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May 24, 2004

Via Hand Delivery
Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Re: Mobile Satellite Ventures Subsidiary LLC
File No. SAT-AMD-20040209-00014 (replacement satellite application)
File No. SAT-AMD-20031118-00335 (replacement satellite application)

Dear Ms. Dortch:

On April 23, 2004, the International Bureau ("Bureau") informed Mobile Satellite Ventures Subsidiary LLC ("MSV") that the two-degree spacing analysis required by Section 25.140(b)(2) of the Commission's rules to accompany applications for Fixed Satellite Service ("FSS") satellites is also required to be submitted with MSV's above-captioned application for a replacement Mobile Satellite Service ("MSS") satellite that will use Planned Ku-band frequencies for feeder links.[1] The letter directed MSV to supplement its pending replacement application with this analysis by May 24, 2004.

In compliance with the Bureau's request, MSV hereby files this supplement to its pending replacement application to include the two-degree spacing analysis.

[1] *See* Letter from Robert G. Nelson, FCC, to Lon C. Levin, MSV, File No. SAT-AMD-20031118-00335 (April 23, 2004). At the same time as it requested the additional information, the Bureau also dismissed MSV's February 9, 2004 amendment to its pending MSS replacement application for failing to include this analysis. *See* MSV, Amendment, File No. SAT-AMD-20090209-00014 (filed February 9, 2004); Letter from Thomas Tycz, FCC, to Lon C. Levin, MSV, File No. SAT-AMD-20040209-00015, DA 04-1095 (April 23, 2004). MSV is filing today for reconsideration of that decision. Submission of this interference analysis is not a concession by MSV that an interference analysis was required.

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Please direct any questions regarding this matter to the undersigned.

Very truly yours,

David S. Konczal

cc: Robert Nelson

MSV-1 Two-degree Spacing Interference Analysis

The MSV feederlinks will operate in the Ku-band frequencies defined in Appendix 30B of the ITU Radio Regulations. In the Appendix 30B plan, the nearest satellite longitudes to 101°W are 104°W (Ecuador) and 98.2°W (Aruba).

The only satellite within 10° with ITU filings is MSAT-1 (Canada) at 106.5°W. The Canadian allocation at 106.5°W is the nearest one that has been brought into use.

Thus, no satellites operate 2° away from 101°W. Therefore, the interference analysis has been performed assuming that a satellite with Ku-band carrier and antenna parameters identical to those of MSV-1 operates at 99°W. To broaden the applicability of the analysis, parameters from the pending Boeing and Iridium applications at 120°W and 87.5°W, respectively, have been included in the analysis.[1] Both Boeing and Iridium satellites are widely separated from MSV-1, but for the purpose of the analysis they will be considered to be located 2° away from 101°W. All MSV-1, Boeing, and Iridium carriers are digital.

Carriers and Feederlink Earth Station Characteristics

The carriers and Earth station characteristics defined in the MSV, Boeing, and Iridium filings are shown in Table 1. Since per user rather than per carrier values were provided for the Boeing and Iridium networks, and several carrier bandwidths are used, C/I calculations will be performed based on carrier densities.

Table 1 MSV, Boeing, and Iridium Carriers

Network	MSV	MSV	MSV	MSV	MSV	Boeing*	Iridium*
Position deg. W.L.	101	101	101	101	101	120	87.5
Carrier	WCDMA	cdma2000	GMR	MSAT Voice	MSAT Data	cdma2000	cdma2000
Ku Band Uplink EIRP per carrier (dBW)	71.7	66.7	61.0	46.7	40.0	29.3	29.3
Uplink BW (kHz)	5000	1250	200	4.8	1.2	9.6	9.6
Uplink EIRP Density dBW/Hz	**4.7**	**5.8**	**8.0**	**9.9**	**9.2**	**-10.4**	**-10.4**
Ku Band Downlink EIRP (dBW)	34.5	34.7	20.5	1.7	-10.3	10	10
Downlink BW (kHz)	5000	1250	50	4.8	1.2	4.8	4.8
Downlink EIRP Density dBW/Hz	**-32.5**	**-26.2**	**-26.5**	**-35.1**	**-41.1**	**-26.8**	**-26.8**

* Boeing and Iridium characteristics were provided on a per-user rather than per-carrier basis.

Relevant feederlink earth station characteristics are shown in Table 2. Side lobe antenna gain is calculated using an angle of 2.2° because that is the Topocentric angle corresponding to 2° orbital separation.

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[1] Iridium, Application for Modification, File No. SAT-MOD-20030828-00286 (August 28, 2003); Boeing, Amendment, File No. SAT-AMD-20030827-00241 (August 27, 2003).

Table 2 – Feederlink Earth Station Antenna Characteristics.

	MSV	Boeing	Iridium
Antenna Transmit Gain (dBi)	61.1	57.9	61.7
Side lobe Pattern	29-25Log()	27-25log()	27-25log()
Side lobe Gain @ 2.2° Topocentric Separation	20.4	18.4	18.4
Delta Gain Main -Side Lobe (dB)	**40.7**	**39.5**	**43.3**
Antenna Receive Gain (dBi)	60.1	56.6	60.2
Side lobe Pattern	29-25Log(θ)	27-25Log(θ)	27-25Log(θ)
Side lobe Gain @ 2.2° Topocentric Separation	20.4	18.4	18.4
Delta Gain Main -Side Lobe (dB)	**39.7**	**38.2**	**41.8**

Uplink Analysis
Table 3 shows the results of the uplink C/I calculations for all pair-wise combinations of carriers and networks. The C/I values are calculated using the equation:

$C/I_{up} = C_{oVup} - C_{oIup} + \Delta G_{tI}$

Where:

C/I_{up} = Uplink carrier to interference ratio of the victim carrier caused by the interfering carrier

C_{oVup} = EIRP density of the victim carrier toward the victim satellite

C_{oIup} = EIRP density of the interfering carrier in the main lobe of its transmitting antenna

ΔG_{tI} = Difference in gain between the main lobe interfering antenna gain and the gain toward the victim satellite.

Table 3 – Uplink Interference Calculation Results

Victim C/I Values (dB)

Interferer	MSV WCDMA	MSV CDMA	MSV GMR	MSV MSAT Voice	MSV MSAT Data	Boeing	Iridium
MSV WCDMA	40.7	41.8	44.0	45.9	45.2	24.4	28.2
MSV CDMA	39.6	40.7	42.9	44.8	44.1	23.3	27.1
MSV GMR	37.3	38.4	40.7	42.6	41.9	21.1	24.9
MSV MSAT Voice	35.4	36.5	38.8	40.7	40.0	19.2	23.0
MSV MSAT Data	36.1	37.2	39.4	41.3	40.7	19.9	23.7
Boeing	55.7	56.8	59.1	60.9	60.3	39.5	43.3
Iridium	58.3	59.4	61.7	63.5	62.9	43.3	43.3

From the Table 3, all carrier combinations result in very low interference. The worst case C/I is 19.2 dB, which corresponds to a ΔT/T value of 1.2%, well below the coordination threshold value.

Downlink Analysis

Table 4 shows the results of the downlink C/I calculations for all pair-wise combinations of carriers and networks. The C/I values are calculated using the equation:

$$C/I_{down} = C_{oVdown} - C_{oIdown} + \Delta G_{rI}$$

Where:

C/I_{down} = Downlink carrier to interference ratio of the victim carrier caused by the interfering carrier

C_{oVdown} = EIRP density of the victim satellite carrier toward its earth station

C_{oIdown} = EIRP density of the interfering satellite carrier toward the victim earth station

ΔG_{tI} = Difference in gain between the main lobe victim antenna gain and the gain toward the interfering satellite.

Table 4 – Downlink Interference Calculation Results

Victim C/I Values

Interferer	MSV WCDMA	MSV CDMA	MSV GMR	MSV MSAT Voice	MSV MSAT Data	Boeing	Iridium
MSV WCDMA	39.7	46.0	45.7	37.1	31.1	43.9	47.5
MSV CDMA	33.4	39.7	39.4	30.8	24.8	37.6	41.2
MSV GMR	33.6	39.9	39.7	31.0	25.1	37.9	41.5
MSV MSAT Voice	42.2	48.5	48.3	39.7	33.7	46.5	50.1
MSV MSAT Data	48.2	54.5	54.3	45.6	39.7	52.5	56.1
Boeing	33.9	40.2	40.0	31.3	25.4	38.2	41.8
Iridium	36.0	42.3	42.1	33.4	27.5	41.8	41.8

From the Table 4, all carrier combinations result in very low downlink interference. The worst case C/I is 19.2 dB, which corresponds to a ΔT/T value of 0.33%, well below the coordination threshold value of 6%..

CERTIFICATION

I, Richard O. Evans, Senior Engineer of Mobile Satellite Ventures Subsidiary LLC ("MSV"), certify under penalty of perjury that:

I am the technically qualified person with overall responsibility for preparation of the information contained in the foregoing. I am familiar with the requirements of the Commission's rules, and the information contained therein is true and correct.

Executed on May 24, 2004

Richard O. Evans
Senior Engineer