

**INTERNATIONAL BUREAU
FCC SELECTED APPLICATION LISTING BY FILE NUMBER
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DA #: None	Adopted Date: None
Released Date: None	

Document Viewing

Site Information

Other filings related to this application (Petitions, comments, etc)

Public Notice List

Licensee History

Attachment Menu

PDF Version of this application.

HTML version of this application.

Old File Number: None

Applicant:

RigNet SatCom, Inc.
1880 S. Dairy Ashford
Suite 300
Houston, TX 77077 USA

Contact: Mr. Raul Magallanes

RigNet, Inc.
1880 S. Dairy Ashford

Houston, TX 770774760 USA

Description: Application for STA to operate Seatel 9797 2.4 m C band antenna in the Gulf of Mexico for Ensco DS5.

APPLICATION FOR EARTH STATION SPECIAL TEMPORARY AUTHORITY

APPLICANT INFORMATION Enter a description of this application to identify it on the main menu:
Application for STA to operate Seatel 9797 2.4 m C band antenna in the Gulf of Mexico. For Ensco DS5

1. Applicant

Name:	RigNet SatCom, Inc.	Phone Number:	281-674-0150
DBA Name:		Fax Number:	281-674-0101
Street:	1880 S. Dairy Ashford Suite 300	E-Mail:	raul.magallanes@rig.net
City:	Houston	State:	TX
Country:	USA	Zipcode:	77077 -
Attention:	Mr Raul Magallanes		

2. Contact

Name:	Mr. Raul Magallanes	Phone Number:	281-674-0150
Company:	RigNet, Inc.	Fax Number:	281-674-0101
Street:	1880 S. Dairy Ashford	E-Mail:	raul.magallanes@rig.net
City:	Houston	State:	TX
Country:	USA	Zipcode:	77077 -4760
Attention:		Relationship:	Same

(If your application is related to an application filed with the Commission, enter either the file number or the IB Submission ID of the related application. Please enter only one.)

3. Reference File Number or Submission ID

4a. Is a fee submitted with this application?

- If Yes, complete and attach FCC Form 159. If No, indicate reason for fee exemption (see 47 C.F.R. Section 1.1114).
 Governmental Entity Noncommercial educational licensee
 Other (please explain):

4b. Fee Classification CGX – Fixed Satellite Transmit/Receive Earth Station

5. Type Request

- Use Prior to Grant Change Station Location Other

6. Requested Use Prior Date
02/28/2015

7. CityGOM

8. Latitude
(dd mm ss.s h) 28 18 0.0 N

9. State LA	10. Longitude (dd mm ss.s h) 88 6 0.0 W
11. Please supply any need attachments. Attachment 1: Intereference Analys Attachment 2: Rad Haz Attachment 3: STA Letter	
12. Description. (If the complete description does not appear in this box, please go to the end of the form to view it in its entirety.) <div style="border: 1px solid black; padding: 5px; margin: 10px 0;">Application for STA to operate Seatel 9797 2.4 m C band antenna in the Gulf of Mexico for Ensco DS5.</div>	
13. By checking Yes, the undersigned certifies that neither applicant nor any other party to the application is subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Act of 1988, 21 U.S.C. Section 862, because of a conviction for possession or distribution of a controlled substance. See 47 CFR 1.2002(b) for the meaning of "party to the application" for these purposes. <input checked="" type="radio"/> Yes <input type="radio"/> No	
14. Name of Person Signing Raul Magallanes	15. Title of Person Signing Associate General Counsel
WILLFUL FALSE STATEMENTS MADE ON THIS FORM ARE PUNISHABLE BY FINE AND / OR IMPRISONMENT (U.S. Code, Title 18, Section 1001), AND/OR REVOCATION OF ANY STATION AUTHORIZATION (U.S. Code, Title 47, Section 312(a)(1)), AND/OR FORFEITURE (U.S. Code, Title 47, Section 503).	

19700 Janelia Farm Boulevard

Ashburn, VA 20147

(703) 726-5500

Fax (703) 726-5600



<http://www.comsearch.com>

February 12, 2015

*** COMSEARCH ***
*** FILE COPY ***
*** DO NOT MAIL ***
*** TO ANYBODY ***

Re: RigNet SatCom, Inc.
GoMex ENSCO DS5, Gulf of Mexico
C-Band, Transmit-Receive Earth Station
Job Number: 150212COMSJC01

***** EXPEDITED FREQUENCY COORDINATION NOTICE *****
***** RESPONSE REQUESTED BY FEBRUARY 24, 2015 *****

Dear Frequency Coordinator:

This notice is being provided in accordance with Section 25.203(c) of the FCC Rules and Regulations. We are forwarding the attached expedited coordination data on behalf of RigNet SatCom, Inc., 1710 West Willow Street, Scott, Louisiana 70583 for a proposed C-band, transmit/receive earth station to be located on an oil platform designated GoMex ENSCO DS5, in the Gulf of Mexico.

The coordination notice is being circulated to the owners (or their protection agents) of all existing or proposed terrestrial facilities operating in a shared frequency band within the coordination contours of the proposed station(s).

We respectfully request that you examine this data for its interference potential with your system(s). In the event that your analysis identifies potential interference cases that have not been resolved, please contact Comsearch by February 24, 2015.

If there are any questions concerning this coordination notice, please contact Comsearch.

Sincerely,

COMSEARCH

Jeffrey E. Cowles
Engineer III, Telecommunications
jcowles@comsearch.com

Enclosure(s)

COMSEARCH**Earth Station Data Sheet**

19700 Janella Farm Boulevard, Ashburn, VA 20147
(703)726-5660 <http://www.comsearch.com>

Date: 02/12/2015
Job Number: 150212COMSJC01

Administrative Information

Status ENGINEER PROPOSAL
Call Sign
Licensee Code RIGNET
Licensee Name RigNet SatCom, Inc.

Site Information **GoMex ENSCO DS5, GULF of MEXICO**

Venue Name
Latitude (NAD 83) 28° 18' 0.0" N
Longitude (NAD 83) 88° 6' 0.0" W
Climate Zone B
Rain Zone 1
Ground Elevation (AMSL) 0.0 m / 0.0 ft

Link Information

Satellite Type Geostationary
Mode TR - Transmit-Receive
Modulation Digital
Satellite Arc 18° W to 139° West Longitude
Azimuth Range 99.7° to 248.9°
Corresponding Elevation Angles 8.8° / 25.9°
Antenna Centerline (AGL) 30.48 m / 100.0 ft

Antenna Information

	Receive	Transmit
Manufacturer	Sea Tel	Sea Tel
Model	9797	9797
Gain / Diameter	38.5 dBi / 2.4 m	41.7 dBi / 2.4 m
3-dB / 15-dB Beamwidth	2.04° / 3.80°	1.41° / 2.64°

341KG7W to 682KG7W

Max Available RF Power	(dBW/4 kHz)	-11.0	-11.0
	(dBW/MHz)	13.0	13.0

Maximum EIRP	(dBW/4 kHz)	30.7	30.7
	(dBW/MHz)	54.7	54.7
	(dBW)	50.0	53.0

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)	341KG7W - 682KG7W / 3700.0 - 4200.0	341KG7W - 682KG7W / 5925.0 - 6425.0

Max Great Circle Coordination Distance	711.0 km / 441.7 mi	262.9 km / 163.3 mi
Precipitation Scatter Contour Radius	644.2 km / 400.3 mi	100.0 km / 62.1 mi

COMSEARCH**Earth Station Data Sheet**

19700 Janelia Farm Boulevard, Ashburn, VA 20147
(703)726-5660 <http://www.comsearch.com>

Coordination Values		GoMex ENSCO DS5, GM			
Licensee Name		RigNet SatCom, Inc.			
Latitude (NAD 83)		28° 18' 0.0" N			
Longitude (NAD 83)		88° 6' 0.0" W			
Ground Elevation (AMSL)		0.0 m / 0.0 ft			
Antenna Centerline (AGL)		30.48 m / 100.0 ft			
Antenna Model		Sea Tel 9797			
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				-11.0 (dBW/4 kHz)	

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz		Transmit 6.1 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
0	0.00	99.62	-10.00	412.20	-10.00	158.40
5	0.00	94.68	-10.00	412.20	-10.00	158.40
10	0.00	89.74	-10.00	412.20	-10.00	158.40
15	0.00	84.80	-10.00	412.20	-10.00	158.40
20	0.00	79.86	-10.00	412.20	-10.00	158.40
25	0.00	74.93	-10.00	412.20	-10.00	158.40
30	0.00	69.99	-10.00	412.20	-10.00	158.40
35	0.00	65.06	-10.00	412.20	-10.00	158.40
40	0.00	60.14	-10.00	412.20	-10.00	158.40
45	0.00	55.22	-10.00	412.20	-10.00	158.40
50	0.00	50.31	-10.00	412.20	-10.00	158.40
55	0.00	45.42	-9.43	419.31	-9.43	160.93
60	0.00	40.55	-8.20	435.16	-8.20	166.57
65	0.00	35.71	-6.82	453.65	-6.82	173.19
70	0.00	30.91	-5.25	474.96	-5.25	181.08
75	0.00	26.18	-3.45	501.55	-3.45	190.64
80	0.00	21.56	-1.34	534.49	-1.34	202.83
85	0.00	17.14	1.15	575.97	1.15	217.55
90	0.00	13.13	4.04	627.08	4.04	235.67
95	0.00	10.03	6.97	683.43	6.97	255.10
100	0.00	8.85	8.33	711.00	8.33	262.90
105	0.00	10.28	6.70	678.02	6.70	253.25
110	0.00	13.52	3.73	621.89	3.73	233.64
115	0.00	17.59	0.87	571.20	0.87	215.86
120	0.00	21.83	-1.48	532.31	-1.48	202.05
125	0.00	26.01	-3.38	502.60	-3.38	191.01
130	0.00	30.12	-4.97	479.02	-4.97	182.54
135	0.00	34.12	-6.33	460.46	-6.33	175.64
140	0.00	37.99	-7.49	444.55	-7.49	169.93
145	0.00	41.69	-8.50	431.23	-8.50	165.17
150	0.00	45.18	-9.37	420.05	-9.37	161.19
155	0.00	48.39	-10.00	412.20	-10.00	158.40
160	0.00	51.23	-10.00	412.20	-10.00	158.40
165	0.00	53.61	-10.00	412.20	-10.00	158.40
170	0.00	55.43	-10.00	412.20	-10.00	158.40
175	0.00	56.58	-10.00	412.20	-10.00	158.40
180	0.00	56.97	-10.00	412.20	-10.00	158.40
185	0.00	56.58	-10.00	412.20	-10.00	158.40

COMSEARCH**Earth Station Data Sheet**

19700 Janelia Farm Boulevard, Ashburn, VA 20147
(703)726-5660 <http://www.comsearch.com>

Coordination Values		GoMex ENSCO DS5, GM			
Licensee Name		RigNet SatCom, Inc.			
Latitude (NAD 83)		28° 18' 0.0" N			
Longitude (NAD 83)		88° 6' 0.0" W			
Ground Elevation (AMSL)		0.0 m / 0.0 ft			
Antenna Centerline (AGL)		30.48 m / 100.0 ft			
Antenna Model		Sea Tel 9797			
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				-11.0 (dBW/4 kHz)	

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz		Transmit 6.1 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	55.44	-10.00	412.20	-10.00	158.40
195	0.00	53.62	-10.00	412.20	-10.00	158.40
200	0.00	51.23	-10.00	412.20	-10.00	158.40
205	0.00	48.38	-10.00	412.20	-10.00	158.40
210	0.00	45.18	-9.37	420.04	-9.37	161.19
215	0.00	41.69	-8.50	431.22	-8.50	165.17
220	0.00	38.07	-7.52	444.25	-7.52	169.82
225	0.00	34.70	-6.51	457.94	-6.51	174.73
230	0.00	31.70	-5.53	471.06	-5.53	179.68
235	0.00	29.19	-4.63	483.97	-4.63	184.32
240	0.00	27.31	-3.91	494.66	-3.91	188.16
245	0.00	26.19	-3.45	501.49	-3.45	190.62
250	0.00	25.93	-3.35	503.10	-3.35	191.20
255	0.00	26.57	-3.61	499.14	-3.61	189.77
260	0.00	28.03	-4.19	490.45	-4.19	186.65
265	0.00	30.20	-5.00	478.61	-5.00	182.39
270	0.00	32.93	-5.94	465.20	-5.94	177.57
275	0.00	36.11	-6.94	452.02	-6.94	172.61
280	0.00	39.61	-7.95	438.52	-7.95	167.78
285	0.00	43.36	-8.93	425.72	-8.93	163.21
290	0.00	47.31	-9.87	413.78	-9.87	158.96
295	0.00	51.39	-10.00	412.20	-10.00	158.40
300	0.00	55.59	-10.00	412.20	-10.00	158.40
305	0.00	59.87	-10.00	412.20	-10.00	158.40
310	0.00	64.21	-10.00	412.20	-10.00	158.40
315	0.00	68.60	-10.00	412.20	-10.00	158.40
320	0.00	73.04	-10.00	412.20	-10.00	158.40
325	0.00	77.50	-10.00	412.20	-10.00	158.40
330	0.00	81.98	-10.00	412.20	-10.00	158.40
335	0.00	86.47	-10.00	412.20	-10.00	158.40
340	0.00	90.97	-10.00	412.20	-10.00	158.40
345	0.00	95.46	-10.00	412.20	-10.00	158.40
350	0.00	99.95	-10.00	412.20	-10.00	158.40
355	0.00	104.42	-10.00	412.20	-10.00	158.40

Radiation Hazard Study

Seatel 9797 2.4m C

This study analyzes the potential Radio Frequency (RF) human exposure levels caused by the Electro Magnetic (EM) fields of the above-captioned antenna. The mathematical analysis performed below complies with the methods described in the Federal Communications Commission Office of Engineering and Technology Bulletin No. 65 (1985 rev. 1997) R&O 96-326.

Maximum Permissible Exposure

There are two separate levels of exposure limits. The first applies to persons in the general population who are in an uncontrolled environment. The second applies to trained personnel in a controlled environment.

According to 47 C.F.R. § 1.1310, the Maximum Permissible Exposure (MPE) limits for frequencies above 1.5 GHz are as follows:

- General Population / Uncontrolled Exposure 1.0 mW/cm²
- Occupational / Controlled Exposure 5.0 mW/cm²

The purpose of this study is to determine the power flux density levels for the earth station under study as compared with the MPE limits. This comparison is done in each of the following regions:

1. Far-field region
2. Near-field region
3. Transition region
4. The region between the feed and the antenna surface
5. The main reflector region
6. The region between the antenna edge and the ground

Input Parameters

The following input parameters were used in the calculations:

<u>Parameter</u>	<u>Value</u>	<u>Unit</u>	<u>Symbol</u>
Antenna Diameter:	2.4	m	<i>D</i>
Antenna Transmit Gain:	41.70	dBi	<i>G</i>
Transmit Frequency:	6175	MHz	<i>f</i>
Feed Flange Diameter:	13.10	cm	<i>d</i>
Power Input to the Antenna:	55.00	W	<i>P</i>

Calculated Parameters

The following values were calculated using the above input parameters and the corresponding formulas.

<u>Parameter</u>	<u>Value</u>	<u>Unit</u>	<u>Symbol</u>	<u>Formula</u>
Antenna Surface Area:	4.52	m ²	<i>A</i>	$\pi D^2/4$
Area of Feed Flange:	134.78	cm ²	<i>a</i>	$\pi d^2/4$
Antenna Efficiency:	0.61		η	$G\lambda^2/(\pi^2 D^2)$
Gain Factor:	14791.08		<i>g</i>	$10^{G/10}$
Wavelength:	0.0486	m	λ	$300/f$

Behavior of EM Fields as a Function of Distance

The behavior of the characteristics of EM fields depending on the distance from the radiating antenna. These characteristics are analyzed in three primary regions: the near-field region, the far-field region and the transition region. Of interest also are the region between the antenna main reflector and the subreflector, the region of the main reflector area and the region between the main reflector and ground.

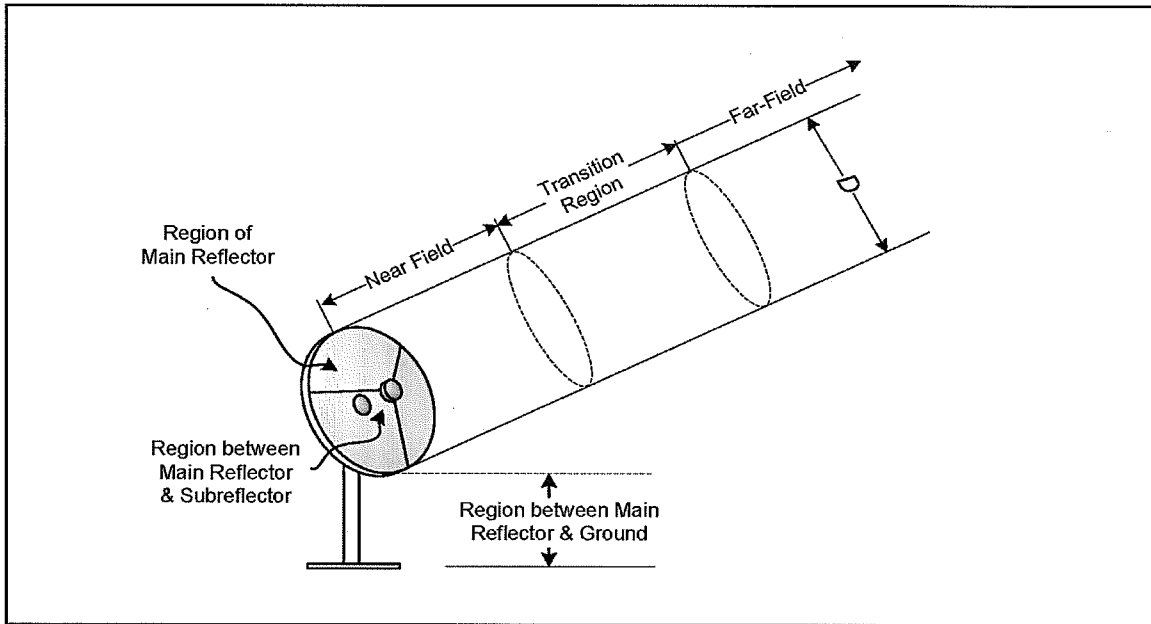


Figure 1. EM Fields as a Function of Distance

For parabolic aperture antennas with circular cross sections, such as the antenna under study, the near-field, far-field and transition region distances are calculated as follows:

<u>Parameter</u>	<u>Value</u>	<u>Unit</u>	<u>Formula</u>
Near Field Distance:	29.640	m	$R_{nf} = D^2/(4\lambda)$
Distance to Far Field:	71.136	m	$R_{ff} = 0.60D^2/(\lambda)$
Distance of Transition Region	29.640	m	$R_t = R_{nf}$

The distance in the transition region is between the near and far fields. Thus, $R_{nf} \leq R_t \leq R_{ff}$. However, the power density in the transition region will not exceed the power density in the near-field. Therefore, for purposes of the present analysis, the distance of the transition region can equate the distance to the near-field.

Power Flux Density Calculations

The power flux density is considered to be at a maximum through the entire length of the near-field. This region is contained within a cylindrical volume with a diameter, D, equal to the diameter of the antenna. In the transition region and the far-field, the power density decreases inversely with the square of the distance. The following equations are used to calculate power density in these regions.

EXHIBIT A

Parameter	Value	Unit	Symbol	Formula
Power Density in the Near-Field	2.986	mW/cm ²	S_{nf}	$16.0 \eta P / (\pi D^2)$
Power Density in the Far-Field	1.279	mW/cm ²	S_{ff}	$GP / (4\pi R_{ff}^2)$
Power Density in the Trans. Region	2.986	mW/cm ²	S_t	$S_{nf} R_{nf} / (R_t)$

The region between the main reflector and the subreflector is confined within a conical shape defined by the feed assembly. The most common feed assemblies are waveguide flanges. This energy is determined as follows:

Parameter	Value	Unit	Symbol	Formula
Power Density at the Feed Flange	1632.3	mW/cm ²	S_{fa}	$4P / a$

The power density in the main reflector is determined similarly to the power density at the feed flange; except that the area of the reflector is used.

Parameter	Value	Unit	Symbol	Formula
Power Density at Main Reflector	4.863	mW/cm ²	$S_{surface}$	$4P / A$

The power density between the reflector and ground, assuming uniform illumination of the reflector surface, is calculated as follows:

Parameter	Value	Unit	Symbol	Formula
Power Density between Reflector and Ground	1.216	mW/cm ²	S_g	P / A

Table 1 summarizes the calculated power flux density values for each region. In a controlled environment, the only regions that exceed FCC limitations are shown below. These regions are only accessible by trained technicians who, as a matter of procedure, turn off transmit power before performing any work in these areas.

Power Densities	mW/cm ²	Controlled Environment (5 mW/cm ²)
Far Field Calculation	1.279	Satisfies FCC Requirements
Near Field Calculation	2.986	Satisfies FCC Requirements
Transition Region	2.986	Satisfies FCC Requirements
Region between Main and Subreflector	1632.3	Exceeds Limitations
Main Reflector Region	4.863	Satisfies FCC Requirements
Region between Main Reflector and Ground	1.216	Satisfies FCC Requirements

Table 1. Power Flux Density for Each Region

In conclusion, the results show that the antenna, in a controlled environment, and under the proper mitigation procedures, meets the guidelines specified in 47 C.F.R. § 1.1310.

SATELLITE EARTH STATION
 FREQUENCY COORDINATION DATA
 02/12/2015

Company	RigNet SatCom, Inc.		
Earth Station Name, State	GOMEX ENSCO DS5, Gulf of Mexico		
Latitude (DMS) (NAD83)	28 18	0.0	N
Longitude (DMS) (NAD83)	88 6	0.0	W
Ground Elevation AMSL (ft/m)	0.00	/	0.00
Antenna Centerline AGL (ft/m)	100.00	/	30.48
Receive Antenna Type:	FCC32		Sea Tel
			9797
4.0 GHz Gain (dBi) / Diameter (m)	38.5	/	2.4
3 dB / 15 dB Half Beamwidth	1.02	/	1.90
Transmit Antenna Type:	FCC32		Sea Tel
			9797
6.0 GHz Gain (dBi) / Diameter (m)	41.7	/	2.4
3 dB / 15 dB Half Beamwidth	0.70	/	1.32
Operating Mode	TRANSMIT AND RECEIVE		
Modulation	DIGITAL		
Emission / Receive Band (MHz)	341KG7W - 682KG7W	/	3700.0000 - 4200.0000
Emission / Transmit Band (MHz)	341KG7W - 682KG7W	/	5925.0000 - 6425.0000
Max. Available RF Power (dBW)/4 kHz	-11.00		
(dBW)/MHz	13.00		
Max. EIRP (dBW)/4 kHz	30.70		
(dBW)/MHz	54.70		
(dBW)	0.00		
Max. Permissible Interference Power			
4.0 GHz, 20% (dBW/1 MHz)	-156.0		
4.0 GHz, 0.0100% (dBW/1 MHz)	-146.0		
6.0 GHz, 20% (dBW/4 kHz)	-154.0		
6.0 GHz, 0.0025% (dBW/4 kHz)	-131.0		
Range of Satellite Arc (Geostationary)			
Degrees Longitude	18.0	W /	139.0
Azimuth Range (Min/Max)	99.7	/	248.9
Corresponding Elevation Angles	8.8	/	25.9
Radio Climate	B		
Rain Zone	1		
Max. Great Circle Coordination Distance (mi./km)			
4.0 GHz	441.8	/	711.0
6.0 GHz	163.4	/	262.9
Precipitation Scatter Contour Radius (mi./km)			
4.0 GHz	400.3	/	644.2
6.0 GHz	62.1	/	100.0

Note: Horizon is less than 0.2 degrees at all azimuths