ATTACHMENT B

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IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF VIRGINIA
Alexandria Division

SATELLITE BROADCASTING & COMMUNICATIONS ASSOCIATION OF AMERICA, et al.	)	
Plaintiffs,	)	
v.	)	Civil Action No. 00-1571-A
FEDERAL COMMUNICATIONS COMMISSION, et al.,	)	**File Under Seal**
Defendants,	)	
and	)	
NATIONAL ASSOCIATION OF BROADCASTERS, et al.	)	
Defendant-Intervenors.	)	

FEDERAL DEFENDANTS' STATEMENT OF MATERIAL FACTS AS TO WHICH THERE IS NO GENUINE ISSUE

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Pursuant to Rule 56 of the Federal Rules of Civil Procedure and Local Rule 56(B), Federal Defendants respectfully submit this Statement of Material Facts As To Which There Is No Genuine Issue.

I. Direct Broadcast Satellite Service and the Plaintiffs

1. Direct Broadcast Satellite ("DBS") is a delivery method for providing video programming to paying subscribers via satellite. DBS suppliers today offer hundreds of channels to their subscribers, including national cable channels, regional channels, music channels, sports packages, pay-per-view, and local channels. Declaration of Jeffrey H. Rohlfs (hereinafter "Rohlfs Dec.") ¶ 3 (Defendants' Joint Exhibits ("D. Ex.") 3).[1]

2. DBS providers collect video signals from various sources (such as local television stations, or national television feeds) at uplink centers. The signal is then sent to the satellite, and transmitted back to earth to the intended receivers. Rohlfs Dec. ¶ 12 (D. Ex. 3); Deposition of Michael Schwimmer (hereinafter "Schwimmer Dec.") 18-23 (D. Ex. 27).

3. To obtain DBS service, a subscriber buys or rents a small (18-to-24-inch) parabolic "dish" antenna, which is mounted on or near the home. A subscriber also must buy or rent a set-top box to convert the incoming digital signal to an analog format viewable on the television receiver. Rohlfs Dec. ¶ 4 (D. Ex. 3).

4. DBS suppliers charge monthly fees for the programming. These charges are over and above installation costs and cost of hardware that resides on customers' premises. Rohlfs Dec. ¶ 3 (D. Ex. 3).

5. Plaintiffs Directv and Echostar are the two major providers of DBS service to subscribers in the United States. Complaint ¶12. Both are "satellite carriers" within the meaning of 17 U.S.C. § 119(d)(6). Complaint ¶¶13, 14.

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[1] The exhibits cited herein are found in Defendant's Joint Submission of Exhibits in Support of their Motion for Summary Judgment and Statement of Undisputed Material Facts

II. The Satellite Home Viewer Improvement Act

6. Prior to the enactment of the Satellite Home Viewer Improvement Act, DBS suppliers were unable to broadcast the signals of local television stations into the local markets associated with these stations ("local into local"). Rohlfs Dec. ¶ 9 (D. Ex. 3).

7. In contrast, cable systems were required to carry the signal of any local television station that requested carriage. Rohlfs Dec. ¶ 24-30 (D. Ex. 3). In exchange for this, cable systems were allowed to retransmit local television signals containing copyrighted materials without having to obtain permission from the copyright holders. Rohlfs Dec. ¶ 31 (D. Ex. 3).

8. To facilitate the ability of DBS operators, such as plaintiffs Directv and Echostar, to retransmit local television broadcast programming without the need for identifying and obtaining authorization from each individual copyright owner, Congress enacted the Satellite Home Viewer Improvement Act of 1999, Pub. L. 106-113, 113 Stat. 1501A-521 (Nov. 29, 1999) (SHVIA). Section 1002 of SHVIA adds a new section 122 to the Copyright Act which limits the exclusive rights of copyright owners in television broadcast programs by creating a statutory license. That license, in turn, authorizes secondary transmissions of television broadcasts by satellite carriers within a broadcast television station's local market under certain circumstances. 17 U.S.C. § 122(a).

9 In order to qualify for the statutory license created by section 122, a satellite carrier must comply with "the rules, regulations, or authorizations of the Federal Communications Commission governing the carriage of television broadcast station signals." 17 U.S.C. § 122(a)(2). In that regard, section 1008(a) of SHVIA amends Title III of the Communications Act of 1934 to add a new section 338 (codified at 47 U.S.C. § 338). Section 338 sets out requirements governing the carriage of television broadcast station signals by satellite carriers that choose to provide secondary transmissions of television broadcasts within a local market pursuant to the statutory license scheme created by 17 U.S.C. § 122. Subject to certain limitations, section 338(a) requires satellite carriers who provide secondary transmissions of television broadcasts under section 122 within a particular local market to "carry upon request the signals of all television broadcast stations within that local market." 47 U.S.C. § 338(a)(1).

The carriage obligation prescribed by section 338(a)(1) becomes effective on January 1, 2002. Id., § 338(a)(3).

10. Like the corresponding provisions governing the cable industry (see 47 U.S.C. 534(a)(5)), the carriage obligations associated with the license created by SHVIA do not apply where the signal of one local commercial broadcast television station substantially duplicates the signal of another. Id., § 338(c)(1). Satellite carriers also have no obligation to carry more than one local commercial broadcast station in a single market that is affiliated with a particular network. Id. In addition, SHVIA authorizes the F.C.C. to limit the obligations of satellite carriers, under the terms of the statutory copyright license, to carry local non-commercial broadcast stations. Id., § 338(c)(2). As in the case of the cable must-carry provisions (see 47 U.S.C. § 534(b)(10)(B)), the statute requires broadcast stations asserting a right to carriage under section 338(a) to bear the costs of delivering a good quality signal to a designated local receive facility of the satellite carrier. Id., § 338(b).

11. However, SHVIA also contains a key limitation which "recognize[s] and account[s] for" the "practical differences between the two industries." H. R. Conf. Rep. No. 104-464, at 92 (1999) (D. Ex. 103). Specifically, SHVIA's carriage obligations, unlike the corresponding "must-carry" requirement applicable to cable systems, apply only "on a market-by-market basis," id. at 100, in circumstances where a satellite carrier provides secondary transmissions within a given local market "under section 122 of title 17" which is the statutory copyright license. 47 U.S.C. § 338(a). Thus, in contrast to the cable must-carry requirements, SHVIA allows satellite carriers to choose whether to incur must-carry obligations in a particular market in exchange for the benefits of the statutory license.

12. Through these provisions, Congress sought to "create parity and enhanced competition between the satellite and cable industries in the provision of local television broadcast stations." Id. at 93-94. In addition, the carriage provisions are intended to ensure that the copyright license created by SHVIA cannot be used in a manner which would adversely affect over-the-air broadcasters and the viewers who rely upon the availability of free over-the-air broadcasts. Id.. at 101 ("The proposed provisions are intended to preserve free television for those not served by satellite or cable systems and to

promote widespread dissemination of information from a multiplicity of sources."). Specifically, Congress was concerned that, in the absence of a carriage obligation, "satellite carriers would carry the major network affiliates and few other signals [and] [n]on-carried stations would face the same loss of viewership Congress previously found with respect to cable non-carriage." Id. at 101. Limiting the use of SHVIA's copyright license to market areas where all eligible broadcast stations are being carried was intended to ensure that the new license does not adversely affect local over-the-air broadcasters by "preventing satellite carriers from choosing to carry only certain stations and effectively preventing many other local broadcasters from reaching potential viewers in their service areas." Id.

III. SHVIA Serves the Government's Interests in a Direct and Effective Way

13. SHVIA is designed to serve several interrelated objectives, including (a) promoting effective competition in the marketplace for delivery of multichannel video programming" by providing satellite carriers with "a statutory scheme for licensing television broadcast programming similar to that of the cable industry," and (b) ensuring that the new statutory copyright license does not adversely affect over-the-air broadcasters and the viewers who rely upon the availability of free over-the-air broadcasting. H.R. Conf. Rep. No. 104-464, at 92 (1999) (D. Ex. 103).

A. SHVIA Promotes Competition in the Marketplace.

14. In passing SHVIA, Congress had substantial evidence before it that the compulsory license and carriage provisions of SHVIA would promote competition in the multi-channel video programming market between DBS operators and cable systems.

15. Representatives of the satellite industry had long contended that the disparity between the licensing schemes governing retransmission of television broadcast signals by cable operators and satellite carriers, respectively, created an unfair competitive advantage for cable operators. See *Copyright Licensing Regimes Governing Retransmission of Broadcast Signals: Hearing Before the House Subcommittee on Courts and Intellectual Property*, 105th Cong. 42 (1997) ("Housing Hearing (1997)") (D. Ex. 102) (statement of Steven J. Cox, Senior Vice President, Directv, Inc.) ("[T]he satellite license needs to be revised so as to place DBS providers on a more equal footing with their cable competitors,

who currently drive [sic] competitive advantages from the terms of the cable compulsory license."); id. at 61-62 (statement of Charles C. Hewitt, President of Satellite Broadcasting and Communications Association of America (SBCA)) ([current law] should be revised to permit "local-into-local" transmissions of broadcast television stations to enable "satellite providers and others to have the same market access rights as the competition."); *Copyright Licensing Regimes Governing Retransmission of Broadcast Signals (Part II): Hearing Before the House Subcommittee on Courts and Intellectual Property*, 105th Cong. 6 (1998) ("House Hearings (1998)") (D. Ex. 100) (statement of Charles W. Ergen, President and CEO, Echostar Communications Corp.) (Congress should enact a compulsory copyright license that permits retransmission of local signals "to the same full extent that cable operators have that right today. Consumer surveys and Echostar's own experience as a company, show that the single greatest barrier to choosing DBS is the lack of local programming."); see also *The Copyright Office Report on Compulsory Licensing of Broadcast Signals: Hearing Before the Senate Committee on the Judiciary*, 105th Cong. 50 (1997) ("Senate Hearing (1997)") (D. Ex. 101) (statement of Charles C. Hewitt, President of SBCA) ("[W]e need the same rights to provide local signals back to their own markets as cable and other providers do.").

16. The use of parallel copyright licensing schemes for cable and DBS suppliers that are similar but take account of differences between the two distribution technologies is an effective means of promoting competition and furthering the goal of reducing the cost to consumers of both cable and satellite service. Rohlfs Dec. ¶ 47 (D. Ex. 3). Cable system operators have been able to exercise significant market power, and government regulation has been ineffective in constraining that exercise of market power. Id.

17. If Congress did not make the license available, DBS operators might be hampered in their contesting for customers' favor in competition with cable system operators, who are afforded a compulsory license. Id. ¶ 50. In the absence of such a license, Congress would give cable operators an artificial competitive advantage. Id.

18. There is also a compelling economic justification for Congress' *not* making a compulsory license available to DBS operators on terms substantially more favorable than those offered to cable operators. Rohlfs Dec. ¶ 51 (D. Ex. 3). To do so would afford an artificial competitive advantage to DBS operators and bias the competitive process in their favor on this account. Id.

19. Had Congress artificially "sweetened" the satellite compulsory license, by permitting use of copyrighted material for free without imposing any offsetting conditions that economically justify an offer of free use and abrogation of the rights of copyright holders, it would have skewed the efficient operation of the competitive process. Rohlfs Dec. ¶ 55 (D. Ex. 3).

20. There is substantial evidence that Congress' conclusion that SHVIA would promote competition between cable and DBS suppliers was accurate. DBS executives have acknowledged that the inability to deliver local programming into local markets hindered the growth of DBS, and providing local channels has promoted it. Schwimmer Dep. 268-269 (D. Ex. 27). Directv's view before SHVIA Was passed was that the absence of local channels was the primary reason for non-purchase of DBS among DBS rejectors, and that more subscribers would sign up if Directv delivered local stations. Deposition of Theresa Ferguson (hereinafter "Ferguson Dep.") 106, 110, (D. Ex. 21) DIR 11659 (D. Ex. 34). See also Ferguson Dep. 119-120 (D. Ex. 21).

21. DBS executives have stated that they are better able to compete with cable suppliers, now that they have the ability to provide local stations. Deposition of Charles Ergen (hereinafter "Ergen Dep.") 80 (D. Ex. 20). Local channels are clearly attracting new people to Directv. Deposition of Stephanie Campbell (hereinafter "Campbell Dep.") 160 (D. Ex. 17).

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B. Congress Crafted the License and Carriage Provisions in SHVIA to Avoid Adverse Effects on the Local Broadcast Industry and Over-the-Air Viewers of Television.

22. Congress sought to assure that the new copyright licensing scheme, which was being created to foster and promote competition between cable and satellite, did not create any collateral adverse effects on local broadcasters and their viewers. Rohlfs Dec. ¶ 40 (D. Ex. 3).

23. Congress had substantial evidence before it that any other type of licensing scheme would create adverse effects. For example, as the Conference Committee explained, Congress had concluded that, "absent the must-carry obligations, satellite carriers would carry the major network affiliates and few others signals." H.R. Conf. Rep. No..104-464, at 101 (1999) (D. Ex. 103).

24. Representatives of the television broadcast industry expressed concern to Congress that selective retransmission of television broadcasts by satellite carriers would undermine the objectives of the cable must-carry rules. House Hearing (1997) (D. Ex. 102) at 154 (statement of Wade H. Hargrove, Counsel, Network Affiliated Stations Alliance) (A compulsory copyright license permitting satellite carriers to pick winners and losers in each market "would be a giant step backward in the progress that the Congress has made in trying to preserve local free over-the-air service."); House Hearing (1998) (D. Ex. 100) at 59 (statement of James J. Popham, Vice President and General Counsel, Association of Local Television Stations) ("[H]aving been rescued by the cable must-carry rules and having struggled to establish a beachhead in their assault on the three entrenched networks' dominance, these independents and emerging network affiliates again find the sand eroding beneath them as they are placed by Echostar at a distinct competitive disadvantage in their local markets."); id. at 83 (Carriage requirements "are critical to ensure that local-to-local enhances rather than undermines local over the air broadcasting.").

25. A DBS provider acts as a "gatekeeper" of the video programming that its subscribers view. After a particular household has chosen a multichannel supplier, that supplier becomes the gatekeeper over video programming to that household. Rohlfs. Decl. ¶ 60 (D. Ex. 3). DBS providers are the gatekeepers for access for approximately 16% of television households, and if a broadcaster wants access to those households, it must deal with the DBS provider. Id.

26. If some stations are carried by a DBS provider, and others are not, it is likely that those uncarried stations will suffer a loss in viewership because DBS viewers will have no alternative means of viewing them. Rohlfs Dec. ¶ 72 (D. Ex. 3).

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28. The effect of this lack of viewership will be that those stations not carried by a DBS provider operate at a competitive disadvantage relative to stations that are carried. As viewership declines, advertising revenue will decline because advertisers will not purchase advertising time on a local station with low viewership. Rohlfs Dec. ¶ 81 (D. Ex. 3). As advertising revenue decreases, cash flow to the station will decrease. Id. ¶ 82. Decreased revenue will, in turn, cause the quality of programming to decline, which in turn, will lead to a drop in viewership. Id. ¶ 85.

29. Indeed, Directv and Echostar have conceded that noncarriage results in harm. Plaintiffs' expert testified that a significant number of major network affiliates that are not eligible for carriage under SHVIA under the nonduplication rule would likely give up their network affiliation and become independent stations in order to obtain satellite carriage. Deposition of Robert W. Crandall (hereinafter "Crandall Dep.") 138 (D. Ex. 18).

30. Lack of carriage by a DBS provider does not only hurt non-carried stations; it also hurts viewers who only receive television signals over the air. The negative impact on program quality described above result in lower-quality programming for non-subscribers. Rohlfs Dec. ¶ 58 (D. Ex. 3). At present, about 17 million American households depend upon free over-the-air television for their television viewing. Crandall Dep. 191 (D. Ex. 18). Approximately 32 million Americans live in those households. Id. 192. Even if all multichannel services grow as plaintiffs' experts predict, in 2005, ten million American households will continue to depend upon free over-the-air television for their television viewing. Id. 193. That constitutes nearly 20 million American viewers. Id. 194. Plaintiffs concede that Congress has an important interest in these viewers who depend upon free television for their viewing. Id. 195. As a matter of public policy, both 10 million and 17 million households are a substantial number of viewers, and their interests are important. Id.

31. There is substantial evidence that Congress' conclusion that a compulsory license with no carriage provision would encourage DBS providers to carry only the major network affiliates in local markets was correct. Until January 1, 2002, SHVIA provides DBS suppliers with a royalty-free copyright license to retransmit broadcast signals on a station-by-station basis, assuming their obtain retransmission consent. Rohlfs Dec. ¶ 37 (D. Ex. 3). Thus, during this "transition period," when no carriage requirements are in effect, we have the opportunity to see how DBS suppliers act when given a compulsory license with no carriage provisions attached.

32. Since the passage of SHVIA, both Echostar and Directv have entered a number of local markets. Directv offers local-into-local service in 41 markets. Deposition of David Baylor (hereinafter "Baylor Dep.") 41 (D. Ex. 15); Deposition of James Butterworth (hereinafter "Butterworth Dep.") 276 (D. Ex. 16). Echostar offers local-into-local service in approximately 35 markets. Schwimmer Dep. 250-251 (D. Ex. 27); Deposition of Edmund Petruzzelli (hereinafter "Petruzzelli Dep.") 39, 42 (D. Ex. 26).

33. Plaintiffs are currently only carrying the network affiliates and a few other stations in the markets they have entered. Declaration of Stephanie Campbell, Senior Vice President of Programming, Directv, ¶ 18 (D. Ex. 10); Declaration of Michael Schwimmer, Vice President of Programming, Echostar,

¶ 19 (D. Ex. 14); see also Compl. ¶ 45. Echostar is currently offering local service in 35-36 markets. Ergen Dep. 100 (D. Ex.20); Schwimmer Dep. 40 (D. Ex. 27). They generally offer only the four network affiliates in these markets, but they do offer some nonnetwork stations in a few markets. Ergen Dep. 101-103 (D. Ex. 20). Directv is now offering local channel service in 41 markets. Ferguson Dep. 208 (D. Ex. 21). Similar to Echostar, Directv is primarily offering the four or five network affiliates in those markets in which it is offering local service. Directv is carrying some independent stations in markets where it offers local into local service. Campbell Dep. 65-66 (D. Ex. 17).

IV. SHVIA Does Not Impose a Burden on Plaintiffs

A. The Effects of SHVIA's Carriage Obligations Are Modest

34. The carriage obligation of Section 338 is voluntary. A satellite carrier can decline to carry any stations, or it can choose to carry stations in some markets but not others. Moreover, the carrier remains free to negotiate copyrights in the marketplace to carry the broadcast programming it chooses. 17 U.S.C. § 122; 47 U.S.C. § 338(a)(1).

35. Additionally, Congress relied on the substantial evidence before it in the form of testimony that "spot-beam" satellites, improved compression techniques, and statistically multiplexing could dramatically increase DBS operators' satellite capacity. See *Copyright Compulsory License Improvement Act: Hearings on H.R. 768 Before the Subcomm. on Courts and Intellectual Property of the House Comm. on the Judiciary, House of Rep.* 106th Cong. (Feb. 25, 1999) (D. Ex. 94) and *Video Competition: Multichannel Programming: Hearings on H.R. 2921 and H.R. 3210 Before the Subcomm. on Telecommunications, Trade, and Consumer Protection of the House Comm. on Commerce*, 105th Cong. (Apr. 1, 1998) (D. Ex. 99). Plaintiffs have put into effect plans that will provide them with sufficient capacity to comply with Section 338 with minimal burden.

B. Plaintiffs' Current Spectrum Capacity

36. The Federal Communications Commission ("FCC") has designated several orbital slots for DBS service. The most desirable orbital locations are at 101 degrees West Longitude ("WL"), 110 degrees WL, and 119 degrees WL. Satellites at these orbital locations are capable of providing DBS

service to the entire Continental United States ("CONUS"). Declaration of Roger J. Rusch (hereinafter "Rusch Dec.") ¶¶ 2, 3 (D. Ex. 4); Complaint ¶ 24.

37. Directv and Echostar collectively control all of the spectrum at these three locations. Both are licensed to use 500 MHz of broadcast spectrum from 12.2 to 12.7 GHz, which is part of the electromagnetic spectrum known as the "Ku band." The 500 MHz of spectrum is divided in to 16 sub-bands, each of which is 27 MHz wide with a 2 MHz guard band. Rusch Dec. ¶ 4 (D. Ex. 4). Because it is possible to use spectrum twice, once with Right Hand Circular Polarization and again with Left hand Circular Polarization, there are 32 frequency bands within the Ku-band at each orbital slot available for assignment to U.S. DBS operators. Rusch Dec. ¶ 4 (D. Ex. 4); Rohlfs Dec. ¶ 13 (D. Ex. 3).

38. Directv is licensed to use 46 full CONUS frequencies, including the entire spectrum at 101 WL (32 frequencies), and part of the spectrum at 110 WL (3 frequencies) and 119 WL (11 frequencies). Rusch Decl. ¶ 6 (D. Ex. 4); Complaint ¶ 26; Baylor Dep. 30 (D. Ex. 15).

39. Echostar is licensed to use 50 full CONUS frequencies, including 29 frequencies at 110 WL, and 21 frequencies at 119 WL. Rusch Dec. ¶ 6 (D. Ex. 4); Complaint ¶ 27; Schwimmer Dep. 207 (D. Ex. 27).

C. Plaintiffs' Current Local-into-Local Service

40. The satellites currently used by Echostar and Directv have CONUS beams, meaning that the transmit antennas on those satellites concentrate the satellite transmissions into a beam that covers the entire contiguous United States, plus Alaska and Hawaii. DIR 35762-3 (D. Ex. 67). Consequently, the signal of local broadcast station with viewer residing solely in the Washington, DC Designated Market Area ("DMA") is transmitted nationwide although reception of the television signal may be blocked or blacked out in every geographic area outside of Washington. Such nationwide broadcasts are particularly inefficient when used for carriage of local broadcast television channels that are intended for a viewing audience located within a single DMA. Because the signal is transmitted nationwide, the satellite carrier is prevented from using the same frequency to transmit the signal of a different local station due to the resulting interference between the two signals. Consequently, Directv and Echostar's existing satellites

are capable of transmitting only 10-11 television signals on each frequency, regardless of whether the signals are nationwide cable channels or local television stations. Rusch Dec. ¶ 9 (D. Ex. 4).

41. Currently, Directv has 5 DBS satellites providing services from its three orbital locations. Rusch Dec. ¶ 7 (D. Ex. 4).

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42. Echostar currently has four DBS satellites providing service from its full CONUS slots. Rusch Dec. ¶ 7 (D. Ex. 4); Schwimmer Dep. 229-231 (D. Ex. 27).

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Schwimmer Dep. 250-251 (D. Ex. 27); Petruzzelli Dep. 39, 42 (D. Ex. 26). This allows Echostar to provide service to 37 DMAs (an average of four local stations per market). Echostar uses most of its remaining 34 full-CONUS frequencies for national programming.

D. Plaintiffs' Planned Use of Spot-Beam Satellites

43. To facilitate the carriage of local television broadcasts, Directv and Echostar have both started construction of satellites with multiple "spot beams" that retransmit local television stations to much smaller geographic areas Because the television signal is transmitted only to a small area, the same frequency may be re-used multiple times in other geographic areas without the interference that would result if two signals were transmitted nationally on the same frequency. Rusch Dec. ¶ 11 (D. Ex. 4).

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44. Spot beam satellites are designed to avoid interference by providing adequate isolation between beams using the same frequencies. This is achieved by avoiding use of the same set of frequencies in adjacent beams, and by ensuring that beams using the same frequencies are spaced apart by approximately the width of a beam. To maintain the appropriate spacing to allow reuse of the beam, the distance between the center points of each of the beams using the same set of frequencies should be approximately two times the diameter of the beams. Rusch Dec. ¶ 26 (D. Ex. 4).

45. Adequate isolation of spot beam the signals may be achieved by a technique known as "signal nulling" or "signal cancellation." This technique involves deliberate (directional) coupling of a small part of the signal from the interfering beam into a beam location where the interference would otherwise occur. Since the same signal appears in two beams, a user on Earth receives the same signal from two sources. By adjusting the phase properly on the satellite, the two interfering signals arrive out of phase by 180 degrees, cancel each other out, and thereby avoid any interference with the television signals that are intended to reach the user. This technique involves little cost and may be used as often as necessary to reduce interference. Rusch Dec. ¶ 27 (D. Ex. 4).

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52. Echostar's spot beam satellites, which are known as Echostar 7 and Echostar 8, are expected to be launched in the fourth quarter of 2001. Petruzzelli Dep. 57-58 (D. Ex. 26). Echostar 7 and 8 are intended to operate at 119 degrees WL and 110 degrees WL, respectively. Id.

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E. Digital Compression, Statistical Multiplexing and Higher Order Modulation

56. Digital compression and statistical multiplexing allow Plaintiffs to carry several standard definition TV signals on one assigned frequency. Petruzzelli Dep. 31-32 (D. Ex. 26).

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59. Modulation is the process by which information is impressed on an electromagnetic carrier wave by varying the amplitude, frequency, or phase. "QPSK" modulation is a form of PSK modulation in which there are four phase states, representing the symbols 00, 01, 11, and 10. With "8PSK" modulation, there are eight phase states representing the symbols 000, 001, 011, etc. Petruzzelli Dep. 84 (D. Ex. 26).

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63. To receive signals transmitted with 8PSK modulation, customers would need to buy new set-top boxes

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Consumers routinely purchase and/or upgrade electronic equipment, such as set top boxes, when they first obtain service or when they wish to take advantage of new features,

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66. Statistical multiplexing is a system whereby each channel in a bit stream utilizes just as many bits as it needs. Thus if programming on a channel has little motion, it will use few bits, while channels with programming having significant activity will use more. Rohlfs Dec. ¶ 19 (D. Ex. 3).

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F. Satellite Design Principles

68. On board processing of signals on satellites, to convert from different types of modulation, is a well-established technology that has been utilized on several commercial

communications satellites, including Motorola's Iridium, Hughes Electronics' Spaceway and Lockheed Martin and TRW's Astrolink. Rusch Dec. ¶ 31 (D. Ex. 4).

69. The use of 16QAM modulation in uplinks to satellites is a well-establish technology. INTELSAT signatories routinely uses 16QAM uplink and downlink terminal-processing equipment for high data rate transmission.

70. Satellite antennas of approximately 6 meters in diameter are practicable as evidenced by the fact that large antennas of similar size have been built and launched. TDRSS launched two 4.88-meter (16-foot) Ku-band antennas on each satellite starting in 1983. Both MSAT and AMSC-1 use two graphite antenna reflectors that are 4.9 by 6.7 meters (16 x 22 feet). Rusch Dec. ¶ 33 (D. Ex. 4).

71. Because spot beams are smaller than full CONUS beams, less RF power is needed for each beam in order to achieve the same power flux density (which is measured in Watts per square meter) on the ground. Rusch Dec. ¶ 35 (D. Ex. 4).

V. SHVIA Provides Substantial Benefits to Plaintiffs

72. Plaintiffs have experienced a significant increase in subscribers since the inception of local into local service, and expect this increase to continue.

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73. The acquisition of new subscribers, and existing subscribers signing up for local service, has been an economic boon for plaintiffs. Directv charges $5.99 per month for local service. Echostar charges $4.99 a month for local service. Both plaintiffs will reap profits worth potentially billions of dollars from the provision of local into local service.

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74. Based upon the evidence before it, Congress could reasonably predict that SHVIA's would not impose a burden on DBS operators; indeed, the evidence further demonstrates that the statute will profit a great economic benefit to plaintiffs.

Respectfully submitted,

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