

# Technical Report Supporting a Form 349 Application for a New FM Translator Station

Pursuant to 47 C.F.R. Section 74:

*for*

*CH246D.P - Texarkana, TX  
CH246D (97.1 MHz)*

---

*"New FM Translator Operation"*

---

*as a*

*Commercial, Fill-In Translator  
for Class C AM Station  
KKTK(AM) - Texarkana, TX*

---



---

# ***Table of Contents***

---

Table of Contents

Explanation of Technical Report

Exhibit 1 - Service Contour Study: Present vs Proposed Operations

Exhibit 2 - Service Contour Study: Proposed vs Primary Operations

Exhibit 3 - Copy of USGS Aerial Photograph of Existing Site

Exhibit 4 - Vertical Plan of Antenna System

Exhibit 5 - HAAT Calculation & Miscellaneous Coordinate Information

Exhibit 6 - Tabulation of Proposed Allocation

Exhibit 7 - Contour Protection Studies Toward Select Allocation Concern(s)

Exhibit 8 - Copy of Manufacturer's Antenna Documentation

## **Supplemental Appendix(s):**

RF Appendix 1 - Radio Frequency Radiation Compliance Showing



---

# ***Explanation of Technical Report***

---

***1***

**EXPLANATION OF PROPOSAL:** This Form 349 Filing and accompanying technical report supports an Original Construction Permit Application for a new FM Translator facility for CH246D.P - Texarkana, TX. This FCC Form 349 Filing requests a new CH246D (97.1 MHz) operation with a power of 0.250 kW ERP (circular polarization). The FM Translator will operate from a COR of 138 meters AMSL utilizing a non-directional antenna. This Form 349 Filing will specify rebroadcast of Class C, AM Primary Station KKTK(AM) - Texarkana, TX (1400 kHz); Facility ID No. 4439. The Translator will be licensed to the community of Texarkana, TX.

**FACILITY COMPLIANCE SHOWINGS:** A map of the proposed 60 dBμ service contour has been included in ***Exhibit 1***. The proposed 60 dBμ contour of the Translator lies wholly inside the larger of the AM primary daytime 2.0 mV/m contour or a 25 mile radius around the AM site. The primary station service contour relationship has been plotted in ***Exhibit 2***.

The proposed facility will be located on an existing 46.7 meter tower which does not require Antenna Structure Registration. In support of this filing, a copy of USGS Aerial Photography of the existing tower site has been included in ***Exhibit 3***. A depiction of the tower and antenna configuration has been included in ***Exhibit 4***. Further notification to the FAA or ASR governing authorities is not required as this proposal will not increase the overall tower height.

**ALLOCATION COMPLIANCE SHOWINGS:** The proposed Translator remains in compliance with C.F.R. 47 Section 74.1204 toward all allocation protection concerns. A general allocation study for this proposal is found in ***Exhibit 6***. There is one additional facility, existing or proposed, close enough to merit further study. Therefore, a supplemental contour protection study has been provided toward this facility as included in ***Exhibit 7***. It is believed sufficient clearance exists, precluding the need for additional contour protection showings. A copy of the antenna manufacturer specifications has been included in ***Exhibit 8***.

The applicant would like to note use of the NED 03 second terrain database for all allocation, contour and HAAT showings contained herein. A copy of the proposed HAAT calculation has been included in ***Exhibit 5***.

Regarding protection of international concerns, the facility is, and will remain, more than 320 km from the common border between the United States and Canada or Mexico. As a result, no further international protection showings are believed required.



**ENVIRONMENTAL COMPLIANCE SHOWINGS:** The proposed facility complies with the maximum permissible radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments as set forth under §1.1310 and/or §1.1307(b)(3) of the Commission's rules and the guidelines for RF radiation protection guidelines as set forth in OET Bulletin No. 65 (Edition 97-01), and the accompanying Supplement A, (Edition 97-01). Compliance has been demonstrated in the attached **RF Appendix 1** of this filing. The facility is, or will be, properly marked with signs. Entry is, or will be, restricted by means of fencing with locked doors or gates. In addition, coordination with other users of the site will be secured to reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency electromagnetic fields in excess of FCC guidelines.

Regarding compliance with the NEPA, Nationwide Programmatic Agreement and NHPA Section 106 for tower co-location, compliance with the Agreement is not required where no new tower construction is being proposed and the tower is not being substantially altered. Specifically, compliance is not necessary where only an antenna is being added to an existing structure, as here. However, should the Commission determine compliance is necessary, upon notification to the applicant, the applicant will file FCC Form 621.

**CERTIFICATION OF TECHNICAL CONSULTANT:** *I declare, under penalty of perjury, that the contents of this report are true and accurate to the best of my knowledge and belief. I further certify I have over eighteen years of experience as a broadcast technical consultant before the Federal Communications Commission ("the FCC"); and am familiar with the Code of Federal Regulations Title 47 ("the Rules") as pertaining to this report and its contents herein. The underlying data utilized in this report was taken directly from FCC databases or indirectly through third party software vendors securing data directly from FCC databases. This firm cannot be held liable for errors or omissions resulting from the underlying data. The information contained herein is believed accurate to the date reported below.*



Justin W. Asher, Technical Consultant  
November 22, 2017



**Exhibit 1**  
**Service Contour Study:**  
**Present vs Proposed Operations**

*Proposed 60 dBμ F(50:50) Contour*

**CH246D.P**  
Texarkana, TX  
Proposed Operation  
Facility ID: NEW  
Latitude: 33-26-33 N  
Longitude: 094-03-20 W  
ERP: 0.25 kW  
Channel: 246D (97.1 MHz)  
AMSL Height: 138.0 m  
Horiz. Pattern: Omni

**60 dBμ F(50:50) Contour**  
Total Population: 76,573  
Total Area: 242.1 sq. km

NED 03 SEC Terrain Database  
US Census 2010 PL Database

Terrain  
60 153 m

Scale 1:125,000  
0 2.5 5 7.5 km

**Asher Broadcast Consulting LLC**  
justinasher@consultant.com  
1 (202) 875-2986

V-Soft Communications LLC ©



**Exhibit 2**  
**Service Contour Study:**  
**Proposed vs Primary Operations**

**25 mile Radius from AM Site**

Little River

**Primary 2 mV/m Daytime Contour**

**Proposed 60 dBμ F(50:50) Contour**

**KKTK(AM)**  
+  
**CH246D.P**

Bowie

Miller

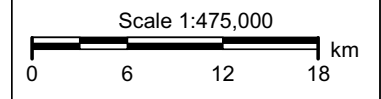
Lafayette

Columbia

KKTK 1400 kHz  
Texarkana, Texas  
Station Class: C  
Region 2 Class: C  
Facility ID: 4439  
File Number: BL-20120503AFF  
33-26-34.0 N 94-03-20.0 W (NAD 27)  
33-26-34.4 N 94-03-20.7 W (NAD 83)  
Power: 1 kW, Non-Directional  
Hours: Daytime  
Pattern Type: Theoretical  
Towers: 1 Augmentations: 0  
Tower Elec Height: 76.9 Deg; 45.74 m  
RMS Theoretical: 288.07 mV/meter

CH246D.P  
Texarkana, TX  
Proposed Operation  
Facility ID: NEW  
Latitude: 33-26-33 N  
Longitude: 094-03-20 W  
ERP: 0.25 kW  
Channel: 246D (97.1 MHz)  
AMSL Height: 138.0 m  
Horiz. Pattern: Omni

NED 03 SEC Terrain Database  
US Census 2010 PL Database



V-Soft Communications LLC ©

Asher Broadcast Consulting LLC  
justinasher@consultant.com  
1 (202) 875-2986



# The National Map Advanced Viewer

## *Exhibit 3* *USGS Aerial Photograph* *of Existing Site*

#1:308.61 ft/94.06 m

### Site Coordinates

(NGS NADCON)

	<u>Latitude</u>	<u>Longitude</u>
NAD 27 datum values:	33 26 33.45133	94 03 20.12041
NAD 83 datum values:	33 26 33.90000	94 03 20.80000

November 21, 2017

**Asher Broadcast Consulting LLC**  
justinasher@consultant.com  
1 (202) 875-2986

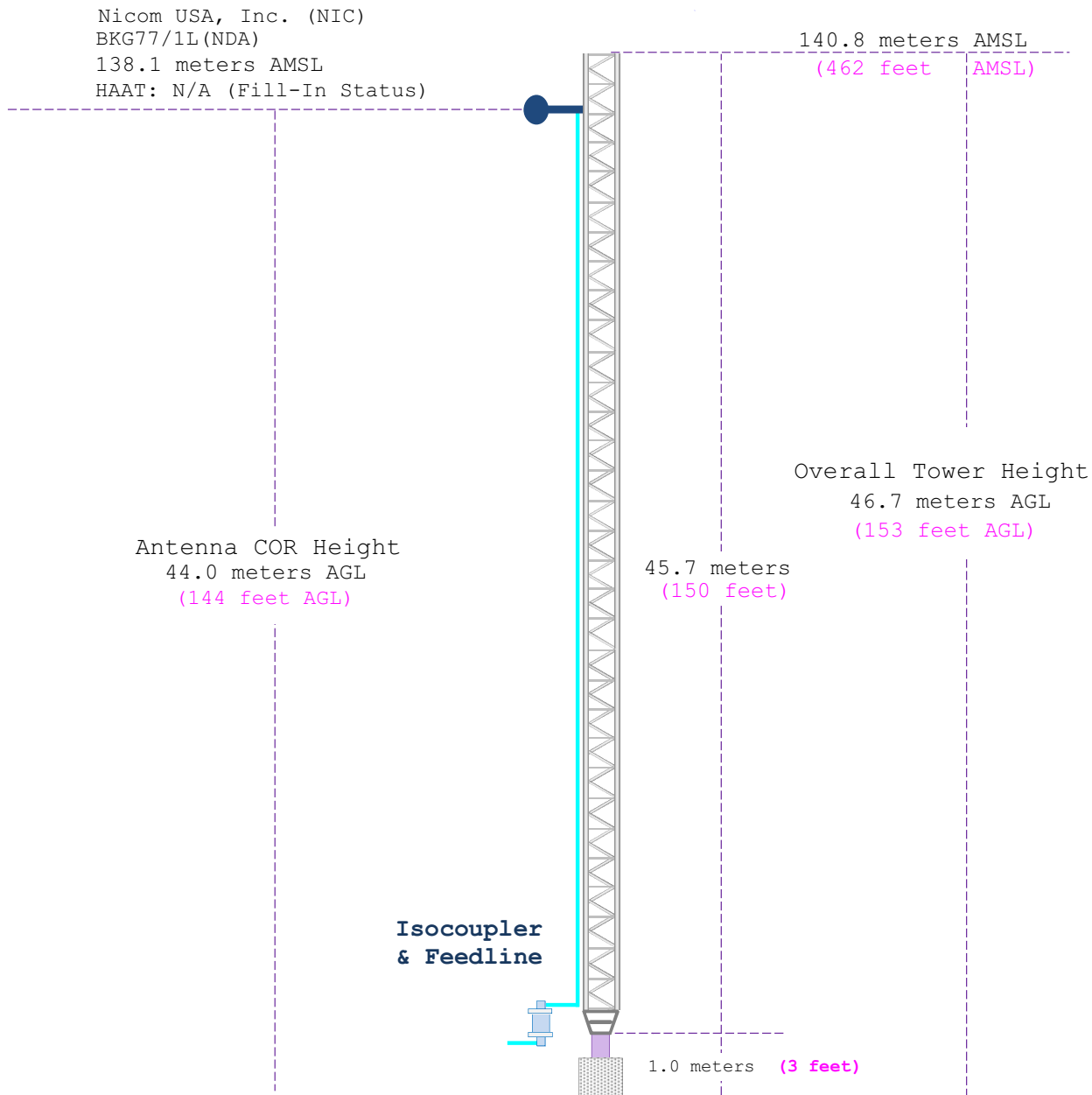
1:2,257  
0 0.0175 0.035 0.07 mi  
0 0.02 0.04 0.08 km

USGS The National Map: Orthoimagery  
USGS The National Map: Orthoimagery



# Exhibit 4

## Vertical Plan of Antenna System



Ground Elevation: 94.1 meters AMSL (309 feet AMSL)		
Address: Southwest of the Intersection of Maple Street and West 28th Street.		
City: Texarkana	Latitude (D M S) Longitude (D M S)	
County: Bowie	NAD 27 datum values: 33 26 33.45133 94 03 20.12041	
State: Texas	NAD 83 datum values: 33 26 33.90000 94 03 20.80000	
Antenna Structure Registration Not Required	Drawing Is Not To Scale	Asher Broadcast Consulting, LLC justinasher@consultant.com 1(202)875-2986



## ***Exhibit 5***

### **HAAT and Miscellaneous Coordinate Information**

#### **HAAT Calculation (1927):**

N. Lat. = 332633    W. Lng. = 940320  
 HAAT and Distance to Contour,  
 FCC, FM 2-10 Mi, 51 pts Method - NED 03 SEC

Azi.	AV EL	HAAT	ERP kW	dBk	Field	60-F5
000	87.6	50.4	0.2500	-6.02	1.000	9.31
030	85.8	52.2	0.2500	-6.02	1.000	9.49
060	88.4	49.6	0.2500	-6.02	1.000	9.23
090	94.5	43.5	0.2500	-6.02	1.000	8.56
120	109.5	28.5	0.2500	-6.02	1.000	7.09
150	91.7	46.3	0.2500	-6.02	1.000	8.87
180	79.7	58.3	0.2500	-6.02	1.000	10.04
210	83.3	54.7	0.2500	-6.02	1.000	9.73
240	93.2	44.8	0.2500	-6.02	1.000	8.72
270	106.1	31.9	0.2500	-6.02	1.000	7.28
300	101.0	37.0	0.2500	-6.02	1.000	7.82
330	93.1	44.9	0.2500	-6.02	1.000	8.72

Ave El= 92.83 M    HAAT= 45.17 M    AMSL= 138 M

#### **NAD 1983 to NAD 1927 Conversion:**

	Latitude	Longitude
NAD 27 datum values:	33 26 33.45133	94 03 20.12041
NAD 83 datum values:	33 26 33.90000	94 03 20.80000

#### **Various Coordinate Conversion Calculations (NAD 1983):**

Position Type	Lat Lon
<b>Degrees Lat Long</b>	33.4427500°, -094.0557778°
<b>Degrees Minutes</b>	33°26.56500', -094°03.34667'
<b>Degrees Minutes Seconds</b>	33°26'33.9000", -094°03'20.8000"
<b>UTM</b>	15S 401866mE 3700870mN
<b>UTM centimeter</b>	15S 401866.98mE 3700870.30mN
<b>MGRS</b>	15SVT0186600870
<b>Grid North</b>	-0.6°
<b>GARS</b>	172LG23
<b>Maidenhead</b>	EM23XK36HG32
<b>GEOREF</b>	FJLD56652656



# ***Exhibit 6***

## ***Tabulation of Proposed Allocation***

Blue Text indicates contour protection studies toward select station(s) as included in ***Exhibit 7.***

<div> <div>REFERENCE</div> <div>CH# 246D - 97.1 MHz, Pwr= 0.25 kW, HAAT= 45.2 M, COR= 138 M</div> <div>33 26 33.0 N.</div> <div>94 03 20.0 W.</div> <div> <div>Freed Am Corporation</div> <div>Average Protected F(50-50)= 8.75 km</div> <div>Omni-directional</div> </div> <div> <div>DISPLAY DATES</div> <div>DATA 11-21-17</div> <div>SEARCH 11-21-17</div> </div> </div>											
CH CITY	CALL	TYPE STATE	ANT TX	AZI <--	DIST FILE #	LAT LNG	PWR (kW) HAAT (M)	INT (km) COR (M)	PRO (km) LICENSEE	*IN* (Overlap in km)	*OUT*
246D Texarkana	1763624	APP_C_ TX		169.1 349.1	0.09 BNPFT20170801AGU	33 26 29.9 94 03 19.3	0.250 132	28.4	8.5 Freed Am Corporation	-38.1*<	-41.1*<
246C2 Camden	KAMD-FM	LIC_CX AR		86.3 267.0	115.66 BLH20020806AAD	33 30 14.0 92 48 38.0	50.000 139	133.5 188	47.9 Radio Works, Inc.	-27.0*<	37.4
247L1 Hooks	KJUK-LP	LIC_ TX		298.1 118.0	19.96 BLL20140411AAJ	33 31 37.0 94 14 44.0	0.100 26	121	3.9 American Legion Post	2.8	248
245A Nashville	KSSW	LIC_CX AR		15.3 195.4	65.59 BMLE20051017AAS	34 00 41.0 93 52 03.0	6.000 100	48.0 247	31.4 Family Worship Center Chur	8.3	21.3
247C2 Waskom	KQHN	LIC_CX TX		165.5 345.7	108.94 BLH20060109AAQ	32 29 36.0 93 45 55.0	42.000 163	77.5 216	52.2 Cumulus Licensing Llc	21.8	43.3
243C1 Shreveport	KVKI-FM	LIC_CY LA		169.1 349.2	96.07 BLH19850305KS	32 35 38.0 93 51 39.0	100.000 243	9.3 305	68.3 Townsquare Media Shrevepor	77.0	26.7
245C3 Pittsburg	KSCN	LIC_NC_ TX		243.2 62.7	106.01 BLH20010730ABF	33 00 31.0 95 04 14.0	14.000 113	56.6 230	37.3 East Texas Broadcasting, I	40.9	56.7
246C Muskogee	KYAL-FM	LIC_CX OK		331.6 150.9	249.86 BLH20080724ABI	35 24 48.0 95 21 55.0	100.000 600	196.5 794	91.1 KmmY Inc.	44.7	130.1
244C3 Idabel	KBEL-FM	LIC_CN OK		304.8 124.4	85.91 BLH19950110KB	33 52 54.0 94 49 10.0	25.000 91	3.8 211	36.5 Brute Force Radio Llc	74.2	48.3
247A Bogata NEW DROP IN	AL3736	VAC_ TX		276.5 95.8	116.77 RM11739	33 33 21.0 95 18 28.0	6.000 100	45.7 236	29.7 Charles Crawford	63.8	76.8
247A Bogata One Step Application	1656962	RSV-A_ TX		276.5 95.8	116.77	33 33 21.0 95 18 28.0	6.000 100	45.7 236	29.7 Charles E. Crawford	63.8	76.8
247A Bogata One Step Application	1656651	APP_CX TX		276.5 95.8	116.78 BNPH20141103ABS	33 33 21.0 95 18 28.1	6.000 100	45.3 233	29.4 Charles E. Crawford	64.3	77.1
248C1 Hot Springs	KQUS-FM	LIC_CX AR		38.7 219.2	137.32 BMLH20050616AAI	34 24 13.0 93 07 14.0	100.000 264	8.9 429	66.9 Us Stations, Llc	118.9	69.3
<div> <div>Terrain database is NED 03 SEC , R= 73.215 qualifying spacings or FCC minimum Spacings in KM, M= Margin in KM</div> <div>Contour distances are on direct line to and from reference station. Reference zone= West Zone, Co to 3rd adjacent.</div> <div>All separation margins (if shown) include rounding.</div> <div>Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)</div> <div>***affixed to 'IN' or 'OUT' values = site inside restricted contour.</div> <div>&lt; = Contour Overlap</div> <div>Reference station has protected zone issue: AM tower</div> </div>											



## *Exhibit 7*

### *Contour Protection Studies Toward Select Allocation Concern(s)*

Freed Am Corporation

FMCommander Single Allocation Study - 11-21-2017 - NED 03 SEC

CH246D.P's Overlaps (In= 3.89 km, Out= 2.84 km)

CH246D.P CH 246 D

Lat= 33 26 33.0, Lng= 94 03 20.0

0.25 kW 45.2 m HAAT, 138 m COR

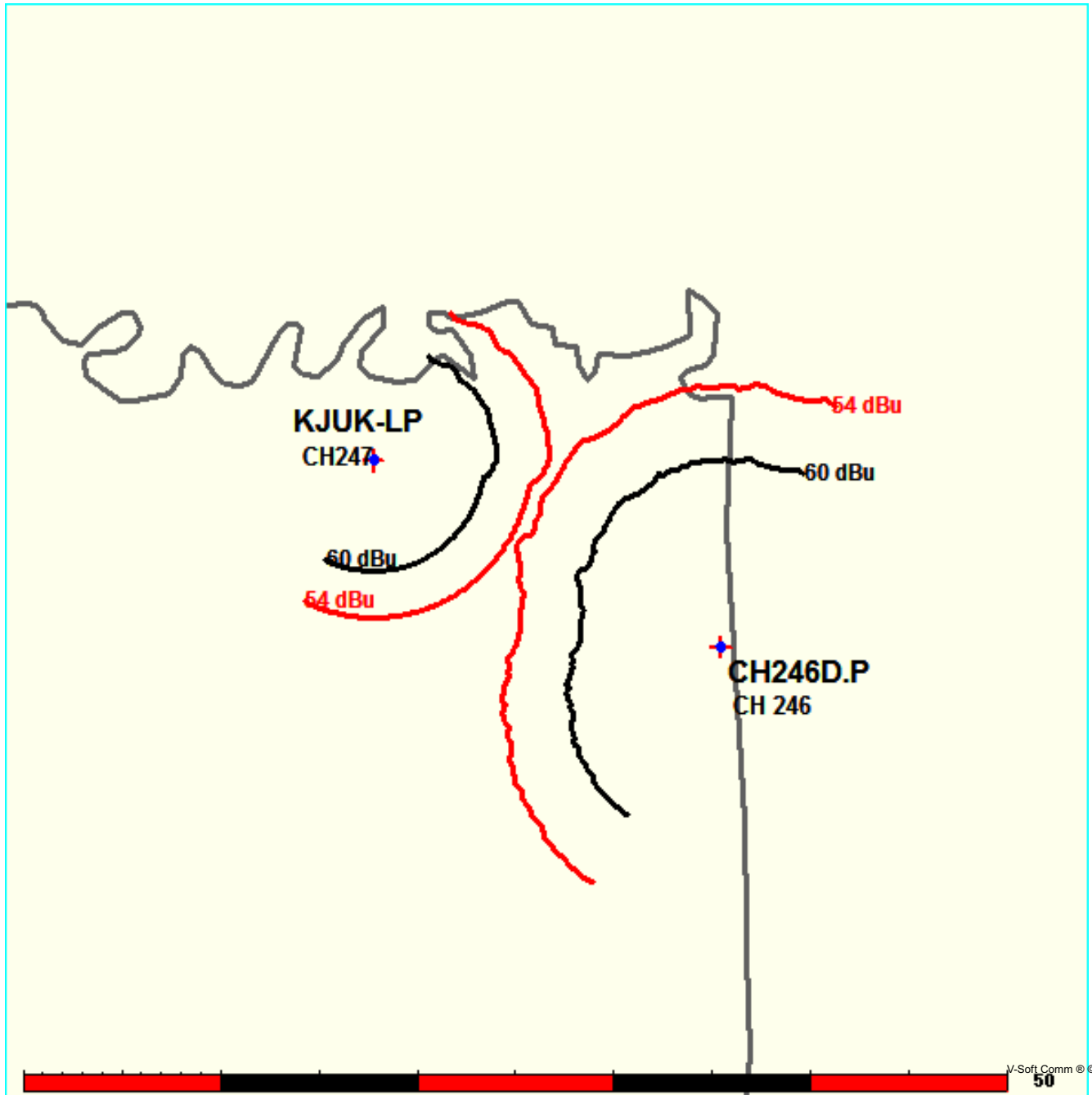
Prot.= 60 dBu, Intef.= 54 dBu

KJUK-LP CH 247 L1 BLL20140411AAJ

Lat= 33 31 37.0, Lng= 94 14 44.0

0.1 kW 26.49379 m HAAT, 121.1 m COR

Prot.= 60 dBu, Intef.= 54 dBu





## Exhibit 7

### Contour Protection Studies Toward Select Allocation Concern(s)

11-21-2017

Terrain Data: NED 03 SEC

FMOver Analysis

CH246D.P

KJUK-LP BLL20140411AAJ

Channel = 246D

Max ERP = 0.25 kW

RCAMSL = 138 m

N. Lat. 33 26 33.0

W. Lng. 94 03 20.0

Protected

60 dBu

Channel = 247L1

Max ERP = 0.1 kW

RCAMSL = 121.1 m

N. Lat. 33 31 37.0

W. Lng. 94 14 44.0

Interfering

54 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
256.0	000.2500	0039.4	008.1	139.3	000.1000	0017.8	015.0	43.04	
257.0	000.2500	0038.6	008.0	138.7	000.1000	0018.5	014.9	43.13	
258.0	000.2500	0037.7	007.9	138.1	000.1000	0018.4	014.8	43.21	
259.0	000.2500	0037.4	007.9	137.7	000.1000	0018.0	014.7	43.33	
260.0	000.2500	0036.5	007.8	137.1	000.1000	0017.5	014.7	43.41	
261.0	000.2500	0035.6	007.7	136.5	000.1000	0017.4	014.6	43.47	
262.0	000.2500	0035.0	007.6	135.9	000.1000	0017.5	014.5	43.55	
263.0	000.2500	0035.4	007.7	135.8	000.1000	0017.5	014.4	43.72	
264.0	000.2500	0034.9	007.6	135.3	000.1000	0017.2	014.3	43.80	
265.0	000.2500	0034.9	007.6	134.9	000.1000	0017.0	014.2	43.92	
266.0	000.2500	0035.2	007.6	134.7	000.1000	0017.1	014.1	44.07	
267.0	000.2500	0034.9	007.6	134.2	000.1000	0017.3	014.0	44.17	
268.0	000.2500	0033.3	007.4	133.4	000.1000	0016.5	014.0	44.15	
269.0	000.2500	0032.8	007.4	132.9	000.1000	0016.2	014.0	44.21	
270.0	000.2500	0031.9	007.3	132.2	000.1000	0016.1	014.0	44.24	
271.0	000.2500	0031.6	007.2	131.7	000.1000	0016.1	013.9	44.32	
272.0	000.2500	0030.9	007.2	131.2	000.1000	0016.9	013.9	44.36	
273.0	000.2500	0030.9	007.2	130.8	000.1000	0017.9	013.8	44.46	
274.0	000.2500	0030.6	007.1	130.3	000.1000	0018.3	013.8	44.52	
275.0	000.2500	0030.7	007.2	129.9	000.1000	0018.3	013.7	44.63	
276.0	000.2500	0030.9	007.2	129.5	000.1000	0018.3	013.6	44.75	
277.0	000.2500	0031.2	007.2	129.1	000.1000	0018.3	013.5	44.86	
278.0	000.2500	0031.2	007.2	128.7	000.1000	0019.1	013.4	44.96	
279.0	000.2500	0031.5	007.2	128.3	000.1000	0019.4	013.3	45.08	
280.0	000.2500	0031.5	007.2	127.8	000.1000	0019.5	013.3	45.15	
281.0	000.2500	0030.9	007.2	127.2	000.1000	0020.2	013.3	45.16	
282.0	000.2500	0031.2	007.2	126.7	000.1000	0020.9	013.2	45.27	
283.0	000.2500	0031.6	007.3	126.3	000.1000	0021.0	013.1	45.40	
284.0	000.2500	0031.2	007.2	125.7	000.1000	0021.8	013.1	45.42	
285.0	000.2500	0031.8	007.3	125.3	000.1000	0021.3	013.0	45.55	
286.0	000.2500	0033.0	007.4	124.9	000.1000	0020.7	012.8	45.78	
287.0	000.2500	0033.9	007.5	124.5	000.1000	0020.6	012.7	45.96	
288.0	000.2500	0034.4	007.5	124.0	000.1000	0021.2	012.6	46.09	



## ***Exhibit 7***

### **Contour Protection Studies Toward Select Allocation Concern(s)**

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
289.0	000.2500	0034.7	007.6	123.5	000.1000	0022.0	012.5	46.18
290.0	000.2500	0035.0	007.6	122.9	000.1000	0022.2	012.5	46.28
291.0	000.2500	0035.2	007.6	122.4	000.1000	0022.5	012.4	46.35
292.0	000.2500	0036.1	007.7	121.8	000.1000	0022.8	012.3	46.53
293.0	000.2500	0037.3	007.9	121.3	000.1000	0023.2	012.2	46.76
294.0	000.2500	0037.8	007.9	120.7	000.1000	0023.2	012.1	46.86
295.0	000.2500	0039.4	008.1	120.1	000.1000	0023.9	011.9	47.16
296.0	000.2500	0039.6	008.1	119.4	000.1000	0023.7	011.9	47.21
297.0	000.2500	0039.4	008.1	118.8	000.1000	0023.3	011.9	47.18
298.0	000.2500	0039.3	008.1	118.1	000.1000	0023.1	011.9	47.18
299.0	000.2500	0038.6	008.0	117.4	000.1000	0022.1	012.0	47.05
300.0	000.2500	0037.0	007.8	116.8	000.1000	0021.9	012.1	46.77
301.0	000.2500	0036.6	007.8	116.2	000.1000	0021.5	012.2	46.69
302.0	000.2500	0037.1	007.8	115.5	000.1000	0021.3	012.2	46.75
303.0	000.2500	0037.8	007.9	114.8	000.1000	0021.0	012.1	46.84
304.0	000.2500	0038.4	008.0	114.1	000.1000	0020.5	012.1	46.90
305.0	000.2500	0038.0	007.9	113.5	000.1000	0020.4	012.1	46.80
306.0	000.2500	0038.3	008.0	112.8	000.1000	0020.4	012.1	46.81
307.0	000.2500	0039.3	008.1	112.0	000.1000	0020.8	012.0	46.92
308.0	000.2500	0040.3	008.2	111.2	000.1000	0020.9	012.0	47.04
309.0	000.2500	0040.6	008.2	110.5	000.1000	0021.1	012.0	47.02
310.0	000.2500	0041.3	008.3	109.8	000.1000	0021.5	012.0	47.07
311.0	000.2500	0040.8	008.3	109.2	000.1000	0021.8	012.1	46.91
312.0	000.2500	0040.7	008.2	108.6	000.1000	0022.4	012.1	46.80
313.0	000.2500	0041.2	008.3	107.9	000.1000	0023.1	012.1	46.81
314.0	000.2500	0041.3	008.3	107.2	000.1000	0023.9	012.2	46.73
315.0	000.2500	0041.9	008.4	106.5	000.1000	0024.4	012.2	46.70
316.0	000.2500	0042.3	008.4	105.8	000.1000	0024.8	012.2	46.66
317.0	000.2500	0042.8	008.5	105.0	000.1000	0024.2	012.2	46.62
318.0	000.2500	0042.8	008.5	104.5	000.1000	0024.2	012.3	46.49
319.0	000.2500	0043.6	008.6	103.6	000.1000	0024.4	012.3	46.49
320.0	000.2500	0043.8	008.6	103.0	000.1000	0024.2	012.4	46.39
321.0	000.2500	0044.2	008.6	102.3	000.1000	0025.0	012.5	46.31
322.0	000.2500	0044.8	008.7	101.6	000.1000	0026.6	012.5	46.23
323.0	000.2500	0045.4	008.8	100.9	000.1000	0028.0	012.6	46.16
324.0	000.2500	0045.8	008.8	100.2	000.1000	0028.7	012.6	46.06
325.0	000.2500	0045.6	008.8	099.8	000.1000	0029.2	012.8	45.89
326.0	000.2500	0046.1	008.9	099.2	000.1000	0030.4	012.8	45.87
327.0	000.2500	0045.5	008.8	098.9	000.1000	0030.9	013.0	45.77
328.0	000.2500	0045.2	008.8	098.6	000.1000	0031.4	013.1	45.72
329.0	000.2500	0045.1	008.7	098.2	000.1000	0032.6	013.2	45.84
330.0	000.2500	0044.9	008.7	097.9	000.1000	0033.1	013.4	45.78
331.0	000.2500	0044.3	008.7	097.7	000.1000	0033.3	013.5	45.60



# ***Exhibit 7***

## **Contour Protection Studies Toward Select Allocation Concern(s)**

11-21-2017      Terrain Data: NED 03 SEC      FMOver Analysis

KJUK-LP    BLL20140411AAJ

CH246D.P

Channel = 247L1  
 Max ERP = 0.1 kW  
 RCAMSL = 121.1 m  
 N. Lat. 33 31 37.0  
 W. Lng. 94 14 44.0  
 Protected  
     60 dBu

Channel = 246D  
 Max ERP = 0.25 kW  
 RCAMSL = 138 m  
 N. Lat. 33 26 33.0  
 W. Lng. 94 03 20.0  
 Interfering  
     54 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
075.0	000.1000	0036.4	006.2	313.3	000.2500	0041.3	016.0	48.88	
076.0	000.1000	0036.5	006.2	313.1	000.2500	0041.3	015.9	48.96	
077.0	000.1000	0036.5	006.2	312.9	000.2500	0041.2	015.8	49.02	
078.0	000.1000	0036.5	006.2	312.7	000.2500	0041.1	015.7	49.07	
079.0	000.1000	0036.6	006.2	312.5	000.2500	0041.0	015.7	49.12	
080.0	000.1000	0036.8	006.2	312.3	000.2500	0040.8	015.6	49.18	
081.0	000.1000	0037.0	006.2	312.1	000.2500	0040.7	015.5	49.23	
082.0	000.1000	0037.0	006.2	311.8	000.2500	0040.7	015.4	49.30	
083.0	000.1000	0037.0	006.2	311.6	000.2500	0040.8	015.3	49.40	
084.0	000.1000	0037.0	006.2	311.3	000.2500	0040.8	015.2	49.48	
085.0	000.1000	0037.1	006.2	311.0	000.2500	0040.8	015.1	49.55	
086.0	000.1000	0037.1	006.2	310.7	000.2500	0041.0	015.1	49.65	
087.0	000.1000	0037.1	006.2	310.4	000.2500	0041.1	015.0	49.61	
088.0	000.1000	0037.0	006.2	310.1	000.2500	0041.3	014.9	49.72	
089.0	000.1000	0036.9	006.2	309.8	000.2500	0041.2	014.8	49.79	
090.0	000.1000	0036.8	006.2	309.4	000.2500	0040.9	014.8	49.78	
091.0	000.1000	0036.8	006.2	309.1	000.2500	0040.6	014.7	49.80	
092.0	000.1000	0036.7	006.2	308.8	000.2500	0040.5	014.7	49.86	
093.0	000.1000	0036.0	006.1	308.3	000.2500	0040.5	014.6	49.86	
094.0	000.1000	0035.3	006.1	307.8	000.2500	0040.3	014.6	49.83	
095.0	000.1000	0035.2	006.1	307.4	000.2500	0040.1	014.6	49.85	
096.0	000.1000	0034.3	006.0	306.9	000.2500	0039.2	014.6	49.64	
097.0	000.1000	0033.5	005.9	306.5	000.2500	0038.8	014.6	49.53	
098.0	000.1000	0032.9	005.9	306.0	000.2500	0038.3	014.6	49.45	
099.0	000.1000	0030.7	005.7	305.4	000.2500	0038.0	014.7	49.25	
100.0	000.1000	0029.0	005.6	304.9	000.2500	0038.0	014.7	49.24	
101.0	000.1000	0028.0	005.6	304.6	000.2500	0038.2	014.7	49.33	
102.0	000.1000	0025.7	005.6	304.2	000.2500	0038.3	014.6	49.40	
103.0	000.1000	0024.2	005.6	303.8	000.2500	0038.3	014.6	49.43	
104.0	000.1000	0024.4	005.6	303.5	000.2500	0038.0	014.6	49.41	
105.0	000.1000	0024.2	005.6	303.1	000.2500	0037.9	014.5	49.42	



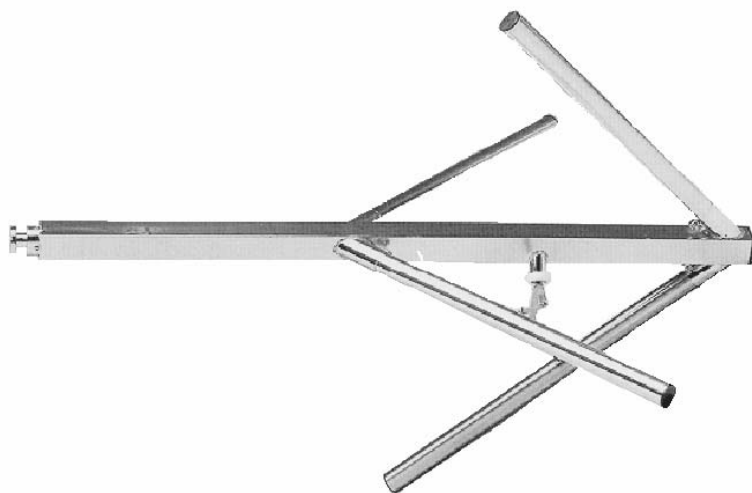
# ***Exhibit 7***

## ***Contour Protection Studies Toward Select Allocation Concern(s)***

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
106.0	000.1000	0025.0	005.6	302.7	000.2500	0037.6	014.5	49.39
107.0	000.1000	0024.1	005.6	302.4	000.2500	0037.2	014.5	49.33
108.0	000.1000	0022.9	005.6	302.0	000.2500	0037.1	014.4	49.32
109.0	000.1000	0022.0	005.6	301.6	000.2500	0036.8	014.4	49.29
110.0	000.1000	0021.5	005.6	301.2	000.2500	0036.6	014.4	49.27
111.0	000.1000	0021.0	005.6	300.8	000.2500	0036.6	014.4	49.28
112.0	000.1000	0020.8	005.6	300.5	000.2500	0036.6	014.4	49.30
113.0	000.1000	0020.5	005.6	300.1	000.2500	0036.9	014.4	49.38
114.0	000.1000	0020.5	005.6	299.7	000.2500	0037.5	014.3	49.55
115.0	000.1000	0021.2	005.6	299.3	000.2500	0038.1	014.3	49.70
116.0	000.1000	0021.4	005.6	298.9	000.2500	0038.9	014.3	49.87
117.0	000.1000	0021.9	005.6	298.5	000.2500	0039.5	014.3	50.02
118.0	000.1000	0022.9	005.6	298.1	000.2500	0039.4	014.3	50.00
119.0	000.1000	0023.4	005.6	297.7	000.2500	0039.2	014.3	49.96
120.0	000.1000	0024.0	005.6	297.3	000.2500	0039.3	014.3	49.97
121.0	000.1000	0023.1	005.6	296.9	000.2500	0039.4	014.3	49.99
122.0	000.1000	0022.6	005.6	296.5	000.2500	0039.4	014.3	49.99
123.0	000.1000	0022.2	005.6	296.1	000.2500	0039.5	014.4	49.99
124.0	000.1000	0021.2	005.6	295.8	000.2500	0039.6	014.4	49.98
125.0	000.1000	0020.7	005.6	295.4	000.2500	0039.6	014.4	49.97
126.0	000.1000	0021.4	005.6	295.0	000.2500	0039.4	014.4	49.90
127.0	000.1000	0020.5	005.6	294.6	000.2500	0038.7	014.4	49.73
128.0	000.1000	0019.4	005.6	294.2	000.2500	0038.0	014.4	49.55
129.0	000.1000	0018.3	005.6	293.8	000.2500	0037.7	014.5	49.43
130.0	000.1000	0018.4	005.6	293.5	000.2500	0037.5	014.5	49.36
131.0	000.1000	0017.4	005.6	293.1	000.2500	0037.4	014.5	49.30
132.0	000.1000	0016.1	005.6	292.7	000.2500	0037.2	014.6	49.21
133.0	000.1000	0016.2	005.6	292.4	000.2500	0036.9	014.6	49.11
134.0	000.1000	0017.1	005.6	292.0	000.2500	0036.1	014.6	48.89
135.0	000.1000	0017.0	005.6	291.7	000.2500	0035.7	014.7	48.75
136.0	000.1000	0017.5	005.6	291.3	000.2500	0035.7	014.7	48.69
137.0	000.1000	0017.5	005.6	291.0	000.2500	0035.1	014.7	48.52
138.0	000.1000	0018.3	005.6	290.6	000.2500	0034.7	014.8	48.37
139.0	000.1000	0018.0	005.6	290.3	000.2500	0034.8	014.8	48.34
140.0	000.1000	0018.6	005.6	290.0	000.2500	0035.0	014.9	48.33
141.0	000.1000	0019.0	005.6	289.6	000.2500	0034.9	014.9	48.24
142.0	000.1000	0018.9	005.6	289.3	000.2500	0034.8	015.0	48.15
143.0	000.1000	0019.3	005.6	289.0	000.2500	0034.7	015.0	48.16
144.0	000.1000	0019.2	005.6	288.7	000.2500	0034.6	015.1	48.09
145.0	000.1000	0018.4	005.6	288.4	000.2500	0034.5	015.2	48.01
146.0	000.1000	0019.0	005.6	288.1	000.2500	0034.4	015.2	47.93
147.0	000.1000	0019.5	005.6	287.8	000.2500	0034.6	015.3	47.92
148.0	000.1000	0019.6	005.6	287.5	000.2500	0034.4	015.3	47.82
149.0	000.1000	0020.2	005.6	287.2	000.2500	0034.0	015.4	47.65



*Exhibit 8*  
*Copy of Manufacturer's Antenna Documentation*  
*(public record copy)*



 **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 8**  
**Copy of Manufacturer's Antenna Documentation**  
*(public record copy)*

Date: 29/04/2013

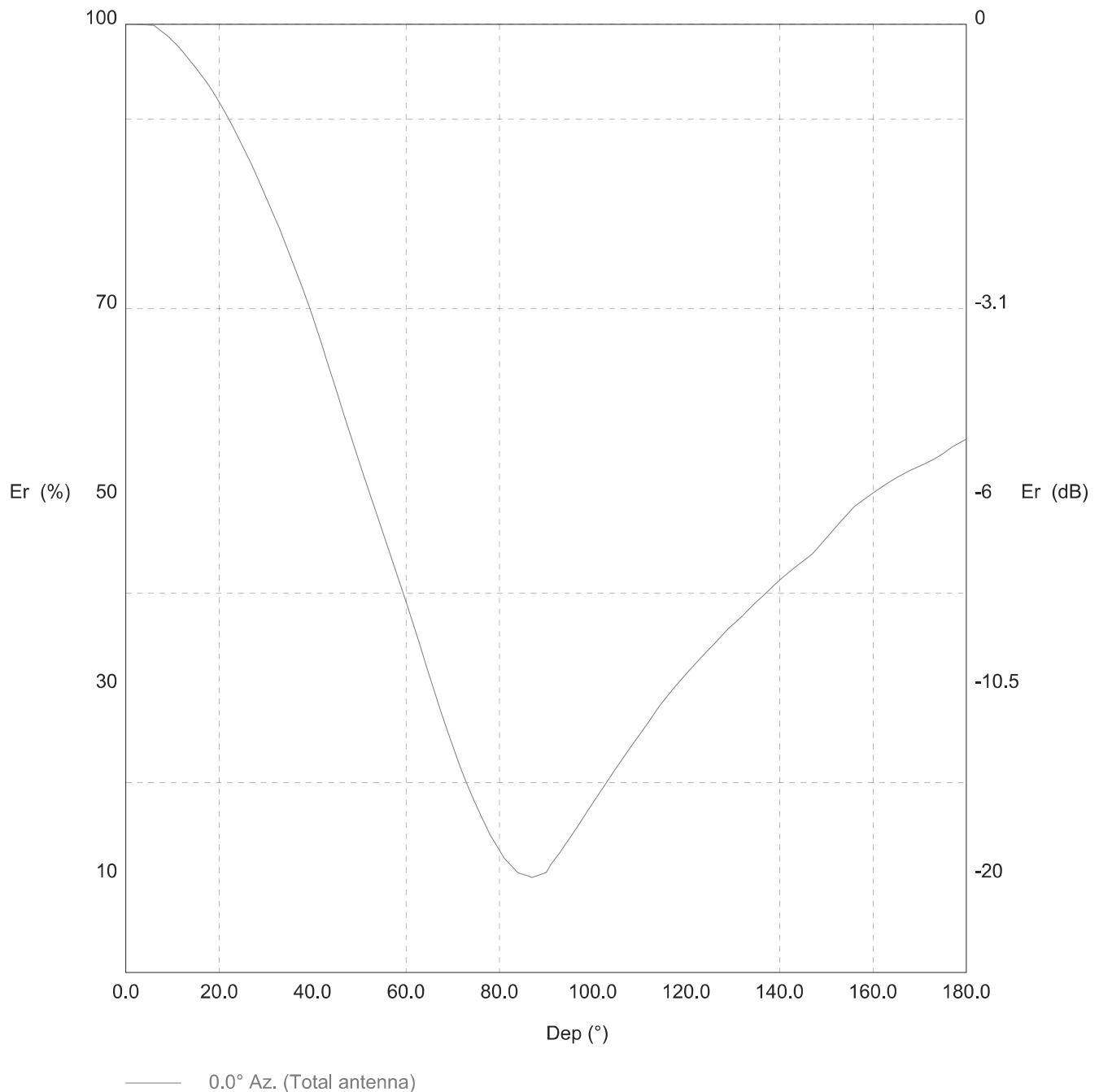
BKG77SINGLE.PRJ

TX station: BKG77-1

Site name:

Frequency: 100.00 MHz

**Vertical diagram**





# Exhibit 8

## Copy of Manufacturer's Antenna Documentation

(public record copy)

Date: 29/04/2013

BKG77SINGLE.PRJ

TX station: BKG77-1

Site name:

Frequency: 100.00 MHz

### Vertical diagram at an azimuth of 0° degrees

Dep (°)	Er (%)	ERP (W)	Dep (°)	Er (%)	ERP (W)	Dep (°)	Er (%)	ERP (W)
0.0	100.0	373.6	60.0	39.1	57.2	120.0	31.5	37.0
1.0	100.0	373.5	61.0	37.6	52.8	121.0	32.0	38.3
2.0	100.0	373.4	62.0	36.1	48.6	122.0	32.6	39.6
3.0	99.9	373.3	63.0	34.5	44.6	123.0	33.1	41.0
4.0	99.9	373.1	64.0	32.9	40.5	124.0	33.6	42.2
5.0	99.9	372.9	65.0	31.3	36.6	125.0	34.1	43.5
6.0	99.9	372.8	66.0	29.7	33.0	126.0	34.6	44.7
7.0	99.5	369.9	67.0	28.2	29.8	127.0	35.2	46.2
8.0	99.1	367.0	68.0	26.8	26.8	128.0	35.7	47.6
9.0	98.7	364.1	69.0	25.3	23.9	129.0	36.2	49.1
10.0	98.2	360.5	70.0	23.9	21.3	130.0	36.7	50.3
11.0	97.7	356.9	71.0	22.5	18.9	131.0	37.1	51.5
12.0	97.2	353.3	72.0	21.1	16.6	132.0	37.6	52.7
13.0	96.6	348.9	73.0	19.9	14.8	133.0	38.1	54.1
14.0	96.0	344.5	74.0	18.8	13.2	134.0	38.6	55.6
15.0	95.4	340.1	75.0	17.6	11.6	135.0	39.1	57.0
16.0	94.7	335.4	76.0	16.6	10.2	136.0	39.5	58.4
17.0	94.1	330.8	77.0	15.5	9.0	137.0	40.0	59.7
18.0	93.4	326.1	78.0	14.5	7.8	138.0	40.4	61.1
19.0	92.6	320.4	79.0	13.7	7.0	139.0	40.9	62.5
20.0	91.8	314.7	80.0	12.9	6.2	140.0	41.4	63.9
21.0	91.0	309.1	81.0	12.0	5.4	141.0	41.8	65.3
22.0	90.0	302.7	82.0	11.5	5.0	142.0	42.2	66.5
23.0	89.1	296.5	83.0	11.0	4.5	143.0	42.6	67.8
24.0	88.1	290.3	84.0	10.5	4.1	144.0	43.0	69.0
25.0	87.2	283.8	85.0	10.3	4.0	145.0	43.4	70.3
26.0	86.2	277.4	86.0	10.2	3.9	146.0	43.8	71.6
27.0	85.2	271.1	87.0	10.0	3.7	147.0	44.1	72.8
28.0	84.0	263.9	88.0	10.2	3.9	148.0	44.7	74.7
29.0	82.9	256.8	89.0	10.4	4.0	149.0	45.3	76.5
30.0	81.8	249.8	90.0	10.5	4.1	150.0	45.8	78.4
31.0	80.6	242.9	91.0	11.4	4.8	151.0	46.4	80.3
32.0	79.5	236.1	92.0	12.0	5.4	152.0	46.9	82.3
33.0	78.3	229.3	93.0	12.7	6.0	153.0	47.5	84.3
34.0	77.1	222.0	94.0	13.4	6.7	154.0	48.0	86.2
35.0	75.8	214.7	95.0	14.1	7.4	155.0	48.6	88.2
36.0	74.5	207.6	96.0	14.8	8.2	156.0	49.1	90.2
37.0	73.2	200.4	97.0	15.6	9.1	157.0	49.5	91.5
38.0	71.9	193.3	98.0	16.4	10.0	158.0	49.8	92.8
39.0	70.6	186.3	99.0	17.1	11.0	159.0	50.2	94.1
40.0	69.1	178.6	100.0	17.9	11.9	160.0	50.5	95.4
41.0	67.6	170.9	101.0	18.6	12.9	161.0	50.9	96.8
42.0	66.1	163.5	102.0	19.3	13.9	162.0	51.2	98.1
43.0	64.6	156.0	103.0	20.1	15.0	163.0	51.5	99.2
44.0	63.1	148.7	104.0	20.8	16.2	164.0	51.8	100.4
45.0	61.6	141.6	105.0	21.5	17.3	165.0	52.1	101.6
46.0	60.0	134.4	106.0	22.3	18.5	166.0	52.4	102.7
47.0	58.4	127.5	107.0	23.0	19.7	167.0	52.7	103.7
48.0	56.8	120.7	108.0	23.7	21.0	168.0	53.0	104.8
49.0	55.3	114.4	109.0	24.4	22.2	169.0	53.2	105.7
50.0	53.8	108.2	110.0	25.1	23.5	170.0	53.4	106.5
51.0	52.3	102.2	111.0	25.7	24.8	171.0	53.6	107.4
52.0	50.8	96.6	112.0	26.5	26.2	172.0	53.9	108.4
53.0	49.4	91.1	113.0	27.2	27.6	173.0	54.1	109.4
54.0	47.9	85.8	114.0	27.9	29.0	174.0	54.4	110.5
55.0	46.5	80.7	115.0	28.5	30.4	175.0	54.7	111.9
56.0	45.0	75.7	116.0	29.2	31.8	176.0	55.1	113.3
57.0	43.6	71.0	117.0	29.8	33.1	177.0	55.4	114.7
58.0	42.1	66.2	118.0	30.4	34.4	178.0	55.7	115.9
59.0	40.6	61.6	119.0	30.9	35.7	179.0	56.0	117.0