SWIDLER BERLIN SHEREFF FRIEDMAN, LLP
THE WASHINGTON HARBOUR
3000 K STREET, NW, SUITE 300
WASHINGTON, DC 20007-5116
TELEPHONE (202) 424-7500
FACSIMILE (202) 424-7647
WWW.SWIDLAW.COM

NEW YORK OFFICE
THE CHRYSLER BUILDING
405 LEXINGTON AVENUE
NEW YORK, NY 10174
TEL.(212) 973-0111
FAX (212) 891-9598

October 15, 2002

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

**Re: MDS America, Incorporated**
***Ex Parte* Filing, ET Docket No. 98-206; RM-9147; RM-9245;**
**Use of Tall Towers with Higher Rural Power Limits Mitigates DBS Interference while Ensuring Viable MVDDS Rural Coverage**

Dear Ms. Dortch:

MDS America, Incorporated ("MDS America") has sought reconsideration of the recent Order in the above-referenced docket establishing rules for Multichannel Video Distribution and Data Service ("MVDDS"). In particular, MDS America is advocating higher rural power and related limits, because such limits not only would ensure the viability of MVDDS in rural areas, where competition is needed most, but also would ensure that harmful interference to DBS reception is avoided in both urban and rural areas. Conversely, lower rural power limits would make such interference more likely (due to the engineering that would be necessary for any MVDDS licensee to make its systems economically feasible in urban areas under the current rules). Because several parties and Commission staff have concerns about the apparent paradox of lower power limits likely leading to greater interference, this *ex parte* submission is intended to provide additional information that may be helpful in resolving these concerns.

In its Order establishing service rules for MVDDS,[1] the Commission, despite having proposed a two-tiered regime with higher power limits for MVDDS installations in rural areas,[2] decided to impose on MVDDS transmitters a uniform nationwide equivalent isotropic radiated power ("EIRP") limit of 14 dBm per 24 MHz.[3] The Commission also imposed four regional equivalent power flux density ("EPFD") limits that are uniform across a region, regardless of population density,[4] and an in-band PFD limit of –135 dBm/m$^2$/4kHz at distances greater than 3 km at the surface of the earth,[5] which MDS America has urged the Commission to eliminate or modify for rural areas to -109 dBW/m$^2$/4 kHz.[6]

In brief, allowing higher rural power for MVDDS systems makes it practical to mount MVDDS transmitters on tall towers, as MITRE Corporation had recommended where possible. Tall towers make it economically feasible to serve sparsely populated areas while preventing interference to DBS systems in urban and rural areas by allowing vertical antenna discrimination techniques, service from low-powered repeaters, and use of non-powered reflectors. As discussed in MDS America's Petition for Reconsideration and Replies to opposition pleadings,[7] from both an economic perspective and a technical perspective, it is simply not reasonable to treat sparsely populated rural areas outside the top 50 television markets in the same manner as densely populated urban areas. MDS America believes that the Commission should reconsider its approach with respect to this matter for two reasons:

First, from the economic perspective, under the current EIRP and EPFD limits, outside urban areas an MVDDS operator cannot serve a large enough area with a sufficient population to

---

1 Amendment of Parts 2 and 25 of the Commission's Rules to Permit Operation of NGSO FSS Systems Co-Frequency with GSO and Terrestrial Systems in the Ku-Band Frequency Range; Amendment of the Commission's Rules to Authorize Subsidiary Terrestrial Use of the 12.2-12.7 GHz Band by Direct Broadcast Satellite Licensees and Their Affiliates; and Applications of Broadwave USA, PDC Broadband Corporation, and Satellite Receivers, Ltd. to Provide a Fixed Service in the 12.2-12.7 GHz Band, *Memorandum Opinion And Order and Second Report and Order*, FCC 02-116 (released May 23, 2002) (hereafter, "*MVDDS Order*").

2 *First Report and Order and Further Notice of Proposed Rule Making*, FCC 00-418, ET Docket No. 98-206, 16 FCC Rcd 4096 (2000) at Appendix E, ¶ 7.

3 *MVDDS Order* at ¶¶ 68, 198. The 39 dBm rural EIRP limit recommended by MDS America is lower than that initially proposed by the Commission.

4 *Id.* at ¶¶ 68, 83.

5 *Id.* at ¶ 112.

6 MDS America urged the Commission to eliminate the maximum PFD limit as premature, unnecessary to protect NGSOs, and prohibitively preclusive of MVDDS. In this connection, see Teledesic Press Release, "Teledesic Suspends Work Under Satellite Contract," http://www.teledesic.com/newsroom/nRele.htm ( Sept. 30, 2002).

7 *See generally* MDS America's *Petition for Reconsideration*.

enable an economically feasible system. Short towers with low power result in small service areas, and in rural areas, those service areas have very few people. If an MVDDS operator wanted instead to use towers of 200 to 300 meters above ground level ("AGL") to increase the geographic area served, without higher power, the "exclusion zone" of subscribers outside the main beam of the MVDDS signal from a tower would virtually encompass the universe of potential subscribers. Thus, keeping the rural power limits as low as the urban ones effectively eliminates the use of tall towers (or the placement of towers on a nearby ridge) as an option for providing economically viable broadband MVDDS service to rural areas. With higher power limits and tall towers, however, the "donut hole" exclusion zone is small in proportion to the large geographic area served directly by the tall tower-mounted MVDDS transmitter (and the few rural residents within the exclusion zone adjacent to a tall tower can be served by the MVDDS system indirectly via inexpensive, non-powered reflectors). Higher MVDDS rural power limits are therefore critical to ensure that sparsely populated states such as Wyoming or Montana will have a choice of service providers for broadband video and data services, and therefore higher rural limits are critical to achievement of one of the primary goals of establishment of the MVDDS. Because, as shown below, higher power can be used in rural areas without causing harmful interference to DBS reception, MVDDS service to rural areas is quite feasible if the needlessly restrictive power limit rules are amended to permit it.

Second, the Commission should raise the power limits in rural areas from the technical, interference-avoidance perspective because retention of the current power level restrictions in rural areas would make it impossible for the MVDDS operator to follow one of the key recommendations of the *MITRE Report: the use of tall towers (of 200 meters or more AGL) to minimize potential interference with DBS reception.*[8] In rural areas, if not in urban areas,[9] use of such tall towers is possible if power limits are sufficiently high. By using tall towers, the MVDDS system designer can take advantage of vertical antenna angular discrimination and other advanced interference mitigation techniques to make harmful interference with DBS operations unlikely. But if the Commission continues to rely exclusively on compliance with low power restrictions to limit interference to DBS, for economic reasons, rural MVDDS systems will never be built.

With higher power limits, and tall towers, however, rural MVDDS systems will be built, and without harmful interference to DBS despite the higher power. This particular issue is one of geometry. As shown in the videotapes of the Andorran installation of the MDS International HyperCable® system of which MDS America is the U.S. licensee and distributor,[10] when the MVDDS transmitter is up high, and has adequate power, it can economically serve a wide area. Unlike the situation of DBS satellites, whose great distance from earth means that power levels and elevation are essentially uniform across the service area, antenna height and power are the

---

[8] *MITRE Corporation*, "Analysis of Potential MVDDS Interference to DBS in the 12.2 – 12.7 GHz Band" (filed Apr. 18, 2001) ("*MITRE Report*") at xvii, 6-2; *see also id.* at 5-6, 5-7.

[9] *See id.* at 6-2.

[10] *See* http://128.121.184.103/resources/video.asp ; *see also Ex Parte Submission of MDS America, Incorporated* (Mar. 6, 2002 ).

important factors that *define* the MVDDS service area. Because the DBS elevation angles are fixed, an MVDDS system can be designed to differentiate itself from the DBS systems by taking advantage of different elevation angles.

When MVDDS transmitters are mounted on tall towers, the MVDDS transmission vectors and DBS receiver pointing angle within the MVDDS service area vary at angles far exceeding the 9° separation suggested by the International Telecommunications Union. (Because the satellites are separated from one another by 9° or more, unless the MVDDS transmitter tower was more than 750 meters tall, the MVDDS system could not have a transmission vector of more than 10° above the horizon for any DBS receiver.) The DBS reception antenna, aimed at the high-powered satellite, can discriminate between the DBS and MVDDS signals, whether or not the MVDDS transmitter is to the south of the DBS receiver, just as the receive dish rejects the signal of another co-frequency satellite because of orbital slot angular discrimination.[11] This factor helps to prevent harmful interference with DBS reception despite the fact that higher power is used with the taller towers to increase the MVDDS service area.

Further, the use of tall towers can also be an important mitigation technique in avoiding harmful interference to DBS reception in *urban* areas. As MITRE recognized,[12] it is extremely difficult to erect tall towers in urban locations. The result is that MVDDS transmitters meeting the current low power limits but constrained by little else are likely to be located throughout urban areas at relatively low heights, and they almost certainly would be omni-directional, producing signals likely to bounce off buildings, causing multipath problems in "urban canyons" where multiple buildings of eight or more stories are clustered in close proximity. MVDDS signals would not be perceived as signals from "satellites on the ground" because there would be no vertical antenna discrimination, and the MVDDS signals could cause interference, absent use of appropriate mitigation techniques. (These multipath problems take two forms: they make it hard for the MVDDS operator to distribute its signal to its customers, and some of the MVDDS signal transmissions will end up pointing directly into the look angle of the satellite reception equipment, the worst-case scenario from the perspective of the DBS receiver.)

These urban multipath problems can, however, be avoided, if *rural* power limits are raised. Urban areas can receive MVDDS service via extremely low-powered repeaters fed by high-powered MVDDS transmitters mounted on taller towers outside the urban areas, with strategically placed non-powered reflectors used to control MVDDS emissions and direct them to MVDDS, not DBS, receivers. These reflected signals, rather than being randomized and uncontrolled like multipath emissions, would be specifically directed by the MVDDS operator. Thus, deployment of taller towers with higher power erected *outside* the urban areas provides a useful means of avoiding the multipath problem *within* urban areas. This comports with the real-world experience of MDS International.

---

[11] *See MITRE Report* at 5-8, 5-10.

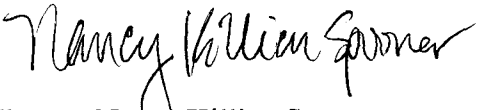
[12] *Id.* at 6-2.

In sum, without higher power (and without commensurate less restrictive EPFD and PFD limits) at least in rural areas, there will be both less MVDDS and more interference to DBS. The Commission can, however, avoid this undesirable result by reverting to the rural/urban distinction included in its previously proposed rules.

MDS America therefore urges the Commission to adopt an EIRP limit of 39 dBm for areas outside the top 50 markets, and EPFD limits that also observe the rural/urban distinction and are at the levels shown on the attached map. The PFD limit should be eliminated, or at least reduced to -109 dBW/m$^2$/4 kHz. This "win-win" approach will promote the public interest in maximizing service to the public and providing a competitive choice of providers for all citizens, regardless of whether they live in rural or urban areas.

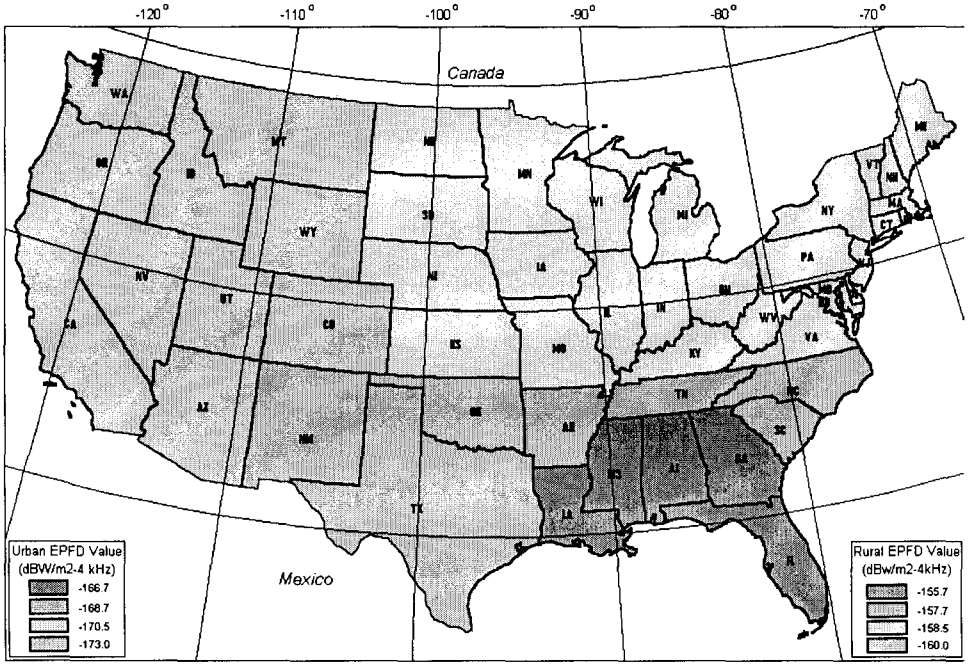
Respectfully submitted,

**MDS America, Incorporated**



By: Nancy Killien Spooner
Helen E. Disenhaus
Its Counsel

## EPFD Limits (Rural, Urban) for DBS 45 cm Antenna



## CERTIFICATE OF SERVICE

I hereby certify that on this 15th day of October, 2002, a true and correct copy of the foregoing was served via e-mail (denoted by *) and hand delivery, on the following individuals:

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

Ms. Cathy Hilke*
Intern
Office of Chairman Michael K. Powell
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Bryan Tramont, Esq.*
Senior Legal Advisor
Office of Chairman Michael K. Powell
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

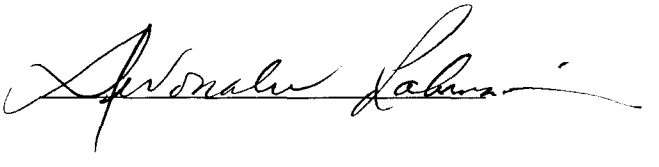
D'wana R. Terry, Esq., Chief*
Public Safety and Private Wireless Division
Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Mr. James Burtle, Chief*
Experimental Licensing Branch
Electromagnetic Compatibility Division
Office of Engineering & Technology
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Pantelis Michalopoulos
Steven Reed
Counsel for EchoStar Satellite Corporation
Steptoe & Johnson LLP
1330 Connecticut Avenue, N.W.
Washington, D.C. 20036

Gary M. Epstein
James H. Barker
Counsel for DIRECTV, Inc.
Latham & Watkins
555 11th Street, N.W.
Suite 1000
Washington, D.C. 20004

Antoinette Cook Bush
Northpoint Technology, Ltd.
444 North Capitol Street, N.W.
Suite 645
Washington, D.C. 20001



411602v2