City, State	NORTH FORT MYERS , FL		
Zip	33917	County	LEE
Center of AM Array		Position of Tower in Array	

### Heights (meters)

Elevation of Site Above Mean Sea Level	Overall Height Above Ground (AGL)
4.0	163.1
Overall Height Above Mean Sea Level	Overall Height Above Ground w/o Appurtenances
167.1	160.3

### Painting and Lighting Specifications

FAA Chapters 3, 4, 5, 12  
 Paint and Light in Accordance with FAA Circular Number 70/7460-1K

### FAA Notification

FAA Study	2007-aso-107-oe	FAA Issue Date	02/02/2007
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### Owner & Contact Information

FRN	0023254592	Owner Entity Type	Limited Liability Company
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#### Owner

CCATT LLC  
 2000 Corporate Drive  
 Canonsburg , PA 15317

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

#### Contact

Verre , Christine  
 Attention To: FCC GROUP  
 2000 Corporate Drive  
 Canonsbugr , PA 15317

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

### Last Action Status

Status	Constructed	Received	01/31/2014
Purpose	Admin Update	Entered	01/31/2014
Mode	Interactive		

### Related Applications

01/31/2014	A0887727 - Admin Update (AU)
01/09/2014	A0870940 - Change Owner (OC)
11/25/2012	A0795172 - Admin Update (AU)

Related applications (18)

### Comments

#### Comments

None

### History

Date	Event
02/01/2014	Registration Printed
01/31/2014	ASR Application receipt email sent: Tower email
01/31/2014	Administrative Update Received

All History (47)

### Automated Letters

02/01/2014	Authorization, Reference
01/10/2014	Authorization, Reference
01/10/2014	Ownership Change, Reference 781407

All letters (18)

## Exhibit 13.2

### Vertical Plan of Antenna System

The site is located 2050 Queen Street;  
the city of North Fort Myers, Lee County, Florida.

#### Site Location (NAD 27)

NL: 26° 41' 29"

WL: 81° 52' 51"

(26-41-30.0NL; 81-52-50.7WL NAD1983)

#### NOTE: Existing Tower Construction

Antenna Structure Registration No.

**1029963**

Proposed Antenna  
COR: 109 meters AMSL  
max HAAT: N/A (Fill-In Status)

167.1 meters AMSL

163.1 meters AGL

105 meters

Ground Elevation = 4.0 m AMSL

Drawing is not to Scale

**MUNN-REESE, INC.**

Broadcast Engineering Consultants  
Coldwater, MI 49036

Terrain  
0 14 m

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

*Proposed 60 dBμ F(50:50) Contour*

## Exhibit 13.3 Present vs. Proposed Service Contour Study

**CH283D.P**  
Fort Myers, FL  
Proposed Operation  
Facility ID: 139201  
Latitude: 26-41-29 N  
Longitude: 081-52-51 W  
ERP: 0.25 kW  
Channel: 283D  
Frequency: 104.5 MHz  
AMSL Height: 109.0 m  
Horiz. Pattern: Directional

60 dBμ Contour  
Total Population: 204,708  
Total Area: 522 sq. km

**W284CK.C**  
Fort Myers, FL  
BNPFT20130826AEA  
Facility ID: 139201  
Latitude: 26-37-51 N  
Longitude: 081-51-40 W  
ERP: 0.25 kW  
Channel: 284D  
Frequency: 104.7 MHz  
AMSL Height: 51.0 m  
Horiz. Pattern: Directional

60 dBμ Contour  
Total Population: 92,448  
Total Area: 170 sq. km

*Present 60 dBμ F(50:50) Contour*

**CH283D.P**

North Fort Myers

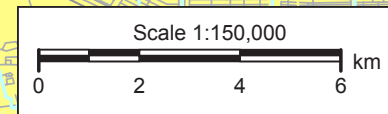
Fort Myers

**W284CK.C**

Tice

Fort Myers St

Cane Coral



# Exhibit 13.4 Proposed vs. Primary Service Contour Study

**Primary 60 dBμ F(50:50) Contour**

**Proposed 60 dBμ F(50:50) Contour**

**CH283D.P**

**Fort Myers**

**WOLZ(FM)**

**CH283D.P**  
Fort Myers, FL  
Proposed Operation  
Facility ID: 139201  
Latitude: 26-41-29 N  
Longitude: 081-52-51 W  
ERP: 0.25 kW  
Channel: 283D  
Frequency: 104.5 MHz  
AMSL Height: 109.0 m  
Horiz. Pattern: Directional

**WOLZ(FM)**  
Fort Myers, FL  
BMLH20100128AAF  
Facility ID: 13898  
Latitude: 26-30-18 N  
Longitude: 081-51-14 W  
ERP: 79.00 kW  
Channel: 237C1  
Frequency: 95.3 MHz  
AMSL Height: 146.0 m  
Horiz. Pattern: Omni

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

Terrain  
-1 64 m

Scale 1:625,000  
0 8 16 24 km

V-Soft Communications LLC ©



# Exhibit 13.5

## Tabulation of Proposed Translator Allocation Study

REFERENCE 26 41 29.0 N. 81 52 51.0 W.											
CH# 283D - 104.5 MHz, Pwr= 0.25 kW DA, HAAT= 104.3 M, COR= 109 M Average Protected F(50-50)= 13.18 km Standard Directional											
DISPLAY DATES DATA 02-10-14 SEARCH 02-12-14											
CH CITY	CALL	TYPE STATE	ANT AZI <--	DIST FILE #	LAT LNG	PWR(kw) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*	
280C Cape Coral	WXKB	LIC NC FL	140.1 320.2	38.89 BLH20000928ABN	26 25 22.0 81 37 49.0	100.000 341	10.7 343	75.2 Wxkb License Limited Partn	15.0	-37.4*<	
284D Fort Myers	W284CK	CP DC FL	163.8 343.8	7.01 BNPFT20130826AEA	26 37 51.0 81 51 40.0	0.250 49	7.0 51	5.0 University Of Northwestern	-13.3*<	-17.9<	
284C2 Naples	WSGL	LIC NC FL	165.8 345.9	64.79 BLH20000105AAP	26 07 35.0 81 43 17.0	20.000 132	62.4 132	41.5 Renda Broadcasting Corpora	-10.9<	3.4	
285A Solana	WCVU	LIC NCX FL	323.2 143.1	28.11 BLH20120525AAE	26 53 37.5 82 03 02.7	6.000 97	2.7 98	27.2 Citicasters Licenses, Inc.	14.2	0.1	
229C2 Sanibel	WXNX	LIC NCX FL	172.6 352.6	20.89 BLH20100119ABA	26 30 18.0 81 51 14.0	43.000 145	17.1 146	5.2 Sun Broadcasting Inc	15.0R	5.9M	
283D Arcadia	W283AM	LIC _C_ FL	1.8 181.8	61.18 BLFT20070228AAK	27 14 29.0 81 51 40.0	0.027 91	23.9 106	7.1 Azure Media, Llc	24.6	10.5	
229C2 Sanibel	AL8348	RSV-A FL	223.5 43.4	29.29 RM11207	26 30 00.0 82 05 00.0	50.000 150	17.1 150	5.2	15.0R	14.3M	
282C3 Sarasota	WKZM	LIC NCX FL	317.6 137.3	88.05 BLED20130607AAV	27 16 30.0 82 28 54.0	25.000 81	56.3 84	35.6 The Moody Bible Institute	20.5	36.1	
283C2 White City One Step Application	WFLM	CP _CX FL	61.4 242.1	171.31 BPH20130823ACM	27 25 16.0 80 21 25.0	50.000 113	132.5 118	46.8 Midway Broadcasting Compan	25.8	79.7	
284C1 Tampa	WRBQ-FM	LIC NC FL	339.7 159.4	147.16 BLH20100122AAR	27 55 53.8 82 24 04.6	100.000 174	91.7 181	61.6 Cbs Radio Stations Inc.	43.8	68.5	
284D Venice	W284CJ	CP _C_ FL	310.3 130.0	67.16 BNPFT20130826ABQ	27 04 51.0 82 23 55.0	0.019 74	8.3 77	5.9 Calvary Chapel Church, Inc	47.6	44.9	
286D Naples	W286AK	LIC _C_ FL	165.8 345.9	64.85 BLFT20130207ABE	26 07 33.0 81 43 17.0	0.099 138	0.7 138	11.9 Wrwk License Lp	50.9	51.8	
283L1 Sebring	570673	APP FL	21.1 201.2	101.32 BNPL20010615AYT	27 32 29.0 81 30 41.0	0.056 40	74	69.2 Esperanza Adventist Educat	50.9		

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 W284CK.C - Fort Myers, FL 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 and 13.7.**

Yellow Highlighted text denotes a §74.1204(d) waiver request for Third Adjacent Channel Given Interference toward WXKB(FM) - Cape Coral, FL (CH280C). as included in **Exhibit 13.8**. Full protection will be afforded the facility as the calculated interference area will not reach the ground nor a 7 meter artificial plane representing a standard two story building when taking into account the downward radiation characteristics of the antenna as supplied by the antenna manufacturer. A copy of the antenna manufacturer specifications have been included in **Exhibit 13.9**.

Exhibit 13.6

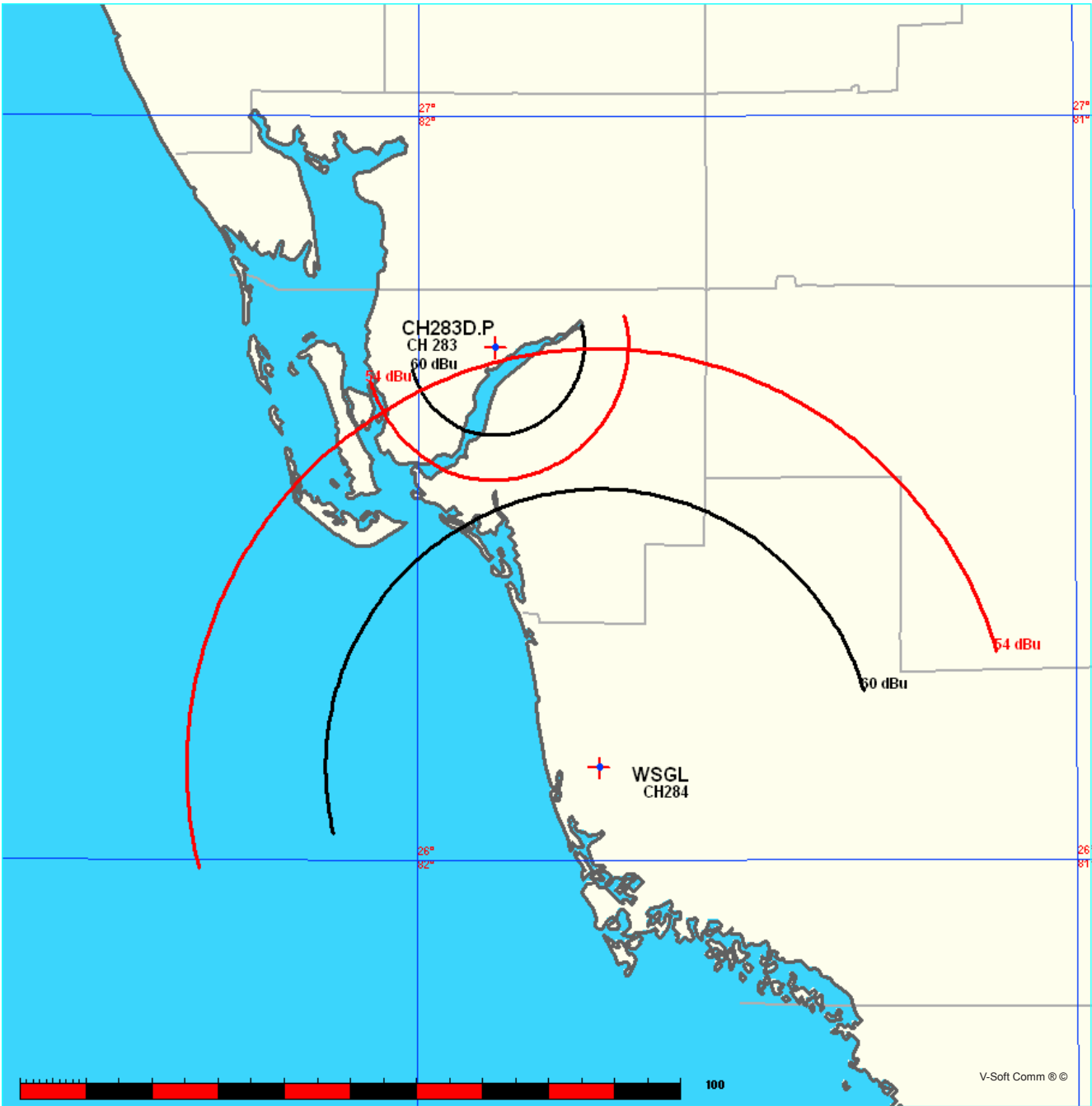
Contour Protection Studies Toward WSG.L - Naples, FL

University Of Northwestern-st. Paul

FMCommander Single Allocation Study - 02-12-2014 - USGS 03 SEC  
CH283D.P's Overlaps (In= -10.93 km, Out= 3.39 km)

CH283D.P CH 283 D DA  
Lat= 26 41 29.0, Lng= 81 52 51.0  
0.25 kW 104.3 M HAAT, 109 M COR  
Prot.= 60 dBu, Intef.= 54 dBu

WSGL CH 284 C2 73.215 N BLH20000105AAP  
Lat= 26 07 35.0, Lng= 81 43 17.0  
20.0 kW 132 M HAAT, 132 M COR  
Prot.= 60 dBu, Intef.= 54 dBu





## Exhibit 13.6

### Contour Protection Studies Toward WSGL.L - Naples, FL

02-12-2014

Terrain Data: USGS 03 SEC

FMOver Analysis

CH283D.P

WSGL BLH20000105AAP

Channel = 283D  
Max ERP = 0.25 kW  
RCAMSL = 109 M  
N. Lat. 26 41 29.0  
W. Lng. 81 52 51.0  
Protected  
60 dBu

Channel = 284C2  
Max ERP = 20 kW  
RCAMSL = 132 M  
N. Lat. 26 07 35.0  
W. Lng. 81 43 17.0  
Interfering  
54 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
121.0	000.2500	0105.8	013.2	355.4	020.0000	0130.0	056.2	56.28*	6.25
122.0	000.2500	0105.7	013.2	355.3	020.0000	0130.0	056.0	56.35*	6.43
123.0	000.2500	0105.7	013.2	355.1	020.0000	0130.0	055.8	56.42*	6.61
124.0	000.2500	0105.7	013.2	355.0	020.0000	0130.0	055.6	56.48*	6.79
125.0	000.2500	0105.7	013.2	354.8	020.0000	0130.0	055.5	56.55*	6.97
126.0	000.2500	0105.7	013.2	354.6	020.0000	0130.0	055.3	56.62*	7.14
127.0	000.2500	0105.6	013.2	354.5	020.0000	0130.0	055.1	56.68*	7.31
128.0	000.2500	0105.6	013.2	354.3	020.0000	0130.0	054.9	56.75*	7.48
129.0	000.2500	0105.6	013.2	354.2	020.0000	0130.0	054.8	56.81*	7.64
130.0	000.2500	0105.6	013.2	354.0	020.0000	0130.0	054.6	56.87*	7.81
131.0	000.2500	0105.7	013.2	353.8	020.0000	0130.0	054.5	56.94*	7.97
132.0	000.2500	0105.6	013.2	353.6	020.0000	0130.0	054.3	56.99*	8.12
133.0	000.2500	0105.7	013.2	353.4	020.0000	0130.0	054.2	57.05*	8.27
134.0	000.2500	0105.7	013.2	353.3	020.0000	0130.0	054.0	57.11*	8.42
135.0	000.2500	0105.7	013.2	353.1	020.0000	0130.0	053.9	57.17*	8.57
136.0	000.2500	0105.8	013.2	352.9	020.0000	0130.0	053.7	57.22*	8.71
137.0	000.2500	0105.8	013.2	352.7	020.0000	0130.0	053.6	57.28*	8.84
138.0	000.2500	0105.8	013.2	352.5	020.0000	0130.0	053.4	57.33*	8.98
139.0	000.2500	0105.8	013.2	352.3	020.0000	0130.0	053.3	57.38*	9.11
140.0	000.2500	0105.8	013.2	352.1	020.0000	0130.0	053.2	57.43*	9.23
141.0	000.2500	0105.9	013.2	351.8	020.0000	0130.0	053.1	57.47*	9.35
142.0	000.2500	0105.9	013.2	351.6	020.0000	0130.0	053.0	57.52*	9.47
143.0	000.2500	0105.9	013.2	351.4	020.0000	0130.0	052.8	57.56*	9.59
144.0	000.2500	0105.9	013.2	351.2	020.0000	0130.0	052.7	57.61*	9.69
145.0	000.2500	0105.8	013.2	351.0	020.0000	0130.0	052.6	57.64*	9.79
146.0	000.2500	0105.9	013.2	350.7	020.0000	0130.0	052.5	57.68*	9.90
147.0	000.2500	0106.0	013.2	350.5	020.0000	0130.0	052.4	57.72*	9.99
148.0	000.2500	0106.0	013.2	350.3	020.0000	0130.0	052.3	57.76*	10.08
149.0	000.2500	0106.0	013.2	350.0	020.0000	0130.0	052.3	57.79*	10.17
150.0	000.2500	0106.0	013.2	349.8	020.0000	0130.0	052.2	57.82*	10.25
151.0	000.2500	0106.0	013.2	349.6	020.0000	0130.0	052.1	57.85*	10.32
152.0	000.2500	0106.1	013.2	349.3	020.0000	0130.0	052.0	57.88*	10.40
153.0	000.2500	0106.1	013.2	349.1	020.0000	0130.0	052.0	57.91*	10.46
154.0	000.2500	0106.1	013.2	348.8	020.0000	0130.0	051.9	57.93*	10.53
155.0	000.2500	0106.1	013.2	348.6	020.0000	0130.0	051.8	57.95*	10.59
156.0	000.2500	0106.2	013.2	348.3	020.0000	0130.0	051.8	57.98*	10.64

**Exhibit 13.6****Contour Protection Studies Toward WSGL.L - Naples, FL**

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	
157.0	000.2500	0106.2	013.3	348.1	020.0000	0130.0	051.7	58.00*	10.69
158.0	000.2500	0106.3	013.3	347.8	020.0000	0130.0	051.7	58.01*	10.74
159.0	000.2500	0106.3	013.3	347.6	020.0000	0130.0	051.7	58.03*	10.78
160.0	000.2500	0106.4	013.3	347.3	020.0000	0130.0	051.6	58.04*	10.81
161.0	000.2500	0106.4	013.3	347.1	020.0000	0130.0	051.6	58.05*	10.84
162.0	000.2500	0106.5	013.3	346.8	020.0000	0130.0	051.6	58.06*	10.87
163.0	000.2500	0106.6	013.3	346.6	020.0000	0130.0	051.5	58.07*	10.89
164.0	000.2500	0106.7	013.3	346.3	020.0000	0130.0	051.5	58.08*	10.91
165.0	000.2500	0106.7	013.3	346.1	020.0000	0130.0	051.5	58.08*	10.92
166.0	000.2500	0106.8	013.3	345.8	020.0000	0130.0	051.5	58.09*	10.93
167.0	000.2500	0107.0	013.3	345.5	020.0000	0130.0	051.5	58.09*	10.93
168.0	000.2500	0107.1	013.3	345.3	020.0000	0130.0	051.5	58.09*	10.93
169.0	000.2500	0107.2	013.3	345.0	020.0000	0130.0	051.5	58.09*	10.92
170.0	000.2500	0107.2	013.3	344.8	020.0000	0130.0	051.5	58.08*	10.91
171.0	000.2500	0107.3	013.3	344.5	020.0000	0130.0	051.5	58.07*	10.89
172.0	000.2500	0107.4	013.3	344.2	020.0000	0130.0	051.6	58.06*	10.86
173.0	000.2500	0107.4	013.3	344.0	020.0000	0130.0	051.6	58.05*	10.83
174.0	000.2500	0107.4	013.3	343.7	020.0000	0130.0	051.6	58.03*	10.79
175.0	000.2500	0107.4	013.3	343.5	020.0000	0130.0	051.7	58.02*	10.74
176.0	000.2500	0107.4	013.3	343.2	020.0000	0130.0	051.7	58.00*	10.69
177.0	000.2500	0107.4	013.3	343.0	020.0000	0130.0	051.8	57.98*	10.64
178.0	000.2500	0107.5	013.3	342.7	020.0000	0130.0	051.8	57.95*	10.59
179.0	000.2500	0107.5	013.3	342.5	020.0000	0130.0	051.9	57.93*	10.52
180.0	000.2500	0107.5	013.3	342.2	020.0000	0130.0	052.0	57.90*	10.45
181.0	000.2500	0107.5	013.3	342.0	020.0000	0130.0	052.0	57.87*	10.38
182.0	000.2500	0107.6	013.3	341.8	020.0000	0130.0	052.1	57.84*	10.30
183.0	000.2500	0107.6	013.3	341.5	020.0000	0130.0	052.2	57.81*	10.22
184.0	000.2500	0107.6	013.3	341.3	020.0000	0130.0	052.3	57.78*	10.14
185.0	000.2500	0107.7	013.3	341.0	020.0000	0130.0	052.4	57.74*	10.05
186.0	000.2500	0107.9	013.4	340.8	020.0000	0130.0	052.5	57.71*	9.96
187.0	000.2500	0108.2	013.4	340.6	020.0000	0130.0	052.5	57.68*	9.88
188.0	000.2500	0108.5	013.4	340.3	020.0000	0130.0	052.6	57.64*	9.78
189.0	000.2500	0108.6	013.4	340.1	020.0000	0130.0	052.7	57.60*	9.68
190.0	000.2500	0108.6	013.4	339.9	020.0000	0130.0	052.9	57.56*	9.57
191.0	000.2500	0108.7	013.4	339.7	020.0000	0130.0	053.0	57.51*	9.45
192.0	000.2500	0108.7	013.4	339.4	020.0000	0130.0	053.1	57.46*	9.32
193.0	000.2500	0108.8	013.4	339.2	020.0000	0130.0	053.2	57.42*	9.20
194.0	000.2500	0108.9	013.4	339.0	020.0000	0130.0	053.4	57.37*	9.08
195.0	000.2500	0109.0	013.4	338.8	020.0000	0130.0	053.5	57.31*	8.94
196.0	000.2500	0109.0	013.4	338.6	020.0000	0130.0	053.6	57.26*	8.80
197.0	000.2500	0108.9	013.4	338.4	020.0000	0130.0	053.8	57.20*	8.66
198.0	000.2500	0109.0	013.4	338.2	020.0000	0130.0	053.9	57.15*	8.51
199.0	000.2500	0109.0	013.4	338.0	020.0000	0130.0	054.1	57.09*	8.36
200.0	000.2500	0109.0	013.4	337.9	020.0000	0130.0	054.2	57.03*	8.20
201.0	000.2500	0109.0	013.4	337.7	020.0000	0130.0	054.4	56.97*	8.04
202.0	000.2500	0108.9	013.4	337.5	020.0000	0130.0	054.5	56.90*	7.88
203.0	000.2500	0108.6	013.4	337.3	020.0000	0130.0	054.7	56.83*	7.70



## Exhibit 13.6

### Contour Protection Studies Toward WSGL.L - Naples, FL

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02-12-2014

Terrain Data: USGS 03 SEC

FMOVer Analysis

WSGL BLH20000105AAP

CH283D.P

Channel = 284C2

Max ERP = 20 kW

RCAMSL = 132 M

N. Lat. 26 07 35.0

W. Lng. 81 43 17.0

Protected

60 dBu

Channel = 283D

Max ERP = 0.25 kW

RCAMSL = 109 M

N. Lat. 26 41 29.0

W. Lng. 81 52 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)
301.0	020.0000	0130.9	041.6	205.5	000.2500	0107.5	045.9	39.91	
302.0	020.0000	0130.9	041.6	205.4	000.2500	0107.5	045.2	40.20	
303.0	020.0000	0130.9	041.6	205.3	000.2500	0107.5	044.5	40.49	
304.0	020.0000	0130.9	041.6	205.1	000.2500	0107.6	043.7	40.78	
305.0	020.0000	0130.9	041.6	205.0	000.2500	0107.7	043.0	41.08	
306.0	020.0000	0130.9	041.6	204.8	000.2500	0107.7	042.3	41.38	
307.0	020.0000	0130.9	041.6	204.6	000.2500	0107.8	041.6	41.68	
308.0	020.0000	0130.8	041.6	204.4	000.2500	0107.9	040.9	41.98	
309.0	020.0000	0130.8	041.6	204.1	000.2500	0108.0	040.2	42.30	
310.0	020.0000	0130.8	041.6	203.8	000.2500	0108.2	039.5	42.61	
311.0	020.0000	0130.7	041.6	203.5	000.2500	0108.3	038.8	42.93	
312.0	020.0000	0130.6	041.5	203.2	000.2500	0108.6	038.1	43.24	
313.0	020.0000	0130.5	041.5	202.8	000.2500	0108.7	037.4	43.56	
314.0	020.0000	0130.5	041.5	202.4	000.2500	0108.8	036.8	43.87	
315.0	020.0000	0130.5	041.5	201.9	000.2500	0108.9	036.1	44.19	
316.0	020.0000	0130.5	041.5	201.5	000.2500	0108.9	035.4	44.50	
317.0	020.0000	0130.5	041.5	201.0	000.2500	0109.0	034.8	44.80	
318.0	020.0000	0130.4	041.5	200.4	000.2500	0109.0	034.1	45.11	
319.0	020.0000	0130.4	041.5	199.8	000.2500	0109.0	033.5	45.41	
320.0	020.0000	0130.3	041.5	199.2	000.2500	0109.0	032.9	45.71	
321.0	020.0000	0130.2	041.5	198.5	000.2500	0109.0	032.3	46.00	
322.0	020.0000	0130.1	041.5	197.8	000.2500	0109.0	031.7	46.30	
323.0	020.0000	0130.0	041.5	197.0	000.2500	0108.9	031.1	46.60	
324.0	020.0000	0129.9	041.5	196.2	000.2500	0109.0	030.5	46.91	
325.0	020.0000	0129.9	041.5	195.3	000.2500	0109.0	029.9	47.22	
326.0	020.0000	0129.9	041.5	194.4	000.2500	0108.9	029.4	47.54	
327.0	020.0000	0129.9	041.5	193.4	000.2500	0108.9	028.9	47.85	
328.0	020.0000	0130.0	041.5	192.4	000.2500	0108.7	028.3	48.15	
329.0	020.0000	0130.0	041.5	191.4	000.2500	0108.7	027.8	48.46	

**Exhibit 13.6****Contour Protection Studies Toward WSG.L - Naples, FL**

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
330.0	020.0000	0130.0	041.5	190.2	000.2500	0108.6	027.4	48.76
331.0	020.0000	0130.0	041.5	189.0	000.2500	0108.6	026.9	49.05
332.0	020.0000	0130.0	041.5	187.8	000.2500	0108.4	026.5	49.33
333.0	020.0000	0130.0	041.5	186.5	000.2500	0108.0	026.1	49.57
334.0	020.0000	0130.0	041.5	185.2	000.2500	0107.7	025.7	49.81
335.0	020.0000	0130.0	041.5	183.7	000.2500	0107.6	025.3	50.05
336.0	020.0000	0130.0	041.5	182.3	000.2500	0107.6	025.0	50.28
337.0	020.0000	0130.0	041.5	180.8	000.2500	0107.5	024.7	50.49
338.0	020.0000	0130.0	041.5	179.2	000.2500	0107.5	024.4	50.68
339.0	020.0000	0130.0	041.5	177.6	000.2500	0107.5	024.1	50.86
340.0	020.0000	0130.0	041.5	176.0	000.2500	0107.4	023.9	51.01
341.0	020.0000	0130.0	041.5	174.3	000.2500	0107.4	023.7	51.14
342.0	020.0000	0130.0	041.5	172.6	000.2500	0107.4	023.6	51.25
343.0	020.0000	0130.0	041.5	170.8	000.2500	0107.3	023.5	51.33
344.0	020.0000	0130.0	041.5	169.1	000.2500	0107.2	023.4	51.39
345.0	020.0000	0130.0	041.5	167.3	000.2500	0107.0	023.3	51.40
346.0	020.0000	0130.0	041.5	165.5	000.2500	0106.8	023.3	51.39
347.0	020.0000	0130.0	041.5	163.7	000.2500	0106.7	023.3	51.37
348.0	020.0000	0130.0	041.5	162.0	000.2500	0106.5	023.4	51.31
349.0	020.0000	0130.0	041.5	160.2	000.2500	0106.4	023.5	51.23
350.0	020.0000	0130.0	041.5	158.5	000.2500	0106.3	023.6	51.13
351.0	020.0000	0130.0	041.5	156.8	000.2500	0106.2	023.8	51.01
352.0	020.0000	0130.0	041.5	155.1	000.2500	0106.1	024.0	50.86
353.0	020.0000	0130.0	041.5	153.5	000.2500	0106.1	024.2	50.69
354.0	020.0000	0130.0	041.5	151.9	000.2500	0106.1	024.5	50.50
355.0	020.0000	0130.0	041.5	150.3	000.2500	0106.0	024.7	50.30
356.0	020.0000	0130.0	041.5	148.8	000.2500	0106.0	025.1	50.07
357.0	020.0000	0130.0	041.5	147.4	000.2500	0106.0	025.4	49.83
358.0	020.0000	0130.0	041.5	146.0	000.2500	0105.9	025.8	49.57
359.0	020.0000	0129.9	041.5	144.7	000.2500	0105.9	026.2	49.30
000.0	020.0000	0129.9	041.5	143.4	000.2500	0105.9	026.6	49.02
001.0	020.0000	0129.8	041.4	142.2	000.2500	0105.9	027.0	48.72
002.0	020.0000	0129.8	041.4	141.0	000.2500	0105.9	027.5	48.42
003.0	020.0000	0129.7	041.4	139.9	000.2500	0105.8	028.0	48.11
004.0	020.0000	0129.6	041.4	138.9	000.2500	0105.8	028.5	47.79
005.0	020.0000	0129.5	041.4	137.9	000.2500	0105.8	029.0	47.47
006.0	020.0000	0129.5	041.4	137.0	000.2500	0105.8	029.6	47.16
007.0	020.0000	0129.4	041.4	136.1	000.2500	0105.8	030.1	46.84
008.0	020.0000	0129.4	041.4	135.2	000.2500	0105.7	030.7	46.53
009.0	020.0000	0129.4	041.4	134.5	000.2500	0105.7	031.3	46.22
010.0	020.0000	0129.4	041.4	133.7	000.2500	0105.7	031.9	45.91
011.0	020.0000	0129.3	041.4	133.0	000.2500	0105.7	032.5	45.62
012.0	020.0000	0129.3	041.4	132.4	000.2500	0105.6	033.1	45.31
013.0	020.0000	0129.2	041.4	131.8	000.2500	0105.6	033.8	45.01
014.0	020.0000	0129.1	041.3	131.2	000.2500	0105.7	034.4	44.71
015.0	020.0000	0128.9	041.3	130.7	000.2500	0105.7	035.1	44.41
016.0	020.0000	0128.9	041.3	130.2	000.2500	0105.7	035.7	44.10

## Exhibit 13.7

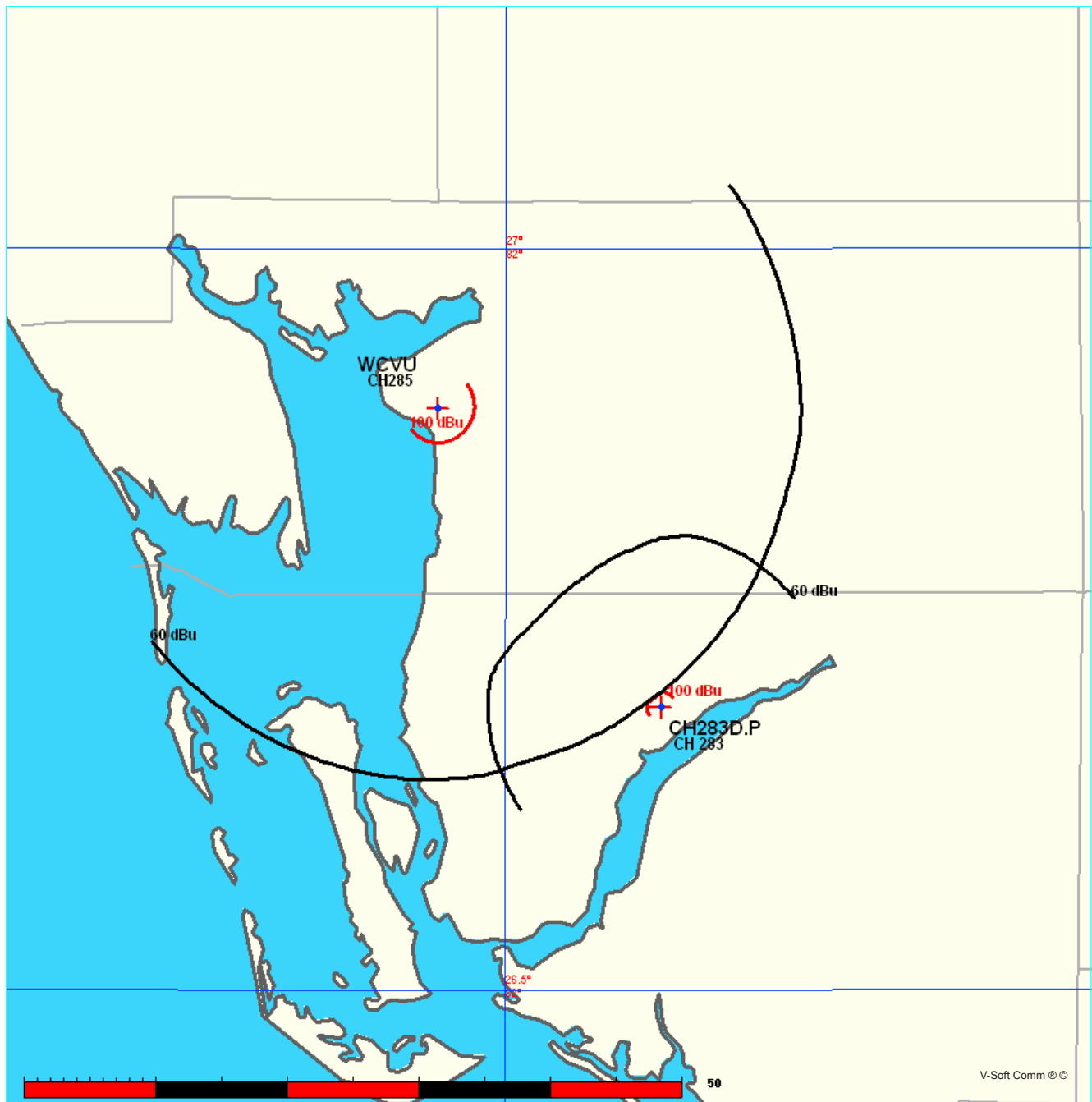
### Contour Protection Studies Toward WCVU.L - Solana, FL

University Of Northwestern-st. Paul

FMCommander Single Allocation Study - 02-12-2014 - USGS 03 SEC  
CH283D.P's Overlaps (In= 14.15 km, Out= 0.05 km)

CH283D.P CH 283 D DA  
Lat= 26 41 29.0, Lng= 81 52 51.0  
0.25 kW 104.3 M HAAT, 109 M COR  
Prot.= 60 dBu, Intef.= 100 dBu

WCVU CH 285 A 73.215 N BLH20120525AAE  
Lat= 26 53 37.5, Lng= 82 03 02.7  
6.0 kW 97 M HAAT, 98 M COR  
Prot.= 60 dBu, Intef.= 100 dBu



## Exhibit 13.7

### Contour Protection Studies Toward WCVU.L - Solana, FL

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02-12-2014

Terrain Data: USGS 03 SEC

FMOver Analysis

CH283D.P

WCVU BLH20120525AAE

Channel = 283D

Max ERP = 0.25 kW

RCAMSL = 109 M

N. Lat. 26 41 29.0

W. Lng. 81 52 51.0

Protected

60 dBu

Channel = 285A

Max ERP = 6 kW

RCAMSL = 98 M

N. Lat. 26 53 37.5

W. Lng. 82 03 02.7

Interfering

100 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
278.0	000.2500	0104.4	013.1	169.4	006.0000	0094.5	021.0	65.81	
279.0	000.2500	0104.4	013.1	169.2	006.0000	0094.4	020.8	65.97	
280.0	000.2500	0104.4	013.1	169.0	006.0000	0094.2	020.6	66.12	
281.0	000.2500	0104.3	013.1	168.7	006.0000	0094.1	020.4	66.28	
282.0	000.2500	0104.3	013.1	168.5	006.0000	0094.0	020.2	66.43	
283.0	000.2500	0104.1	013.1	168.2	006.0000	0093.9	020.0	66.59	
284.0	000.2500	0104.1	013.1	167.9	006.0000	0093.8	019.8	66.75	
285.0	000.2500	0104.0	013.1	167.6	006.0000	0093.7	019.6	66.90	
286.0	000.2500	0103.9	013.1	167.3	006.0000	0093.7	019.4	67.06	
287.0	000.2500	0103.8	013.1	166.9	006.0000	0093.6	019.2	67.22	
288.0	000.2500	0103.7	013.1	166.5	006.0000	0093.6	019.0	67.37	
289.0	000.2500	0103.6	013.1	166.2	006.0000	0093.6	018.8	67.53	
290.0	000.2500	0103.5	013.1	165.8	006.0000	0093.6	018.6	67.68	
291.0	000.2500	0103.3	013.1	165.3	006.0000	0093.5	018.4	67.82	
292.0	000.2500	0103.2	013.1	164.9	006.0000	0093.5	018.2	67.97	
293.0	000.2500	0103.1	013.1	164.4	006.0000	0093.4	018.1	68.11	
294.0	000.2500	0103.0	013.0	163.9	006.0000	0093.4	017.9	68.24	
295.0	000.2500	0102.8	013.0	163.4	006.0000	0093.3	017.7	68.38	
296.0	000.2500	0102.6	013.0	162.9	006.0000	0093.3	017.6	68.51	
297.0	000.2500	0102.4	013.0	162.4	006.0000	0093.3	017.4	68.64	
298.0	000.2500	0102.2	013.0	161.8	006.0000	0093.3	017.3	68.76	
299.0	000.2500	0102.1	013.0	161.2	006.0000	0093.3	017.1	68.89	
300.0	000.2500	0102.1	013.0	160.7	006.0000	0093.3	017.0	69.01	
301.0	000.2500	0102.0	013.0	160.1	006.0000	0093.3	016.8	69.13	
302.0	000.2500	0102.0	013.0	159.5	006.0000	0093.3	016.7	69.25	
303.0	000.2500	0102.0	013.0	158.8	006.0000	0093.3	016.5	69.36	
304.0	000.2500	0102.0	013.0	158.2	006.0000	0093.2	016.4	69.47	
305.0	000.2500	0102.0	013.0	157.5	006.0000	0093.2	016.3	69.57	
306.0	000.2500	0102.0	013.0	156.8	006.0000	0093.2	016.2	69.67	
307.0	000.2500	0102.0	013.0	156.1	006.0000	0093.1	016.1	69.76	
308.0	000.2500	0102.0	013.0	155.4	006.0000	0093.1	016.0	69.85	
309.0	000.2500	0102.0	013.0	154.7	006.0000	0093.1	015.8	69.94	
310.0	000.2500	0102.0	013.0	153.9	006.0000	0093.1	015.8	70.02	
311.0	000.2500	0102.0	013.0	153.2	006.0000	0093.0	015.7	70.09	
312.0	000.2500	0102.0	013.0	152.4	006.0000	0093.0	015.6	70.16	
313.0	000.2500	0102.0	013.0	151.6	006.0000	0092.9	015.5	70.21	

**MUNN-REESE, INC.**

Broadcast Engineering Consultants

COLDWATER, MI 49036

**Exhibit 13.7****Contour Protection Studies Toward WCVU.L - Solana, FL**

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
314.0	000.2500	0102.0	013.0	150.8	006.0000	0092.8	015.4	70.26
315.0	000.2500	0102.0	013.0	150.0	006.0000	0092.8	015.4	70.31
316.0	000.2500	0102.0	013.0	149.2	006.0000	0092.7	015.3	70.35
317.0	000.2500	0102.0	013.0	148.4	006.0000	0092.6	015.3	70.39
318.0	000.2500	0102.0	013.0	147.5	006.0000	0092.5	015.2	70.42
319.0	000.2500	0102.0	013.0	146.7	006.0000	0092.5	015.2	70.44
320.0	000.2500	0102.0	013.0	145.8	006.0000	0092.4	015.2	70.46
321.0	000.2500	0102.0	013.0	145.0	006.0000	0092.3	015.1	70.47
322.0	000.2500	0102.0	013.0	144.1	006.0000	0092.3	015.1	70.47
323.0	000.2500	0102.0	013.0	143.3	006.0000	0092.2	015.1	70.47
324.0	000.2500	0102.0	013.0	142.4	006.0000	0092.2	015.1	70.47
325.0	000.2500	0102.0	013.0	141.6	006.0000	0092.2	015.1	70.46
326.0	000.2500	0102.0	013.0	140.7	006.0000	0092.2	015.2	70.45
327.0	000.2500	0102.0	013.0	139.8	006.0000	0092.3	015.2	70.43
328.0	000.2500	0102.0	013.0	139.0	006.0000	0092.2	015.2	70.40
329.0	000.2500	0102.0	013.0	138.2	006.0000	0092.2	015.3	70.36
330.0	000.2500	0102.0	013.0	137.3	006.0000	0092.1	015.3	70.32
331.0	000.2500	0102.0	013.0	136.5	006.0000	0092.2	015.4	70.27
332.0	000.2500	0102.0	013.0	135.7	006.0000	0092.2	015.4	70.23
333.0	000.2500	0102.0	013.0	134.9	006.0000	0092.2	015.5	70.17
334.0	000.2500	0102.0	013.0	134.1	006.0000	0092.2	015.6	70.10
335.0	000.2500	0102.0	013.0	133.3	006.0000	0092.2	015.6	70.03
336.0	000.2500	0102.0	013.0	132.6	006.0000	0092.2	015.7	69.96
337.0	000.2500	0102.0	013.0	131.8	006.0000	0092.2	015.8	69.88
338.0	000.2500	0102.0	013.0	131.1	006.0000	0092.2	015.9	69.79
339.0	000.2500	0102.0	013.0	130.3	006.0000	0092.2	016.0	69.71
340.0	000.2500	0102.0	013.0	129.6	006.0000	0092.2	016.1	69.61
341.0	000.2500	0102.0	013.0	129.0	006.0000	0092.2	016.2	69.51
342.0	000.2500	0102.0	013.0	128.3	006.0000	0092.2	016.4	69.41
343.0	000.2500	0102.0	013.0	127.6	006.0000	0092.2	016.5	69.30
344.0	000.2500	0102.0	013.0	127.0	006.0000	0092.2	016.6	69.19
345.0	000.2500	0102.0	013.0	126.4	006.0000	0092.2	016.8	69.07
346.0	000.2500	0102.0	013.0	125.8	006.0000	0092.2	016.9	68.95
347.0	000.2500	0102.0	013.0	125.2	006.0000	0092.2	017.1	68.83
348.0	000.2500	0102.0	013.0	124.7	006.0000	0092.2	017.2	68.70
349.0	000.2500	0101.9	013.0	124.1	006.0000	0092.2	017.4	68.56
350.0	000.2500	0101.9	013.0	123.6	006.0000	0092.2	017.5	68.42
351.0	000.2500	0101.8	013.0	123.1	006.0000	0092.2	017.7	68.28
352.0	000.2500	0101.7	013.0	122.6	006.0000	0092.2	017.9	68.14
353.0	000.2500	0101.7	013.0	122.2	006.0000	0092.2	018.1	67.99
354.0	000.2500	0101.6	013.0	121.8	006.0000	0092.2	018.2	67.84
355.0	000.2500	0101.6	013.0	121.3	006.0000	0092.2	018.4	67.69
356.0	000.2500	0101.5	013.0	120.9	006.0000	0092.2	018.6	67.54
357.0	000.2500	0101.4	013.0	120.6	006.0000	0092.2	018.8	67.38
358.0	000.2500	0101.3	012.9	120.2	006.0000	0092.2	019.0	67.22
359.0	000.2500	0101.3	012.9	119.8	006.0000	0092.2	019.2	67.07
000.0	000.2500	0101.3	012.9	119.5	006.0000	0092.2	019.4	66.90

## Exhibit 13.7

### Contour Protection Studies Toward WCVU.L - Solana, FL

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02-12-2014

Terrain Data: USGS 03 SEC

FMOver Analysis

WCVU BLH20120525AAE

CH283D.P

Channel = 285A

Max ERP = 6 kW

RCAMSL = 98 M

N. Lat. 26 53 37.5

W. Lng. 82 03 02.7

Protected

60 dBu

Channel = 283D

Max ERP = 0.25 kW

RCAMSL = 109 M

N. Lat. 26 41 29.0

W. Lng. 81 52 51.0

Interfering

100 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
098.0	006.0000	0093.0	027.3	028.7	000.2500	0101.6	021.3	52.48	
099.0	006.0000	0092.7	027.3	029.1	000.2500	0101.5	020.8	52.84	
100.0	006.0000	0092.3	027.2	029.4	000.2500	0101.5	020.4	53.20	
101.0	006.0000	0092.0	027.2	029.7	000.2500	0101.5	019.9	53.57	
102.0	006.0000	0091.8	027.2	030.0	000.2500	0101.5	019.4	53.94	
103.0	006.0000	0091.7	027.2	030.4	000.2500	0101.4	019.0	54.30	
104.0	006.0000	0091.6	027.1	030.8	000.2500	0101.4	018.5	54.68	
105.0	006.0000	0091.5	027.1	031.2	000.2500	0101.4	018.1	55.06	
106.0	006.0000	0091.4	027.1	031.6	000.2500	0101.4	017.6	55.43	
107.0	006.0000	0091.4	027.1	031.9	000.2500	0101.4	017.1	55.81	
108.0	006.0000	0091.4	027.1	032.3	000.2500	0101.4	016.7	56.20	
109.0	006.0000	0091.4	027.1	032.7	000.2500	0101.4	016.2	56.58	
110.0	006.0000	0091.5	027.1	033.2	000.2500	0101.4	015.8	56.96	
111.0	006.0000	0091.5	027.1	033.6	000.2500	0101.4	015.3	57.35	
112.0	006.0000	0091.6	027.2	034.0	000.2500	0101.4	014.8	57.64	
113.0	006.0000	0091.7	027.2	034.5	000.2500	0101.4	014.4	58.17	
114.0	006.0000	0091.9	027.2	034.9	000.2500	0101.4	013.9	58.72	
115.0	006.0000	0091.9	027.2	035.3	000.2500	0101.4	013.5	59.31	
116.0	006.0000	0092.0	027.2	035.7	000.2500	0101.4	013.0	59.93	
117.0	006.0000	0092.1	027.2	036.1	000.2500	0101.4	012.5	60.58	
118.0	006.0000	0092.1	027.2	036.5	000.2500	0101.4	012.1	61.27	
119.0	006.0000	0092.1	027.2	036.8	000.2500	0101.4	011.6	61.99	
120.0	006.0000	0092.2	027.2	037.1	000.2500	0101.4	011.1	62.74	
121.0	006.0000	0092.2	027.2	037.4	000.2500	0101.3	010.6	63.52	
122.0	006.0000	0092.2	027.2	037.7	000.2500	0101.3	010.2	64.33	
123.0	006.0000	0092.2	027.2	038.0	000.2500	0101.3	009.7	65.18	
124.0	006.0000	0092.2	027.2	038.2	000.2500	0101.3	009.2	66.06	
125.0	006.0000	0092.2	027.2	038.4	000.2500	0101.3	008.8	66.96	
126.0	006.0000	0092.2	027.2	038.5	000.2500	0101.2	008.3	67.90	
127.0	006.0000	0092.2	027.2	038.7	000.2500	0101.2	007.8	68.88	
128.0	006.0000	0092.2	027.2	038.7	000.2500	0101.2	007.3	70.00	
129.0	006.0000	0092.2	027.2	038.7	000.2500	0101.2	006.9	71.24	
130.0	006.0000	0092.2	027.2	038.7	000.2500	0101.2	006.4	72.54	



**Exhibit 13.7****Contour Protection Studies Toward WCVU.L - Solana, FL**

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
131.0	006.0000	0092.2	027.2	038.5	000.2500	0101.3	005.9	73.92
132.0	006.0000	0092.2	027.2	038.2	000.2500	0101.3	005.4	75.38
133.0	006.0000	0092.2	027.2	037.8	000.2500	0101.3	005.0	76.89
134.0	006.0000	0092.2	027.2	037.2	000.2500	0101.4	004.5	78.50
135.0	006.0000	0092.2	027.2	036.4	000.2500	0101.4	004.0	80.29
136.0	006.0000	0092.2	027.2	035.2	000.2500	0101.4	003.5	82.27
137.0	006.0000	0092.1	027.2	033.2	000.2500	0101.4	003.1	84.42
138.0	006.0000	0092.2	027.2	030.8	000.2500	0101.4	002.6	87.00
139.0	006.0000	0092.2	027.2	027.2	000.2500	0101.6	002.2	89.96
140.0	006.0000	0092.3	027.2	021.3	000.2500	0102.0	001.7	93.08
141.0	006.0000	0092.2	027.2	011.3	000.2500	0102.0	001.3	98.32
142.0	006.0000	0092.3	027.2	354.0	000.1980	0101.6	001.0	99.63
143.0	006.0000	0092.2	027.2	326.6	000.1406	0102.0	000.9	99.47
144.0	006.0000	0092.3	027.2	297.5	000.1703	0102.3	001.0	99.45
145.0	006.0000	0092.3	027.2	277.7	000.2500	0104.5	001.3	98.89
146.0	006.0000	0092.4	027.3	266.1	000.2500	0104.7	001.6	93.95
147.0	006.0000	0092.5	027.3	259.3	000.2500	0104.8	002.1	90.88
148.0	006.0000	0092.6	027.3	255.1	000.2500	0104.6	002.5	87.90
149.0	006.0000	0092.7	027.3	252.2	000.2500	0104.6	003.0	85.25
150.0	006.0000	0092.7	027.3	250.3	000.2500	0104.6	003.4	83.03
151.0	006.0000	0092.8	027.3	249.0	000.2500	0104.5	003.9	81.01
152.0	006.0000	0092.9	027.3	247.9	000.2500	0104.5	004.4	79.17
153.0	006.0000	0093.0	027.3	247.3	000.2500	0104.4	004.8	77.52
154.0	006.0000	0093.1	027.3	246.9	000.2500	0104.4	005.3	76.00
155.0	006.0000	0093.1	027.4	246.7	000.2500	0104.4	005.8	74.53
156.0	006.0000	0093.1	027.4	246.6	000.2500	0104.4	006.3	73.13
157.0	006.0000	0093.2	027.4	246.5	000.2500	0104.4	006.8	71.80
158.0	006.0000	0093.2	027.4	246.5	000.2500	0104.4	007.2	70.55
159.0	006.0000	0093.3	027.4	246.6	000.2500	0104.4	007.7	69.39
160.0	006.0000	0093.3	027.4	246.8	000.2500	0104.4	008.2	68.37
161.0	006.0000	0093.3	027.4	247.0	000.2500	0104.4	008.7	67.42
162.0	006.0000	0093.3	027.4	247.2	000.2500	0104.4	009.1	66.49
163.0	006.0000	0093.4	027.4	247.4	000.2500	0104.5	009.6	65.61
164.0	006.0000	0093.4	027.4	247.7	000.2500	0104.5	010.1	64.75
165.0	006.0000	0093.5	027.4	247.9	000.2500	0104.5	010.6	63.92
166.0	006.0000	0093.6	027.4	248.2	000.2500	0104.5	011.0	63.13
167.0	006.0000	0093.6	027.4	248.5	000.2500	0104.5	011.5	62.37
168.0	006.0000	0093.8	027.5	248.7	000.2500	0104.5	012.0	61.63
169.0	006.0000	0094.2	027.5	248.8	000.2500	0104.5	012.5	60.92
170.0	006.0000	0094.9	027.6	248.8	000.2500	0104.5	013.0	60.24
171.0	006.0000	0095.8	027.7	248.7	000.2500	0104.5	013.5	59.58
172.0	006.0000	0096.4	027.8	248.8	000.2500	0104.5	014.0	58.96
173.0	006.0000	0096.7	027.9	249.1	000.2500	0104.5	014.4	58.38
174.0	006.0000	0096.9	027.9	249.5	000.2500	0104.6	014.9	57.85
175.0	006.0000	0096.9	027.9	250.0	000.2500	0104.6	015.4	57.57
176.0	006.0000	0097.0	027.9	250.4	000.2500	0104.6	015.9	57.17
177.0	006.0000	0097.1	027.9	250.8	000.2500	0104.6	016.3	56.77
178.0	006.0000	0097.2	027.9	251.3	000.2500	0104.6	016.8	56.38

WXKB(FM) - 76.85 dBμ F(50:50)

CH283D.P

## Exhibit 13.8

### §74.1204(d) 3rd Adjacent Channel Given Interference Waiver Request Study Toward WXKB(FM)

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

Terrain

0 10 m

Scale 1:165,000

0 2 4 6 km

CH283D.P

Fort Myers, FL

Proposed Operation

Facility ID: 139201

Latitude: 26-41-29 N

Longitude: 081-52-51 W

ERP: 0.25 kW

Channel: 283D

Frequency: 104.5 MHz

AMSL Height: 109.0 m

Horiz. Pattern: Directional

WXKB(FM)

Cape Coral, FL

BLH2000928ABN

Facility ID: 73933

Latitude: 26-25-22 N

Longitude: 081-37-49 W

ERP: 100.00 kW

Channel: 280C

Frequency: 103.9 MHz

AMSL Height: 343.0 m

Horiz. Pattern: Omni

WXKB(FM)

+

The Interference Contour corresponding to the WXKB(FM) - Cape Coral, FL 76.85 dBμ F(50:50) Protected Contour at the proposed Translator site has been calculated to be no less than the 116.85 dBμ F(50:10) Interference Contour. This represents the proposed interference contour which falls wholly within the 40:1 dBμ ratio. As seen on the map and associated vertical protection study, full protection will be afforded the WXKB(FM) facility as the calculated interference area will not reach the ground nor a 7 meter artificial plane representing a standard two story building when taking into account the downward radiation characteristics of the antenna as supplied by the antenna manufacturer. A copy of the antenna manufacturer's vertical radiation pattern has been included in **Exhibit 13.9**.



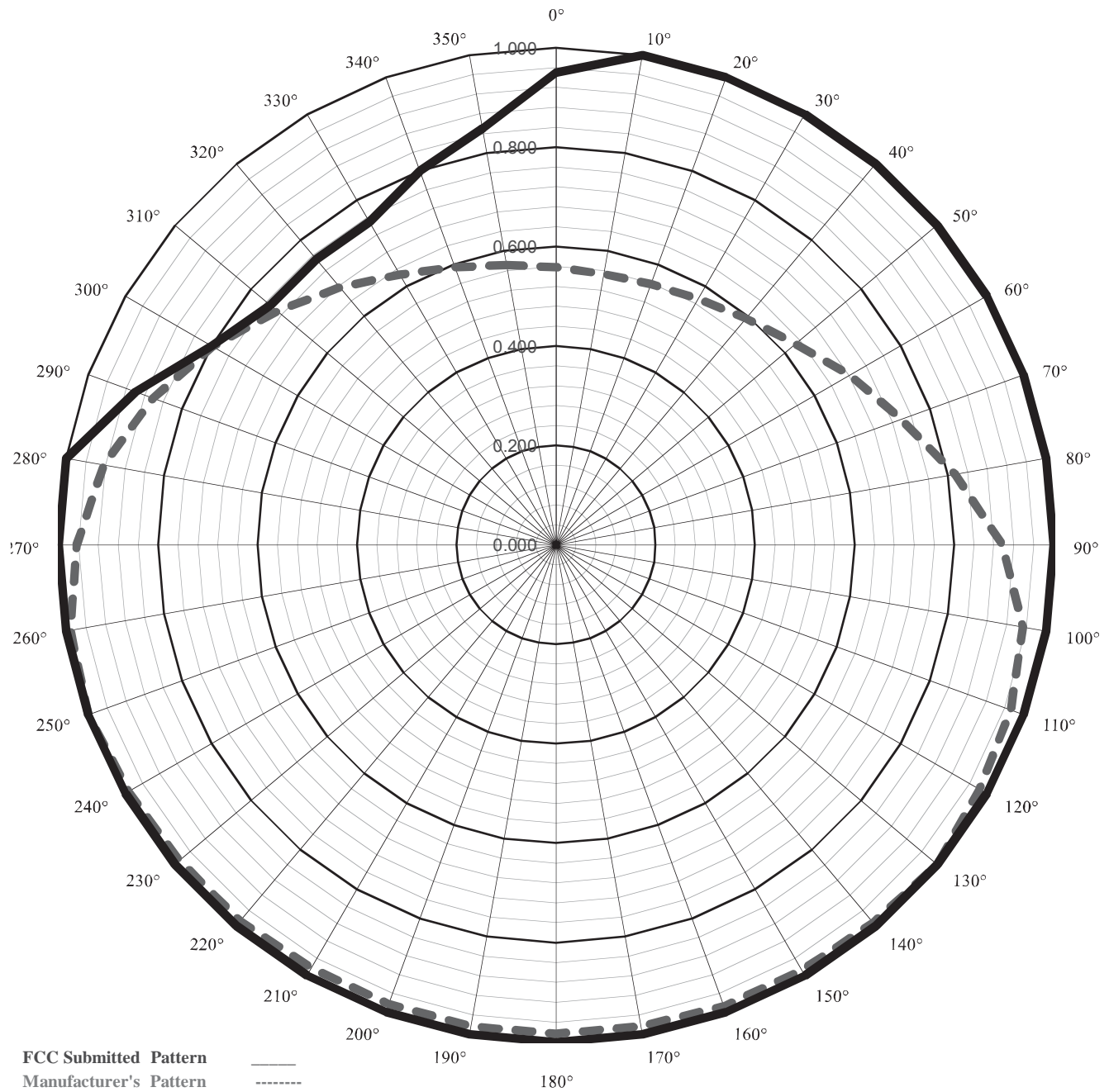
# Exhibit 13.9

## Directional Antenna Study

### (FCC vs. Manufacturer's Pattern)



#### Measured Composite Pattern in Relative Field



**Call Sign:** CH283D.P

**Channel:** 283D

**Max ERP:** 0.250 kW (V)  
0.250 kW (H)

**Antenna Make:** Nicom USA Inc.

**Model:** BKG77/2DA(0.9wl)

**Licensee:** University Of Northwestern-St. Paul

**Munn-Reese, Inc.**  
Broadcast Engineering Consultants  
Coldwater, MI 49036

# Exhibit 13.9

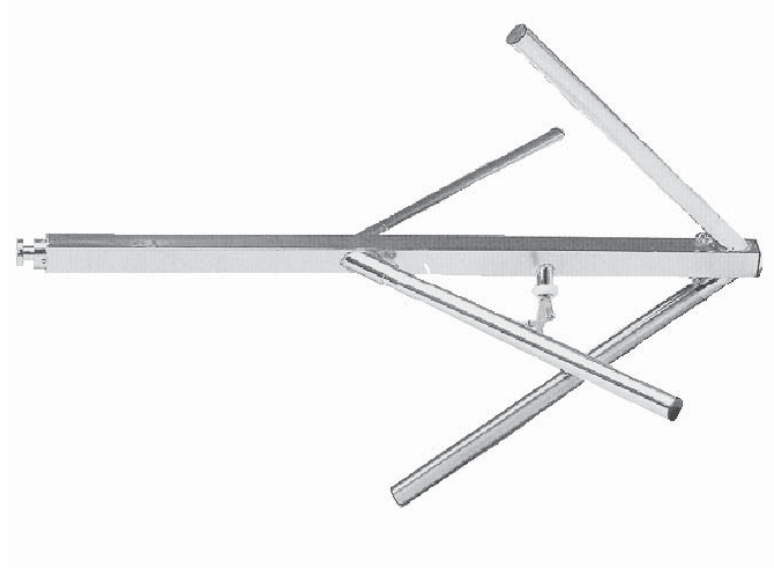
## Directional Antenna Study

### (FCC vs. Manufacturer's Pattern)



MEASURED PATTERN (from manufacturer)							SUBMITTED PATTERN (to FCC)						
Enter	Measured	Calculated			Measured	Relative	Enter	Submitted	Calculated			Submitted	Relative
Max ERP	Relative	dB			Equiv	Relative	Max ERP	Relative	dB			Equiv	Relative
(kW)	° True	Field	Change	Suppression	Power	Field <sup>2</sup>	(kW)	° True	Field	Change	Suppression	Power	Field <sup>2</sup>
0.25	0°	0.558	-0.20	-5.07	0.078	0.31	0.250	0°	0.950	0.97	-0.45	0.226	0.90
	10°	0.553	-0.08	-5.15	0.076	0.31		10°	1.000	0.45	0.00	0.250	1.00
	20°	0.558	0.08	-5.07	0.078	0.31		20°	1.000	0.00	0.00	0.250	1.00
	30°	0.571	0.20	-4.87	0.082	0.33		30°	1.000	0.00	0.00	0.250	1.00
	40°	0.594	0.34	-4.52	0.088	0.35	Percentage of Allocated Pattern: 88.58%	40°	1.000	0.00	0.00	0.250	1.00
	50°	0.628	0.48	-4.04	0.099	0.39		50°	1.000	0.00	0.00	0.250	1.00
	60°	0.682	0.72	-3.32	0.116	0.47		60°	1.000	0.00	0.00	0.250	1.00
	70°	0.738	0.69	-2.64	0.136	0.54		70°	1.000	0.00	0.00	0.250	1.00
	80°	0.815	0.86	-1.78	0.166	0.66		80°	1.000	0.00	0.00	0.250	1.00
	90°	0.897	0.83	-0.94	0.201	0.80		90°	1.000	0.00	0.00	0.250	1.00
	100°	0.953	0.53	-0.42	0.227	0.91		100°	1.000	0.00	0.00	0.250	1.00
	110°	0.973	0.18	-0.24	0.237	0.95		110°	1.000	0.00	0.00	0.250	1.00
	120°	0.983	0.09	-0.15	0.242	0.97		120°	1.000	0.00	0.00	0.250	1.00
	130°	1.000	0.15	0.00	0.250	1.00		130°	1.000	0.00	0.00	0.250	1.00
	140°	0.992	-0.07	-0.07	0.246	0.98		140°	1.000	0.00	0.00	0.250	1.00
	150°	0.988	-0.04	-0.10	0.244	0.98		150°	1.000	0.00	0.00	0.250	1.00
	160°	0.988	0.00	-0.10	0.244	0.98		160°	1.000	0.00	0.00	0.250	1.00
	170°	0.983	-0.04	-0.15	0.242	0.97		170°	1.000	0.00	0.00	0.250	1.00
	180°	0.983	0.00	-0.15	0.242	0.97		180°	1.000	0.00	0.00	0.250	1.00
	190°	0.983	0.00	-0.15	0.242	0.97		190°	1.000	0.00	0.00	0.250	1.00
	200°	0.983	0.00	-0.15	0.242	0.97		200°	1.000	0.00	0.00	0.250	1.00
	210°	0.983	0.00	-0.15	0.242	0.97		210°	1.000	0.00	0.00	0.250	1.00
	220°	0.988	0.04	-0.10	0.244	0.98		220°	1.000	0.00	0.00	0.250	1.00
	230°	0.988	0.00	-0.10	0.244	0.98		230°	1.000	0.00	0.00	0.250	1.00
	240°	0.992	0.04	-0.07	0.246	0.98		240°	1.000	0.00	0.00	0.250	1.00
	250°	1.000	0.07	0.00	0.250	1.00		250°	1.000	0.00	0.00	0.250	1.00
	260°	0.991	-0.08	-0.08	0.246	0.98		260°	1.000	0.00	0.00	0.250	1.00
	270°	0.963	-0.25	-0.33	0.232	0.93		270°	1.000	0.00	0.00	0.250	1.00
	280°	0.923	-0.37	-0.70	0.213	0.85		280°	1.000	0.00	0.00	0.250	1.00
	290°	0.862	-0.59	-1.29	0.186	0.74		290°	0.900	-0.92	-0.92	0.203	0.81
	300°	0.797	-0.68	-1.97	0.159	0.64		300°	0.800	-1.02	-1.94	0.160	0.64
	310°	0.731	-0.75	-2.72	0.134	0.53		310°	0.750	-0.56	-2.50	0.141	0.56
	320°	0.676	-0.68	-3.40	0.114	0.46		320°	0.750	0.00	-2.50	0.141	0.56
	330°	0.628	-0.64	-4.04	0.099	0.39		330°	0.750	0.00	-2.50	0.141	0.56
	340°	0.594	-0.48	-4.52	0.088	0.35		340°	0.800	0.56	-1.94	0.160	0.64
	350°	0.571	-0.34	-4.87	0.082	0.33		350°	0.850	0.53	-1.41	0.181	0.72

# Exhibit 13.9 - Copy of Manufacturer's Directional Antenna Pattern Data (Actual Pattern Rotated to 190°T)



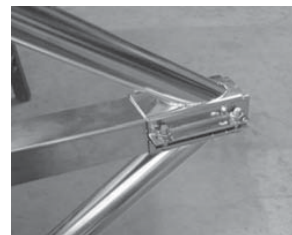
**NICOM**  
**BKG77**

**Low Power**

**Broadband  
FM Circular  
Polarization  
Antenna  
*Antena de  
FM Banda Ancha  
Polarizacion Circular***

This antenna, constructed completely of stainless steel, offers circular polarization for better coverage especially in urban areas. In order to facilitate and decrease shipping costs, this model is simple to break down and reassemble when ready to be installed. It is insulated with Teflon, and with the appropriate connector has a maximum input of 0.5 kw.

Esta antena, fabricada completamente de acero inoxidable, le ofrece polarización circular para mejor alcance, especialmente en zonas urbanas. Para facilitar y disminuir los costos de transportación, este modelo es fácil de desarmar y volver a montar tan pronto que la quiera instalar. Está aislada con Teflon, y con el conector apropiado tiene una entrada máxima de 0.5 kw.



## TECHNICAL SPECIFICATIONS (per bay)

Antenna type	circular polarization dipole	Front-to-back ratio	3 dB
Frequency range	87.5 - 108 MHz	Lightening protection	all parts grounded
Bandwidth	500 kHz max	Max wind velocity	119 mph (190 km/h)
Impedance	50 ohms	Wind load	8 Lbs (3.6 kg)
Connectors	N type (0.5 kw)	Wind surface	0.3 ft <sup>2</sup> (0.04 m <sup>2</sup> )
Power rating	500 Watts max	Materials (external)	stainless steel
VSWR	< 1.1:1	Mounting	from 2" to 4"
Polarization	vertical and horizontal	Weight	7.7 Lbs (3.5 kg)
Gain	- 3 dBd (referred to half-wave dipole)	Dimensions	58"×32"×32" (1450×800×800mm)
H plane	omnidirectional ±1.5 dB (with a 4" mast)	Packing	72"×6"×6" (1500×152×152mm)
V plane	omnidirectional ±3 dB (with a 4" mast)		

# Exhibit 13.9 - Copy of Manufacturer's Directional Antenna Pattern Data (Actual Pattern Rotated to 190°T)



Date: 29/04/2013

BKG77SINGLE.PRJ

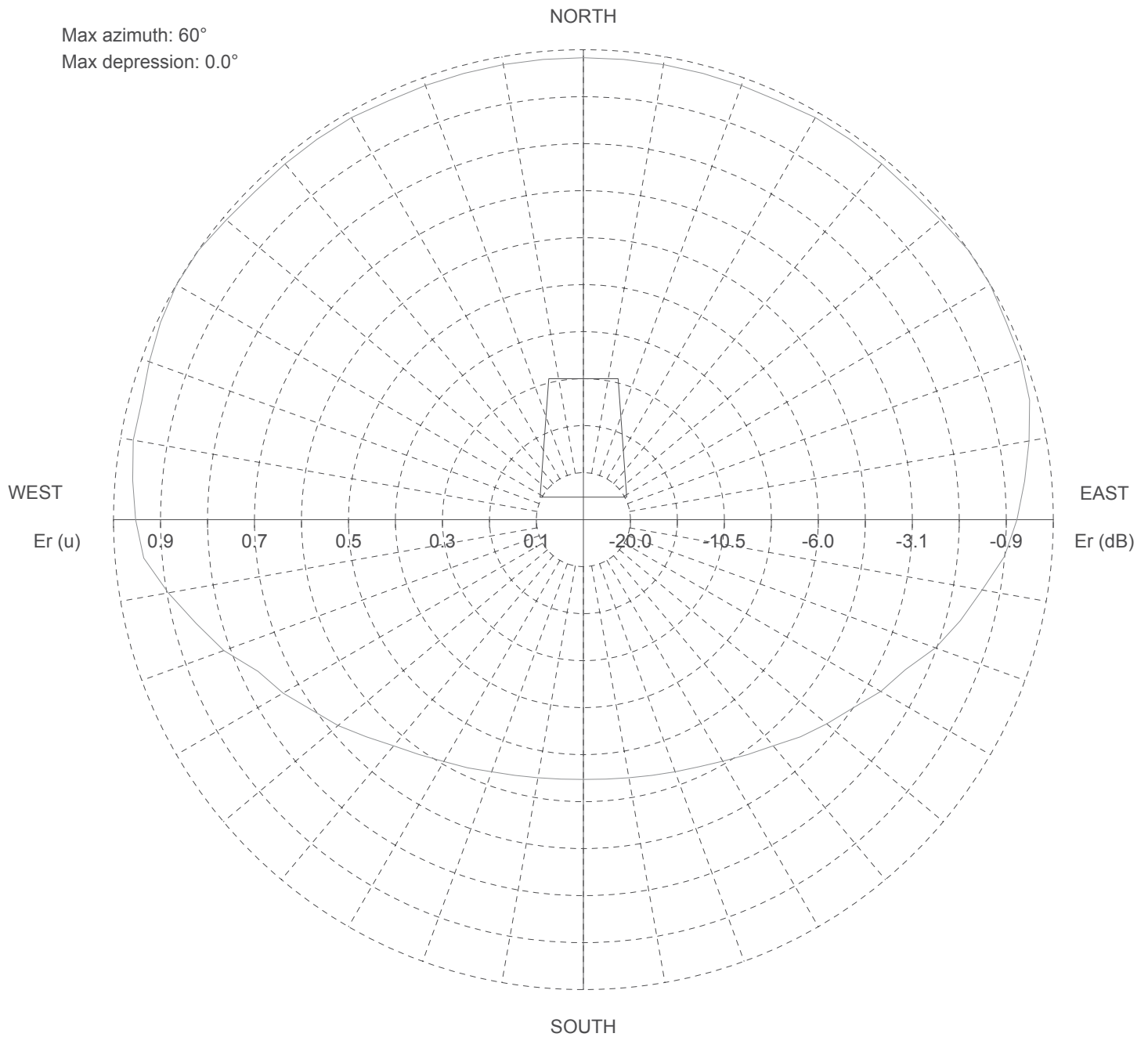
TX station: BKG77-1

Site name:

Frequency: 100.00 MHz

## Horizontal diagram of Maxima

Max azimuth: 60°  
Max depression: 0.0°



—— 0.0° depres. (Total antenna), Gain (dBd): -3.03 ERP T.max (KW): 0.498

ERP E.max (KW): 0.387

NicomUsa, Inc



# Exhibit 13.9 - Copy of Manufacturer's Directional Antenna Pattern Data (Actual Pattern Rotated to 190°T)



Date: 29/04/2013

BKG77SINGLE.PRJ

TX station: BKG77-1

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	98.3	373.6	120.0	0.0	73.1	206.6	240.0	0.0	73.8	210.7
5.0	0.0	98.3	373.6	125.0	0.0	69.9	189.2	245.0	0.0	76.4	225.7
10.0	0.0	98.3	373.6	130.0	0.0	67.6	176.7	250.0	0.0	81.5	256.6
15.0	0.0	98.3	373.6	135.0	0.0	65.3	165.1	255.0	0.0	85.3	281.6
20.0	0.0	98.3	373.6	140.0	0.0	62.8	152.7	260.0	0.0	89.7	311.1
25.0	0.0	98.3	373.6	145.0	0.0	61.0	144.0	265.0	0.0	93.9	341.1
30.0	0.0	98.8	377.5	150.0	0.0	59.4	136.3	270.0	0.0	95.3	351.1
35.0	0.0	98.8	377.5	155.0	0.0	58.0	130.3	275.0	0.0	96.3	358.5
40.0	0.0	98.8	377.5	160.0	0.0	57.1	126.1	280.0	0.0	97.3	366.1
45.0	0.0	98.8	377.5	165.0	0.0	56.3	122.8	285.0	0.0	97.3	366.1
50.0	0.0	99.2	380.8	170.0	0.0	55.8	120.3	290.0	0.0	98.3	373.6
55.0	0.0	100.0	386.5	175.0	0.0	55.4	118.7	295.0	0.0	99.3	381.4
60.0	0.0	100.0	386.7	180.0	0.0	55.3	118.2	300.0	0.0	100.0	386.7
65.0	0.0	99.3	381.4	185.0	0.0	55.4	118.7	305.0	0.0	100.0	386.5
70.0	0.0	99.1	380.0	190.0	0.0	55.8	120.3	310.0	0.0	99.2	380.8
75.0	0.0	98.3	373.6	195.0	0.0	56.3	122.8	315.0	0.0	98.8	377.5
80.0	0.0	96.3	358.5	200.0	0.0	57.1	126.1	320.0	0.0	98.8	377.5
85.0	0.0	94.3	343.8	205.0	0.0	58.3	131.4	325.0	0.0	98.8	377.5
90.0	0.0	92.3	329.3	210.0	0.0	59.4	136.5	330.0	0.0	98.8	377.5
95.0	0.0	90.0	312.9	215.0	0.0	61.0	144.0	335.0	0.0	98.3	373.6
100.0	0.0	86.2	287.1	220.0	0.0	62.8	152.7	340.0	0.0	98.3	373.6
105.0	0.0	83.0	266.7	225.0	0.0	65.3	165.1	345.0	0.0	98.3	373.6
110.0	0.0	79.7	245.9	230.0	0.0	68.2	179.6	350.0	0.0	98.3	373.6
115.0	0.0	75.6	221.0	235.0	0.0	70.6	192.7	355.0	0.0	98.3	373.6

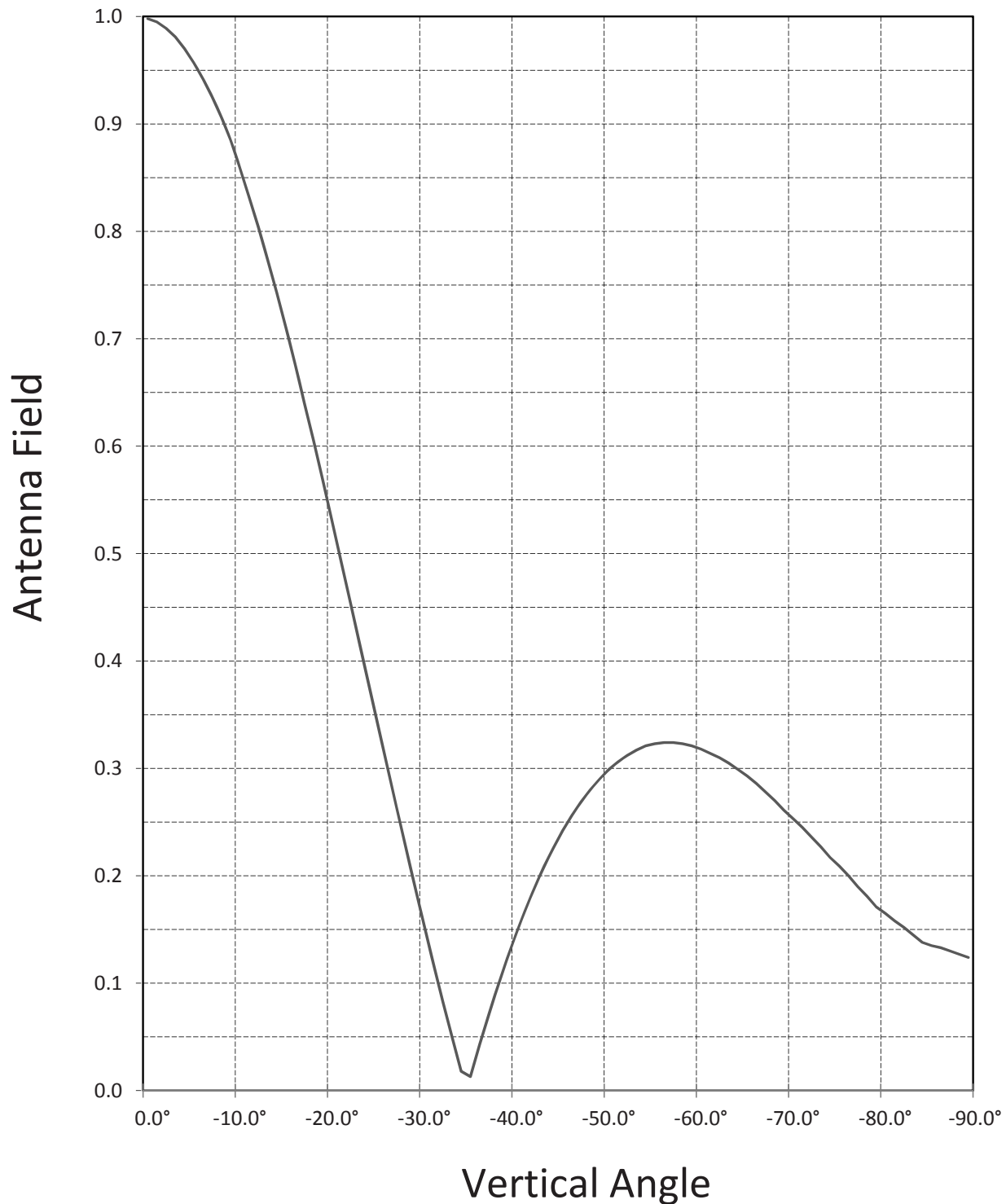
**Exhibit 13.9 - Copy of Manufacturer's  
Directional Antenna Pattern Data  
(Actual Pattern Rotated to 190°T)**



## Plot of Vertical Radiation Pattern

**Manufacturer:** NicomUSA, Inc.  
**Make/Model:** BKG77/2-DA  
**Polarization:** Circular  
**Inter Bay Spacing:**  $0.9 \lambda$  (Wavelength)  
**Antenna Gain:** -0.1 dBd

**Frequency:** 87.5 MHz - 108.0 MHz  
**Weight:** 14 kg  
**Max Power:** 1.0 kW  
**Return Loss:** -27.1 dB  
**R.C. Phase:** -89°



# Exhibit 13.9 - Copy of Manufacturer's Directional Antenna Pattern Data (Actual Pattern Rotated to 190°T)



## Tabulation of Vertical Radiation Pattern

**Manufacturer:** NicomUSA, Inc.  
**Make/Model:** BKG77/2-DA  
**Polarization:** Circular  
**Inter Bay Spacing:** 0.9  $\lambda$  (Wavelength)  
**Antenna Gain:** -0.1 dBd

**Frequency:** 87.5 MHz - 108.0 MHz  
**Weight:** 14 Kg  
**Max Power:** 1.0 kW  
**Return Loss:** -27.1 dB  
**R.C. Phase:** -89°

Vertical Azimuth	Field (%)	Field dB	Vertical Azimuth	Field (%)	Field dB	Vertical Azimuth	Field (%)	Field dB
0.0°	1.000	0.00	-30.0°	0.189	-7.24	-60.0°	0.321	-4.93
-1.0°	0.998	-0.01	-31.0°	0.153	-8.15	-61.0°	0.318	-4.98
-2.0°	0.995	-0.02	-32.0°	0.118	-9.28	-62.0°	0.314	-5.03
-3.0°	0.989	-0.05	-33.0°	0.083	-10.81	-63.0°	0.310	-5.09
-4.0°	0.981	-0.08	-34.0°	0.050	-13.01	-64.0°	0.305	-5.16
-5.0°	0.970	-0.13	-35.0°	0.018	-17.45	-65.0°	0.299	-5.24
-6.0°	0.957	-0.19	-36.0°	0.013	-18.86	-66.0°	0.293	-5.33
-7.0°	0.942	-0.26	-37.0°	0.043	-13.67	-67.0°	0.286	-5.44
-8.0°	0.925	-0.34	-38.0°	0.071	-11.49	-68.0°	0.278	-5.56
-9.0°	0.906	-0.43	-39.0°	0.098	-10.09	-69.0°	0.270	-5.69
-10.0°	0.885	-0.53	-40.0°	0.123	-9.10	-70.0°	0.261	-5.83
-11.0°	0.859	-0.66	-41.0°	0.147	-8.33	-71.0°	0.253	-5.97
-12.0°	0.832	-0.80	-42.0°	0.169	-7.72	-72.0°	0.245	-6.11
-13.0°	0.804	-0.95	-43.0°	0.190	-7.21	-73.0°	0.236	-6.27
-14.0°	0.774	-1.11	-44.0°	0.209	-6.80	-74.0°	0.227	-6.44
-15.0°	0.743	-1.29	-45.0°	0.226	-6.46	-75.0°	0.217	-6.64
-16.0°	0.710	-1.49	-46.0°	0.242	-6.16	-76.0°	0.209	-6.80
-17.0°	0.676	-1.70	-47.0°	0.256	-5.92	-77.0°	0.200	-6.99
-18.0°	0.640	-1.94	-48.0°	0.269	-5.70	-78.0°	0.190	-7.21
-19.0°	0.605	-2.18	-49.0°	0.280	-5.53	-79.0°	0.181	-7.42
-20.0°	0.568	-2.46	-50.0°	0.290	-5.38	-80.0°	0.171	-7.67
-21.0°	0.530	-2.76	-51.0°	0.299	-5.24	-81.0°	0.165	-7.83
-22.0°	0.492	-3.08	-52.0°	0.306	-5.14	-82.0°	0.158	-8.01
-23.0°	0.454	-3.43	-53.0°	0.312	-5.06	-83.0°	0.152	-8.18
-24.0°	0.415	-3.82	-54.0°	0.317	-4.99	-84.0°	0.145	-8.39
-25.0°	0.377	-4.24	-55.0°	0.321	-4.93	-85.0°	0.138	-8.60
-26.0°	0.339	-4.70	-56.0°	0.323	-4.91	-86.0°	0.135	-8.70
-27.0°	0.301	-5.21	-57.0°	0.324	-4.89	-87.0°	0.133	-8.76
-28.0°	0.263	-5.80	-58.0°	0.324	-4.89	-88.0°	0.130	-8.86
-29.0°	0.226	-6.46	-59.0°	0.323	-4.91	-89.0°	0.127	-8.96
						-90.0°	0.124	-9.07