Exhibit For
MTN License Corp.
Holmdel, New Jersey
Alpha Satcom 9 Meter Earth Station

Compliance with FCC Report & Order (FCC96-377) for the 13.75 - 14.0 GHz Band
Analysis and Calculations

1. Background

This Exhibit is presented to demonstrate the extent to which the licensed MTN License Corp. (MTN) satellite earth station (E160163), which is being modified in Holmdel, New Jersey, is in compliance with FCC REPORT & ORDER 96-377. The potential interference from the earth station to US 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): 40° 23’ 42.0” N, 74° 10’ 24.0” W
- Satellite Location for Earth Station: 50° W
  Intelsat (IS-29e)
- Frequency Band: 13.75-14.0 GHz for uplink
- Polarizations: Linear and Circular
- Emissions: 58K0G7W
  40M5G7W
- Modulation: Digital
- Maximum Aggregate Uplink EIRP: 53.8 dBW for the 58 kHz Carriers
  71.8 dBW for the 40.5 MHz Carriers
- Transmit Antenna Characteristics
  - Antenna Size: 9.0 meters in Diameter
  - Antenna Type/Model: Alpha Satcom
  - Gain: 60.3 dBi
- RF power into Antenna Flange: 58 kHz
  -6.5 dBW,
  or -18 dBW/4 kHz (Maximum)

40.5 MHz
11.5 dBW
or -28.5 dBW/4 kHz (Maximum)

- Minimum Elevation Angles:
  Holmdel, N.J. 37.1° @ 145.3° Az. Intelsat (IS-29e) at 50° W

- Side Lobe Antenna Gain: 32 - 25*log(θ)

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 station and both Navy Department and NASA systems. Potential interference from the earth station could impact with the Navy and/or NASA systems in two areas. These areas are noted in FCC Report and Order 96-377 dated September 1996, and consist of (1) Radiolocation and radio navigation, (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 Federal Communication Commission (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 dBW/m^2/4 kHz.

The closest distance to the shoreline from the Holmdel, New Jersey earth station is approximately 16.9 km east toward the New Jersey coastline. The calculation of the power spectral density at this distance is given by:

	58 kHz	40.5 MHz
1. Clear Sky EIRP:	53.8 dBW	71.8 dBW
2. Carrier Bandwidth:	58 kHz	40.5 MHz
3. PD at antenna input: dBW/4 kHz	-18	-28.5
4. Transmit Antenna Gain:	60.3 dBi	
5. Antenna Gain Horizon:	FCC Reference Pattern	
6. Antenna Elevation Angle :	37.1°	

The earth station will radiate interference toward the New Jersey coastline according to its off-axis side-lobe performance. A conservative analysis, using FCC standard reference pattern, results in off-axis antenna gains of -10 dBi toward the coastline.

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

58 kHz Carriers
PFD = Antenna Feed Power density (dBW/4 kHz) + Antenna Off-Axis Gain (dBi) – Spread Loss (dBw-m^2).

= -18 dBw/4 kHz + (-10) dBi – 10*log[4Π*(16900m)^2]
= -123.5 dBW/m^2/4 kHz + Additional Path Losses (~81.0 dB)
= -204.5 dBW/m^2/4 kHz

40.5 MHz Carriers
PFD = Antenna Feed Power density (dBW/4 kHz) + Antenna Off-Axis Gain (dBi) – Spread Loss (dBw-m^2).

= -28.5 dBw/4 kHz + (-10) dBi – 10*log[4Π*(16900m)^2]
= -134.0 dBW/m^2/4 kHz + Additional Path Losses (~81 dB)
= -215.0 dBW/m^2/4 kHz

Our calculations show additional path loss of approximately 81 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 –204.5 dBW/m^2/4 kHz for the 58 kHz carriers. The calculated PFD including additional path losses to the closest shoreline location is –215.0 dBW/m^2/4 kHz for the 40.5 MHz carriers. This is 37 dB (58 kHz) and 48 dB (54 MHz) below the –167 dBW/m^2/4 kHz interference criteria of R&O 96-377. Therefore, there should be no interference to the US Navy RADAR from the Holmdel 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 the MTN earth station in Holmdel, New Jersey 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 the MTN earth station in Holmdel, New Jersey.

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 9 meter earth station antenna will have an EIRP less than 71 dBW/6 MHz for the 58 kHz carriers in this band.

The EIRP for the 58 kHz carriers is 53.8 dBW. The equivalent EIRP per 6 MHz segment will be 53.7 dBW/6 MHz. Therefore, there should not be interference to the TDRSS space-to-space link for the 58 kHz carriers.

For the 40.5 MHz carriers, the EIRP of 71.8 dBW, will equate to an EIRP per 6 MHz of 65.0 dBW/6 MHz. Since this level will also be less than the 71.0 dBW/6 MHz threshold, there will not be interference to the TDRSS space-to-space link from the 40.5 MHz carriers.

4. Coordination Issue Result Summary and Conclusions

The results of the analysis and calculations performed in this Exhibit indicate that compatible operations between the earth station at the Holmdel, New Jersey facility and the US Navy and NASA systems space-to-earth link and NASA systems space-to-space link (13772.0 to 13778.0 MHz) will be permitted for the 36 MHz carriers.