MSV
Mobile Satellite Ventures

Exhibit A

I. Overview

Mobile Satellite Ventures Subsidiary LLC ("MSV") requests an experimental Special Temporary Authority ("STA") to conduct a limited test and demonstration of the Ancillary Terrestrial Component ("ATC") portion of its next-generation Mobile Satellite System ("MSS") using L band spectrum coordinated for MSV and Mobile Satellite Ventures (Canada) Inc.[1] Among other things, MSV will use the STA to test and demonstrate the provision of a variety of key broadband communications applications for public safety users. These will include transmissions of video and accessing of CAD drawings by firefighters on the scene of a fire, transmissions of video and monitoring data by an ambulance at the scene of an auto accident, use of a surveillance camera by police, transmissions of Amber Alerts, and coordination of the response to a chemical spill. *See* Exhibit D. Based on the public interest benefit of the rapid development of such public safety services, MSV seeks expedited processing of this application.

The WiMAX system to be tested and demonstrated consists of six (6) base station sites and up to 100 portable and fixed customer premise equipments (CPE). MSV will locate the base station sites within the vicinity of the Reston and McLean, Virginia areas. CPEs will operate within a 5 mile radius of the Reston Town Center site, defined below.

The proposed experimental operations are neither "reverse-band" nor "forward-band," as those terms have been defined by the FCC.[2] Rather, the proposed experimental network is based on the WiMAX 802.16d standard and uses the Time Division Duplex (TDD) access scheme.[3] With TDD, both the base transceiver stations (BTS) and CPE

[1] These frequencies do not include any of the "disputed" (also known as "loaned") frequencies between MSV and Inmarsat, as discussed in MSV's June 20, 2006 letter. *See* Letter from Jennifer A. Manner, MSV, to Ms. Marlene H. Dortch, FCC (June 20, 2006).

[2] The FCC has explained that with "reverse band" operations, mobile terminals transmit in the downlink band and base stations transmit in the uplink band. With "forward band" operations, mobile terminals transmit in the uplink band and base stations transmit in the downlink band. *See Flexibility for Delivery of Communications by MSS Providers, Report and Order*, IB Docket No. 01-185, 18 FCC Rcd 1962 (February 10, 2003) ("*ATC Order*"), at Appendix C1 at § 1.0.

[3] MSV currently holds a license to operate an Ancillary Terrestrial Component (ATC) in the L band, but this license does not yet include authority to operate using the WiMAX air interface. MSV understands that a grant of this experimental STA is without prejudice to the Commission's consideration of MSV's pending request to add the WiMAX air interference to its ATC license. *See* MSV, Application, File Nos. SAT-MOD-20051104-00212, SAT-MOD-20051104-00211, SES-MOD-20051110-01561

transmit and receive in the same frequency band. The system will use carriers occupying the following frequency ranges:

CPE and BTS Frequencies (MHz)		
From	**To**	**Center**
1552.500	**1556.000**	**1554.250**
1652.620	**1656.120**	**1654.370**
1656.120	**1659.620**	**1657.870**

MSV has completed all necessary coordination within its MSS system to avoid interference to its existing MSS customers. MSV has contacted AFTRCC to coordinate with any nearby Mobile Aeronautical Telemetry facilities and will update the application when that process is complete.

The test and demonstrations will entail terrestrial transmissions only; there will be no satellite operations pursuant to this experiment. **The equipment to be operated pursuant to this STA is strictly for testing and demonstration purposes only and will not be deployed commercially.**

MSV is in the process of evaluating and developing the technologies for its hybrid MSS-ATC network. The key objectives of this trial are (i) validation of link budget validation; (ii) assessment of system performance (e.g.. throughput); and (iii) verification of applications.

The CPE will be of two types: (i) a WiNetworks wireless router with WiMax capability added, called the "Gateway" CPE; and (ii) a Kyocera PCMCIA card that can be inserted into conventional personal computers.

Five of the six BTS installations will be on buildings, and the sixth will be on a tower, the Wireless Communications Tower (Columbia Gas). While the tip of the antenna on the tower will be 53.6 meters above ground level, the top of the tower is 58 meters above ground level. Therefore, the addition of the antenna for the MSV trial does not increase the height of the existing tower and poses no additional threat to aviation. BTS will be installed at the following locations:

(November 4, 2005); MSV, Application, File No. SAT-MOD-20070117-00012 (January 17, 2007).

Site name	Site address	Antenna Base Elev (AGL)	Lat	Long.
Reston Town Center	1760 Reston Parkway, Reston, VA 20190	19.2	38-57-51.78N	77-21-16.50W
Worldgate Marriott Hotel	13101 Worldgate Drive, Herndon, VA 20170	43.1	38-57-34.26N	77-24-00.60W
Reston International Center	11800 Sunrise Valley Drive, Reston, VA 20191	49.9	38-56-58.20N	77-21-20.70W
Parkridge Five	10802 Parkridge Blvd, Reston, VA 20181	20.9	38-56-42.59N	77-18-53.95W
U.S. Geological Survey (USGS)	12201 Sunrise Valley Drive, Reston, VA 20192	34.6	38-56-54.50N	77-22-05.94W
Wireless Communications Tower (Columbia Gas)	11000 Route 7; Dranesville, VA Site Elevation: 107m	51.8m	38-59-21.00N	77-19-35.00W

Each site will use separate antennas for transmit and receive functions. Each site will transmit in each of three azimuths: 0° (North), 120°, and 240°. Therefore, each of the six (6) sites will be equipped with six antennas and three base transceivers, for a total of 36 antennas and 18 base transceivers.

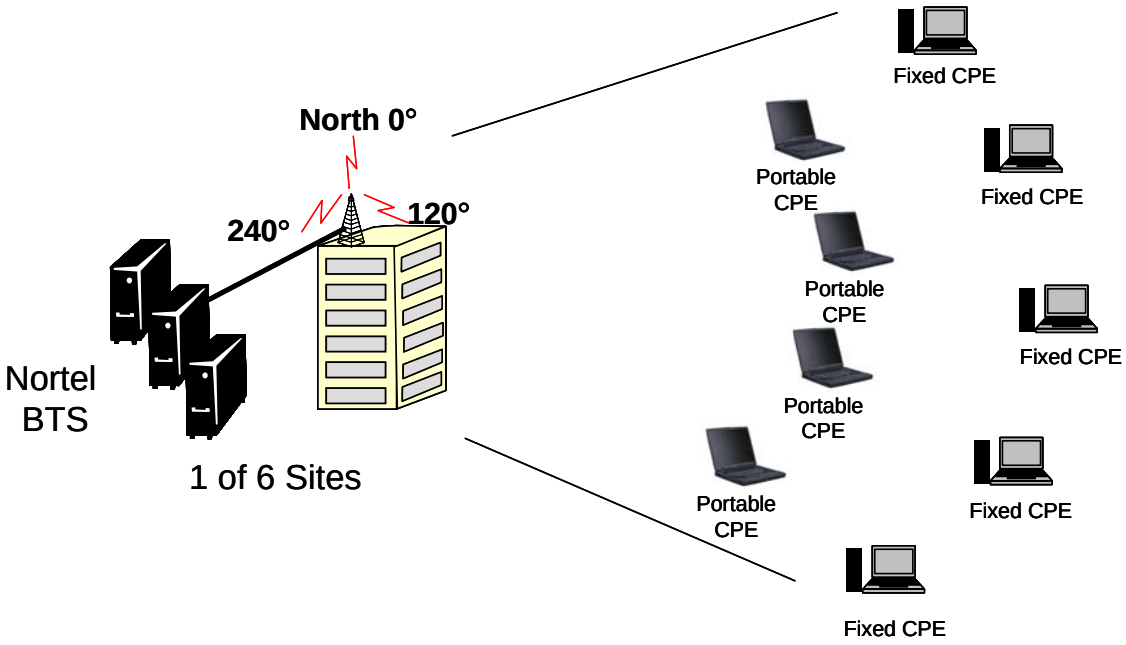

Figure 1: Network Overview

II. Interference Analysis

Each base transceiver or CPE will transmit a 3.5 MHz wide carrier centered at 1554.25, 1654.37, or 1657.87 MHz. The interference considerations are different for the 1.5 GHz frequency and the 1.6 GHz frequencies and are considered separately. As discussed below, the proposed experimental TDD network will cause no more interference than that permitted by the forward-band ATC network permitted by the FCC's rules.

A. Transmissions in the 1.6 GHz Band

1. Base Station Transmissions in the 1.6 GHz Band

Each of the three base transceivers at each of the six locations will transmit in one 60º sector. The peak EIRP of each base transceiver will be 23.9 dBW, which is outside the range (12-16 dBW) that MSV's authorized and existing satellite-only mobile earth terminals ("METs") operate. However, as shown below, the radiated power spectral density from the BTS will be much lower than that of MSV's existing METs because of the difference in bandwidth of the signals (3500 kHz for the base transceivers and 6 kHz for the existing METs). Further, the antennas will be mounted with a main beam down-tilt of 5° so that the EIRP toward the horizon will be lower, 17.4 dBW, and the EIRP above the horizon will be lower still.

	MSV MSS MET	BTS (per Sector)
EIRP (dBW)	16	23.9
Bandwidth (kHz)	6	3500
EIRP Density (dBW/Hz)	-21.8	-41.5

Therefore, the BTS transmissions in the 1.6 GHz band have less potential for causing interference to satellite receivers than do MSV's currently authorized satellite METs.

In addition, base transceivers transmitting in the 1.6 GHz band will meet the following out-of-channel emission (OOCE) limits.

- The EIRP density will not exceed -100 dBW/MHz in the 1559-1610 MHz band which is consistent with the out-of-band emission limit that MSV previously committed to meet and which is more stringent than the limits specified in the Commission's rules.[4]

[4] *See* MSV and U.S. GPS Industry Council *ex parte* presentation, IB Docket No. 01-185 (July 17, 2002); MSV *ex parte* presentation, IB Docket No. 01-185 (July 29, 2002); Application of Mobile Satellite Ventures Subsidiary LLC, File No. SAT-MOD-20031118-00333 et al. (Nov. 18, 2003); *Mobile Satellite Ventures Subsidiary LLC, Order and Authorization*, DA 04-3553 (Chief, International Bureau, November 8, 2004).

- There is 2.5 MHz separating the low edge of the base transceiver carrier and the high edge of the nearest Inmarsat spectrum. The base transceiver will meet an EIRP density of -90.3 dBW/4 kHz into that adjacent spectrum.

2. CPE Transmissions in the 1.6 GHz Band

The BTS is expected to have a range of less than 1.0 kilometer. Thus, the CPEs will be within approximately that distance when operating with the BTS. The CPEs will operate in time-division duplex (TDD) mode. The CPE will transmit a 3.5 MHz wide OFDM signal centered at 1654.37 or 1657.870 MHz and receive the same type of signal at the same frequency from the terrestrial BTS. The peak EIRPs of the mobile CPEs in terrestrial mode will be -9.0 dBW for the PCMCIA card and -1.0 dBW for the Gateway, both of which are well below the power of MSV's authorized and existing satellite-only METs (12-16 dBW). Further, the radiated power spectral density from the mobile CPE will be much lower than that of MSV's existing satellite METs because of the difference in bandwidth of the signals (3500 kHz for the mobile CPE and 6 kHz for the existing METs).

Therefore, the CPE transmissions in the 1.6 GHz band have less potential for causing interference to satellite receivers than do MSV's currently authorized METs.

With respect to OOCE limits, CPE transmitting in the 1.6 GHz band will comply with the OOCE limits specified in the FCC's rules for ATC mobile terminals transmitting in the 1.6 GHz band of -67.0 dBW/4 kHz. 47 C.F.R. § 27.253(g)(1). Further, the EIRP density will not exceed -90 dBW/MHz in the 1559-1605 MHz, increasing linearly to no more than -66 dBW/MHz at 1610 MHz thus satisfying the out-of-band emission limit that MSV previously committed to meet, which is more stringent than the limits specified in the Commission's rules.

B. Transmissions in the 1.5 GHz Band

1. Base Station Transmissions in the band 1.5 GHz Band

Pursuant to the FCC's rules, MSV is permitted to operate an unlimited number of L band ATC base transceivers stations in the 1.5 GHz band at a maximum EIRP of 31.9-10*log (number of carriers) dBW/200 kHz, per sector, for each carrier.[5] Under the proposed experimental operation, MSV will operate a total of 18 transmitters in the 1.5 GHz band using its licensed frequencies at temporary fixed locations at an EIRP well below that permitted by the FCC's rules for ATC base stations. Each of the three base transceivers at each of the six locations will transmit in one 60º sector only. The peak

[5] *See* 47 C.F.R. § 25.253(d)(1); *see also Mobile Satellite Ventures Subsidiary LLC, Order and Authorization*, DA 04-3553 (Chief, International Bureau, November 8, 2004) ("*MSV ATC Decision*"), at ¶ 83.

EIRP of each BTS will be 17.4 dBW. Thus, the EIRP density will be 5 dBW/200 kHz, well below the 31.9 dBW/200 kHz limit.

With respect to OOCE limits, BTS transmitting in the 1.5 GHz band will comply with the OOCE limits specified in the FCC's rules for ATC BTS transmitting in the 1.5 GHz band.

- The power density into the base transceiver antenna will not exceed -57.9 dBW/MHz in the adjacent channel. 47 C.F.R. § 27.253(b).

- The EIRP density will not exceed -100 dBW/MHz in the 1559-1610 MHz, thus satisfying the out-of-band emission limit that MSV previously committed to meet, which is more stringent than the limits specified in the Commission's rules.

2. CPE Transmissions in the band 1.5 GHz[6]

The BTS is expected to have a range of less than 1.0 kilometer and thus the CPEs will be within approximately that distance when operating with the BTS. The CPEs will operate in time-division duplex (TDD) mode. The CPE will transmit a 3.5 MHz wide OFDM signal centered at 1554.250 MHz and receive the same type of signal on the same frequency from the terrestrial BTS. The peak EIRPs of the mobile CPE in terrestrial mode will be -9 dBW for the PCMCIA card and -1.0 dBW for the Gateway. Thus, the total aggregate EIRP from the 100 CPEs in the trial *if* all were to transmit at the same time (which is not likely to occur) would be 11 dBW, much less than that of a single BTS. Moreover, the testing will occur in only a limited area, within five miles of the Reston Town Center site.

In addition to the foregoing, CPE transmitting in the 1.5 GHz band will comply with the following limits:

- CPE transmitting in the 1.6 GHz band will comply with the OOCE limits specified in the FCC's rules for ATC mobile terminals transmitting in the 1.6 GHz band of -67.0 dBW/4 kHz. 47 C.F.R. § 27.253(g)(1).

- The EIRP density will not exceed -90 dBW/MHz in the 1559-1610 MHz, which is consistent with the out-of-band emission limit that MSV previously committed to meet and which is more stringent than the limits specified in the Commission's rules.

- MSV's CPE and BTS will not transmit in the 1541.5-1547.5 MHz band.

- MSV CPE OOCEs from terminals into the 1452-1525 MHz band will not exceed the limit of -90.3 dBW/4 kHz.

[6] MSV notes that the Office of Engineering and Technology previously authorized MSV to conduct CPE transmissions in the 1.5 GHz band. *See* WC9XRS.

- There will be no direct terminal-to-terminal communications without the use of a base station.

- MSV will coordinate any BTS whose service radius extends to 1 km or less from a SARSAT receive station operating in the 1544-1555 MHz band. The nearest SARSAT receive station is about 33 km away.

- MSV will coordinate any BTS whose service radius extends to 1 km or less from a Mobile Aeronautical Telemetry receive site. However, the nearest Mobile Aeronautical Telemetry site is more than 100 km away.

III. Other

Contemplated Hours of Operation. The BTS and CPE will be capable of operating 24 hours per day and 7 days per week.

Given the limited nature of this testing, MSV is confident that this experimental operation will not result in interference to other spectrum users. MSV will also ensure that this testing does not result in interference to its existing customers. MSV will keep records of the dates and times when operations are conducted pursuant to this experimental authority.

MSV acknowledges that operations pursuant to an experimental STA are strictly on a non-harmful interference basis. MSV's Network Operations Center ("NOC") can be contacted 24 hours/7 days per week in the event of interference concerns at the following address and number:

Mobile Satellite Ventures LP
10802 Parkridge Boulevard
Reston, VA 20191
1-800-216-6728

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