

## Exhibit C

### Compliance of Operations in the 13.75 - 14.0 GHz Band with FCC Report & Order (FCC96-377)

#### 1. Background

This Exhibit is presented to demonstrate the extent to which the PanAmSat Licensee Corp. satellite earth station call sign E030096 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° 16' 37.0" N, 104° 48' 24.0" W
- Satellite Location for Earth Station: Intelsat 16 from 48.0°W to 58.0°W
- Frequency Band: 13.9975 GHz for uplink
- Polarizations: Linear and Circular
- Emissions: 850KG7D
- Modulation: Digital
- Maximum Aggregate Uplink EIRP: 85.0 dBW for all Carriers
- Transmit Antenna Characteristics
  - Antenna Size: 11.0 meters in Diameter
  - Antenna Type/Model: Vertex
  - Gain: 62.5 dBi
- RF power into Antenna Flange: 22.5 dBW or 23.2 dBW/ MHz  
or -0.8 dBW/4 kHz (Maximum)
- Minimum Elevation Angles:  
Castle Rock, CO 16.7° at 112.5° Az. at 48.0° W.  
24.3° at 120.7° Az. at 58.0° W.
- Side Lobe Antenna Gain:  $32 - 25 \cdot \log(\theta)$

Because the above uplink spectrum is shared with the federal government, analysis of potential interference between the earth station and both Navy Department and NASA systems is required. 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 on United States Navy ships. The FCC 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  $-167 \text{ dBW/m}^2/4 \text{ kHz}$ .

The closest distance to the shoreline from the Castle Rock, CO earth station is approximately 1350 km Southwest toward the Pacific Ocean.

Therefore, there should be no interference to the U.S. Navy radars from the Castle Rock, CO earth station given the distance and terrain blockage to the shore.

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

The geographic location of the earth station in Castle Rock, CO is outside the 390 km radius coordination contour surrounding NASA's White Sands, NM ground station complex. Therefore, the TDRSS space-to-earth link will not be impacted by the PanAmSat earth station in Castle Rock, CO.

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 11.0 meter earth station that is the subject of this application will not radiate in this band, as the proposed transmissions will be limited to the 13997.5 GHz frequency.

Therefore, there will be interference to the TDRSS space-to-space link.

### **4. Summary and Conclusions**

The results of the analysis and calculations performed in this exhibit indicate compatible operations between the PanAmSat earth station and the U.S. Navy radiolocation systems.

Similarly, there will be no interference above permissible FCC levels into NASA's TDRSS systems, as the intended operations are outside of the 13772.0 to 13778.0 MHz frequency range.