

Eleanor Lott

From: Billy Volek <Billy.Volek@sdncommunications.com>
Sent: Tuesday, August 26, 2014 6:13 PM
To: Eleanor Lott
Subject: RE: Application SES-REG-20140822-00670,
Attachments: Receive-Only Earth Station_Interference_Analysis_report_20131223.pdf

Hello Eleanor,

Thanks for your patience on this. Please see the attached frequency coordination.

I just tried to upload this document and the website would not allow me to. Please advise where/how to upload the document onto the application.

Thanks,

Billy Volek | Operations Engineer

Billy.Volek@SDNCommunications.com
2900 W. 10th St. | Sioux Falls, SD 57104
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RECEIVED

AUG 26 2014

Satellite Division
International Bureau

From: Eleanor Lott [<mailto:Eleanor.Lott@fcc.gov>]
Sent: Tuesday, August 26, 2014 4:52 PM
To: Billy Volek
Cc: Eleanor Lott
Subject: Application SES-REG-20140822-00670,

Hello Mr. Volek,

You filed a Receive Only Earth Station Registration Application stated above on August 22, 2014, this is a C-band and you must submit a Frequency Coordination attachment Data sheet with your FCC For 312 pursuant with the FCC Rules part 25:131, so therefore your application is unaccepted as filed? Please submit the requested Information for this filing in order to process your application.

Thank you,

Eleanor Lott

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PRELIMINARY INTERFERENCE ANALYSIS REPORT

Receive-Only Earth Station

SDN Communications Sioux Falls, SD



Prepared on Behalf of

Mega Hertz

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December 25, 2013 rev1

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MEGA HERTZ



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SECTION 1

INTRODUCTION

Receive/Only Earth Station

This report presents the results of a preliminary interference analysis for a proposed C-band receive/only earth station site. The site was selected by SDN Communications and is located in Sioux Falls, South Dakota.

The earth station was analyzed for reception of analog and digital traffic from all domestic satellites located in the satellite arc from 60 degrees to 143 degrees West Longitude. Operation on all transponders in the 3700 to 4200 MHz frequency band was investigated.

This analysis was performed considering a 4.5 meter antenna. The long term interference objective is -156 dBW/ 1 MHz.

The preliminary analysis is meant to provide an overview of potential interference at this location and to recommend a course of future action.

SECTION 2

CONTENTS OF THE REPORT

Receive/Only Earth Station

Section 1 presents the introduction describing the system characteristics including site location, system name, type reception, satellite arc, frequency band considered, type antenna, and interference objectives.

Section 2 describes the contents of this report.

Section 3 presents the site analysis data sheet. This sheet includes the system location data, site analysis conclusions, and a summary of the analysis with recommendations.

Table 3.1-1 summarizes the results of the preliminary analysis, with predicted over-the-horizon (O-H) losses calculated for the various potential interference cases. The columns, reading from left to right, represent the following data:

- | | | |
|---------------|---|---|
| 1. Path | - | Interference source and transmission path. |
| 2. Band | - | The frequency band in GHz. |
| 3. Azimuth | - | Azimuth from the earth station toward the interference source (bearing measured from True North). |
| 4. Distance | - | Distance to interference source (kilometers). |
| 5. LOS Margin | - | Interference margin in dB, on a line-of-sight (LOS) basis, i.e., additional isolation required to meet objective (no blockage assumed). |
| 6. O-H Loss | - | Estimated over-the-horizon loss in dB (predictions consider antenna height and path length, no detailed terrain data used). |
| 7. Estimated | - | Considering O-H Loss, difference Margin between LOS margin and O-H loss in dB (negative values indicate interference is unlikely). |

The cases marked with an asterisk are the cases posing the greatest interference problems.

Table 3.1-2 tabulates all transponders that would be affected by terrestrial stations in the 4 GHz frequency band. The columns reading from left to right present the following data:

- | | | |
|-------------------------------|---|--|
| 1. Terrestrial Path | - | Interference source and Transmission path. |
| 2. Band | - | The frequency band in GHz. |
| 3. Azimuth | - | Azimuth from the earth station toward the interference source (bearing measured from True North). |
| 4. Distance | - | Distance to interference source (Kilometers). |
| 5. Loss Required (Long Term) | - | The amount of loss in dB, required to reduce the interference levels to meet the 20% objective. |
| 6. Loss Required (Short Term) | - | The amount of loss in dB, required to reduce the interference levels to meet the .01% objective. |
| 7. Affected Transponders | - | The transponders that are affected by the interfering source. The transponders are numbered 1 - 24 from left to right. |

Section 4 summarizes the data pertinent to the proposed receive/only earth station.

Table 4.1-1 contains the operational parameters of the proposed earth station.

Table 4.1-2 lists the azimuth and elevation data for the satellite arc, including those satellites within that arc.

Figure 4.1-1 indicates the location of the proposed receive/only earth station. **This location should be verified, and if it is not the desired site, Comsearch should be notified immediately so that the precise location can be plotted and analyzed.**

SECTION 3

PRELIMINARY ANALYSIS DATA SHEET
RECEIVE-ONLY EARTH STATION

1. **System Name:** SDN Communications
2. **City:** Sioux Falls, South Dakota
3. **Site Identification:**
4. **Coordinates: Latitude(North DMS):** 43-36-28.0
Longitude(West DMS): 96-48-31.0
5. **Ground Elevation:** 1484 Feet

6. **Preliminary Analysis Conclusions:**

- (X) a. Site is likely to be acceptable based on computer analysis of the terrestrial environment.
- () b. Detailed analysis required to further identify the potential interference problems.
- () c. Near-in blockage may be required toward azimuths of potential interference cases as shown in Table 3.1-1.
- () d. Measurements may be required to quantitatively establish the local microwave environment.
- () e. Alternate site should be considered for an antenna location.

7. Summary of Results

Conclusions

The preliminary analysis did not identify any potential terrestrial interference conflicts within the coordination contours of this site.

Recommendations

Based on the results of the preliminary analysis, it is recommended this site be prior coordinated with the common carriers as the first step toward FCC registration.

It should be noted that this analysis considers the 4 GHz microwave environment and does not include potential interference from sources outside the 4 GHz band. (Radar Altimeters, Radar Detectors, Cellular Phone, ect.)

Table 4.1-1 Earth Station Parameters

SATELLITE EARTH STATION
 FREQUENCY COORDINATION DATA
 12/23/2013

Company	SDN COMMUNICATIONS
Owner Code	
Earth Station Name, State	SIOUX FALLS, SD
Latitude (DMS) (NAD83)	43 36 28.0 N
Longitude (DMS) (NAD83)	96 48 31.0 W
Ground Elevation AMSL (ft/m)	1483.99 / 452.32
Antenna Centerline AGL (ft/m)	9.00 / 2.74
Receive Antenna Type:	FCC32
	FCC REFERENCE
	32-25LOG(THETA)
4.0 GHz Gain (dBi) / Diameter (m)	43.6 / 4.5
3 dB / 15 dB Half Beamwidth	0.55 / 1.10
Operating Mode	RECEIVE ONLY
Modulation	DIGITAL
Emission / Receive Band (MHz)	36M0F8W / 3700.0000 - 4200.0000
Max. Permissible Interference Power	
4.0 GHz, 20% (dBW/1 MHz)	-156.0
4.0 GHz, 0.0100% (dBW/1 MHz)	-146.0
Range of Satellite Arc (Geostationary)	
Degrees Longitude	60.0 W / 143.0 W
Azimuth Range (Min/Max)	132.7 / 236.5
Corresponding Elevation Angles	27.7 / 22.0
Radio Climate	A
Rain Zone	2
Max. Great Circle Coordination Distance (mi./km)	
4.0 GHz	199.1 / 320.4
Precipitation Scatter Contour Radius (mi./km)	
4.0 GHz	310.7 / 500.1

Table 4.1-2 Satellite Arc and Elevation Table

Earth Station Azimuth and Elevation Table
12/23/2013

Earth Station Name SIOUX FALLS, SD
 Owner SDN COMMUNICATIONS
 Latitude (DMS) (NAD83) 43 36 28.0 N
 Longitude (DMS) (NAD83) 96 48 31.0 W
 Ground Elevation (ft/m) 1483.99 / 452.32 Amsl
 Antenna Centerline (ft/m) 9.00 / 2.74 Agl
 Satellite Arc Range 60.0 W
 143.0 W

Satellite Longitude	Azimuth (Degrees)	Elevation (Degrees)	Satellite Name
60.0	132.7	27.7	
61.0	133.7	28.3	AMAZONAS
62.0	134.8	28.9	
63.0	135.8	29.4	
64.0	136.9	30.0	
65.0	138.0	30.5	BRAZILSAT B2
66.0	139.2	31.0	
67.0	140.3	31.5	
68.0	141.4	32.0	
69.0	142.6	32.5	
70.0	143.8	33.0	BRAZILSAT B1
71.0	145.0	33.4	
72.0	146.2	33.9	AMC 6
73.0	147.4	34.3	
74.0	148.6	34.7	
75.0	149.9	35.1	
76.0	151.1	35.5	
77.0	152.4	35.9	
78.0	153.7	36.3	
78.5	154.4	36.4	BRAZILSAT B4
79.0	155.0	36.6	
80.0	156.4	36.9	
81.0	157.7	37.2	
82.0	159.0	37.5	
83.0	160.4	37.8	
84.0	161.8	38.1	BRAZILSAT B3
85.0	163.1	38.3	
85.1	163.3	38.3	XM 3
86.0	164.5	38.5	
87.0	165.9	38.7	AMC 3
88.0	167.3	38.9	
89.0	168.8	39.1	GALAXY 28
90.0	170.2	39.2	
91.0	171.6	39.4	GALAXY 11
92.0	173.0	39.5	
93.0	174.5	39.6	GALAXY 26
94.0	175.9	39.6	
95.0	177.4	39.7	GALAXY 3C
96.0	178.8	39.7	
97.0	180.3	39.7	GALAXY 25
98.0	181.7	39.7	

Earth Station Azimuth and Elevation Table
12/23/2013

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 Owner SDN COMMUNICATIONS
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 Longitude (DMS) (NAD83) 96 48 31.0 W
 Ground Elevation (ft/m) 1483.99 / 452.32 Amsl
 Antenna Centerline (ft/m) 9.00 / 2.74 Agl
 Satellite Arc Range 60.0 W
 143.0 W

Satellite Longitude	Azimuth (Degrees)	Elevation (Degrees)	Satellite Name
99.0	183.2	39.7	GALAXY 16
99.2	183.5	39.7	SPACEWAY 2
100.0	184.6	39.6	
101.0	186.1	39.5	AMC 4
101.1	186.2	39.5	DIRECTV 95
102.0	187.5	39.4	
102.8	188.6	39.3	SPACEWAY 1
103.0	188.9	39.3	AMC 1
104.0	190.4	39.2	
105.0	191.8	39.0	AMC 18
106.0	193.2	38.9	
107.0	194.6	38.7	
107.3	195.0	38.6	ANIK F1
107.3	195.0	38.6	ANIK F1R
108.0	196.0	38.5	
109.0	197.4	38.2	WILDBLUE 1
110.0	198.8	38.0	
111.0	200.1	37.7	
111.1	200.3	37.7	ANIK F2
112.0	201.5	37.4	
113.0	202.8	37.1	SATMEX 6
114.0	204.2	36.8	
114.9	205.3	36.5	SOLIDARIDAD
115.0	205.5	36.5	XM 4
116.0	206.8	36.1	
116.8	207.8	35.8	SATMEX 5
117.0	208.1	35.8	
118.0	209.3	35.4	
119.0	210.6	35.0	
120.0	211.8	34.6	
121.0	213.1	34.1	GALAXY 23
121.0	213.1	34.1	ECHOSTAR 9
122.0	214.3	33.7	
123.0	215.5	33.3	GALAXY 10R
124.0	216.7	32.8	
125.0	217.8	32.3	GALAXY 14
126.0	219.0	31.8	
127.0	220.1	31.3	GALAXY 13
127.0	220.1	31.3	HORIZONS 1
128.0	221.3	30.8	
129.0	222.4	30.3	GALAXY 27

Earth Station Azimuth and Elevation Table
12/23/2013

Earth Station Name SIOUX FALLS, SD
 Owner SDN COMMUNICATIONS
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 Antenna Centerline (ft/m) 9.00 / 2.74 Agl
 Satellite Arc Range 60.0 W
 143.0 W

Satellite Longitude	Azimuth (Degrees)	Elevation (Degrees)	Satellite Name
130.0	223.5	29.8	
131.0	224.6	29.2	AMC 11
132.0	225.6	28.7	
133.0	226.7	28.1	GALAXY 15
134.0	227.7	27.5	
135.0	228.8	26.9	AMC 10
136.0	229.8	26.3	
137.0	230.8	25.8	AMC 7
138.0	231.8	25.1	
139.0	232.7	24.5	AMC 8
140.0	233.7	23.9	
141.0	234.6	23.3	
142.0	235.6	22.7	
143.0	236.5	22.0	

Figure 4.1-1

