2 Degree Antenna Statement.

The 3.8 meter antenna proposed in this application will operate with the same/similar parameters as the earth stations licensed under file number and call signs in the chart listed below. The maximum EIRP density of 33.07 dBW/4KHz for the 3.8 meter antenna filed in this application will be lower than the EIRP density dBW/4KHz filed in the following licenses.

Call Sign	FCC File Number	Satellite Arc W-W	Emission	Max EIRP Density dBW/4kHz	Max EIRP dBW	Emission	Max EIRP Density dBW/4kHz	Max EIRP dBW
E7900	SES-RWL-20080303-00218	37.0/156.0	307KG7W	31.73	50.58			
E060165	SES-LIC-20060517-00825	37.0/155.5	230KG7W	33.61	51.21			
E060432	SES-LIC-20061207-02105	43/139	154KG7W	33.75	51.34	230KG7W	33.74	51.34
E070242	SES-LIC-20071017-01427	43/1039	230KG7W	33.16	50.76			
E070077	SES-LIC-20070427-00526	43/139	307KG7W	31.3	50.15			
E080090	SES-LIC-20080427-00495	43/139	2M30G7F	34.5	62.22			

Analysis of Non-Ionizing Radiation for a 3.8-Meter Earth Station System

This report analyzes the non-ionizing radiation levels for a 3.8-meter earth station system. The analysis and calculations performed in this report comply with the methods described in the FCC Office of Engineering and Technology Bulletin, No. 65 first published in 1985 and revised in 1997 in Edition 97-01. The radiation safety limits used in the analysis are in conformance with the FCC R&O 96-326. Bulletin No. 65 and the FCC R&O specifies that there are two separate tiers of exposure limits that are dependant on the situation in which the exposure takes place and/or the status of the individuals who are subject to the exposure. The Maximum Permissible Exposure (MPE) limits for persons in a General Population/Uncontrolled environment are shown in Table 1. The General Population/Uncontrolled MPE is a function of transmit frequency and is for an exposure period of thirty minutes or less. The MPE limits for persons in an Occupational/Controlled environment are shown in Table 2. The Occupational MPE is a function of transmit frequency and is for an exposure period of six minutes or less. The purpose of the analysis described in this report is to determine the power flux density levels of the earth station in the far-field, near-field, transition region, between the subreflector or feed and main reflector surface, at the main reflector surface, and between the antenna edge and the ground and to compare these levels to the specified MPEs.

Table 1. Limits for General Population/Uncontrolled Exposure (MPE)

Frequency Range (MHz)	Power Density (mW/cm^2)
30-300	0.2
300-1500	Frequency (MHz)*(0.8/1200)
1500-100,000	1.0

Table 2. Limits for Occupational/Controlled Exposure (MPE)

Frequency Range (MHz)	Power Density (mW/cm^2)
30-300	1.0
300-1500	Frequency (MHz)*(4.0/1200)
1500-100,000	5.0

Table 3. Formulas and Parameters Used for Determining Power Flux Densities

Parameter	Symbol	Formula	Value	Units
Antenna Diameter	D	Input	3.8	m
Antenna Surface Area	$A_{surface}$	$\pi D^2 / 4$	11.34	m^2
Feed Flange Diameter	D_{fa}	Input	19.1	cm
Area of Feed Flange	A_{fa}	$\pi D_{fa}{}^2/4$	286.52	cm^2
Frequency	F	Input	6175	MHz
Wavelength	λ	300 / F	0.048583	m
Transmit Power	P	Input	20.00	W
Antenna Gain (dBi)	G_{es}	Input	45.9	dBi
Antenna Gain (factor)	G	$10^{Ges/10}$	38904.5	n/a
Pi	π	Constant	3.1415927	n/a
Antenna Efficiency	η	$G\lambda^2/(\pi^2D^2)$	0.64	n/a

1. Far Field Distance Calculation

The distance to the beginning of the far field can be determined from the following equation:

Distance to the Far Field Region

$$R_{ff} = 0.60\ D^2 / \lambda \quad (1)$$
$$= 178.3\ \text{m}$$

The maximum main beam power density in the far field can be determined from the following equation:

On-Axis Power Density in the Far Field

$$S_{ff} = G\ P / (4\ \pi\ R_{ff}^2) \quad (2)$$
$$= 1.947\ \text{W/m}^2$$
$$= 0.195\ \text{mW/cm}^2$$

2. Near Field Calculation

Power flux density is considered to be at a maximum value throughout the entire length of the defined Near Field region. The region is contained within a cylindrical volume having the same diameter as the antenna. Past the boundary of the Near Field region, the power density from the antenna decreases linearly with respect to increasing distance.

The distance to the end of the Near Field can be determined from the following equation:

Extent of the Near Field

$$R_{nf} = D^2 / (4\ \lambda) \quad (3)$$
$$= 74.3\ \text{m}$$

The maximum power density in the Near Field can be determined from the following equation:

Near Field Power Density

$$S_{nf} = 16.0\ \eta\ P / (\pi\ D^2) \quad (4)$$
$$= 4.545\ \text{W/m}^2$$
$$= 0.455\ \text{mW/cm}^2$$

3. Transition Region Calculation

The Transition region is located between the Near and Far Field regions. The power density begins to decrease linearly with increasing distance in the Transition region. While the power density decreases inversely with distance in the Transition region, the power density decreases inversely with the square of the distance in the Far Field region. The maximum power density in the Transition region will not exceed that calculated for the Near Field region. The power density calculated in Section 1 is the highest power density the antenna can produce in any of the regions away from the antenna. The power density at a distance R_t can be determined from the following equation:

Transition Region Power Density

$$S_t = S_{nf}\ R_{nf} / R_t \quad (5)$$
$$= 0.455\ \text{mW/cm}^2$$

4. Region between the Feed Assembly and the Antenna Reflector

Transmissions from the feed assembly are directed toward the antenna reflector surface, and are confined within a conical shape defined by the type of feed assembly. The most common feed assemblies are waveguide flanges, horns or subreflectors. The energy between the feed assembly and reflector surface can be calculated by determining the power density at the feed assembly surface. This can be determined from the following equation:

Power Density at the Feed Flange

$$S_{fa} = 4000\ P / A_{fa} \quad (6)$$
$$= 279.212\ mW/cm^2$$

5. Main Reflector Region

The power density in the main reflector is determined in the same manner as the power density at the feed assembly. The area is now the area of the reflector aperture and can be determined from the following equation:

Power Density at the Reflector Surface

$$S_{surface} = 4\ P / A_{surface} \quad (7)$$
$$= 7.054\ W/m^2$$
$$= 0.705\ mW/cm^2$$

6. Region between the Reflector and the Ground

Assuming uniform illumination of the reflector surface, the power density between the antenna and the ground can be determined from the following equation:

Power Density between Reflector and Ground

$$S_g = P / A_{surface} \quad (8)$$
$$= 1.763\ W/m^2$$
$$= 0.176\ mW/cm^2$$

7. Summary of Calculations

Table 4. Summary of Expected Radiation levels for Uncontrolled Environment

Region		Calculated Maximum Radiation Power Density Level (mW/cm^2)	Hazard Assessment
1. Far Field (R_{ff} = 178.3 m)	S_{ff}	0.195	Satisfies FCC MPE
2. Near Field (R_{nf} = 74.3 m)	S_{nf}	0.455	Satisfies FCC MPE
3. Transition Region ($R_{nf} < R_t < R_{ff}$)	S_t	0.455	Satisfies FCC MPE
4. Between Feed Assembly and Antenna Reflector	S_{fa}	279.212	Potential Hazard
5. Main Reflector	$S_{surface}$	0.705	Satisfies FCC MPE
6. Between Reflector and Ground	S_g	0.176	Satisfies FCC MPE

Table 5. Summary of Expected Radiation levels for Controlled Environment

Region		Calculated Maximum Radiation Power Density Level (mW/cm^2)	Hazard Assessment
1. Far Field (R_{ff} = 178.3 m)	S_{ff}	0.195	Satisfies FCC MPE
2. Near Field (R_{nf} = 74.3 m)	S_{nf}	0.455	Satisfies FCC MPE
3. Transition Region ($R_{nf} < R_t < R_{ff}$)	S_t	0.455	Satisfies FCC MPE
4. Between Feed Assembly and Antenna Reflector	S_{fa}	279.212	Potential Hazard
5. Main Reflector	$S_{surface}$	0.705	Satisfies FCC MPE
6. Between Reflector and Ground	S_g	0.176	Satisfies FCC MPE

It is the applicant's responsibility to ensure that the public and operational personnel are not exposed to harmful levels of radiation.

8. Conclusions

Based on the above analysis it is concluded that harmful levels of radiation will not exist in regions normally occupied by the public or the earth station's operating personnel. The transmitter will be turned off during antenna maintenance so that the FCC MPE of 5.0 mW/cm2 will be complied with for those regions with close proximity to the reflector that exceed acceptable levels.

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Board of Supervisors of LSU/A&M College
SHREVEPORT, LA
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
October 01, 2012

TABLE OF CONTENTS

1. CONCLUSIONS

An interference study considering all existing, proposed and prior coordinated microwave facilities within the coordination contours of the proposed earth station demonstrates that this site will operate satisfactorily with the common carrier microwave environment. This earth station will be limited to operations of the bandwidths shown in Section 4 of this report.

2. SUMMARY OF RESULTS

A number of great circle interference cases were identified during the interference study of the proposed earth station. Each of the cases, which exceeded the interference objective on a line-of-sight basis, was profiled and the propagation losses estimated using NBS TN101 (Revised) techniques. The losses were found to be sufficient to reduce the signal levels to acceptable magnitudes in every case.

The following companies reported potential great circle interference conflicts that did not meet the objectives on a line-of-sight basis. When over-the-horizon losses are considered on the interfering paths, sufficient blockage exists to negate harmful interference from occurring with the proposed transmit-receive earth station.

Company

Centerpoint Energy Field Services
Central Louisiana License Co., LLC
Lousiana Dept. of Transportation and Dev
New Cingular Wireless PCS, LLC - LA, GM
Wireless Infrastructure Partners, LLC

No other carriers reported potential interference cases.

3. SUPPLEMENTAL SHOWING

Pursuant to Part 25.203(c) of the FCC Rules and Regulations, the satellite earth station proposed in this application was coordinated by Comsearch using computer techniques and in accordance with Part 25 of the FCC Rules and Regulations.

Coordination data for this earth station was sent to the below listed carriers with a letter dated 07/27/2012.

Company
Allied Wireless Communications Corp.
Alltel Comm., of Southwest Arkansas
Alltel Wireless of Alexandria, LLC
Alltel Comm of Arkansas RSA #12 Cell L P
Alltel Comm of N Louisiana Cellular LP
Alltel Communications Wireless Inc. -AR
Alltel Communications Wireless Inc.- CTX
Alltel Communications Wireless of LA, In
American Electric Power Service Corp.
Centerpoint Energy Field Services
Central Louisiana License Co., LLC
Cleco Power LLC
Conterra Ultra Broadband, LLC
Encana Oil & Gas (USA) Inc.
Entergy Services Inc
Etex Communications, L.P.
KN Telecommunications, Inc.
LaSalle Parish School District
Longview, City of
Lousiana Dept. of Transportation and Dev
New Cingular Wireless PCS LLC - N Texas
New Cingular Wireless PCS, LLC - AR
New Cingular Wireless PCS, LLC - LA, GM
Nexus Systems, Inc.
Northeast Texas Consortium(NETnet)
PUBLIC SERVICE COMPANY OF OKLAHOMA
SOUTHWESTERN ELECTRIC POWER COMPANY
TX-10 Licensee Co., LLC
Texas RSA 11B Limited Partnership
Texas RSA 7B2 Limited Partnership
Trunkline Gas Company, LLC
Tyler-Longview-Marshall MSA Ltd Partners
UNITED WEHCO INC.
Verizon Wireless (VAW) LLC (CA)
Verizon Wireless (VAW) LLC - Arkansas
Verizon Wireless (VAW) LLC-Central Texas
Verizon Wireless Personal Comm LP-LA/MS
Verizon Wireless(VAW) LLC-AZ/CO/NM/NV/UT
WWC Texas RSA Limited Partnership
Wireless Infrastructure Partners, LLC

4. EARTH STATION COORDINATION DATA

This section presents the data pertinent to frequency coordination of the proposed earth station that was circulated to all carriers within its coordination contours.

COMSEARCH

Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147
(703)726-5500 http://www.comsearch.com

Date:	10/01/2012
Job Number:	120727COMSTC02

Administrative Information

Licensee Name	Board of Supervisors of LSU/A&M College

Site Information — SHREVEPORT, LA

Latitude (NAD 83)	32°25' 28.0" N
Longitude (NAD 83)	93°42' 24.7" W
Climate Zone	A
Rain Zone	1
Ground Elevation (AMSL)	49.23 m / 161.5 ft

Link Information

Satellite Type	Geostationary
Mode	TR - Transmit-Receive
Modulation	Digital
Satellite Arc	37.5°W to 139°West Longitude
Azimuth Range	109.7°to 242.0°
Corresponding Elevation Angles	19.8°/ 28.8°
Antenna Centerline (AGL)	2.6 m / 8.5 ft

Antenna Information

	Receive	Transmit	
Manufacturer/Model	Prodelin 1385	Prodelin 1385	
Gain / Diameter	41.9 dBi / 3.8 m	45.9 dBi / 3.8 m	
3-dB / 15-dB Beamwidth	1.60° / 3.20°	0.80° / 1.60°	
		154KG7W	230KG7W
Max Available RF Power (dBW/4 kHz)		-12.83	-14.08
(dBW/MHz)		11.14	9.9
Maximum EIRP (dBW/4 kHz)		33.07	31.82
(dBW/MHz)		57.04	55.80
(dBW)		50.67	47.66

Interference Objectives:	Long Term	-156.0 dBW/MHz	20%	-154.0 dBW/4 kHz	20%
	Short Term	-146.0 dBW/MHz	0.01%	-131.0 dBW/4 kHz	0.0025%

Frequency Information

	Receive 4.0 GHz	Transmit 6.1 GHz
Emission / Frequency Range (MHz)	154KG7W / 3700.0 - 4200.0 230KG7W / 3700.0 - 4200.0	154KG7W / 5925.0 - 6078.35 230KG7W / 5925.0 - 6078.35 154KG7W / 6108.55 - 6271.09 230KG7W / 6108.55 - 6271.09 154KG7W / 6301.29 - 6330.39 230KG7W / 6301.29 - 6330.39 154KG7W / 6360.59 - 6425.0 230KG7W / 6360.59 - 6425.0
Max Great Circle Coordination Distance	353.3 km / 219.5 mi	168.6 km / 104.7 mi
Precipitation Scatter Contour Radius	580.0 km / 360.3 mi	100.0 km / 62.1 mi

COMSEARCH

Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147
(703)726-5500 http://www.comsearch.com

Coordination Values	**SHREVEPORT, LA**			
Licensee Name	Board of Supervisors of LSU/A&M College			
Latitude (NAD 83)	32°25' 28.0" N			
Longitude (NAD 83)	93°42' 24.7" W			
Ground Elevation (AMSL)	49.23 m / 161.5 ft			
Antenna Centerline (AGL)	2.6 m / 8.5 ft			
Antenna Mode		Receive 4.0 GHz		Transmit 6.1 GHz	
Interference Objectives: Long Term		-156.0 dBW/MHz	20%	-154.0 dBW/4 kHz	20%
Short Term		-146.0 dBW/MHz	0.01%	-131.0 dBW/4 kHz	0.0025%
Max Available RF Power				-12.8 (dBW/4 kHz)	

			Receive 4.0 GHz		Transmit 6.1 GHz	
Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
0	0.00	108.53	-10.00	285.28	-10.00	134.86
5	0.00	103.85	-10.00	285.28	-10.00	134.86
10	0.00	99.16	-10.00	285.28	-10.00	134.86
15	0.00	94.46	-10.00	285.28	-10.00	134.86
20	0.00	89.76	-10.00	285.28	-10.00	134.86
25	0.00	85.06	-10.00	285.28	-10.00	134.86
30	0.00	80.36	-10.00	285.28	-10.00	134.86
35	0.00	75.67	-10.00	285.28	-10.00	134.86
40	0.00	70.99	-10.00	285.28	-10.00	134.86
45	0.00	66.33	-10.00	285.28	-10.00	134.86
50	0.00	61.70	-10.00	285.28	-10.00	134.86
55	0.00	57.11	-10.00	285.28	-10.00	134.86
60	0.00	52.56	-10.00	285.28	-10.00	134.86
65	0.00	48.07	-10.00	285.28	-10.00	134.86
70	0.00	43.67	-9.00	291.69	-9.00	137.69
75	0.00	39.37	-7.88	299.12	-7.88	141.03
80	0.00	35.23	-6.67	307.32	-6.67	144.77
85	0.00	31.31	-5.39	316.91	-5.39	148.95
90	0.00	27.69	-4.06	326.42	-4.06	153.50
95	0.00	24.52	-2.74	336.03	-2.74	158.21
100	0.00	22.00	-1.56	344.79	-1.56	162.61
105	0.00	20.36	-0.72	351.13	-0.72	165.84
110	0.00	19.82	-0.43	353.33	-0.43	168.60
115	0.00	20.48	-0.78	350.64	-0.78	165.59
120	0.00	22.22	-1.67	343.97	-1.67	162.19
125	0.00	24.82	-2.87	335.06	-2.87	157.73
130	0.00	28.05	-4.20	325.42	-4.20	153.02
135	0.00	31.68	-5.52	316.01	-5.52	148.53
140	0.00	35.28	-6.69	307.23	-6.69	144.73
145	0.00	38.69	-7.69	300.40	-7.69	141.60
150	0.00	41.87	-8.55	294.69	-8.55	139.03
155	0.00	44.76	-9.27	289.95	-9.27	136.91
160	0.00	47.29	-9.87	286.11	-9.87	135.22
165	0.00	49.38	-10.00	285.28	-10.00	134.86
170	0.00	50.95	-10.00	285.28	-10.00	134.86
175	0.00	51.93	-10.00	285.28	-10.00	134.86
180	0.00	52.27	-10.00	285.28	-10.00	134.86
185	0.00	51.93	-10.00	285.28	-10.00	134.86

COMSEARCH

Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147
(703)726-5500 http://www.comsearch.com

Coordination Values	**SHREVEPORT, LA**			
Licensee Name	Board of Supervisors of LSU/A&M College			
Latitude (NAD 83)	32°25' 28.0" N			
Longitude (NAD 83)	93°42' 24.7" W			
Ground Elevation (AMSL)	49.23 m / 161.5 ft			
Antenna Centerline (AGL)	2.6 m / 8.5 ft			
Antenna Mode	Receive 4.0 GHz		Transmit 6.1 GHz	
Interference Objectives: Long Term	-156.0 dBW/MHz	20%	-154.0 dBW/4 kHz	20%
Short Term	-146.0 dBW/MHz	0.01%	-131.0 dBW/4 kHz	0.0025%
Max Available RF Power			-12.8 (dBW/4 kHz)	

			Receive 4.0 GHz		Transmit 6.1 GHz	
Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	50.95	-10.00	285.28	-10.00	134.86
195	0.00	49.38	-10.00	285.28	-10.00	134.86
200	0.00	47.29	-9.87	286.12	-9.87	135.22
205	0.00	44.76	-9.27	289.95	-9.27	136.92
210	0.26	41.69	-8.50	287.21	-8.50	133.89
215	0.00	38.70	-7.69	300.38	-7.69	141.59
220	0.00	35.69	-6.81	306.35	-6.81	144.33
225	0.00	33.10	-6.00	312.66	-6.00	146.96
230	0.00	31.03	-5.29	317.60	-5.29	149.28
235	0.21	29.39	-4.70	320.37	-4.70	150.20
240	0.23	28.65	-4.43	319.66	-4.43	149.12
245	0.22	28.74	-4.46	321.22	-4.46	150.35
250	0.23	29.58	-4.78	317.56	-4.78	148.24
255	0.00	31.36	-5.41	316.77	-5.41	148.89
260	0.30	33.29	-6.06	299.03	-6.06	137.85
265	0.27	36.01	-6.91	296.65	-6.91	137.68
270	0.28	39.10	-7.80	288.98	-7.80	133.98
275	0.22	42.54	-8.72	290.64	-8.72	136.53
280	0.25	46.17	-9.61	281.91	-9.61	133.31
285	0.21	50.02	-10.00	283.63	-10.00	133.76
290	0.22	53.98	-10.00	282.21	-10.00	134.08
295	0.22	58.07	-10.00	282.36	-10.00	134.18
300	0.24	62.23	-10.00	279.81	-10.00	132.50
305	0.00	66.52	-10.00	285.28	-10.00	134.86
310	0.00	70.80	-10.00	285.28	-10.00	134.86
315	0.00	75.12	-10.00	285.28	-10.00	134.86
320	0.00	79.47	-10.00	285.28	-10.00	134.86
325	0.00	83.83	-10.00	285.28	-10.00	134.86
330	0.00	88.21	-10.00	285.28	-10.00	134.86
335	0.00	92.59	-10.00	285.28	-10.00	134.86
340	0.00	96.97	-10.00	285.28	-10.00	134.86
345	0.00	101.33	-10.00	285.28	-10.00	134.86
350	0.00	105.67	-10.00	285.28	-10.00	134.86
355	0.00	109.98	-10.00	285.28	-10.00	134.86

5. CERTIFICATION

I HEREBY CERTIFY THAT I AM THE TECHNICALLY QUALIFIED PERSON RESPONSIBLE FOR THE PREPARATION OF THE FREQUENCY COORDINATION DATA CONTAINED IN THIS APPLICATION, THAT I AM FAMILIAR WITH PARTS 101 AND 25 OF THE FCC RULES AND REGULATIONS, THAT I HAVE EITHER PREPARED OR REVIEWED THE FREQUENCY COORDINATION DATA SUBMITTED WITH THIS APPLICATION, AND THAT IT IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

Timothy O. Crutcher
Frequency Planner
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147

DATED: October 01, 2012