

Exhibit A

Compliance with FCC Report & Order (FCC 96-377) for the 13.75 - 14.0 GHz Band Analysis and Calculations

1. Background

This Exhibit demonstrates the extent to which the Intelsat North America LLC's satellite earth station at Clarksburg, Maryland is in compliance with FCC Report & Order 96-377. The potential interference from the earth station to U.S. Navy shipboard radiolocation operations (RADAR) and the NASA space research activities in the 13.75 - 14.0 GHz band is addressed in this exhibit. The parameters for the earth station are:

Table 1. Earth Station Characteristics

- Coordinates (NAD83): 39°13'06.6" N, 77°16'15.3" W
- Satellite Location for Earth Station: LEOP
- Frequency Band: 13.75-14.0 GHz for uplink
- Polarizations: Circular
- Emissions: 850KFXD
- Modulation: FM
- Maximum Aggregate Uplink EIRP: 85.0 dBW
- Transmit Antenna Characteristics
 - Antenna Size: 14.2 meter in Diameter
 - Antenna Type/Model: TIW
 - Gain: 64.7 dBi
- RF power into Antenna Flange: 20.3 dBW/4 kHz or 0.0 dBW/4 kHz
-3.0 dBW/4 kHz (Maximum)
- Minimum Elevation Angle:
Clarksburg, MD LEOP 5.0° Minimum
- Side Lobe Antenna Gain: $32 - 25 \cdot \log(\theta)$

Because the above uplink spectrum is shared with the Federal Government, coordination in this band requires resolution data pertaining to potential interference between the earth stations and

both Navy Department and NASA systems. Potential interference from the earth station could impact the Navy and/or NASA systems in two areas. These areas are noted in FCC Order 96-377 and consist of (1) Radiolocation and radio navigation, and (2) Data Relay Satellites.

Summary of Coordination Issues:

- 1) Potential Impact to Government Radiolocation (Shipboard Radar)
- 2) Potential Impact to NASA Data Relay Satellite Systems (TDRSS)

2. Potential Impact to Government Radiolocation (Shipboard Radar)

Radiolocation operations (RADAR) may occur anywhere in the 13.4 - 14 GHz frequency band aboard ocean going United States Navy ships. The FCC's Report & Order 96-377 allocates the top 250 MHz of this 600 MHz band to the Fixed Satellite Service (FSS) on a co-primary basis with the radiolocation operations and provides for an interference protection level of -167 dBW/m²/4 kHz.

The closest distance to the shoreline from the Clarksburg, Maryland earth station is approximately 88 km southeast toward the Atlantic Ocean. The calculation of the power spectral density at this distance is given by:

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|-----------------------------|-----------------------|
| 1. Clear Sky EIRP: | 85.0 dBW |
| 2. Carrier Bandwidth: | 850 kHz |
| 3. PD at antenna input: | -3.0 dBW/4 kHz |
| 4. Transmit Antenna Gain: | 64.7 dBi |
| 5. Antenna Gain Horizon: | FCC Reference Pattern |
| 6. Antenna Elevation Angle: | 5.0° |

The proposed earth station will radiate interference toward the ocean according to its off-axis side-lobe performance. A conservative analysis, using FCC standard reference pattern, results in off-axis antenna gains of 4.5 dBi toward the Atlantic Ocean.

The signal density at the shoreline, through free space is:

$$\begin{aligned} \text{PFD} &= \text{Antenna Feed Power density (dBW/4 kHz)} + \text{Antenna Off-Axis Gain (dBi)} - \text{Spread Loss (dBW-m}^2\text{)} \\ &= -3.0 \text{ dBW/4 kHz} + (4.5 \text{ dBi}) - 10 * \log[4\pi * (199000\text{m})^2] \\ &= -115.5 \text{ dBW/m}^2\text{/4 kHz} + \text{Additional Path Losses (~68 dB)} \end{aligned}$$

Our calculations show additional path loss of approximately 68 dB including absorption loss and earth diffraction loss for the actual path profiles from the proposed earth station to the nearest shoreline.

The calculated PFD including additional path losses to the closest shoreline location is -183.5 dBW/m²/4 kHz. This is 16.5 dB below the -167 dBW/m²/4 kHz interference criteria of R&O 96-377. Therefore, there should be no interference to the U.S. Navy RADAR from the Clarksburg earth station due to the distance and the terrain blockage between the site and the shore.

3. Potential Impact to NASA's Data Relay Satellite System (TDRSS)

The geographic location of Intelsat's Clarksburg, Maryland earth station is outside the 390 km radius coordination contour surrounding NASA's White Sands, New Mexico ground station complex. Therefore, the TDRSS space-to-earth link will not be impacted by Intelsat North America LLC's satellite earth station in Clarksburg, Maryland.

The TDRSS space-to-space link in the 13.772 to 13.778 GHz band is assumed to be protected if an earth station produces an EIRP less than 71 dBW/6 MHz in this band. The 14.2 meter earth station dish will operate in the frequency 13997.5 MHz. There is no frequency overlap with NASA TDRSS operations in the 13.772 to 13.778 GHz band, and hence there will be no interference into these operations.

4. Coordination Issue Result Summary and Conclusions

The results of the analysis and calculations performed in this exhibit indicate that compatible operation between the earth station and the U.S. Navy and NASA systems is probable. These analyses have been based on the assumption of 850 KHz bandwidth FM transmissions. Should signals with significantly lower bandwidths be transmitted, the station's total EIRP will also be reduced in order to continue to meet the Navy radiolocation and NASA space research interference criteria.

The Clarksburg, Maryland earth station will operate on 13,997.5 MHz and will not be tuned to operate at the frequencies in the 13.772 to 13.778 GHz band.

No interference to U.S. Navy RADAR operations from the Clarksburg, Maryland site earth station will occur.