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Federal Communications Commission
Office of Secretary

August 5, 2005

BY HAND DELIVERY

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

Re: Mobile Satellite Ventures Subsidiary LLC
File Nos. SAT-LOA-19980702-00066, SAT-AMD-20001214-00171, SAT-AMD-20010302-00019, SAT-AMD-20031118-00335, SAT-AMD-20040209-00014 and SAT-AMD-20040928-00192
Call Sign S2358

Dear Ms. Dortch:

On June 22, 2005, EchoStar Satellite L.L.C. ("EchoStar") filed a Petition for Clarification and/or Reconsideration ("EchoStar Petition") of the International Bureau's decision to grant Mobile Satellite Ventures Subsidiary LLC's ("MSV's") above-referenced application and associated amendments to operate an L-band Mobile Satellite Service ("MSS") satellite with extended Ku-band feeder links at the 101° W.L. orbit location.[1]

In EchoStar's Reply to MSV's Opposition to EchoStar's Petition, EchoStar indicated that it would soon be filing an Application for Review of the International Bureau's recent decision denying an EchoStar application to operate at the 101° W.L. orbital location.[2] EchoStar stated that

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[1] *See In the Matter of Mobile Satellite Ventures Subsidiary LLC,* DA 05-1492 (rel. May 23, 2005) ("*MSV Order*").

[2] *See In the Matter of EchoStar Satellite LLC*, DA 05-1955 (rel. July 6, 2005) ("*EchoStar Order*"). *See* EchoStar Reply, filed in File No. SAT-LOA-19980702-00066 *et al.* (July 21, 2005). This Reply is the subject of a pending Motion to Strike filed by MSV, and Opposition filed by EchoStar. *See*
(Continued…)

accompanying that forthcoming Application for Review would also be a preliminary sharing analysis between EchoStar and MSV that the International Bureau may also find relevant in its consideration of the EchoStar Petition. EchoStar indicated that it would provide a copy of this sharing analysis for the record in the above-captioned proceedings when the analysis was completed and submitted with EchoStar's Application for Review.[3]

Accordingly, enclosed as Attachment A to this letter, please find a copy of the following sharing analysis for inclusion in the record of this proceeding: "MSV-EchoStar Sharing Analysis," prepared by Dr. Richard J. Barnett, Telecomm Strategies Inc.

Please let us know if you have any questions or would like to discuss this issue further.

Sincerely,

Philip L. Malet/MAP

Pantelis Michalopoulos
Philip L. Malet

Counsel to EchoStar Satellite L.L.C.

cc: Donald Abelson, International Bureau
Cassandra Thomas, International Bureau
Fern Jarmulnek, International Bureau
Robert Nelson, International Bureau
Jennifer Manner, Vice President, Regulatory Affairs, MSV (by first class mail, postage prepaid)
Bruce D. Jacobs and David S. Konczal, Counsel to MSV (by first class mail, postage prepaid)
David Bair, Vice President, Project Operations, EchoStar (by first class mail, postage prepaid)

MSV Motion to Strike Reply of EchoStar Satellite L.L.C., filed in SAT-LOA-19980702-00066 *et al.* (Aug. 1. 2005); *see* EchoStar Opposition to Motion to Strike, filed in SAT-LOA-19980702-00066 *et al.* (Aug. 5, 2005).

[3] EchoStar Reply at 4. While EchoStar in its Reply indicated that it would be filing this sharing analysis with its forthcoming Application for Review, it ultimately decided to file a Petition for Reconsideration of the *EchoStar Order* instead of an Application for Review. Accordingly, the sharing analysis was attached to this Petition for Reconsideration. *See* Petition for Reconsideration, filed in File No. SAT-LOA-20040210-00015 *et al.* (Aug. 5, 2005).

ATTACHMENT A

MSV-EchoStar Sharing Analysis

A.1 Introduction

MSV's planned use of the extended Ku-band at 101°W.L. for its MSS feeder links is compatible with EchoStar's FSS use of the same frequencies and same orbital location for spot beam DTH services.[1] Sharing of the frequencies would be based on geographic separation of the spot beams in both systems. Such an arrangement would constitute efficient use of the Ku-band FSS spectrum.

The analysis presented below is intended to demonstrate the feasibility of this sharing arrangement between MSV and EchoStar. It is not intended to derive the final sharing conditions, which are best established through bilateral coordination between the parties.

A.2 MSV's Ku-Band Feeder Links

In the November 2003, February 2004 and September 2004 Amendments to its FCC application for a next generation MSS satellite, MSV has provided scant information concerning its Ku-band feeder links.[2] MSV showed an illustrative Ku-band feeder link beam with broad North American coverage, but also stated that "… Ku-band feeder link spot beams may also be formed by the satellite in the event spatial frequency reuse of the available feeder link spectrum

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[1] The Ku-band frequency ranges under consideration here are those in the ITU Appendix 30 B Plan, which are 10.7-10.95 GHz and 11.2-11.45 GHz downlink, and 12.75-13.25 GHz uplink.

[2] *See* Applications of Mobile Satellite Ventures Subsidiary LLC, File No. SAT-AMD-20031118-00335 (Nov. 18, 2003); File No. SAT-AMD-20040209-00014 (Feb. 9, 2004); File No. SAT-AMD-20040928-00192 (Sept. 28, 2004).

becomes necessary ....”[3]. More recently MSV has stated that it intends to use an ATC self-interference cancellation system in its next generation satellite in order to protect its MSS operations from its own ATC operations.[4] MSV has stated that its interference cancellation scheme will “... require MSV to employ greater re-use of its feeder link frequencies than it would otherwise ... MSV will accomplish this by deploying additional gateway earth stations at a relatively modest additional cost ....”[5]

To date MSV has not clarified the details of its feeder link design, such as the design of the spot beam coverage or the number and location of feeder link earth stations. Its authorization, however, expressly is conditioned on operating up to two feeder link earth stations with its new satellite. Currently MSV is authorized by the FCC to operate only two feeder link earth stations located in Reston, VA and Alexandria, VA. However, these two locations are too close to each other to allow for spatial re-use of the feeder link frequencies using satellite spot beams. Therefore, in the sharing analysis below it is assumed that one of the feeder link spot beams will point towards the Washington DC area (and hence be used with the Reston and/or Alexandria earth stations), and a second spot beam will be pointed towards a distant location, which was arbitrarily selected as being Houston, TX. Candidate spot beam coverage to implement this scheme is shown in Figure 2-1 below.[6]

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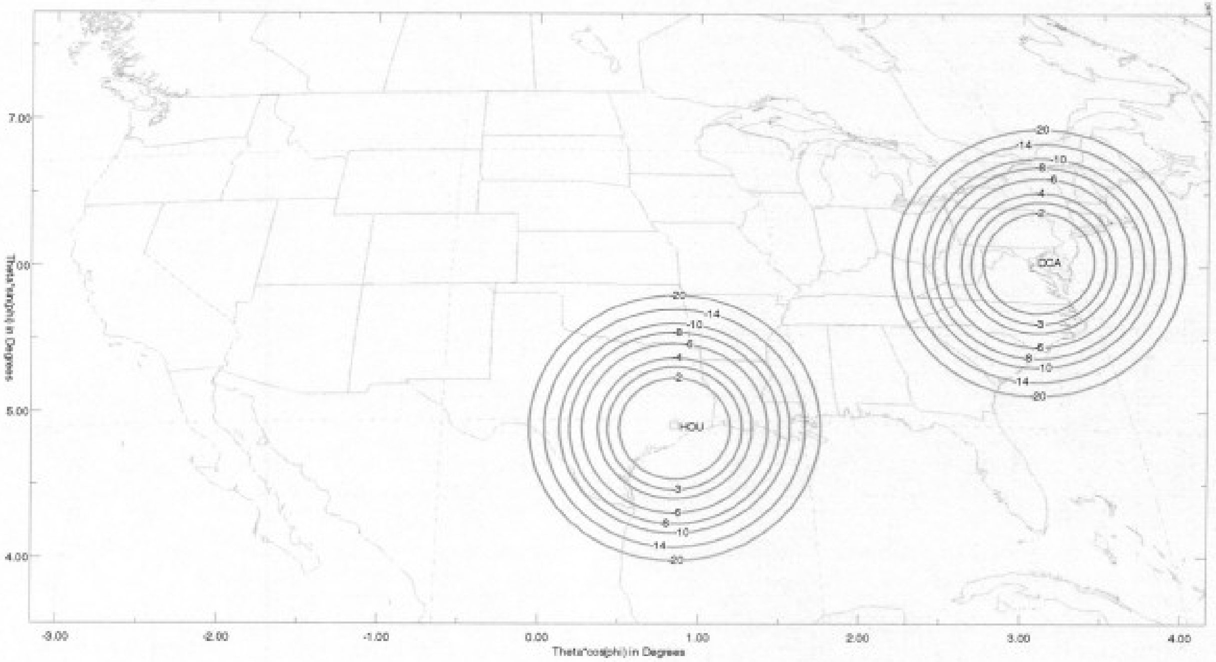
3 *See* Applications of Mobile Satellite Ventures Subsidiary LLC, File No. SAT-AMD-20031118-00335 (Nov. 18, 2003); File No. SAT-AMD-20040209-00014 (Feb. 9, 2004).

4 *See* Consolidated Opposition to and Comments on Petitions for Reconsideration at 1.C p.7-8 (August 20, 2003); Reply of Mobile Satellite Ventures Subsidiary LLC at technical Appendix 1.2 (September 2, 2003); Applications of Mobile Satellite Ventures Subsidiary LLC, File No. SAT-AMD-20031118-00335 at Technical Appendix p.11 (Nov. 18, 2003); MSV *ex-parte* (January 22, 2004); Response of Mobile Satellite Ventures Subsidiary LLC to Opposition of Inmarsat Ventures Ltd at 17-18 (April 14, 2004).

5 *See* Response of Mobile Satellite Ventures Subsidiary LLC to Opposition of Inmarsat Ventures Ltd. at Section II.B.2, April 14, 2004.

6 Note that the contours shown are -2, -3, -4, -6, -8, -10, -14 and -20 dB relative to beam peak. The -14 dB contour is used in the analysis in later sections of this document.

Figure 2-1 – Candidate MSV Feeder Link Spot Beam Coverage



A satellite reflector of 2 meters in diameter is assumed, which results in a peak gain of approximately 45 dBi at the downlink frequencies. This gain is significantly higher than the broad North American beam originally shown in MSV's Amendment, which was 29 dBi, allowing for a reduction in satellite transmit power on the feeder downlink.

There is an inconsistency in the MSV Amendments (common to both the November 2003 and February 2004 Amendments) regarding the actual feeder downlink EIRP and PFD levels. In Table 1-6 of the MSV Amendment, the maximum feeder downlink PFD at the Earth's surface is stated to be in the range -167.3 to -168.7 $dBW/m^2/4kHz$, depending on elevation angle, although no back-up analysis is shown to support this. This is inconsistent with the MSV link budget given in Table 1-12 of the MSV Amendment, which shows a feeder downlink EIRP of 20.5 dBW per carrier (50 kHz bandwidth). Such an EIRP level corresponds to a PFD of -152.5 $dBW/m^2/4kHz$ which is at least 14.8 dB higher than the PFD values stated by MSV in its Table 1-6. This analysis assumes that the MSV link budget is correct and that the proposed feeder downlink EIRP density is 20.5 dBW/50kHz.

Regarding the MSV feeder uplink, Table 1-13 of the MSV Amendment shows a feeder uplink EIRP of 61 dBW per carrier (200 kHz bandwidth). This will be assumed in the sharing analysis below.

A.3 EchoStar's Spot Beam Downlinks

In its FCC Amendment for 101°W, EchoStar proposes downlink spot beams with a peak EIRP of 57 dBW (in 27 MHz). Typically, service could be provided down to EIRP levels of 50 dBW in the dryer rain regions. These parameters will be used in the sharing analysis below.

A.4 EchoStar's Feeder Uplinks

EchoStar's planned satellite at 101°W will have reconfigurable uplink beam capability, including both fixed and steerable satellite receive beams. The spot beams are steerable such that uplinks can be received from any part of the visible Earth, subject to appropriate regulatory constraints. These spot beams are relatively large (39.5 dBi), but they could be made smaller to further facilitate sharing with MSV. In the sharing analysis below it will be assumed that these beams have 45 dBi peak gain, and operate with an earth station EIRP level of 80.6 dBW (in 27 MHz), as given in the link budgets of the EchoStar 101W° FCC application, as amended.

A.5 Downlink Sharing Analysis

Table 5-1 below shows the analysis of downlink interference from MSV into EchoStar. The MSV downlink EIRP is assumed to be as given in Section A.2 above, and the minimum

EchoStar downlink EIRP as given in Section A.3 above. The results show that a C/I of 16.2 dB is achieved outside of the -14 dB gain contour of the candidate MSV downlink spot beam.[7]

Table 5-1 – Downlink Interference Analysis (MSV > EchoStar)

Parameter	Units	Value
MSV downlink EIRP per carrier (per 50 kHz)	20.5	dBW/50kHz
MSV downlink EIRP density (per Hz)	-26.5	dBW/Hz
Min. EchoStar downlink EIRP (per 27 MHz)	50.0	dBW/27MHz
Min. EchoStar downlink EIRP density (per Hz)	-24.3	dBW/Hz
Resulting C/I into EchoStar at MSV beam peak	2.2	dB
Resulting C/I into EchoStar at MSV -14 dB contour	16.2	dB

Table 5-2 below shows the analysis of downlink interference from EchoStar into MSV. The maximum EchoStar downlink EIRP is assumed to be as given in Section A.3 above, and the minimum MSV downlink EIRP as given in Section A.2 above. The results show that a C/I of 16.8 dB is achieved outside of the -26 dB gain contour of the EchoStar downlink spot beam.[8]

Table 5-2 – Downlink Interference Analysis (EchoStar > MSV)

Parameter	Units	Value
Max. EchoStar downlink EIRP (per 27 MHz)	57.0	dBW/27MHz
Max. EchoStar downlink EIRP (per Hz)	-17.3	dBW/Hz
MSV downlink EIRP (per 50 kHz)	20.5	dBW/50kHz
MSV downlink EIRP (per Hz)	-26.5	dBW/Hz
Resulting C/I into MSV at EchoStar beam peak	-9.2	dB
Resulting C/I into MSV at EchoStar -26 dB contour	16.8	dB

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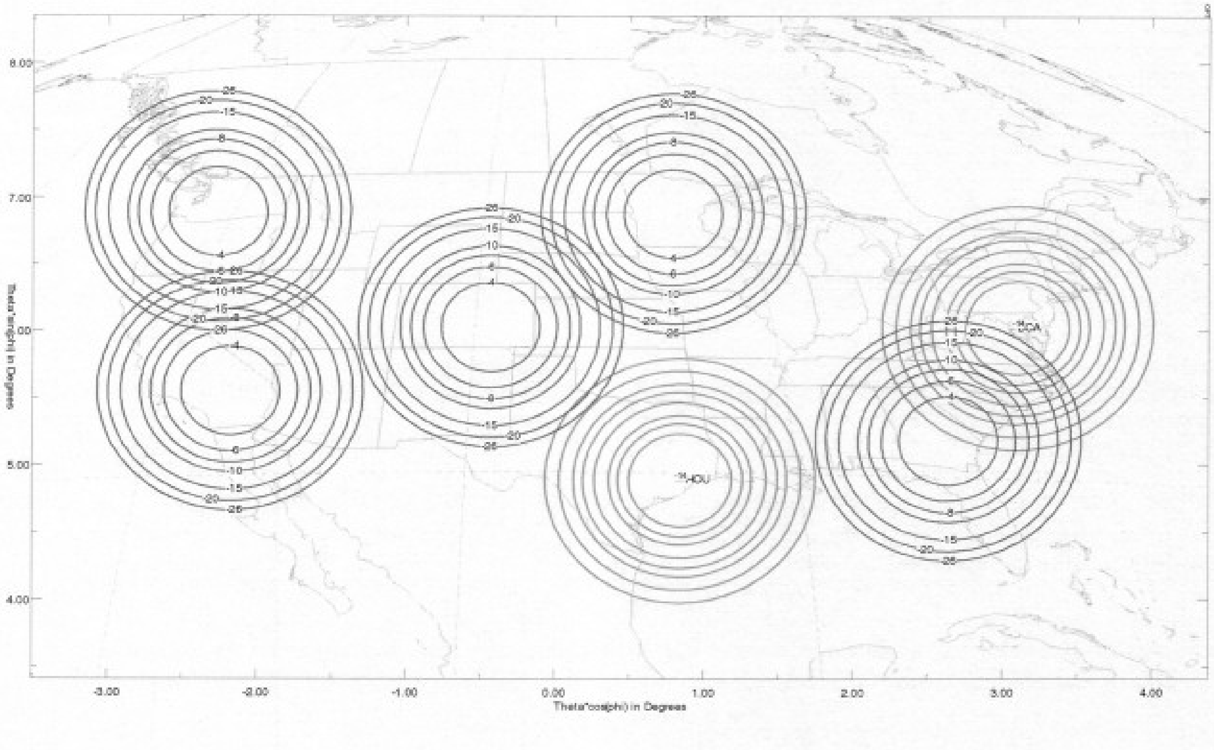
[7] EchoStar is not necessarily proposing that 16.2 dB be the criterion for downlink interference from MSV into EchoStar, although operation at this C/I level is clearly a possibility, particularly for newly established EchoStar services.

[8] Similarly, EchoStar is not necessarily proposing that 16.8 dB be the criterion for downlink interference from EchoStar into MSV, although operation at this C/I level is clearly a possibility, particularly for MSV's newly established links on its next generation satellite. It is noted that this level of adjacent satellite interference is lower than the MSV-1 satellite's intra-system interference (C/I of 12.7 dB).

Figure 5-1 below shows some example EchoStar downlink spot beams superimposed on the assumed MSV spot beams. The four EchoStar beams to the center and west of CONUS are all well isolated from the MSV spot beams, showing the significant amounts of territory that can be served by EchoStar that are well removed from the MSV feeder link beams and earth stations. The EchoStar beam to the south-east has deliberately been located relatively close to one of the MSV beams. Note, however, that even in this case the MSV receiving earth station is outside of the -26 dB gain contour of the EchoStar spot beam and so a C/I of greater than 16.8 dB would be achieved for the MSV feeder downlink. For this EchoStar spot beam the -14 dB gain contour of the MSV beam intersects approximately one third of the main service area of the EchoStar beam, but useful EchoStar service could be achieved over a significant area of the beam due to the fact that the EchoStar EIRP is well above the assumed minimum of 50 dBW over the main part of the EchoStar beam.

Figure 5-1 – Example EchoStar Spot Beams and Assumed MSV Spot Beams



Blue = EchoStar; Red = MSV

A.6 Uplink Sharing Analysis

Table 6-1 below shows the analysis of uplink interference from MSV into EchoStar. The MSV uplink EIRP is assumed to be as given in Section A.2 above, and the EchoStar uplink EIRP as given in Section A.4 above. The results show that a C/I of greater than 18.3 dB is achieved provided the MSV feeder link earth stations are located outside of the -20 dB gain contour of the EchoStar uplink spot beam.[9]

Table 6-1 – Uplink Interference Analysis (MSV > EchoStar)

Parameter	Units	Value
MSV uplink EIRP (per 200 kHz)	61.0	dBW/200kHz
MSV uplink EIRP density (per Hz)	8.0	dBW/Hz
EchoStar uplink EIRP (per 27 MHz)	80.6	dBW/27MHz
EchoStar uplink EIRP density (per Hz)	6.3	dBW/Hz
Resulting C/I into EchoStar if MSV E/S is located at EchoStar beam peak	-1.7	dB
Resulting C/I into EchoStar if MSV E/S is located at EchoStar -20 dB contour	18.3	dB

Table 6-2 below shows the analysis of uplink interference from EchoStar into MSV using the same assumptions as for Table 6-1 above. The results show that a C/I of 21.7 dB is achieved provided the EchoStar feeder link earth stations are located outside of the -20 dB gain contour of the MSV uplink spot beam.[10]

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[9] EchoStar is not necessarily proposing that 18.3 dB be the criterion to be used for uplink interference from MSV into EchoStar, although operation at this C/I level is clearly a possibility, particularly for newly established EchoStar services.

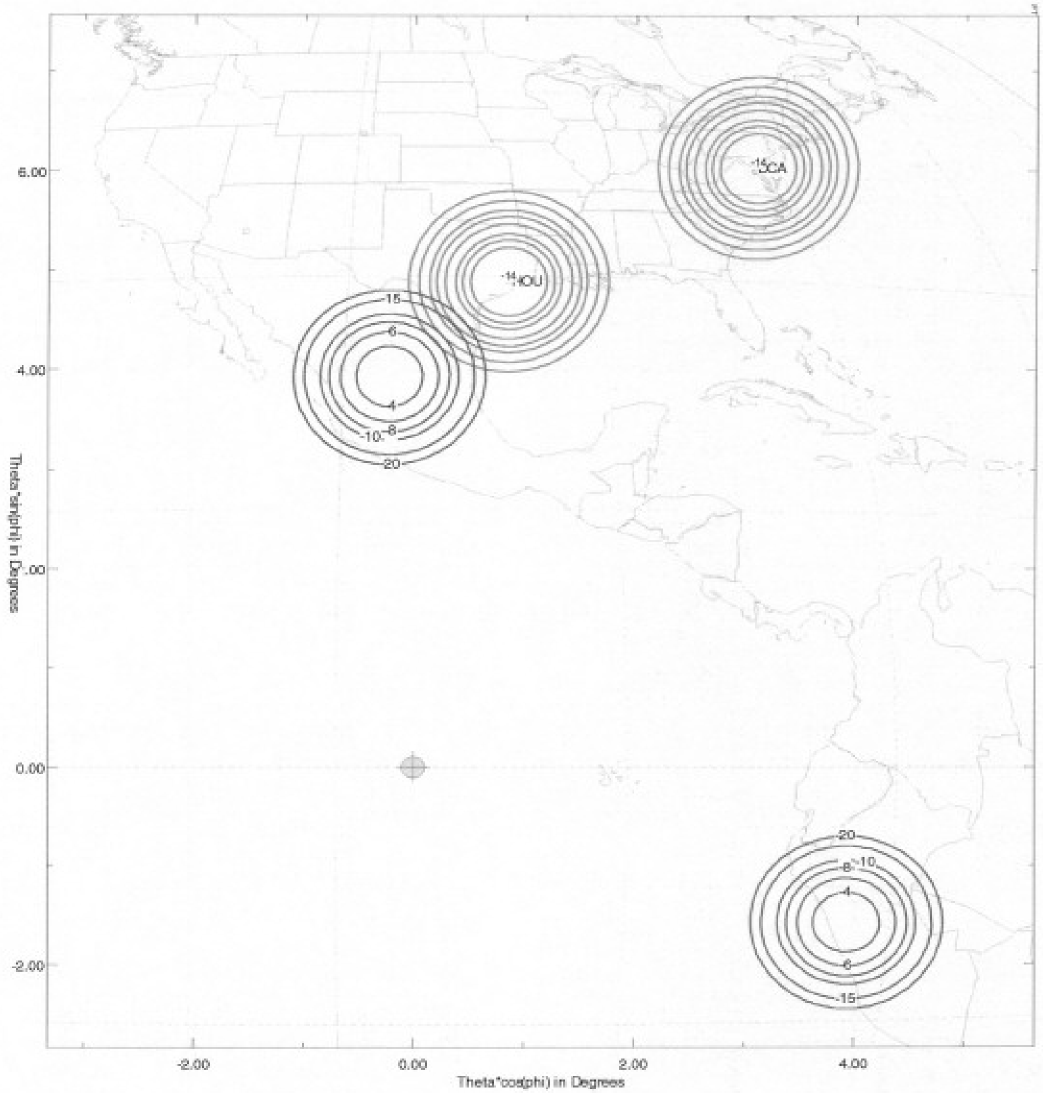
[10] EchoStar is not necessarily proposing that 21.7 dB be the criterion to be used for uplink interference from EchoStar into MSV, although operation at this C/I level is clearly a possibility, particularly for MSV's newly established links on its next generation satellite. It is noted that this level of adjacent satellite interference is lower than the MSV-1 satellite's intra-system interference (C/I of 14.7 dB).

Table 6-2 – Uplink Interference Analysis (EchoStar > MSV)

Parameter	Units	Value
EchoStar uplink EIRP (per 27 MHz)	80.6	dBW/27MHz
EchoStar uplink EIRP density (per Hz)	6.3	dBW/Hz
MSV uplink EIRP (per 200 kHz)	61.0	dBW/200kHz
MSV uplink EIRP density (per Hz)	8.0	dBW/Hz
Resulting C/I into EchoStar if MSV E/S is located at EchoStar beam peak	1.7	dB
Resulting C/I into EchoStar if MSV E/S is located at EchoStar -20 dB contour	21.7	dB

Two uplink sharing scenarios are addressed below in terms of the location of the EchoStar uplinks. The first is shown in Figure 6-1 where the EchoStar uplinks are located outside of the USA, as illustrated in the EchoStar 101W FCC application, as amended. In this case there is ample geographic separation of the beams between MSV and EchoStar to meet the levels computed in Tables 6-1 and 6-2 above. In fact the isolation is likely to be much greater than 30 dB, rather than the 20 dB assumed in these tables, resulting in C/I levels of the order of 30 dB. Note also that the -20 dB contour of the EchoStar beam only enters a very small area of CONUS in southern Texas along the Mexican border, thereby placing negligible constraints on the possible location of the MSV feeder link earth stations.

Figure 6-1 – Scenario of EchoStar Uplinks Outside of the USA

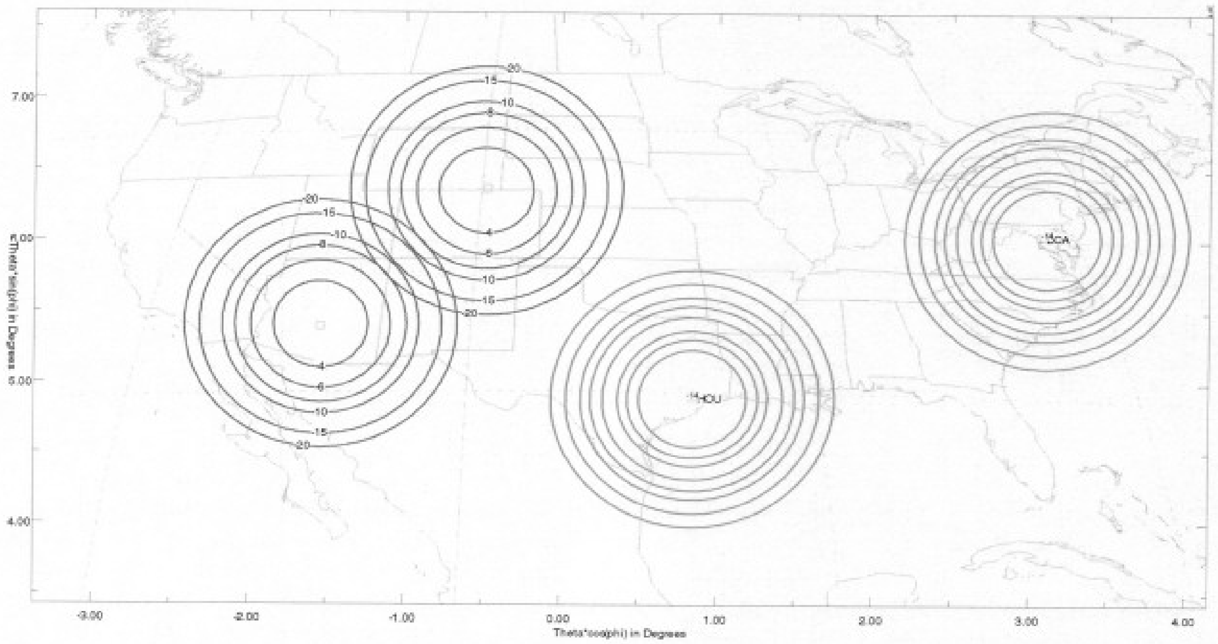


The second scenario is shown in Figure 6-2 where the EchoStar uplinks are located inside the USA at Cheyenne, WY and Gilbert, AZ.[11] In this case there is also more than sufficient geographic separation of the beams between MSV and EchoStar and likely isolation and hence C/I levels would be in the region of 30 dB or more. Note that with this scenario there would be considerable flexibility for MSV to locate its 2nd feeder link earth station anywhere within large

[11] These two sites are already established EchoStar uplink sites used with other EchoStar satellites.

parts of CONUS provided it maintains a certain geographic distance from Cheyenne, WY and Gilbert, AZ.

Figure 6-2 – Scenario of EchoStar Uplinks in the USA



A.7 Possible Use of Additional MSV Feeder Link Earth Stations

MSV has indicated that it might choose to use up to three or four additional feeder link earth station sites in order to obtain higher levels of frequency re-use.[12] Although this would restrict the flexibility for EchoStar's use of the band, sharing would still be viable as demonstrated in Figures 7-1 below, which shows the downlink situation (similar results apply in the case of the uplink). Two additional feeder link sites have been arbitrarily located at Chicago

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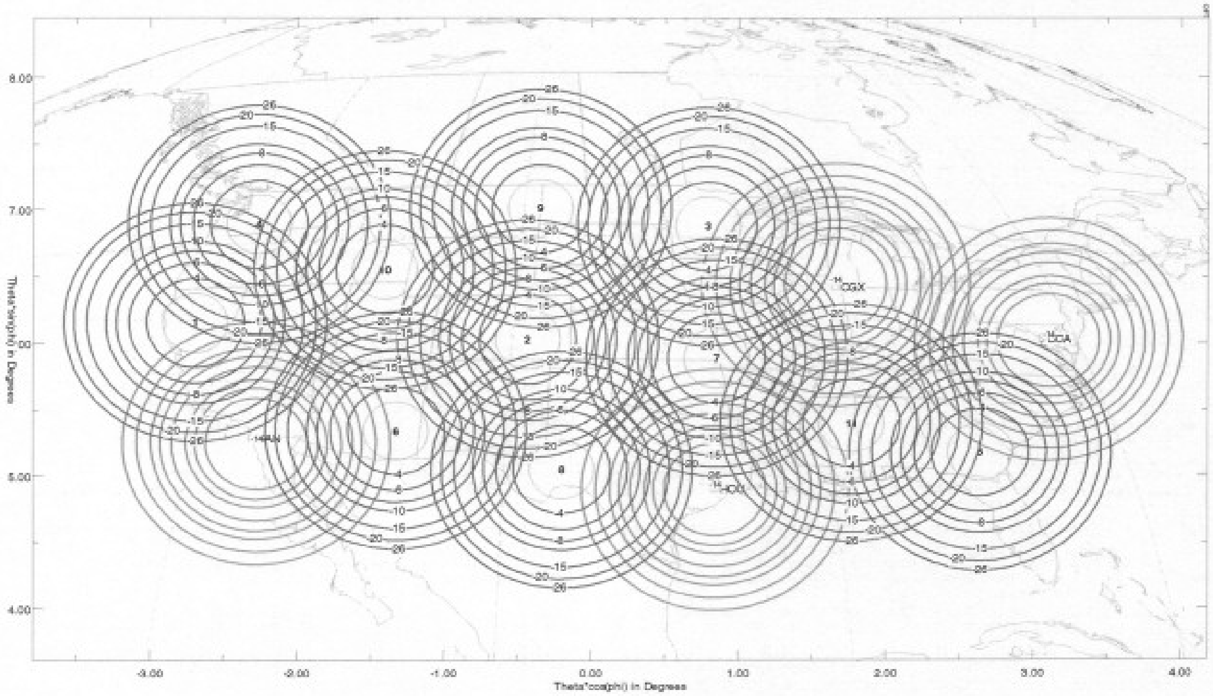
[12] *See* MSV Opposition to Petition for Clarification and/or Reconsideration at 4-5 (July 7, 2005). EchoStar does not concede that the FCC should modify the two feeder link condition in the MSV authorization; without possible restrictions on the future location of additional earth stations. Similar restrictions were placed on MSS feeder links in the 29 GHz band to accommodate LMDS stations. *Rulemaking to Amend Parts 1, 2, 21 and 25 of the Commission's Rules to Redesignate the 27.5-29.5 GHz Frequency Band, to Reallocate the 29.5-30.0 GHz Frequency Band, to Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services*, 11 FCC Rcd. 19005, 19033 (1996).

and San Diego, which ensure adequate isolation from the other two assumed MSV feeder link sites at Washington DC and Houston. Many example EchoStar beams are shown in Figure 7-1, all of which achieve the 26 dB isolation from the MSV feeder link earth station sites. This illustrates well that EchoStar and MSV would be able to share the band even with a higher level of frequency reuse in the MSV system.

Figure 7-1 – Downlink Example with Four MSV Feeder Link Earth Stations



Blue = EchoStar; Red = MSV

A.8 Conclusions

In this sharing analysis it has been demonstrated that, with EchoStar and MSV's particular requirements for use of the Appendix 30B Ku-band, sharing is possible using co-frequency collocated satellites, without placing undue constraints on either party. Such sharing is feasible because of the use of spot beams by both MSV and EchoStar. Spot beams in the MSV system apparently are necessary in order to permit MSV to implement the ATC interference cancellation system that it intends to deploy. In the EchoStar system spot beams are an important means for efficiently transmitting its programming to restricted geographic areas.

Although the analysis presented here clearly shows the feasibility of sharing, coordination between the parties is necessary to arrive at the optimum arrangements for both parties.

CERTIFICATION OF PERSON RESPONSIBLE

FOR PREPARING ENGINEERING INFORMATION

I hereby certify that I am the technically qualified person responsible for preparation of the engineering information contained in this pleading, that I am familiar with Part 25 of the Commission's Rules, that I have either prepared or reviewed the engineering information submitted in this pleading, and that it is complete and accurate to the best of my knowledge and belief.

Richard Barnett

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Dated: August 5, 2005